CYCLOPÆDIA:

OR, AN

UNIVERSAL DICTIONARY

OF

ARTS AND SCIENCES;

CONTAINING
AN EXPLICATION OF THE TERMS, AND AN ACCOUNT OF
THE THINGS SIGNIFIED THEREBY,
IN THE
SEVERAL ARTS, BOTH LIBERAL AND MECHANICAL;
AND THE
SEVERAL SCIENCES, HUMAN AND DIVINE:
THE
Figures, Kinds, Properties, Productions, Preparations, and Uſes of Things
NATURAL AND ARTIFICIAL:
The Riſe, Progreſs, and State of Things
ECCLESIASTICAL, CIVIL, MILITARY, AND COMMERCIAL:
With the ſeveral Syſtems, Sects, Opinions, &c. among
PHILOSOPHERS,
DIVINES,
MATHEMATICIANS,
PHYSICIANS,
ANTIQUARIES,
CRITICS, &c.

The Whole intended as a Courſe of antient and modern Learning.

Extracted from the beſt Authors, Dictionaries, Journals, Memoirs, Tranſactions,
Ephemerides, &c. in ſeveral Languages.

By E. CHAMBERS, F.R.S. k

Floriferis ut apes in ſaltibus omnia libant,
Omnia nos—————————LUCRET.

THE SEVENTH EDITION,

CORRECTED and AMENDED.

IN TWO VOLUMES.

VOL. I.

LONDON:
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J. and J. RIVINGTON, J. WARD, M. SENEX, and the Executors of J. DARBY.
MDCCLI.

TO THE

KING.

SIR,

THE ARTS and SCIENCES humbly crave audience of Your Majeſty. The near connexion they have with the happineſs of a people, promiſes them a favourable reception from a Prince who makes his people's happineſs the baſis of his own. 'Tis by them the parſimony of nature is ſupplied, and life rendered eaſy and agreeable under its numerous infirmities. By them the mind is reclaimed from its native wildneſs, and enriched with ſentiments which lead to virtue and glory. 'Tis they, in fine, that make the difference between Your Majeſty's ſubjects, and the ſavages of Canada, or the Cape of Good Hope.

THE protection of ARTS has ever been eſteemed the proper province of the Great. 'Tis a branch of the regal office, which a Prince equal to the whole charge of a Crown, will not ſuffer to be alienated into other hands. From this, do the firſt and moſt diſtinguiſhed names in hiſtory derive a large ſhare of their glory: and if there be any age or nation conſpicuous above the reſt, and which is looked on with envy by our own; it is that wherein the Sovereigns have ſignalized themſelves moſt in this quality.—But, the time is now at hand, when we are no longer to envy Rome her AUGUSTUS and AUGUSTAN AGE; but Rome, in her turn, ſhall envy ours.

SOMETHING extraordinary ſeems intended by Providence, in placing ſuch a Prince at the head of ſuch a people: a Prince inſpired with a generous paſſion to devote his cares to the welfare of mankind; and a people conſpiring with unexampled ardor and unanimity to all his glorious views. Some of our beſt Princes have had their hands tied down; check'd by reluctant factions, which oppoſed every nobler deſign: Your Majeſty has found the happy ſecret, to make even contention do You homage; and turn oppoſition itſelf into approbation and applauſe.

THERE

DEDICATION.

THERE is a time reſerved in fate for every nation to arrive at its height; and the uppermoſt place on the terreſtrial ball is held ſucceſſively by ſeveral ſtates. May not the numerous preſages, which uſher in Your Majeſty's reign, give us room to expect that our turn is next; and that what Greece was under ALEXANDER, and Rome under AUGUSTUS Cæſar, Britain ſhall be under Your Majeſty's government and protection?

BUT even this were to under-rate our hopes, which are raiſed by Your Majeſty to ſomething ſtill more truly glorious. Greatneſs, ſo fondly coveted, has already coſt the world very dear; and though ſtill purſued by unthinking men under almoſt every ſhape, is only deſirable in a few. Of itſelf it is rather an object of terror and alarm, than delight; and at beſt only pleaſes, when joined with ſomething naturally amiable. From the practice of Your Majeſty, men may correct their ſentiments, and learn, that greatneſs has no charm except when founded in goodneſs. To be Great and a King, is but a ſmall matter with Your Majeſty; 'tis a quality many others enjoy in common with You, and to which ſome have even been doomed to their infamy: 'tis what Herod was, what Nebuchadnezzar was; and what Nero, and Domitian, were. But, while ſome Princes chuſe to be great in what is deſtructive, and others in things wholly indifferent; 'tis Your Majeſty's praiſe to be great in what is the perfection of our nature, and that whereby we approach neareſt the Deity. Happy choice! to uſe power only as the means of rendering your beneficence more diffuſive; and thus to make Royalty miniſter to the happineſs of mankind, which it has been uſed to invade.

YOUR Majeſty commands a people capable of every thing. Not more fitted to ſhine in arms, or maintain an extended commerce; than to ſucceed in the ſtiller purſuits of philoſophy, and literature. And it will be Your Majeſty's glory, not to let any of their talents lie unemploy'd. If Your Majeſty gives the word, while ſome of them are buſied in avenging Your cauſe, by humbling ſome turbulent monarch; ſome in extending Your dominions by new ſettlements, and ſome in increaſing Your people's wealth, by new trades: others will be employ'd in enlarging our knowlege by new diſcoveries in nature, or new contrivances of art; others in refining our language; others in improving our morals; and others in recording the glories of Your reign in immortal ſong.

THE Work I here preſume to lay at Your Majeſty's feet, is an attempt towards a ſurvey of the republic of learning, as it ſtands in Your Majeſty's moſt auſpicious reign. We have here ſomewhat of the boundary that circumſcribes our preſent proſpect; and ſeparates the known, from the unknown parts of the intelligible world. Under Your Majeſty's princely influence and encouragement, we promiſe ourſelves this boundary will be removed, and the proſpect extended far into the other hemiſphere.——Methinks I ſee trophies erecting to Your Majeſty in the yet undiſcover'd regions of Science; and Your Majeſty's Name inſcribed to inventions at preſent held impoſſible!

I am, with all ſincerity and devotion,

May it pleaſe Your MAJESTY,

Your Majeſty's moſt dutiful,

and obedient Subject,

and Servant,

GRAY'S-INN,
Octob. 15th,
1727.

Ephraim Chambers.

ADVERTISEMENT

Concerning the SECOND EDITION.

WHAT advantages the preſent Edition has above the former, I had rather the Reader ſhould find in the peruſal, than be taught by a formal recital of them: the rather, as an author's ſecond cares, whatever credit they may do his perſeverance, do none to his circumſpection; his utmoſt praiſe, in ſuch caſe, being to have done that at a ſecond attempt, which he ought to have done at the firſt.

THUS much, however, it may be neceſſary to ſay, in juſtice to the Bookſellers concerned, That the work is now conſiderably more correct than at its firſt appearance; as having been retouched, and amended in a thouſand places. Some advantage it likewiſe has, in being rendered more uniform, its parts in many places better diſpoſed, as well as more conformable to each other, and the References reformed throughout. Some Additions, likewiſe, the Reader will meet withal; particularly, the articles BOOK, PAPER, BRIDGE, DEGREE, DYING, SATYR, BOG, *and a few others of leſſer conſequence.—Some other articles, as* GYMNASIUM, GYMNASTICS, LUSTRATION, LUXATION, LYRIC, SPINOZISM, PLANETARY, *&c. have alſo been enlarged, for reaſons chiefly typographical, and not very neceſſary to be recited here; the leſs, as all additions are beyond the main deſign, which was, to have reſerved the additional matters intire for a ſupplemental work.*

SOME perſons, perhaps, inſtead of a new edition, may have expected a new work, agreeable to the plan publiſhed ſome time ago in my paper of Conſiderations, *&c. To obviate any complaints from this quarter, it may be proper to add, that nothing has been wanting on the author's part, to have ſatisfied their expectations. A conſiderable part of the copy was prepared, and upwards of twenty ſheets actually printed in that method, with a deſign to have publiſhed a volume laſt winter, and to have gone on publiſhing a volume yearly, till the whole had been finiſhed. But while things were in this train, the Bookſellers were alarmed with a bill in parliament, containing a clauſe to oblige the publiſhers of all improved editions of books, to print their improvements ſeparately: which, in the method we were proceeding in, could not have been done without great loſs. The bill, indeed, after having paſſed the commons, failed (when it was leaſt expected) in the houſe of lords: but as there were apprehenſions of its being revived in ſome ſubſequent ſeſſion, when it might have borne ſtill harder on the undertakers of this work, they thought beſt to retreat, before they were further involved.*

'TIS poſſible, the loſs, from this alteration of meaſures, may be the greateſt to themſelves; and that the public may even be gainers by it: as, by this means, they now have the former book conſiderably improved, without either its bulk, or its price being ſenſibly augmented.

THE PREFACE.

IT is not without ſome concern that I put this work in the reader's hands; a work ſo ſeemingly diſproportionate to any ſingle perſon's experience, and which might have employed an academy. What adds to my apprehenſions, is the ſcanty meaſure of time that could be employed in a performance, which a man's whole life ſcarce appears equal to. The Vocabulary of the academy *della Cruſca* was above forty years in compiling, and the Dictionary of the French academy much longer; and yet the preſent work will be found more extenſive than either of them in its ſubject and deſign, as much as it falls ſhort of them in reſpect of years, or of hands employed in it.

HERE, the reader might be led to ſuſpect ſomething of diſingenuity; and think I firſt offer him a book, and then give him reaſons why I ſhould not have done it.—But his ſuſpicions will abate, when he is appriſed of ſome advantages under which I engaged; which are ſuperior to what had been known in any former work of the kind: ſince all that had been done in them, accrued, of courſe, to the benefit of this. I come, like an heir, to a large patrimony, gradually raiſed by the induſtry and endeavours of a long race of anceſtors. What the French and Italian academiſts, the abbé Furetiere, the editors of Trevoux, Savary, Chauvin, Harris, Wolfius, Daviler, and others have done, has been ſubſervient to my purpoſe. To ſay nothing of an inferior claſs of books of this kind, which contributed their ſhare; dictionaries on almoſt every ſubject, from medicine and law, down to heraldry and the manage.

YET this is but a part: I am far from having contented myſelf to take what was ready collected; but have augmented it with a large acceſſion from other quarters. Few parts of the commonwealth of learning, but have been trafficked to on this occaſion. Recourſe has been frequently had to the originals themſelves on the ſeveral arts; and, not to mention what ſmall matters could be furniſhed from my own ſtock, the reader will here have extracts and accounts from a great number of books of all kinds, either overlooked by former lexicographers, or not then extant; and a multitude of improvements in the ſeveral parts, eſpecially of natural knowlege, made in theſe laſt years. If inſtances hereof were required, I hope there are few pages which will not afford ſeveral.

SUCH are the ſources from whence the materials of the preſent work were derived; which, it muſt be allowed, were more than ſufficiently ample: ſo that the difficulty lay in the form and œconomy of it; ſo to diſpoſe ſuch a multitude of materials, as not to make a confuſed heap of incoherent parts, but one conſiſtent whole.—And here it muſt be confeſſed there was little aſſiſtance to be had.—Former lexicographers have ſcarce attempted any thing like ſtructure in their works; nor ſeem to have been aware, that a dictionary was, in ſome meaſure, capable of the advantages of a continued diſcourſe. Hence it is that we ſee nothing like a whole in what they have done: and, for this reaſon, ſuch materials as they did afford for the preſent work, generally needed farther preparation, ere they became fit for our purpoſe; which was as different from moſt of theirs, as a ſyſtem from a cento.

OUR view was, to conſider the ſeveral matters, not only in themſelves, but relatively, or as they reſpect each other: both to treat them as ſo many wholes, and as ſo many parts of ſome greater whole; their connexion with which to be pointed out by a reference. So that by a courſe of references, from generals to particulars; from premiſes to concluſions; from cauſe to effect, and vice verſa; *i. e.* from more to leſs complex; and from leſs to more; a communication might be opened between the ſeveral parts of the work; and the ſeveral articles be, in ſome meaſure, replaced in their natural order of ſcience, out of which the alphabetical order had removed them.

FOR an inſtance.—The article ANATOMY, is not only to be conſidered as a whole, *i. e.* as a particular ſyſtem, or branch of knowlege; and accordingly divided into its parts, *human*, and *comparative*; and human, again, ſubdivided into the *analyſis of ſolids*, and *fluids* (to be referred to in their ſeveral places in the book, where they themſelves being treated of, refer to others ſtill lower, and ſo on); but alſo as a part of MEDICINE; which, accordingly, it refers to; and which, itſelf, refers to another higher, *&c.*—By ſuch means, a chain may be carried on from one end of an art to the other, *i. e.* from the firſt or ſimpleſt complication of ideas, appropriated to the art, which we call the *elements*, or principles thereof, to the moſt complex, or general one, the name or term that repreſents the whole.

NOR is the purſuit to be dropped here: but as the elements or data, in one art, are ordinarily quæſita in ſome other ſubordinate one, and are furniſhed thereby (as here, for inſtance, the elements of anatomy are furniſhed by *natural hiſtory*, *phyſics*, and *mechanics*; and anatomy itſelf may be conſidered as a datum furniſhed to *medicine*); we may carry on the view farther, and refer out of one art or province into the adjoining ones; and thus lay, as it were, the whole land of knowlege open.—It may appear, indeed, with the face of a wilderneſs; but it ſhould be a wilderneſs through which a reader might find his way as ſecurely, though not ſo expeditiouſly and eaſily, as through a regular parterre.

IT may be even ſaid, that if the Syſtem be an improvement upon the Dictionary; the Dictionary is ſome advantage to the Syſtem; and that this is, perhaps, the only way wherein the whole circle, or body of knowlege, with all its parts and dependencies, can well be delivered. In any other form, many thouſand leſſer things muſt needs be concealed: all the pins, the joints, the binding of the fabric, muſt be inviſible of courſe; all the leſſer parts, one might ſay, all the parts whatſoever, muſt be, in ſome meaſure, ſwallowed up in the whole. The imagination, ſtretched and amplified to take in ſo large a ſtructure, can have but a very general, indiſtinguiſhing perception of any of the component parts.—Whereas the parts are not leſs matter of knowlege when taken ſeparately, than when put together.—Nay, and as our ideas are all individuals; and as every thing that exiſts is one; it may ſeem more natural to conſider knowlege in its parts, *i. e.* as divided into ſeparate articles, denoted by ſo many different terms, than to conſider the whole aſſemblage in its utmoſt compoſition; which is a thing merely artificial, and the work of imagination.

AND yet the latter way muſt be allowed to have many and real advantages over the former; which, in truth, is only of uſe and ſignificance, as it partakes of it.—Whence it ſhould follow, that the moſt advantageous way is, to make uſe of both: to conſider every point, both as a part, to help the imagination to the whole;

and as a whole, to help the underſtanding to each part. — Which is the view in the preſent work. — So far, we mean, as the many and great difficulties we had to labour under would allow us to purſue it.

IN this view we have endeavoured to give the ſubſtance of what has been hitherto diſcovered in the ſeveral branches of knowlege, both natural and artificial: that is, in the knowlege of *nature*, firſt, as ſhe appears to our ſenſes, either ſpontaneouſly, as in *natural hiſtory*; or with the aſſiſtance of art, as in *anatomy*, *chemiſtry*, *medicine*, *agriculture*, &c. Secondly, to our imagination, as in *grammar*, *rhetoric*, *poetry*, &c. Thirdly, to our reaſon; as in *phyſics*, *metaphyſics*, *logics*, and *mathematics*: with the ſeveral ſubordinate arts ariſing from each; as *agriculture*, *painting*, *ſculpture*, *trade*, *manufactures*, *policy*, *law*, &c. and numerous remote particulars, not immediately reducible to any of theſe heads; as *heraldry*, *philology*, *antiquities*, *cuſtoms*, &c,

THE plan of the work, then, I hope, may be allowed to be good; whatever exceptions be taken to the execution of it. It would look extravagant to ſay, that half the men of letters of an age might be employed in it to advantage; and yet it will appear, that a work accompliſhed as it ought to be, on the footing of this, would anſwer moſt of the purpoſes of a library, except parade; and contribute more to the propagating of uſeful knowlege through the body of a people, than half the books extant. — After this, let the reader judge how far I may deſerve cenſure for engaging in it, even under ſome diſadvantages; and whether to have failed in ſuch a deſign may not be ſome degree of praiſe.

BUT it will be here neceſſary to carry on the diviſion of knowlege, juſt laid down, a little farther; and make a more preciſe partition of the body thereof, in the formal way of an analyſis: the rather, as an analyſis, by ſhewing the origin and derivation of the ſeveral parts, and the relation in which they ſtand to their common ſtock, and to each other, will aſſiſt, both in reinſtating the ſcattered articles in the book, and in connecting them together.

- KNOWLEGE is either
  - *Natural*, and *Scientifical*; which is either — —
    - *Senſible*; conſiſting in the perception of phænomena, or external objects — called Physiology, or Natural History; and which, according to the different kinds of ſuch objects, divides into —
      - Meteorology [1]
      - Hydrology [2]
      - Mineralogy [3]
      - Phytology [4]
      - Zoology [5]
    - Or,
    - *Rational*; conſiſting in the perception of the intrinſic characters or habitudes of ſenſible objects — either their — — —
      - *Powers*, and *Properties* — called Physics, and Natural Philosophy [6]
      - *Abſtracts* — called Metaphysics [7], which ſubdivides into
        - Ontology.
        - Pneumatology.
      - *Quantities* — called Pure Mathematics — which divides, according to the ſubject of the quantity, into —
        - Arithmetic [8] — whence
          - Analytics [9]
          - Algebra [10]
        - Geometry [11] — whence
          - Trigonometry.
          - Conics.
          - Spherics.
        - Statics [12] — —
      - *Relations* to our happineſs — called Religion, or the doctrine of Offices, which ſubdivides into
        - Ethics [13], or Natural Religion — whence
          - Politics [14]
          - Law [15]
        - Theology [16], or Revelation.
  - Or,
  - *Artificial* and *Technical* (conſiſting in the application of natural notices to further purpoſes), which is either — —
    - *Internal*; employed in diſcovering their agreement and diſagreement; or their relations in reſpect of truth — called Logics [17]
    - Or,
    - *External*; which is either —
      - *Real*, employed in diſcovering and applying the
        - *Latent powers* and *properties* of bodies — called Chemistry [18] — whence
          - Alchemy.
          - Natural Magic, &c.
        - *Quantities* of bodies — called Mixed Mathematics; which, according to the different ſubjects, reſolves into —
          - Optics [19], Catoptrics, Dioptrics, — whence
            - Perspective [20]
            - Painting [21]
          - Phonics — whence Music [22]
          - Hydroſtatics [23], Hydraulics.
          - Pneumatics [24]
          - Mechanics [25] — whence
            - Architecture [26]
            - Sculpture [27]
            - Trades [28], and Manufactures.
          - Pyrotechnia [29] — whence
            - The Military *Art* [30]
            - Fortification [31]
          - Astronomy [32] — whence
            - Chronology [33]
            - Dialing [34]
          - Geography [35], Hydrography — whence
            - Navigation [36]
            - Commerce [37]
        - *Structure* and *œconomy* of organical bodies — called Anatomy [38]
        - *Relations* thereof to the preſervation and improvement — either of —
          - Animals — called
            - Medicine [39]
            - Pharmacy [40]
          - Vegetables — called
            - Agriculture [41]
            - Gardening [42]
          - Brutes — called
            - Farrying [43]
            - Manage — whence
              - Hunting.
              - Falconry.
              - Fishing, &c.
      - Or,
      - *Symbolical*, employed in framing and applying
        - *Words*, or articulate ſigns of ideas — called Grammar [44]
        - *Armorics* — called Heraldry [45]
        - *Tropes* and *Figures* — called Rhetoric [46]
        - *Fables* — called Poetry [47]

THIS is a view of knowlege, as it were *in ſtamine*; exhibiting only the grand conſtituent parts thereof: it would be needleſs to purſue it into all its members and ramifications; which is the proper buſineſs of the book itſelf. It might here, therefore, ſeem ſufficient to refer, from the ſeveral branches thus deduced, to the ſame in the courſe of the work; where their diviſion is carried on. And yet this would ſometimes prove inconvenient for the reader; who, to find ſome particular matter, would go a long circuit, and be referred backwards and forwards, from one end of the book to another: to ſay nothing of the interruptions which may frequently happen in the ſeries of references. — To obviate this, we have taken a middle courſe, and carried on the diſtribution farther, in the way of *notes* at the bottom of the pages; but this is in a looſer manner, to prevent the embarraſs of a ſtrict analyſis, ſo complex and diffuſive as this muſt otherwiſe prove. Some of the principal articles, in each branch of ſcience, are hereby brought to light, and ſuch as will naturally ſuggeſt, and lead to the reſt; ſo that this may afford the reader a ſort of *ſummary* of the whole; and, at the ſame time, diſpenſe a kind of auxiliary, or ſuccedaneous order throughout the whole; the articles omitted all naturally enough ranging themſelves in their proper places among theſe. A detail of this kind is of the more

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[1] METEOROLOGY, or the hiſtory of *AIR*, and the *ATMOSPHERE*: including, 1°, That of its contents, Æther, Fire, Vapour, Exhalation, *&c.* 2°, Meteors formed therein; as Cloud, Rain, Shower, Drop, Snow, Hail, Dew, Damp, *&c.* Rainbow, Parhelion, Halo, Thunder, Water-spout, *&c.* Winds, Monsoon, Hurricane, and the like.

[2] HYDROLOGY, or the hiſtory of *WATER*; including that of Springs, Rivers, Acidulæ, Baths, *&c.* of Lake, Sea, Ocean, *&c.* of Tides, Deluge, and the like.

[3] MINERALOGY, or the hiſtory of *EARTH*; 1°, Its parts; as Mountain, Mine, Moss, Bog, Grotto; and their phænomena, as Earthquake, Volcano, Conflagration, *&c.* Its Strata, as Clay, Bole, Sand, *&c.* 2°, Fossils or Minerals, as Metals, Gold, Silver, Mercury, *&c.* with operations relating to them; as Fusion, Refining, Purifying, Parting, Essaying, *&c.* Litharge, Lavatory, *&c.* Salts, as Nitre, Natron, Gemma, Alum, Armoniac, Borax, *&c.* Sulphurs, as Arsenic, Amber, Ambergrise, Coal, Bitumen, Naphtha, Petrol, *&c.* Semi-metals, as Antimony, Cinnabar, Marcasite,

consequence,

MARCASITE, MAGNET, BISMUTH, CALAMINE, COBALT, &c. STONES, as MARBLE, PORPHYRY, SLATE, ASBESTOS, &c. GEMS, as DIAMOND, RUBY, EMERALD, OPAL, TURCOISE, &c. EMERY, LAPIS LAZULI, whence ULTRAMARINE, AZURE, &c. PETREFACTIONS, as CRYSTAL, SPAR, STALACTITES, TROCHITES, CORNU AMMONIS, and the like.

[4] PHYTOLOGY, or the hiſtory of *PLANTS*; their origin in the SEED, FRUIT, &c. Their kinds; as TREE, HERB, &c. Extraordinary ſpecies; as TEA, COFFEE, PARAGUAY, VINE, GINSENG, COTTON, TOBACCO, &c. CORAL, MUSHROOM, TRUFFLE, PARASITES, MISTLETO, MOSS, &c. Parts; as ROOT, STONE, FLOWER. WOOD; as GUAIACUM, SASSAFRAS, EBONY, ALOES, &c. LEAVES, FOLIATION, ROLL, &c. BARK; as QUINQUINA, &c. alſo PISTIL, FARINA, STAMINA, &c. Operations thereof; as VEGETATION, GERMINATION, CIRCULATION, &c. Circumſtances; as PERPENDICULARITY, PARALLELISM, FECUNDITY, &c. Productions; as HONEY, WAX, BALSAM, SUGAR, MANNA, &c GUM, RESIN, CAMPHOR, &c. INDIGO, OPIUM, GALLS, and the like.

[5] ZOOLOGY, or the hiſtory of *ANIMALS*; their origin in EGG, EMBRYO, FOETUS, GENERATION, CONCEPTION, GESTATION, HATCHING, MIGRATION, &c. Their kinds; as QUADRUPED, BIRD, FISH, INSECT, REPTILE, RUMINANT, CARNIVOROUS, &c. Extraordinary ſpecies; as UNICORN, TORPEDO, TARANTULA, TORTOISE, CAMELION, SALAMANDER, BARNACLE, ANCHOVY, DEATH-WATCH, &c. MONSTERS; as DOUBLE ANIMALS, HERMAPHRODITE, MULE, PYGMY, GIANT, &c. Metamorphoſes; as AURELIA, METEMPSYCHOSIS, &c. Parts; as HEAD, HAND, FOOT, FINGER, TAIL, FIN, WING, GILLS, &c. Covering; as HAIR, WOOL, SILK, FEATHERS, &c. Armature; as NAIL, STING, HORN, TOOTH, SHELL, PROBOSCIS, WEB, &c. Productions; as PEARL, BEZOARD, CASTOREUM, CIVET, MUMMY, USNEA, KERMES, COCHINEAL, &c. Motion; as FLYING, SWIMMING, and the like.

[6] PHYSICS, or the doctrine of *CAUSES*; as NATURE, LAW, &c. Occaſions or means; as PRINCIPLE, MATTER, FORM, &c. Their compoſition, or conſtitution, in ELEMENT, ATOM, PARTICLE, BODY, CHAOS, WORLD, UNIVERSE, SPACE, VACUUM, &c. Properties of body; as EXTENSION, SOLIDITY, FIGURE, DIVISIBILITY, &c. Powers thereof; as ATTRACTION, COHESION, GRAVITATION, REPULSION, ELASTICITY, ELECTRICITY, MAGNETISM, &c. QUALITIES; as FLUIDITY, FIRMNESS, DUCTILITY, HARDNESS, VOLATILITY, DENSITY, POLARITY, LIGHT, HEAT, COLD, &c. Operations or effects thereof; as MOTION, RAREFACTION, DILATATION, CONDENSATION, DISSOLUTION, EBULLITION, FREEZING, EVAPORATION, FERMENTATION, DIGESTION, EFFERVESCENCE, &c. VISION, SEEING, HEARING, FEELING, SMELLING, &c. Modifications or changes; as ALTERATION, CORRUPTION, PUTREFACTION, GENERATION, DEGENERATION, TRANSMUTATION, &c. Syſtems or hypotheſes thereof; CORPUSCULAR, EPICUREAN, ARISTOTELIAN, PERIPATETIC, CARTESIAN, NEWTONIAN, &c.—Occult and fictitious qualities, powers, and operations; ANTIPERISTASIS, SYMPATHY, ANTIPATHY, ARCHÆUS, &c. MAGIC, WITCHCRAFT, FASCINATION, VIRGULA DIVINA, LIGATURE, TALISMAN, CABBALA, &c. DRUID, BARD, BRACHMAN, GYMNOSOPHIST, MAGI, ROSICRUCIAN, and the like.

[7] METAPHYSICS, or the doctrine of *ENS*; ESSENCE, EXISTENCE, POWER, ACT, UNDERSTANDING, &c. —The *MIND*, its FACULTIES; APPREHENSION, JUDGMENT, IMAGINATION, REASON, WIT, &c. Its OPERATIONS; RETENTION, REFLECTION, ASSOCIATION, ABSTRACTION, &c. Its PERCEPTIONS; as SUBSTANCE, ACCIDENT, MODE, &c. RELATIONS; as UNITY, MULTITUDE, INFINITY, UNIVERSAL, &c. QUANTITY, QUALITY, WHOLE, PART, &c. GENUS, SPECIES, DIFFERENCE, &c. PROPER, OPPOSITE, CIRCUMSTANCE, EXTERNAL, &c. Effects hereof; KNOWLEGE, SCIENCE, ART, EXPERIENCE, &c. Conditions; PROBABILITY, CERTAINTY, FALLACY, &c. Syſtems hereof; NOMINALS, SCOTISTS, &c.

[8] ARITHMETIC, including the doctrine of *DISCRETE* or DISCONTINUOUS *QUANTITY*; viz. NUMBER, RATIO, PROPORTION, &c. Kinds; as INTEGER, FRACTION, DECIMAL, SURD, &c. Relations; as ROOT, POWER, SQUARE, CUBE, &c. RULES or operations thereof; as NOTATION, NUMERATION, ADDITION, SUBTRACTION, &c. REDUCTION, PRACTICE, POSITION, &c. EXTRACTION, APPROXIMATION, &c. Inſtruments ſubſervient thereto; as LOGARITHMS, NEPER'S BONES, &c.

[9] ANALYTICS, or the reſolution of *PROBLEMS* by SPECIES, or ſymbolical expreſſions: RULES or operations hereof; as ADDITION, SUBTRACTION, MULTIPLICATION, &c. Application thereof, in COMBINATION, PERMUTATIONS, MAGIC SQUARES, CHANCES, GAMING, &c. SERIES, PROGRESSIONS, &c. METHODS DE MAXIMIS, FLUXIONS, EXPONENTIALS, TANGENTS, &c.

[10] ALGEBRA, or the doctrine of *EQUATIONS*; SIMPLE, QUADRATIC, CUBIC, &c. Operations thereof; as REDUCTION, CONSTRUCTION. Objects thereof; PROBLEMS, RESOLUTION, &c.

[11] GEOMETRY, or the doctrine of *EXTENDED* or CONTINUOUS *QUANTITY*; viz. 1°, LINES; RIGHT, PERPENDICULAR, PARRALLEL, OBLIQUE, &c. ANGLES; ACUTE, SCALENOUS, VERTICAL, OPPOSITE, &c. 2°, FIGURES, or SURFACES; TRIANGLE, SQUARE, PARALLELOGRAM, POLYGON, &c. Circumſtances hereof; as PERIMETER, AREA, &c. Operations relating hereto; as BISECTING, DIVIDING, MULTIPLYING, MEASURING, &c. Inſtruments uſed therein; as COMPASSES, RULER, SQUARE, PARALLELISM, SCALE, &c. CURVES; as CIRCLE, CYCLOID, CISSOID, CATENARIA, CAUSTIC, EVOLUTE, QUADRATRIX, &c. Circumſtances thereof; as AXIS, DIAMETER, RADIUS, CENTER, CIRCUMFERENCE, ABSCISS, ORDINATE, &c. ARCH, CHORD, SINE, TANGENT, SECANT, &c. Inſtruments uſed herein; as artificial LINES, CANONS, &c. Operations ariſing herefrom; as SURVEYING, taking ANGLES or BEARINGS, &c. with QUADRANT, PLAIN-TABLE, SEMICIRCLE, CIRCUMFERENTOR, &c. taking DISTANCES, with CHAIN, PERAMBULATOR, &c. PLOTTING into DRAUGHT, MAP, &c. with PROTRACTOR, &c. 3°, SOLIDS, or bodies; as CUBE, PARALLELEPIPED, PRISM, PYRAMID, CYLINDER, POLYHEDRON, &c. Their SUPERFICIES, SOLIDITY, &c. Operations relating hereto; as CUBATURE, meaſuring of TIMBER, GAUGING, &c. Inſtruments uſed herein; as CARPENTERS RULE, SECTOR, SLIDING RULE, GAUGING ROD, &c.—The SPHERE; its doctrine, PROJECTION, &c. Application thereof; in PLANISPHERE, ANALEMMA, &c.—The CONE; its SECTIONS, ELLIPSIS, PARABOLA, HYPERBOLA, &c. with its ASYMPTOTES, FOCI, &c. Their CONSTRUCTION; QUADRATURE, RECTIFICATION, &c.

[12] STATICS, or the doctrine of *MOTION*: its laws; VELOCITY, MOMENTUM, &c. Cauſes; as GRAVITY, PERCUSSION, COMMUNICATION, &c. Modifications; as COMPOSITION, ACCELERATION, RETARDATION, REFLECTION, REFRACTION, &c. Kinds; as ASCENT, DESCENT, CENTRAL, CENTRIPETAL, &c. OSCILLATION, UNDULATION, PROJECTION, &c. POWERS, or applications thereof; in LEVER, SCREW, &c. PENDULUM, PROJECTILE, &c. Operations directed hereby; as GUNNERY, the MECHANICAL ARTS, &c. enumerated hereafter.

[13] ETHICS, or the conſideration of NATURAL INCLINATIONS, PASSIONS, TASTES, &c. Objects thereof; as GOOD, EVIL, VIRTUE, VICE, BEAUTY, DEFORMITY, &c. PLEASURE, PAIN, &c. RECTITUDE, EQUITY, CONSCIENCE, &c. LAW, OBLIGATION, &c. WILL, LIBERTY, ACTION, ASSENT, &c. NECESSITY, PREMOTION, PROVIDENCE, &c. Syſtems hereof; STOICS, PLATONISM, ACADEMY, CYNIC, and the like.

[14] POLICY, or the conſideration of *SOCIETY* and *GOVERNMENT*: its origin; in CONTRACT, &c. Conſtitutions and forms thereof; as, 1°, MONARCHY, DESPOTISM, &c. Powers thereof; KING, QUEEN, PRINCE, DUKE, EMPEROR, SULTAN, SOPHY, CALIPH, CÆSAR, CZAR, YNCA, ETHNARCH, TETRARCH, DESPOT, and the like. Their TITLES and QUALITIES; MAJESTY, HIGHNESS, GRACE, EXCELLENCE, and the like. Their REGALIA; CROWN, SCEPTRE, TIARA, FASCES, &c. 2°, ARISTOCRACY, its powers; as ARCHON, DICTATOR, DOGE, SENATE, COUNCIL, &c. 3°, DEMOCRACY, STATES GENERAL, STADTHOLDER, PROTECTOR, &c.

conſequence, as it may not only ſupply the office of a *table of contents*, by preſenting the diſperſed materials of the book in one view; but alſo that of a rubric, or directory, by indicating the order they are moſt advantageouſly read in.—Note, then, that the initial words of the *notes* correſpond to the final ones of the *analyſis*; and that their ſeveral members, or items of both, make ſo many heads or articles in the book.

Their Succession, Elective, Hereditary, by Primogeniture, *&c.* Their tranſactions; as Peace, War, Treaty, Union, Croisade, *&c.* By Armies, Fleets, Embassies, Secretary, Plenipotentiary, Envoy, Legate, Nuntio, *&c.* Their Territories, Empire, Signory, *&c.* Their Estates, Nobles, Commons, Clergy, Census, Enumeration, Tribe, Quarter, *&c.* Province, Circle, County, City, Town, *&c.* Magiſtrature, Chancellor, Judge, Sheriff, Justice, Mayor, Alderman, Bailiff, Constable, Interrex, Consul, Pretor, Censor, Visier, Tribune, Triumvir, Provost, Ephori, Ædile, Prefect, Questor, Proconsul, Viceroy, Lieutenant, Steward, Warden, Keeper, Jurisconsultus, Procurator, Advocate, Barrister, Prothonotary, Custos, Philazer, Chirography, Usher, Clerk, *&c.* Their juriſdiction; Courts; as Areopagus, Comitia, *&c.* Parliament, Diet, Divan, Chamber, Assize, Privy-Council, *&c.* Chancery, King's-Bench, Exchequer, Admiralty, Verge, Sessions, Turn, County Court, Leet, Eyre, *&c.* Terms, Circuits, Commissions, Oyer, Convocation, Arches, Prerogative, Faculties, Delegates, Rota, Inquisition, *&c.* Their Revenues, Treasury, Fisc, Exchequer, Tally, Political Arithmetic, Duties, Customs, Gabel, Excise, *&c.* Coinage, Money, Interest, Usury, *&c.* Their Houshold, Chamber, Green-Cloth, Wardrobe, *&c.* Under Steward, Chamberlain, Comptroller, Cofferer, Aga, Oda, *&c.* Guards, Ordnance, *&c.* directed by Captain, Master, Equerry, *&c.* Militia, Navy, Post, Timariot, Arriere Band, *&c.* Dignities; Dauphin, Elector, Palatine, Grave, Palsgrave, Thane, Earl, Count, Knight, Garter, Baronet, Bath, Teutonic, Malta, Elephant, *&c.* Gentleman, Yeoman, *&c.* Their Names, Surnames, Titles, Precedence, *&c.* Factions, Patrician, Guelph, Tory, *&c.* Corporations, or leſſer Communities, University, Academy, College, Society, Chapter, School, Hospital, Inn. Public Buildings; Hall, Basilica, Guildhall, Prison, Tower, Arsenal, Library, Museum, Circus, *&c.* Solemn Ceremonies; as Triumph, Tournament, Carrousal, Quadril, Donative, Medal, Trophy, Monument, Funeral, Tomb, Catacomb, *&c.*

15 LAW, or the rules and meaſures of *SOCIETY*; publiſhed in Act, Statute, Charter, Rescript, Constitution, Decretal, Senatus-Consultum, Pragmatic Sanction, *&c.* Recorded in Institutes, Code, Novel, Register, Pandect, Corpus, Domesday, *&c.* Kinds; Civil, Canon, Sumptuary, *&c.* reſpecting, 1°, Perſons; as the King; his Prerogative, Royalties, &c. *viz.* Granting Dispensation, Pardon, Commendam, Exemption, Dignities, Franchises, Forest, Park, Purlieu, Vert, Chase, Impost, Subsidy, Toll, Tax, Aid, Hidage, Scutage, Prisage, Waif, Estray, Escheat, Treasure Trove, *&c.* Officers and Magiſtrates; created by Writ, Warrant, Commission, *&c.* Their Oath, Test, Declaration, Visitation, Procuration, *&c.* Corporations; Regular, Secular, *&c.* made by Charter, Patent, *&c.* diſſolved by Quo Warranto, Mandamus, *&c.* Subjects; as Denizen, Alien, Naturalization, Husband, Wife, Marriage, Concubine, Separation, Alimony, Dower, Affinity, Bastard, Adoption, Emancipation, Lord, Tenant, Villain, Vassal, Client, Patron, Servant, Slave, Retainer, Manumission, Enfranchising, *&c.* Tenure, Service, Homage, Fealty, Sergeanty, Escuage, Relief, Guardian, Wardship, Socage, Heir, Intestate, Ancestor, *&c.*—2°, Estates, or things; either real, as Tenements, Hereditaments, Freehold, Fee, Customary, Tail, Gavelkind, Courtesy, *&c.* In Reversion, Mortgage, Hypotheca, *&c.* Manor, Demesne, Honours, Common, Glebe, Advowson, *&c.* Acquired by Occupancy, Prescription, Descent, Conveyance, Feoffment, Fine, Recovery, Defeizance, Lease, Devise, Attournment, Investiture, Livery, *&c.* Loſt by Alienation, Mortmain, Disseisin, Abatement, Surrender, Discontinuance, Disclaimer, Forfeiture, Resignation, Deprivation, Lapse, *&c.* Or perſonal; as Goods, Chattels, Emblements, Annuity, Debts, Specialty, Recognizance, *&c.* Acquired by Succession, Heriot, Mortuary, Heir-loom, Testament, Executor, Administrator, Ordinary, Judgment, Fieri Facias, *&c.*—3°, Wrongs or Injuries; either to perſons; as Crimes, Treason, Parricide, Murder, Felony, Assault, Rape, Assassin, Adultery, Fornication, Defloration, Polygamy, Heresy, *&c.* Proſecuted by Indictment, Accusation, Actions of Conspiracy, and upon the Case, Habeas Corpus, *&c.* Puniſhed with Hanging, Crucifixion, Wheel, Furca, Scala, Pillory, Transportation, Divorce, Scaphism, *&c.* Or Civil, and to things; as Trespass, Nuisance, Deforcement, *&c.* Remedied by Writs of Quare Impedit, Darrein Presentment, Appeal, Atteint, Error, Right, Disceit, Supersedeas, Audita Querela, *&c.*—Suit, or courſe of proceedings, whereby redreſs is procured; including, 1°, Process; either by Bill, Summons, Subpoena, Attachment, Capias, Exigent, *&c.* to which belong Appearance, Attorney, Bail, Essoin, Default, Nonsuit, Arraignment, *&c.*—2°, Pleading; whence Count, Declaration, Aid Prier, Voucher, Age Prier, Bar, Abate, Release, Replication, Outlawry, Sequestration, *&c.*—3°, Issue; whence Demurrer.—4°, Trial; whence Proof, Evidence, Presumption, Oath, Affidavit, Affirmation, Jury, Challenge, Array, Verdict, Battel, Duel, Champion, Purgation, Ordeal, *&c.* Paine fort et dure, Rack, Torture, *&c.*—5°, Judgment; whence Arrest, *&c.* — 6°, Execution; whence Scire Facias, Reprieve, *&c.*

16 THEOLOGY, or the conſideration of *GOD:* his nature and Attributes; as Eternity, Ubiquity, *&c.* His Unity, Trinity, *&c.* Persons, Hypostasis, *&c.* Our duty to him, diſcovered by Inspiration, Revelation, Prophecy, *&c.* by the Messiah, Evangelists, Apostles, *&c.* In the Bible; Pentateuch, Hagiographa, Psalter, Gospel, Apocalypse, *&c.* Canon, Deuterocanonical, Apocrypha, *&c.* Circumſtances thereof; Style, Allegory, Type, Parable, Mystical, *&c.* Text, Version, Septuagint, Vulgate, *&c.* Paraphrase, Targum, *&c.* Points, Quotations, *&c.* Matter thereof; Declarations, of Incarnation, Passion, Crucifixion, Miracles, *&c.* Injunctions; as Worship, Prayer, Sacrifice, *&c.* Sacraments; as Eucharist, Baptism, *&c.* Promises; as Grace, Justification, *&c.* Decrees; as Predestination, Election, Reprobation, *&c.* Breaches on our part; Sin, Fall, Imputation, *&c.* Remedies thereof; by Penitence, Confession, *&c.* Rewards and puniſhments allotted thereto; Heaven, Hell, Resurrection, Immortality, *&c.* His Ministers; Angels, Devil, *&c.* His Church; either Triumphant; as Saints, Martyrs, Confessors, Fathers, Doctors, *&c.* or Militant, *&c.* Its Offices; Creed, Liturgy, Decalogue, Doxology, Trisagion, *&c.* Diſcipline, and rites; as Absolution, Anathema, Excommunication, *&c.* Catechumen, Confirmation, Genuflexion, *&c.* Its Hierarchy; as Bishop, Priest, Deacon, *&c.* Patriarch, Archbishop, Primate, Dean, Canon, Prebend, Archdeacon, Chantor, *&c.* Their enſigns; Mitre, Crosier, Pallium, *&c.* Their Ordination, Consecration, Collation, Imposition, *&c.* Benefices, Revenues, Tithes, *&c.* Places ſet apart; as Church, Chapel, Oratory, *&c.* Cathedral, Parochial, Cardinal, *&c.* Choir, Nave, Altar, Font, *&c.* Diocese, Province, *&c.* Assemblies; as Synod, Council, Convocation, Consistory, Chapter, Presbyter, *&c.* Feasts, Fasts, Lent, Vigils, *&c.* Easter, Epiphany, Pentecost, Annunciation, Purification, Presentation, *&c.*—Particular Systems, or profeſſions thereof; *viz.* Reformed, or Protestant; as the Church of England, Lutheranism, Calvinism, *&c.* Romiſh, or Latin; its Mass, Breviary, Legend, *&c.* Transubstantiation, Extreme Unction, Supererogation, Penance, *&c.* Hierarchy; Pope, Cardinal, *&c.* Secular, Regular, Monk, Religious, Abbot, Prior, *&c.* Order, Congregation, Monastery, General, *&c.* Jesuit, Carthusian, Carmelite, Augustine, Dominican, *&c.* Third order; Coenobite, Anachoret, Hermit, Recluse, Monastery, Cell, Rule, Vow, Reform, Noviciate, *&c.* Image, Relics, Saint, Virgin, Rosary, *&c.* Canonization, Beatification, *&c.* Indulgence, Jubilee, Exorcism, *&c.*—Greek; its Anthologion, Prothesis, Particles, *&c.* Maronite, Jacobite, Thomæan, *&c.* Armenian, Cophti, Solitary, *&c.*—Sects, and Heresies; as Manichees, Gnostics, Arians, *&c.* Ebionites, Nestorians, Millennaries, Quartodecimans, *&c.* Montanists, Socinians, Arminians, *&c.* Presbyterians, Anabaptists, Independents, Quakers, *&c.* Quietists, Servetists,

I might here have ended my preface; and perhaps the reader would be willing enough to be thus diſmiſſed. But ſomething has been already ſtarted, which will require further diſquiſition.—The diſtribution we have made of knowlege is founded on this; that the ſeveral branches thereof commence either Art or Science, according to the agency or non-agency of the human mind, in reſpect thereof.—It remains to take the matter up a little higher, and explain the reaſon and manner of this operation: to conſider knowlege in its principles, antecedent to

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Pre-Adamites, &c. Deist, Atheist, Spinosism, &c.—Jewiſh; its Talmud, Tradition, &c. Temple, Tabernacle, Sanctuary, Ark, &c. Pontiff, Levite, Tribe, &c. Ephod, Theraphim, Circumcision, Sabbath, Sanhedrin, &c. Rabbin, Doctor, Cabbala, Massora, &c. Pharisee, Sadducee, Essean, Caraite, &c. Nazarite, Therapeuta, &c. Samaritan, Dosithean, Hellenist, &c. Passover, Scenopegia, Gehenna, &c.—Mahometan; their Alcoran, Mufti, Dervis, Mosque, Mussulman, &c.—Heathen; their Idolatry, Theogony, &c. Their Gods; Penates, Lares, Lemures, &c. Satyrs, Sylvans, Nymphs, Tritons, &c. Demi-God, Hero, Fortune, Destiny, Dæmon, Genius, &c. Apotheosis, Sacrifice, &c. Feast, Lustration, &c. as Eleusinia, Saturnalia, Cerealia, &c. Miniſters thereof; Rex, Pontifex, Flamen, Vestal, Corybantes, &c. Games; Olympic, Isthmia, &c. Divination, Oracle, Pythian, Sibyl, &c. Augur, Auspex, &c. Temple, Fane, Pagod, &c. Sects; as Banians, Brachmans, Sabæans, &c.

[17] LOGICS, or the conſideration of *IDEAS* or *NOTIONS*: their kinds; Simple, Complex, Adequate, &c. Diſpoſition into claſſes or Categories, Predicaments, Predicates, &c. Their compoſition, or aſſociation into Axioms, Propositions, Problems, Theorems, Theses, Hypotheses. Arguments; as Syllogism, Enthymeme, Sorites, Sophism, Dilemma, Crocodilus, &c. Their Resolution; Definition, Division, &c. into Premises, Consequences, Terms, &c. Their Truth, Falshood, Evidence, Demonstration, &c. Operations therewith; as Argumentation, Induction, Discoursing, Philosophizing, &c. Disputation, Distinction, Contradiction, Reductio ad Absurdum, &c.

[18] CHEMISTRY, including the uſe of *FIRE*, Water, Baths, Ferments, Menstruums, Furnaces, Retorts, and other inſtruments; to change Animal, Vegetable, and Fossile bodies, by inducing Fusion, Putrefaction, Fermentation, Dissolution, Exhalation, &c. and hereby procuring Spirits, Salts, Oils. Acid, Alcaline, Aromatic, Urinous. Wines, Vinegars, Flowers, Calces, Crystals, Soaps, Tartars. Regulus, Magistery, Extract, Elixir. Ceruss, Minium, Litharge, Quintessence, Phosphorus, Alcahest, Philosophers Stone, and the like; by the operations of Distillation, Expression, Cohobation, Sublimation, Rectification, Crystallization, Calcination, Amalgamation, Digestion, Precipitation, Vitrification, Fixation, Transmutation, and the like.—Arbor Dianæ, Aurum Fulminans, artificial Earthquake, Magic, Divination, &c.

[19] OPTICS, including the laws and conſideration of *VISION*, and Visible Objects; effected by means of Light: its Rays; their Refrangibility, Reflexibility, &c. Focus, Transparency, Opacity, Shadow, &c.—Reflection thereof, in Mirrour, Looking-Glass, Catoptric, Cistula, &c.—Refraction, in Lens, Prism, Glass, &c. Application, in Telescope, Microscope, Magic Lantern, &c. Spectacle, Polemoscope, Polyhedron, Camera Obscura, &c.

[20] PERSPECTIVE, or the projection of Points, Lines, Planes, &c. in Scenography, Orthography, Ichnography, Anamorphosis, &c.

[21] PAINTING, or the *DESIGNING* of objects in Clair-obscure, Proportion, &c. with Ordonnance, Expression, &c. Circumſtances hereof; Attitude, Contrast, Group, &c. Kinds; Limning, Miniature, Camieux, Fresco, &c. Enamelling, Mosaic, &c.

[22] PHONICS, or the doctrine of *SOUNDS*, Voice, &c. Their modifications, in Echo, Resonance, Whispering Place, Speaking Trumpet, &c.——Their Tune, Gravity, Interval, &c. Time, Triple, &c. expreſſed by Note, Chord, &c. Compariſons thereof; Concord, as Unison, Octave, Third, Fourth, Discord, &c. Composition; as Melody, Harmony, Counterpoint. Symphony, Synaulia, Chime, Song, Rhythmus, &c. Kinds; Genus, Mode, &c. Circumſtances; Key, Cleff, Signature, Transposition, &c. Staff, Scale, Gammut, Solfaing, Modulation, &c. Inſtruments; Organ, Bell, Trumpet, Lyre, Cymbal, Violin, Harpsichord, &c.

[23] HYDROSTATICS, or the conſideration of *FLUIDS*; their Specific Gravity, Density, Equilibrium, &c. Inſtruments to meaſure the ſame; as Aræometer, Hydrostatical Balance, &c. Siphon, Torricellian, &c. —Motion thereof; in Pump, Fountain, Spiral Screw, Hydrocanisterium, Hydromantic, &c.

[24] PNEUMATICS, or the conſideration of the *AIR*; its Weight, Density, Pressure, Elasticity, &c. Condensation, Rarefaction, Motion, Wind, &c. in Air-Pump, Suction, Vacuum, &c. Meaſured by Barometer, Thermometer, Hygrometer, Manometer, &c. Anemometer, Windmill, &c.

[25] MECHANICS, including the ſtructure and contrivance of *MACHINES*; as Balance, Steelyard, Pully, Polypast, &c. Wheel, Clock, Watch, Pendulum, Spring, Fusee, &c. Clepsydra, Coach, Rota Aristotelica, Perpetual Motion, &c. Mill, Press, Vice, Lath, Loom, Windlass, &c. Operations of Swimming, Diving, Flying, &c.

[26] ARCHITECTURE, including the conſtruction of *BUILDINGS*; as House, Temple, Church, Hall, Palace, Theatre, &c. Ship, Gally, Galleon, Ark, Bucentaur, Boat, &c. Pyramid, Mausoleum, Pantheon, &c. Capitol, Seraglio, Escurial, &c. Arch, Vault, Bridge, Monument, Tomb, &c. Forms thereof; Rotundo, Platform, Pinnacle, &c. Plans, Design, Ichnography, Profile, &c. Parts; as Foundation, Wall, Roof, &c. Door, Window, Stairs, Chimney, &c. Orders; as Tuscan, Doric, Corinthian, &c. Caryatides, Rustic, Gothic, &c. Column; Pilaster, Attic, &c. Parts thereof; Entablature, Capital, Pedestal, &c. Cornice, Frieze, Base, &c. Volute, Pediment, Modillion, Console, &c. Mouldings; Ogee, Tore, Astragal, Scotia, Abacus, Ovolo, &c. Materials; as Brick, Stone, Tyle, Slate, Shingle, &c. Timber, Wainscot, Glass, Lead, Plaster, &c. Beam, Rafter, Morter, Nail, Hinge, Key, Lock, &c. Quarry, Masonry, &c.

[27] SCULPTURE, or the framing of Statue, Figure, Ornament, &c. in Relievo, Creux, &c. as Carving, Pottery, Porcelain, &c. Engraving; Seal, Dye, &c. Etching, Cutting, Mezzotinto, &c. Foundery; of Bell, Letter, Ordnance, &c. Coining; Money, Medal, Medallion, &c. Pile, Legend, &c. Lapidary, Turning, Inlaying, Vaneering, Damasqueening, Enchasing, &c.

[28] TRADES and MANUFACTURES; as Printing, Paper-making, Bookbinding, &c. Gilding, Japanning, Glass-making, Grinding, &c. Plumbery, Forging, Hammering, &c. Weaving, Bleaching, Whitening, &c. Fulling, Dying, Pressing, Sheering, Calendring, Tabbying, Friezing, &c. Woolen, Silk, Linum Incombustibile, &c. Cloth, Serge, Taffety, Stocken, &c. Velvet, Tapestry, Hat, &c. Tanning, Currying, Tawing, &c. Shamoising, Shagreen, Morocco, &c. Making Parchment, Glue, Gunpowder, Smalt, Soap, Starch, &c. Candle, Taper, Torch, &c. Steel, Button, Pin, Needle, Pipe, Fan, Peruke, &c.

[29] PYROTECHNY, or Artificial *FIRE*-works; including the conſideration and uſe of Gunpowder, Match, Fusee, &c. Of Ordnance, Cannon, Gun, Mortar, &c. Carriage, Charge, Projection, Range, Point-blank, Recoil, &c. Petard, Carcass, Shot, Bomb, Granado, &c. Rocket, Star, &c.

[30] MILITARY Arts, including the conſideration of *ARMIES*, Fleets, Cavalry, Infantry, &c. conſiſting of Regiments, Troops, Companies, Phalanx, Legion, &c. Soldiers; Dragoon, Grenadier, Fusileer, Cuirassier, Archer, Janisary, Spahi, Velites, Argyraspides,

to ſuch intervention of ours; and even purſue it up to its cauſe, and ſhew how it exiſts there: and trace the progreſs of the mind through the whole, and the order of the modifications induced by it.—This is a deſideratum which we could not here decline entering upon, on account of its immediate relation to the preſent deſign. It is the baſis of all learning in general; the great, but obſcure hinge, on which the whole Encyclopædia turns.

TO

gyraspides, Gend'armery, &c. Divided into Squadron, Battalion, Brigade, &c. commanded by General, Marshal, Bashaw, Admiral, &c. Lieutenant, Brigadier, Colonel, Captain, Serjeant, Major, Adjutant, Ensign, Quartermaster, Tribune, Centurion, Primipilus, &c. in Battle, Siege, March, Camp, &c. Ranged in Line, Column, &c. Motions; Attack, Retreat, Halt, &c. Evolutions; Wheeling, Counter-wheeling, &c. Signals; Word, Drum, Chamade, &c. Guards; Garison, Piquet, Patrol, Round, Quarter, Place of Arms, &c. Standard, Banner, Eagle, Labarum, &c. Their Arms; Artillery, Carabine, Musquet, &c. Helmet, Buckler, Pelta, Cuirass, &c. Aries, Balista, Catapulta, Sling, &c.

[31] **FORTIFICATION**, or the conſtruction of *FORTRESSES*; as Citadel, Castle, Tower, &c. Fort, Star, Redoubt, &c. Works, or parts thereof; Rampart, Bastion, Ditch, Counterscarp, Curtin, &c. Raveling, Hornwork, Crownwork, &c. Approaches; Trench, Sap, Mine, &c. Line, Parallel, Circumvallation, &c. Battery, Attack, &c.

[32] **ASTRONOMY**, or the doctrine of the *HEAVENS*; their Circles, Ecliptic, Zodiac, Meridian, Equator, Vertical, Azimuth, Galaxy, &c. Points; as Pole, Zenith, Nadir, &c. Celeſtial bodies, viz. Stars, Sun, &c. Aſſemblage thereof; into Sign, Constellation, &c. Their Precession, Culmination, Refraction, Declination, Ascension, Longitude, Latitude, Altitude, Amplitude, Azimuth, Planets; as Saturn, Venus, Earth, Moon, Satellite, Comet, &c. Their Places, Aspects, Syzygy, Conjunction, Quadrature, Diameter, Distance, Period, Revolution, Orbit, Node, &c. Their Station, Retrogradation, Equation, &c. Their Phases, Eclipse, Penumbra, Occultation, Parallax, Crepusculum, Maculæ, &c. Obſervations thereof; taken with the Quadrant, Gnomon, Micrometer, Reticula, &c. Collected in Catalogue, Tables, &c. Hypotheses, or Systems thereof; Copernican, Tychonic, Ptolemaic, &c. Exhibited in Sphere, Globe, &c.

[33] **CHRONOLOGY**, or the doctrine of *TIME*; meaſured by Year, Month, Week, Day, Hour, Age, Period, Cycle, &c. Commencing from Epocha, Incarnation, Hegira, &c. Laid down in Fasti, Almanack, Calendar, Julian, Gregorian, &c. Accommodated to Feasts, Feriæ, Easter, &c. by means of Epact, Golden Number, Dominical, &c.

[34] **DIALING**, including the Furniture, and projection of *DIALS*; Horizontal, Declining, Reclining, Deinclining, &c. Moon-dial, Ring-dial, Horodictical, &c. Inſtruments; as Declinator, Analemma, Scales, &c.

[35] **GEOGRAPHY**, including the doctrine of the *EARTH*, or *GLOBE*: its Circles; Parallel, Tropic, Horizon, Axis, Poles, &c. Its Zones, Climates, &c. Its Places; their Longitude, Latitude, Distance, Elevation, &c. Inhabitants; Antipodes, Aborigines, Troglodytes, Ascii, Periscii, &c. Inſtruments relating thereto; Globe, Map, &c.

[36] **NAVIGATION**, or the conſideration of *SAILING*; in Ship, Frigate, Bark, &c. Parts thereof; Mast, Anchor, Sails, Yards, Cordage, Capstan, Rudder, Deck, &c. Their Course, Rhumb, &c. ſhewn by Compass, Needle, Variation, &c. Directed by Steering, Current, &c. Diſtance, or Reckoning, by Log, Observation, Longitude, Latitude, &c. Taken by Forestaff, Backstaff, Astrolabe, Nocturnal, Sinical Quadrant, &c. Wrought by Gunter, Chart, Mercator, Traverse, &c. The operations of Sounding, Weighing, Careening, Signals; Buoy, &c.

[37] **COMMERCE**, or the affairs of *MERCHANDIZE*; including Money, Coin, Species, &c. as Pound, Crown, Shilling, Peny, Sterling, Ducat, Dollar, Piece of Eight, Talent, Sesterce, Shekel, and the like. Weights; Libra, Ounce, &c. Measures; Foot, Yard, Standard, &c. Given in Exchange, Truck, Permutation, Commutation, &c. for Manufacture, Spice, Drug, Woolen, Slave, Negro, &c. Imported, Exported, Transported, Convoy, Flota, &c. Conditions thereof; Tariff, Contraband, Charter-party, Freight, Average, &c. Customs, Duty, Tonage, Poundage, &c. Bottomry, Assurance, Pike, &c. Tranſacted by Company; as Hans, Steelyard, East-India, Turky, Hamburgh, Missisippi, South Sea, Assiento, Register, Colony, Fishery, Factory, &c. At Staple, Fair, Market, Bank, Exchange, &c. By Commission, Factor, Broker, &c. Weighing, paying by Bill; at Usance, Acceptance, Par, Protest, Discount, Rechange, &c. Action, Subscription, Book-keeping, &c.

[38] **ANATOMY**, or the Analysis of *ANIMAL BODIES*, and their Parts, viz. Bones; as Cranium, Rib, Vertebra, Radius, Femur, Tibia, Sacrum, Pubis, Patella, &c. Their Articulation, Apophyses, &c. Muscles; Abductor, Adductor, Erector, Depressor, Deltoides, Sartorius, Cucullaris, Orbicularis, Sphincter, &c. Their Tendons, Fibres, &c. Vessels; as Artery, Aorta, Aspera, Trachea, Pulmonary, &c. Veins; as Cava, Porta, Jugular, Carotid, &c. Glands; as Pancreas, Parotides, Prostates, &c. Nerves; Optic, Olfactory, Auditory, &c. Lymphatic, Lacteal, Mesaraic, Mucilaginous, &c. Their Valves, Tunics, Anastomases, &c. Their Humours; as Chyle, Blood, Spirit, Seed, Gall, Urine, Milk, Sweat, Marrow, &c. Membranes; Pannicle, Cutis, Cuticula, Papilla, &c. Venters, Head, Meninges, Brain, &c. Eye, Ear, Pupil, Tympanum, Tongue, Tooth, Palate, Larynx, Glottis, Oesophagus, &c. Viscera, Stomach, Lungs, Heart, &c. Liver, Spleen, Kidney, Intestines, Bladder, &c. Functions or operations hereof; Respiration, Deglutition, Digestion, Chylification, Sanguification, Circulation, Systole, Nutrition, Secretion, Excretion, Perspiration, Vomiting, &c. Genitals; Penis, Testicles, Clitoris, Matrix, Nympha, Hymen, Embryo, Zoophyte, Mole, &c. Erection, Generation, Conception, Gestation, Delivery, Lochia, Menses, &c.

[39] **MEDICINE**, including the conſideration of *LIFE* and *HEALTH*: conditions thereof; Longævity, Strength, Temperament, &c. Means; as Food, Drink, Exercise, &c. Oppoſites; as Death, Disease, &c. Kinds hereof; Chronic, Epidemic, Contagious, &c. as Plague, Fever, Gout, Apoplexy, Epilepsy, Palsy, Pox, Polypus, Palpitation, Mania, Hydrophobia, Spasm, Hypochondriac, Phthisis, Scorbutus, Dropsy, Tympanites, Lepra, Itch, Plica, Ophthalmia, Gutta, Cataract, and the like. Wound, Ulcer, Cancer, Fracture, Fissure, Caries, and the like. Symptoms; Sign, Diagnostic, Pulse, Urine, &c. Prescription, Crisis, Cure, &c. Regimen, Diet, Medicine, &c. Kinds hereof; Specific, Purgative, Emetic, Diaphoretic, Diuretic, Alterative, Styptic, Astringent, Emollient, Opiate, Absorbent, Caustic, Anodyne, Sympathetic, Cardiac, Cephalic, Febrifuge, Antimonial, Chalybeat, Mercurial, and the like. Operations; as Evacuation, Phlebotomy, Suture, Lithotomy, Amputation, Inoculation, Salivation, Couching, Cupping, Trepanning, Touching, Paracentesis, Stroaking, Transfusion, Castration, Circumcision, and the like.

[40] **PHARMACY**, or the Preparation and Composition of *REMEDIES*; as Mithridate, Treacle, Hiera Picra, Laudanum, Diasenna, Turbith, Calomel, &c. in the form of Electuary, Confection, Extract, Tincture, Syrup, Troche, Pill, Powder, Lohoc, Potion, Apozem, Drops, medicated Ales, Wines, Waters, Unguent, Emplaster, Purge, Clyster, Suppository, Pessary, Collyrium, &c. From Drugs, or Simples; as Guaiacum, Sassafras, Colocynthis, Crocus, Rhubarb, Cassia, Senna, Cortex, Styrax, Jalap, Scammony, Opium, &c. Fats, Claws, Horns, &c. of Viper, Crab, Elk, &c. Cantharides, Millepedes, Mummy, Usnea, Ichthyocolla, &c. Antimony, Orpiment, Asphaltus, Bismuth, Marcasite, Bole, Cinnabar, Mars, Venus, &c.

[41] AGRI

TO be more explicit:—Words are the immediate matter of knowlege; I mean of knowlege conſidered as communicable, or capable of being tranſmitted from one to another. We ſhould have known many things without language; but it would only have been ſuch as we had ſeen or perceived ourſelves. The obſervations of others could no-way have been added to our own; but every individual muſt have gone through a courſe for himſelf, without any aſſiſtance either from predeceſſors, or contemporaries.—It is evident, that, in this caſe, nothing like an art or ſcience could ever have ariſen: the little ſyſtem of things, which come immediately in one man's way, would but have afforded a ſlender ſtock of knowlege; eſpecially to a being whoſe views were all to terminate in himſelf. Add, that as the chief occaſions of his obſervation would have been of the ſame kind with thoſe of other animals; it is probable his knowlege would not have been very different, whether we conſider its quantity or quality. It is confeſſed, that all our knowlege, in its origin, is no other than ſenſe; whence it ſhould follow, that one being has no natural advantage over another, in its diſpoſitions for knowlege, other than what it has in the ſuperior number, extent, or acuteneſs, of its ſenſes.

IT is, then, to language that we are chiefly indebted for what we call *ſcience*. By means of language our ideas and notices, though things in their own nature merely perſonal, and adapted only to private uſe, are extended to others, to improve their ſtock. And thus, by a kind of ſecond ſenſe, a man gets perceptions of the objects that are perceived by all mankind; and is preſent, as it were by proxy, to things at all diſtances from him: we hear ſounds made a thouſand years ago; and ſee things that paſs a thouſand miles off. If the eagle really ſees, the raven ſmells, and the hare hears, farther and better than man; their ſenſe, at beſt, is but narrow, in compariſon of ours, which is extended, by the artifice of language, over the whole globe. They ſee with their own eyes only; we with thoſe of a whole ſpecies.—In effect, by language, we are upon much the ſame footing, in reſpect of knowlege, as if each individual had the natural ſenſe of a thouſand: an acceſſion, which, alone, muſt have ſet us far above any other animals. But, at the ſame time, this very acceſſion of a multitude of ideas, more than naturally belonged to us, muſt have been in great meaſure uſeleſs, without certain other faculties of ordering and arranging them; of abſtracting, or making one a repreſentative of many; of comparing them together, in order to learn their relations; and of combining them, &c. The effect thereof is what we call *diſcourſing* and *philoſophizing*; whence ariſe *doctrines*, *theories*, &c.

EVERY word is ſuppoſed to ſtand for ſome point, article, or relation of knowlege. From which it follows, that the vocabulary of any language is repreſentative of the ſeveral notices of the people among whom it obtains: I mean of the primary, or abſolute notices; for, by the conſtruction of theſe words with one another, a new ſet of ſecondary or relative notices are expreſſed.—To enter better into this, it may be obſerved, that the ſeveral objects of our ſenſes, with that other ſet of things analogous hereto, the proper objects of the imagination, are repreſented by fixed names*; denoting ſome of them, individuals †; others, kinds §, &c. Now theſe, which make the firſt or fundamental part of a language, it is obvious, are no other than a repreſentation of the works of nature and art, as they exiſt in a kind of ſtill life, or in a ſtate of inaction, and independency one upon another. But, in regard we do not find the creation thus quieſcent, but obſerve a great number of mutations ariſe in the things we are converſant among; we are hence put under a neceſſity of framing another ſet of words, to expreſs theſe variations, and the actions to which they are owing, with the ſeveral circumſtances and modifications thereof ‖. By this means, nature is removed, as it were, out of her dormant conſtitution, and ſhewn in action; and thus may occaſional deſcriptions be framed, accommodate to the preſent ſtate of things.

41 **AGRICULTURE**, or the TILLAGE and improvement of *SOILS*, CLAY, SAND, EARTH, &c. by the operations of PLOWING, FALLOWING, BURNING, SEMBRADORE, SEMINATION, MANURING, &c. To produce CORN, HEMP, FLAX, LIQUORICE, SAFFRON, &c. For MALT, FARINA, &c. GRANARY, THRESHING, &c. The culture of TREES, TIMBER, &c. by PLANTING, SHROWDING, BARKING, &c. For COPPICE, PARK, PADDOCK, HEDGE, PASTURE, &c.

42 **GARDENING**, including the culture of *HERBS*, FLOWERS, FRUITS, &c. as DWARF, STANDARD, WALL, ESPALIER, SALET, &c. The operations of PLANTING, TRANSPLANTING, REPLANTING, WATERING, ENGRAFTING, INOCULATING, PRUNING, PINCHING, VARIEGATING, &c. Preventing DISEASES, BLIGHTS, GUM, &c. The USE and ordering of an HOT-BED, GREEN-HOUSE, NURSERY, GARDEN, VINEYARD, &c. Their EXPOSURE, WALLS, HORIZONTAL SHELTER, &c. WALKS, GRASS-PLOT, TERRACE, QUINCUNX, PARTERRE, &c.

43 **MANAGE**, including the conſideration of *HORSES*; their AGE, COLOUR, TOOTH, HOOF, STAR, &c. PACES; as AMBLE, GALLOP, &c. AIRS; as VOLTE, DEMIVOLTE, CURVET, CAPRIOLE, &c. AID, CORRECTION, HAND, BIT, &c. SADDLE, SHOE, BRIDLE, &c. DISEASES; as HALTING, FARCY, STAGGERS, SCRATCHES, YELLOWS, &c. Operations; as ROWELLING, CURTAILING, GELDING, &c.—HAWK, HAWKING, HOOD, &c. RECLAIMING, CASTING, &c. PIP, FILANDERS, &c.—HOUND, HUNTING, &c. RUT, STALKING, BIRDLIME, TRAMMELNET, BAT-FOWLING, &c.—FISH, FISHING, FISHERY, &c. ANGLING, HOOK, ROD, FLOAT, &c. BAIT, FLYING, HERRING, &c.

44 **GRAMMAR**, or the conſideration of *LANGUAGE*; as ENGLISH, LATIN, GREEK, HEBREW, FRENCH, &c. Their DIALECT, IDIOM, PATAVINITY, &c. Matter thereof; LETTER, VOWEL, CONSONANT, DIPHTHONG, ALPHABET, CHARACTER, SYMBOL, HIEROGLYPHIC, &c. SYLLABLE, PARTICLE, &c. WORD; kinds thereof; NOUN, PRONOUN, VERB, &c. SUBSTANTIVE, ADJECTIVE, &c. Their CONSTRUCTION, CONCORD, REGIMEN, &c. In CASE; NOMINATIVE, GENITIVE, &c. GENDER; MASCULINE, &c. NUMBER, PERSON, MOOD, TENSE, &c. Into SENTENCE, PHRASE, PERIOD, &c. Diſtinguiſhed by POINT, ACCENT, COMMA, &c. Delivered by PRONUNTIATION, WRITING, ORTHOGRAPHY, &c.

45 **HERALDRY**, or the conſideration of *COATS*; conſiſting of FIELD, CHARGE, FIGURE, &c. as CROSS, CHEVRON, BEND, PALE, &c. with ABATEMENT, DIFFERENCE, QUARTERING, &c. Compoſed of COLOUR, METALS, POINTS, &c. Born on ESCUTCHEON, SHIELD, &c. Accompanied with SUPPORTERS, HELMET, CREST, MANTLING, MOTTO, &c. DEVICE, EMBLEM, REBUS, ÆNIGMA, &c. And deſcribed by BLAZON.

46 **RHETORIC**, or the means of *PERSUASION*; as INVENTION, AMPLIFICATION, TOPIC, PLACE, ARGUMENT, PASSIONS, MANNERS, &c. DISPOSITION, EXORDIUM, NARRATION, CONFIRMATION, PERORATION, &c. ELOCUTION, SUBLIME, STYLE, NUMBERS, &c. FIGURES; as EXCLAMATION, PLEONASM, EPIPHONEMA, APOSTROPHE, PROSOPOPOEIA, ANTITHESIS, &c. TROPES; as METAPHOR, ALLEGORY, SYNECDOCHE, SARCASM, HYPERBOLE, CATACHRESIS, &c. ACTION, GESTURE, MONOTONIA, &c. COMPOSITIONS; as ORATION, DECLAMATION, PANEGYRIC, &c. PARABLE, ESSAY, DIALOGUE, HISTORY, &c.

47 **POETRY**; including the conſideration of *VERSE*; its MEASURE, FEET, QUANTITY, &c. as HEXAMETER, ALEXANDRINE, SPONDEE, IAMBIC, &c. RHYME, STANZA, &c. COMPOSITIONS; as EPIGRAM, ELEGY, SONG, MADRIGAL, HYMN, ODE, PINDARIC, &c. ECLOGUE, SATYR, GEORGIC, &c. ANAGRAM, ACROSTIC, BURLESQUE, MACARONIC, LEONINE, TROUBADOUR, &c. DRAMATIC; as TRAGEDY, COMEDY, HILARO-TRAGOEDIA, FARCE, &c. Parts thereof; ACT, SCENE, PROTASIS, EPITASIS, CATASTROPHE, &c. Circumſtances; PROLOGUE, EPILOGUE, SOLILOQUY, CHORUS, &c. LAWS, UNITY, ACTION, &c. EPIC; its FABLE, HERO, MACHINES, &c. CHARACTERS, MANNERS, SENTIMENTS, &c. PERSONIFICATION, PROPOSITION, INVOCATION, EPISODE, &c. ILIAD, ODYSSEE, RHAPSODY, &c.

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* *Names.* † *Proper Names.* § *Appellatives.* ‖ *Verbs, Particles, Adverbs, &c.*

HENCE ariſe two kinds of knowlege; the one abſolute, including the ſtanding phænomena; the other relative, or occaſional, including what is done, or paſſes, with regard to them. The former is, in ſome ſenſe, permanent; the latter is merely tranſient, or hiſtorical. The firſt is held forth, as already obſerved, in the vocabulary: the ſecond is vague, and uncircumſcribed by any bounds; being what fills all the other books. In effect, this laſt, being in ſome meaſure caſual, may be ſaid to be infinite: for that every new caſe, *i. e.* every new application and combination of the former, furniſhes ſomething new.

IN the wide field of intelligibles appear ſome parts which have been more cultivated than the reſt; chiefly on account of the richneſs of the ſoil, and its eaſy tillage; but partly too by reaſon of the ſkilful and induſtrious hands under which it has fallen. Theſe ſpots, regularly laid out, and conveniently circumſcribed, and fenced round, make what we call the *Arts and Sciences:* and to theſe have the labours and endeavours of the men of curioſity and learning, in all ages, been chiefly confined. Their bounds have been enlarged from time to time, and new acquiſitions made from the adjoining waſte; but ſtill the ſpace of ground they poſſeſs is but narrow; and there is room either to extend them vaſtly, or to lay out new ones.

THEY were divided, by their firſt diſcoverers, into a number of ſubordinate provinces, under diſtinct names; and have thus remained for time immemorial, with little alteration. And yet this diſtribution of the land of ſcience, like that of the face of the earth and heavens, is wholly arbitrary; and might be altered, perhaps not without advantage. Had not Alexander, Cæſar, and Genkiſkan, lived, the diviſion of the terraqueous globe had, doubtleſs, been very different from what we now find it: and the caſe would have been the ſame with the world of learning, had no ſuch perſon been born as Ariſtotle. The firſt diviſions of knowlege were as ſcanty and ill concerted as thoſe of the firſt geographers; and for the like reaſon: and though future Bacons, Carteſ's, and Newtons, by opening new tracks, have carried our knowlege a great way farther; yet the regard we bear to the antient adventurers, and the eſtabliſhed diviſion, has made us take up with it, under all its inconveniencies, and ſtrain and ſtretch things, to make our later diſcoveries quadrate thereto. I do not know whether it might not be more for the general intereſt of learning, to have the partitions thrown down, and the whole laid in common again, under one diſtinguiſhed name. Our inquirers, in ſuch caſe, would not be confined to ſo narrow bounds; but we ſhould be led to explore many a rich track, now doomed to lie neglected, becauſe without the pale.

ART, and **Science**, are, indeed, words of familiar uſe, and great ſignificance; but, I doubt, little underſtood: philoſophers have long laboured to explain and aſcertain their notion and difference; but all their explanation amounts to little more, than the ſubſtituting one obſcure notion for another. Their attempts have uſually terminated in ſome abſtracted definition, which rather caſts obſcurity, than light, on the ſubject; and expreſſes very little of the eſſence, and obvious phænomena thereof.—To come at which, we muſt be at the pains of a new inveſtigation.

TO Science, then, ſeem to belong ſuch things as men may diſcover by the uſe of ſenſe and reaſoning: whatever the mind deſcries in virtue of that faculty whereby we perceive things, and their relations, is matter of ſcience: ſuch are the laws of nature, the affections of bodies, the rules and criterions of right and wrong, truth and error, the properties of lines and numbers, &c. Science, in effect, is the reſult of reaſon and ſenſe, in their general or natural ſtate, as imparted to all men, and not modified, or circumſtantiated, by any thing peculiar in the make of a man's mind, the objects he has been converſant among, or the ideas he has preſent to him. In fine, ſcience is no other than a ſeries of deductions, or concluſions, which every perſon, endued with thoſe faculties, may, with a proper degree of attention, ſee, and draw: and a ſcience, *i. e.* a formed ſcience, is no more than a ſyſtem of ſuch concluſions, relating to ſome one ſubject, orderly and artfully laid down in words. Thus a perſon who has all the ideas expreſſed in Euclid's *Definitions*, and ſees the immediate connexion of thoſe in his *Axioms*; which no man, acquainted with his language, can be ſuppoſed without; may be ſaid to have it in his power, with attention and induſtry, to form all the theorems and problems that follow: he has nothing to do, but to range thoſe ideas orderly in his mind, compare them together, one by one, in all their changes, and put down the immediate relations obſerved in the compariſon, *i. e.* their parity, imparity, &c. And after the relations of each to each are thus got, which make a kind of primary propoſitions; to proceed to combine them, and take down the relations reſulting from a compariſon of the ſeveral combinations. By ſuch means, without any other helps than penetration and perſeverance, might he make out an infinite number of propoſitions; poſſibly more than Euclid has done: there being a new relation, *i. e.* a new propoſition, reſulting from every new combination.

TO Art, on the other hand, belong ſuch things as mere reaſon would not have attained to; things which lie out of the direct path of deduction, and which require a peculiar caſt, or turn of mind, to ſee, or arrive at. A man might call theſe the reſults of particular or perſonal reaſon, in oppoſition to the former; but that ſuch a denomination would be thought unphiloſophical. It may, perhaps, be more juſt to conſider reaſon, here, as modified or tinctured with ſomething in the complexion, humour, or manner of thinking, of the perſon; or as reſtrained and diverted out of its proper courſe, by ſome views or notices peculiar to him.—The difference between the two may be illuſtrated by that between wit and humour; the former whereof is a general faculty of exciting agreeable and ſurpriſing pictures in the imagination; and the latter a particular one: the former is pure and abſolute in its kind; the latter tinged with ſomething foreign and complexional.

AN *art* and a *ſcience*, therefore, only ſeem to differ as leſs and more pure: a ſcience is a ſyſtem of deductions made by reaſon alone, undetermined by any thing foreign, or extrinſic to itſelf: an art, on the contrary, requires a number of data, and poſtulata, to be furniſhed from without; and never goes any length, without, at every turn, needing new ones. It is, in one ſenſe, the knowlege and perception of theſe data that conſtitutes the art: the reſt, that is, the doctrinal part, is of the nature of ſcience; which attentive reaſon alone will deſcry.

AN art, in this light, appears to be a portion of ſcience, or general knowlege, conſidered, not in itſelf, as ſcience, but with relation to its circumſtances, or appendages. In a ſcience, the mind looks directly backwards and forwards to the premiſes and concluſions: in an art we alſo look laterally to the concomitant circumſtances. A ſcience, in effect, is that to an art, which a ſtream running in a direct chanel, with regard to any thing but its own progreſs, is to the ſame ſtream turned out of its proper courſe, and diſpoſed into caſcades, jets, ciſterns, ponds, &c. In which caſe the progreſs of the ſtream is not conſidered with regard to itſelf, but only as it concerns the works; every one of which modifies the courſe of the ſtream, and leads it out of its way. It is eaſy to trace the progreſs of the former, from its riſe to its iſſue; in regard it flows conſequentially: but a man ever ſo well acquainted with this, will not be able to diſcover that of the latter, in regard it depends on the genius, humour, and caprice, of the engineer who laid the deſign.

THESE are ſome of the different characters, or conditions, of *art* and *ſcience*; but there is a difference between them prior to any of theſe, and of which theſe are only conſequences. The origin of them all lies higher, in the principle of action, or operation, above ſpecified; namely, as the mind is either active or paſſive, in reſpect of them. With regard to this, thoſe things may be ſaid to belong to ſcience, which we only ſee, or perceive; which flow from the nature and conſtitution of things, by the ſole agency of the author thereof; ſubſervient only to his general purpoſes; excluſive of any immediate agency, or intervention of ours.—And, on the contrary, thoſe things belong to art, wherein ſuch ſcience or perception is further modified, and applied, by us, to particular purpoſes and occaſions of our own.—From hence ariſe the ſeveral differences above-mentioned: for the matters of art are only perſonal, as they are according to the meaſure of the artiſt's natural faculties, in reſpect of quantity and degree; and to the complexion and caſt of his moral faculties, in reſpect of their quality. The perception, even of matters of art, is of the nature of ſcience: ſo that thus far the two agree: and their differences only commence from the ſuperinducing a farther modification in the matter of ſuch perception; and the giving it a new direction to ſome particular end. By means hereof, it becomes inveſted with a new ſet of conditions, and circumſtances wholly perſonal; as being all framed and adapted to the particular view and aim of the artiſt, and conducted according to his particular degree of knowlege and addreſs; which is the effect of a particular ſet of objects, and a particular organiſm of body. In a word, in art there is a moral view or motive, ſuperadded to the natural ſcience, or perception; which motive is the proper principle, or primum mobile, of art: perception is its matter; and ſome member of the body its organ, or inſtrument. And from ſuch new principle, *&c.* ariſe a new ſet of ſecondary perceptions analogous to the natural and primary ones.—The whole, therefore, ends in this; that ſcience ariſes from a natural principle, art from a moral one; or even, as moral matters are alſo, in one ſenſe, natural, ſcience may be ſaid to be of divine original, art of human [*].

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[*] THIS doctrine may ſeem to overturn the Ariſtotelian definition of art; *Ars eſt habitus mentis cum recta ratione effectivus*, an habit of the mind operative according to right reaſon; which, at firſt ſight, appears to be taken from a partial conſideration of the ſubject.—If it be the ſingle character or condition of art, to proceed according to right reaſon; the more and purer this reaſon, the more perfect the art. But, in ſome of the arts, reaſon appears to have little to do; and the leſs, as thoſe arts are in greater purity and perfection.—Thus it is in poetry; a man that would undertake an ode, or an epic poem, on the ſtrength of his reaſon, would be miſerably miſtaken: all his efforts would not carry him above the humble ſphere of verſification, where he muſt be contented to wait for an impulſe of another kind. So far is reaſon from leading the way, that it can ſcarce follow at a diſtance, ſo as to keep in ſight. The principle of motion is evidently ſomething other than reaſon; otherwiſe, the greateſt philoſophers would be the beſt poets, and vice verſa. On the contrary, moſt of us have known people weak enough in their rational, yet powerful in their poetical faculties. Poetry is an appendage of one kind of madneſs, and accordingly paſſes, among phyſicians, for a ſymptom thereof.—Let not this be thought any reflection upon the poets: a ſpice of the *μανικον παθος* is no diſreputable thing: a man, ſeated on that bench, finds himſelf in very good company; ſome of the greateſt philoſophers, prophets, legiſlators, doctors, fathers, and ſaints, of all ages, being confeſſedly his aſſeſſors. It is remarkable with what reſpect and awe the antients treated people ſuſpected to be touched: the very names they called them by import a high veneration, and place them, as it were, at the threſhold of Jupiter [†]. One of their moſt common appellations, *numine afflati*, is, at the ſame time, the moſt juſt and philoſophical that can be thought of. In effect, a ſhare of fury and enthuſiaſm is held, by them, a condition abſolutely neceſſary, in order to riſe above the croud. We may add, that the poets themſelves have an hundred times expreſly attributed all their greater and happier thoughts to enthuſiaſm, ecſtaſy, and fury; and they do it implicitly, almoſt in every piece they write: it being their ſtanding practice to take a formal leave of common ſenſe at firſt ſetting out, and call a muſe for their future guide; which, to talk out of the poetical ſtile, is as much as to ſay, they reſign themſelves over to the conduct of genius and imagination, which they now find ſtrong and prevalent in them: thus inſpired, a new ſcene of objects ariſes; caſtles on caſtles: and they ſee things inviſible to other eyes.—From ſuch prevalency of imagination ariſes what we call ΠΟΙΗΣΙΣ, which is common to all men, in a greater or leſs degree: philoſophers have a little of it, poets a great deal, and lunatics ſcarce any thing elſe.

IT may look ſtrange to ſay, that the principle is preciſely of the ſame kind in them all. We are uſed to conſider it, in the two firſt, as conſtitution; in the latter, as diſeaſe: in the former, it is only occaſional; in the latter, perpetual: in the one, it is arbitrary, and uncontroulable; in the other, limited, and reſtrained. The barque, in the one caſe, drives of neceſſity, as wanting cable and anchor to hold her; and, in the other, ſails out of choice, as finding the wind favourable, and the voyage deſireable. But all this amounts to little more than a difference in degree, between the fictions of the poet, and thoſe of the lunatic: the moving principle is the ſame in both, though its effects be various. If the proper balance and adjuſtment between the powers of reaſon and imagination be wanting, yet they ſtill retain their nature; as the wind is the ſame, whether the pilot directs the helm or not.

THIS doctrine is plainly countenanced by the antients; who, in ſome reſpects, ſeem to have had clearer and juſter notions than the moderns; as being leſs embarraſſed with the jargon and refinements of the ſcholaſtic learning. Philoſophy, with them, was one degree more ſimple and obvious than among us: nature was not yet covered and concealed under ſo much elucidation, but afforded more frequent, and nearer views of herſelf.—Accordingly, the divine Plato, in his *Phædrus*, aſſerts, "that enthuſiaſm and madneſs are one and the ſame "thing;" and has a long and cogent diſcourſe to prove, that it muſt be ſo: and among the ſeveral ſpecies of enthuſiaſm, he expreſly ranks poetry. In effect, the *ποιητικον* and *μαντικον* make two of the principal branches in his diviſion of enthuſiaſm, or inſpiration. And Plutarch, though he divide enthuſiaſm ſomewhat differently from Plato; yet agrees with him in making poetry a ſpecies of it. Nay, the moſt reſerved of all the antient critics, Longinus, declares, "that "the poet is poſſeſſed with a kind of enthuſiaſm; that he believes he "really ſees what he ſpeaks; and repreſents it ſo to others, that they "catch the enthuſiaſm, and ſee it likewiſe." Add, that, ſpeaking of the orators, he does not ſcruple to uſe *πνευμα ενθουσιαστικον* as ſynonymous with *μανια*.

THE principle, then, of the art of poetry, is ſomething other than reaſon; and I know of no art that has more of the nature and eſſence of an art, than poetry: nothing that can faſhion, build, and produce things ſo fine, and ſo faſt: ſculpture, architecture, agriculture, *&c.* are arts, but in an inferior degree.—And yet, turning another ſide of things forwards, poetry will ſcarce appear to have any thing of an art in it, but rather to be all the work of nature; wherein human thought and ſtudy have the leaſt hand. It is produced by a principle ſuperior to that of reaſon, *i. e.* a more immediate action of the author of nature.—But the ſame may be ſaid of moſt of the other arts; and when we ſay, that art produces effects, we mean nature does ſo. The poet's imagination may be conſidered as a field, wherein the author of nature produces a ſet of objects, which exiſted not before: new images ariſe here, like new plants, according to the ſettled laws of the Creator; ſo fruitful is the womb of nature! New worlds, innumerable, ariſe out of every particle of an old one.

THE *factive* arts, as ſome love to call them, *i. e.* thoſe from which permanent effects ariſe, may be conſidered as ſo many ſecondary or derivative natures, raiſed, by engraftment, from the old ſtock; and ſpreading out or projecting from this or that part thereof.—Here, at firſt ſight, man appears ſomewhat in quality of creator: the potter's power over his clay has been made a ſhadow or ſimilitude of that of the Deity over his works: and yet the potter, at beſt, is only acceſſory or occaſional to his own productions. Nature, that is, the power or principle of action and motion, to which we owe this viſible frame, and all the appearances and alterations therein, acts by fixed laws, which neceſſarily produce different effects, according to the different circumſtances of things: thus a glaſs globe, being ſwiftly revolved about its axis, and an hand applied to its ſurface, grows warm, emits light, attracts bodies, *&c.* i. e. becomes an hot, luminous, electrical body; though, before, it had none of thoſe properties. So gunpowder, a maſs of dark, inert, motionleſs matter, being only touched with a lighted brand, inſtantly blazes up, and ſmokes, with noiſe; perhaps burſts a rock, or drives a ball, in a parabolical direction, and levels a tower, or other work.—Now nothing ariſes here, but in conſequence of pre-eſtabliſhed laws, which import, that the globe and the powder, whenever by any means they come under ſuch circumſtances, ſhall exhibit ſuch appearances. There are no two bodies in nature more different from each other, than the ſame is from itſelf, under the different circumſtances of contiguity or non-contiguity with ſome other body, *e. gr.* with a ſpark of fire. But both ſtates are equally natural; and there muſt be a law of nature, to produce the appearances of one ſtate, as well as of the other.—Now the agency of man amounts to this, that he has it in his power to put bodies in ſuch circumſtances, as are neceſſary to make this or that reſpective law take hold of them. And this we call *art*; and by this means we can produce a number of things, or bring them into act, which otherwiſe would have remained in eternal non-entity.—Man may be ſaid to create them, but no otherwiſe than the apothecary creates the bliſter, or the gardener the apple; *i. e.* thoſe effects would neceſſarily have ariſen, upon the ſame poſition of the cantharides and the cutis, and the ſcion and ſtock, if there never had been apothecary or gardener in the world.

WE may define the works or productions of art, therefore, to be all thoſe phænomena, or effects, which would not have ariſen without the agency or intervention of man. But man can only be ſaid to act, or intervene, ſo far, as what he does is his own principle, without being moved or directed by any external power; *i. e.* ſo far as he is exempted from the influence of any neceſſary laws of nature, concurring, however remotely, to ſuch effect. So that if, as ſome philoſophers have maintained, man were not really and truly a free agent, there would be no ſuch thing as art, in the ſenſe here underſtood; but art would only be a name given to that ſyſtem or ſeries of effects, to which man is made by nature, and in her hands, ſubſervient; and might, with equal reaſon, be attributed to ſuch effects, as any other natural production is ſubſervient to.

WE ſee, then, how far man is concerned in the productions of art. Our endeavours are contrived, by nature, to be means acceſſory to the laws taking place, from whence the effects are to ariſe. We are part of the chain, whereby the effect is connected to the cauſe. The circumſtances are in our power, on which ſuch and ſuch laws depend; and thus far we may be ſaid to be active, in the caſe of art: ſuppoſing that there is nothing higher, or farther; and that the chain ends with us: in a word, that our agency is not ſubordinate, but collateral, to that of the Almighty. But if there be other ſuperior laws which reſpect thoſe ſame circumſtances, and which are not in our power; *i. e.* if the circumſtances neceſſary to the former laws be,

themſelves,

[†] Θεομαντεις, Ενθουσιασται, Θεοληπτοι, Ενθεοι, Κατοχοι, Ecſtatici, Phrenetici, Pythii, Siderii, &c.

HAVING diſcuſſed the nature and characters of *art* and *ſcience*, it remains to ſettle the notion of a TERM *of art*; an expreſſion as little underſtood as any thing in language.—Art and ſcience, we have obſerved, are denominations of knowlege, under this or that habitude; and words are repreſentatives of the ſeveral parts thereof. The whole compaſs of words, in all their caſes, is ſuppoſed equivalent to the whole ſyſtem of poſſible ſcience,

themſelves, ſuppoſed the effects of neceſſary laws, and the immediate work of nature; our agency will dwindle into nothing. The utmoſt that can be ſaid of us in ſuch caſe, is, that we are active in reſpect of the one, and paſſive in reſpect of the other; which, to moſt people, may appear a kind of contradiction.—The ſtatue cannot be formed, unleſs our inclination concur thereto; ſo far its exiſtence depends on us: but are our inclinations, with reſpect thereto, of our own growth; or do they riſe naturally, in conſequence of an apprehenſion of good and advantage in the ſubject? That is, does any thing appear good and advantageous to us, abſolutely, and of itſelf? or only what the Creator repreſents to us as ſo? And do we deſire and purſue this ſeeming good, from any principle and tendency that is in us, other than what we owe to his laws? The difficulty ſeems to amount to this; whether between our faculties of apprehending, or willing, and their reſpective objects, there be any relation which he did not create? If any allege, that it is ſuch relation conſtitutes the faculty; and therefore, that the queſtion ends in this, whether our faculties are from God, or ourſelves; *i. e.* whether they be the cauſes of themſelves? I ſhould ſuſpect ſome ſophiſm in the caſe, which, at preſent, I have not penetration enough to detect.

BUT, having traced the agency of man thus far, we muſt here deſiſt; and, from the factive arts, reſume the conſideration of the active ones; *i. e.* we muſt paſs from what art does out of us, to what it does in us; or rather, from the arts whoſe ſource is ſuppoſed in ourſelves, and which proceed outwards; to thoſe whoſe ſource ſeems without us, and act inwards; that is, from thoſe which ariſe from our obſervation and reaſon, directing us how to miniſter occaſions to the laws which obtain in the external world; to thoſe which flow into our imagination, and furniſh occaſions to the laws which obtain in the internal world.—An inquiry which may, perhaps, carry us where the reader little imagines; but which will afford an ample diſcuſſion of the principle above eſtabliſhed; and a further inſight into the origin and cauſe of ſcience and art, and the nature and meaſure of our agency, and paſſion, therein.

WE have already ſaid ſomething concerning poetry; not for its own ſake, but as a proper inſtance to illuſtrate the nature of art in. It makes the loweſt article in our *Analyſis*, and may be conſidered as the laſt in the ſcale of arts; there being a ſort of progreſſion from the beginning of the analyſis to the end. It begins with the firſt matter of knowlege, the common objects of our ſenſes; and proceeds through the various modifications they undergo by the other faculties of imagination and reaſon, till thoſe ſenſible objects become ſo much our own, are ſo aſſimilated to us, and, as it were, humanized, that they are part of ourſelves, and obey and take directions from our will, and miniſter to all our views and purpoſes: of which, this of producing images, and making fables, is, in one ſenſe, the moſt conſpicuous; inaſmuch as the greateſt effects here ariſe from the ſlendereſt means and endeavours. The poet ſtirs but little in the matter; but nature co-operates ſo ſtrongly with him, that this little ſuffices, even to make new worlds. In effect, the poet ſeems, as it were, to ſit nearer the ſpring of action than other men; and to have only to do with the general and higher principles thereof, which command and direct a number of other ſubordinate ones, that he himſelf is not ordinarily aware of. What we ſhall ſay of poetry, therefore, will hold proportionally of all the other arts; and we have only kept to that, becauſe the influence or inſpiration is here the moſt apparent and palpable.—The principle or ſpirit of poetry may be ſaid to be that of art in general; and hence many authors do not ſcruple to make all arts the invention of poets; thus it is that Homer is often complimented with being the father of all arts.

THE mind is allowed to be paſſive, in reſpect of the matter of the art of poetry. We need not quote the poets to prove it: no true poet ever queſtioned his inſpiration: every body knows, that their whole ſyſtem is built on the ſuppoſition. And hence the ſtories of *Apollo* and the *Muſes*, of *Helicon* and *Parnaſſus*; the dreams of *Pindus*, and the *Aonian* maids: but the philoſophers and critics alſo give them their ſuffrages, and atteſt their inſpiration, in the ſtrongeſt terms. Plato contends at large, that all poetry is "by immediate divine "inſpiration, in the proper and literal ſenſe of the word." Ariſtotle confirms it; ἔνθεον ἡ ποίησις, poetry comes by divine inſpiration." And Plutarch ſays as much of all the branches of enthuſiaſm, poetical, divinatory, bacchical, or corybantical, martial, or erotic: to all which, he aſſerts, the appellation, ἐνθουσιαστικὸν, or ἐνθεαστικὸν πάθος, equally agrees.—And not only ſo, but they hold the enthuſiaſm communicable from one to another. It ariſes from the poet, as its centre, and is diffuſed in orbem; in a leſs degree of intenſeneſs, the further it recedes from him. Plato aſſerts, that the ῥαψῳδοί, or thoſe who ſung and rehearſed the poets works on the public theatres; nay, and the ſpectators themſelves; were all divinely inſpired, in ſome degree; which he illuſtrates in the caſe of a needle touched by a magnet, which communicates an attractive property to another needle; that, to a third; and ſo on, but with a continual diminution.—Nor does the effect end here; but the profeſſors of other arts, as ſculpture, criticiſm, and even philoſophy itſelf, borrow their flame and inſpiration from this fire. Thus Phidias declared he was inſpired to make that wonderful ſtatue of Jupiter Olympius, by the reading of Homer: and thus Ariſtotle may be ſaid to have been inſpired by the ſame poet, to compoſe his immortal *Poetics*: the like one of our own poets ſays of Longinus; that he was inſpired by the muſes, or with the fire of a poet.

BUT, after poetry, rhetoric comes neareſt, and ſhares moſt of the ſpirit thereof: accordingly Plato, in his dialogue inſcribed *Meno*, allows, that "as we ſay pythians, prophets, and poets, are divinely "agitated; ſo we do of orators." Elſewhere he adds, "that they are "certainly inſpired of God, and plainly poſſeſſed." So Dion. Halicarnaſſeus relates, that "Demoſthenes did plainly ἐνθουσιᾷν:" and adds, that the diſtemper caught ſo among his audience, that "they "were poſſeſſed at ſecond-hand, and brought to do many things "againſt their own reaſon and judgment." And Æſchines, his profeſſed enemy and antagoniſt, allows as much. I need not ſay, that Plutarch relates the like of Cicero, in the inſtance of his oration to Cæſar, for Ligarius.

SOMETHING like this has been obſerved, even in the caſe of prayer to God: ſeveral heretics are on record for poſſeſſing their hearers that way. Hacket, executed for blaſphemy under queen Elizabeth, is ſaid, by the hiſtorian, "to have raviſhed all that heard him at his "devotions, and converted many in ſpite of their teeth:" and Saravius relates, the people were perſuaded, that "God directed his "tongue." S. Baſil even affirms, "that our prayers are never right "or acceptable, till the fervour thereof carry us out of ourſelves, ſo "that God poſſeſſes us in ſome extraordinary manner." And hence the learned and pious Caſaubon eſtabliſhes a new kind of enthuſiaſm, which he calls *ſupplicative* or *precatory*. To ſay no more, the author laſt-mentioned makes no ſcruple to rank even "the ordinary "delights and benefits men receive from the harangues of orators, "ſophiſts, preachers, *&c.* among the effects of enthuſiaſm and inſpi"ration; as being what could never have ariſen from mere common "ſenſe." And Plutarch, and others, make that ardour which the ſoldier feels in battle, of the ſame kind with that which inſpired the prophet, orator, and poet.

WE have here little leſs than a ſyſtem, ſufficient to account for moſt of the phænomena in the moral world, on principles of enthuſiaſm: and yet theſe are only a few, out of infinite inſtances, of the immediate agency and inſpiration of the Deity. We find the ſame principle in every art, every invention, every diſcovery; where no natural and neceſſary connexion is perceived between the diſcovery, and ſomething known before. What has no immediate dependence, either on what we perceive by ſenſation, or reflection, comes by the vehicle of inſpiration, *i. e.* of imagination; for there it riſes. The imagination may be called the medium of art, as ſenſe is of ſcience. The faculty of reaſon can make no great diſcoveries; it can only advance from one ſtep to another, which muſt be ready laid to its hand; and if theſe be any-where interrupted or diſcontinued, there it is at a ſtand. It is, in fine, a limited principle, ſubject to very narrow bounds; whereas the imagination ſeems to be indefinite, and ſtill kept in the Creator's hand, to be occaſionally made uſe of for the conduct of mankind.

THE truth is, when we ſay, ſuch a thing is the effect of enthuſiaſm, or inſpiration (ſpeaking, I mean, of profane matters; the inſpiration, for inſtance, of Scripture, being matter of a very different conſideration, and quite beſide our preſent purpoſe); this does not remove it out of the ordinary courſe of things: it does not put it on any principle different from that whereby cauſes and effects ſucceed each other in the phyſical world. We can account for the phænomena of the imagination, as well as thoſe of ſenſation. They have their reſpective laws, like other things, which they are ſubject to; and to which we have arts and proceſſes appropriated. In effect, all the inſpiration here ſpoken of may be produced without any great conjuration.—If the reader will not take offence at this novel philoſophy, he may be convinced of it. And, 1°, In the inſtance of the poetical kind.

THE inſpiration of poetry is of a ſtill and pure kind; and needs little artifice and apparatus to produce it in an imagination naturally diſpoſed for it. The attentive conſideration of ſome intereſting object uſually ſuffices to ſet it a-going. And the gentlemen of that faculty have all nature to chooſe out of: the fineſt ſeaſons, the moſt agreeable ſcenes, and the moſt moving objects. Hence it is, that they are continually harping on "groves and ſhades, and gods and nymphs, "and darts and flames."—How do they riot in "meadows, trim "with daiſies pied; ſhallow brooks, and rivers wide: towers and "battlements they ſee, boſom'd high in tufted trees!" Sometimes they ſing of "knights and 'ſquires, and maids forlorn." Then, "tilts and tournaments, and feats of arms: pomp, and feaſt, and re"velry, with maſque and antique pageantry: ſtories of Thebes, "or Pelops line; or the tale of Troy divine; of Arthur and "Cambuſcan bold; of Cambal and of Algarſife, and who took Ca"nace to wife." If theſe fail, they have all that is gloomy, and ſolemn, and terrible, in nature, at their beck; we may now expect to ſee "the red bolt, or forked lightning glare." Earthquakes and tempeſts ſeldom roar in vain: if by chance they do, the "ill-boding "raven's croak" is ready at hand; or elſe "the far-off curfew ſounds, "o'er ſome wide watery ſhore, ſwinging ſlow with ſolemn roar." And now for "baleful ebon ſhades, and ragged low-brow'd rocks:" next enter "horrid ſhapes, and ſhrieks, and ſights unholy: Gorgons, "and Hydras, and Chimæra's dire." Images of things moſt moving to ſenſe readily alarm, and raiſe a commotion in, the imagination. And the new ideas thus procured, coming to be mixed and combined, in the imagination, with others there before; new effects ariſe from them, in conſequence of the laws of the Creator: much as intelligibly as fire and flame, upon mixing ſpirit of nitre, and oil of cloves.

SCALIGER diſtinguiſhes two kinds of θεόπνευστοι, or poets divinely inſpired: the firſt, thoſe on whom the inſpiration falls, as it were, from heaven; without any thought or ſeeking; or, at leaſt, by means of prayer and invocation. The ſecond, thoſe in whom it is procured by the fumes of wine.—All required to the firſt, is a delicate, pregnant imagination; ſuſceptible of any feeble impreſſions that may happen to be made in the courſe of things; and ready to take fire at the leaſt ſpark. The ſurfaces of the finer fluids, we find, are kept in continual motion, by the bare tremor of the atmoſphere, though to us inſenſible: and thus the air is never ſo ſtill, but that the aſpinence, though it is only a ſmall part thereof that is actual, *i. e.* only a few of the poſſible combinations are, or ever will be, made.

THE buſineſs of knowlege, then, is cantoned out among the body of words: but they do not bear equal ſhares thereof. Being creatures of our own, we have dealt with them accordingly; and made ſome more,

others

leaf feels its impulſe, and bends and trembles to it; when others require a ruder guſt to move them: yet theſe, too, give way in a general ſtorm; whole foreſts then totter indifferently: accordingly, we read, in antient hiſtory, of whole nations being at once ſeized with the poetical fury; few of the cities of Greece, not even Athens itſelf, with all its philoſophy, but has, one time or other, laboured under theſe epidemical enthuſiaſms.

WE have already obſerved, that invention is the principle or ſource of poetry: an excellent poet of our own age adds, that it is this which furniſhes art with all its materials; and that, without it, judgment itſelf can, at beſt, but ſteal wiſely.—Now this faculty of invention itſelf is uſually no other than a delicacy, or readineſs of taking hints: but even at moſt, what we are ſaid to *invent*, reſults or ariſes from ſomething already in us. Invention produces no new ſimple ideas: thoſe can only come by the way of ſenſe and obſervation; all that paſſes in the other caſe, is, that from the memory of certain things, *i. e.* the compreſence of certain ideas to the mind, certain new images or pictures ariſe, according to the order of things. The ſprightly imagination is led, on various occaſions, to compound its ideas; and many of them ſo oddly and boldly, that we take its productions for new things; and thus think we invent them, becauſe they did not before exiſt in that form: there is no more real invention in the poet, than in the tapeſtry or moſaic worker, who ranges and combines the various coloured materials furniſhed to his hand, ſo as to make an aſſemblage or picture, which before had no exiſtence.

THE reader who has any doubt about this, need only take the firſt piece of poetry that comes in his way, to be convinced that all that is new, and moving in it, is no other than new compoſition, and combination of ſenſible ideas. In the *Il Allegro*, and *Il Penſeroſo*, two of the moſt poetical pieces in our, or perhaps in any language; how eaſy is it to reſolve all that is ſo magical and raviſhing, to the new, uncouth, and frequently wild and romantic aſſemblages of imagery! Who can contain himſelf at—"Sport which wrinkled care "derides, and laughter holding both his ſides.—Cynthia peeping "through a cloud, while rocking winds are piping loud.—To hear "the lark begin her flight, and ſinging ſtartle the dull night; or early "cock with lively din, ſcatter the rear of darkneſs thin: or, liſten "how the hounds and horn, loudly rouſe the ſlumbering morn.—"or ſee glowing embers, through the room, teach light to counterfeit a gloom.—Or, ſtoried windows richly dight, caſting a dim "religious light.—Or hear Orpheus ſing ſuch notes, as warbled to the "ſtring, drew iron tears down Pluto's cheek."

PERSONIFICATION, which is of that extent and importance, that it is uſually held the life and eſſence of poetry, is a vaſt ſource of new imagery. By this, not only different objects, but different ſyſtems and worlds, are combined and blended together; and what belongs to one kind of beings, man, is attributed to every other; each object, either of ſenſe or imagination, being occaſionally inveſted with all the characters and properties belonging to the human kind. Thus an arrow grows impatient, and thirſts to drink the blood of a foe; or loiters and ſtops half-way, loth to carry death, *&c.* So an action of the body, *laughter*, is repreſented, by Milton, as itſelf laughing, ready to burſt its ſides. One of the planets, the moon, is repreſented as tricked up, and frounced; and again as kerchiefed, and in a decent undreſs, and thus going a hunting. To tell us that a fine ſpring morning, attended with a gentle gale of wind, is very pleaſant; preſently—"Zephyr with Aurora playing, as he met her once a "maying, on a bed of violets blue, and freſh-blown roſes dipt in dew, "filled her with a daughter fair, yclep'd in heaven Euphroſyne, and "mirth on earth." How conſiſtent with the nature of things, that a breath of air ſhould lay an early hour of the day down; and that, from a green gown thus given, a paſſion of the mind ſhould in time be brought forth? In effect, the inſpiration of the poet frequently amounts to little more, than relating things that are naturally incongruous. He does not invent, he only tranſpoſes; nor has he the leaſt power to move, other than what he derives from the novelty and ſtrangeneſs of his combinations; to which nothing exiſts in the ordinary ſyſtem, any way conformable.—To ſay no more, if invention furniſh art; memory furniſhes the invention; and ſenſation the memory, where all knowlege originally commences. And the whole proceſs is nothing but the action or operation of the Deity, in a courſe of laws.

AS to the ſecond kind of poets, in whom the inſpiration is excited by means of wine; Caſaubon is perfectly frighted at it; judging it the higheſt ſtrain of impiety, to ſuppoſe a man may be divinely inſpired by the fumes of liquor.—And yet I do not know whether his fright be not founded on a miſapprehenſion. If Scaliger allege, that the juice of the grape may be a means or condition neceſſary to make the laws that concur to invention take place; I do not ſee what religion has to do here, more than in any other enthuſiaſm. The uſe of ſuch means is no way derogatory to the power or goodneſs of God, who ſtill remains the author of this, as of any other inſpiration; whether it be by viſions, by voices, dreams, or the like.—What matters it, whether the ſound of a cymbal, or the ſight of an image, or the effluvia of a liquor, be the occaſion? And of all the bleſſings this juice is made the inſtrument of to us; why ſhould it be precluded from that, which even the vileſt of God's creatures occaſionally miniſter?

THE inſpiration of orators, bears a near relation to that of the poets; though, being ſomewhat groſſer, it demands more induſtry and art.—Quintilian tells us how a rhetor is to get inſpired: "not by "ſupinely lolling, and gazing at the next moveable, and careleſly "turning things over in his mind; but by imagining the judge and "the audience preſent, and ſtrongly repreſenting to himſelf the time, "the occaſion," *&c.* He adds, that nobody ought to pretend to be an orator, unleſs he have this art of inſpiration at command; ſo that he can raiſe it at pleaſure.

WHAT has been ſaid above, contains ſome of the general principles of enthuſiaſm, and their connexion with other phyſical effects: and it would be eaſy to trace and purſue the ſame, where they appear in other caſes, and with other circumſtances. Thus the inſpiration, excited by the orator in his audience, is reſolved, by Caſaubon, into the muſic of the ſpeaker, *i. e.* the tone and cadence of his voice; and the συνθεσι, or order and placing of his words: in which laſt, how ſimple and trivial ſoever it may ſeem, all the great maſters on the ſubject allow ſomewhat myſterious, and unaccountably forcible; and accordingly make it the principal part of rhetoric. And yet there is nothing in the whole, but what reſults from the powers, properties, *&c.* of the ſeveral letters, conſidered as ſo many ſounds, artfully combined. In effect, there is ſome ῥυθμὸς, or numbers, and ſome μετροι, or dimenſion, in all diction; much more in that of oratory: and muſic itſelf has no charm in it, but what it derives from thoſe very ſources.

NOR muſt it be omitted, that the uſe of metaphors contributes its ſhare to the effect: the ſecret whereof conſiſts in this, that they are, as it were, accommodated to the ſenſes; and preſent ſuch images to the imagination, as move us moſt, when perceived in the way of ſenſation.

AS to that enthuſiaſm felt in prayer, its cauſe is not far to ſeek. The powers of rhetoric and muſic, and a peculiar fervour of imagination, raiſed by an apprehenſion of the preſence of God, *&c.* will go a great way. We may add, that the antient heathens made uſe of dithyrambics in all their moſt ſolemn prayers; which, Proclus obſerves, are peculiarly fit to ſtir up enthuſiaſtical diſpoſitions. A man that rides Pindar's horſe cannot well fail of going at a great rate.

BUT the moſt extraordinary and unaccountable kind of inſpiration is ſtill behind; *viz.* that of prophecy, divination, diſcovering cures by dreams, *&c.* which yet may all be produced by art; and accordingly, they have all been taught and ſtudied like other arts: not to ſay, alſo, practiſed like them for a livelihood. Schools and colleges of prophets, divines, augurs, *&c.* were numerous, both among Jews and Gentiles; and there was little in their diſcipline, but what may be reſolved into what has been already ſaid. Here, all the means above-mentioned, all the ſprings of enthuſiaſm, were uſed; and frequently all combined together, to make the more compound and extraordinary effect. The ſight of vaſt objects, as rocks and mountains, wild proſpects, ſolitary groves, gloomy caves, furious rivers, ſeas, *&c.* which we find to work ſo ſtrongly on the mind, were indulged; and frequent changes, and ſudden tranſitions, were made from one to another. Such unuſual objects neceſſarily ſuggeſted unuſual ideas; which were heightened by proper applications to all the other ſenſes. And when the patient was at length got out of the ordinary ſyſtem of thinking, what he uttered was judged oracular. And among a large train of objects, which preſented themſelves to him, ſome could not want an analogy to things that were really to happen; at leaſt in the opinion of a perſon already poſſeſſed with the notion thereof. It may be added, that the prophecies themſelves had their ſhare in producing futurity; the events whereof partook of the predictions, ſome more, others leſs, according to the degree of poſſeſſion of the parties concerned in them. In effect, the revelation ſtill retained ſomething of the means made uſe of to raiſe it. And hence a revelation was artificially producible of the complexion required; which was the very apex of the art. So that the divination, when moſt perfect, really ſuppoſed a natural knowlege of the thing demanded, and was built on it.

AS to dreams, *&c.* there was a formula for them; the circumſtances whereof might be appropriated to raiſe in the imagination an idea of the thing required.—After a number of ceremonies, the party was to ſleep in the temple: and the prieſts had not only the placing of his body, and the ſtrewing of his bed; but alſo the management of odours, ſounds, *&c.* in the night-time. So that if any natural means were known for the cure, here was room enough to ſuggeſt it to the patient's imagination, which was made acceſſible to them; and, as it were, put into their hands. But if no adequate remedy were known; as, it is probable, they hardly entered ſo far into the part; yet, what was thus ſuggeſted, perhaps at random, how ſtrongly muſt it operate, when enforced by the opinion of its coming by miracle and inſpiration? We ſee what the bare preſence and aſſurance of a phyſician will frequently do; even cure diſorders far above the reach of his ſkill: and what an improvement would it not be to the faculty, to have the further aſſiſtance of a little ſhew of religion and ceremony?

I AM afraid I may ſeem to have been too long abſent from my ſubject; but it has been all along in my eye, and a little recapitulation will convince the reader, that we have not wandered far out of the way.—We have ſhewn whence all our knowlege originally riſes; that ſenſation is its only ſource; that what comes this way, comes by the agency of the Divine Being; that it is further modified in the memory or imagination, where new aſſemblages are frequently made, which is called *invention*; that it is continually altering, by the admiſſion of new ideas from without; but ſtill remains ſubject to the laws impoſed by the Creator; ſo that nothing happens therein, but in conſequence of ſuch laws.—Thus far the mind appears merely paſſive; and thus it ſtands with reſpect to the matter of all knowlege and art.—It remains, now, to conſider its *form*, or that whereby ſuch knowlege becomes *art*, i. e. becomes ſubſervient to human purpoſes, and under the direction of human reaſon.

HERE, therefore, a new ſtate of the mind, *agency*, and a new faculty thereof, *reaſon*, come in play: the foundation and office

whereof

others leſs ſignificant, at pleaſure; ſome ſtand for large provinces, others for petty diſtricts thereof. In effect, the order wherein we attain our knowlege, has occaſioned us to make a kind of ſortment in the matter thereof. Though the mind only ſees and perceives individuals, which alone are the proper objects thereof; yet it has a power of combining and complicating theſe together, for its own conveniency: and hence its progreſs from particulars,

whereof, will be beſt aſcertained, by inquiring what there is in the artiſt's, *e. gr.* Homer's mind, that concurred with his inſpiration or invention, to the production of his poem? This will be found to reſolve into, firſt, an inclination to produce ſome piece, in the way of fable, that ſhall ſtrongly repreſent the miſchiefs of diſcord among confederates; and, ſecondly, a knowlege of certain means neceſſary to that end, or an acquaintance with certain rules and meaſures which tend to produce ſuch an effect.

THE firſt is a *moral view*, or *motive*, which has already been laid down as the ſpring, or principle, of all human action, and which is founded on the apprehenſion of good, or advantage, to ariſe from ſuch a poem. The ſecond, *viz.* the knowlege of the *means*, ſtands on the common footing of the knowlege hitherto diſcourſed of.

THE means and meaſures of an art make a kind of preliminary doctrine, neceſſary or conducive thereto, called the *theory of the art*; which alſo, in one ſenſe, may be conſidered as another art, diſtinct from the former: at leaſt, to come at it, is the buſineſs of another art.—If, for inſtance, a certain poſition, or ſet of motions of the body, be conſtituted, by nature, the occaſion of a poetic inſpiration; and ſuch and ſuch images and ideas, ariſing herefrom, be conſtituted the occaſions of ſuch paſſions in the mind of a reader, and ſuch views conſequent thereon; *viz.* an averſion to enmity and contention; to form an art productive of theſe effects, we muſt firſt obſerve the like effects to ariſe from the like cauſes; and infer, that it is probable theſe motions, or theſe images, are the occaſions thereof: and conſider their order, manner, and circumſtances, to form the art, or method.—So that we have here, as before, 1°, *Matter*, or phænomena, furniſhed by ſenſation, and preſerved in the memory; 2°, *Form*, ariſing from the moral view, which led us to frame an art; and, in order thereto, to conſider and dwell on the phænomena, compare them together, and infer ſomething from them.

IT appears, therefore, that we have two arts of poetry, very different from each other, ariſing from different cauſes, tending to different ends, and rarely found, in any great degree, in the ſame perſon. The firſt art Homer poſſeſſed in perfection; the ſecond, Ariſtotle.

BUT, for all their difference, the two will be found of the ſame general nature and kind; and only to differ in point of degree, and ſubordination; as they are nearer to, or farther from, the principle of all knowlege and art, ſenſation.—Homer, we have ſhewn, was inſpired: he derived his art only from nature, acting on him in the ordinary courſe of things, and firſt preſenting objects to his ſenſe, then to his imagination; and others are inſpired from him, *i. e.* they derive the inſpiration from nature, through his means: among whom is Ariſtotle. Nature, as ſhe appears to the ſenſes, is Homer's object; as ſhe ſhews herſelf in Homer, ſhe is Ariſtotle's: by which time the inſpiration is grown a degree cooler, and leſs forcible; and the ideas, thus excited at ſecond-hand, moving the mind leſs, it can attend more ſteadily to them, and perceive their relations better.—In the firſt, it falls like lightning immediately from heaven; the ſecond may be compared to the reflexion of the ſame lightning in a mirror. The reading of Homer, *i. e.* the exciting and calling up his ideas, and images, does, as it were, impregnate Ariſtotle's imagination, and tranſplant the poet's whole ſtock into the philoſopher's garden, to be further cultivated. Accordingly, Ariſtotle, applying his reaſon to them, and examining them cloſely on all ſides, perceives divers relations and analogies between them, which Homer was not aware of; and which the warmth of his imagination, and the quick ſucceſſion of new ideas, would not give him room to attend to. Theſe analogies he calls *rules*, or *laws*, the aſſemblage or ſyſtem whereof make what we call Ariſtotle's *Art of Poetry*.

THE like proceſs might be obſerved in the ſeveral other arts. Thoſe we have hitherto chiefly kept to, have been of the ſymbolical kind: we ſhall here give an inſtance in what we call the real kind, *viz.* architecture.—An Athenian ſculptor, then, obſerving an acanthus ſhooting up under a baſket, is pleaſed with the figure it preſents; and, taking the hint, invents the capital of a column on the model thereof: and, by a number of like ſteps, an intire order gradually aroſe; and, in time, a whole art.—Things thus advanced, and another perſon ſeeing a building framed after ſuch manner, he attentively examines the ſeveral members, their forms, proportions, *&c.* and puts them down in writing: and thus does another poſterior art ariſe. And between the two there ſtill remains the ſubordination already obſerved between the means, or occaſions, of producing them; *i. e.* the rules thus formed, being couched in words, ſupply the office of the external objects they were originally derived from, and prove occaſions of raiſing ideas, or images, in the imaginations of future artiſts, to be imitated in the proper materials.

THE arts, then, of poetry and architecture, come firſt in at Homer's and Callimachus's ſenſe, in the ſimple quality of natural objects; which, meeting with other ideas in the memory, or imagination, and coming to be compared and combined therewith, by the agency of the moral view or principle which ſuggeſted the making of a poem, *&c.* as advantageous and deſirable, new productions ariſe, *e. gr.* a poem, or a building; which coming, at length, under the cognizance and conſideration of reaſon, certain relations or analogies are diſcovered therein, which tend to propagate and produce the like at any time.—Reaſon returns rules for matter; which rules prove like the philoſophers ſtone, which tends to turn all materials it is applied to into gold; and the materials thus tranſmuted, like the pretended multiplicative virtue of the ſame ſtone, from every thing they are applied to, produce rules again.—And thus are we arrived at the reaſon of the Ariſtotelian definition of *art* above-mentioned, which we ſee lies pretty deep, and coſts ſome pains to come at; as do many other doctrines of that philoſopher, which the precipitancy of moderns has rejected as falſe, only becauſe they would not be at the pains to diſcover their truth.

REASON, in effect, which is the laſt faculty the matter of art arrives at, is the firſt from which the form or rules thereof, which are to propagate it, ariſe. In which view, reaſon may be laid down as the principle of this ſecondary art, or theory; as imagination is of the primary one. We ſtill ſee the effect of the firſt laws, even in the latter art; external objects ſtrike the ſenſe and imagination ſo ſtrongly, that they reach to reaſon; which, like an infinitely elaſtic ſubſtance, reflects them back again; and thus they again grow into objects of ſenſe, and ſo on in a circle.

THIS ſeems to make the two arts differ very widely: and as reaſon appears our higheſt faculty (inaſmuch as it is this alone that tends to produce and multiply, and accordingly all our knowlege appears proportionably higher and purer, as reaſon is more concerned therein), the rules or theory of an art appear of infinitely nearer conſequence than the matter thereof. The former is, in ſome ſenſe, active, and, like the Almighty mind, tends to produce new things, new worlds, new ſyſtems, without end; the latter is mere paſſion, and ends in bare brute perception.

YET Ariſtotle's rules, it muſt be obſerved, do not tend to produce poetry; I mean not the matter of poetry, but only the form: Ariſtotle's art is not the art of poetry, in that ſenſe, as its rules do not tend to produce enthuſiaſm. They only give the human part, and relate what reaſon obſerves in the productions of the imagination, *i. e.* what there is in them, that is a proper object in this laſt faculty, and comes under its notice. In effect, poetry is only ſubject to Ariſtotle's rules, as there is reaſon, not as there is inſpiration or invention, in it.

THE ſource of poetry, we have obſerved, lies out of poetry, in a higher ground; and to turn the ſtream upon us, is the buſineſs of this other art of inſpiration. The immediate inſpiration is not ſo immediate as we may imagine: it is not the ultimate principle of art, but it is itſelf ſubordinate to another further or purer art; ſo that we muſt not only have art and rules to produce poetry, but alſo to produce the principle thereof, inſpiration, or invention. And the ſame will hold of the rules of this laſt art, themſelves, which will require others; and ſo on *in infinitum*: at leaſt, the ſeries will be infinite, if we only take ourſelves, and our own agency, into the account.

TO clear up this, it may be obſerved, that the art, *e. gr.* of poetry, is not only the reſult of another higher art, as above laid down, but that its matter and form are each of them the ſubject of a particular art, and each of them require another higher art to produce them.—The means, for inſtance, neceſſary for inſpiration, or the invention of images, make one art; and thoſe for their application to the preſent purpoſe, another: ſo that the art of poetry reſolves itſelf into two ſubordinate ones; the firſt of which may be called the *art of invention*, the other the *art of judgment*, or criticiſm: each of which, has all the characters of the general art; is come at like it, produces new objects like it, and reſolves into principles of the ſame kind with it.—Nor does the view end here: for as each of theſe ſubordinate arts may be conſidered as conſiſting of matter and form, each of them reſolves lower into two other arts: and the ſame may be ſaid of each of theſe; and ſo on. So that there is really an infinite ſeries of arts, previous to any one, and acceſſory thereto; all diſtinct from each other, though all of the ſame general nature, and only differing in point of order, or ſubordinacy. They ariſe ſubordinately from the ſame cauſe, and tend ſubordinately to the ſame end; which difference or ſubordination, as already noted, ariſes only from their greater or leſs diſtance from the principle of all knowlege, ſenſation.

UPON the whole; ſenſible nature furniſhes the matter of them all, by means of the imagination; and moral nature the form, by means of the light of reaſon.—The former propoſition has been ſufficiently diſcuſſed; it remains to inquire a little further into the latter: for, *that reaſon furniſhes the means*, &c. muſt be further qualified, ere it be received.—Our reaſon, it is to be obſerved, does not perceive any neceſſary and immediate connexion between the means and the effect; for there really is none: conſequently, reaſon cannot be the author of them; in regard, the medium is wanting, whereby, alone, it could poſſibly attain them. So that they muſt be procured by ſome other canal, which will, at length, be found to end in ſenſation. In effect, ere we know, that ſuch means conduce to ſuch end, we muſt firſt have obſerved, or found it ſo by experience. Our memory ſuggeſts to us, that ſuch or the like cauſes have been followed by ſuch or the like effects; which is the only foundation we have to expect any thing from them on the preſent occaſion.—Thus, if Homer's reaſon direct him to retire into a place free of noiſe and diſturbance, at a time when his mind is clear, and in due temper; and there to apply himſelf with attention and earneſtneſs to think on his ſubject; in conſequence of which means, new ideas and images preſent themſelves, ſome more immediately relative to the preſent purpoſe, others leſs: whence comes all this, but that Homer remembers ſuch or the like ideas as are now wanted, to have ariſen upon the uſe of ſuch or the like means? And if, among the croud of images, he chooſes only ſuch as are moſt proper and immediately conducive to his end, and throws aſide, or expunges, the reſt; whence is this, but that he remembers ſuch, on former occaſions, to have contributed more fully to ends like his own, than ſuch other? So that the whole proceſs appears to be little other than remembrance, which, we know, reſolves into ſenſe.

BUT, memory, it is here to be noted, deals only in paſt things: it informs us, that on ſuch an occaſion ſuch means, under ſuch circumſtances, produced ſuch effects; but its notices are merely narrative, or hiſtorical, and relate only to thoſe numerical means, occaſions, circumſtances, *&c.* which can never happen again. So that memory ſpeaks nothing to the preſent caſe, nor gives any directions how the particular purpoſe, now in view, is to be attained: its language is only particulars, to generals; from ſimple to complex.—Hence we come to have words of all orders and degrees; from the ſimplicity of an atom, to the complexneſs of the univerſe. It is pleaſant to trace the mind, bundling up its ideas, and giving names to the ſeveral parcels; to obſerve, for inſtance, how it proceeds from the ſimple idea, *thinking*, to the more comprehenſive one, *knowlege*, thence to a *ſcience*, thence forward to *ſcientifical*, &c.

INDEED they are very few of our words that expreſs ſingle or ſimple ideas. The reaſon is, that, obſerving certain relations to obtain between the ſeveral ideas; as of cauſe and effect, ſubject and attribute, *&c.* we do not ſo much conſider them abſolutely, and independently, as under ſuch circumſtances and relations to each other. The great readineſs and propenſity of the mind to combine its ideas, and thus pay or receive them in parcels, has left us very few ſimple ones; I mean, very few names which denote only one idea. The words *atom*, or *mathematical point*, uſually imply ſeveral ideas; in regard we are led to take the attributes and relations into the conſideration of the ſubject: thus we conſider the *atom*, as hard, heavy, and indiviſible; as the principle of phyſical magnitude; as contributing to the conſtitution of bodies, *&c.* And even the primary qualities themſelves, as hardneſs, heavineſs, and the like, ſimple as they are in their own nature, are ſo far combined with particular circumſtances, *e. gr.* their cauſe, *&c.* that their names become none of the leaſt complex.

NOW what we call a *term*, is no other than “ a word which denotes an aſſemblage, or ſyſtem of ideas, relating to ſome one point, which the mind has artfully complicated, or aſſociated together, for the convenience of its own operations.” Or, it is “ a word which comprehends ſeveral ideas under a certain relation to each other, whereby they repreſent ſome complex piece of knowlege to the mind, for the conveniency, *&c.*” Or, “ it is a word, which holds ſeveral different ideas combined together in a relation, ſuch as they appeared under when the mind firſt conſidered them as a ſtanding phænomenon, and took meaſures to have them fixed or retained in that quality.”

THE effect of *term* is, that by virtue thereof, we are enabled to receive or communicate knowlege with more eaſe and diſpatch; foraſmuch as, having proper combinations thereof always ready made, we are ſaved the neceſſity of beginning *de novo*, and detailing it in individuals: much as in arithmetic, to avoid the embarraſs of a large number of units, we tell by tens, or ſixties, or hundreds: with the like view, on ſome occaſions, we make up certain ſums of money in rouleau's, or in purſes; and thus pay and receive them, without the trouble of telling or enumerating the contents.

IN this ſenſe of a *term*, we ſhall find little elſe in language.—Among nouns all are ſuch, except proper names, which, indeed, are out of the ordinary caſe of language; yet even theſe ſometimes become terms; as when any particular ideas become conſtantly attached to them, *e. gr.* in *Mæcenas*, *Machiavel*, *Auguſtus*, *Atlas*, *Bucephalus*, *Argo*, &c. And, among verbs, very few but are terms, except the general ones, *to be*, *to do*, and *to ſuffer*. As all the others ſuppoſe theſe, and modify, or ſuperadd ſome farther circumſtances thereto; they commence terms of courſe: ſuch, for inſtance, is the word *to moiſten*; which, as it carries a farther meaning, than the bare act of applying a fluid to a dry body; and denotes, *e. gr.* the modus of action, and the alteration ſuperinduced by it, *viz.* the ſoftening, lubricating, *&c.* is a thorough term. So, *to ſtrike*, as it not only implies a certain motion of the arm, but this motion effected by the ſucceſſive contraction and dilatation of certain muſcles, *&c.* has every thing that is eſſential to a term. In the ſame ſenſe, a *ſtaff* is a term, as much as a *lever*; and a *pin*, as an *axis in peritrochio*.

THIS may look like ſtretching a point, eſpecially to thoſe who are uſed to conſider *terms*, as things, I know not how, quaint and myſterious; and make a *term* and a hard word the ſame thing. But there is no remedy: complexneſs is the only characteriſtic, that will be found to hold good, of them all; and if there be any other more ſpecific, and diſtinguiſhing properties in moſt of them, as we ſhall have occaſion, hereafter, to ſhew there are; yet theſe, not being univerſal, cannot be made the foundation of a juſt philoſophical definition. They may, perhaps, be introduced, to good purpoſe, into a popular one; as they afford a more uſeful and adequate knowlege of the ſubject, ſo far as they do obtain.

THUS much relates to what we may call *terms of knowlege*, which are one degree more ſimple than the terms of an art or ſcience; and were, for that reaſon, pitched upon to exhibit the common nature and origin of both. Theſe latter ariſe out of the former, by the ſuperaddition of ſome new character, or condition. They were before members of the commonwealth of knowlege; but they are now incorporated into ſome certain province, or city thereof; where they become of farther ſignificance and conſideration than before: that is, ſome new ideas and circumſtances are now taken into the combination, which before did not belong to it.—A term of art, then, “ is a word that has a meaning beyond its general or ſcientifical one, and this meaning reſtrained to ſome one art.” Or, “ it is a word uſed to denote a certain combination of ideas, under ſome peculiar rela-

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only this, “ Such means did produce ſuch and ſuch effects.”—To make the application of paſt things to preſent, is the office of reaſon; which comes in where memory ends; and ſubjoins that, “ if ſuch means have done ſo, ſuch others will now do ſo.” And, conſequently, it is reaſon that, in ſtrictneſs, preſcribes the preſent meaſures.

OUR inquiry now draws towards an iſſue; and it only remains to ſhew, in what manner reaſon attains this end, *i. e.* what farther or higher means there are, to enable it to furniſh meaſures for the preſent exigency, from the circumſtances of paſt ones?—This it effects by certain perceptions of ſimilitude and diſſimilitude, parity and imparity, congruity and incongruity, between former, and preſent means, occaſions, *&c.* By virtue of theſe, the mind infers, that, “ inaſmuch as ſuch means were followed by ſuch effects; ſuch others, by parity of reaſon, will be followed by ſuch others.” And that, “ as there are ſuch and ſuch differences between former and preſent occaſions, and circumſtances; there muſt be ſuch and ſuch other correſpondent variations in the preſent meaſures, to keep up the congruity.” All which reſolves into the comprehenſive word, *analogy*.—Thus it is found, that every means, every ſtep of an art, includes what has been already ſhewn of the whole art; and conſiſts of *matter*, furniſhed by memory, from ſenſe and obſervation; and *form*, furniſhed by reaſon, from compariſon and analogy.

AND thus it is reaſon that makes all our hiſtorical knowlege of any ſignificancy to us. It is this that makes former caſes ſubſervient to the preſent occaſion. We may look upon this, as the inſtrument or faculty of transferring; whereby the effects of former times and places are brought over to the preſent ones. Without this, ſenſe would loſe its chief uſe; and memory, with all its copia, would be no other than uſeleſs lumber.—It is this faculty alone, that arranges our ſenſible ideas into any thing of ſubordinacy. Memory only preſents them ſuch as they firſt appeared; wholly diſtinct all, and independent of each other, being connected by nothing but their compreſence, or coexiſtence, in point of time and place. The eſtabliſhment of all other relations is the work of reaſon; which, from theſe few ſenſible relations, infers numerous others, *e. gr.* from the compreſence of two things in reſpect of time, place, *&c.* it concludes that ſome new appearance, perceived in the one, was occaſioned by the other; and, therefore, that there was ſome power in the latter, by which this was effected, *&c.* And thus it is we come by the relations or perceptions of cauſe, effect; action, paſſion; property, quality, *&c.* ſo that to this faculty of reaſon we owe the whole ſcience of phyſics; which is no other than the doctrine of cauſes: at leaſt the form thereof. The matter, *i. e.* the ſenſations themſelves, being furniſhed by ſenſe, conſtitute *natural hiſtory*, the baſis of all knowlege whatever.

WE are now got to the top of all our natural faculties; *reaſon*; and the moſt refined of all our ſciences, *analogy*.—It remains to obſerve, that with this natural reaſon is connected *moral inclination*. In the caſe, for inſtance, of good; to the voice of reaſon repreſenting a thing as ſuch, is connected a deſire or inclination towards the ſame; which is the great principle of human action, or operation; and commands a number of ſubordinate ones; the application of all which, conſtitutes what we call the *purſuit* of ſuch good.

AND thus we are got to the bottom of all our moral faculties, *deſire*, or *inclination*.—Hence, as reaſon is the end of paſſion, or perception; inclination is the beginning of action; the one terminating in the apprehenſion of good, where the other commences. And again, as the perception of analogy is the ultimate effect of ſcience; the inclination, ariſing by means hereof, is the beginning of art; the two being joined, and, as it were, inoſculated, in ſome middle point. And thus external or phyſical things come to influence or produce internal or moral ones: thus the whole effect of ſenſible nature is applied to moral nature. And thus do phyſics take hold of ethics, God of man.

“ tion, retained arbitrarily in ſome art, and either not uſed in any other art, or for a different combination, or “ with other relations and circumſtances.”

TO make the way a little clearer to the philoſophy of a term of art, it is to be obſerved, that from the primary, or literal ſenſe of words, we frequently, by abſtraction, form a ſecondary, general, or philoſophical one, expreſſing only the quality moſt predominant in the former, excluſive of the particular circumſtances of the concrete. Thus, the word *ſpirit* literally and primarily ſignifying *breath*; we thence frame a more ſimple general meaning, and uſe the word for any thin, ſubtile matter whatſoever.—Now, terms of art are not immediately formed from the literal or grammatical, but from the general or philoſophical acceptation of words; which is their proper baſis, or the ground-work they are erected on. The general or abſtract ſenſe of ſome word already eſtabliſhed, being found to agree to ſomething which we have occaſion to give a name to; we take the word in that ſenſe, and ſuperadd the other incidents and circumſtances, which the preſent occaſions furniſh, thereto; which, being different, according to the different matter and ſubject of the art, ſpecify the meaning of the term in this or that art. So that the word which, to raiſe it to a philoſophical or ſcientifical ſenſe, was generalized, to form a technical one, is again particularized, or appropriated, and inveſted with new accidents.

THUS, the ſame word *ſpirit*, which literally ſignifies breath, and philoſophically any ſubtile ſubſtance, is technically brought to denote divers other things; as, in anatomy, a thin animal juice ſecreted in the brain, and detached thence through the nerves, for the uſes of ſenſation, and muſcular motion: in chemiſtry, the exhalations of bodies expoſed to the fire: in theology, the third perſon of the Trinity: in metaphyſics, any incorporeal agent, or intelligence, *&c.* In all which, we ſee the ſame ſubſtratum, *viz.* a fine ſubtile ſubſtance; but this modified a great diverſity of ways; each of which is ſuſceptible, by further ſuper-additions, of infinite more. And hence we have legions of ſorts of ſpirits, both in the human body, the chemiſts laboratories, the hierarchy, *&c.*

THE notion of a term, will receive ſome farther light from that of a DEFINITION; which is, as it were, the analyſis thereof.—By *definition* we undo what was done in forming the term; that is, we reſolve the complex ideas into ſimple ones, or reſtore the ideas from their new and artificial ſtate, to their primitive and vague one. A *definition*, then, may be defined, “ An enumeration of the ſeveral ſimple ideas couched under any terms, “ in the relation wherein they ſtand to one another.”—We have already ſhewn, that terms are words which have peculiar and determinate meanings, reſulting from a certain combination of ideas; in which view, a term may be ſaid to be, “ a word that is capable of definition;” *i. e.* of having its ſenſe explained and aſcertained, by an enumeration of its properties and relations; by which it is diſtinguiſhed from words merely grammatical, whoſe meanings are general and indeterminate, and may be uſed with equal propriety in a thouſand caſes. We can explain a term; a word is inexplicable: all we can do towards this, amounts not to definition, but only to ſubſtitution, or the giving a ſynonymon.

THUS the idea attached to the word *force*, is abſolutely incommunicable by means of any language: we can only try whether the party have it not already, under another name; to which end, we may tell him it is *power*, or *energy*, or *vigour*; if he have ideas for any of theſe, he will take in that of force, by its relation thereto; if he have not, we muſt proceed to try him with more, and tell him it is *forza*, or *vis*, or *efficacia*, or *potentia*, &c. or it is βια, or ισχυς, or δυναμις, &c. If none of theſe will do, it remains to try, whether he may not have it without any name to it; and ſay, it is “ that whereby one thing, coming in contact with an-“ other, moves, or ſhakes, or breaks it,” *&c.*—If, by any of theſe means, he learns what force is, he does not form any new idea; he only learns a new name: and finds, that what he had known by one name, others call by another; or that what he had never taken the pains to diſtinguiſh by any name, ſome others have. To get the idea, he muſt have recourſe to ſenſation, not to language; it being a phyſical *ens*, and only to be attained that way.

BUT the ſimple idea, called *force*, being given; and coming to be afterwards modified, or circumſtantiated by new accidents added thereto, and thus formed into terms, in this or that art; it is here in the power of language alone to excite them, by reſolving ſuch compound idea into its ingredient ones; which, being re-compounded, or put together again, in the manner aſſigned by the definition, gives the full adequate import thereof.—Thus the idea of *force* being variouſly modified, and combined with other ideas of *centre*, *attraction*, *repulſion*, *will*, *machine*, &c. in the words *central force*, *centripetal force*, *centrifugal force*, *neceſſity* or *moral force*, *mechanic force*, &c. we can, by definition, arrive at the meaning thereof; by having thoſe circumſtances ſpecified, or ſuperadded to the idea of force.—In this caſe, there is no coming at the idea by ſenſation; in regard it is a creature of our own, and does not exiſt any-where without us, to make an object of ſenſe.

HENCE appear all the diverſity of definitions; technical ones, comporting only to terms, as to *central force*; ſcientifical, or philoſophical, to qualities, as *forcibleneſs*; and nominal, or ſuccedaneous, belonging to ſimple ideas, as *power*, or *energy*.

IT is the various aſſemblage of ſimple ideas, denoted by common words, that makes all the variety of terms; as it is of ſimples in an apothecary's ſhop, that makes the variety of his medicines.—The analogy goes farther; and it may be ſaid, terms, like medicines, only differ from each other as their ingredient ideas, and the relations thereof, differ.—If theſe be not all rehearſed in the definition, the term or medicine is not ſpecified, or diſtinguiſhed from ſome other, which may have all, except that one or two omitted. Conſequently, ſuch one or two are the characteriſtics of that term; which may be explained, in ſome ſort, by only enumerateing thoſe characteriſtics, and couching the reſt under the name of that other term. This amounts to little more than the ſubſtitution above-mentioned; and yet to this is reducible all that the ſchoolmen teach of *genus*, *ſpecies*, and *difference*.

BESIDES ſimple words, which we have obſerved are, in their own nature, inexplicable; there are divers others that become accidentally ſo: and ſuch are all the data, or preliminary principles of any art, with reſpect to thoſe who confine themſelves to the bounds of that art. Thus, if it be demanded of an apothecary to define one of his ſimples, *e. gr.* mercury; he muſt needs be at a ſtand, unleſs he be likewiſe verſed in minerology; by reaſon it is putting him to explain a principle, which his art does not explain, but aſſume; the explication thereof lying in another province. But aſk him to define calomel, and he is prepared for you; and will readily enumerate the ſeveral ingredients, and the manner of preparing it, which is the proper pharmaceutical definition of calomel.

HERE it may be obſerved, that the words uſed in the definition of a term do many of them repreſent complex ideas; and, conſequently, ought themſelves to be firſt defined, if we would have the definition complete. The term has uſually divers ſubaltern ones; all which are reſolvable into it, and make part and parcel of the knowlege held forth by it. Thus, if mercurius præcipitatus albus be defined, “ A white medicinal powder, “ precipitated from a ſolution of crude mercury in aqua fortis, by adding thereto a lixivium of ſea-ſalt; and “ then purified by repeated ablutions in a filtre;” *&c.* the ideas, *powder*, *precipitated*, *ſolution*, *mercury*, *aqua fortis*, *ablution*, *filtre*, &c. remain to be explained, to furniſh the complete notion of white precipitate.—But as this would be endleſs, and would defeat the intention of a definition; the practice obtains, to ſuppoſe all other terms known, except that particular one under definition. By this means we avoid the embarraſs of bringing down every word to its principles, or ſimple ideas; and acquit ourſelves, by bringing it to the next complex ones: ſince the bringing an unknown term to ſeveral known ones, is a kind of indirect definition.

SUCH is the nature of a technical definition, which holds good or valid for thoſe of that art, or craft; who are to be ſuppoſed furniſhed with the neceſſary data, or preliminary notices. But to make a ſcientifical definition, we muſt go a little lower; and bring down the words, if not to their ſimple ideas, yet to general or common ones. For it is to be obſerved, there are great numbers of complex ideas current among moſt people, which therefore may be conſidered as data, and uſed as ſimple ones, for more conveniency ſake. All technical apparatus, then, is to be here thrown by; and inſtead of giving five or ſix hard words for one, the general effect and meanings thereof are to be made uſe of. Thus, the precipitate above-mentioned may be defined, "a "white powder, which falls down from quickſilver diſſolved in ſpirit of ſaltpetre, upon caſting ſalt therein; and "afterwards waſhed, again and again, by paſſing fair water through it," *&c.* where, though ſeveral of the words be complex; yet moſt people, in the ordinary courſe of life, have framed the complex ideas belonging to them: ſo that they may be conſidered as ſimple ones.—Yet the definition can ſcarce be ſaid to be complete, even here: the general, or philoſophical ſenſe of words, we have obſerved, is formed from the grammatical one; and, conſequently, the definition ought, in ſtrictneſs, to extend thither: the ſolution, to be adequate, ſhould go as far as the knot; the analyſis, as the ſyntheſis.

THE reader already begins to feel this preface grow tireſome; and yet ſeveral things are ſtill behind. When ſo large a work was to follow, he perhaps imagines he ſhould have been excuſed from a long introduction: and the like, probably, may the author ſay; who, after ſo tedious a work, could not be over-fond of any additional fatigue. But, the expediency of the caſe, which ſwayed and determined the one, may, we hope, ſuffice to ſatisfy the other. Several matters were purpoſely waved in the courſe of the Book, to be treated of in the Preface; which appeared the moſt proper place for ſuch things as have a regard to the whole work. What has been hitherto inſiſted on, as well as what remains, immediately affects every article in the book; and tends, withal, to let a little needful light into certain points, hitherto involved in great obſcurity. A *preface* may be conſidered as a vehicle wherewithal to convey the reader, commodiouſly, from the title-page into the book. The preface is a kind of comment upon the title; the book a paraphraſe on it: or, if you had rather, the book is the title executed, the preface the title explained.

HAVING, therefore, diſpatched ſome of the leading words of our title, Art, Science, Term, and Definition; we proceed to conſider the nature of a Dictionary.—It were to be wiſhed, that the many adventurers in print, who publiſh their thoughts under this or that form and denomination, would frame to themſelves ſome preciſe notion of the character and laws thereof.—There is ſomething arbitrary and artificial in all writings: they are a kind of draughts, or pictures, where the aſpect, attitude, and light, which the objects are taken in, though merely arbitrary, yet ſway and direct the whole repreſentation.—Books are, as it were, plans or proſpects of ideas artfully arranged and exhibited, not to the eye, but to the imagination; and there is a kind of analogous perſpective, which obtains in them, wherein we have ſomething not much unlike points of ſight, and of diſtance. An author, in effect, has ſome particular view or deſign in drawing out his ideas; either nakedly, to repreſent ſomething, or to diſtort and ridicule it, or to amplify and extenuate, or diſcover, or teach, or prove, *&c.* whence ariſe divers kinds of compoſitions, under the names of *hiſtories*, *diſcourſes*, *treatiſes*, *eſſays*, *inquiries*, *examinations*, *paraphraſes*, *courſes*, *memoirs*, *burleſques*, &c. in all which, though the matter or ſubject may be the ſame, the conduct or artificial part is very different; as much as a ſtill-life from a hiſtory, or a groteſque, or a nudity, or a caricatour, or a ſcene-work, or a miniature, or a profile, *&c.* each of theſe methods of compoſition has its particular characters, and laws; and, to form a judgment of the things repreſented, from the picture made of them, it is neceſſary we be able to unravel or undo what is artificial in them, reſolve them into their former ſtate, and extricate what has been added to them in the repreſentation: that is, we ſhould know the manner thereof; whether, *e. gr.* they be mere nature, ſhewn through this or that medium, in a fore, or ſide-view, withinſide, or without, to be viewed from above, or below; or nature raiſed and improved, or altered for the better, or the worſe.—The caſe amounts to the ſame as the viewing of objects in a mirror; where, unleſs the form of the mirror be known, *viz.* whether it be plane, concave, convex, cylindric, or conic, *&c.* we can make no judgment of the magnitude, figure, *&c.* of the objects.

IT is beyond my purpoſe to enter into the nature of the ſeveral methods of compoſition above-mentioned: I ſhall only note, by the way, that the firſt writers in each marked and chalked out the meaſures of all that came after them.—The ſeveral manners of compoſing amount to ſo many *arts*; which, we have already ſhewn, are things, in great meaſure, perſonal, and depend on the genius or humour of the inventors.

WERE we to inquire who firſt led up the way of Dictionaries, of late ſo much frequented; ſome little grammarian would, probably, be found at the head thereof: and from his particular views, deſigns, *&c.* if known, one might probably deduce, not only the general form, but even the particular circumſtances of the modern productions under that name. The relation, however, extends both ways; and if we cannot deduce the nature of a Dictionary from the condition of the author, we may the condition of the author from the nature of the Dictionary. Thus much, at leaſt, we may ſay, that he was an *analyſt*; that his view was not to improve or advance knowlege, but to teach or convey it; and that he was hence led to untie the complexions, or bundles of ideas his predeceſſors had made, and to reduce them to their natural ſimplicity: which is all that is eſſential to a lexicographer. Probably this was in the early days of the Egyptian ſages, when words were more complex and obſcure than now, and myſtic ſymbols and hieroglyphics obtained; ſo that an explication of their marks or words might amount to a revelation of their whole inner philoſophy: in which caſe, inſtead of a grammarian, we muſt put, perhaps, a prieſt or myſtagogue at the head of Dictionaries.—Indeed, this ſeems the more probable, for that a grammatical Dictionary could only have place where a language was already become very copious, and many ſynonymous got into it; or where the people of one language were deſirous to learn that of another: which we have no reaſon to think could be very early, or till much commerce and communication had made it neceſſary.

WHEN a path is once made, men are naturally diſpoſed to follow it, even though it be not the moſt convenient: numbers will enlarge and widen, or even make it ſtraiter and eaſier; but it is odds they do not alter its courſe. To deviate from it, is chiefly for the ignorant, or the irregular; perſons who do not well know it, or are too licentious to keep it. And hence the alterations and improvements made in the ſeveral arts, are chiefly owing to people of thoſe characters. There is ſcarce a more powerful principle in nature than that of imitation; which not only leads us to do *what* we ſee others do, but *as* they do it. It is true, there are exceptions from every rule: there are perſons, in good meaſure exempted from the influence of this principle; and it is happy there are; witneſs our Paracelſus's, Hobbes's, Leibnitz's, *&c.* In effect, if an art were firſt broached by an happy genius, it is afterwards cultivated, on his principles, to advantage; otherwiſe, not: and it may wait long for the anomalous hand of ſome reformer, to ſet it to rights. Some of our arts have met with ſuch hands, others ſtill want them.

WERE we to give an abſolute and conſiſtent definition of a Dictionary; we ſhould ſay, "It is a collection of definitions of the words of a language."——Whence, according to the different kinds of words, and definitions above laid down, *i. e.* according to the different matter, and the different view wherein ſuch matter is conſidered, will ariſe different ſorts of Dictionaries: *grammatical*, as the common Dictionaries of languages; which, for one word, ſubſtitute another of equal import, but more obvious ſenſe: *philoſophical*, which give the general force or effect of words, or what is common to them in all the occaſions where they occur: and *technical*, which give the particular ſenſe attached to them in ſome one or more arts.

BUT, in truth, this is a little chimerical: though we have Dictionaries under all theſe titles, it would, perhaps, be hard to find any conformable to this partition; which is not ſo much taken from what really is, as what might, or ſhould be. Dictionary-writers are far from conſidering their ſubject ſo cloſely, or confining themſelves to ſo narrow, though direct a chanel: they muſt have more room; and think themſelves privileged by the general quality of lexicographers, to uſe all kinds of definitions promiſcuouſly. It is no wonder they ſhould not keep to views which they had not, and which could only ariſe from reſearches they never made. While the notions of *term* and *art* remained yet in the rubbiſh wherein they were left by the ſchoolmen, thoſe of *definition*, and *Dictionary*, muſt needs be vague, and arbitrary enough; and the Dictionariſts and Expoſitors profited by an embarraſs which it was their buſineſs to have removed. They have not only built on it, but improved it, by a continual varying and confounding of views, imperfect enumerations, *&c.*

IT is not to be imagined, what miſchiefs and inconveniencies have ariſen from this ſingle head; what great uncertainty it has introduced into language; and what an obſtacle it has been to the improvement thereof. It is certain it has, in great meaſure, defeated the intention of ſpeech; and turned knowlege, which that was to be the medium of, into jargon and controverſy. All the confuſion of Babel is brought upon us hereby; and people of the ſame country, nay the ſame profeſſion, no longer underſtand one another.—The effect is, that our knowlege is grown into little other than that of peoples miſunderſtandings or miſapprehenſions of one another; which is the only kind of knowlege that grows; and which will for ever grow; there being the ſeeds already laid of ſuch diſputes, as, according to the ordinary ſpreading of ſuch things, muſt overſhadow and ſtarve every thing elſe. If all men meant preciſely the ſame thing by the ſame name, there would be no room for their differing upon any point, either in philoſophy, or any thing elſe: there is no more poſſibility of ſeeing the relations of things to each other, differently; than of altering their nature, and overturning the ſyſtem. Relations of ideas are as immutable as the Creator's will.—Error, in effect, is no natural production; nor is there any direct way of coming at it: we muſt go about for it; and find ſome law of nature, to put it in our power. So that error is, in one ſenſe, truth, ere it take place; only it is not the truth it is taken for.

THERE are two manners of writing: in the one, which we may call *ſcientifical*, we proceed from ideas, and things, to words; that is, we firſt lay down the thing, then the name it is called by.—This is the way of diſcovery, or invention; for that the thing ought to be firſt found, before it is named. In this way, we come from knowlege to ignorance; from ſimple and common ideas, to complex ones.

THE other is *didactic*, juſt the reverſe of the former; in which we go from words and ſounds, to ideas and things; that is, begin with the term, and end with the explanation.—This is the hiſtorical way, or the way of teaching, and narration; of reſolving the extraordinary knowlege of one perſon, into the ordinary of another; of diſtributing artificial complications into their ſimple ideas; and thus raiſing, and levelling again, what art had erected.

THE Dictionary comes under the latter kind. It ſuppoſes the advances and diſcoveries made, and proceeds to explain or relate them. The Lexicographer, like an hiſtorian, comes after the affair; and gives a deſcription of what paſſed. The ſeveral terms are ſo many ſubjects, ſuppoſed to be known to him; and which he imparts to others, by a detail of the particulars thereof.—Indeed, the analogy between a *Dictionary* and a *hiſtory*, is cloſer than people at firſt ſight may imagine: the Dictionary relates what has paſſed, with regard to each of our ideas, in the coalitions or combinations that have been made thereof: its buſineſs is, to deliver the progreſſes made in the ſeveral parts of knowlege under conſideration, by an orderly retroſpect, and deduction of the terms, from their preſent complex, to their original ſimple ſtate. The Dictionary of an art, is the proper hiſtory of ſuch art: the Dictionary of a language, the hiſtory of that language. The one relates that ſuch an art, or ſuch and ſuch parts thereof, ſtand ſo and ſo; are manag'd ſo and ſo; and the reſult ſo and ſo: the other, that ſuch and ſuch a word is uſed as ſynonymous to ſuch and ſuch others. The Dictionary-writer is not ſuppoſed to have any hand in the things he relates; he is no more concerned to make the improvements, or eſtabliſh the ſignifications, than the hiſtorian to atchieve the tranſaction he relates.

THE difference between what we commonly call the *hiſtory of an art*, and a *Dictionary* thereof, is only circumſtantial; ariſing from the different views of the two ſorts of authors: the one chiefly regards the time and order, when each ſtep, each advance, was firſt made, *i. e.* how it ſtood with reſpect to ſuch and ſuch æra's, or periods of time; and might more properly be called the *chronology of the art*: the other, regarding chiefly the object or intention of the art, relates its preſent conſtitution, and how it proceeds to attain the end propoſed. You may add, that the former primarily conſiders what is paſt, or already advanced; the other, alſo what is preſent, or remains to be done: the one tells, *e. gr.* how Mercury, finding a dead tortoiſe on the ſhore, took its ſhell, added ſtrings to it, and made it into a lyre: the other, how a lyre is, or may be, made. And if you will likewiſe add this, that the hiſtory intermixes divers foreign and accidental circumſtances with the diſcovery, which the Dictionary abſtracts, and ſets aſide, and ſo reduces it nearer to ſcience, you will have the full and adequate difference between them. Thus the making of the firſt lyre is related with ſome circumſtances, which have no place in the proper ſtructure of the inſtrument, and are therefore to be omitted in the Dictionary, which only takes in what belongs to the art, or artiſts in general; not what belongs to ſome one of them.

THE whole, in effect, amounts to this, that the firſt time of doing a thing is related by the hiſtorian with the ſeveral particulars which in any-wiſe, though occaſionally only, and remotely, affected it: whereas the lexicographer, coming afterwards, keeps more cloſely and ſeverely to the point, and relates nothing but what is eſſential; *i. e.* the firſt time the thing is conſider'd as now ariſing; a new production or phænomenon, from ſome analogous principle; and therefore we attend to the foreign cauſes that brought it forth: whereas, afterwards, we conſider it as ariſing from a pre-exiſtent theory, or the preſcription of an artiſt, and thus reſolve the cauſe into the art itſelf.

ANY other difference which may ſeem to be between the two, is only as to more or leſs particular; which indeed is a thing that embarraſſes and amuſes us on many other occaſions: thus in mere civil hiſtories, if one relate the ſeries of a campaign, another the bombardment of a town, and a third the wounding and death of a general officer; though the latter ſubjects be only part of the former, yet the firſt will be ſaid to have compoſed a piece of *hiſtory*, the ſecond a piece of *fortification*, and the third a piece of *ſurgery*. And yet there is no other difference between them, than between the geography of a country, and the topography of a village, or a hillock, the hiſtory of a nation, and the life of a ſingle perſon.

TO ſay no more, the Dictionary of an art ſtands in much the ſame relation to the hiſtory thereof, that the hiſtory of a people does to the lives of all the conſiderable and active perſons therein. Their difference is only as to the point of ſight; the eye being ſuppoſed ſo near in the one caſe, as to ſee the parts diſtinctly; and in the other ſo far off, as to take in the whole completely: whence the one gives you all the incidents; the other only the greater. In effect, the one is all concerted to one point of view, moſt favourable to the whole, and the great parts; the other to many; the eye being ſhifted for each part, to furniſh an adequate repreſentation of each.

I am afraid to keep the reader any longer in this painful way of diſquiſition, wherein we are obliged to dig for every ſtep we take. It would doubtleſs ſeem a more agreeable, as well as more reputable employment, to be raiſing things on high, than thus engaged in ſinking, and working under-ground: a caſtle in the air is an object of pleaſure to every body, while it laſts; and withal is eaſily raiſed, and at ſmall expence. Mines, and ſubterraneous cavities, are mere drudgery, and pioneers work; difficult to carry on, dubious of ſucceſs, and overlooked when done.—Being therefore arrived near the ſurface, we take this opportunity to quit the courſe, and emerge to open air.

AFTER ſo ſevere an inquiry into the reaſon, nature, and perfections, of a Dictionary; it may prove dangerous and impolitic, to ſpeak any thing about the preſent one. From the deſign of a Dictionary in general, to the actual performance of any particular one, the ſtile muſt be much altered. A man would make fine work, that would examine the ſeveral Dictionaries extant, by the ſtandard here laid down: none of them could abide ſuch a trial; even that here offered muſt go to wreck, like the reſt.—It may be remembred, that the thing executed is allowed to come ſhort of the idea conceived: the former is only a copy of the latter, and liable to all the imperfections incident to other copies. A thouſand things interfere: lexicography, being of the nature of an art, deviates, of courſe, from the ſtandard of pure reaſon; and its productions come to degenerate ſtill farther, by the accidents that attend their bringing forth. The inſtruments, the materials, and forty things, come into the account: the former prove out of order; the latter obſtinate and untractable, or perhaps not eaſy to be had. In effect, the author's ſituation, his want of leiſure or perſeverance, his frailties and foibles, nay his very perfections, all conſpire againſt it.

INDEED a too ſervile attachment to the rules and methods of an art, in many caſes, proves incommodious and impertinent. We know, that the rules of an art are poſterior to the art itſelf, and were taken from it, or adjuſted to it, *ex poſt facto*. An author, therefore, is ſtill in ſome meaſure left to his own conduct, and may conſider himſelf as inveſted with a ſort of diſcretionary power, whereby he can diſpenſe with ſome of them, and go by others of his own ſuggeſting, where he apprehends it for the general advantage of his work. The heights of art are never to be reach'd by rule, but by genius; by reaſon the rules were accommodated to a certain concourſe of circumſtances, which rarely happens twice; ſo that laws ſhould be made *de novo* for every new caſe. While a perſon conſiders himſelf as following, at ſecond-hand, the meaſures pointed out and preſcribed by others; he will not go on with that ſpirit and alacrity, as when he follows his own bent. He ſhould therefore conſider himſelf in the place of the firſt inventor, or as his repreſentative, or ſucceſſor; and therefore qualified to enact with the ſame authority for the preſent occaſion, as he did for another.

WHEN a law is not founded on mere reaſon, as we have ſhewn is the caſe in art; the obſervation of ſuch law cannot be injoined on others. It may well obtain, with reſpect to the perſon that firſt eſtabliſhed it, as being accommodated to his particular genius, ſituation, and other circumſtances: but it cannot extend to thoſe in whom theſe conditions are different. Accordingly, few laws of art are univerſal. Small matter by what laws and preſcripts a people is guided, provided they be led on to happineſs; or by what courſe a veſſel ſteers, if ſhe do but make a proſperous voyage.

WITH this view, in the preſent work, we have taken all the advantages the nature of the thing would afford us; and have frequently made ourſelves delinquents againſt ſtrict rule, for our reader's benefit.—A Dictionary, by our own confeſſion, is to be a hiſtory; and yet we have not kept ſo cloſe to that form, as to abandon the benefit of all others. In the buſineſs of mathematics, for inſtance; the regular way would be to relate or enumerate the ſeveral matters belonging thereto, without inveſtigating or demonſtrating their truth: demonſtrations, ſtrictly ſpeaking, have nothing to do in a Dictionary, no more than authentic inſtruments, declarations, *&c.* in a hiſtory. To demonſtrate the ſeveral properties and relations, *e. gr.* of *lines*, *angles*, *numbers*, *&c.* in a Dictionary, were an indiſcretion as great, as for an hiſtorian to produce certificates, and copies of pariſh-regiſters, of the births, burials, marriages, *&c.* of the ſeveral perſons whoſe actions he relates.—And yet, on ſome extraordinary occaſions, we have not omitted to give demonſtrations; where, for inſtance, there was any thing very intereſting, or important in them: a practice like which hiſtorians themſelves frequently give into; though it be a confeſſed irregularity, as it breaks in upon the unity of the narration.

BUT we are far from the views of certain Dictionary-writers, who ſeem to think it incumbent on them to demonſtrate every thing that is capable thereof. This is directly to forget the nature of their work; and diſpenſe with the rules, both to their own and reader's coſt. How dear, *e. gr.* muſt a competent demonſtration of moſt of Euclid's propoſitions be here purchaſed? Either the reader muſt be at the pains of picking it piece-meal, out of twenty ſeveral parts of the book, where the alphabet has happened to caſt it; or the author muſt relinquiſh the Dictionary-method, and deliver things together, that properly belong to ſo many ſeveral places; or elſe there muſt be a repetition of the ſame thing a dozen times over. And for what? Why, to make the Dictionary do the buſineſs of an Euclid's elements; which it is the unfitteſt in the world for. You might, with equal propriety, make an ozier-baſket ſupply the office of a pleaſure-boat; or a ſword-pummel that of a portmanteau, as Paracelſus is ſaid to have done.

WHEN a thing has been once regularly demonſtrated, it may be aſſumed, or taken for granted: every body, perhaps, may be concerned in the truth of it, but not to ſee the truth of it. To make it a principle to take nothing on truſt, would be as troubleſome in the ſciences, as in life; and would render us, for ever, both wretched and ignorant. Not only ſuppoſitions, but even errors, frequently lead us to knowlege otherwiſe inacceſſible. Mathematicians themſelves, who, of all others, keep moſt to demonſtration, yet find themſelves under a frequent neceſſity of admitting and making uſe of things as true, which they do not then ſee to be ſo; and thus are ſwayed, like other people, by authority. A perſon who makes uſe of the equality of the ſquare of the hypotenuſe, to the ſquares of the two ſides, upon the credit of Pythagoras or Euclid's having demonſtrated it, does little more than what they themſelves do on many occaſions, who aſſume and make uſe of propoſitions they have no other evidence of, but the knowlege and remembrance of their having been demonſtrated.

THE caſe is much the ſame with *experimenting*, which ſtands on the like footing as demonſtrating. They are both neceſſary in their kind; the former, as it leads on our knowlege, the latter as it follows and ſecures the rear: but their uſe is to be reſtrained to theſe purpoſes; and may be diſpenſed withal, in caſes where neither of theſe are concerned. A perſon who would diſcover any point in phyſics, or broach and eſtabliſh any point in mathematics, muſt uſe them: but the occaſion is, in great meaſure, private and perſonal; and does not extend to the public, in the ſame degree as the knowlege of the doctrines themſelves. That is, the particular means by which a thing was firſt come at, or is ſhewn to be true, do not intereſt us ſo immediately as the knowlege of the thing itſelf, which might have ariſen from various other means, and in other manners: a man may know a thing in the way of *preſumption*, of *opinion*, of *ſurmiſe*, of *authority*, and forty other ways; which, though all much inferior, and leſs excellent than the way of *demonſtration* and *certainty*; yet we are glad of them on many occaſions, and uſe them to good purpoſe. Every degree of knowlege is valuable. It would be an unreaſonable,

able, as well as incommodious ſullenneſs in us, to refuſe all light, except that of noon-day. We find our eaſe and happineſs frequently depend on the doing of things by twilight, or even moon-light, or the ſtill more dubious light of a ruſh, or glow-worm.

PYTHAGORAS, in all probability, was not ignorant of the equality of the ſquare of the hypotenuſe, *&c.* before he demonſtrated it; elſe, what ſhould have led him to look for the demonſtration? And the like may be ſaid of many of Mr. Boyle's experiments. Plato even obſerves, that "the very putting a queſtion, implies "ſome knowlege of the thing demanded; ſince, without this, we ſhould not know that what is returned is an "anſwer."

LESS might have ſufficed, to ſhew why, in the courſe of this work, we have uſually omitted the apparatus of demonſtrations and experiments; and given the doctrines pure, and unincumbered by any thing not eſſential to them. The experiments, for inſtance, which led to the theory of light and colours, what would they be, but like the ſcaffolding before a fine building, which break and interrupt the ſight, and hide moſt of the beauties of the work? Such ſcaffolding, it is true, would be of uſe to the connoiſſeurs; who might have a mind to examine the work, to meaſure the proportions of the ſeveral parts, and inquire whether every ſtone were juſtly laid. But, to the generality, it would rather be an incumbrance, much to the diſadvantage of the edifice—Yet, in the caſe of experiments, as of demonſtrations, we have receded a little from ſtrict method, in favour of ſuch as have any thing very remarkable or beautiful in them. For the reſt, the reader, if his curioſity ſerve him, is told where to have them at firſt-hand.

IN the caſe of definitions, too, we do not keep inviolably to what has been above laid down, but reſerve to ourſelves the diſcretionary right claimed by our predeceſſors.—We make uſe, occaſionally, of all ſorts of definitions, as they beſt ſuit our deſign, the conveying of knowlege. In effect, we have uſually a regard to the degree of notoriety, importance, *&c.* of the term, though a point arbitrary and indeterminate enough; and endeavour to accommodate the explication thereto. The rule ſhould be, to ſay, *Communia proprie, propria communiter*; to expreſs common things ſo, as that even the learned may be the better for them; and the more abſtract and difficult ſo, as that even the ignorant may enter into them. Accordingly, in popular terms, we endeavour to give a technical definition, *i. e.* to wave the general and obvious meaning, which is ſuppoſed to be known, and enter farther into the nature of the thing, not known. But, in the more remote terms, the popular and nominal definition is alſo given, as being ſuppoſed there to be wanted.

THE literal and technical definitions of a term are lame and imperfect without each other; the firſt gives its uſe and effect, as part of general, or abſtracted ſcience; the ſecond, as applied to ſome particular ſubject.—The literal notion, *e. gr.* of *relation*, is that of "conformity, dependence, or compariſon of one thing to an-"other:" thus much is common to relation, both in grammar, logic, geometry, *&c. i. e.* it expreſſes this, both when applied to words, to propoſitions, to quantities, *&c.*—The technical notion of relation, in grammar, is "the dependence of words in conſtruction:" this makes the grammatical notion of relation, *i. e.* it limits, or ties down, the general abſtract idea of relation, to the particular ſubject of grammar, words. So, the technical notion of relation with regard to arithmetic, geometry, *&c.* is "the conformity or dependence between two or more "lines or numbers."

FROM the whole, it follows, that the two kinds of definitions differ as an art and a ſcience, as general and particular reaſon.—And hence, from the ſeveral technical or particular meanings, one might run back to the general, or literal meaning, by abſtracting, but not contrariwiſe, from the general or abſtract, to the particular ones; in regard thoſe other are arbitrary, and depend on the good pleaſure of the artiſt, who firſt introduced them.

IN ſtrictneſs, every term ſhould be firſt given in its literal or grammatical meaning; eſpecially if it be a term in ſeveral arts: as this helps to ſhew the orderly derivation of the word, from the ſimple or general idea that gave riſe to it, to its laſt, and moſt complex ſtate.—Yet we have not always kept to this method. In ſome words, there is much of the literal import of the word preſerved in the term, or the technical one; as in the word *free*, or *freedom*: a man who has a notion of *freedom*, in its common or literal ſenſe, will eaſily paſs on to all the particular ones, as *free city*, *free port*, *freedom of ſpeech*, *of behaviour*, &c. ſo that, in this caſe, a literal definition might almoſt alone ſuffice; the meaning of the word having ſuffered little alteration at the hands of artiſts.—In other words, the literal or primary import of the word is almoſt loſt in the term: for inſtance, in the word *power*, in arithmetic: which will ſcarce bear any tolerable definition at all. Literally, the word implies a relation of ſuperiority, or influence over ſomething, which, in reſpect hereof, is conceived as weak, *&c.* According to the analogy of language, therefore, the arithmetical power ſhould have ſomewhat of this relation of ſuperiority over the root: but the root itſelf is alſo a *power*: ſo that the definition of power muſt take in two oppoſite relations, *viz.* both power and ſubjection.

PERHAPS, to go on in the moſt regular manner, and take up things at their ſource, we ſhould begin with ſettling the etymologies of words: but the great alteration many words have undergone, and the great length they have been carried from their original meanings, in being borrowed from one language or age to another, would frequently make this not only a tedious, but an uſeleſs labour: ſo that here, too, we have uſed a diſcretionary power, and only meddled with etymologies, where they appeared of ſome ſignificance.

TO explain a term, as a term, we uſually expreſs the circumſtances wherewith it is attended, in the art to which it belongs, in their technical names. This is agreeable to the manner of artiſts, who, writing of their reſpective arts, uſe terms as common words, and ſuppoſe them to be known: and it is this that conſtitutes a technical explanation; not the giving the general effect or force, in ſuch words as may equally agree to all other arts.—And yet, in ſome caſes, we recede from this rule, particularly in divers of the lower claſſes of manual arts, and the ſtructure of ſome machines: thus, *e. gr.* in turnery, we make no difficulty, inſtead of *chuck*, to ſay a round piece of wood, *&c.* The reaſon is, that where the ſeveral ſubordinate terms of a definition are themſelves explained in their places, we may ſuppoſe them underſtood; but where the term defined is itſelf ſo low, that we do not go lower to define the parts couched under it; there we chooſe, as more intelligible, to ſubſtitute ſome more obvious name, or the general meaning of the word, for the term itſelf; and thus prefer the general or popular, to the technical definition.

FOR it is to be obſerved, that the Dictionary has its limits; it only carries matters to a certain pitch of ſimplicity, where we ſuppoſe people may take them up, and carry them farther as they pleaſe. We bring them into their ſphere, and ſo leave them. So much knowlege, *i. e.* ſuch a number of complex ideas, as we may preſume people uſually to have got in the common occurrences of life, we are willing to ſuppoſe, as a footing: where theſe end, our work is to begin, which is to take in the reſt.

IF at any time we explain a complex idea, which it may be ſuppoſed moſt people have formed; it is becauſe we think they do not take in all the ſimple ideas that go to conſtitute it: as in the caſe of *milk*, *blood*, or the like, where people are contented with two or three of the more obvious properties and phænomena, and ſlur over the reſt.—Thus, in milk, *whiteneſs* and *fluidity* are almoſt alone conſidered; and theſe, in the common opinion, conſtitute *milk*; ſo that whatever has theſe two attributes, comes in for the denomination *milky*. The texture and component parts of this milk, the manner of that fluid's being ſecreted, collected, *&c.* with the peculiar properties and virtues reſulting from all theſe, are left behind. So in *blood*, it is enough it be a rediſh, pretty compact, animal juice; when warm, fluid and homogeneous, *&c.* This is going a great way, and even Dictionaries ſeldom go farther: but, for the component parts, the *cruor* and *ſerum*; with the compotent principles of theſe, *viz.* the *oil*, *phlegm*, &c. their form, properties, *&c.* whence ariſe the craſis, colour, heat, ſpecific gravity, *&c.* of blood; Dictionary-writers do not ordinarily trouble themſelves.

IF, by the artifice above-mentioned, we get free of a vaſt load of plebeian words, which muſt have greatly incumbered us; the grammar and analogy of language diſengages us from a ſtill greater number of all kinds. The various ſtates of the ſame word, conſidered as it comes under different parts of ſpeech, and accordingly aſſumes different terminations, increaſes the liſt of terms immenſely: as, in *dark*, *darkneſs*, *darkening*; *project*, *projection*, *projectile*, *projective*, &c. which may either be conſidered as one and the ſame word, under different habitudes; in regard there is a common baſis of them all: or, as ſo many different terms; in regard every one takes in ſomething not contained in the other.—This latitude we make uſe of occaſionally; and either conſider the words this way or that, as ſeems moſt advantageous to our purpoſe. In ſome caſes, where the alteration is merely grammatical, we content ourſelves to explain them in one ſtate, *e. gr. ſheering*; and ſuppoſe the reader able, by grammar, to form the reſt, as *ſhorn*, &c. In others, where ſeveral particular ideas are arbitrarily ſuperadded to the word in one part of ſpeech, which do not belong to it in another, we there explain it in all: as *precipitate*, *precipitant*, *precipitation*, &c.

THIS gives an occaſion to mention a ſtrange kind of licence, frequently practiſed in our language. Though there be ordinarily a great deal of difference between the ſeveral ſtates or modifications of the ſame word, *e. g. reflecting*, *reflection*, *reflexible*, &c. the ſame as between the action and quality, the power and the exerciſe of it in this or that caſe, the cauſe and the effect; yet authors make no difficulty of uſing them promiſcuouſly; which would make downright nonſenſe, were the readers to keep to the ſtrict import of the word. But the truth is, they are not ſo critical about the matter: if the meaning come within their reach, they jump at it, and are glad to take it; without waiting to ſee whether it would reach them in its preſent direction, or whether it might not rather fall ſhort, or fly by them. What confuſion ſhould we make, even in our beſt and cleareſt writers, were we to reſolve not to underſtand them but according to the ſtrict rules of grammar, and not indulge them the liberty of uſing one word for another? In a thouſand caſes, the ſame idea is denoted by oppoſite terms: thus, we ſay, ſuch a medicine is good *for*, or *againſt*, the worms, plague, *&c.*

IT may be urged, that as cuſtom has authorized this latitudinarian practice, it is become of grammatical authority; and that as the licence is known, it cannot deceive us; ſince the readers are led, on ſuch occaſions, to relax the bands of grammar, aud annul the difference between words, in order to admit one a ſubſtitute for another.—But I am afraid this expedient ſcarce indemnifies us from the abuſe. Beſides the extraordinary embarraſs of reading what is thus promiſcuouſly written; it is not always we know when and how to ſuperſede the ſtrict import of an author's words, and make him ſpeak ſenſe in his own deſpite. This I take to be none of the leaſt occaſions of controverſy and diſpute owing to language, and which we may almoſt deſpair of ſeeing rectified, unleſs in a new one.

I ſhall not here enter upon the merits and defects of the Engliſh tongue, conſidered as a language: a great deal has been ſaid on that head by others, for which the reader may turn to the proper article in the Dictionary itſelf.—What we have to add, will be chiefly as it ſtands with regard to the arts, and more particularly to a Dictionary of arts.

I believe none will queſtion but we have met with difficulties enough in the courſe of this work. The very bulk and dimenſions of it confeſs as much, and the variety of its matter ſtill more. But theſe were natural difficulties, appendant to the very deſign; and therefore did not afflict us ſo much as ſome others, which aroſe from it at ſecond-hand, or were ſuperadded to it, as it were, by accident. And ſuch was the preſent ſtate of our language, which alone were ſufficient to have baffled the beſt ſcheme, and broken through the beſt meaſures, that could be formed.

WE have already repreſented language as ſomething very important; and as having a near and neceſſary intereſt in knowlege. *Names* are ſolemn things, as they are repreſentatives of ideas themſelves, and uſed on moſt occaſions in their ſtead; and *terms*, or combinations of ideas, are ſtill more ſo; as much as complex engines are of farther and nicer conſideration than the ſimple mechanic powers. But who would imagine this, to conſider the wanton uſe we make of them; and with how little fear or diſcretion words are treated among us? Every body thinks himſelf privileged to alter, or ſet aſide, the old, and introduce new ones at pleaſure. England is open to all nations; and our traders in this commodity import their wares from every country, in all ſecurity. The humour of importing ſeems to have poſſeſſed every part of us: we are not only unwilling to be without the natural produce, the faſhions, and the follies, of our neighbour countries; but we even envy them their words and phraſes. The effect is, that our language continues in a perpetual flux; and no body is maſter of is for two days together.

A man never knows when he is at the end of the terms, *e. g.* in architecture. When he has got two or three names for ſome one member, and thinks himſelf over-ſtocked, it is odds he has not half. It is not enough he knows what the thing is named in Engliſh; but he muſt likewiſe learn what the French, Italians, Latins, and Greeks, likewiſe call it, or frequently find himſelf at a ſtand. Thus it is in the caſe of *fillets*, *liſts*, *liſtels*, *reglets*, *platbands*, *bandelets*, *tænia's*, and *baguettes*; of *chaplets*, *aſtragals*, *batoons*, and *tores*; of *gula's*, *gueules*, *doucines*, *cyma's*, *cymatiums*, *ogees*, and *talons*; *ovums*, *ovolo's*, *echinus's*, *quarter-rounds*, *boultins*, &c. between which, there are no known, allowed differences; but they are either uſed indiſcriminately, or diſtinguiſhed arbitrarily; one perſon making this diſtinction, and the next another, or perhaps none at all. So that if we come ſtrictly to Dictionaries, we ſhould have a different one for every author.

BUT the miſchief does not end here: for as the antient arts are, in many reſpects, different from the modern; the uſe of their terms neceſſarily involves us in a new confuſion, and makes the ſame word ſtand in an antient author for one thing, and in a modern for another. Thus it is in *paraſtata*, *orthoſtata*, *anta*, &c. In effect, there is that alteration continually making in the language of architecture, that there ought to be a different Dictionary of it for every different age.

THE truth is, a fourth part of the words, in ſome of our popular Dictionaries, ſtand on no better authority than the ſingle practice of ſome one fanciful author; who has met with Dictionary-writers fond enough to take his frippery off his hands, and expoſe them to the public for legitimate goods. By ſuch means theſe exotics have obtained a kind of currency; ſo that a Dictionary would be thought defective without them. To omit even our fopperies, would be thought a failing; and might even be eſteemed, by ſome, as the moſt unpardonable of all.—On theſe accounts we have been obliged to temporize a little, how much ſoever againſt the grain; and thus, perhaps, have contributed to the ſtill farther eſtabliſhment of a number of words, which we had much rather have proſcribed.

UPON the whole, nothing could be more deſirable than an *index expurgatorius*, to clear the language of ſuperfluous words and ſynonymons; to expunge the modern French and Italian terms in the ſeveral arts, where we have Latin and Greek ones; and even the Latin and Greek ones, where we have Engliſh or Saxon ones, equal in ſound and ſignificancy. I think the learned languages ought to have the preference to the modern, becauſe every perſon may be ſuppoſed to have read, but not to have travelled; and our country words I would prefer to any others, becauſe there is the moſt analogy between them, and they uſually retain more of the origin and etymology, than thoſe tranſplanted from other languages.—Such a reform would reduce our dictionaries to more reaſonable dimenſions; and diſencumber the arts of half the difficulty now to be ſurmounted in attaining them.

BUT there is another ſpring of words no leſs prolific than that hitherto ſpoken of, and which has produced a ſwarm of ſpurious, mis-ſhapen words, which no nation but our own would have owned; I mean the itch of coining, or making, Engliſh words, by a ſort of analogy, from the Latin and Greek ones. This fault the tribe of lexicographers have carried to a ſtrange exceſs. How muſt a man ſtare, to ſee what deteſtable ſtuff ſome late writers of that claſs have furniſhed us with; words of their own manufacture, ſcarce fit to do any thing with, except cure agues! Witneſs *ſcopuloſity*, *ſiticulous*, *ſcatebroſity*, *ſiccific*, *pugnacity*, *ſegnity*, *ſputative*, *mulieroſity*, *mugient*, *faſtuouſneſs*, and many thouſand more, at the reader's ſervice, to be met withal in a dictionary which few people are without. We are already over-run with this writer's ſcarecrows: what ſhall we be, when, having thus anglicized all the Greek and Latin words, he proceeds to do the ſame with the Dutch, Iriſh, and Welſh? Indeed I am the leſs angry with him, for that he has carried the abuſe ſo far, as muſt not only ſave people from being ſeduced, but bring the practice into contempt: ſuch monſters cannot poſſibly live long; if they have eſcaped the midwife, who ought to have ſtrangled them ere they came to light, yet, if ever they ſtir abroad, they muſt infallibly be knocked o'the head.

HOW oddly will our practice in this reſpect look, when confronted with that of our neighbours? One of the moſt learned men, and beſt critics, of the laſt age, M. Menage, incurred infinite cenſure, for only endeavouring to introduce the ſingle word *proſateur*, and could not ſucceed in it; notwithſtanding that a word of that import was confeſſedly wanting in the French, and both the ſound and analogy of the new word were unexceptionable.

TO return — The different ſtates of different arts is remarkable: ſome of them have been refined to a degree of ſubtilty that has ruined them; as metaphyſics, and logics: others have ſcarce had any culture, but lie waſte and over-run for want of it; as agriculture, *&c.* The groſſneſs of ſome is their fault; it being ſuch as diſguſts and forbids a delicate mind from purſuing them: in others, their ſubtilty and nicety is their bane, as leaving nothing for the mind to feed on. What meagre fare, for inſtance, are the ſchool rules, and doctrines of *mediums*, and *extremes?* &c. They furniſh us, indeed, with relations, and true relations too: but theſe ſo remote from all purpoſes of life, that they are in great meaſure inſignificant.

IT is certain, all our knowlege and arts ultimately refer to the great end of preſervation. The faculties of the mind, like thoſe of the body, were not given us for the mere exerciſe, or gratification, of them, but in ſubſerviency to further purpoſes. Our knowlege is all originally a ſort of revelation; and the Divine Being reveals nothing to us for the mere vague ſake of our knowing it, but that it may miniſter to his ends, the being and well-being of his creatures. Our perceptions and notices are ſecond cauſes, or at leaſt occaſions, of what we do; and, no doubt, are under the direction of him for whom we do, whoſe glory is ſerved thereby. In reality, they all centre and terminate, at laſt, in our preſervation; and, according as they are farther from, or nearer to, this point, they are found fainter or ſtronger; very near, they are palpable and cogent; as they recede, they continually abate of their clearneſs and evidence; and when arrived at a certain diſtance, they dwindle to nothing, and are loſt. At a great height from this centre, the nexus, or chain, whereby things are held together, and in virtue whereof we conclude from things known, to things unknown, becomes inſenſible; ſo that we loſe our hold, and wander on we know not where. Our faculties here faulter; the objects they meet with are inadequate to them; the air grows too thin for reſpiration. But where we leave off, there, poſſibly, ſome ſuperior order of beings may take it up.

IN effect, the ſeveral arts have been cultivated to more or leſs purpoſe, as our preſervation is more or leſs immediately intereſted in them: and by this key one might almoſt venture to judge which arts are capable of being carried ſtill farther, and which not.—Our knowlege of *very great*, and of *very little* things, is very imperfect, *e. gr.* of very great and little *objects*, *diſtances*, *ſounds*, &c. And the reaſon, no doubt, is, that there is but little relation between us and them; ſo that we are but little intereſted in the knowlege of them. Thoſe things we have neceſſarily and immediately to do withal, are made to our reach: for the reſt, it is no great matter what they are.

AND yet our curioſity has found means of making even theſe more cognizable than otherwiſe they are: we can, in ſome meaſure, alter the eſtabliſhed relation between our faculties and their objects, and make uſe of one law of nature to undo, or ſuperſede, another.—Thus we can magnify a little ſound, or little body, or a little diſtance, *&c.* or we can diminiſh large ones; and thus make things, in ſome meaſure, adequate objects, that naturally are not ſo.

BUT there is no great advantage in this: we only, by theſe means, come at a better apprehenſion of things which nature ſeemed to put out of our way, for no other reaſon but becauſe they did not concern us, leſt we ſhould be engaged to miſtake, and run after things we had no buſineſs with, to the neglect of thoſe with which we have.—Thus anatomy is found of leſs uſe in phyſic than at firſt ſight one would imagine; as being employed in taking things aſunder, and conſidering them in parts, which nature intended to act in conjunction. There is I know not what ſecret law, whereby the effect of a thing is, as it were, annexed to its integral ſtate; ſo that in proportion as you either diminiſh it, or enlarge it, its effect is altered, in a manner beyond what we can well account for, from the bare conſideration of magnitude.

ABUNDANCE of the leſs uſeful notices we find were kept back, and left to be accidentally turned up in courſe of time: ſuch as the knowlege of optic glaſſes, and their effects—This affords an illuſtration of the goodneſs of nature, in contriving, that things moſt uſeful and neceſſary ſhould be moſt obvious, ſo as to be almoſt diſcoverable by a ſort of inſtinct; and the other leſs immediately uſeful ones left to be accidentally turned up in the courſe of experiment and diſquiſition. We may admire her wiſdom ſtill farther in this, that ſhe ſhould, as it were, go out of her way, and annex a ſort of pleaſure beyond her main purpoſe, to the knowlege even of things not immediately uſeful, in order to engage us to induſtry and activity. This ſhews that ſhe has ends to ſerve by that very activity; and, perhaps, is the beſt demonſtration in the world of the neceſſity we are under to purſue knowlege; and may raiſe a ſuſpicion, that this very purſuit may poſſibly contribute to our preſervation, in ſome farther manner not yet attended to.

'TIS no wonder the ſchool-philoſophy ſhould be carried to ſuch a length, conſidering the narrowneſs of its object, and the great number of hands to cultivate it, for ſo long a time. Its chief employment is in aſſigning and enumerating the characters and differences of our perceptions, taken as they are excited in us in the natural courſe of things; by which it is diſtinguiſhed from the modern philoſophy, which is chiefly employed in means to vary and modify theſe perceptions; and thus find out farther relations and differences than would otherwiſe have appeared.—The philoſophers of the former kind are contented to take nature as ſhe comes home to them, and apply their reaſonings thereto without more ado: thoſe of the latter go out in queſt of her, to have more matter to reaſon upon.—The former are more contemplative, the latter more active; the former, in fine, reaſon, abſtract, and diſcourſe, more; the latter, obſerve, try, and deſcribe, more.

HENCE we diſcover why the old is much more perfect in its kind than the new. The former has little to do but compare, order, methodize, &c. what is ready at hand; the latter has likewiſe to *find*. After which, all the labour of the other ſtill remains. The former takes nature in all her ſimplicity; the latter adds art to her; and thus brings nature into conſideration in all her diverſity: the former chiefly conſiders natural bodies in their integral ſtate; the latter divides and analyſes them: ſo that the former finds moſt of the principal relations; the latter many more curious and amuſing ones.—Hence the former haſted to its perfection, and could not long hold out, for that its matter was limited: the latter can ſcarce ever arrive at perfection, ſince experiments are endleſs. To ſay no more, to have philoſophy complete, we ſhould have the order, preciſion, and diſtinctneſs, of the old; and the matter, the copia, of the new.

THE modern is yet wild, and unaſcertained; 'tis not arrived at the maturity of method; the mine is but juſt opened, and the adventurers are chiefly ſolicitous about the matter, to ſee what it affords; it will be long ere it arrive at a juſt extent, to give room and leiſure for reducing it to regularity: not but the rules and methods of the antients are, in ſome meaſure, applicable to the new, and will go a good way towards the arranging it; but the preſent philoſophers ſeem too warm and ſanguine for ſuch a buſineſs; and the farther they go on to dig materials, ſtill the more difficult will the ranging of them be.—This a man may be poſitive of, he never will ſee half the experiments and obſervations already made, employed in a ſyſtem of phyſics.

BUT when that is done, a deal will ſtill remain ere we have the chief uſes of it. For phyſical knowlege, ſtrictly conſidered, is only a means of arriving at an higher and farther kind.—Hiſtories, obſervations, and experiments of the kinds, order, ſtrata, &c. for inſtance, of foſſils, are uſeful things, as they tend to lay in a ſtock of ſenſible phænomena for the mind to work upon, digeſt, and draw new notices from, for the improvement of our own faculties, and the better conduct of life: but it is ſhort-ſightedneſs to forget this farther view, and look only to the things themſelves. The bare acquiſition of new ideas is no real advantage, unleſs they be ſuch as are adapted to the circumſtances of our wants and occaſions, or capable of being made ſo. Knowlege in its firſt ſtate, is like food in the ſtomach, which may pleaſe and ſatisfy us, but is of no uſe to the body till farther prepared: it muſt be carried farther, and aſſimilated, ere it feed us.—The modern philoſophy is not ſo properly a philſophy, as the adit, or opening, of one: its matter has yet only undergone the firſt concoction: we are yet chiefly converſant about new phyſical relations, learned by ſenſation; whereas, to bring it to the perfection required, it muſt have undergone the farther operations of imagination and reaſon. Mere phyſics, as ſuch, do not make a philoſophy; thoſe phyſics muſt firſt be carried up to metaphyſics, and ethics, ere we can juſtly ſtop.

SENSIBLE phænomena, we have already ſhewn, are the foundation of philoſophy; but the edifice will neither make any figure, nor afford much convenience, till it be carried one or two ſtories higher; 'tis but, as it were, the cellaring, or ground-work; which one would think were no very comfortable place to live and ſpend one's time in: 'tis one extreme to take our lodging, as ſome virtuoſo's are contented to do, under-ground; and another, to reſide altogether in the garrets, as the ſchoolmen may be ſaid to have done.

THE ſchool-philoſophy, however, is of ſome farther uſe, as matter of hiſtory: we learn by it how people have thought, what views have obtained, and in what various manners the ſame thing has been conceived; which, though it be knowlege, as it were, once removed, yet is not intirely uſeleſs. The hiſtory of human thoughts is, no doubt, the moſt valuable of all others; it being this alone that can make the baſis of a juſt logic; as phyſiology, of juſt phyſics. We muſt know wherein people have failed, or fallen ſhort, or been deceived, to learn the reaſons thereof, or be able to form rules for avoiding the like. The ſeveral opinions that have obtained, may be conſidered as ſo many phænomena of the human mind, which muſt be conſidered, and inquired into, to find its nature.—This alone were enough to have engaged us not to omit that part of learning in the preſent work: though there were not wanting other circumſtantial reaſons, which had alſo their ſhare; as the neceſſity hereof to the underſtanding, not only of the antient writers, but even of the modern ones, who frequently combat, remark, &c. upon the antient notions. To which it may be added, that abundance of our terms and phraſes are derived from them, and therefore could not be ſo completely underſtood without them.

THE language of the antient and modern philoſophy is not very different: the chief diverſity is in the different ideas affixed to the ſame words, and the different applications of them. And happy had it been for the moderns, had they formed a new ſet of terms, adapted to their new notions! By adopting the old ones, they have not only introduced much ambiguity and confuſion, but have even loſt the credit of many of their own diſcoveries, which now lie blended and buried among thoſe of the antients. One is at a loſs to think what could induce the great philoſopher of our age to retain the word *attraction* in the ſenſe he has done. The ſtamp and impreſſion it had already taken from the antients, made it leſs fit to receive a new one; it could, at beſt, but take it imperfectly; and the reſult was, a promiſcuous image, wherein we neither ſee the old nor the new diſtinctly. 'Tis difficult for the imagination totally to diveſt a ſound of its received meaning, and conſider it as indifferent to all things, as much as it is to annihilate the characters on a piece of paper, and conſider it as a mere blank. Accordingly, though the great author above-mentioned explained over and over, in the cleareſt terms, the ſenſe he affixed to his *attraction*, yet experience verifies how much he was overſeen; the chief objections againſt his whole ſyſtem having been drawn from miſapprehenſions of this very word, which keep half the philoſophers in Europe ſtill at a diſtance, afraid to admit a moſt excellent doctrine, merely out of diſtruſt of the vehicle by which it is conveyed. But this by the way—The reader who deſires to ſee farther, may turn to the articles Attraction, Newtonian Philosophy, Gravitation, &c.

WHAT has been ſpoken of the ſchool-philoſophy reminds us of *aſtrology*, the terms whereof are not omitted in this work.—Were it only that it once obtained, is ſtill extant in books, and has given occaſion to abundance of terms and phraſes adopted into other arts, it would have a title to be remembred.—"The hiſtory of mens "follies, ſays the inimitable Fontenelle, makes no ſmall part of learning; and, unhappily for us, much of our "knowlege terminates there." But this is not all; and they who abſolutely reject all aſtrology as frivolous, do not know it. Every art and ſcience has its vanities and foibles, even philoſophy, mathematics, and theology; and every one its good ſenſe, even aſtrology. The heavenly bodies have their influences: the foundation, therefore, of aſtrology, is good; but thoſe influences are not directed by the rules commonly laid down, nor do they produce the effects uſually attributed to them; ſo that the ſuperſtructure is falſe. Aſtrology, therefore, ought not to be exploded, but reformed. Indeed a reformation would reduce it into a little compaſs; but this little is too much to be loſt, as it now is, among the heap of trumpery mixed with it.—We have even been careful to preſerve what is juſt and rational in the doctrines of *phyſiognomy*, *witchcraft*, and many other fanciful arts. The time was, when phyſics was not much more worthy the ſtudy of a man of ſenſe, than aſtrology now is; ſo that one might propoſe an *introductio ad ſanam aſtrologiam*, as a deſideratum.

OUR Preface ſeems now grown into a Diſſertation in good earneſt: enough has been diſcourſed of the general nature and ſubject of the work; allow me now to deſcend a little more to particular and perſonal matters, and thus end my preface, where I need not have wanted precedents for beginning it.

WHAT has been ſaid hitherto, has been on the advantageous ſide of my work: to acquit myſelf to the reader, it will be neceſſary I turn the medal, and repreſent ſome things which appear on the contrary ſide.——The book, in reality, is not without conſiderable failings, of more kinds than one.—The curious reader muſt expect he will here meet with omiſſions, and there with redundancies; here the method and œconomy are not kept to; there an article is imperfectly treated: here, a paſſage from ſome other language is not ſufficiently naturalized; there, a ſentiment of ſome other author is not ſufficiently digeſted: here, in fine, the author was overſeen, and there the printer.

ONE might palliate theſe objections, by alleging, that "they are things not peculiar to this work, but extend to all the kind; that moſt of them ariſe, of neceſſity, from the very nature and form of a Dictionary; and that many of them are not peculiar even to a Dictionary, but are found in all extenſive undertakings, and are appendant to the very beſt part of the deſign, its univerſality." But, inſtead of extenuating, I had rather be taxed with inflaming and aggravating.

FOR *errors*, they cannot be very few, conſidering the hands through which moſt parts of our knowlege have paſſed, and from whom we are obliged to take many of our accounts! What one author, upon the narroweſt ſubject can be produced, that has not his ſhare of them? And what Argus could poſſibly ſee and correct the overſights in all the authors he had to do with? Scaliger, in his exercitations againſt Cardan, has ſhewn ſome twenty thouſand in one ſmall work; and no one imagines he has picked it perfectly clean. Yet Cardan was no ill author. Bayle's chief deſign in compoſing his dictionary, was to detect the errors in Moreri; which he ſucceeded in ſo well, that his book has been called the *errata of Moreri*'s. Yet is not Bayle himſelf without his errors: a late writer has diſcovered ſome twenty-five in a ſingle article of not quite ſo many lines.—F. Hardouin, in the preface to his *Nummi Antiqui Populorum & Urbium*, ſays, it may be called *Errata Antiquariorum*; and yet M. Vaillant ſpied not leſs than three hundred errors at the firſt reading it over. So eaſy a matter is it to diſcover faults in others, and ſo difficult to prevent them in ourſelves! The moſt learned Dr.***** who offered to point out five thouſand faults in the Lexicon of Heſychius, has been charged with committing forty-ſix in his emendations of the firſt book of Horace's *Odes*, beſides ninety in the notes.

NOTHING of this kind can appear ſurpriſing, when we conſider on what a multitude of ſides a man is acceſſible to error! An author we truſt to, deceives us—our own judgment betrays us—our attention leaves us for a moment—our very eyes and hands play us falſe—or, ſuppoſe we eſcape all theſe ſnares: an amanuenſis ſhall bring us into the ſcrape; or, if we get clear here too, we are in imminent danger of miſcarrying in the printer's hands.

IN a work of any conſiderable extent, and variety of matters, it ſeems impoſſible not to err. All the qualifications requiſite for a faultleſs writer, ſcarce ever concurred in a more ſignal manner than they did in Joſ. Scaliger, whoſe book *de Emendatione Temporum* is one of the top performances in the whole compaſs of literature. Yet has F. Petau diſcovered, at leaſt, a thouſand ſlips in it!—Who then can be ſafe? He only who writes nothing, or next to nothing. If a Baronius will compile *Annals*; Du Pin, a *Bibliotheque*; or Baillet, *Jugemens des Savans*; what triumphs do they prepare for future Pagi's, Simons, and Menages?

THE moſt we can ſay, is, that we hope there will be few errors found in the preſent work, in compariſon with others of the like kind: many thouſands we have corrected, both in the Dictionaries and other writings we have collected from, by means of the light which other parts of knowlege afforded: but after ſo large an harveſt, no doubt, there remains a ſufficient gleaning. We flatter ourſelves, however, that what we have overlooked, the reader will frequently be enabled to correct, by the means here afforded; and that there will not be many errors found in the book, which the book itſelf will not help to rectify.

AS to *omiſſions*, there is ſcarce any avoiding them; and the more intelligent the reader is, the more of this kind he will neceſſarily diſcover. Indeed, I muſt own myſelf greatly a debtor on this ſcore; and though at preſent inſolvent, yet if the reader will give me credit, it ſhall be my endeavour to ſee all I owe diſcharged: if not in a lump, yet by a courſe of payments.

FOR *redundancies*, people will hardly be agreed about them. After one man has picked what he thinks fit of this kind, and laid it by, 'tis odds but a ſecond taxes his temerity, and want of taſte, and reſtores half of them to their places; and a third will, perhaps, be tempted to replace the remainder.

AS to *irregularities*, and breaches of method, I will not claim impunity on the ſcore of being the firſt that has attempted to introduce any certain rules or method into this way of writing: but there will be, at leaſt, this peculiarity attending my caſe, that I cannot eaſily be indicted for the breach of any laws but my own.——I am ſenſible, however, there is no point I have been more delinquent in, than this of method: and that the references, and neceſſary connexions between the parts, which ſhould ſhew their relation, and help to put them together, are but too frequently either dropt, by which the reader is left without his clue; or miſplaced, by which he is put on a wrong queſt.

THE *references*, it may be neceſſary to obſerve, are of two kinds; the one *real*, which directs to ſome other article, wherein the matter in hand is further explained; the other *grammatical*, or *verbal*, ſerving to indicate ſome particularity relating to the name; *e. gr.* ſome ſynonym, paronym, oppoſite, etymon, or the like. The uſe of the former is palpable, as they are converſant about the relation of *things*; that of the latter is more obſcure, as dealing only in the relations of *words*: yet are theſe as eſſential to the work, conſidered as a Dictionary, as the others are to it, conſidered as a body, or ſyſtem.

AS to *jejuneneſs*, and crudity, no doubt, there muſt be a deal of that kind, conſidering the ſhort time ſo great a load of fruit had to hang and ripen. Much of it was gathered ere it could poſſibly be matured; ſo that it is no wonder it now-and-then taſtes of the wood. But ſetting aſide this; if a man may not be allowed to ſay a good number of but indifferent things in the compaſs of five hundred ſheets, I know not who would be an author.

LASTLY, as to there being little *new*, and of my own growth, I muſt here change my ſtyle; and, from confeſſion, turn to vindication.——The work is, what it ought to be, a *collection*; not the produce of one man's wit, for that would go but a little way; but of a whole commonwealth. If any perſon will undertake to write a Dictionary, even of ſome one particular art, from his own fund alone, a man may ſafely venture to foretel, that it will not be good for much.——I do not pretend to entertain my gueſts at this rate, with juſt what my own ſcanty granaries afford: the whole country is ranſacked to make them the fuller banquet. Nobody that fell in my way has been ſpared, antient nor modern, foreign nor domeſtic, Chriſtian, nor Jew, nor Heathen: philoſophers, divines, mathematicians, critics, caſuiſts, grammarians, phyſicians, antiquaries, mechanics, have been all brought under contribution.

NONE of my predeceſſors can blame me for the uſe I have made of them; ſince it is their own avowed practice. It is a kind of privilege attached to the office of lexicographer; if not by any formal grant, yet by connivance, at leaſt.——I have already aſſumed the *bee* for my device; and who ever brought an action of trover or treſpaſs againſt that avowed free-booter?

'TIS vain to pretend any thing of property in things of this nature. To offer our thoughts to the public, and yet pretend a right reſerved therein to one's ſelf, if it be not abſurd, yet it is ſordid. The words we ſpeak, nay, the breath we emit, is not more vague and common than our thoughts, when divulged in print. You may as well prohibit people to uſe the light that ſhines in their eyes, becauſe it comes from your candle: e'en clap it in a dark lantern, and let us not be amuſed and dazled by it: if we may not be the better for the good things, let us not be the worſe for the ill and indifferent ones mixed with them.

WE ſee the ſame thought, which was firſt ſtarted in one author under a world of crudity, borrowed by another, become farther improved, and ripened; and at length, being tranſmitted to a third, yield fruit in abundance. All plants will not thrive in all ſoils that will produce them; ſome languiſh in their mother beds: whence the gardener is under a frequent neceſſity of replanting, *&c.*

SOME perſons, I know, condemn all uſe of Dictionaries, abridgments, and compilations whatever. The Scaligers, Salmaſius's, Huets, and other critics, proteſt againſt every thing that may tend to facilitate and ſhorten the courſe of ſtudy, as it tends, at the ſame time, to leſſen diligence and application, to exempt men from the neceſſity of going to the fountain-heads, and thus renders them ſuperficial. What we attain eaſily, ſay they, is loſt again as eaſily: one of the chief fruits of ſtudy is, to enure men to labour and attention: what room is left for the judgment to act, where every thing is methodized, and laid in order? what occaſion for the memory, where a man can immediately have recourſe to every thing he wants? and who would burden his head with a ſtock of knowlege, which he can always keep by him on much eaſier terms? It is added, that the exact and profound learning of the antient writers was chiefly owing to this, that they had no ſuch helps; which obliged them to go painfully to the ſources, and ſtudy their authors at firſt hand.

THIS is the common ſtile of men of the firſt-rate erudition; and were it only directed to thoſe who aſpire to the ſame rank with themſelves, it would undoubtedly be excellent. He who pretends to have a ſeat on that bench, muſt go to work the ſevere way: he muſt not ſtudy, *e. gr. antiquity*, in Dictionaries, or even in modern Syſtems, but in the antient writers themſelves; the *Jewiſh* antiquities, for inſtance, in the books of the Old Teſtament, Philo, Joſephus, the Talmud, Maimonides, and the Rabbins: the *Grecian*, in Homer, the antient tragedians, Ariſtophanes's comedies, Diodorus Siculus, Pauſanias, Athenæus, and others: the *Roman*, in Livy, Dionyſius Halicarnaſſeus, and other antients in both languages; the *Chriſtian* in the Acts of the apoſtles, and the Greek and Latin fathers.——These he is to be reading night and day, in order to arrive at the right underſtanding of them, meditating, and making frequent reflections on them, ſtriving to penetrate into all their views; maturely weighing all the circumſtances in them; and, laſtly, comparing all with the hints, remarks, and improvements, ſuggeſted in the writings and comments of the more learned among the moderns.

ALL this, no doubt, is excellent.—But it is not many ſubjects or branches of ſcience that a man can thus go through! And the greater part of mankind conſiſts of ſuch as are not enough intereſted in any one, to be ſolicitous about ſo thorough and profound a knowlege of it.—Add, that thoſe who do, are forced, on many occaſions, to make uſe of Dictionaries, and other helps; and that thoſe who ſpeak moſt contemptuouſly of them do the ſame, oftener than they care to own it.

IN reality, a reduction of the vaſt bulk of univerſal knowlege into a leſſer compaſs (as I have elſewhere had occaſion to obſerve) is of no ſmall advantage to all thoſe concerned in the acquiſition of learning, that is, of all perſons in general: for I know of no rank, condition, or even ſex, that is diſpenſed from the neceſſity of cultivating and improving their own minds. By means hereof a ſtock of knowlege becomes attainable on eaſy terms, ſufficient for the purpoſes of moſt perſons, except thoſe who make learning their more immediate profeſſion; and for thoſe too in moſt parts of ſcience, except that which makes their immediate province. Such a deſign may perhaps ſeem moſt adapted to the uſes of men of buſineſs, who cannot ſpend a deal of time; or of men of pleaſure, who do not care to be at ſuch pains in the purſuit of knowlege: but it would be no leſs advantageous to men of letters and ſtudy, whatever faculty or branch of ſcience they devote themſelves to; ſince Polymathy, or a general acquaintance with all the reſt, is indiſpenſably requiſite to arrive at an excellency in any one, by reaſon of that near connexion which is between the ſeveral ſciences, and the mutual lights they afford each other. And what a vaſt career does this open? what a multitude of books and ſubjects will they have to make their way through; and what helps are not requiſite to facilitate ſo laborious a courſe? Without theſe, either a man's whole life will be in danger to be ſpent in preliminaries, and preparing himſelf for his province, or he muſt reſolve to ſet out with leſs ceremony, exclude the numerous kindred ſciences out of his ſcheme, and retrench himſelf within the narrow limits of a ſingle one. This, it muſt be owned, is but too often done, to the no ſmall diſhonour both of learning itſelf, and of thoſe who cultivate it. By this means the ſciences become cantoned out into ſo many ſeparate diſtricts, and the due communication between them is cut off; by which each is defrauded of the improvements which might be derived to it from the reſt. Hence, in great meaſure, the inferiority of the modern authors to the antient. A narrow compaſs of knowlege, it is certain, will not enable a man to write with that dignity and maſterhood, which is found in moſt of the antient writers; who, beſides the particular ſcience they wrote on, were converſant in all the reſt. Thoſe who have the leaſt acquaintance with the antient method of ſtudy, know how ſevere they were on this head: a man was not allowed to be an orator, hiſtorian, poet, grammarian, or even architect, or muſician, much leſs a philoſopher, without the whole circle of ſciences.—The ſame we ſtill find inſiſted on as neceſſary by later writers, though the difficulty of arriving at it is ſo much increaſed, and the modern *Cyclopædia* become ſo vaſtly more extenſive, as well as intricate, than the antient. How many new arts and ſciences, and new appendages of old ones, come under conſideration among us, that the antients overlooked? How many languages, living and dead, is a modern obliged to learn, when a Roman or Athenian was thought ſufficiently furniſhed with one, or two? And how many difficulties have we to ſtruggle withal in the acquiſition of their ſciences; the antient chronology, for inſtance, geography, or the like; from which they were free? We charge ourſelves with the knowlege of their affairs, as well as our own; ſtudy minutely not only their ſciences, but their moſt indifferent actions and cuſtoms, and their very words and phraſes, which with us make ſpacious fields of learning, under the denomination of *antiquity* and *philology*. The dilemma then is apparent; either our talents and application muſt be greater, or our lives muſt be longer than thoſe of the antients; or elſe our proficiency muſt be leſs in proportion, unleſs ſome means be had recourſe to, to expedite the ſame.

IN effect, a reduction of the body of learning is growing every day more and more neceſſary; as the objects of our knowlege are increaſing, books becoming more numerous, and new points of diſpute and inquiry turning up. For want of this, the ſciences remain in great meaſure at a ſtand, or can advance only imperceptibly; ſince the whole life of thoſe who ſhould make diſcoveries, is ſpent in learning what is already found out. Hence, ſuch improvements as are occaſionally made, rarely arrive at any maturity, but terminate in hints, and imperfect openings, or in queries and propoſals for farther inquiry. Moſt of the late diſcoveries in the ſciences remain thus crude and imperfect; the whole vaſt ſyſtems of microſcopical plants and animals, and teleſcopic worlds, of attraction, magnetiſm, electricity, and the like, remain, as it were in embryo. How many curious obſervations, and anomalous caſes, are ſcattered in the writings of modern philoſophers, which want to be reduced to ſyſtems? And what numerous lights are held forth in the writings of modern virtuoſo's, for ſupplying divers deſiderata in the ſciences, to no purpoſe?—How many operations are there, both of nature and art, of which we have imperfect notices, which want to be compared, and traced more minutely? Tranſmutations, petrefactions, reproductions of organical parts, recompoſitions of bodies from their principles, reſuſcitations, meliorations, accelerations of growth, multiplications of ſpecies; to ſay nothing of transfuſions, inoculations, injections, and the like; which are like to periſh, as multitudes have done before them, for want of time to purſue them.

TO do juſtice to a *collection*, I mean a general and promiſcuous one, it has its advantages. Where numbers of things are thrown precariouſly together, we ſometimes diſcover relations among them, which we ſhould never have thought of looking for; as the painter's and ſculptor's fancy is frequently led on to the boldeſt and moſt maſterly deſigns, by ſomething they ſpy in the fortuitous ſketches of chance or nature; inſomuch that a celebrated Italian makes no ſcruple to lay this down as the firſt origin and occaſion of all theſe arts. 'Tis certain moſt of our knowlege is empirical, the reſult of accident, occaſion, and caſual experiment; 'tis but very little we owe to dogmatizing and method; which, as already obſerved, are poſterior things, and only come in play after the game is ſtarted. It was, in all probability, the hand of chance, that firſt threw ſulphur, charcoal, and ſaltpetre, together; and little did he who thus produced gunpowder, imagine he was inventing a new art of making war.

'TIS, indeed, ſurpriſing, to conſider what ſlender experiments and obſervations many of the capital doctrines have ariſen from: the blows of a ſmith's hammer on his anvil are ſaid to have given riſe to the muſical notes; which Guido, a poor friar, perfected by what he obſerved in conning over his beads.—The inventions of printing, of glaſs, of dying, of the dipping-needle, of phoſphorus, of teleſcopes, of taffety, of antimony, *&c.* are ſuppoſed to have ariſen in the like manner; as the reader may find under their proper articles; and how many more we know not, by reaſon the great obſcurity of their firſt riſe, ere they attained a degree of uſefulneſs and perfection fit to be taken notice of, has buried the particular circumſtances thereof. If we will hear the antient Phœnicians and Egyptians, among whom moſt of the arts are ſuppoſed to have ariſen, they all came from caſual obſervations; geometry from the inundations of the Nile; the flight of the crane gave occaſion to the invention of the rudder; the ibis taught to adminiſter a glyſter; the ſwallow to build; and the ſpider to weave, *&c.* In effect, a new obſervation, in ſome peoples minds prepared for it, is like a ſpark in an heap of gunpowder, which may blow a whole mine.

WHAT advantages may not philoſophy be expected to derive from ſuch a collection, or farrago, of arts, when it is conſidered, that every circumſtance, every article, of an art, is to be looked upon as a datum, a phænomenon, or experiment in philoſophy? and that the leaſt of them may poſſibly be the foundation of a new ſyſtem?—To conſider only the dying of cloth; or tanning, or currying, of leather; what is the whole proceſs, but a ſeries of phyſical effects, ariſing from new applications of body to body? And how many lectures will the philoſopher have, from painting, gardening, agriculture, *&c.* touching planting, ingrafting, pruning, expoſure, expreſſion, walls, *&c.* which might never have come in his way but by ſuch a chance? When a thing is one ſtarted, it may be applied infinite ways, and nobody knows where it will ſtop.

THROUGHOUT the whole of this work a particular regard has been had, both in the choice of the ſeveral heads, and in amplifying on them, to the extending of our views, and opening new tracks, new ſcents, new viſta's. We have endeavoured not only to furniſh the mind, but to enlarge it, by placing it in a great variety of ſituations, and preſenting to it the ſentiments, notions, manners, cuſtoms, *&c.* of moſt ages, people, ſects, *&c.* that have any thing new, unuſual, or original, in them.

SUCH a variety of views, and manners of thinking, is a ſure remedy againſt being too violently attached to any one; and is the beſt way of preventing the making of pedants, bigots, *&c.* of any kind. It may be ſaid, that every art, every ſyſtem, tends to give the mind a particular turn; and that the only way of maintaining it in its natural rectitude, is by calling in other oppoſite ones, by way of counter-balance. Thus what is unſufferable in the mere mathematician, critic, grammarian, chymiſt, poet, or herald, is qualified, and rendered amiable, by a due admixture of the reſt.

THIS, indeed, is not the way to make a very great progreſs in any art; but at the ſame time it is the only way to hinder our being ſpoiled by any. Though this is only to be underſtood with regard to perſonal benefit: for no doubt the public is more benefited by the mere purſuers of particular arts, than by the general appliers to all: ſince, by the former, each is brought to greater perfection, and the mixture and temperament wanting in the individuals is found in the whole.

TO conclude, the ultimate view of a work of this kind ſhould be, the forming a ſound mind, *i. e.* acquireing a ſyſtem of perceptions and notions agreeing to the ſyſtem of things, or in the relations thereto intended by its author. The end of learning and ſtudy, is not the filling our heads with other mens ideas; that is an enrichment which may prove for the worſe; richneſs is only a matter of ſecondary conſideration; ſoundneſs is the firſt. There are many manures which the huſbandman dare not uſe, by reaſon they would corrupt the land, at the ſame time they enriched it, and lay the foundation of a diſeaſe, which would in the end impoveriſh, and make it ſpend itſelf in unprofitable weeds.—But it muſt be owned, mens heads are not ſo eaſily filled: the memory is not ſo tenacious as we may imagine; ideas are tranſient things, and ſeldom ſtay long enough with us to do us either much good, or harm: ten to one but what we read to-day, is moſt of it forgot again to-morrow. And what chiefly makes new ideas of any ſignificancy, is their extending and enlarging the mind, and making it more capacious, and ſuſceptible.—But neither is this enlargement the laſt aim; but is chiefly of uſe, as it contributes to the increaſing our ſenſibility, to the making our faculties more ſubtile and adequate, and giving us a more exquiſite perception of things that occur; and thus enabling us to judge clearly, pronounce boldly, conclude readily, diſtinguiſh accurately, and to apprehend the manner and reaſons of our deciſions. To which end ſeveral things may conduce, that are not ſo much direct matters of knowlege, as collateral to it; for inſtance, much of the ſchool-philoſophy, which, by exerciſing and exciting the mind, has a kind of inſtrumental tendency to ſharpen its faculties, and needs only be read, not retained, to produce its effect.—But even this does not amount to the full and adequate end of knowlege: this is only improving the organ; and there muſt be ſome farther end in ſuch improvement. No man ſharpens his weapon on the ſole conſideration of having it ſharp, but to be the fitter for uſe. Briefly then, our faculties being only ſo many inlets whereby, and according to the meaſure whereof, we receive intimations of the Creator's will, and the effects of his power and action; all the improvements made in them, have a tendency to ſubject us more intirely to his influence and direction; and thus make us conſpire, and move more in concert with the reſt of his works, to accompliſh the great end of all things. In which our happineſs and perfection conſiſt; the perfection of a ſingle nature ariſing in proportion as it contributes to that of the univerſe.

Concerning the CUTS.

THE *Reader* may be pleaſed to obſerve, that the figures relating to each art are brought into a ſeveral plate, and placed in the book fronting the name of ſuch art, and referred to under that name: as in *Tab. Architecture*, *Tab. Geometry*, *fig.* 3. &c.—This may alſo ſerve for

Directions to the BOOKBINDER.

Who is hereby inſtructed to place the ſeveral Cuts fronting thoſe words which make their reſpective titles; *e.gr.* the plate intitled ANATOMY, fronting the article ANATOMY: and ſo of the reſt.

N. B. The plate *Analyſis* is joined to that of ALGEBRA; and the plate *Navigation*, to that of GEOGRAPHY.

CYCLOPÆDIA:

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OF

ARTS and SCIENCES.

A.

A, A vowel, and the firſt letter of the Engliſh, and moſt other alphabets.

The grammarians will needs have *A* the firſt letter in all languages; and ſome of them aſſign a natural reaſon for it, *viz.* that it is the moſt ſimple, and the eaſieſt pronounced of all articulate ſounds.—To confirm this, Jul. Scaliger obſerves, that *A* is the firſt ſound nature puts forth at the crying or ſmiling of infants; and that it needs no other motion to form it, but a bare opening of the lips.

Covarruvias, refining on this ſentiment of Scaliger, obſerves, very gravely, that the firſt ſound put forth by boys, is *A*; but that girls firſt put forth E; each pronouncing the initial letter of the name of the firſt parent of its reſpective ſex.—Dr. Littleton, ſetting Adam aſide, makes the one ſpeak the final, and the other the initial letter of the mother of mankind, EvA.—But it is in vain that authors compare the *A* of the Engliſh, Latin, French, *&c.* with the Aleph of the Hebrews, or the Eliph of the Arabs. Thoſe two letters have no conformity with our *A*, except in this, that they are the firſt of their ſeveral alphabets. What ſets them very far aſunder, is, that theſe oriental *a*'s are not vowels.

Some critics take the Hebrew Aleph to be neither vowel, nor conſonant, but what the grammarians call an aſpirate, or pneumatic letter; like the H in the Latin, and our language: adding, that St. Jerom appears to have had the ſame thought, who probably learnt it from the Jews of the ſchool of Tiberias. But later writers give the thing another turn; having ſhewn that the Hebrew Aleph, Arabic Eliph, and Syriac Olaph, are real conſonants; and that the ſame holds of all other aſpirates. This is a paradox in grammar; but it is not the leſs true for being a paradox. See ASPIRATE.

Of all the letters, *A* is obſerved to be that which dumb perſons are ſooneſt taught to pronounce. The reaſon is, that it does not depend on the muſcles, and other organs of the mouth and tongue, which are generally wanting in mutes; but on thoſe of the throat and noſe, which they commonly have.

This firſt, ſimpleſt ſound, ſerves us to expreſs moſt of the vehement movements of the ſoul. It is ſo much the language of nature, that upon all ſudden and extraordinary occaſions we are neceſſarily led to it, as the inſtrument readieſt at hand. With this we ſpeak our admiration, joy, anguiſh, averſion, apprehenſion of danger, *&c.*—Where the paſſion is very ſtrong, we frequently enforce the *A*, by adding an aſpirate, as, *Ah.*

It is obſerved of the Engliſh pronunciation, that we ſpeak the *A* with a ſlenderer, and more puny ſound than any of our neighbours: ordinarily, it is ſcarce broad enough for a French *e* neuter: and comes far ſhort of the groſs *A* of the Germans, which would make our au, or aw, or o.—In ſome words however, as talk, wall, ſtall, *&c.* the *A* is broad, and deep enough. But this, it is obſerved, may not be the mere ſound of *A*; but the effect of the antient orthography, which, as low as queen Elizabeth, frequently added an u to the *A*, and wrote taulk, *&c.*

The Romans laid a mighty ſtreſs on their *A*; and diſtinguiſhed exactly, both in writing and ſpeaking, when it was long, and when ſhort.—To denote it long, they firſt wrote it double, *Aala*, for *Ala*; which not being enough, they inſerted an *h* between them, *Ahala*: at length they fell to the common long accent *Āla*. See ACCENT.

A was one of the numeral letters among the antients, and ſignified 500.—With a daſh atop, Ā, it ſtood for 5000. See CHARACTER.

Baronius gives us a ſet of antient technical verſes, wherein the numeral value of each letter of the alphabet is expreſſed: whereof this is the firſt.

> *Poſſidet* A *numeros quingentos, ordine recto.*

But we ſhall here obſerve, once for all, that it was not ſtrictly among the antients that this uſe of numeral letters had place, as is commonly ſuppoſed. Iſidore Hiſpalenſis, an author of the ſeventh century, affirms it expreſly: *Latini autem numeros ad literas non computant.* The uſage was really introduced in the days of barbariſm. M. du Cange explains what that uſage was, at the beginning of each letter of his Gloſſary; but the generality of dictionary-writers, who take it from him, miſtake him. The account, they all ſay, is found in Valerius Probus: whereas du Cange ſays no ſuch thing; but only that it is found in a collection of grammarians, among whom are Valerius Probus, and Petrus Diaconus. *Habetur verò illud cum Valerio Probo, Paulo Diacono* (it ſhould have been *Petro*) *& aliis qui de numeris ſcripſerunt, editum inter grammaticos antiquos.*

A is alſo uſed, in the Julian calendar, as the firſt of the ſeven dominical letters.

It had been in uſe among the Romans long before the eſtabliſhment of Chriſtianity, as the firſt of the eight *nundinales literæ*; in imitation whereof it was, that the dominical letters were firſt introduced. See NUNDINAL.

A is alſo an abbreviature, uſed in divers arts, and with divers intentions. Hence,

A, among logicians, is uſed to denote an univerſal affirmative propoſition: according to the verſe,

> *Aſſerit A, negat E, verùm generaliter ambæ.*

Thus, in the firſt figure, a ſyllogiſm conſiſting of three univerſal affirmative propoſitions, is ſaid to be in Bar-ba-ra; the *A* thrice repeated, denoting ſo many of the propoſitions to be univerſal, *&c.*

A, among the Romans, was uſed in the giving of votes, or ſuffrages.—When a new law was propoſed, each voter had two wooden ballots put in his hand; the one marked with a capital *A*, ſignifying *antiquo*, q. d. *antiquam volo*; and the other with *V. R.* for *uti rogas*. Such as were againſt the law paſſing caſt the firſt into the urn, as who ſhould ſay, I refuſe it, I antiquate it; or, I like the antient law, and deſire no innovation.

A, in the tryals of criminal cauſes, denoted abſolution: whence Cicero, *pro Milone*, calls *A*, *litera ſalutaris*, a ſaving letter.—Three ballots were diſtributed to each judge, marked with the letters, *A* for *abſolvo*, I acquit; *C* for *condemno*, I condemn; and *N. L.* for *non liquet*, it is not clear. From the number of each caſt into the urn, the prætor pronounced the priſoner's fate. If they were equal in number, he was abſolved.

A, in the antient inſcriptions of marble, &c. occaſionally ſtands for *Auguſtus*, *ager*, *aiunt*, &c. When double, it denotes *Auguſti*: and when triple, *auro*, *argento*, *ære*. Iſidore adds, that when it occurs after the word *miles*, it denotes him young.

A, on the reverſe of antient medals, denotes them ſtruck by the city of Argos, ſometimes by that of Athens. — And among the later coins, the ſame letter is the mark of Paris. See MEDAL.

A, among Engliſh writers, is ordinarily uſed for *anno*, as, *A.D. anno Domini*; for *artium*, as *A. M. artium magiſter*, &c.

A, ā, or āā, among phyſicians, is uſed in preſcription for *ana*; to denote an equal portion of divers ingredients, whether in reſpect of meaſure or weight.

Thus, ℞ *Sal volat. oleoſ. tinct. croc.* āā ℥ ſs. expreſſes Sal volatile oleoſum, and tincture of ſaffron, of each half an ounce.

The ſame ā, or āā, is alſo uſed in the like ſenſe, without expreſſing any limited quantity or weight: Thus, a, or āā, *P. Æ.* denotes ſimply, equal parts of the ingredients there mentioned.

A A A, among chymiſts, ſignifies an amalgama, or the operation of amalgamating. See AMALGAMATION.

A, AN. See ARTICLE.

ABACTOR *, in ſome law-writers of the middle age, denotes a thief who drives off cattle by open force; more uſually called *abigeus*.

* The word is compounded of *ab*, from, and *actor*, a driver, from *agere*, to drive.

ABACTUS, among the antient phyſicians, was uſed for a miſcarriage procured by art, or force of medicines, in contradiſtinction to *aborſus*, which is natural. But the moderns know no ſuch diſtinction. See ABORTION.

ABACUS *, among the antients, was a kind of cupboard, or buffet. See BUFFET.

* The word is Latin, but formed from the Greek, αϐαξ, which among that people ſignified the ſame thing; which ſome ſuppoſe to be compounded of α privative, and βασις, foundation; *q. d.* without a foot or frame, to be faſtened ſome way to the wall. But Guichart goes higher: he derives αϐαξ from the Hebrew אבק, *extolli*, to be elevated, raiſed; and ſuppoſes its primary ſignification to be a high ſhelf, or other convenience for things to be laid upon out of the way.

In this ſenſe, Livy, deſcribing the luxury into which the Romans degenerated after the conqueſt of Aſia, ſays, they had their *Abaci*, beds, &c. plated over with gold. Dec. IV. Lib. ix.

ABACUS * was particularly uſed among the mathematicians, for a little table ſtrewed over with duſt, on which they drew their ſchemes and figures.

* In this ſenſe, the word ſeems formed from the Phœnician אבק, *abak*, duſt.

ABACUS *Pythagoricus*, a table of numbers, contrived for the ready learning of the principles of arithmetic; denominated from its inventor Pythagoras, *Pythagoricus*.

Hence alſo, from an agreement in point of uſe, the names *Abacus*, and *Abaco*, are uſed, among Latin and Italian writers, for an alphabet, or A B C, &c.

The *Abacus Pythagoricus* was, in all probability, no other than what we call multiplication-table.

Ludolphus and Wolfius gives us methods of performing multiplication without the help of the *Abacus*; but they are too operoſe in ordinary caſes for practice. See MULTIPLICATION.

ABACUS, in architecture, is the uppermoſt member of the capital of a column; ſerving as a kind of crowning, both to the capital, and the whole column.

Divers of our dictionary-writers make the *Abacus* to be the capital itſelf; which is altogether as juſt, as to make the crown of the head the whole head.

Vitruvius, and others after him, who give the hiſtory of the orders, tell us, the *Abacus* was originally intended to repreſent a ſquare tile laid over an urn, or rather over a baſket.— An Athenian old woman happening to place a baſket thus covered over the root of an acanthus; that plant ſhooting up the following ſpring, encompaſſed the baſket all around, till meeting with the tile, it curled back in a kind of ſcrolls. An ingenious ſculptor paſſing by, took the hint, and immediately executed a capital on this plan; repreſenting the tile by the *Abacus*, the leaves by the volutes, and the baſket by the vaſe, or body of the capital.— Such was the origin of the firſt regular order. — See the repreſentation hereof in *Tab.* Archit. *fig.* 21.

There is ſome difference in the form of the *Abacus* in different orders. In the Tuſcan, Doric, and ancient Ionic, it is a flat, ſquare member, well enough repreſenting its original tile; whence the French call it *tailloir*, trencher. See *fig.* 24. *lit.* I. & *fig.* 28. *lit.* o. & *fig.* 3. *lit.* k. See alſo the articles TUSCAN, DORIC, and IONIC.

In the richer orders it loſes its native form; its four ſides, or faces, being arched, or cut inwards, with ſome ornament, as a roſe, or other flower, or fiſh's tail in the middle of each arch.—See *fig.* 26. *lit.* d. & *fig.* 20. See alſo the articles CORINTHIAN, and COMPOSITE.

But ſome architects take other liberties in the *Abacus*, both in reſpect of its name, place, and office. Thus, in the Tuſcan order, where it is the largeſt and moſt maſſive, as taking up one third of the height of the whole capital, it is ſometimes called the dye of the capital.— In the Doric it is not always the uppermoſt member of the capital; a cymatium being frequently placed over it.— In the Ionic, ſome make it a perfect ogee, and crown it with a fillet. See the figures above referred to.

The proportion of the *Abacus*, as preſcribed by Vitruvius (4. 1.) is, that its diagonal from corner to corner be twice its height. A rule which the moderns make no difficulty of diſpenſing with.

Abacus is alſo uſed by Scamozzi for a concave moulding in the capital of the Tuſcan pedeſtal.

ABAFT, in the ſea-language, is uſed in ſpeaking of things placed, or done, toward the ſtern, or hinder-part of a veſſel; called alſo *aft*, and ſtands oppoſed to *fore*.—Thus they ſay, a thing is *abaft* the fore-maſt, when it is behind it, or nearer the ſtern than the fore-maſt is. The poſt of the maſter, captain, and other officers, is *abaft* the main-maſt.

The ſtern, ſtrictly ſpeaking, is only the outſide; *abaft* includes both inſide and out. See STERN.

ABALIENATION *, in the Roman law, denotes a ſpecies of alienation; whereby thoſe goods called *res mancipi* were transferred to perſons legally capable thereof; either by a formula called *traditio nexu*, or a ſurrender in open court. See ALIENATION.

* The word is compounded of *ab*, from; and *alienare*, to alienate.

The things here called *res mancipi*, which were the object of *Abalienation*, were cattle, ſlaves, lands, and poſſeſſions within the territory of Italy.—The perſons capable of purchaſing were Roman citizens, Latins, and certain foreigners, who were particularly indulged this traffick.—The manner in which it was tranſacted was either with the ceremony of weights and money in hand, or a ſurrender before a magiſtrate.

ABAPTISTON, or ANABAPTISTON, a name antiently given to an inſtrument in chirurgery, by modern writers more uſually called trepan, modiolus, terebra, terebellum, and trafine. See TREPAN.

ABARTICULATION, in anatomy, the ſame with diarthroſis. See DIARTHROSIS.

ABASED, lowered, or made low; from the French *bas*, low; which Nicod derives from βασις, foundation.

ABASED, ABAISSÉ, in heraldry, is applied to the vol, or wings of eagles, &c. when the tip, or angle, looks downward toward the point of the ſhield; or when the wings are ſhut: the natural way of bearing them being ſpread, with the tip pointing to the chief, or the angles.

A chevron, a pale, bend, &c. are alſo ſaid to be *abaſed*, when their points terminate in, or below, the centre of the ſhield.

Again, an ordinary is ſaid to be abaſed, when below its due ſituation. Thus the commanders of the order of Malta, who have chiefs in their own arms, are obliged to *abaſe* them under thoſe of the religion.

ABASING, in the ſea-language. See STRIKING.

ABATEMENT, in heraldry, ſomething added to a coat-armour, to diminiſh its proper value and dignity, and note ſome diſhonourable action, or ſtain in the character of the perſon who bears it.

It is a little controverted among authors, whether heraldry allows of any ſuch things as regular *Abatements*. Leigh and Guillim, however, without any ſcruple as to their reality, give us ſeveral kinds.

Abatements, according to the laſt of thoſe writers, are either made by reverſion or diminution.

Reverſion is either turning the whole eſcutcheon upſide-down; or the adding another eſcutcheon, inverted, in the former.

Diminution is the blemiſhing any part by adding a ſtain, or mark of diminution: ſuch are a delf, a point dexter, a point champaign, a plain point, a goar ſiniſter, and a guſſet. See each under its proper article.

It may be added, that theſe marks muſt always be either tawney, or murrey; otherwiſe, inſtead of diminutions, they become additions of honour.

The laſt editor of Guillim diſcards the whole notion of *Abatements*, as a chimæra. He alleges that no one inſtance is to be met with in ſuch bearing; and that it implies a contradiction to ſuppoſe it. Arms, being *inſignia nobilitatis & honoris*, cannot admit of any mark of infamy, without ceaſing to be arms, and becoming badges of diſgrace; which all would covet to lay aſide. Add, that as no hereditary honour can be actually diminiſhed; ſo neither can the marks thereof. Both indeed may be forfeited; as in the caſe of treaſon, where the eſcutcheon is totally reverſed, to intimate a total ſuppreſſion of the honour.

Some inſtances, however, are produced to the contrary by Columbiere, and others. But theſe, though they may ſhew ſome extraordinary reſentments of princes for offences committed in their preſence, do not amount to a proof of ſuch cuſtom or practice; much leſs authorize the being of particular badges in the hands of inferior officers, as kings at arms.

Abatement is alſo uſed, in a law-ſenſe, for the fruſtrating, or ſetting aſide a ſuit, on account of ſome fault either in the matter, or proceeding thereof. Hence,

Plea in **Abatement**, is ſome exception alleged, and made good, either againſt the plaintiff's writ, as wanting due form, or containing falſe Latin; or againſt his count, or declaration, as being inſufficient, or varying from the writ, ſpeciality, or record; or againſt the matter of either, as inſufficient, or being before another court; or againſt the allegations, as being uncertain, on account of ſome miſnomer, or the death of one of the parties, or the marriage of the plaintiff being a woman: to which ſome add diſability.— Upon any of theſe, the defendant prays, that the plaintiff's writ or plaint may *abate*, *i. e.* that his ſuit may ceaſe for that time: if it be granted, all writs and proceſs muſt be begun *de novo*.

Abatement alſo denotes an irregular entry upon lands, or tenements, left vacant by their former poſſeſſor, and not yet laid hold of by the next heir.

As he that puts out the poſſeſſor is ſaid to diſſeize; ſo he that interpoſes, or ſteps in, between the former poſſeſſor and his heir, is ſaid to abate.

Coke on Littleton diſtinguiſhes between *Abatement* and intruſion; but the new book of entries renders *Abatement* by *intruſio*. Some think it were better, for diſtinction-ſake, to render it by *interpoſitio*. *Term. de ley, p.* 2.

ABB, among clothiers, denotes the yarn of a weaver's warp.— In a riot at Melkſham, J. Crabb is ſaid to have marched with *Abb* on a ſtick; another evidence calls this a blue ſkain on a ſtick; and a third, a chain on a ſtick.— They alſo uſe the phraſe, *Abb*-wool.— Great quantities of *Abb*-wool were, by rioters, thrown into the river.

ABBESS, the ſuperior of an abbey, or convent of nuns. See **Abbey**.

The *Abbeſs* has the ſame rights, and authority over her nuns, that the abbots regular have over their monks. See **Abbot**.

The ſex, indeed, does not allow her to perform the ſpiritual functions annexed to the prieſthood, wherewith the abbot is uſually inveſted; but there are inſtances of ſome *Abbeſſes*, who have a right, or rather a privilege, to commiſſion a prieſt to act for them. They have even a kind of epiſcopal juriſdiction, as well as ſome abbots, who are exempted from the viſitation of their dioceſans.

F. Martene, in his treatiſe of the rites of the church, obſerves, that ſome *Abbeſſes* have formerly confeſſed their nuns: but he adds, that their exceſſive curioſity carried them ſuch lengths, that there aroſe a neceſſity of checking it.

St. Baſil, in his rule, allows the *Abbeſs* to be preſent with the prieſt at the confeſſion of her nuns.

ABBEY *, or **Abby**, a monaſtery, or religious houſe, governed by a ſuperior under the title of abbot, or abbeſs. See **Abbot**.

* In our antient ſtatutes the word is ſometimes alſo written *Abbathy*. By 31 H. 8. c. 13. *Abbathies* are given to the king.

Abbeys differ from *priories*, in that the one are under the direction of an abbot, and the other of a prior: but abbot and prior (we mean a prior conventual) are much the ſame thing; and differ in little but the name.

Fauchet obſerves, that, in the early days of the French monarchy, dukes and counts were called abbots, and duchies and counties *Abbeys*. Many perſons of the prime quality, without any concern in the monaſtic life, took the ſame quality; even ſome of their kings are mentioned in hiſtory under the title of abbots. Philip I. Louis VI. and afterwards the dukes of Orleans, are called abbots of the monaſtery of S. Agnan. The dukes of Aquitain were called abbots of the monaſtery of S. Hilary, at Poictiers; and the earls of Anjou of S. Aubin, *&c.*

One third of the beſt benefices in England were antiently, by the pope's grant, appropriated to *Abbeys*, and other religious houſes;, which, upon their diſſolution under king Henry VIII. became lay-fees: 190 ſuch were diſſolved of between 200*l.* and 35000*l.* yearly revenue, which, at a medium, amounted to 2853000*l.* *per annum*.

ABBOT *, or **Abbat**, the ſuperior of a monaſtery of monks erected into an abbey, or prelacy.

* The name *Abbot* is originally Hebrew, where it ſignifies father. The Jews call father, in their language, *Ab*; whence the Chaldees and Syrians formed *Abba*; thence the Greeks *αϐϐας*, which the Latins retained, *Abbas*; and thence our *Abbot*, the French *Abbé*, *&c.*— St. Mark and St. Paul uſe the Syriac *Abba* in their Greek, by reaſon it was then commonly known in the ſynagogues, and the primitive aſſemblies of the Chriſtians; adding to it, by way of interpretation, the word father, αϐϐα ο πατηρ, abba, father, *q. d.* Abba, that is to ſay, father.—But the name Ab or Abba, which at firſt was a term of tenderneſs and affection, in the Hebrew and Chaldee, became, at length, a title of dignity and honour: The Jewiſh doctors affected it; and one of their moſt antient books, containing the ſayings or apophthegms of divers of them, is intituled, Pirke *Abboth*, or Avoth; *i. e.* chapters of the Fathers. It was in alluſion to this affectation, that Jeſus Chriſt forbad his diſciples to call any man their father on earth: which word S. Jerom turns againſt the ſuperiors of the monaſteries of his time, for aſſuming the title of *Abbots*, or fathers.

The name *Abbot*, then, appears as old as the inſtitution of monks itſelf.— The governors of the primitive monaſteries aſſumed indifferently the titles *Abbot*, and Archimandrite.

They were really diſtinguiſhed from the clergy, though frequently confounded with them, becauſe a degree above laymen. St. Jerom, writing to Heliodorus, ſays expreſly, *alia monachorum eſt cauſa, alia clericorum.*

In thoſe early days, the *Abbots* were ſubject to the biſhops, and the ordinary paſtors. Their monaſteries being remote from cities, and built in the fartheſt ſolitudes, they had no ſhare in eccleſiaſtical affairs. They went on Sundays to the pariſh-church with the reſt of the people; or, if they were too remote, a prieſt was ſent them, to adminiſter the ſacraments; till, at length, they were allowed to have prieſts of their own body. The *Abbot*, or Archimandrite himſelf, was uſually the prieſt; but his function extended no farther than to the ſpiritual aſſiſtance of his monaſtery; and he remained ſtill in obedience to the biſhop.

There being among the antient *Abbots* ſeveral perſons of learning, they made a vigorous oppoſition to the riſing hereſies of thoſe times; which firſt occaſioned the biſhops to call them out of their deſarts, and fix them about the ſuburbs of cities, and at length in the cities themſelves; from which æra their degeneracy is to be dated.

The *Abbots*, now, ſoon wore off their former plainneſs and ſimplicity, and began to be looked on as a ſort of little prelates. In time they would be independent of the biſhops, and became ſo inſupportable, that ſome ſevere laws were made againſt them at the council of Chalcedon: notwithſtanding this, in time, many of them carried the point of independency, and got the appellation of lord, with other badges of the epiſcopate, particularly the mitre.

Hence aroſe new ſpecies and diſtinctions of *Abbots*: mitred, and not mitred; croziered, and not croziered; œcumenical *Abbots*, cardinal *Abbots*, *&c.*

Mitred **Abbots**, were thoſe privileged to wear the mitre; and allow'd, withal, a full epiſcopal authority within their ſeveral precincts.— Among us, theſe were alſo called *Abbots* ſovereign, and *Abbots* general; and were lords of parliament. Of theſe Sir Edward Coke reckons twenty-ſeven in England, beſide two mitred priors.

The reſt, who were not mitred, were ſubject to the dioceſan.

Pere Hay, a Benedictine monk, in his book intituled *Aſtrum inextinctum*, maintains, that the *Abbots* of his order have not only a ſort of epiſcopal, but even of papal juriſdiction, *poteſtatem quaſi epiſcopalem, imo quaſi papalem*; and as ſuch can confer the lower orders of deacon and ſubdeacon.

When the *Abbots* firſt aſſumed the mitre, the biſhops made heavy complaints of their privileges being invaded by the monks; and were particularly offended, that in ſynods and councils there was no diſtinction between them. On this occaſion pope Clement IV. ordered, that the *Abbots* ſhould only wear their mitres embroidered with gold, and leave jewels to the biſhops.

Croziered **Abbots**, are thoſe who bear the crozier, or paſtoral ſtaff.

There are ſome croziered, and not mitred; as the *Abbot* of the Benedictine abbey at Bourges: and others, both the one and the other.

Among the Greeks, ſome even took the quality of œcumenical *Abbots*, or univerſal *Abbots*, in imitation of the patriarchs of Conſtantinople.

Nor have the Latins been much behind them, in that reſpect; the *Abbot* of Cluny, in a council held at Rome, aſſumed the title of *Abbas abbatum*, *Abbot of Abbots*; and pope Calixtus gave the ſame *Abbot* the title of cardinal *Abbot*.

To ſay nothing of other cardinal *Abbots*, thus denominated from their being the principal *Abbots* of monaſteries, which came to be ſeparated.

Abbots are now chiefly diſtinguiſhed into regular, and commendatory.

Abbots *regular*, are real monks, or religious, who have taken the vows, and wear the habit of the order. See **Regular**, and Vow.

Such are all *Abbots* preſumed to be; it being expreſly provided, by the canons, that none but a monk have the command over monks.— But, in fact, it is found far otherwiſe: in France, I think, there are now but ſix regular abbeys.

Abbots *in commendam*, are ſeculars; though they have undergone the tonſure, and are obliged, by their bulls, to take orders when they come of age.

Though the term *commendam* inſinuates, that they have only the adminiſtration of their abbeys for a time; yet do they hold, and reap the fruits of them for ever, as well as the regular *Abbots*.

Their bulls give them a full power *tam in ſpiritualibus quam in temporalibus*; and yet it is true, that the commendatory *Abbots* do not perform any ſpiritual offices; nor have they any ſpiritual juriſdiction over their monks: ſo that the phraſe *in ſpiritualibus*, is rather ſomething of the Roman ſtyle, than a reality.

Some of their canoniſts rank the *commendam* in the number of benefices, *inter titulos beneficiorum*. It is, in truth, no more than a canonical title, or proviſion to enjoy the fruits of a benefice: but as ſuch proviſions are contrary to the antient canons, none but the pope, by diſpenſing with the old law, can grant them.

Our own hiſtory ſpeaks very little of theſe commendatory *Abbots*; and it is probable the practice never prevailed much among us. Hence, many of our writers have been led into the miſtake, of ſuppoſing that all *Abbots* are monks. Of this we have a remarkable inſtance, in the diſpute about the inventor of the lines for transforming geometrical figures, called, by the French, the Robervallian lines. Dr. Gregory, in the Philoſophical Tranſactions *anno* 1694. raillies the *Abbot* Galloys, who held the abbey of St. Martin de Cores *in commendam*, with being a monk: 'The good father, ſays he, 'imagines we are returned into that fabulous age wherein a 'monk might be allowed to ſay what he pleaſed.' Which paſſage the *Abbot* takes hold of, and returns the raillery, with intereſt, on the doctor, in the *Memoir. de l'Academ. an.* 1703.

The ceremony whereby *Abbots* are created, is properly called benediction; or ſometimes, though that abuſively, conſecration.

It antiently conſiſted in cloathing him with the habit called *cuculla*, a cowl; putting the paſtoral ſtaff in his hand, and the ſhoes called *pedales*, or *pedules*, on his feet. Theſe particularities we learn from the *ordo Romanus* of Theodore, archbiſhop of Canterbury.

Abbot is alſo a title, which has been given to certain biſhops, by reaſon their ſees had originally been abbeys; and that they were even elected by the monks: ſuch are thoſe of Catanea and Montreal, in Sicily.

Abbot is alſo an appellation ſometimes given to the ſuperiors or generals of ſome congregations of regular canons; as that of St. Genevieve, at Paris. See Canon.

Abbot is alſo a title borne by ſeveral magiſtrates, and other lay perſons.— Among the Genoeſe, one of their principal magiſtrates was called the *Abbot* of the people.

In France, particularly about the time of Charlemaign, there were ſeveral lords and courtiers, who having the ſuperintendency of certain abbeys committed to them, were ſtyled, *Abbacomites*, or abbey-counts.

ABBREVIATURE *, or **Abbreviation**, a contraction of a word, or paſſage; made by dropping ſome of the letters, or by ſubſtituting certain marks, or characters, in their place.

* The word is derived from the Latin *brevis*, of the Greek βραχυς, ſhort.

Lawyers, phyſicians, &c. uſe abundance of *Abbreviatures*; partly for the ſake of expedition, and partly for that of myſtery.—A liſt of the principal *Abbreviatures*, in the ſeveral arts and faculties, ſee under the article Character.

Of all people, the Rabbins are the greateſt dealers in this way: their writings are unintelligible, without an explication of the Hebrew *Abbreviatures*. The Jewiſh authors and copiſts don't content themſelves to *abbreviate* words, like the Greeks and Latins, by retrenching ſome of the letters, or ſyllables thereof; but they frequently take away all but the initial letters. Thus, ר ſtands for *rabbi*, and א for אל, ארני, or אמר, according to the place it is found in.

But what is more, they frequently take the initial letters of ſeveral ſucceeding words, join them together, and adding vowels to them, make a barbarous ſort of word, repreſentative of all the words thus abridged. Thus, *Rabbi Schelemoh Jarchi*, in the jargon of Hebrew *Abbreviatures*, is called *Raſi*; and *Rabbi Moſes ben Maiemon*, is *Rambam*. And thus, again, מביא is put for מתן בסתר יכפה אף *donum in abdito evertit iram*. Mercures, David de Pomis, Schindler, Buxtorf, &c. have given explications of ſuch *Abbreviatures*.—The moſt copious collection of Roman *Abbreviatures*, is that of Sertorius Urſatus: *Sertorii Urſati, equitis, de notis Romanorum, commentarius*.

ABBREUVOIR *, in maſonry, the joint, or juncture of two ſtones; or the interſtice or ſpace left between them, and filled up with morter.

* The word is French, and literally denotes a watering-place.

ABBROCHMENT. See the article Abrochment.

ABBUTTALS. See the article Abuttals.

ABCEDARY, **Abcedarian**, or **Abecedarian**, is ſometimes applied to compoſitions whoſe parts are diſpoſed in the order of the letters of the alphabet.

In this ſenſe *Abcedarian* is ſynonymous with alphabetical.—Thus we meet with *Abcedarian* pſalms, lamentations, prayers, and the like; chiefly among Hebrew writers; which makes it probable they were the inventors of this ſpecies of wit.

ABDICATION *, **Abdicatio**, the act whereby a magiſtrate, or perſon in office, renounces, and gives up the ſame, before the legal term of ſervice is expired.

* The word is derived from *abdicare*; which is compounded of *ab*, from; and *dicere*, to declare.

Abdication is frequently confounded with reſignation; but, ſtrictly ſpeaking, there is a difference: *Abdication* being done purely and ſimply; whereas reſignation is done in favour of ſome third perſon.

In this ſenſe, Diocleſian, and Charles V. are ſaid to have *abdicated* the crown; but Philip IV. of Spain reſigned it. The parliament voted king James's violation of the laws, and his quitting the kingdom, without providing for the due adminiſtration of affairs in his abſence, to import an *Abdication* of the crown.

Abdication, among Roman writers, is more particularly uſed for the act whereby a father diſcarded or diſclaimed his ſon, and expelled him the family.

In this ſenſe the word is ſynonymous with the Greek *αποκηρυξις*, and the Latin, *a familia alienatio*, or ſometimes *ablegatio*, and *negatio*; and ſtands oppoſed to adoption.—It is diſtinguiſhed from *exhæredatio*, or diſinheriting, in that the former was done in the father's life-time, the latter by will at his death: ſo that whoever was *abdicated*, was alſo diſinherited, but not *vice verſa*. See Exheredation.

ABDOMEN *, in anatomy, the belly, or lower venter; or that part of the body comprehended between the thorax and the hips.

* The word is purely Latin, and is derived from *abdere*, to hide; either becauſe many of the principal viſcera of the body are contained, and as it were hidden in this part; or, as others imagine, becauſe the part itſelf is uſually covered and concealed from ſight, whereas the part over it, *viz.* the thorax, is frequently left bare.— Others ſuppoſe the word *abdomen* a compound of *abdere* and *omentum*, in regard the omentum or caul is one of the parts contained in it.— Others take it for a mere paronymon, or different termination of *abdere*; eſpecially as in ſome antient gloſſes it is written *abdumen*, which might have been formed from *abdere*, as *legumen* from *legere*, the *e* and *u* being often interchanged.

Anatomiſts uſually divide the body into three regions, or venters: the head, the thorax or breaſt, and the *Abdomen*, which makes the loweſt part of the trunk; being terminated by the diaphragm above, and by the inguen or pubes below. See Body.

The *Abdomen* is lined internally with a thin, ſoft membrane, which, inveſting all the viſcera above-mentioned, contains and keeps them in their place: this is called the *peritonæum*: upon a rupture or dilatation whereof, they are apt to fall, and form thoſe tumours called hernias. See Peritonæum.

It is covered and defended with five pair of muſcles; which not only defend the viſcera, but, by their alternate relaxations and contractions in reſpiration, promote the action of digeſtion, and the extruſion of the fæces and urine. By their contraction, the cavity of the *Abdomen* is ſtraitened, and the deſcent of the contents of the viſcera through the inteſtines is promoted. They are the proper antagoniſts to the ſphincters of the anus and bladder, and forcibly expel the excrements of thoſe parts, as alſo the fœtus in parturition.

Theſe muſcles are the *obliqui deſcendentes* and *aſcendentes*, the *rectus transverſalis* and *pyramidalis*. See each under its proper article.

The *Abdomen* is ſubdivided into three leſſer regions or cavities: the uppermoſt, called the epigaſtric, commences from the diaphragm and cartilago enſiformis, and terminates two fingers breath above the navel; the ſecond, called the umbilical, begins where the former ends, and terminates two fingers breadth below the navel; the third, called the hypogaſtric, deſcends as low as the os pubis.

Each of theſe ſubdiviſions the more accurate writers divide further into three parts; a middle, and two lateral ones, called the *hypochondriums*. The middle part of the umbilical is called the *umbilicus*, or navel; and its lateral parts the *lumbi*, or loins: the middle of the hypogaſtric is called the *hypogaſtrium*; and its ſides the *ilia*, or flanks. To which may be added the pubes, groin, iſchiatic region, and perinæum. See each under its proper place.

ABDUCTION *, in logic, a kind of argumentation, by the Greeks called *apagoge*; wherein the greater extreme is evidently contained in the medium, but the medium not ſo evidently in the leſſer extreme, as not to require ſome further medium, or proof, to make it appear.

* It is called *Abduction*, from *ab*, from; and *ducere*, to draw; becauſe, from the concluſion, it draws us on to prove the propoſition aſſumed.

Thus, in the ſyllogiſm, 'All whom God abſolves are free 'of ſin; but God abſolves all who are in Chriſt: therefore, 'all who are in Chriſt are free of ſin.' The major is evident; but the minor, or aſſumption, is not ſo, without ſome other propoſition to prove it; as, 'God received ſatisfaction 'for ſin by the ſuffering of Jeſus Chriſt.'

ABDUCTOR *, or **Abducent**, in anatomy, a name common to ſeveral muſcles, whoſe action is the withdrawing, opening, or pulling back, the parts they are fixed to.

* The name is Latin, compounded of *ab*, from; and *ducere*, to draw.—Their antagoniſts are called *Adductores*. See Adductor.

ABDUCTOR *Auricularis*, or of the little finger, ariſes from the annular ligament, and the third and fourth bones of the carpus in the ſecond rank; and is inſerted externally into the firſt bone of the little finger: it ſerves to draw that finger from the reſt, and alſo to bend it a little.—See *Tab. Anat.* (Myol.) *fig.* 2. *n.* 23.

In ſome ſubjects it appears divided into two or three muſcles, conſiſting of ſo many different ſeries of fibres.

ABDUCTOR *Indicis*, or of the fore-finger, ariſes from the inſide of the bone of the thumb, and is inſerted into the firſt bone of the fore-finger, which it draws from the reſt towards the thumb.—See *Tab. Anat.* (Myol.) *fig.* 1. *n.* 32. & *fig.* 6. *n.* 24. & *fig.* 7. *n.* 8.

ABDUCTOR *minimi digiti manus*. See ABDUCTOR *Auricularis*.

ABDUCTOR *minimi digiti pedis*, or of the little toe, ariſes from the outſide of the os calcis, near the exterior bone of the metatarſus, and is inſerted laterally into the outſide of the ſecond bone of that toe, which it pulls from the reſt.—See *fig.* 1. *n.* 74. & *fig.* 6. *n.* 45.

ABDUCTOR *oculi*, or of the eye, is one of the four recti, or ſtrait muſcles, ariſing from the bottom of the orbit, and ſpread over the firſt proper tunic; ſerving to draw the eye towards the outer canthus.

ABDUCTOR *pollicis*, called alſo *thenar*, ſprings from the annular ligament, and firſt bone of the carpus; from whence paſſing to the thumb, it makes that fleſhy body called mons lunæ: it draws the thumb from the fingers.—See *fig.* 1. *n.* 31. & *fig.* 2. *n.* 21. & *fig.* 6. *n.* 25. & *fig.* 7.

ABDUCTOR *pollicis pedis*, or of the great toe, ſprings from the inſide of the os calcis, and the greater os cuneiforme; and is inſerted into the outſide of the exterior os ſeſamoideum pollicis; it ſerves to draw the great toe from the reſt.—See *fig.* 1. *n.* 72. & *fig.* 2. *n.* 52. See alſo the article TOE.

ABECEDARIAN. See the article ABECEDARY.

ABELIANS, ABELONIANS, or ABELOITES, a ſect of heretics in Africa, not far from Hippo, whoſe diſtinguiſhing tenet and practice was to marry, and yet live with their wives in a profeſſed abſtinence, without having any carnal commerce together.

Theſe heretics, inconſiderable in themſelves (for they were confined to a little compaſs, and laſted not long), are become famous, by the great pains the learned have taken to aſcertain the principle they went upon, and the reaſon of their denomination.

Some will have them to have built on that text of St. Paul, 1 Cor. vii. 29. *Let them that have wives be as though they had none.* A late writer concludes, that they regulated their marriage on the foot of the terreſtrial paradiſe; alleging, that there was no other union between Adam and Eve, but that of hearts. He adds, that they had likewiſe an eye to the practice of Abel, whom they held to have been married, but never to have known his wife: and that from him they derived their name.

Bochart obſerves, that it was a tradition current throughout the eaſt, that Adam conceived ſo much ſorrow for the death of Abel, that he was an hundred and thirty years without having to do with Eve. This, he ſhews, was the ſentiment of the Jewiſh doctors; from whom the fable was tranſmitted to the Arabs: and hence it was, according to Giggeus, that תאבל *thabala*, in Arabic, came to ſignify, *to abſtain from one's wife*. He concludes, that he is the moſt miſtaken perſon in the world, or this ſtory had reached Africa, and given occaſion both to the ſect, and the name.

It is true, the Rabbins do hold, that Adam, after the death of Abel, remained a long time without any uſe of marriage; and till the time when he begot Seth: but to ſay that this was an hundred and thirty years, is a manifeſt error, and contrary to their own chronologies, which place Seth's birth in the hundred and thirtieth year of the world, or of Adam's life, as may be ſeen in their two Seder Olams.

Abarbanel ſays, it was a hundred and thirty years after Adam's fall; as believing, with the other Rabbins, that Cain and Abel were conceived immediately after Adam's tranſgreſſion. But, ſay others, be this as it will, whether a continence on occaſion of the fall, or of Abel's death; it was the continence of Adam, not of Abel, that theſe heretics imitated; who, on this footing, ſhould have been called *Adamites*, rather than *Abelians*. In effect, it is more than probable, they took their name from *Abel* for no other reaſon, but becauſe like that patriach they had no iſſue; not that he lived in continence after marriage; but becauſe he was killed before he had married.

ABETTOR *, or ABBETTOR, in law, one who incites, encourages, or ſets another to perform ſomething criminal; or ſome way ſeconds, and aſſiſts him in the performance itſelf. See ACCESSORY.

* The word *abet* ſome deduce from *ad*, to; and *bet*, to lay on one's ſide;—others from the Belgic *baeten*, to profit.—It alludes to the Saxon *bedan*, and the French *bouter*, to ſtir up.

Thus thoſe who procure others to ſue out falſe appeals of felony, or murder againſt men, to render them infamous, are particularly denominated *Abettors*.

So, *Abettors* in murder, are ſuch as adviſe or procure a murder to be committed, or are acceſſory thereto. See MURDER.

There are *Abettors* in felony, but not in treaſon; the law looking on all thoſe concerned in treaſon as principals. See TREASON.

ABEYANCE *, ABEIANCE, or ABBAYANCE, in law-books; ſomething that only exiſts in expectation, or in the intendment, or remembrance of the law.

* The word ſeems derived of the French *Abbayer*, or Italian *Abbajare*, to bark; by a metaphor taken from dogs, which when earneſt for meat, bark, and as it were devour it with expectatiou. Though Spelman rather chooſes to derive it from the phraſe *tenir en Abbay*, to hold at bay, to defer or keep off.

Abeyance, in our law, amounts to much the ſame with *hæreditas jacens*, among the Romans, and κληρος αδεσποτος, or διαλειπων, among the Greeks; *i. e. hæreditas ſperata*, or *expectata*, or rather *novum dominum expectans*. As civilians ſay lands and goods do *jacere*; ſo common lawyers ſay, that things in like condition are in *Abeyance*: much as logicians ſay a thing is *in poſſe*, or in underſtanding; and as we ſometimes ſay a thing is *in nubibus*.

It is a maxim in law, that of every land, either there is a fee-ſimple in ſomebody, or it is in *Abeyance*.—If a church become vacant by the death of the parſon, the freehold is ſaid to be in *Abeyance*, till a new parſon be inducted: for the patron has not the fee, but only the right of preſenting to it, the freehold itſelf being in the incumbent thus preſented, and therefore till ſuch preſentation in nobody.

ABIGEUS. See ABACTOR.

AB-INTESTATE, AB-INTESTATO, in the civil law, is applied to a perſon who inherits from one who died inteſtate. See INTESTATE.

ABISHERSING *, an antient law-term, denoting a being free, or exempt, from all amerciaments for tranſgreſſions of any kind. See AMERCIAMENT.

* According to Spelman, it originally ſignifies a forfeiture, or amerciament; and ſhould rather be written *Miſherſhing*, *Miſhering*, or *Miſkerring*.

The word *Abiſherſing*, in a charter or grant, is ſaid to give the proprietor not only the forfeitures, and amerciaments of all others for tranſgreſſions committed within his fee; but alſo to exempt him from all ſuch controul by any within that compaſs.

ABJURATION *, in a general ſenſe, the act of denying, or renouncing a thing in a ſolemn manner, and even with an oath.

* The word is Latin, *Abjuratio*, compounded of *ab*, and *jurare*, to ſwear from, or againſt.

Among the Romans, *Abjuration* ſignified the denying a debt, pledge, depoſit, or the like truſt, by a falſe oath.

In which ſenſe, *Abjuration* coincides with perjuration; and ſtands diſtinguiſhed from ejuration, where the oath is ſuppoſed juſt.

ABJURATION, more particularly, is uſed for a ſolemn recantation, or renunciation of ſome doctrine, or opinion, as falſe and pernicious.

In our own laws, to *abjure* a perſon, is to renounce all authority or dominion of ſuch a perſon.—By the *oath of Abjuration*, a perſon binds himſelf not to own any regal authority in the perſon called the Pretender, or ever to pay him the obedience of a ſubject.

ABJURATION is alſo uſed in our antient cuſtoms, for an oath taken by a perſon guilty of felony; who, flying to a place of ſanctuary, would ſwear to forſake the realm for ever, in lieu of other puniſhment.—We alſo find inſtances of temporary *Abjurations*, viz. for three years, for one year and a day, and the like. This, in ſome caſes, was admitted from criminals in lieu of death. The devotion for the church was ſo warm, from the time of Edward the Confeſſor to the reformation, that if a man, having committed felony, could recover a church or church-yard before he were apprehended, it was an aſylum from which he could not be brought to take his trial at law; but confeſſing his crime to the juſtices, or coroner, and *abjuring* the kingdom, he was at liberty.

After *Abjuration*, a croſs was given him, which he was to carry in his hand through the highways, till he was got out of the king's dominions; this was called the banner of mother-church. In time, *Abjuration* dwindled into a perpetual confinement of the priſoner to the ſanctuary; wherein, after *abjuring* his liberty and free habitation, he was allowed to ſpend his life. By Stat. 21 Jac. I. all uſe of ſanctuaries, and conſequently of *Abjuration*, is taken away.

ABLACTATION. The weaning a child from the breaſt. See Supplement, article WEANING.

ABLACTATION, in the antient agriculture, is a method of engrafting; wherein the cyon of one tree, being united for ſome time to the ſtock of another, is afterwards cut off, and as it were weaned from its mother-tree *.

* Whence the name *Ablactation*; *viz.* of *ab*, from; and *lac*, milk.

Among the modern writers, *Ablactation* is more uſually called inarching, or grafting by approach. See the manner of performing it under the article INARCHING.

Ablactation is only practicable where the ſtock to be grafted on, and the tree from which the graft is to be taken, ſtand ſo near, that the branch or cyon may be applied, without cutting off. Hence, it is chiefly uſed on plants that grow in caſes; as orange, lemon, and pomgranate-trees; vines, jaſmins, &c. The ſeaſon is April or May. To perform it, the uſual method is, to take the branch, intended for the graft, and pare it away, both the rind and wood, the length of three inches; then, paring likewiſe the ſtock, ſo that they may join cloſely to each other, they bind them together, and cover them over with clay, or grafting-wax. As ſoon as they are found well incorporated together, the head of the ſtock is to be cut off four inches above the binding; and the ſpring following, the graft, leaving the ſtock to ſubſiſt by itſelf.

Or the operation may be done by cutting off the head of the ſtock at firſt, and leaving the top a little ſloped, and applying the graft thereto, as in ſhoulder-grafting. But this method is not found equally ſucceſsful.

ABLAQUEATION *, a name uſed by the antient writers of agriculture for an operation in gardening, whereby the earth is dug from about a vine, or other fruit-tree, and its roots are laid bare, to expoſe them more to the ſun, rain, and air, in order to promote its fecundity.—This is generally done in January.

* The word is formed from *ab*, from; and *lacus*, an hole, or ditch.

ABLATIVE *, in grammar, the ſixth caſe of Latin nouns.

* The word is Latin, formed from *auferre*, to take away. Priſcian alſo calls it the *comparative caſe*; as ſerving, among the Latins, for comparing, as well as taking away.

The *Ablative* is oppoſite to the dative; the firſt expreſſing the action of taking away, and the latter that of giving. See DATIVE.

The *Ablative* ſcarce anſwers to the juſt idea of a caſe; at leaſt it is the moſt vague of all others. It will be ſhewn, in its place, that the Engliſh, and other modern tongues, have properly no ſuch thing as caſes (See CASE). But even in the antient languages, from which the notion of caſes is borrowed, it is ſuggeſted, that the *Ablative* is only a ſort of ſupernumerary, or ſupplement to the reſt. The five proper caſes not being found ſufficient to expreſs all the relations of things to each other, recourſe was had to an expedient; *viz.* the putting a prepoſition before ſome of the other caſes; and this made the *Ablative*.

It may be added, that in the plural number the *Ablative* is ſtill more obſcure, as being only the dative repeated.

In Engliſh, French, &c. there is no preciſe mark whereby to diſtinguiſh the *Ablative* from other caſes; and we only uſe the term in analogy to the Latin. Thus, in the two phraſes, the magnitude of the city, and he ſpoke much of the city; we ſay, that of the city in the firſt is genitive, and in the latter *Ablative*; by reaſon it would be ſo, if the two phraſes were expreſſed in Latin.

ABLEGATIO. See ABDICATION.

ABLUENTS, ABLUENTIA, in medicine, a name which ſome authors give to a ſort of remedies, better known by the name of *abſtergents*. See ABSTERGENT.

ABLUTION, in antiquity, a religious ceremony in uſe among the Romans; being a ſort of purification, performed by waſhing the body, before they entered on ſacrifice.

Sometimes they waſhed their hands and feet, ſometimes the head, and oftentimes the whole body: for which purpoſe, at the entrance into their temples were placed marble veſſels filled with water.

This cuſtom they probably learnt from the Jews; ſince we read, in Scripture, that Solomon placed, at the entry into the temple which he erected to the true God, a great laver, which the text calls a braſen ſea, where the prieſts waſhed themſelves before they offered ſacrifice; having, beforehand, ſanctified the water, by throwing into it the aſhes of a victim that was ſlain in ſacrifice.

ABLUTION is particularly uſed, in the Romiſh church, for a ſup of wine and water, which the communicants antiently took after the hoſt, to waſh it down, and help to digeſt it.

The ſame term alſo ſignifies the water which ſerves to waſh the hands of the prieſt who conſecrated it.

ABLUTION, in pharmacy, is a preparation divers remedies undergo, by waſhing them in water, or ſome other fluid, proper to cleanſe and free them of their impurities, and ſo to exalt their powers.

ABLUTION is ſometimes alſo uſed, though with leſs propriety, for the waſhing or infuſing certain medicines in water, to freſhen them, and diſſolve their ſalts: this is otherwiſe called *dulcifying*.

ABOLITION *, ABOLISHING, in a general ſenſe, the act of deſtroying a thing, or reducing it to nothing.

* The word is Latin; derived, as ſome think, from the Greek απολλυω, to deſtroy; but, according to others, compounded of *ab* and *olere*, to ſmell; *q. d. ita perdere, ut ne oleat quidem*, not to leave any ſmell of it behind: yet in Pliny we even meet with *abolere odorem*.

In our laws, the *Abolition* of a law, ſtatute, or cuſtom, is the abrogating or repealing it.

In the civil law, the leave given by a prince, or judge, to a criminal accuſer, to deſiſt from further proſecution of the accuſed, is peculiarly called *Abolition*. *V.* 25 *H.* VIII. c. 51.

ABOMASUS, ABOMASUM, or ABOMASIUM, in comparative anatomy, one of the ſtomachs or ventricles of animals of the ruminating kind. See RUMINANT.

Beaſts that chew the cud are found to have four ſtomachs; *viz.* the rumen, or magnus venter, or ſtomach, properly ſo called; the reticulum, omaſus, and *Abomaſus*. See RUMINATION, &c.

The *Abomaſus*, popularly called the *maw*, is the laſt of the four; being the place wherein the chyle is formed, and from which the food deſcends immediately into the inteſtines.

It is full of a ſort of leaves, like the omaſus; but its leaves have this particular to them, that beſide the membranes they conſiſt of, they contain a great number of glands, not found in any of the firſt.

It is in the *Abomaſus* of calves and lambs that the rennet, or earning, is found, wherewith houſewives turn or curdle their milk.

ABORIGINES, or ABORIGENES, in geography, a name ſometimes given to the primitive inhabitants of a country, or thoſe who had their original therein; in contradiſtinction to colonies, or new races of inhabitants, derived from elſewhere.

The term *Aborigines* is famous in antiquity.—Though now an appellative, it was originally a proper name, given only to a certain people of Italy; and both the reaſon and origin of it are greatly diſputed among the learned.

ABORIGINES then denoted a nation in Italy, which inhabited the antient Latium, or country now called *Romania*, or *Campagna di Roma*.

In which ſenſe, the *Aborigines* are diſtinguiſhed from the Janigenæ, who, according to the falſe Beroſus, inhabited the country before them; from the Siculi, whom they expelled; from the Grecians, from whom they deſcended; from the Latins, whoſe name they aſſumed, after their union with Æneas and the Trojans; and, laſtly, from the Auſonii, Volſci, Œnotrii, &c. neighbouring nations in other parts of the country.

Whence this people came by the appellation, whether (1) as belonging to any of the ſpecies of *Aborigines*, above recited; or (2) from their having been *aberrigines*, *i. e.* wanderers; or (3) from their inhabiting the mountains; or on what other account, is much diſputed.

(1) St. Jerom ſays, they were ſo called as being, *abſque origine*, the primitive planters of the country after the flood. Dion. Halicarnaſſeus accounts for the name, as denoting them the founders of the race of inhabitants of that country: others think them ſo called as being originally Arcadians, who claimed to be earth-born, and not deſcended from any people.

(2) Aurelius Victor ſuggeſt another opinion; *viz.* that they were called *Aborigines*, *q. d. Aberrigines*, from *ab*, from, and *errare*, to wander; as having been before a wandering people, to which opinion Feſtus gives ſome credit. It is added, that Pelaſgians, another name ſometimes given them, is of the ſame import, and denotes vagabonds, like cranes.

(3) Pauſanias rather thinks they were thus called, απο ορεων, from mountains; which opinion ſeems confirmed by Virgil, who, ſpeaking of Saturn, the legiſlator of his people, ſays:

Is genus indocile, ac diſperſum montibus altis
Compoſuit, legeſque dedit.—

The *Aborigines* were either the original inhabitants of the country, ſettled there by Janus, as ſome imagine, or by Saturn, or Cham, as others, not long after the diſperſion; or even, as ſome think, before it: or they were a colony ſent from ſome other nation; who, expelling the antient inhabitants the Siculi, ſettled in their place. About this mother-nation there is great diſpute: ſome maintain it to be the Arcadians, parties of whom were brought into Italy at different times; the firſt under the conduct of Œnotrus, ſon of Lycaon, four hundred and fifty-five years before the Trojan war; a ſecond from Theſſaly: a third under Evander, ſixty years before the Trojan war; beſides another under Hercules; and another of Lacedæmonians, who fled from the ſevere diſcipline of Lycurgus: all theſe uniting, are ſaid to have formed the nation or kingdom of the *Aborigines*. Others will have them of Barbarian, rather than Grecian origin, and to have come from Scythia; others from Gaul: and, laſtly, others will have them to be Canaanites, expelled by Joſhua.

ABORTION is uſed, in medicine, for the unſeaſonable excluſion of an imperfect human fœtus, either alive, or dead, before the legitimate time of delivery.

In this ſenſe, *Abortion* amounts to the ſame with what we popularly call *miſcarriage*; the Latins *abortus*, and ſometimes *abactus*.

This may happen at any time of pregnancy; but if before the ſecond month after conception, it is properly called a *falſe conception*, or effluxion.

We have alſo hiſtories of irregular deliveries by the way of the anus, the navel, &c.

The uſual cauſes of *Abortion* are, immoderate evacuations, violent motions, ſudden paſſions, frights, &c. Other cauſes are, the largeneſs and heavineſs of the fœtus, irritation of the womb, relaxation of the ligaments of the placenta, weakneſs, and want of nouriſhment in the fœtus; exceſs of eating, long faſting or waking, the uſe of buſks for the ſhape, offenſive ſmells, violent purgatives; and, in the general, any thing that tends to promote the menſes.

The ſymptoms uſually preceding, are a fever, either continual or intermitting; pain in the loins and head, heavineſs in the eyes, a bearing down and conſtriction of the abdomen; an eruption of aqueous, or pure blood; falling of the breaſts; watery milk, &c. When the time of miſcarriage is juſt at hand, the pains are much the ſame as thoſe in labour.

Abortion is dangerous where the time of pregnancy is far advanced, ſo that the fœtus muſt be large, where the cauſe is very violent, or the patient ſtrongly convulſed, and where a large hæmorrhage precedes or enſues, or the fœtus is putrefied, &c. Under other circumſtances it rarely proves mortal.

The treatment is to be adapted to the particular ſymptoms and circumſtances: if the patient be plethoric, as ſoon as the firſt ſymptoms diſcover themſelves, a vein is to be opened. In caſe of flooding, recourſe is had to proper aſtringents; or if thoſe fail, to fomentations, injections, and ſuffumigations. If a teneſmus attend, rhubarb is to be uſed; and if there be an habitual laxity of the uterine veſſels, guaiacum. See GESTATION.

ABORTION is alſo uſed, ſomewhat abuſively, for a fœtus which, dying in the womb, continues there beyond the legitimate term; ſometimes ſeveral years, and ſometimes even during the whole life of the mother.

ABORTIVE, ſomething come before its due time, or before it has arrived at its maturity and perfection.

F. Jerom. Florentinius has an expreſs treatiſe of the baptiſm of *Abortives*, or *abortive* children. His aim is to ſhew, that an *Abortive* may, and ought to be baptized, at what time or term ſoever it come into the world; by reaſon the preciſe time when the fœtus begins to be animated is not known. There are ſeveral curious, and uncommon things in this work, which is intituled, *Homo dubius, ſive de baptiſmo Abortivorum.* Lugd. 1674. 4to.

ABORTIVE *Velom*, is that made of the ſkin of an *abortive* calf. See VELOM.

ABRACADABRA *, a magic word, which being repeated in due form, a certain number of times, is ſuppoſed to have the virtue of a charm or amulet, in curing agues, and preventing other diſeaſes.

* The word is of barbarous origin, formed from ΑΒΡΑΞΑΣ, the name of a god, ſuppoſed to contain great myſteries; from this, by lengthening the word with two additional ſyllables, to make it more quaint and ſonorous, comes *Abracadabra.* See BASILIDIAN.

The invention of this charm is generally aſcribed to the elder Serenus Sammonicus, who lived under Severus and Caracalla. Others ſuppoſe he only copied it from ſome other writer of the Baſilidian ſect. All we know for certain is, that in an heroic poem of this author ſtill extant, concerning eaſy and parable remedies for moſt diſeaſes, *de medicina parvo pretio parabili*, the word *Abracadabra* is preſcribed for ſemi-tertian agues, with the manner how it is to be applied; *viz.* by writeing it as many times as it contains letters, omitting each time the laſt letter in the former; ſo that the whole may form a kind of inverted cone *: in which there is this property, that which way ſoever the letters be taken, beginning from the apex, and aſcending either to the right or left, they make the ſame word, or, as ſome will have it, the ſame ſentiment, as is found in the firſt whole line.—According to Julius Africanus, another antient writer, the pronouncing of the word in the ſame manner will do as well.

* The preſcription, as given by Serenus, is as follows:

Inſcribes chartæ quod dicitur Abracadabra,
Sæpius & ſubter repetes, ſed detrahe ſummam,
Et magis atque magis deſint elementa figuris,
Singula quæ ſemper rapies, & cætera figes,
Donec in anguſtum redigatur litera conum.
His lino nexis collum redimire memento:
Talia languentis conducent vincula collo,
Lethaleſque abigent (miranda potentia!) morbos.

ABRASION * is ſometimes uſed, among medical writers, for the act of wearing away the natural mucus which covers the membranes, and particularly thoſe of the ſtomach and inteſtines, by ſharp corroſive medicines, or humours.

* The word is compoſed of the Latin *ab*, and *rado*, I ſhave, or ſcrape off.

ABRAXAS. The ſame as ABRACADABRA. Which ſee.

ABRENUNCIATION. See the article RENUNCIATION.

ABRIDGMENT, a ſummary, or contraction of a diſcourſe; wherein the leſs material things being more briefly inſiſted on, the whole is brought into a leſſer compaſs. See EPITOME.

The *Abridgments* of the Philoſophical Tranſactions, of Mr. Boyle's Philoſophical Works, &c. are works very uſeful in their kind: though it has been charged as a fault in the former of theſe, that the authors have taken upon them intirely to omit a great number of ſuch papers and diſcourſes, as were not ſo much to their own taſte; which is not the nature of an *Abridgment*, but of a florilege, analecta, or excerpta.

ABRIDGMENT, in law, is particularly uſed for the ſhortening a count, or declaration, by ſubtracting ſome of the ſubſtance of it.

A man is ſaid to *abridge his plaint* in aſſize, or a woman her demand in an action of dower, when, having put any lands therein which are not in the tenure of the tenant or defendant; and non-tenure, or the like, is pleaded to that land in abatement of the writ; they are brought to *abridge*, *i. e.* to deſiſt from and leave that parcel out of the demand; and pray that the tenant may anſwer to the reſt, to which he has not yet pleaded any thing.—Though the demandant has *abridged* his plaint or demand; yet the writ ſtill remains good for the reſt. The reaſon is, that ſuch writs run in general, and do not ſpecify particulars. See 21 *H.* VIII. *c.* 3.

ABROCHMENT, or ABBROCHMENT, ABROCAMENTUM, in ſome antient law-writers, denotes the act of ingroſſing or buying up commodities by wholeſale, before they come into the open market; in order to ſell them off dear by retail: otherwiſe called *foreſtalling*.

ABROGATION, the act of aboliſhing a law, by authority of the maker.

In which ſenſe, the word is ſynonymous with abolition, repealing, and revocation.

Abrogation ſtands oppoſed to rogation: it is diſtinguiſhed from derogation, which implies the taking away only ſome part of a law; from ſubrogation, which denotes the adding a clauſe to it; from obrogation, which implies the limiting, or reſtraining it; from diſpenſation, which only ſets it aſide in a particular inſtance; and from antiquation, which is the refuſing to paſs a law.

ABSCESS *, in medicine, a kind of inflammatory tumour, containing purulent matter, pent up in a fleſhy part, and corrupting and conſuming the fibres, and other ſubſtance thereof. See TUMOUR.

* Authors are divided as to the reaſon of the appellation: ſome think the tumour thus called, by reaſon parts before contiguous, *abſcedunt*, or ſeparate from each other; others, becauſe particles of the fibrous matters are torn off and waſted; others, becauſe the matter flows and is derived from another part, or is ſecreted from the blood; laſtly, others derive the appellation from the running of the pus; on which principle they aſſert, that it is not properly an *Abſceſs*, till it burſts, and begins to vent itſelf. But this is a critic's deciſion; which phyſicians will hardly be determined by.

Abſceſs is the ſame with what the Greek call *apoſtema*, and the Engliſh, *impoſtume*, or *impoſthumation*.

Almoſt all *Abſceſſes* are the conſequences of inflammation. —The ripening of *abſceſſes* is promoted by poultices, &c.— *Abſceſſes* are opened either by cauſtic or inciſion; but the latter in moſt caſes is preferable. *Sharp. Surg. Intr. c.* 2.

Abſceſſes ariſe often in women after delivery; and though dangerous in themſelves, yet they often appear to be the criſis of the diſeaſe that gave riſe to them.—For the cure, if they cannot be diſcuſſed, *i. e.* carried off by proper artificial evacuations, as phlebotomy, purging, &c. with the uſe of calomel between whiles, and gentle perſpiratives, fotus's, liniments, and cataplaſms; recourſe is to be had to the contrary method, and they muſt be brought to ſuppuration. When the matter is fully ripened, they are to be opened with a lancet or cauſtic, and their cure attempted by digeſtives and incarnatives. See RIPENER, and INCARNATIVE.

ABSCISSE, ABSCISSA, in conics, a part of the diameter, or tranſverſe axis, of a conic ſection, intercepted between the vertex, or ſome other fixed point, and a ſemiordinate. See CONIC *Section.*

Such are the lines AP, AP, &c. (*Tab. Conics, fig.* 20.) intercepted between the vertex A and the ſemiordinates PM, PM, &c. which are called *Abſciſſes*, of the Latin *abſcindere*, to cut off; as being parts cut off from the axis.—Others call them, *ſagittæ*, *q. d.* arrows.

In the parabola, the *Abſciſſe* is a third proportional to the parameter and ſemiordinate; and the parameter a third proportional to the *Abſciſſe* and ſemiordinate.

In the ellipſis, the ſquare of the ſubordinate is equal to the rectangle of the parameter into the *Abſciſſe*, ſubtracting another rectangle of the ſame *Abſciſſe* into a fourth proportional to the axis, parameter, and *Abſciſſe*.

In the hyperbola, the ſquares of the ſemiordinates are to each other as the rectangles of the *Abſciſſe* into another line, compoſed of the *Abſciſſe* and the tranſverſe axis.

ABSENT. See the article PRESENT.

ABSIS. See the article APSIS.

ABSOLUTE *, in a general ſenſe, ſomething that ſtands free or independent on others.

* The word is compounded of the Latin *ab*, from; and *ſolvere*, to looſen.

ABSOLUTE, in metaphyſics, denotes a being, whoſe whole eſſence does not conſiſt in a mere habitude or relation to another.

In which ſenſe *Abſolute* ſtands oppoſed to relative or reſpective.

ABSOLUTE is more particularly underſtood of a thing which does not proceed from any cauſe, or does not ſubſiſt by virtue of any other being, conſidered as its cauſe.

In which ſenſe, God alone is *Abſolute*.

Abſolute, in this ſenſe, is ſynonymous with independent, and ſtands oppoſed to dependent.

ABSOLUTE alſo denotes a thing's being free from conditions, or limitations.

In this ſenſe, the word is ſynonymous with unconditional. We ſay, an *Abſolute* decree, *Abſolute* promiſe, *Abſolute* obedience. The covenant with Noah was *Abſolute*, and without conditions; that under the goſpel, on condition of faith and obedience. The Antinomians alſo hold the goſpel-covenant *Abſolute*, and that Chriſt has purchaſed our ſalvation, without any conditions to be performed on our ſide.

ABSOLUTE *Government*, that wherein the prince is left ſolely to his own will, being not limited to the obſervance of any laws, except thoſe of his own diſcretion.

When the Danes made their king *Abſolute*, in 1670. they declared him abſolved from his coronation-oath.

ABSOLUTE *Number*, in algebra, is the known quantity or number which poſſeſſes one intire ſide, or part of an equation; being the rectangle or ſolid, whoſe root or value is to be found. See EQUATION.

Thus, in the equation $aa+16a=36$, the *Abſolute Number* is 36; which is equal to a multiplied by itſelf, added to 16 times a.

This is what Vieta calls *homogeneum comparationis*.

ABSOLUTE *Equation*, in aſtronomy, is the ſum of the optic and eccentric equations.

Ablative ABSOLUTE, in grammar, is a word or phraſe detached and independent of the reſt of the diſcourſe; neither governing, nor being governed of, any other thing.

This is frequent among the Latins; in imitation of whom, the modern languages have likewiſe adopted it: *deleto exercitu*, the army being cut to pieces. *All things conſidered*, reaſon will appear the beſt guide in matters of religion.

ABSOLUTE *Motion.*		MOTION.
ABSOLUTE *Place.*	See	PLACE.
ABSOLUTE *Space.*		SPACE.

ABSOLUTELY, in a general ſenſe, ſtands oppoſed to relatively. See the articles ABSOLUTE, and RELATIVE.

Thus the terms of a propoſition are ſaid to be taken *Abſolutely*, that is, without relation to each other.—Man, conſidered *Abſolutely*, and in himſelf, is a reaſonable creature.

ABSOLUTELY is alſo uſed for unlimitedly or unconditionally.

In which ſenſe, the ſchoolmen oppoſe it to *ſecundùm quid*.

Thus a thing is ſaid to be *Abſolutely*, and ſimply, good.

ABSOLUTELY is alſo uſed, by divines, in oppoſition to declaratively.

The church of Rome holds, that the prieſt can forgive ſins *Abſolutely*; the proteſtants ſay, only declaratively and miniſterially.

In grammar we ſay, a word is taken *Abſolutely*, *abſolutè ſumptus*, when it has no regimen, or government. Thus, in the phraſe *We ſhould pray without ceaſing*, the word *pray* is taken *Abſolutely*, as it governs nothing.

In geometry, *Abſolutely* is taken for intirely, or completely. Thus, we ſay, ſuch a thing is *Abſolutely* round; in contradiſtinction from what is only partly ſo; as a ſpheroid, cycloid, *&c.*

ABSOLUTION, ABSOLUTIO, in the civil law, *&c.* a definitive ſentence, whereby a perſon, accuſed of any crime, is acquitted, and declared innocent.

Among the Romans, the ordinary method of pronouncing judgment was this: After the cauſe had been pleaded on both ſides, the praeco uſed the word *dixerunt*, *q. d.* they have ſaid what they had to ſay; then, three ballots were diſtributed to each judge; one marked with the letter *A.* for *Abſolution*; another with *C.* for condemnation; and a third with *N. L.* for *non liquet*, it is not clear; to require reſpite of judgment: and according as the majority fell of this or that mark, the accuſed was *abſolved* or condemned, *&c.* If he were *abſolved*, the prætor diſmiſſed him with *videtur non feciſſe*, or *jure videtur feciſſe*.

When the votes were equally divided on the ſides of *Abſolution* and condemnation, the accuſed was *abſolved*: this procedure is ſuppoſed to be founded on the law of nature. Such is the ſentiment of Faber on the 125th law, *de Div. Reg. Jur.* of Cicero, *pro Cluentio*; of Quintilian, *Declam.* 254. of Strabo, lib. ix. *&c.*

ABSOLUTION, in the canon law, is a juridical act, whereby a prieſt, as a judge, and in virtue of a power given him by Jeſus Chriſt, remits the ſins of ſuch as, upon confeſſion, appear to have the conditions requiſite thereto.

The Romaniſts hold *Abſolution* a part of the ſacrament of penance: the council of Trent, ſeſſ. xiv. cap. iii. and that of Florence, in the decree *ad Armenos*, declare the form or eſſence of the ſacrament to lie in the words of *Abſolution*, *I Abſolve thee of thy ſins*.

The formula of *Abſolution*, in the Romiſh church, is abſolute; in the Greek church, it is deprecatory; and in the churches of the Reformed, declarative. Arcuvius, indeed, contends, that the Greek formula is abſolute; and that it conſiſts in theſe words, *Mea mediocritas habet te venia donatum*: but the inſtances he produces are either no formula's of *Abſolution*, or only of *Abſolution* from excommunication, not of ſacramental *Abſolution*.

ABSOLUTION is chiefly uſed, in the Reformed churches, for a ſentence whereby a perſon, who ſtands excommunicated, is releaſed, or freed from the ſame.

In the church of Scotland, if the excommunicated ſhew real ſigns of godly ſorrow; and if, upon application to the preſbytery, a warrant be granted for his *Abſolution*; he is brought before the congregation to confeſs his ſin, and expreſs his ſorrow, as often as the preſbytery ſhall think meet; when the congregation is ſatisfied of his penitence, the miniſter puts up a prayer, deſiring Jeſus Chriſt, who has inſtituted the ordinance of excommunication (*i. e.* of binding and looſing the ſins of men on earth), with a promiſe of ratifying the righteous ſentence above, to accept of this man, to forgive his diſobedience, *&c.* This done, he pronounces his *Abſolution*; by which his former ſentence is taken off, and the ſinner is again received into the communion.

In the church of Rome there are divers other political *Abſolutions*; as,

ABSOLUTIO *a ſævis*, which is neceſſary where a perſon has been concerned in ſeeing ſentence of death executed on a criminal, or has any other way diſqualified himſelf for the holding of a benefice.

ABSOLUTIO *ad cautelam*, is that granted to a perſon who has lodged an appeal againſt a ſentence of excommunication, by which the force of the cenſure is ſuſpended.

It being a maxim, in the papal juriſprudence, that the ſentence ſtands good, notwithſtanding any appeal; this ſort of *Abſolution* is ſometimes granted until the iſſue of his appeal be known: by means hereof, ſome articles, at leaſt, of his excommunication, are taken off; inſomuch that perſons may converſe with him without danger: and, beſide, in caſe of death, this ſentence is ſuppoſed to ſtand him in ſome ſtead.

ABSORBENTS, in medicine, remedies which, by the ſoftneſs or poroſity of their component parts, become proper to ſheath the aſperities of ſharp pungent humours; or to imbibe or dry away, as with a ſponge, ſuperfluous moiſtures.

Such are the teſtaceous powders, hartſhorn, coral, crabs eyes and claws, calcined bones, burnt ivory, terra ſigillata, and even iron itſelf: alſo divers woods; as ſanders, maſtic, guaiacum, ſaſſafras: and divers roots; as china, ſarſaparilla, *&c.*

Abſorbents are much the ſame with what we otherwiſe call driers and ſweeteners. Latin writers alſo uſe the word as ſynonymous with *imbibentia*, and *ſaturantia*.

The term *Abſorbent* is frequently confounded with alcali; alcalies having, really, the effect of *Abſorbents*, with reſpect to acids.

ABSTEMIOUS, is properly underſtood of a perſon who refrains abſolutely from all uſe of wine.

In which ſenſe, *Abſtemious* is ſynonymous with the Latin *invinius*, *vini abſtinens*, and the Greek αοινος, or even ὑδροποτης, and ὑδροπαραςατις, *q. d.* water-drink, water-advocate, *&c.* being compounded of *abs*, from; and *temetum*, wine.

ABSTEMIOUS is particularly uſed, among eccleſiaſtical writers, in ſpeaking of perſons who are diſabled from partaking of the cup in the euchariſt, by reaſon of a natural averſion to wine.

It has been diſputed, whether thoſe naturally *Abſtemious* may be allowed to communicate in the ſpecies of bread only? The Calviniſts, in the ſynod of Charenton, permitted them to communicate by only touching the cup with the lips, without drinking a drop: the Lutherans exclaim againſt this toleration, as a ſacrilegious mutilation of the ſacrament. There is no devout perſon, ſay they, but by force of prayer to God, may obtain power to ſwallow, at leaſt, a drop of wine.—V. *Stricker*, *in Nov. lit. Germ.* 1709. p. 304.

The biſhop of Meaux alleges the caſe of the *Abſtemious*, to juſtify the retrenchment of the cup; ſince it appears hence, that communion under both kinds is not a divine command, inaſmuch as there are ſome caſes wherein it may be diſpenſed withal.—V. *Nouv. rep. lett. t.* 3. p. 23. *Mem. de Trev.* 1708. p. 33. 1717. p. 1415.

The Roman ladies, in the firſt ages of the republic, were all enjoined to be *Abſtemious*; and that it might appear, by their breath, whether or no they kept up to the injunction, it was one of the laws of the Roman civility, that they ſhould kiſs their friends and relations whenever they accoſted them.

ABSTERGENTS *, or ABSTERSIVE *medicines*, a claſs of remedies, whoſe effect is to abrade and wipe away ſuch mucous particles as they meet in their paſſage; and thus cleanſe the parts from viſcid, or impure adheſions, and carry off the morbid matter of wounds, ulcers, *&c.*

* The word is compounded of the Latin *abs*, from; and *tergere*, to wipe.

Abſtergents are more uſually called, among phyſicians, *detergents*. See **Detergent**.

Many *abſtergents* are of the genus of balſamics; and ſome only differ, in their degree of ſubtilty and efficacy, from what are called vulneraries.

The principal ſimples, in the claſs of *abſtergents*, are, the leaves of wormwood, garlick, leeks, capers, ſcurvygraſs, fumitory, liverwort, tanſy, and vervain: bitter almonds, figs, jujebs, raiſins, dates, juniper-berries; gum ammoniac, balſam of Capivi, balm of Gilead, tacamahaca; turpentines; barberries, liquorice, turmeric, madder, parmaſitty, mummy, ſulphur, ſalt, mercury, and native cinnabar.—Theſe the reader will find particularly deſcribed under their proper articles.

ABSTINENCE *, in a general ſenſe, the act or habit of refraining from ſomething which we have a propenſion to, or find pleaſure in.

* The word is derived from the Latin *abſtinere*; formed of *abs*, from; and *tenere*, to hold; *q. d. ab aliqua re ſe tenere*.

The Jews were obliged to *abſtain* from their wives at certain ſeaſons.—The ſame is injoined, in the apoſtolical conſtitutions, on all faſt and meagre days: the church of England recommends certain days of faſting, and *abſtinence*.—*Abſtinence from fleſh* has been injoined by ſtatute even ſince the Reformation, particularly on Fridays, and Saturdays, and on vigils, and all commonly called *fiſh-days*, 2 and 3 *Ed.* VI. *c.* 19.—The like injunctions were renewed under Q. Elizabeth, but at the ſame time it was declared, that this was done, not out of motives of religion, as if there were any difference in meats, but in favour of the conſumption of ſea-fiſh, and to multiply the number of fiſhermen and mariners, as well as ſpare the ſtock of ſheep, 5 *Eliz. c.* 15.—The great faſt, ſays St. Auguſtine, is to *abſtain* from ſin. See **Fast**.

The antient athletæ lived in a perpetual *abſtinence* from all kind of ſenſible pleaſure, to render their bodies more robuſt, and hardy.

Abstinence is more particularly uſed for a ſpare diet, or a ſlender parſimonious uſe of food, much below the ordinary ſtandard of nature. See **Food**, and **Diet**.

The phyſicians relate wonders of the effects of *abſtinence* in the cure of many diſorders, and in protracting the term of life.—The noble Venetian, Cornaro, after all imaginable means had proved vain, ſo that his life was deſpaired of at forty, recovered, and lived to near an hundred, by mere dint of *abſtinence*; as he himſelf gives the account.

It is indeed ſurpriſing, to what a great age the primitive Chriſtians of the Eaſt, who retired from the perſecutions into the deſarts of Arabia and Egypt, lived, healthful and chearful, on a very little food. Caſſian aſſures us, that the common rate for twenty-four hours was twelve ounces of bread, and mere water; and that with this S. Antony lived an hundred and five years; James the hermit an hundred and four; Arſenius, tutor to the emperor Arcadius, an hundred and twenty; St. Epiphanius an hundred and fifteen; Simeon the ſtylite an hundred and twelve; and Romuald an hundred and twenty.

Indeed we can match, nay outdo, theſe inſtances of longævity, from the ſame cauſe, at home. Buchanan writes, that one Laurence preſerved himſelf to an hundred and forty by force of temperance and labour; and Spotſwood mentions one Kentigern, afterwards called S. Mongah, or Mungo, who lived to an hundred and eighty-five by the ſame means.—Other inſtances ſee under the article **Longævity**.

Moſt of the chronical diſeaſes, the infirmities of old age, and the ſhort lives of Engliſhmen, are owing, according to Dr. Cheyne, to repletion; and may be either cured, prevented, or remedied, by *abſtinence*.

Among the brute creation, we ſee extraordinary inſtances of long *abſtinence* *.—It is the natural courſe of divers ſpecies to paſs four, five, or ſix months, every year, without either eating or drinking; accordingly, the tortoiſe, dormouſe, ſerpent, *&c.* are obſerved regularly to retire, at certain ſeaſons, to their reſpective cells, and hide themſelves; ſome get into the caverns of rocks, or ruins; others dig holes under ground; others get into the woods, and lay themſelves up in the clefts of trees; others bury themſelves under water, *&c.*

* The ſerpent-kind bear *abſtinence* to a miracle. We have ſeen rattle-ſnakes that had ſubſiſted many months without any food, yet ſtill retained their vigour and fierceneſs.—Dr. Shaw (*Trav.* p. 429.) ſpeaks of a couple of ceraſtes (a ſort of Egyptian ſerpents), which had been kept five years in a bottle, cloſe corked, without any ſort of food, unleſs a ſmall quantity of ſand, wherein they coiled themſelves up in the bottom of the veſſel, may be reckoned as ſuch: yet, when he ſaw them, they had juſt caſt their ſkins, and were as briſk, and lively, as if juſt taken.

In effect, ſeveral ſpecies of birds, the whole tribe almoſt of inſects, and many among the other tribes, are able to ſubſiſt all winter, not only without food, but many of them without reſpiration too.—This furniſhes an admirable inſtance of the wiſdom of the creator: the proper food of theſe creatures, eſpecially the inſect tribe, being then wanting, there is a proviſion for them to live without it. When the fields are diveſted of their flowery furniture, and the trees and plants are ſtripped of their fruits, what would become of ſuch animals as are ſubſiſted only by the produce of the ſpring, and ſummer? And when the air is grown rigid and chilly with froſt, what would become of thoſe many tender ſpecies which are impatient of cold? To prevent the total deſtruction and extirpation of many ſpecies of animals, the author of nature has provided, that creatures, thus bereaved of their food, ſhould be likewiſe impatient of cold; to lead them thus to ſhelter themſelves out of the way of danger; and that, when there arrived, the natural texture and viſcidity of their blood ſhould diſpoſe it, by a further degree of cold, to lag and ſtagnate in the veſſels: ſo that, the circulation ſtopping, and the animal functions being, in great meaſure, ſuſpended; there is no ſenſible waſte or conſumption of parts, but they remain in a kind of drowſy neutral ſtate, between life and death; till the warm ſun revive both them, and their food, together, by thawing the congealed juices, both of ſuch animals and vegetables.

It is more than probable, that all motion of the animal juices is extinct in flies, and other inſects, when thus aſleep; in that, though cut in pieces, they do not awake, nor does any fluid ouſe out at the wound, unleſs ſome extraordinary degree of warmth have been firſt applied to unbind the congelation.—The ſleep of ſuch animals is little elſe than death, and their waking, a reſurrection.—For if life do not conſiſt in a circulation of the blood, we do not know what it conſiſts in.

Hence it is no wonder that tortoiſes, dormice, *&c.* are found as fat and fleſhy, after ſome months *abſtinence*, as before.—Sir G. Ent weighed his tortoiſe ſeveral years ſucceſſively, at its going to earth in October, and coming out again in March; and found, that of four pounds four ounces, it only uſed to loſe about one ounce. V. *Philoſoph. Tranſact.* N° 194. Indeed we have inſtances of men paſſing ſeveral months as ſtrictly *abſtinent* as other creatures.—The records of the Tower mention a Scotſman, impriſoned for felony, and ſtrictly watched in that fortreſs for ſix weeks; in all which time he took not the leaſt ſuſtenance; for which he had his pardon. The German Ephemerides ſpeak of one Martha Taylor, who, by a blow on the back, fell into ſuch a proſtration of appetite, that ſhe took no ſuſtenance, beſides a few drops with a feather, for thirteen months: but this was a morbid and unnatural caſe; for ſhe ſlept but little, all the time.—We may add the inſtance of S. Chilton, of Tinſbury, near Bath; who, in the year 1693. 1694. 1695. ſlept ſometimes four months, and ſometimes above ſix together, with very little food: and ſix weeks without any more than a little tent, conveyed with a quill into his mouth through a hole in his teeth. V. *Philoſoph. Tranſact.* N° 304.

It is to be added, that, in moſt of the inſtances of long *abſtinence* related by naturaliſts, there were apparent marks of a texture of blood, and humours, much like that of ſummer-beaſts and inſects.—Though it is no improbable opinion, that the air itſelf may furniſh ſomething for nutrition. It is certain, there are ſubſtances of all kinds, animal, vegetable, *&c.* floating in the atmoſphere; which muſt be continually taken in by reſpiration: and that an animal body may be nouriſhed thereby, is evident, in the inſtance of vipers; which, if taken when firſt brought forth, and kept from every thing but air, will yet grow very conſiderably in a few days. So the eggs of lizards are alſo obſerved to increaſe in bulk, after they are produced, though there be nothing to furniſh the increment but air alone; after the like manner as the eggs or ſpawn of fiſhes grow, and are nouriſhed with the water.—And hence, ſay ſome, it is that cooks, turnſpit dogs, *&c.* though they eat but little, yet are uſually fat.

ABSTRACT, **Abstractum**, in philoſophy, a thing ſeparated from ſome other thing, by an operation of the mind, called *abſtraction*. See **Abstraction**.

Abstract, in a more particular ſenſe, denotes an idea formed in the mind, when we conſider a thing ſimply in itſelf, without reſpect to the ſubject wherein it reſides; or it is a ſimple idea, detached and ſeparated from any particular ſubject, or complex idea, for the ſake of viewing and conſidering it more diſtinctly.

Thus magnitude and humanity are *abſtracts*, or *abſtract* ideas, when conſidered in themſelves, and without being attached to any particular body, or perſon; though they cannot have any real ſubſiſtence without ſuch ſubjects, nor the ſubjects without them.

Whiteneſs is an *abſtract*, inaſmuch as it does not denote any one white object, but that colour, or idea in the general, where-ever found.

From the knowlege of *abſtracts* we arrive at that of concretes, which is the oppoſite term; concrete denoting a general or *abſtract* idea's being attached to ſome particular ſubject, or conſidered as combined with ſome other ideas; as, great houſe, white wall.

Abstract is alſo uſed as a term which ſignifies an *abſtract* idea.

In which ſenſe, the words whiteneſs, paternity, animality, juſtice, crookedneſs, *&c.* are *abſtracts*, or *abſtract* terms.

Abſtract Terms may be conceived as words which denote a more ſimple conception of a form, or quality exiſting in a thing; without expreſſing the ſubject wherein it reſides.—The ſchool-philoſophers define *abſtract* terms from the ſimplicity of their ſignification: *abſtracts*, according to them, expreſs only the forms of things, or attributes of things, diſtinct from the ſubjects whereof they are forms or attributes.

All our ſimple ideas, ſays Mr. Locke, have *abſtract*, as well as concrete names; as, whiteneſs, white; ſweetneſs, ſweet; *&c.* The like alſo holds in our idea of modes, and relations; as, juſtice, juſt; equality, equal; *&c.*

But as to our ideas of ſubſtances, we have very few *abſtract* names at all.—Thoſe few that the ſchools have forged, as *animalitas*, *humanitas*, &c. hold no proportion with the infinite number of names of ſubſtances; and could never get admittance into common uſe, or obtain the licence of public approbation: which ſeems to intimate a confeſſion of mankind, that they have no ideas of the real eſſences of ſubſtances; ſince they have not names for ſuch ideas.

It was only the doctrine of ſubſtantial forms, and the confidence of miſtaken pretenders to a knowlege they had not, which firſt coined, and then introduced *animalitas*, *humanitas*, and the like; which yet went very little farther than their own ſchools, and could never get to be current among underſtanding men.

But the reality and exiſtence of all *abſtract* ideas, and of any ſuch faculty in the mind as *abſtraction*, has of late been controverted. See ABSTRACTION.

In effect, if there were any ſuch things as *abſtracts*, *abſtract* qualities, *&c.* we do not ſee how they could be deſtroyed; they muſt be permanent and immutable; for that which deſtroys the white warm flame, could not reach the whiteneſs, or the warmth: that which deſtroys the figured, moving, ſolid ball, could not hurt the figure, motion, ſolidity, *&c.*—*Abſtract* ideas, in fine, ſeem to tend to ſubſtantial forms.

ABSTRACT is alſo extended to divers other things, in reſpect of their purity, ſimplicity, ſubtility, *&c.*—In which ſenſe, we ſay,

ABSTRACT *Numbers* are aſſemblages of units, conſidered in themſelves, and not applied to denote any collections of particular ſorts of things.

ABSTRACT *Mathematics* are thoſe branches employed about quantity conſidered abſolutely, or in the general; without reſtriction to any certain kind or ſpecies of it.

Such are geometry and arithmetic.

In this ſenſe, *abſtract* mathematics ſtand oppoſed to mixt mathematics; where the ſimple and *abſtracted* properties and relations of quantity delivered in the former, are applied to ſenſible objects; and by that means become intermixed with phyſical conſiderations.—Such are hydroſtatics, optics, navigation, *&c.*

ABSTRACT is alſo uſed, in matters of literature, for a compendious view, or epitome of a larger work.

An *abſtract* is ſuppoſed to be a degree ſhorter, and more ſuperficial, than an abridgment. See ABRIDGMENT.

ABSTRACTION, an operation of the mind, whereby we ſeparate things naturally conjunct, or exiſting together; and form, and conſider, ideas of things thus ſeparated. See ABSTRACT.

The faculty of *abſtracting*, ſtands directly oppoſite to that of compounding.—By compoſition we conſider thoſe things together, which, in reality, are not joined together in one exiſtence. And by *abſtraction* we conſider thoſe things ſeparately and apart, which, in reality, do not exiſt apart.

Abſtraction is chiefly employed theſe three ways.—Firſt, when the mind conſiders any one part of a thing, in ſome reſpects diſtinct from the whole; as a man's arm, without the conſideration of the reſt of his body.

Secondly, when we conſider the mode of any ſubſtance, omitting the ſubſtance itſelf; or when we ſeparately conſider ſeveral modes which ſubſiſt together in one ſubject. See MODE.

This *abſtraction* the geometricians make uſe of, when they conſider the length of a body ſeparately, which they call a line; omitting the conſideration of its breadth and depth. See LINE.

Thirdly, it is by *abſtraction*, that the mind frames general, or univerſal ideas; omitting the modes and relations of the particular objects whence they are formed.—Thus, when we would underſtand a thinking being in general, we gather from our ſelf-conſciouſneſs what it is to think; and omitting the conſideration of thoſe things which have a peculiar relation to our own mind, or to the human mind; we think of a thinking being in general.

Ideas framed thus, which are what we properly call *abſtract ideas*, become general repreſentatives of all objects of the ſame kind; and their names applicable to whatever exiſts conformable to ſuch ideas.—Thus, the colour that we receive from chalk, ſnow, milk, *&c.* is a repreſentative of all that kind; and has a name given it, *whiteneſs*, which ſignifies the ſame quality, where-ever found or imagined.

It is this laſt faculty, or power of *abſtracting*, according to Mr. Locke, that makes the great difference between men and brutes; even thoſe latter muſt be allowed to have ſome ſhare of reaſon: that they really reaſon in ſome caſes, ſeems almoſt as evident as that they have ſenſe; but it is only in particular ideas. They are tied up to thoſe narrow bounds, and do not ſeem to have any faculty of enlarging them by *abſtraction*. *Eſſay on Human Underſtanding*, L. III. c. 3.

Such is the doctrine of *abſtract* ideas, under the improvements of that excellent author.—In effect, it is the ſtanding opinion, that the mind has ſuch a power or faculty of framing *abſtract* ideas, or notions of things; and on ſuch very ideas do a great part of the writings of philoſophers turn. Theſe are ſuppoſed in all their ſyſtems; and without them there would be nothing done.—They are more eſpecially reputed the objects of logic, mathematics, and metaphyſics, and all that paſſes under the notion of the moſt *abſtracted* and ſublime learning.

Yet has a late eminent and ingenious author, Dr. Berkeley, conteſted the reality of ſuch ideas; and gone a good way towards overturning the whole ſyſtem, and conſequently towards ſetting philoſophy on a new footing.

The qualities or modes of things, it is on all hands agreed, do never really exiſt apart, and ſeparated each from all others, but are conſtantly mixed and combined together, ſeveral in the ſame object.—But, ſay the philoſophers, the mind being able to conſider each quantity ſingly, or abſtracted from other qualities with which it is united, does by that means frame to itſelf *abſtract* ideas, of a different nature and kind from the ſenſible ones.

For an example hereof: the eye perceiving an object extended, coloured, and moved, reſolves this compound idea, into its ſimple conſtituent ones; and viewing each by itſelf, excluſive of the reſt, frames *abſtract* ideas of extenſion, colour, and motion themſelves, or in their own nature.—Not that it is poſſible for ſuch colour and motion to exiſt without extenſion; but only that the mind can frame to itſelf, by *abſtraction*, the idea of colour excluſive of extenſion; and of motion, excluſive both of colour and extenſion.

Again, ſay the ſame philoſophers, the mind having obſerved that in the particular extenſions perceived by ſenſe, there is ſomething common, and alike in all; and ſome other things peculiar; as, this or that figure, or magnitude, which diſtinguiſh them one from another; it can conſider apart, or ſingle out by itſelf, what is common; making thereof a general *abſtract* idea of extenſion, which is neither line, ſurface, nor ſolid, nor has any figure or magnitude, but is an idea intirely preſcinded from them all.—So, likewiſe, by leaving out of the ſeveral colours perceived by ſenſe, that which diſtinguiſhes them from one another, and only retaining what is common to all, it makes an idea of colour in the *abſtract*, which is neither red, nor blue, nor white, *&c.*—After the ſame manner, by conſidering motion *abſtractedly*, both from the body moved, and from the figure it deſcribes, and all particular directions and velocities; an *abſtract* idea of motion is framed, which equally correſponds to all motions whatever.

They add, that as the mind frames *abſtract* ideas of qualities or modes; ſo does it, by the ſame faculty, attain *abſtract* ideas of the more compound beings, which include many coexiſtent qualities.—For an example.—Having obſerved that Peter, James, John, *&c.* reſemble each other in ſhape, and other qualities; we can leave out of the complex idea we had of Peter, James, *&c.* that which is peculiar to each, retaining only what is common to all, and ſo make an *abſtract* idea, wherein all the particulars equally partake.—And thus it is we are ſuppoſed to come by the *abſtract* idea of man, or of humanity, or of human nature; wherein there is indeed included colour, becauſe no man but has ſome colour, but it is neither white, nor black, nor brown; becauſe there is no one particular colour wherein all men partake. So likewiſe there is included ſtature, but then it is neither tall, nor low, nor yet middle ſtature, but ſomething *abſtracted* from all theſe: and ſo of the reſt.

Farther yet, there being a general variety of other creatures, which partake in ſome parts, but not all, of the complex idea of man; the mind leaving out thoſe parts which are peculiar to men, and retaining thoſe only which are common to all living creatures, frames the idea of animal; which *abſtracts* or participates not only of all men, but all birds, beaſts, fiſhes, and inſects.

The conſtituent parts of ſuch *abſtract* idea of animal, are body, life, ſenſe, and ſpontaneous motion.—By body, is meant, body without any particular ſhape, or figure, there being no one common to all animals; without covering, either of hair, of feathers, or ſcales: nor yet naked; hairs, feathers, ſcales, and nakedneſs, being the diſtinguiſhing properties of particular animals, and for that reaſon left out of the *abſtract* idea. Upon the ſame account, the ſpontaneous motion muſt be neither walking, nor flying, nor creeping; it is nevertheleſs a motion—But what that motion is, it is not eaſy to perceive.

‘ I will not affirm, ſays Dr. Berkeley, that other people have
‘ not this wonderful faculty of *abſtracting* their ideas; but I
‘ am confident I have it not myſelf.—I have, indeed, a fa-
‘ culty of imagining, or repreſenting to myſelf the ideas of

‘ things I have perceived, and of variouſly compounding or ‘ dividing them: I can imagine a man with two heads, or ‘ the upper parts of a man joined to the body of a horſe. I ‘ can conſider the hand, the eye, the noſe, each by itſelf, ‘ *abſtracted* or ſeparated from the reſt of the body.—But then, ‘ whatever hand or eye I imagine, it muſt have ſome parti- ‘ cular ſhape and colour.—So, again, the idea of a man I ‘ frame to myſelf, muſt be either of a white, or a black, or a ‘ tawny, a ſtrait or a crooked, a tall, or a low, or a middle- ‘ ſized man.

‘ I cannot by any effort of thought conceive the *abſtract* idea ‘ above deſcribed; and it is equally impoſſible for me to form ‘ the *abſtract* idea of motion, diſtinct from the body moving, ‘ and which is neither ſwift nor ſlow, curvilinear, nor recti- ‘ linear.—And the like may be ſaid of all other *abſtract* ge- ‘ neral ideas whatever.’

Since all things that exiſt are only particulars, ‘ Whence, ſays ‘ Mr. Locke, is it, that we come by general words, expreſ- ‘ ſive of a thouſand individuals?’ His anſwer is, terms only become general, by being made the ſigns of *abſtract* and general ideas; ſo that the reality of *abſtract* ideas ſhould follow from the reality of general words.—But this ſeems a deception.—A word becomes general, by being made the ſign, not of an *abſtract* general idea, but of ſeveral particular ones, any one of which it indifferently ſuggeſts to the mind.—For an example, when I ſay, that *Whatever has extenſion is diviſible*; the propoſition is to be underſtood of extenſion in general: not that I muſt conceive any *abſtract* general idea of extenſion, which is neither line, ſurface, nor ſolid, neither great nor ſmall, *&c.* To make this more evident, ſuppoſe a geometrician to be demonſtrating a method of dividing a line into two equal parts: in order hereto, he draws, for inſtance, a black line, an inch long; and this, which in itſelf is a particular line, is nevertheleſs, with reſpect to its ſignification, general; ſince it repreſents all lines whatever: ſo that what is demonſtrated of this one, will hold of all others.—And as that particular line becomes general by being made a ſign; ſo does the name *line:* and as the former owes its generality, not to its being the ſign of an *abſtract* or general line, but of any or all particular right lines that may poſſibly exiſt; ſo muſt the latter derive its generality from the ſame cauſe.

Mr. Locke, ſpeaking of the difficulty of forming *abſtract* ideas, ſays, ‘ And does it not require ſome pains and ſkill to form ‘ the general idea of a triangle, which yet is none of the moſt ‘ *abſtract* and comprehenſive? for it muſt be neither oblique, ‘ nor rectangular; neither equilateral, iſoſceles, nor ſcalenous; ‘ but all, and none of theſe, at once.’—Now, let any man look into his thoughts, and try whether he has, or can attain to an idea of a triangle correſpondent to this deſcription.

From the notion of *abſtract* ideas, Dr. Berkeley endeavours to ſhew, it was, that bodies firſt came to be ſuppoſed to have an exiſtence of their own, out and independent of the mind perceiving them.—Can there be a greater ſtrain of *abſtraction*, ſays he, than to diſtinguiſh the exiſtence of ſenſible objects from their being perceived, ſo as to conceive them exiſting unperceived?

We ſhall only add, that *abſtracting*, on the common ſyſtem, is no more than generalizing: it is making one thing ſtand for an hundred, by omitting the conſideration of the differences between them: it is taking ſeveral differents, *i. e.* different combinations, ſetting aſide the peculiarities in each, and conſidering only what is found alike in all.—Thus it is that I ſay, *I love my friend, love my miſtreſs, love myſelf, my bottle, my book, my eaſe*, &c.—Not that it is poſſible I ſhould have the ſame perception with reſpect to ſo many different ſorts of things, things that ſtand in ſuch different relations to me; but only that there appearing ſomething in them all that bears a reſemblance to the reſt, in ſome circumſtance or other, I chooſe to expreſs all by one name, *love.* For if I conſider the tendency and effects of them all, I ſhall find they lead me very different ways, to very different actions; all the analogy there is between them, is a ſort of pleaſure or ſatisfaction, ariſing upon the application of the particular object to its proper organ, or ſenſe.—The *abſtract* idea of love, then, will terminate in the idea of pleaſure; but, it is certain, there can be no idea of pleaſure, without a thing pleaſant to excite it. Any other *abſtract* idea of pleaſure, will amount to no more than a view or perception of the circumſtances wherewith our pleaſures have been attended: but theſe are mere externals, foreign to the pleaſurable ſenſation itſelf; which nothing but an object, applied in ſuch and ſuch a manner, can excite.—To ſuppoſe an idea of pleaſure produced indirectly, by any other than the proper cauſe, is as abſurd as to ſuppoſe an idea of ſound, produced without a ſonorous object. The mind has no power of making any ideas, call them what you will, whether *abſtract*, or *concrete*; or *general*, or *particular*: its activity goes no farther than to the perceiving of ſuch as are preſented to it: ſo that its action is really no other than a degree of paſſion.

ABSTRUSE*, denotes ſomething deep, hidden, or far removed from the common apprehenſions, and ways of conceiving; in oppoſition to what is obvious, and palpable.

* The word is of Latin original *abſtruſus*; formed of *abs*, from, and *trudo*, I thruſt; *q. d.* being far off, and out of reach.

In this ſenſe, metaphyſics is an *abſtruſe* ſcience; the new doctrine of infinites is an *abſtruſe* point of knowlege that few people attain to.

ABSURD, Absurdum, a thing that thwarts, or goes contrary, to the common notions, and apprehenſions of mankind.

Thus, a propoſition would be *abſurd*, that ſhould affirm, that two and two make five; or that ſhould deny them to make four.

The logicians have a way of proving the truth of a propoſition, by ſhewing, that the contrary is *abſurd*.

This they call

Reductio ad Absurdum, or *arguing ex abſurdo*. See Reduction.

ABSURDITY, a kind of error, or offence, againſt ſome evident, and generally allowed truth, or principle.

The greateſt of all *abſurdities* is the contradiction. See Contradiction.

The ſchoolmen make two ſpecies of *abſurdities*.—The one, *abſolute*, απλως, which contradicts the common ſenſe of mankind; the other *relative*, τινι, which gives the lye to ſome one, or more philoſophers; or perſons of great weight and authority.

In this ſenſe, the doctrine of a *vacuum* is an abſurdity, as being contrary to Ariſtotle: and that of a *plenum*, as being contrary to Sir Iſaac Newton.—In effect, there is ſcarce one truth of any moment, but what is an *abſurdity* in this ſenſe; as being repugnant to the ſyſtem of ſome ſect, or party.

ABSYNTHIUM*, or Absinthium, a medicinal plant, of conſiderable efficacy in quality of a bitter, and ſtomachic; popularly called *wormwood.*

* The word ſeems compounded of the privative particle α, and ψινθος, *delectatio*, pleaſure; alluding to the diſagreeable taſte of this plant.

There are divers kinds of *abſynthium* enumerated by botaniſts. Thoſe which chiefly obtain in medicine, are, 1°, The *Roman*, or ſmall, called alſo *Pontic*; uſed as a ſtomachic, aſtringent, and diſcutient, and to prevent putrefaction.—Etmuller ſays, there is not a chronical diſtemper in which it is not ſerviceable.—A conſerve of the Roman *abſynthium* is now alſo much uſed in the ſhops.

2°, The *common*, or large *wormwood*, *Abſynthium Vulgare*, or *Vulgare Majus:* this is much bitterer than the former, and antiently was uſed, not only as a ſtomachic, and a deſtroyer of worms, but alſo as a detergent, and preſcribed againſt the jaundice, and dropſy: but it is now grown into diſuſe in thoſe intentions, as being prejudicial to the eyes; and is chiefly retained as an ingredient in ſome of the officinal compoſitions; and particularly ſome cephalic diſtilled waters.—The infuſion of *abſynthium* in wine, makes what they call *vinum abſynthites*.

The pharmacopœias alſo mention an abſtract of *abſynthium*, *extractum abſynthii*; and a ſyrup of *abſynthium*, *ſyrupus de abſynthio*.—

Some will have it to be the common wormwood that yields the *ſemen ſanctum*, or *ſantonicum*, i. e. worm-ſeed; but Matthiolus with juſtice affirms the contrary. See Santonicum.

ABUNDANCE*, *Copia*, plenty.

* *Abundantia*, overflowing, is compounded of *ab*, from; and *unda*, wave, or water.

Abundance, when carried to an exceſs, is a fault, called *redundance*, *exuberance*, &c.

The author of the *Dictionnaire Oeconomique* gives divers manners or ſecrets of producing *abundance*; as, an *abundant* crop of wheat, pears, apples, peaches, *&c.* See Fecundity.

ABUNDANT *Numbers*, are thoſe whoſe quota-parts added together, exceed the number itſelf whereof they are parts. See Number.

Thus, the number 12 is *abundant*, its quota-parts, 1, 2, 3, 4, and 6, amounting to 16.—In oppoſition to *abundant* numbers ſtand defective ones. See Defective.

ABUSE*, an irregular uſe of a thing; or the introducing ſomething contrary to the true intention thereof.

* The word is compounded of *ab*, from; and *uſus*, uſe.

The buſineſs of reformations, viſitations, *&c.* is to correct *abuſes* ſecretly crept into diſcipline, *&c.*—Conſtantine the Great, by introducing riches into the church, laid the foundation for thoſe numerous *abuſes* in it, which the ſucceeding ages groaned under.

Self-Abuse, is a phraſe uſed by ſome late writers for the crime of ſelf-pollution. See Pollution.

In grammar, to apply a word *abuſively*, or in an *abuſive* ſenſe, is to miſapply, or pervert its meaning.

A permutation of benefices, without the conſent of the biſhop, is deemed *abuſive*, and conſequently is null.

ABUTTALS, Abbutals, Abutals, among law-writers, denote the buttings or boundings of a piece of land; expreſſing on what other lands, highways, or the like, the ſeveral extremes thereof do *abut*, or terminate. See Boundary.

In this ſenſe, the word is ſometimes alſo written corruptly, *abbuttals*, or *abutals*.—In old ſurveys we often find them called *headlands*.—*Abuttals* amount to the ſame with what Latin writers call *capita*; Marculſus, *frontes*; the French, *bouts*.—In Croke, the plaintiff is ſaid to fail in his *abuttals*, that is, in ſetting forth how the land is bounded.

ABYSS *, in a general ſenſe, denotes ſomething profound, and, as it were, bottomleſs.

* The word is originally Greek, αβυσσος; compounded of the privative α, and βυσσος, bottom; *q. d.* without a bottom. Suidas, and others, give different origins; as, from α, and βυω, to cover, to hide; or from α, and δυω, &c. But the more judicious reject them, as but one degree better than that of the old gloſſariſt, who derives *abyſſus* from *ad ipſus*, in regard the waters flock hither.

We ſay, the *abyſs* of a mountain, an *abyſs* of waters, the great *abyſs*, the Moſaic *abyſs*, an unfathomable *abyſs*, &c.

ABYSS, in a more particular ſenſe, denotes a deep maſs, or fund of waters.

In this ſenſe the word is particularly uſed, in the Septuagint, for the water which God created at the beginning with the earth, which encompaſſed it round, and which our tranſlators render by the *deep*.—Thus it is that darkneſs is ſaid to have been on the face of the *abyſs*.

ABYSS is alſo uſed for an immenſe cavern in the earth, where God collected all thoſe waters on the third day; which, in our verſion, is rendered the *deep*, and elſewhere the *great deep*.

Dr. Woodward has let ſome light into this great *abyſs*, in his *Natural Hiſtory of the Earth*.—He aſſerts, that there is a mighty collection of waters incloſed in the bowels of the earth; conſtituting a huge orb in the interior or central parts of it; and over the ſurface of this water he ſuppoſes the terreſtrial ſtrata to be expanded.—This, according to him, is what Moſes calls *the great deep*, and what moſt authors render *the great abyſs*.

That there is ſuch an aſſemblage of waters lodged in the depths of the earth, is confirmed by abundance of obſervations. See EARTH, and DELUGE.

The water of this vaſt *abyſs*, he aſſerts, does communicate with that of the ocean, by means of certain hiatus's, or chaſms paſſing betwixt it and the bottom of the ocean: and this and the *abyſs* he ſuppoſes to have one common centre, around which the water of both is placed; but ſo that the ordinary ſurface of the *abyſs* is not level with that of the ocean, nor at ſo great a diſtance from the centre as the other, it being, for the moſt part, reſtrained and depreſſed by the ſtrata of earth lying upon it; but where-ever thoſe ſtrata are broken, or are ſo lax and porous, that water can pervade them, there the water of the *abyſs* aſcends, fills up all the clefts and fiſſures into which it can get admittance; and ſaturates all the interſtices and pores of the earth, ſtone, or other matter, all around the globe, quite up to the level of the ocean.

ACACIA *, in medicine, an inſpiſſated juice of a ſhrub of the thorn kind, uſed as an aſtringent.

* The word is compounded of α, very, and κακος, evil; on account of the prickles.

There are two kinds, the *vera*, and *Germanica*.

The **ACACIA** *vera* is brought from the Levant in round balls, of different ſizes, in fine bladders; and ſuppoſed to be the juice of the pods of a large thorny tree, growing in Egypt and Arabia.—Some naturaliſts will have it the ſame tree that yields the gum Arabic.

This is very auſtere, and binding; and, on that account, good againſt fluxes.—Chooſe that of a tan-colour, ſmooth, and ſhining; and of an aſtringent diſagreeable taſte.—It is, or ſhould be, an ingredient in the *Theriaca Andromachi*.

The *German* **ACACIA** is a counterfeit of the former; being made of the juice of unripe ſloes, boiled to the conſiſtence of a ſolid extract, and put up in bladders like the former.—It is diſtinguiſhed from it chiefly by its colour, which is as black as that of Spaniſh liquorice.—It is uſed as a ſubſtitute to the true *acacia*.

ACACIA, among antiquaries, ſomething reſembling a kind of roll, or bag, ſeen on medals in the hands of ſeveral of the conſuls, and emperors, from the time of Anaſtaſius.

Authors are not agreed, either about the uſe of this roll, or about the ſubſtance whereof it conſiſts; ſome taking it for a handkerchief rolled up, which the perſon who preſided at the games threw out as a ſignal for their beginning; whilſt others rather imagine it intended to repreſent a roll of memoirs, or petitions.

ACADEMICS, a ſect of philoſophers, who followed the doctrine of Socrates and Plato, as to the uncertainty of knowlege, and the incomprehenſibility of truth.

Academic, in this ſenſe, amounts to much the ſame with Platoniſt; the difference between them being only in point of time. They who embraced the ſyſtem of Plato, among the antients, were called *academici*, *academics*; whereas thoſe who did the ſame ſince the reſtoration of learning, have aſſumed the denomination of Platoniſts. See PLATONIST.

The original dogma of the *academics* was this: *Unum ſcio, quod nihil ſcio*, I know this one thing, that I know nothing: which was afterwards improved into, *Nihil ſcio, ne hoc quidem quod nihil ſcio*, I know nothing, not even this, that I know nothing.—Accordingly they pleaded, that the mind ought always to remain in ſuſpenſe; as having nothing to determine on but bare probability, or veriſimilitude, which is as likely to lead into error as truth.

It ſhould ſeem, however, that Plato, in recommending it to his diſciples to diſtruſt and doubt of every thing, had it not ſo immediately in view to leave them fluctuating and in continual ſuſpenſe between truth and error, as to guard againſt thoſe raſh precipitate deciſions which young minds are liable to; and to put them in a diſpoſition to ſecure themſelves from error, by examining every thing without prejudice.

M. Des Cartes has adopted this ſame *acatalepſia*, or principle of doubting; but, it muſt be allowed, he makes a very different uſe of it.—The *academics* doubted of every thing, and were reſolved ſtill to doubt: Des Cartes, on the contrary, ſets out with doubting of every thing; but declares he will not always doubt; and that he only doubts at firſt, that his determinations afterwards may be the ſurer. See CARTESIANISM.—'In Ariſtotle's philoſophy, ſay the followers of Des Cartes, there is nothing doubted of; 'every thing is accounted for, and yet nothing is explained, 'otherwiſe than by barbarous, unmeaning terms, and dark 'confuſed ideas: whereas Des Cartes makes you even forget what you knew before; but from your new, affected 'ignorance, he leads you gradually into the ſublimeſt 'knowlege.'—Hence they apply to him what Horace ſays of Homer:

Non fumum ex fulgore, ſed ex fumo dare lucem
Cogitat, ut ſpecioſa dehinc miracula promat,
Antiphatem, Scyllamque, & cum Cyclope Charybdim.

It is thus the Carteſians talk: but we may add, that, long before their maſter, Ariſtotle himſelf had ſaid, that, to know a thing well, a man muſt firſt have doubted it; and that it is with doubting that all our knowlege muſt begin.

ACADEMICS, or rather **ACADEMISTS**, is alſo uſed among us for the members of the modern *academies*, or inſtituted ſocieties of learned perſons. See ACADEMY, and ACADEMIST.

ACADEMY, ACADEMIA, in antiquity, a fine villa, or pleaſure-houſe, ſituate in one of the ſuburbs of Athens, about a mile from the city; where Plato, and the wiſe men who followed him, held aſſemblies for diſpute, and philoſophical conferences; and which gave the denomination to the ſect of *Academics*. See ACADEMIC.

It took its name, *Academy*, from one Academus, or Ecademus, a citizen of Athens, to whom it originally belonged; and who uſed to have gymnaſtic ſports or exerciſes therein.—He lived in the time of Theſeus.

Some, miſtakenly, derive its name and origin from Cadmus the Phœnician, as being the firſt who introduced learning, and the uſe of letters, among the Greeks.

The *Academy* was further improved and adorned by Cimon, with fountains, trees, ſhady walks, &c. for the convenience of the philoſophers, and men of learning, who here met to confer, diſpute, &c.—It was alſo the burying-place of illuſtrious perſons, who had deſerved well of the republic.

Here it was that Plato taught his philoſophy; and from him all public places, deſtined for aſſemblies of the learned and ingenious, have been ſince called *academies*.

Sylla ſacrificed the delicious groves and walks of the *academy*, planted by Cimon, to the laws of war; and employed thoſe very trees to make machines wherewith to batter the city.

Cicero alſo had a villa, or country retirement, near Puzzuoli, which he called by the ſame name *Academia*; where he uſed to entertain his philoſophical friends.—It was here he compoſed his *Academical queſtions*, and his books *De Natura Deorum*.

ACADEMY alſo denotes a ſect of philoſophers, who maintained that truth is incomprehenſible, all knowlege uncertain; and that a wiſe man therefore is always to doubt, and remain in ſuſpenſe, never poſitively aſſerting or denying any thing.

In which ſenſe, *academy* is ſynonymous with the ſect of *academics*. See ACADEMIC.

We uſually reckon three *academies*, or ſects of *academics*; though ſome make five.—The antient *academy* was that whereof Plato was the chief. See PLATONISM.

Arceſilas, one of his ſucceſſors, introducing ſome alterations into the philoſophy of this ſect, founded what they call the *ſecond academy*.

The eſtabliſhment of the third, called alſo the *new academy*, is attributed to Lacydes, or rather Carneades.

Some authors add a fourth, founded by Philo; and a fifth by Antiochus, called the *Antiochan*, which tempered the antient *academy* with Stoiciſm. See STOICISM.

The antient *academy* doubted of every thing, and went ſo far, as to make it a doubt, whether or no they ought to doubt.—It was a ſort of principle with them, never to be certain, or ſatisfied with any thing; never to affirm or deny any thing, either for true or falſe.—In effect, they aſſerted an abſolute *acatalepſia*. See ACATALEPSIA.

The *new Academy* was ſomewhat more reaſonable; they owned ſeveral things for truths, but without attaching themſelves to any with entire aſſurance.—Theſe philoſophers had found, that the ordinary commerce of life and ſociety was inconſiſtent with the abſolute and univerſal doubtfulneſs of the antient *Academy:* and yet, it is evident they themſelves looked upon things rather as probable, than as true, and certain; by this amendment, thinking to ſecure themſelves from thoſe abſurdities into which the antient *Academy* had fallen. See the *academical* queſtions of Cicero; where that philoſopher explains and unravels the ſentiments of thoſe who in his days called themſelves followers of the new and old *Academy*, with great clearneſs and addreſs.

ACADEMY is more frequently uſed among the moderns, for a regular ſociety, or company of learned perſons; inſtituted under the protection of a prince, for the cultivation and improvement of arts, or ſciences.

Some authors confound *Academy* with univerſity; but though much the ſame in Latin, they are very different things in Engliſh.—An univerſity is, properly, a body compoſed of graduates in the ſeveral faculties; of profeſſors, who teach in the public ſchools; of regents or tutors, and ſtudents who learn under them, and aſpire likewiſe to degrees. Whereas an *Academy* is not intended to teach, or profeſs any art, ſuch as it is, but to improve it: it is not for novices to be inſtructed in, but for thoſe that are more knowing; for perſons of diſtinguiſhed abilities to confer in, and communicate their lights and diſcoveries to each other for their mutual benefit and improvement.

The firſt *Academy* we read of, was eſtabliſhed by Charlemaign at the motion of Alcuin: it was compoſed of the chief wits of the court, the emperor himſelf being a member.—In their *academical* conferences, every perſon was to give an account of what antient authors he had read; and each of them aſſumed the name of ſome antient author, who pleaſed him moſt, or ſome celebrated perſon of antiquity. Alcuin, from whoſe letters we learn theſe particulars, took that of Flaccus, the ſurname of Horace: a young lord, named Augilbert, took that of Homer: Adelard, biſhop of Corbie, was called Auguſtin: Riculſe, biſhop of Mentz, was Dametas; and the king himſelf, David.

This lets us ſee a miſtake in ſome modern writers, who relate, that it was in conformity with the genius of the learned men of thoſe times, who were great admirers of Roman names, that Alcuin took the name of Flaccus Albinus.

Moſt nations have now their *Academies*, Ruſſia not excepted: but, of all countries, Italy bears the bell in this reſpect.—We have but few in England.—The only one of eminence is called by another name, *viz.* the *Royal Society:* an account whereof, ſee under the article ROYAL *Society*.

Beſide this, however, we have an *Academy* of muſic; and another of painting; eſtabliſhed by letters patent, and governed by their reſpective directors.

The French have flouriſhing *Academies* of all kinds, eſtabliſhed at Paris; moſtly by the late king—*viz.* the

Royal ACADEMY *of Sciences*, for the improvement of phyſics, mathematics, and chemiſtry; firſt ſet on foot in 1666. by order of the king, though without any act of royal authority iſſued for that end.—In the year 1699. it had as it were a ſecond birth; the ſame prince, by a regulation dated the 26th of January, giving it a new form, and putting it on a new and more ſolemn footing.

In virtue of that regulation, the *Academy* was to be compoſed of four kinds of members, *viz. honorary*, *penſionary*, *aſſociates*, and *eleves*.—The firſt claſs to conſiſt of ten perſons; and the reſt of twenty each.—The honorary *academiſts* to be all inhabitants of France; the penſionaries all to reſide at Paris; eight of the aſſociates allowed to conſiſt of foreigners; and the eleves all to live at Paris.—The officers, to be a preſident, named every year by the king, out of the claſs of honorary *academiſts*; and a ſecretary and treaſurer, to be perpetual.

Of the penſionaries, three to be geometricians, three aſtronomers, three mechanics, three anatomiſts, three chemiſts, three botaniſts; the remaining two, ſecretary and treaſurer.—Of the twelve aſſociates, two to apply themſelves to geometry, two to botany, and two to chemiſtry.—The eleves to apply themſelves to the ſame kind of ſcience with the penſionaries they are attached to; and not to ſpeak, except when called thereto by the preſident.—No regular or religious to be admitted, except into the claſs of honorary *academiſts* *; nor any perſon to be admitted, either for aſſociate or penſionary, unleſs known by ſome conſiderable printed work, ſome machine, or other diſcovery.—Further, no perſon to be allowed to make uſe of his quality of *academiſt*, in the title of any of his books, unleſs ſuch book have been read to, and approved by the *Academy*.

The meetings of the *Academy* were appointed to be held twice a week, on Wedneſdays and Saturdays, in the king's library (though ſoon after, they were removed to a more commodious apartment in the Louvre); and to laſt, at leaſt, two hours, *viz.* from three to five. At the beginning of every new year, each penſionary to be obliged to declare in writing what work he intended chiefly to proſecute that year; and the reſt to be invited to do the ſame. All the obſervations the *academiſts* bring to the meeting to be left in writing, in the hands of the ſecretary; who is to enter the ſubſtance of what paſſes at each aſſembly in a regiſter: and at the end of every year, to publiſh the hiſtory, or tranſactions of the *Academy* for that year.

No perſon, not a member, to be preſent at their ordinary meetings; unleſs ſuch as are introduced by the ſecretary, to propoſe ſome new machine, or diſcovery; though their public meetings, twice a year, ſhall be open to every body.

To encourage the members to continue their labours, the king engages not only to pay the ordinary penſions, but even to give extraordinary gratifications, according to the merit of their reſpective performances; furniſhing withal, the expence of the experiments, and other inquiries neceſſary to be made.—If any member give in a bill of charges of experiments which he has made, or deſire the printing of any book, and bring in the charges of graving, the preſident allowing and ſigning it, the money is immediately paid by the king.—So if an anatomiſt require live tortoiſes, for inſtance, for making experiments about the heart, *&c.* they ſhall be brought him as many as he pleaſes at the king's charge. *Liſt. Journ. to Paris.*—Their motto, *Invenit & perfecit.*

In the year 1716, the duke of Orleans, then regent, made an alteration in their conſtitution; augmenting the number of honoraries, and of aſſociates capable of being foreigners, to twelve; admitting regulars among ſuch aſſociates; ſuppreſſing the claſs of eleves, and eſtabliſhing, in lieu thereof, a new claſs of twelve adjuncts, to the ſix ſeveral kinds of ſciences cultivated by the *Academy:* and, laſtly, appointing a vice-preſident, to be choſen yearly by the king, out of the honorary members; and a director, and ſub-director, out of the penſionaries.

Their ſecretary, M. de Fontenelle, has obliged the public with a great number of elegant volumes of the productions of this illuſtrious body; under the title of *Hiſtoire de l' Academie Royale*, &c. *avec les Memoires de Mathematique & de Phyſique tirez des Regiſtres*, &c.

ACADEMY *of Painting, Sculpture, and Architecture*, was eſtabliſhed under the cardinal Mazarin, firſt protector thereof; and the chancellor Seguier, vice-protector.

It conſiſts of a director, a chancellor, four rectors, a treaſurer, twelve profeſſors; adjuncts to the rectors, and profeſſors; counſellors; a ſecretary; a profeſſor for anatomy, and another for geometry, and perſpective.

Perſons are here admitted either in quality of painters, or ſculptors.—The painters are admitted according to their reſpective talents; there being a diſtinction made between thoſe who work in hiſtory, and thoſe who only paint portraits, or landſkips, or beaſts, or fruits, or flowers, or paint in miniature; or only deſign; or engrave; or carve, *&c.*—Their productions are expoſed to the public view, yearly, in the great hall of the Louvre; and there are prizes for thoſe who perform beſt. V. *Guerin. deſ. de l'acad. roy. de peint. & ſculpt. Act. erudit.* 1717. *p.* 188.

There is alſo a French *Academy* of painting, ſculpture, *&c.* at *Rome*, eſtabliſhed by Lewis XIV. wherein thoſe who have won the annual prizes in the like *Academy* at Paris, are received and entertained for three years, to give them an opportunity of perfecting themſelves. *Lett. Juiv.* 15.

ACADEMY *of Medals and Inſcriptions*, was erected for the ſtudy and explanation of antient monuments; and to conſecrate great and memorable events to poſterity, by ſimilar monuments; as medals, relievo's, inſcriptions, *&c.*

ACADEMY *of Politics*, is compoſed of ſix perſons, who meet on certain days each week at the Louvre, in the chamber where the papers relating to foreign affairs are lodged. Here they peruſe ſuch papers as are put in their hands, by order of the ſecretary for foreign affairs, who acquaints the king with the progreſſes they make, and the capacities of each, that his majeſty may employ them accordingly.

French ACADEMY, eſtabliſhed for the improvement and refining of the language. See LANGUAGE.

ACADEMY *of Muſic:* this conſiſts of the managers and directors of the opera.

The French have alſo conſiderable *Academies* in moſt of their great cities; as, at Montpelier a royal *Academy* of ſciences, on the like footing as that at Paris; being as it were a counterpart thereof: at Thouloufe an *Academy* under the denomination of Lanterniſts: others at Niſmes, Arles, *&c.*

The Royal Spaniſh ACADEMY, is an *Academy* for cultivating the Caſtilian tongue, eſtabliſhed at Madrid, on the model of the French *Academy*.—The deſign of this was laid by the duke d'Eſcalona; and approved of by the king in 1714. who declared himſelf protector thereof.—It conſiſts of twenty-four *academiſts*; including the director and ſecretary.

Its device is a crucible on the fire, with this motto, *Limpia, fija, y da eſplendor.*

ACADEMY *of Naturæ Curioſi*, in Germany, was firſt founded in 1652. by M. Bauſch a phyſician; and taken in 1670. under the protection of the emperor Leopold.

There are other *academical* inſtitutions at Berlin, and other parts of the north; ſeveral of which having diſtinguiſhed themſelves by their journals, ephemerides, &c. the reader will find ſome account of them under the article JOURNAL.

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* Dr. Liſter obſerves, that they would have been glad of F. Plumier; but they avoided making a precedent for the admiſſion of any regulars.

Italy, alone, has more *Academies* of note than all the reſt of the world; not a city but furniſhes a ſet of learned perſons for an *Academy*, which to them ſeems an eſſential part of a regular conſtitution.—Jarckius has given us a ſpecimen of their hiſtory, printed at Leipſic, in 1725. and withal, grounds to expect a fuller, and more perfect account from ſeveral learned perſons, who had been long employed about the ſame; as Krauſius, profeſſor of eloquence at Leipſic: Hyacinth, Gimma, and Mich. Richeyus.

Jarckius's account goes no farther than to the *Academies* of Piedmont, Ferrara, and Milan; in which laſt city he reckons twenty-five: but he adds a liſt of all the reſt, to the number of five hundred and fifty.—The names of moſt of them are very curious.

The *Academiſts*, *e. gr.* of Boulogna, are called *Abbandonati*, *Anſioſi*, *Ocioſi*, *Arcadi*, *Confuſi*, *Difettuoſi*, *Dubbioſi*, *Impatienti*; *Inabili*, *Indifferenti*, *Indomiti*, *Inquieti*, *Inſtabili*, *Della notte*, *Piacere*, *Sitienti*, *Sonnolenti*, *Torbidi*, *Veſpertini*.—Thoſe of Genoa, *Accordati*, *Sopiti*, *Reſuegliati*: of Gubio, *Addormentati*: of Venice: *Acuti*, *Allettati*, *Diſcordanti*, *Diſguiſinti*, *Diſinganati*, *Dodonei*, *Filadelfici*, *Incruſcabili*, *Inſtancabili*: of Rimini, *Adagiati*, *Eutrapeli*: of Pavia, *Aſſidati*, *Della Chiave*: of Fermo, *Raffrontati*: of Moliſa, *Agitati*: of Florence, *Alterati*, *Humidi*, *Furfurati*, *Della Cruſca*, *Del Cimento*, *Infocati*: of Cremona, *Animoſi*: of Naples, *Arditi*, *Infernati*, *Intronati*, *Lunatici*, *Secreti*, *Sirenes*, *Sicuri*, *Volanti*: of Ancona, *Argonauti*, *Caliginoſi*: of Urbino, *Aſſorditi*: of Perugia, *Atomi*, *Eccentrici*, *Inſenſati*, *Inſipidi*, *Uniſoni*: of Tarentum, *Audaci*: of Macerata, *Catenati*, *Imperfetti*: of——*Chimarici*: of Sienna, *Corteſi*, *Gioviali*, *Trapaſſati*: of Rome, *Delfici*, *Humoriſti*, *Lyncei*, *Fantaſtici*, *Illuminati*, *Incitati*, *Indiſpoſiti*, *Infecondi*, *Malencolici*, *Negletti*, *Notti Vaticane*, *Notturni*, *Ombroſi*, *Pellegrini*, *Sterili*, *Vigilanti*: of Padua, *Delii*, *Immaturi*, *Orditi*: of Trepano, *Difficili*: of Breſſe, *Diſperſi*, *Erranti*: of Modena, *Diſſonanti*: of Recanatum, *Diſuguali*: of Syracuſe, *Ebrii*: of Milan, *Eliconii*, *Faticoſi*, *Fenici*, *Incerti*, *Naſcoſti*: of Candia, *Extravaganti*: of Peſaro, *Eteroclliti*: of Comacchio, *Flutuanti*: of Arezzo, *Forzati*: of Turin, *Fulminales*: of Reggio, *Fumoſi*, *Muti*: of Cortona, *Humoroſi*: of Bari, *Incogniti*: of Roſſano, *Incurioſi*: of Breda, *Innominati*, *Pigri*: of Acis, *Intricati*: of Mantua, *Invaghiti*: of Agrigento, *Mutabili*, *Offuſcati*: of Verona, *Olympici*, *Uranii*: of Viterbo, *Oſtinati*: of —*Vagabondi*.

ACADEMY, is alſo uſed among us for a kind of collegiate ſchool, or ſeminary; where youth are inſtructed in the liberal arts, and ſciences; in a private way.

The nonconformiſt miniſters, &c. are many of them bred up in ſuch private *Academies*: as not reliſhing the common univerſity-education.

Frederic I. king of Pruſſia, eſtabliſhed an *Academy* in Berlin in 1703. for the education of the young nobility of the court, ſuitable to their extraction. The expence of the ſtudents was very moderate, the king having undertaken to pay the extraordinaries. This illuſtrious ſchool, which was then called *the Academy of Princes*, has now loſt much of its antient ſplendor. *Pollnitz. Mem. T.* 3. *p.* 52.

ACADEMY, is alſo uſed in ſpeaking of the ſchools of the Jews: *i. e.* thoſe ſeminaries where the rabbins, or doctors, inſtruct the youth of their nation in the Hebrew tongue; explain to them the Talmud; teach them the Cabbala, &c.

The Jews have had of theſe *Academies* ever ſince their return from the Babyloniſh captivity. The *Academies* of Tiberias and Babylon are particularly celebrated. See MASSORETES.

ACADEMY is particularly underſtood of a riding-ſchool; or a place where young gentlemen are taught to ride the great horſe, with other ſuitable exerciſes; as fencing, &c.

This is what Vitruvius calls *Ephebeum*, and ſome others among the antients, *Gymnaſium*: the moderns *equeſtrian*, or *military Academy*.

The Duke of Newcaſtle will have the art of riding to have had its origin in Italy; and the firſt *Academy* of this ſort to have been eſtabliſhed at Naples, by Frederic Griſon; who, he adds, was the firſt that wrote on this ſubject; which he did like a true cavalier, and a great maſter.—Henry VIII. ſays the ſame author, called over two Italians, diſciples of Griſon, into England; who ſoon ſtock'd the nation with ecuyers, or riding-maſters.

He adds, that the greateſt maſter Italy ever produc'd, was a Neapolitan, Pignatelli by name; that la Broue rid under him five years; Pluvinel nine; and S. Antoine many years: and that theſe three Frenchmen filled France with French maſters; which till then had known none but Italians.

The ground ſet apart in an *Academy*, for riding, is called the *Manege*; having uſually a pillar in the centre, and other pillars, placed two by two, at the ſides.

ACADEMY, or ACADEMY-*Figure*, in painting, is a drawing, or deſign made after a model, with a crayon, or pencil.—Or the copy of ſuch a draught. See DESIGN.

ACANACEOUS. See the article ACANTHACEOUS.

ACANTHA, among ſome anatomiſts, is applied to the hind, or poſterior protuberances of the vertebræ of the back; forming what we call the *ſpina dorſi*. See VERTEBRA, and SPINA.

ACANTHABOLUS *, Ακανθοβολος, a ſurgeon's inſtrument, wherewith to extract foreign bodies, which by the ſharpneſs of the points have penetrated, and entred the parts of the body.

* The word is ſometimes alſo written, corruptly, *Acantabolus*. It is compounded of the Greek ακανθα, a thorn; and βαλλω, to caſt away.

The *Acanthabolus* is the ſame with what is otherwiſe called *volſella*.—Its chief uſe is for extracting of fiſh-bones, or the like, ſticking in the œſophagus; as alſo the fragments of weapons, bones, hair, &c. remaining in wounds.—Its figure reſembles that of a pair of pincers: ſometimes it is alſo made crooked, for more commodious application to the fauces.

ACANTHABOLUS is alſo ſometimes uſed for an inſtrument, wherewith people pull out the hairs from their eye-brows.

ACANTHACEOUS *, among botaniſts, a term applied to a claſs of plants, popularly known under the name of the *thiſtle kind*. See THISTLE, and CARDUUS.

* The word is formed of the Greek ακανθιζω, *acuo*, to ſharpen; or ακανθα, *ſpina*, a thorn; in regard of the prickles they are beſet withal.

ACANTHUS *, in architecture, an ornament in the Corinthian, and Compoſite orders; being the repreſentation of the leaves of an acanthaceous plant, in the capitals thereof.—See *Tab. Archit. fig.* 21. *litt.* bb.

* It takes its name from ακανθα, the name given this plant among the Greeks; as being prickly, or of the thiſtle kind. The Latin botaniſts call it *Branca Urſina*, or bear's breech, from ſome ſuppoſed reſemblance it bears thereto; and ſome *Branca Hircina*, by reaſon its leaves bend and twiſt ſomewhat like a goat's horns.

There are two kinds of the plant *Acanthus*, one whereof grows wild, and is full of prickles; the other grows in gardens, and is by Virgil called *mollis*, in regard it is ſoft, and without any prickles.—The Greek ſculptors adorned their works with the figure of the latter; as the Gothic did with that of the former, which they repreſented not only in their capitals, but alſo in other ornaments.

The garden *Acanthus* is the moſt dented; bearing ſome ſort of reſemblance to ſmallage: and thus it is we find it repreſented in the compoſite capitals of Titus, and Septimius Severus at Rome.

Theſe leaves make the principal character, and diſtinction of the two rich orders from the reſt: and their different number and arrangement do alſo diſtinguiſh the two orders from each other. See SUPPLEMENT, article ACANTUS.

The origin and occaſion of the ornament, ſee under the article ABACUS.

ACATALECTIC *, ACATALECTICUS, in the antient poetry, a term applicable to ſuch verſes as have all their feet and ſyllables; and are in no-wiſe lame or defective at the end. See VERSE, and FOOT.

* The word comes from κατα, and ληγειν, to ceaſe or end; whence καταληκτικος, *which wants ſomething at the end*; and the privative α being prefixed ακαταληκτικος, *which wants nothing at the end*.

On the contrary, catalectic verſes are thoſe which end too haſtily, and with a ſyllable too little. See CATALECTIC.

In the following ſtrophe of Horace, the two firſt verſes are *Acatalectic*, and the laſt catalectic.

Solvitur acris hyems, grata vice
Veris & Favoni:—
Trahuntque ſiccas machinæ carinas———

ACATALEPSIA *, ACATALEPSY, in philoſophy, an impoſſibility of a thing's being conceived or comprehended.

* The word is compounded of the privative α, and καταλαμβανω, *deprehendo*, to find out: of κατα, and λαμβανω, *capio*, to take. See CATALEPSIS.

Acatalepſia is ſynonymous with incomprehenſibility.

The Pyrrhoniſts or Sceptics aſſerted an abſolute *Acatalepſia*: all human ſcience and knowlege, according to them, went no further than to appearances, and veriſimilitude: they declaimed much againſt the ſenſes; and charged them with a principal ſhare in ſeducing, and leading us to error. See PYRRHONIST.

ACATERY, ACCATRY, in the king's houſhold, a kind of check betwixt the clerks of the kitchen, and the purveyors. See PURVEYOR.

The officers of the *Acatery*, are a ſerjeant, (ſalary 6 *l.*), two joint-clerks (ſal. 120 *l.*), and a yeoman of the ſalt-ſtores.

ACATIUM *, in the antient navigation, a kind of boat or pinnace uſed for military purpoſes.

* The word is Greek, Ακατιον, formed, according to ſome, from ακη, point: on account of the ſharpneſs of its make.

The *Acatium* was a ſpecies of thoſe called *Actuariæ Naves*, i. e. ſuch as were wrought with oars. It was ſometimes made uſe of in battle: Strabo repreſents it as a kind of privateer, or pirate ſloop.

ACCAPITARE *, Accaptare, Acaptare, in antient law-books and records, the act of becoming vaſſal of a lord, or of yielding homage and obedience to him.

* The word is compounded of the Latin *ad*, to; and *caput*, head; by reaſon vaſſals own their lords for their head. Whence alſo the lords are ſometimes called *domini capitales*; as thoſe who command in an army are called *capitanei*, captains; and in old French, *chevetaines*, chieftains, in reſpect of their ſoldiers.—

ACCAPITUM *, a ſum of money paid by a vaſſal, upon his admiſſion to a feud. See Accapitare.

* The word is alſo written *Acapitum*, *Accapitamentum*, *Acaptio*, *Acaptatio*, and *Acaptagium*.

Accapitum, in our antient law-books, ſignifies relief due to the chief lord. See Relief.

ACCATRY. See Acatery.

ACCEDAS * *ad Curiam*, an original writ, which lies for removing ſuits in any court baron, except the county court, into the king's court; upon apprehenſion of partiality or falſe judgment in the other.

* *Accedas* is a Latin word ſignifying an order that thou come, *&c.* compounded of *ad*, to; and *cedere*, to come.

A like writ lies for him who has received falſe judgment in the county court; where it is called *de falſo judicio*.

An *Accedas ad Curiam* lies alſo for juſtice delay'd, as well as falſly given; and is a ſpecies of the writ *Recordari*. See the article Recordari.

Accedas *ad Vicecomitem*, is a writ directed to the coroner, commanding him to deliver a writ to the ſheriff, who having a pone delivered to him, ſuppreſſes it. See Pone.

ACCELERATED *Motion*, in mechanics, is a motion which receives continual increments, or acceſſions of velocity. See Motion.

If the acceſſions of velocity be equal in equal times; the motion is ſaid to be *uniformly accelerated*.

The motion of falling bodies is an *accelerated motion*: and ſuppoſing the medium they fall through, *i. e.* the air, void of reſiſtance; the ſame motion may be alſo conſidered as *uniformly accelerated*.

For the Laws of Accelerated Motion, ſee Motion.

ACCELERATION *, in mechanics, the increaſe of velocity in a moving body.

* The word is compounded of *ad*, to; and *celer*, ſwift.

Acceleration ſtands directly oppoſed to retardation, which denotes a diminution of velocity.

Acceleration is chiefly uſed in phyſics, in reſpect of falling bodies, *i. e.* of heavy bodies tending towards the centre of the earth by the force of gravity. See Gravity, and Centre.

That natural bodies are *accelerated* in their deſcent, is evident from various conſiderations, both à priori and poſteriori.—Thus, we actually find, that the greater height a body falls from, the greater impreſſion it makes, and the more vehemently does it ſtrike the ſubject plane, or other obſtacle.

Various are the ſyſtems and opinions which philoſophers have produced to account for this *Acceleration*.—Some attribute it to the preſſure of the air: the farther, ſay they, a body falls, the greater load of atmoſphere is of conſequence incumbent on it: and the preſſure of a fluid is in proportion to the perpendicular altitude of the column thereof.—Add, that the whole body of the fluid preſſing in innumerable right lines, which all meet in a point, *viz.* the centre; that point, by the meeting of thoſe lines, ſuſtains, as it were, the preſſing of the whole maſs: conſequently, the nearer a body approaches thereto, the effect or preſſure of more united lines muſt it ſuſtain.

But what overturns this account, is, that as the preſſure of the air downwards increaſes; ſo, by the known laws of ſtatics, does the reſiſtance, or the force wherewith the ſame fluid tends to repel, or drive the body upwards again.

Others inſiſt, that the incumbent air is the groſſer and more vaporous, the nearer the earth; and filled with more heterogeneous particles, which are not true elaſtic air: and hence, ſay they, a deſcending body, meeting continually with leſs reſiſtance from the elaſticity of the air, and having the ſame force of gravity ſtill acting on it, muſt neceſſarily be *accelerated*. Hobbs (*Philoſ. probl. c.* 1. *p.* 3.) attributes *Acceleration* to a new impreſſion of the cauſe which makes bodies fall; which, on his principles, is alſo the air. As part of this mounts, part alſo muſt deſcend; for reaſons drawn from the motion of the earth, which is compounded of two motions, one circular, the other progreſſive; conſequently the air aſcends, and circulates at once. As the body, in its fall, receives a new preſſure in every point of its deſcent, its motion he ſays muſt needs be accelerated.

But what overturns all accounts where the air or atmoſphere is concerned, is, that the *Acceleration* holds in vacuo, and even more regularly than in air. See Vacuum.

The Peripatetic account is worſe than this: the motion of heavy bodies downwards, ſay they, ariſes from an intrinſic principle, which makes them tend to the centre, as their proper ſeat, or element, where they would be at reſt: hence, add they, the nearer bodies approach thereto, the more is their motion intended.

The Gaſſendiſts, on the other hand, hold that the earth emits a ſort of attractive effluvia, innumerable threads whereof continually aſcend and deſcend; which threads, proceeding like radii from a common centre, divaricate the more, the further they go: ſo that the nearer a heavy body is to the centre, the more of theſe magnetic threads it receives; and hence the more is its motion *accelerated*.

But this is refuted by an eaſy experiment: for if a ball be let fall out of the loweſt window of a high tower, and alſo out of the higheſt; the *Acceleration* will be the ſame in both caſes, notwithſtanding the greater vicinity to the centre in the one, than in the other caſe.

The Carteſians account for the *Acceleration*, from the repeated pulſes of a ſubtil ethereal matter, which is continually acting on the falling body, and impelling it downwards.

After all, the cauſe of *Acceleration* is nothing myſterious; the principle of gravitation, which determines the body to deſcend, determining it to be *accelerated* by a neceſſary conſequence. See Gravitation.

Suppoſe a body let fall from on high: the primary cauſe of its beginning to deſcend, is doubtleſs the power of gravity; but when once the deſcent is commenced, that ſtate becomes in ſome meaſure natural to the body; ſo that if left to itſelf, it would perſevere in it for ever, even though the firſt cauſe ſhould ceaſe: as we ſee in a ſtone caſt with the hand, which continues to move, after it is left by the cauſe that gave it motion.

But, beſide the propenſity to deſcend impreſſed by the firſt cauſe, and which of itſelf were ſufficient to continue the ſame degree of motion once begun, in infinitum; there is a conſtant acceſſion of ſubſequent efforts of the ſame principle, gravity, which continues to act on the body already in motion, in the ſame manner as if it were at reſt.

Here, then, being a double cauſe of motion, and both acting in the ſame direction, *viz.* directly towards the centre of the earth; the motion they jointly produce muſt neceſſarily be greater than that of any one of them.—And the velocity thus increaſed having the ſame cauſe of increaſe ſtill perſiſting, the deſcent muſt neceſſarily be continually *accelerated*.

For, ſuppoſing gravity, whatever it be, to act uniformly on all bodies, at equal diſtances from the earth's centre; and that the time in which a heavy body falls to the earth, be divided into equal parts infinitely ſmall: let this gravity incline the body towards the earth's centre, while it moves in the firſt infinitely ſmall part of the time of its deſcent; if, after this, the action of gravity be ſuppoſed to ceaſe, the body would proceed uniformly on towards the earth's centre, with a velocity equal to the force of the firſt impreſſion.

But, now, ſince the action of gravity is here ſuppoſed ſtill to continue; in the ſecond moment of time, the body will receive a new impulſe downwards, equal to what it received at firſt; and thus its velocity will be double of what it was in the firſt moment; in the third moment it will be triple; in the fourth quadruple, and ſo on continually: for the impreſſion made in one moment, is not at all altered by what is made in another; but the two are, as it were, aggregated, or brought into one ſum.

Wherefore, ſince the particles of time are ſuppoſed infinitely ſmall, and all equal to one another; the impetus acquired by the falling body will be every-where, as the times from the beginning of the deſcent.—And hence, ſince the quantity of matter in the body given, continues the ſame; the velocity will be as the time in which it is acquired.

Further, the ſpace paſſed over by a moving body in a given time, and with a given velocity, may be conſidered as a rectangle made by the time and the velocity.—Suppoſe A (*Tab. Mechan. fig.* 62.) a heavy body deſcending, and let AB repreſent the time of its deſcent; which line ſuppoſe divided into any number of equal parts, AC, CE, EG, *&c.* repreſentative of the intervals, or moments of the given time.—Let the body deſcend through the firſt of thoſe diviſions, AC, with a certain equable velocity ariſing from the propoſed degree of gravity: this velocity will be repreſented by AD; and the ſpace paſſed over, by the rectangle CAD.

Now, as the action of gravity in the firſt moment produced the velocity AD, in the body before at reſt; in the ſecond moment, the ſame will produce, in the body ſo moving, a double velocity, CF; in the third moment, to the velocity CF will be added a further degree, which, together therewith, will make the velocity EH, which is triple of the firſt, and ſo of the reſt. So that in the whole time AB, the body will have acquired a velocity BK.—Again, taking the diviſions of the line, *e. g.* AC, CE, *&c.* for the times, the ſpaces gone through will be the areas or rectangles, CD, EF, *&c.* So that in the whole time AB, the ſpace deſcribed by the moveable, will be equal to all the rectangles, *i. e.* to the dented Figure ABK.

Such would be the caſe, if the acceſſions of velocity only happened in certain given points of time, *e. g.* in C, in E, *&c.* So that the degree of motion ſhould continue the ſame till the next period of *Acceleration* come up.—If the diviſions or intervals of time were ſuppoſed leſs, *e. g.* by half; then the dentures of the figure would be proportionably ſmaller; and it would approach ſo much the nearer to a triangle.—If they were infinitely ſmall, *i. e.* if the acceſſions of velocity were ſuppoſed to be made continually, and in every point of time, as is really the caſe; the rectangles thus ſucceſſively produced will make a juſt triangle, *e. g.* ABE (*fig.* 63.)—Here, the whole time AB conſiſting of the little portions of time A 1, A 2, *&c.* and the area of the triangle ABE, of the ſum of all the little triangular ſurfaces anſwering to the diviſions of the time; the whole area or triangle expreſſes the ſpace moved through in the whole time AB; and the little triangles A 1 *f*, *&c.* the ſpaces gone through in the diviſions of time *a* 1, *&c.*

But theſe triangles being ſimilar, their areas are to one another, as the ſquares of their homologous ſides AB, A 1, *&c.* and conſequently, the ſpaces moved, are to each other as the ſquares of the times.

Hence we eaſily infer the great law of *Acceleration*, viz. "That a deſcending body, uniformly *accelerated*, deſcribes, in "the whole time of its deſcent, a ſpace which is juſt half of "what it would have deſcribed in the ſame time, with the "*accelerated* velocity it has acquired at the end of its fall."

For, the whole ſpace the falling body has moved through in the time AB, we have already ſhewn, will be repreſented by the triangle ABE; and the ſpace the ſame body would move through in the ſame time, with the velocity BE, will be repreſented by the rectangle ABEF.—But the triangle is known to be equal to juſt half the rectangle.—Therefore, the ſpace moved, is juſt half of what the body would have moved with the velocity acquired at the end of the fall.

Hence, 1°, we gather, that the ſpace moved with the laſt acquired velocity BE, in half the time AB, is equal to that really moved by the falling body in the whole time AB.

2°, If a falling body deſcribe any given length in a given time, in double that time it will deſcribe four times that length; in thrice the time, nine times, *&c.* and univerſally, if the times be in arithmetical proportion, 1, 2, 3, 4, *&c.* the ſpaces deſcribed will be, 1, 4, 9, 16, *&c.*

3°, The ſpaces deſcribed by a falling body, in a ſeries of equal moments or intervals of time, will be as the unequal numbers 1, 3, 5, 7, 9, *&c.*—And ſince the velocities acquired in falling are as the times; the ſpaces will alſo be as the ſquares of the velocities; and both times and velocities in a ſubduplicate ratio of the ſpaces.

The motion of a body aſcending, or impelled upwards, is diminiſhed or retarded from the ſame principle of gravity acting in a contrary direction, in the ſame manner as a falling body is *accelerated*. See RETARDATION.

A body thus projected upwards, riſes till it has loſt all its motion; which it does in the ſame time that a body falling would have acquired a velocity equal to that wherewith the body was thrown up.

Hence, the ſame body thrown up, will riſe to the ſame height, from which falling, it would have acquired the velocity wherewith it was thrown up.

And hence, the height which bodies thrown up with different velocities do aſcend to, are to one another as the ſquares of thoſe velocities.

ACCELERATION *of bodies on inclined planes.*—The ſame general law obtains here, as in bodies falling perpendicularly: the effect of the plane is, to make the motion ſlower; but the inclination being every-where equal, the retardation riſing therefrom will proceed equally in all parts, at the beginning and the ending of the motion.—The particular laws, ſee under the article *Inclined* PLANE.

ACCELERATIONS *of the motion of pendulums.*—The motion of pendulous bodies is *accelerated* in their deſcent; but in a leſs ratio than that of bodies falling perpendicularly. See *the laws thereof under the article* PENDULUM.

ACCELERATION *of the motion of projectiles.* See PROJECTILE.

ACCELERATION *of the motion of compreſſed bodies*, in expanding or reſtoring themſelves. See COMPRESSION.

That the motion of compreſſed air, expanding itſelf by its elaſticity to its former dimenſions, is *accelerated*, is evident from various conſiderations.

ACCELERATION is alſo applied in the antient aſtronomy, in reſpect of the fixed ſtars.—This *Acceleration* was the difference between the revolution of the primum mobile, and the ſolar revolution; which was computed at 3 minutes, and 56 ſeconds.

ACCELERATOR *, in anatomy, a muſcle of the penis, whoſe office is to expedite the diſcharge of the urine, and ſemen.

* This is more peculiarly called *Accelerator urinæ*: ſome make two muſcles of it, and give them the denomination *Acceleratores*, or *acceleratory muſcles*.

It ariſes tendinous from the upper and fore-part of the urethra, but ſoon grows fleſhy, paſſes under the os pubis, and encompaſſes the bulb of the cavernous body of the urethra.—Both ſides of this muſcle meet in a middle line, correſponding to the ſeam in the ſkin over it; and continue ſo united, the ſpace of two inches; after which, it detaches two fleſhy elongations, which become thin tendons at their terminations on the cavernous bodies of the penis.

Its upper part covering the bulb, when in action, ſtreightens the veins which paſs through it from the corpus cavernoſum of the urethra, and hinders the reflux of the blood in an erection. By the repeated contractions of this upper part, the blood in the bulb is alſo driven towards the glans.

The two elongations compreſs the chanel of the urethra, and ſo force out the contained ſeed, or urine; whence the muſcle takes its name.

ACCENSI *, in antiquity, denotes an inferior order of officers, appointed to attend the Roman magiſtrates, ſomewhat in the manner of uſhers, ſerjeants, or tipſtaves among us.

* They were thus called from *accire*, to ſend for; one part of their office being to call aſſemblies of the people, ſummon parties to appear and anſwer before the judges, *&c.*

ACCENSI *, alſo denotes a kind of ſupernumerary ſoldiers in the Roman armies; whoſe office was to attend the motions of their principals, and ſupply the places of thoſe who were killed, or diſabled by their wounds.

* They were thus denominated from *ad*, to; and *cenſere*, to reckon.

ACCENSION *, ACCENSIO, in phyſics, the act of kindling, or ſetting a body on fire.

* The word is formed of the Latin *accendere*, to kindle; a compound of *ad*, to; and *candere*, to glow. Though ſome grammarians ſuſpect the primitive ſignification of *accendere*, to have been, to render famous.

Accenſion, on other occaſions, is called *inflammation*, *ignition*, *conflagration*, &c. See the articles IGNITION, and INFLAMMATION.

Accenſion, ſtands oppoſed to extinction. See EXTINCTION.

Chemiſts furniſh us various inſtances of the *Accenſion* of cold liquors by bare mixtion: as of the acid ſpirits of minerals, and the eſſential oils of plants. V. *Mem. Acad. Scien.* an. 1726. *p.* 132. *Hiſt. p.* 39.

ACCENT *, in its primitive ſenſe, an affection of the voice, which gives each ſyllable of a word its due pitch, in reſpect of height or lowneſs.

* The word is originally Latin, *accentus*, a compound of *ad*, to; and *cano*, to ſing. *Accentus quaſi Adcantus*; or *juxta cantum*.—In this ſenſe, *Accent* is ſynonymous with the Greek τονος, the Latin *tenor*, or *tonor*, and the Hebrew טעם *guſtus*, taſte.

The *Accent*, properly, has only to do with high and low, or acute and grave.—Though the modern grammarians frequently alſo uſe it in reſpect of loud and ſoft, long and ſhort; but this confounds *Accent* with *Quantity*. See the article QUANTITY.

The difference between the two may be conceived from that which we obſerve between the beat of a drum, and the ſound of a trumpet: the former expreſſes every thing belonging to loud and ſoft, and long and ſhort: but, ſo long as there is a μονοτονια in the ſound, there is nothing like *Accent*.

ACCENT is alſo uſed in grammar, for a character placed over a ſyllable, to mark the *Accent*, *i. e.* to ſhew it is to be pronounced in a higher, or in a lower tone; and regulate the inflexions of the voice in reading.

We uſually reckon three grammatical *Accents* in ordinary uſe, all borrowed from the Greeks, *viz.* the *Acute Accent*, which ſhews when the tone of the voice is to be raiſed; and is expreſſed thus (ʹ).

The *Grave Accent*, when the note or tone of the voice is to de depreſſed; and is figured thus (ˋ).

The *Circumflex Accent*, which is compoſed of both the acute and the grave; it points out a kind of undulation of the voice, and is expreſſed thus (˜ or ˆ).

Words which have no accent are called *Atonics*.

The Hebrews have a grammatical, a rhetorical, and a muſical *Accent*; though the firſt and laſt ſeem, in effect, to be the ſame; both being compriſed under the general name of *Tonic Accents*, becauſe they give the proper tone to ſyllables: as the rhetorical *Accents* are ſaid to be *Euphonic*; inaſmuch as they tend to make the pronunciation more ſweet and agreeable.

There are four euphonic *Accents*, and twenty-five tonic; of which ſome are placed above, and others below the ſyllables; the Hebrew *Accents* ſerving not only to regulate the riſings and fallings of the voice, but alſo to diſtinguiſh the ſections, periods, and members of periods, in a diſcourſe; and to anſwer the ſame purpoſes with the points in other languages.

Their *Accents* are divided into *emperors*, *kings*, *dukes*, &c. each bearing a title anſwerable to the importance of the diſtinction it makes.—Their emperor rules over a whole phraſe, and terminates the ſenſe completely; anſwering to our point.—Their king anſwers to our colon; and their duke to our comma.—The king, however, occaſionally becomes a duke, and the duke a king, as the phraſes are more or leſs ſhort.—It muſt be noted, by the way, that the management and combination of theſe *Accents* differs in Hebrew poetry from what it is in proſe.

The uſe of the tonic, or grammatical *Accents*, has been much controverted; ſome holding that they diſtinguiſh the ſenſe, while others maintain that they are only intended to regulate the muſic, or ſinging; alleging that the Jews ſing, rather than read, the ſcriptures in their ſynagogues. V. *Cooper, dom. Moſaic. clav.* p. 31.

The truth ſeems here to lie between the two opinions; for though we are inclined to think, that the primary intention of theſe *Accents* was to direct the ſinging; yet the ſinging ſeems alſo to have been regulated according to the ſenſe; ſo that the *Accents* might ſerve not only to guide the ſinging, but alſo to point out the diſtinctions.—Though it muſt be confeſſed, that many of theſe diſtinctions are too ſubtile and inconſiderable; nor can the modern writers, or the editors of old ones, agree in the matter; ſome of them making twice as many of theſe diſtinctions as others.

The Hebrew *Accents*, in effect, have ſomething common with thoſe of the Greeks and Latins; and ſomething peculiar to themſelves.—What they have in common, is, that they mark the tones; ſhewing how the voice is to be raiſed, and ſunk on certain ſyllables. What they have peculiar, is, that they do the office of the points in other languages. See PUNCTUATION.

Be this as it will, it is certain the antient Hebrews were not acquainted with theſe *Accents*; ſo that, at beſt, they are not jure divino.—The opinion which prevails amongſt the learned, is, that they were invented about the ſixth century, by the Jewiſh doctors of the ſchool of Tiberias, called the Maſſoretes.

The learned Hennin affirms them to be of Arabic invention; and to have been adopted and transferred thence into the Hebrew by the Maſſoretes: eſpecially by the celebrated Rabbi Ben Aſcher, who flouriſhed in the middle of the ſixth century; on occaſion of the emperor Juſtinian's prohibiting the reading their traditions in their ſynagogues. He adds, that they were firſt brought to their degree of perfection, by Rabbi Juda Ben David Chiug, a native of Fez, in the eleventh century.—It is indeed poſſible, the Jews might borrow their points from the Arabs: but how they ſhould have their *Accents* from them is hard to conceive, the Arabic language having no ſuch thing as *Accents*, either in proſe or verſe.

The ſame Hennin makes the Arab Alchahil Ebn Ahmed, who lived about the time of Mahomet, the great improver of the Arabic *Accents*.—The chief ground of the opinion, is, that this writer is ſaid to have been the firſt who reduced poetry into an art; marking the meaſures, and quantities of the verſes, by the Latins called *pedes*, and by us feet.—Add, that the ſhare Hennin gives Rabbi Juda of Fez, in completing the Hebrew *Accents*, is chiefly founded on the common opinion, that this rabbin was the firſt grammarian among the Jews. But the opinion is erroneous; there having been a Hebrew grammar compoſed by R. Saadias Gaon, many years before R. Juda. In M. Simon's critical hiſtory of the Old Teſtament, we have a catalogue of Hebrew grammars, at the head of which is this of R. Saadias: M. Simon, on this occaſion, obſerves, "that after the Jews of Tiberias had added points and *Accents* to the texts of the old "teſtament, the doctors of the other ſchools began to do "the like in their copies, which were afterwards imitated "by the reſt."

As to the Greek *Accents*, now ſeen both in manuſcript and printed books, there has been no leſs diſpute about their antiquity and uſe, than about thoſe of the Hebrews.—Iſaac Voſſius, in an expreſs treatiſe *de Accentibus Græcanis*, endeavours to prove them of modern invention; aſſerting, that antiently they had nothing of this kind *, but only a few notes in their poetry, which were invented by Ariſtophanes the Grammarian, about the time of Ptolemy Philopater; and that theſe were of muſical, rather than of grammatical uſe, ſerving as aids in the ſinging of their poems; and very different from thoſe introduced afterwards.

He adds, that Ariſtarchus, a diſciple of Ariſtophanes, improved on his maſter's art; but that all they both did was only deſigned to facilitate youth in the making of verſes.—The ſame Voſſius ſhews from ſeveral antient grammarians, that the manner of writing the Greek *Accents* in thoſe days, was quite different from thoſe now uſed in our books.

Hen. Chriſt. Hennin, in a diſſertation publiſhed to ſhew that the Greek tongue ought not to be pronounced according to the *Accents*, eſpouſes the opinion of Voſſius, and even carries the matter ſtill further.—He thinks that *Accents* were the invention of the Arabians, about nine hundred years ago; and that they were only uſed in poetry; that they were intended to aſcertain the pronunciation of the Greek, and to keep out that barbariſm which was then breaking in upon them; that the antient *Accents* of Ariſtophanes were perfectly agreeable to the genuine Greek pronunciation, but that the modern ones of the Arabs deſtroy it.

Wetſtein, Greek profeſſor at Baſil, in a learned diſſertation, endeavours to prove the Greek *Accents* of an older ſtanding.—He owns that they were not always formed in the ſame manner by the antients; but thinks that difference owing to the different pronunciation which obtained in the ſeveral parts of Greece.

He brings ſeveral reaſons à priori for the uſe of *Accents*, even in the earlieſt days; as that they then wrote all in capital letters equidiſtant from each other, without any diſtinction either of words, or phraſes; which without *Accents* could ſcarce be intelligible: and that *Accents* were neceſſary to diſtinguiſh ambiguous words and to point out their proper meaning; which he confirms from a diſpute on a paſſage in Homer, mentioned by Ariſtotle in his *Poëtics*, chap. V. Accordingly, he obſerves, that the Syrians, who have tonic, but no diſtinctive *Accents*, have yet invented certain points, placed either below or above the words, to ſhew their mood, tenſe, perſon, or ſenſe. See further in his *Diſſertatio Epiſtolica de Accentuum Græcorum Antiquitate & Uſu.* Baſil, 1686.

ACCENT is alſo applied, ſomewhat abuſively, to the characters which mark the quantities of ſyllables, or the time the voice is to dwell on them.

The ſpurious *Accents* anſwer to the characters of time in muſic; as crotchets, quavers, *&c.*—The genuine *Accents* rather anſwer to the muſical notes, ſol, fa, *&c.*

Such are the *long Accent*, which ſhew that the voice is to ſtop on the vowel, and is expreſſed thus (¯).

The *ſhort Accent*, which ſhews that the time of pronunciation ought to be ſhort, and is marked thus (˘).

Some even rank the hyphen, diaſtole, and apoſtrophe, among *Accents*.

ACCENT alſo denotes a certain inflexion of voice; or a peculiar tone, and manner of pronunciation, contracted from the country, or province, where a perſon was bred.

In this ſenſe, we ſay, the Welſh tone or *Accent*, the northern *Accent*, the Gaſcoign *Accent*, Norman *Accent*, &c.

ACCENT is alſo a tone or modulation of the voice frequently uſed as a mark of the intention of the ſpeaker, and giving a good or an evil ſignification to his words.

One may give offence with the ſofteſt and moſt ſoothing words imaginable, by a proper management of the *Accent*, and manner of pronouncing them.—The *Accent* frequently gives a contrary ſenſe to what the words themſelves naturally imported.

ACCENT, in muſic, is a modulation of the voice, to expreſs a paſſion.

Every bar or meaſure is divided into *accented* and *unaccented* parts.

The *accented* parts are the principal; being thoſe intended chiefly to move and affect: it is on theſe the ſpirit of the muſic depends. See BAR, and MUSIC.

The beginning and middle, or the beginning of the firſt half of the bar, and the beginning of the latter half thereof, in common time; and the beginning, or firſt of the three notes in triple time; are always the *accented* parts of the meaſures.

In common time, the firſt and third crotchet of the bar are on the *accented* part of the meaſure.—In triple time, where the notes always go by three and three, that which is in the middle of every three is always *unaccented*; the firſt and laſt *accented*. But the *Accent* in the firſt is ſo much ſtronger, that in many caſes the laſt is accounted as if it had no *Accent*.

The harmony is always to be full, and void of diſcords in the *accented* parts of the meaſure. In the *unaccented* parts this is not ſo abſolutely neceſſary; diſcords here paſſing without any great offence to the ear.

ACCENT, in Poetry. See REST.

ACCEPTANCE *, in a general ſenſe, the act of *accepting*, *i. e.* of receiving, or admitting a thing offered to us, which by our refuſal would have been fruſtrated, and rendered of no effect.

The *Acceptance* of a donation is neceſſary to its validity; and is a ſolemnity eſſential thereto.—*Acceptance*, ſay the civilians, is the concurrence of the will, or choice of the donee, which renders the act compleat; and without which the donor may revoke his gift at pleaſure.

In beneficiary matters, the canoniſts hold, that the *Acceptance* ſhould be ſignified at the ſame time with the reſignation; not *ex intervallo*. See RESIGNATION.

ACCEPTANCE, in common law, denotes a tacit agreement to a preceding act, which might have been defeated and avoided, were it not for ſuch *Acceptance* had.—If a man and his wife, ſeiſed of land in right of the wife, make a joint leaſe, or feoffment by deed; reſerving rent; the man dying, and the wife receiving the rent; ſuch receipt is deemed an *Acceptance*, and ſhall make the leaſe good: ſo that ſhe ſhall be barred from bringing the writ, *Cui in vita*. See CUI *in vita*.

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* This appears from inſcriptions as well as manuſcripts, none of which, till 170 years before Chriſt, has either accent, ſpirit, apoſtrophus, or ιωτα ſubſcribed. V. *Maj. de Numm. Græc. Inſcr.* p. 10, ſeq. *Politian. Miſcell.* 78. *Voſſ. Ariſtarch.* 1, 8. Idem *de accent.* p. 5.

* The word is formed from *accipere*, to receive; which is compounded of *ad*, to; and *capere*, to take.

ACCEPTANCE is more particularly uſed in the Romiſh eccleſiaſtical law, for the manner of receiving or admitting the pope's conſtitutions; or the act whereby they are received, and made obligatory.

There are two kinds of *Acceptances*; the one ſolemn, the other tacit.

The *ſolemn Acceptance* is a formal act, whereby ſome error, or ſcandal, which the pope condemns, is expreſſly condemned by the acceptor.—Infinite diſputes and diſſenſions have been raiſed in the Roman catholic world, eſpecially in France, on occaſion of the *Acceptance* of the conſtitution *Unigenitus*: and many of the French clergy ſtill refuſe to *accept* it.

When a conſtitution has been ſolemnly *accepted* by thoſe it more immediately relates to; it is ſuppoſed to be tacitly *accepted* by all the other prelates in the Chriſtian world, who have cognizance thereof: and this acquieſcence is what they call a *Tacit Acceptance*.

In this ſenſe, France, Poland, *&c.* tacitly *accepted* the conſtitution againſt the doctrine of Molinos, and the Quietiſts.—And Germany, Poland, *&c.* tacitly *accepted* the conſtitution againſt Janſenius.

ACCEPTANCE, in commerce, is particularly uſed in reſpect of bills of exchange.—To *accept* a bill of exchange, is to ſign, or ſubſcribe it; and thereby become principal debtor of the ſum contained therein; with an obligation to pay or diſcharge it at the time prefixed. See BILL *of Exchange*.

The *Acceptance* is uſually performed by him on whom the bill is drawn; upon its being preſented to him by the perſon in whoſe behalf it was drawn, or by ſome others by his order.—While the acceptor is maſter of his ſignature, *i. e.* before he have returned the *accepted* bill to the bearer, he may eraſe his *Acceptance*: but not after he has once delivered it.

Bills payable at ſight are not to be *accepted*; as being to be acquitted at their firſt preſenting; or, in defect of payment, to be proteſted.—In bills drawn for a certain number of days after ſight, the *Acceptance* muſt be dated; in regard the time is to be accounted therefrom.—The form of this *Acceptance* is, *Accepted ſuch a day*, and then the ſignature.

Bills drawn payable on a day named, or at uſance, or double uſance, need not be dated; uſance being reckoned from the date of the bill itſelf. See USANCE.—On theſe it is ſufficient to write, *Accepted*, and the ſignature.

If the bearer of a bill be contented with an *Acceptance* to be paid in twenty days after ſight, where, in the bill itſelf, only eight days are expreſſed; he runs the riſque of the twelve additional days: ſo that if the acceptor fail, he has no remedy againſt the drawer. And if the bearer content himſelf to receive a leſs ſum than is expreſſed, in part; he is to ſtand the chance of the reſt.

ACCEPTATION, in grammar, the ſignification of a word; or the ſenſe wherein it is taken and received. Thus we ſay:

Such a word has ſeveral *Acceptations*.—In its firſt and moſt natural *Acceptation*, it denotes, *&c.* See SIGNIFICATION.

ACCEPTILATION, in the civil law, an acquittance given without receiving any money; or a declaration of the creditor, in favour of the debtor, ſignifying, that he is ſatisfied for his debt, and forgives all further claim, or demand; though in reality no payment has been made.

ACCEPTION, or ACCEPTATION. See ACCEPTATION.

ACCEPTOR, of a bill of exchange, the perſon who accepts the bill.

The *Acceptor*, who is uſually the perſon on whom the bill is drawn, becomes perſonal debtor by the acceptance; and is obliged to pay it, though the drawer fail before it becomes due. See ACCEPTANCE.

ACCESS *, in a general ſenſe, ſignifies the approach of a thing towards another.

* The word is of Latin original, *acceſſus*, or *acceſſio*; formed of *accedere*; compounded of *ad*, to; and *cedere*, to come.

In which ſenſe, *Acceſs* ſtands oppoſed to receſs. See RECESS.

We ſometimes ſay, the *Acceſs* of bodies, the *Acceſs* of the moon, the ſun, planets, *&c.* but more frequently, the approach of bodies, the appulſe of the moon, the riſing of the ſun, *&c.* Geometricians ſpeak of a line called the curve of equable *acceſs*, or approach.

ACCESS, in a more particular ſenſe, denotes entrance, or admiſſion. See ENTRY, and ADMISSION.

We ſay, ſuch a perſon has *Acceſs* to the prince: the *Acceſs* on that ſide was very difficult, by reaſon of rocks, *&c.*

ACCESS, in medicine, denotes a fit, or return of ſome periodical diſeaſe.

We ſay an *Acceſs* of the gout, but eſpecially an ague, an intermitting fever, an epilepſy, *&c.* an *Acceſs* of madneſs; ſometimes alſo a prophetical *Acceſs*, a cold *Acceſs*, *&c.*

Acceſs is frequently confounded with paroxyſm; but they are different things; an *Acceſs* being properly the beginning, or firſt onſet of a diſeaſe, a paroxyſm the height of it. See PAROXYSM.

ACCESSIBLE, ſomething that may be approached; or, that *Acceſs* may be had to.

Such a place, a fortreſs, is *acceſſible* from the ſea-ward, *i. e.* the paſſage to it is practicable. See FORTIFICATION, and FORTIFIED *place*.

ACCESSIBLE *height*, or *diſtance*, in geometry, *&c.* is either that which may be mechanically meaſured by the application of a meaſure to it; or it is a height whoſe baſe and foot may be approached to, and a diſtance meaſured thence on the ground.

With the quadrant, *&c.* we can take altitudes both *acceſſible* and inacceſſible.

Surveying, includes the meaſuring, plotting, *&c.* both of *acceſſible* and inacceſſible diſtances.

ACCESSION, in a general ſenſe, is the act of approaching, or going to a place, perſon, or thing.

ACCESSION is more particularly uſed for the act whereby a thing is joined or united to ſomething exiſting before.

ACCESSION is alſo uſed for a prince's ſucceſſion to the throne. The firſt of Auguſt was obſerved in memory of the late king's *Acceſſion* to the crown of Great Britain.

ACCESSION is alſo uſed for the act of engaging, and becoming a party in a treaty before concluded between other powers; on the ſame footing and conditions as if originally comprehended in the treaty itſelf: ſuch as

The *Acceſſion* of the States General to the treaty of Hanover; of the Czarina to the treaty of Vienna, *&c.*

ACCESSORY, or ACCESSARY, ſomething that accedes, or is added to another more conſiderable thing.

In which ſenſe, the word ſtands oppoſed to principal. See PRINCIPAL.

ACCESSORY, or ACCESSARY, in common law, is chiefly uſed for a perſon guilty of a felonious offence, not principally, but by participation; as, by advice, command, or concealment.

There are two kinds of *Acceſſories*; before the fact, and after it.—The firſt is he who commands, or procures another to commit felony, and is not preſent himſelf; for if he be preſent, he is a principal.

The ſecond, is he who receives, aſſiſts, or comforts any man that has done murder, or felony, whereof he has knowlege.

A man may alſo be *acceſſory* to an *Acceſſory*, by aiding, receiving, *&c.* an *Acceſſory* in felony.

An *Acceſſory* in felony ſhall have judgment of life and member, as well as the principal, who did the felony; but not till the principal be firſt attainted, and convict, or outlawed thereon.—Where the principal is pardoned without attainder, the *Acceſſory* cannot be arraigned; it being a maxim in law, *Ubi non eſt principalis, non poteſt eſſe Acceſſorius.* But if the principal be pardoned, or have his clergy after attainder, the *Acceſſory* ſhall be arraigned. 4 & 5 *W.* & *M. c.* 4. In the loweſt and higheſt offences there are no *Acceſſories*, but all are principals: as in riots, routs, forcible entries, and other treſpaſſes, which are the loweſt offences.—So alſo in the higheſt offence, which is high treaſon, there are no *Acceſſories*. *Cok. Littlet.* 71.

Acceſſories in petty treaſon, murder, and felony, are not to have their clergy.—There can be no *Acceſſory* before the fact in manſlaughter; becauſe that is ſudden and unprepenſed.

ACCESSORY by ſtatute, is ſuch a one as abets, adviſes, aids, or receives one that commits an offence, which is made felony by ſtatute.

ACCESSORY nerves, ACCESSORIUS *Williſii*, or *Par* ACCESSORIUM, in anatomy, a pair of nerves, which, ariſing from the medulla in the vertebræ of the neck, aſcend, and enter the ſkull, and paſs out of it again, with the par vagum, wrapped up in the ſame common integument therewith; and after quitting the ſame, are diſtributed into the muſcles of the neck and ſhoulders.—See *Tab. Anat.* (*Oſteol.*) *fig.* 5. *litt.* rr.

In the aſcent towards the head, they receive branches from each of the firſt five pair of cervical nerves, near their riſe from the medulla; and ſend forth twigs to the muſcles of the larynx, gula, *&c.*—Uniting with a branch of the intercoſtal, they form the plexus ganglioformis.

ACCIDENCE, ACCIDENTIA, a name chiefly uſed for a little book, containing the firſt elements, or rudiments of the Latin tongue. See GRAMMAR.

ACCIDENS, ACCIDENT, in philoſophy. See ACCIDENT.

Per **ACCIDENS**, is frequently uſed among philoſophers to denote what does not follow from the nature of a thing, but from ſome accidental quality thereof: in which ſenſe, it ſtands oppoſed to *per ſe*, which denotes the nature and eſſence of a thing. See Per *ſe*.

Thus, fire is ſaid to burn *per ſe*, or conſidered as fire, and not *per accidens:* but a piece of iron, though red-hot, only burns *per accidens*, by a quality *accidental* to it, and not conſidered as iron.

ACCIDENT *, Accidens, in philoſophy, ſomething additional, or ſuperadded, to a ſubſtance; or not eſſentially belonging thereto, but capable, indifferently, either of being or not being in it, without the deſtruction thereof. See Substance.

* The word is derived from *accidere*, to happen; which is compounded of *ad*, to; and *cadere*, to fall.

The ſchoolmen diſtinguiſh three kinds of *Accidents*; verbal, predicable, and predicamental.

Verbal Accident, *Accidens Verbale*, ſtands oppoſed to eſſence; and in this ſenſe, the adjuncts to a thing, though ſubſtances themſelves, are denominated *Accidents* thereof.

Thus, the cloaths a man has on, though real ſubſtances, yet, as they are not eſſential, but adventitious or acceſſory to his exiſtence, are *Accidents*.

Predicable Accident, *Accidens Prædicabile*, is uſed in oppoſition to *Proper*.—Such is any common quality; as whiteneſs, heat, learning, or the like.

Thus a man may be ſick or well; and a wall white or black; yet the one be ſtill a man, and the other a wall.

Theſe are called in the ſchools, *Predicable Accidents*; becauſe uſually laid down and explained in the doctrine of predicables.

Predicable Accidents may either be taken in the abſtract, as whiteneſs, learning; or in the concrete, white, learned. See Abstract, and Concrete.

If taken in the abſtract, as is done by Porphyry; the *Accident* is defined as above, that which may either be preſent, or abſent, without the deſtruction of its ſubject.

If it be taken in the concrete; *Accident* is uſually defined by the ſchoolmen, to be ſomething capable of being predicated contingently, of many, in reſpect of quality.—As learning, which may probably be predicated of you, him, *&c.*

Predicamental Accident, *Accidens Prædicamentale*; which alone properly anſwers to the idea of an *Accident*; is a mode, or modification of ſome created ſubſtance, inhering or depending thereon, ſo as not to be capable of ſubſiſting without the ſame.

In this ſenſe, *Accident* is oppoſed to ſubſtance.—Whence, as ſubſtance is defined a thing that ſubſiſts of itſelf, and the ſubſtratum of *Accidents*; ſo an *Accident* is ſaid to be that *cujus eſſe eſt ineſſe:* and therefore Ariſtotle, who uſually calls ſubſtances ſimply οντα, entities, beings; commonly calls *Accidents*, οντος οντα, entities of entity; requiring ſome ſubſtance wherein to reſide, as their ſubject of inheſion.

An *Accident*, then, has an immediate, and eſſential dependence on its ſubſtance; both as to its production, its continuation, and its effects: it ariſes or is deduced from its ſubject, is preſerved or ſubſiſted by it; and can only be affected by what alters, or affects the ſubject.

The old ſchoolmen, however, will not have *Accidents* to be mere modes of matter, but entities really diſtinct from it; and, in ſome caſes, ſeparable from all matter.—But the notion of real *Accidents*, and qualities, is now exploded.

Ariſtotle and the Peripatetics make nine kinds or claſſes of *Predicamental Accidents*; others contract them into a leſs number.

Abſolute Accident, is a term uſed in the Romiſh theology, for a predicamental *Accident* which ſubſiſts, or may poſſibly ſubſiſt, at leaſt miraculouſly, and by ſome ſupernatural power, without a ſubject.

Such, they contend, are the *Accidents* of the bread and wine in the euchariſt, *e. gr.* the colour, flavour, figure, *&c.* thereof, which remain after the ſubſtances they belonged to are changed into other ſubſtances of fleſh.

This abſurdity has been very ſtiffly maintained by many of the caſuiſts; and even ſolemnly decreed by ſome of their councils.—The euchariſt, ſay they, being a ſacrament, *i. e.* a viſible ſign of an inviſible grace; it is neceſſary there be ſomething ſenſible therein: now, this cannot be the ſubſtance, that being deſtroyed or tranſubſtantiated; and therefore it muſt be *Accidents.*—Add, that in every converſion there muſt be ſomething of the former nature remaining after the change; otherwiſe it would be no more than a ſimple ſubſtitution of one thing for another: as, then, nothing of the ſubſtance remains, it muſt be *Accidents.*—Hence, the council of Conſtance condemns the following propoſition, which is the ſecond of Wickliff, as heretical: The *Accidents* of bread do not remain without a ſubject in the ſacrament. Seſſ. VIII.

Some of the fathers ſeem to give countenance to the ſame opinion.—S. Baſil, in his ſixth homily on the creation, obſerves that light, or rather brightneſs, the ſplendor of light, τȣ φωτος ἡ λαμπροτης, is a thing diſtinct from its ſubject, as whiteneſs is from a white body; and that it exiſted in the beginning, without this ſubject; having been created four days before the ſun.

The Carteſians, to a man, combat the notion of *abſolute Accidents*; it being their doctrine, that the eſſence of matter conſiſts in extenſion; and that *Accidents* are only modifications thereof, in no-wiſe diſtinct from it: an *Accident* therefore without a ſubject muſt be a contradiction.—And hence, Carteſianiſm is branded as contrary to the catholic faith.

Various expedients have been invented by the Carteſians, to account for tranſubſtantiation, *&c.* without the hypotheſis of *abſolute Accidents.*—Some hold, that the uſual impreſſions are made on the ſenſe by the immediate agency of God; and without any thing remaining of the former nature. Others aſcribe the whole to heterogeneous matters contained in the pores of the bread, *&c.* which remaining unaltered by the tranſubſtantiation, produce the ſame ſenſations as the bread produced.

Accident, in the popular ſenſe of the word, ſignifies a contingent effect; or ſomething produced caſually, and without any foreknowlege or deſtination thereof in the agent that produced it.

Accident, in heraldry, is an additional note, or mark in a coat-armour, not neceſſarily belonging thereto, but capable either of being retained, or omitted, without altering the eſſence of the armour.—Such are abatements, differences, and tincture.

ACCIDENTAL, ſomething that partakes of the nature of an *Accident*; or, that is not eſſential to its ſubject, but indifferent thereto.

Thus, whiteneſs is *accidental* to marble; and heat, to a red hot iron.

Accidental *Point*, in perſpective, is a point in the horizontal line, where lines parallel to one another, though not perpendicular to the picture, or repreſentation, meet. See Point, and Perspective.

Accidental *Dignities*, and *Debilities*, in aſtrology, are certain caſual diſpoſitions, and affections of the planets, whereby they are ſuppoſed to be either ſtrengthened, or weakened, by their being in ſuch a houſe of the figure.

ACCLAMATION *, a confuſed noiſe, or ſhout of joy, by which the public expreſs their applauſe, eſteem, or approbation of any thing.

* *Acclamatio*, the Latin term, is compounded of *ad*, to, or at; and *clamare*, to cry out, or ſhout.

Theſe were formerly uſed in churches, as well as theatres; and the biſhops, and other eccleſiaſtical officers, were elected by the *Acclamations* of the people.—But their principal uſe has always been at the ſolemn entries of princes and heroes; where they are uſually attended with good wiſhes, prayers, vows, *&c.*

Antiquity has handed down to us ſeveral forms of *Acclamations*; the Hebrews uſed to cry, Hoſanna; the Greeks, Αγαθη τυχη, Good luck.—The Romans to their princes, generals, *&c.* *Dii te nobis ſervent*; *veſtra ſalus, noſtra ſalus:* ‘the Gods preſerve you for us; your ſafety, ‘our ſafety.’—*In te omnia, per te omnia habemus, Antonine.* ‘In you, Antoninus, and by you, we have every thing.’ —Lampridius relates, that at the entry of Severus, the people cried out, *Salve, Roma; quia ſalvus Alexander.* ‘O Rome, be ſafe; ſince Alexander is ſafe.’—Briſſonius, in his treatiſe of Formula's, enumerates various ſorts of *Acclamations*, uſed by the ſenate, the army, *&c.* Among the moderns, the Engliſh cry, ‘God ſave ‘the king.’—The French, *Vive le Roy*, ‘May the king ‘live,’ *&c.*

ACCLIVIS, in anatomy, a muſcle, otherwiſe called *Obliquus Aſcendens*. See Obliquus *Aſcendens*.

ACCLIVITY *, the ſteepneſs, or ſlope of a line or plane inclined to the horizon; reckoned upwards. See *Inclined* Plane.

* The word is compounded of the Latin *ad*, to; and *clivus*, a cliff, a ſlanting or ſloping.

The aſcent of a hill is an *Acclivity*; the deſcent of the ſame a declivity.

Some writers of fortifications uſe *Acclivity* for *Talus*. See Talus.

ACCOLA *, in a general ſenſe, denotes an inhabitant near any certain place.

* The word is compounded of *ad*, to; and *colere*, to dwell, inhabit; *Accola eo quod adveniens terram colat*. Hence ſome place the diſtinguiſhing character of *Accolæ* in this, that they come from elſewhere: *Accola cultor loci in quo non eſt natus*; by which they ſtand oppoſed to *Incolæ*.—According to the verſe: *Accola non propriam, propriam colit incola terram.*

ACCOLADE *, a ceremony antiently uſed in the conferring of knighthood.

* The word is French, and literally denotes an embrace, or hugging; being formed of *ad*, to; and *col*, or *collum*, neck.

The *Accolade* conſiſted in the king's laying his arms about the young knight's neck, and embracing him; in token of friendſhip.—After the *Accolade*, the prince giving him a little blow on the ſhoulder with the flat of a ſword, he forthwith entered into the profeſſion of arms.

ACCOMMODATION *, in philoſophy, the application of one thing, by analogy, to another.

* The word is compounded of *ad*, to; and *commodus*, commodious.

To know a thing by *Accommodation*, is to know it by the idea of a ſimilar thing referred thereto.

A prophecy of ſcripture is ſaid to be fulfilled various ways; properly, as when a thing foretold comes to paſs; and improperly, or by way of *Accommodation*, when an event happens to any place or people, like to what fell out ſome time before to another.—Thus, the words of Iſaiah, ſpoken to thoſe of his own time, are ſaid to be fulfilled in thoſe who lived in our Saviour's; and are *accommodated* to them: Ye hypocrites, well did Eſaias propheſy of you, *&c.* which ſame words, St. Paul afterwards *accommodates* to the Jews of his time.—This method of explaining ſcripture by *Accommodation*, ſerves as a key for ſolving ſome of the greateſt difficulties relating to the prophecies.

On many occaſions, a man finds it expedient to tranſlate by *Accommodation*: thus, the word *Librarius*, ſcrivener, may be tranſlated, by *Accommodation*, a printer; as it originally ſignifies thoſe who made it their buſineſs to furniſh copies of books, before the invention of printing.

ACCOMMODATION is alſo uſed for an amicable agreement, or compoſition between two contending parties.—Thus we ſay, The proceſs is grown ſo intricate and perplex'd, that there is no hope of getting out of it but by an *Accommodation*.

Theſe *Accommodations* are frequently effected by means of compromiſe, and arbitration.

ACCOMPANYMENT, ſomething attending, or added as a circumſtance to, another; either by way of ornament, or for the ſake of ſymmetry, or the like.

The muſic, in dramatic performances, ſhould only be a ſimple *Accompanyment*.—The organiſts ſometimes apply the word to ſeveral pipes which they occaſionally touch to *accompany* the treble; as the drone, flute, *&c.*

The *Accompanyments*, in heraldry, are all ſuch things as are applied about the ſhield, by way of ornament; as the belt, mantling, ſupporters, *&c.*

A thing is alſo ſaid to be *accompanied*, when there are ſeveral bearings, or figures about ſome one principal one; as a ſalteer, bend, feſs, chevron, or the like.

ACCOMPLICE *, one that has a hand in a buſineſs; or is privy in the ſame deſign or crime with another. See ACCESSORY.

* The word is compounded of *ad*, to; *con*, together; and *plicare*, to fold.

ACCOMPLISHMENT *, the entire execution, atchievement, or fulfilling of ſomething propoſed, or undertaken.

* The word is compounded of *ad*, to; and *complere*, to fill up.

The *Accompliſhment* of the prophecies of the Old Teſtament, in the perſon of our Saviour, is the great mark of his being the Meſſiah.

There are two ways of *accompliſhing* a prophecy, directly, and by accommodation. See ACCOMMODATION.

Mr. Sykes has a particular inquiry into the meaning of thoſe words uſed by the evangeliſt, That it might be fulfilled, or accompliſhed, which was ſpoken by the prophets: where he ſhews, that the πληρωθῇ, *fulfilled*, does not neceſſarily refer to a prediction of a future event *accompliſhed*; but is frequently a mere accommodation of words, borrowed from ſome other author, and accommodated to the preſent occaſion.

ACCOMPT. See the article ACCOUNT.

ACCORD *, in muſic, is more uſually called *concord*. See CONCORD.

* The word is French, formed, according to ſome, from the Latin *ad*, to; and *cor*, the heart; but others, with more probability, derive it from the French *corde*, a ſtring, or cord; on account of the agreeable union between the ſounds of two ſtrings ſtruck at the ſame time. Whence alſo ſome of the conſonants in muſic come to be called *tetrachord*, *hexachord*, &c. which are a fourth, and a ſixth. See CHORD, and TETRACHORD.

ACCORD, in law, is a verbal agreement between two, at the leaſt, to ſatisfy an offence that the one hath committed againſt the other; whether it be a treſpaſs, or the like; for which the one agrees to make, and the other to accept, a certain ſatisfaction.—This, if executed, becomes a good bar in law to any ſuit to be brought for the ſame matter.

ACCOUNT *, or ACCOMPT, in arithmetic, a calculus, or computation of the number of certain things.

* The word is compounded of *ad*, to; and *computus*, a computation.

There are various ways of *accounting*; as, by enumeration, or telling one by one; and by the rules of arithmetic, addition, ſubtraction, *&c.*

We *account* time by years, months, *&c.* The Greeks *accounted* it by olympiads; the Romans by indictions, luſtres, *&c.* We *account* diſtances by miles, leagues, *&c.*

Money of **ACCOUNT**, is an imaginary ſpecies, contrived for the facilitating, and expediting the taking, and keeping of *Accounts*.—Such are pounds, angels, *&c.*

ACCOUNT is alſo uſed in reſpect of a company or ſociety, when two, or more perſons have received, or diſburſed money for each other; or when this has been done by their order, or commiſſion. See COMPANY, and COMMISSION.

ACCOUNT, or **ACCOUNTS**, is alſo uſed, collectively, for the ſeveral books or regiſters which merchants keep of their affairs and negotiations.

Hence, to make out an *Account*; to paſs one's *Account*, &c. —Bankrupts are obliged to ſurrender their *Accounts*.

ACCOUNT, or **ACCOMPT**, in a legal ſenſe, is a particular detail, or enumeration delivered to a court, a judge, or other proper officer or perſon, of what a man received or expended on the behalf of another, whoſe affairs he has had the management of.

In the remembrancer's office in the exchequer, are enter'd the ſtates of all the *Accounts* concerning the king's revenue; for cuſtoms, exciſe, ſubſidies, *&c.* See REMEMBRANCER.

The great *Accounts*, as thoſe of the mint, wardrobe, army, navy, tenths, *&c.* are called *impreſt Accounts*.

All *Accounts* which paſs the remembrancer's office, are brought to the office of the clerk of the pipe. See PIPE; ſee alſo TALLY, and AUDITOR.

ACCOUNT is alſo more particularly uſed for a writ which lies where an agent, ſteward, or other perſon, who ought to render an *Account*, refuſes to give in the ſame.

Chamber of **ACCOUNTS**, in the French polity, is a ſovereign court, of great antiquity, where the *Accounts* relating to the king's revenue are delivered in, and regiſtred.

This anſwers pretty nearly to the court of exchequer in England.

There are preſidents of *Accounts*, maſters of *Accounts*, correctors of *Accounts*, &c.

ACCOUNTANT, or ACCOMPTANT, a perſon, or officer appointed to keep, or make up the *accounts* of a company, office, court, or the like. See ACCOUNT.

Thus there are *Accountants* in the cuſtom-houſe, the exciſe, *&c.*

ACCOUNTANT-*General of the Court of Chancery.* See CHANCERY.

ACCOUNTING- or ACCOMPTING- or COUNTING-*Houſe*. See COUNTING-*Houſe*, and BOOK-KEEXING.

ACCOUTREMENT *, an antient term, uſed for an habiliment; or a part of the apparatus, and furniture of a ſoldier, knight, or even of a gentleman.

* The word is French; formed from the antient German, *Kuſter*; whence *Coutre*, a name uſed in ſome cathedrals in France, *e. gr.* at Bayeux, for the ſacriſtan or officer, who has the care of furniſhing, and ſetting out the altar, in the church; called in German *Kuſter*, νεωκορος.

ACCRETION *, in phyſics, the growth, or increaſe of an organical body, by the acceſſion of new parts.

* The word is compounded of *ad*, to; and *creſcere*, to grow.

Accretion is of two kinds; the one, conſiſting in an external appoſition of new matter.

This is what we otherwiſe call, *juxtapoſition*; and it is thus, ſtones, ſhells, *&c.* are ſuppoſed to grow.

The other is by ſome fluid matter received into proper veſſels, and gradually brought to adhere, or grow to the ſides thereof. —This is what we call *introſuſception*; and it is thus that plants and animals are nouriſh'd.

ACCRETION, in the civil law, denotes the union or acceſſion of a thing vague or vacant to another already occupied, or diſpoſed of. See ACCESSION.

A legacy given to two perſons jointly, *tam re quam verbis*, falls wholly to him that ſurvives the teſtator, by right of *Accretion*.—Alluvion is another ſpecies of *Accretion*. See ALLUVION.

ACCRUE, or ACCREW, in law, is underſtood, of a part that accedes to, or follows the property of, another part, or perſon.

ACCUBITOR *, an antient officer of the emperors of Conſtantinople; whoſe buſineſs was to lie near the emperor.

* The word is Latin, formed of the verb *accumbere*, to lie by; whence alſo *accubatio*, that ſtate, or poſture of the body, when we ſit, and at the ſame time lean backwards.

ACCUMULATION *, the act of heaping, or amaſſing ſeveral things together.

* The word is originally compounded of *ad*, to; and *cumulus*, heap.

The lawyers ſpeak of an *Accumulation* of titles; as, when a perſon claims lands, a benefice, or the like, in virtue of ſeveral titles, or pretenſions of different kinds: *e. gr.* by death, by reſignation, *&c.*

In a like ſenſe, we ſometimes read of *accumulative* treaſon, which is, where a fact is not treaſon in itſelf, but becomes ſo by an *Accumulation* of circumſtances.

The Earl of Strafford was condemned of *accumulative* treaſon; none of the facts alleged againſt him amounting ſingly to treaſon. 13 & 14 *Car.* 2. *c.* 29.

ACCURSED, ſomething that lies under a curſe, or a ſentence of excommunication. See ANATHEMA.

ACCUSATION *, ACCUSATIO, in the civil law, the intenting a criminal action againſt any perſon, either in one's own name, or that of the public.

* The word is compounded of *ad*, to; and *cauſari*, to plead.

By the Roman law, there was no public *Accuſer*, for public crimes; every private perſon, whether intereſted in the crime, or not, might *accuſe*, and proſecute the *accuſed* to puniſhment, or abſolution.

But the *Accuſation* of private crimes was never received but from the mouths of thoſe who were immediately intereſted in them.—Thus none but the huſband could accuſe his wiſe of adultery.

Indeed, it was not properly an *Accuſation* except in public crimes; in private ones it was called ſimply *action*, or intenting an action, *intendere actionem*, or *litem*. See ACTION.

Cato, the moſt innocent perſon of his age, had been *accuſed* 42 times; and abſolved as often.

When the accuſed *accuſes* the accuſer, it is called *recrimination*; which is not admitted till the *accuſed* has been firſt purged.

By the cruel laws of the inquiſition, the *accuſed* is forced to accuſe himſelf of the crime objected to him. See INQUISITION.

It has formerly been the cuſtom in ſome parts of Europe, where the *Accuſation* was very heavy, either to decide it by combat, or at leaſt to make the *accuſed* purge himſelf by oath; which, however, was not admitted, excepting a certain number of his neighbours, and acquaintance, ſwore together with him.

ACCUSATIVE, in grammar, the fourth caſe of nouns that are declined.

Its uſe may be conceived from this, that all verbs which expreſs actions that paſs from the agent, as to beat, *&c.* muſt have ſubjects to receive thoſe actions: for, if I beat, I muſt beat ſomething; ſo that ſuch verb evidently requires after it a noun, or name, to be the object of the action expreſſed.

Hence, in all languages which have caſes, the nouns have a termination which they call *Accuſative*: as, *amo Deum*, I love God; *Cæſar vicit Pompeium*, Cæſar overcame Pompey.

In Engliſh, we have nothing to diſtinguiſh this caſe from the nominative; but as we ordinarily place words in their natural order, it is eaſily diſcovered; the nominative conſtantly preceding, and the *Accuſative* following the verb.—Thus, when we ſay, the prince loves the princeſs, and the princeſs loves the prince: the prince is the nominative in the firſt, and the *Accuſative* in the laſt; and the princeſs the *Accuſative* in the firſt, and the nominative in the ſecond.

ACEPHALUS *, or ACEPHALOUS, ſomething that wants a head.

* The word is compoſed of the privative α, and κεφαλη, *caput*, head.

Pliny repreſents the Blemmyes as a headleſs, or *Acephalous* nation—*Acephalous* worms, or what are ſuppoſed ſuch, are frequent. See WORMS.

ACEPHALOUS, in a figurative ſenſe, is more frequently applied to perſons deſtitute of a leader, or chief.

Thus, the name *Acephali* is ſometimes applied to ſuch prieſts, or biſhops, as are exempted from the diſcipline and juriſdiction of their ordinary biſhop, or patriarch.

Anaſtaſius the library-keeper calls this exemption from the juriſdiction of a patriarch, *autocephalia*.

We find a great number of canons of councils, capitulars of princes, *&c.* againſt *Acephalous* clerks.

ACEPHALOUS, in our antient law-books, is alſo uſed for thoſe poor people who had no proper lord; as holding nothing in fee, either of king, biſhop, baron, or other feudal lord.

ACEPHALI, or ACEPHALITÆ, frequently occurs, in eccleſiaſtical hiſtory, as the denomination of divers ſects: particularly,

1°, Of thoſe who, in the affair of the council of Epheſus, refuſed to follow either St. Cyril, or John of Antioch.

2°, Of certain heretics of the fifth century, who at firſt followed Peter Mongus; but afterwards abandoned him, upon his ſubſcribing the council of Chalcedon; they themſelves ſticking to the errors of Eutyches.

3°, Of the adherents of Severus of Antioch; and of all in general who refuſed to admit the council of Chalcedon.

ACERB, ACERBUS, a compound taſte, conſiſting of ſour, with the addition of a degree of roughneſs, and aſtringency.

Such is the taſte of pears, grapes, and moſt other fruits before they are ripe.

Phyſicians uſually make *Acerb* an intermediate ſavour between acid, auſtere, and bitter. All matters which come under this denomination are aſtringent.

ACERRA, in antiquity a kind of altar, erected near the bed of a perſon defunct. It was much uſed among the Romans; and the friends and familiars daily burnt incenſe on it, till the time of the burial.

ACETABULUM *, in antiquity, a little vaſe, or cup, uſed at table to ſerve up things proper for ſawce, or ſeaſoning: much after the manner of our ſalts, and vinegar-cruets.

* Hence Agricola, in his treatiſe of Roman meaſures, L. I. takes the name to have been formed from *Acetum*, vinegar; as ſuppoſing it principally deſtined to ſerve vinegar on.

ACETABULUM alſo denotes a Roman meaſure, uſed both for liquid and dry things, chiefly in medicine. See MEASURE.

The *Acetabulum* contained a cyathus, and a half, as is proved by Agricola, from two verſes of Fannius; who, ſpeaking of the cyathus, ſays, it weighs ten drachms; and the *Oxybaphus*, or *Acetabulum*, fifteen.

Bis quinque hunc faciunt drachmæ, ſi appendere tentes:
Oxybaphus fiet, ſi quinque addantur ad illas.

Binet, in his treatiſe of weights and meaſures prefixed to his tranſlation of Pliny, makes the *Acetabulum* of oil weigh two ounces and two ſcruples; the *Acetabulum* of wine, two ounces, two drachms, a grain, and a third of a grain; and the *Acetabulum* of honey, three ounces, three drachms, a ſcruple, and two ſiliquæ.

ACETABULUM, in anatomy, is uſed for a deep cavity, in certain bones, appointed for the reception of the large heads of other bones, in order to their articulation.—See *Tab. Anat.* (*Oſteol.*) *fig.* 12. *lit.* b. Thus the cavity of the iſchium, or huckle-bone, which receives the head of the thigh-bone, is called *Acetabulum*, and ſometimes *Cotyle*, or *Cotyloides*.

The *Acetabulum* is lined, and capped round with a cartilage, whoſe circular margin is called *ſupercilium*.—In its bottom lies a large mucilaginous gland.

ACETABULUM is alſo uſed, by anatomiſts, in the ſame ſenſe with *Cotyledon*. See COTYLEDON.

ACETARIA *. See the article SALLET.

* The word is formed of *Acetum*, vinegar; in regard that fluid is commonly uſed for the ſeaſoning of ſallets.

ACETOUS, or ACETOSE, ſomething relating to vinegar; called in Latin *Acetum*. See ACETUM, and VINEGAR.

We ſay, an *Acetous* taſte; *Acetous* qualities, *&c.* Wine, and all vinous liquors, are rendered *Acetous*, by exciting their ſalts, and tempering, or abating, their ſulphurs. Chemiſts give the preparation of divers *Aceta*, or *Acetous* liquors.

ACETUM *, in medicine, *&c.* the ſame with vinegar; the properties, uſes, and preparation whereof, ſee under the article VINEGAR.

* The word is pure Latin; formed of *acere*, to be ſharp.

There are ſeveral medicines in the ſhops, whereof this liquor is the baſis; as,

ACETUM *Diſtillatum*, diſtilled vinegar; chiefly uſed in preparations, for diſſolution, and precipitation.

Spiritus ACETI, ſpirit of vinegar; made by drenching copper-filings, with diſtilled vinegar, then evaporating it till the fumes of the vinegar cannot be ſmelt; the ſaturation and evaporation to be again repeated, till the menſtruum be ſatiated; which being then diſtilled, the ſpirit comes over.—Its qualities and uſes are much the ſame with thoſe of the diſtilled vinegar, only it is more powerful.

ACETUM *Roſatum*, vinegar of roſes; this is made of roſe-buds infuſed in vinegar forty or fifty days; the roſes are then preſſed out, and the vinegar preſerved.—It is chiefly uſed by way of embrocation on the head and temples, in the head-ach.

After the like manner are made *Acetum Sambucinum*, vinegar of elder; *Acetum Anthoſatum*, vinegar of roſemary-flowers; *Acetum Scilliticum*, vinegar of ſquills, *&c.*

The German diſpenſatories abound with medicated vinegars, chiefly aimed againſt peſtilential diſeaſes; but they are not uſed among us.—Our diſpenſatories retain indeed ſome of them, as the *Acetum Theriacale Norimbergenſe*; but it is never preſcribed.

ACETUM *Alcalizatum*; is made of diſtilled vinegar; with the addition of ſome alkaline, or volatile ſalt. See ALKALI.

ACETUM *Philoſophorum*, a ſour kind of liquor; made by diſſolving a little butter of antimony in a great deal of water.

ACHANE, Αχανη, an antient Perſian corn-meaſure, containing 45 Attic medimni. *Arbuthn. Diſſ. p.* 104.

ACHAT, in our Law-French, ſignifies a contract, or bargain; eſpecially in the way of purchaſe.

Pourveyors were by act of parliament 36 Ed. III. ordained to be thenceforth called *Achators*.

ACHE, or **Ach**, a painful ailment in any part of the body.

Aches, may be either ſcorbutic, rheumatic, owing to violent pains, or the like.

Head-**Ach**. See **Head**-*Ach*, and **Cephalalgy**.

ACHERNER, or **Acharner**, in aſtronomy, a ſtar of the firſt magnitude in the ſouthern extremity of the river Eridanus.—Its longitude, latitude, &c. ſee under the article **Eridanus**.

ACHILLEIS, or **Achilleid**, a celebrated poem of Statius, wherein he propoſed to deliver the whole life and actions of Achilles.

It only takes in his infancy, the poet being prevented from proceeding by death.

The *Achilleid* is of the heroic, or epic kind; but extremely faulty in the plan, or fable.

It is a point controverted among the critics, whether the whole life of a hero, *e. gr.* of Achilles, be a proper ſubject matter of an epic poem? See **Epic**, and **Heroic**.

ACHILLES, a name which the ſchools give to the principal argument alleged by each ſect of philoſophers in behalf of their ſyſtem.

In this ſenſe, we ſay, this is his *Achilles*; that is, his maſter-proof: alluding to the ſtrength and importance of *Achilles* among the Greeks.

Zeno's argument againſt motion, is peculiarly termed *Achilles*.—That philoſopher made a compariſon between the ſwiftneſs of *Achilles*, and the ſlowneſs of a tortoiſe: whence he argued, that a ſlow moveable that precedes a ſwift one by ever ſo ſmall diſtance, would never be out-run by it. See **Motion**.

The antient botaniſts gave the name *Achillæa* to ſeveral plants; one of which is ſaid to be the ſame with our millefolium; and took its name from *Achilles*, who, having been the diſciple of Chiron, firſt brought it into uſe for the cure of wounds and ulcers.

Tendon of **Achilles**, *Chorda Achillis*, is a large tendon, formed by the union of the tendons of the four extenſor muſcles of the foot. See **Foot**.

It is ſo called, becauſe the fatal wound whereby *Achilles* is ſaid to have been ſlain, was given there.

ACHOR, in medicine, the third ſpecies or degree of a tinea, or ſcald head. See **Tinea**.

Achor is a ſort of ſmall running ulcer on the face, and head, chiefly of children while at ſuck; by which the ſkin is broken into a number of little holes, out of which iſſues a viſcid humour.

ACHRONICAL, in aſtronomy. See the article **Acronychal**.

ACID *, **Acidum**, any thing which affects the tongue with a ſenſe of ſharpneſs, and ſourneſs.

* The word is formed from *acere*, to be ſharp; which is derived from ακη, a point or edge.

Acids are divided by many into *manifeſt* and *dubious*.

Manifeſt **Acids**, are thoſe above defined, which impreſs the idea ſenſibly.—Such are vinegar, and its ſpirit; the juices of crabs, citrons, oranges, lemons, barberries, and tamarinds; ſpirit of nitre, ſpirit of alum, ſpirit of vitriol, ſpirit of ſulphur per campanam, ſpirit of ſea-ſalt, and the like.

Dubious, or *Latent* **Acids**, are thoſe which do not poſſeſs enough of the *Acid* nature to give ſenſible marks thereof on the taſte, but agree with the manifeſt *Acids* in ſome other properties, ſufficient to refer them to the ſame claſs. Hence it appears, that there are ſome characters of acidity more general than that of a ſharp taſte; though it is that taſte which is chiefly regarded in the denomination.

The great and general criterion, then, of *Acids*, is that they make a violent efferveſcence, when mixed with another ſort of bodies, called *Alcalies*.

Yet is not this property alone univerſally to be depended on, to determine a body an *Acid*, without the joint conſideration of the taſte, and the changes of colour producible in other bodies thereby.—To diſtinguiſh dubious *Acids* from alcalies, mix them with a blue tincture of violets: if they turn it red, they are of the *Acid* tribe; if green, alcaline.

Acids are all of the tribe of ſalts; and compoſe a particular ſpecies thereof, called *Acid ſalts*.

Acid ſalts are all found to be volatile; by which they are diſtinguiſhed from the reſt, which are either fixed, or have an urinous, inſtead of an *Acid* taſte.

Some late chymical philoſophers have even made it very probable, that it is the *Acid* which is the ſaline part, or principle, in all ſalts.—They conſider it as a ſubtile, penetrating ſubſtance, diffuſed through the ſeveral parts of the globe; which, according to the different matters it happens to be united with, produces different kinds of bodies; if it meets a foſſil oil, it converts it into ſulphur; if it be received into the lapis calcarius, it coagulates with it, and becomes alum; with iron it grows into the green vitriol; with copper, into blue vitriol, &c.

Of this ſentiment is Sir I. Newton.—'In decompounding ſulphur, ſays that author, we get an *Acid* ſalt, of 'the ſame nature with oil of ſulphur per campanam: 'which ſame *Acid* abounding in the bowels of the earth, 'unites ſometimes with earth, and thus makes alum; ſome'times with earth and metal, and makes vitriol; and 'ſometimes with earth and bitumen, and thus compounds 'ſulphur.'

In effect, all our native ſalts, though without any mixture from art, are yet found to be real mixtures; and their compoſition and decompoſition is eaſily made.—'As many as 'they are, they may be all reduced, according to M. Hom'berg, to three kinds, *viz.* ſalt-petre, ſea-ſalt, and vitriol; 'each whereof has its ſeveral ſpecies. Of the combinations 'of theſe with different oily matters, are all the other ſalts 'produced. By the analyſes we have made of them, they 'all appear to be compoſed of an aqueous, an earthy, a 'ſulphureous, and an *Acid* part; but the *Acid* we hold the 'pure ſalt: this makes our chymical principle ſalt, the com'mon baſis of all ſalts; and which, antecedent to its deter'mination to any particular ſpecies, appears to be one ſimi'lar, uniform matter, though never found alone, but always 'accompanied with ſome ſulphureous mixture or other; 'which determines it to ſome one of the three ſorts of foſſil 'ſalts above-mentioned.'

The *Acid*, accompanied with its determining ſulphur, never becomes ſenſible to us, except when lodged either naturally in ſome earthy matter, or artificially in an aqueous one.—In the firſt caſe, it appears under the form of a cryſtallized ſalt; as ſalt-petre, ſea-ſalt, &c. In the ſecond, it appears in form of an *Acid* ſpirit; which, according to the determination of the ſulphur accompanying it, is either ſpirit of nitre, or ſpirit of ſalt, or ſpirit of vitriol.

What is here ſpoken of the three ſimple foſſil ſalts, may be equally applied to all the compound ſalts of vegetables and animals, with this difference, that the latter have always a larger proportion of the earthy matter than the ſimple ones, when in the form of a concrete ſalt; and a larger proportion of the aqueous matter, when in the form of an *Acid* ſpirit.—And hence we account for two important phænomena: 1°, That the *Acid* ſpirits of animal and foſſil ſalts are always weaker, and leſs penetrating, as well as lighter in weight, than thoſe of the foſſil ſalts: 2°, That, after a vehement diſtillation, they leave a larger quantity of earthy matter behind them than thoſe of the foſſil do.

The ſalt naturally contained in plants, may be conſidered as a mixture of earth, oil, a little water, and an *Acid*: this laſt ingredient being ſeparated from the plant with the help of fire, ſhoots into a new ſalt, which ſometimes retains an *Acid* taſte, as in the tartar of wine; ſometimes it aſſumes a ſweetneſs, as in ſugar; ſometimes is bitter, as in quinquina; and ſometimes almoſt as inſipid as in ſage. This M. Homberg calls the *eſſential ſalt* of the plant; which, by a gentle diſtillation, reſolves into an inſipid water, and *Acid* liquor, and a ruddy fetid one, containing part of the *Acid* ſalt, and part of the fetid oil of the plant: of the combination of which, is compoſed a particular kind of fetid ſalt, ſmelling like urine, called the *volatile ſalt*, or *volatile alcali ſalt* of the plant: and the caput mortuum remaining, being reduced into aſhes, is ſeparated by lixiviation into one part of fixed alcali ſalt, and another of inſipid alcaline earth.—Add, that the eſſential ſalt always diſſolves intirely into water, even the earthy part joined with it. But if the ſame ſalt have been robbed, by means of fire, of a great part of its *Acid*, the earthy part will not wholly diſſolve, but a ſediment of inſipid earth, indiſſoluble in water, will be found at bottom; to which if an *Acid* ſpirit be added, it then becomes intirely diſſoluble in water: whence it may be fairly concluded, that the other part of the aſhes, before diſſolved in the water, and which after evaporation appears in form of a fixed lixivial ſalt, was only diſſolved by virtue of the *Acid* it contained; or as having retained enough of the *Acid* to effect a ſolution.

Again, when the earth of the plant, ſatiated with its *Acid*, becomes a cryſtallized ſalt; no more of the ſame *Acid* can be introduced into it: whereas the lixivious ſalt drawn from the aſhes, does not cryſtallize, but ſtill greedily imbibes the *Acid* ſpirits.

Hence it may be probably concluded, that the lixivious, or fixed alcali ſalt, is no other than the earth of the plant, which, notwithſtanding the violence of the fire, has retained a little portion of its *Acid* ſalt, ſufficient to diſſolve it in water; ſtill reſerving a ſufficient number of loculi, or pores, to lodge the firſt *Acid* that ſhall offer itſelf, in lieu of that driven out of it by the fire.—And as the name alcali is only given to a ſalt, in reſpect to its imbibing and retaining an *Acid* preſented to it, in order to the producing a cryſtallized ſalt; the lixivious ſalts of plants may be ſaid to be more or leſs alcaline,

caline, as they abſorb more or leſs of the *Acid*; or, which amounts to the ſame, as they contain more or fewer vacuities which may be filled with *Acids*.

An alcaly, after it has been fully ſatiated with one ſort of *Acid*, will yet ſometimes admit and retain part of another *Acid*. This is chiefly obſerved where a vegetable *Acid* has been received firſt, and a foſſil one is offered after: and it ſeems owing to this, that the vegetable *Acid*, having undergone a greater degree of fermentation in the body of the plant, is become rare and pervious, in reſpect of the more ſolid and weighty particles of the mineral *Acid*; which, therefore, force their way in.

The ſame is always the caſe, where an *Acid* appears an alcaly with reſpect to another *Acid*; that is, where, of two *Acid* ſpirits, one whereof has a mixture of ſome alcaly; the rarer of the two having poſſeſſed the pores of the alcaly, is compreſſed by the other denſer *Acid*.—Thus, a pin-cuſhion, though ever ſo full of bran, will admit a good number of pins.

Now, urinous ſalts are alcalies as well as the lixivious kind, *i. e.* they greedily imbibe *Acids*, retain them, and, together with them, compoſe ſalts which cryſtallize.—But their volatility ſeems to make it plain, that they are not, like the former, a compoſition of a mere earthy matter, with a little *Acid*; in regard a mere earth can never become volatile by ſuch admixture. Yet is there a great deal of reaſon to imagine, that their compoſition is no other than a part of the ſame matter which would have produced the lixivious ſalt, intimately mixed with a deal of the fetid oil of the plant; and that the oil is the ſole cauſe of the volatility of theſe ſalts.

M. Homberg, in his *Eſſai du Sel principe*, makes three claſſes of *acid* ſalts, correſponding to the three ſpecies of ſulphurs, wherewith the primitive *Acids* may be combined.

The firſt claſs conſiſts of ſuch as contain an animal or a vegetable ſulphur, which amount nearly to the ſame.—To this claſs belong all the diſtilled *Acids* of plants, fruits, woods, *&c.* which muſt neceſſarily retain part of the oil of the plant, which is their ſulphur. To this claſs alſo belongs ſpirit of nitre, as being a ſubſtance procured from the excrements of animals, *&c.*

The ſecond claſs is of thoſe which contain a bituminous ſulphur.—Such are vitriol, common ſulphur, and alum; which are all uſually procured from a mineral ſtone, wherein bitumen is the prevailing ingredient.

The third is of ſuch as contain a more fixed mineral ſulphur, approaching the nature of a metalline one.—Such are the *Acids* drawn from ſea-ſalts, and ſal gemma's; the latter of which is chiefly found in places near mines of metals; and the former probably ariſes from rocks, or veins of ſal gemmæ, running into the ſea, and there diſſolved.

From the peculiar nature and properties of the ſulphur thus accompanying the ſeveral kinds of *Acid* ſalts, their different phænomena and effects are to be accounted for.

The *Acids* of animals are, doubtleſs, chiefly derived from plants, in the ordinary way of food, and nutrition; and thoſe of plants, again, from thoſe of minerals: ſo that there ſhould ſeem to be but one ſpring of *Acidity*: the diverſities ariſe from what happens to them in paſſing through the organized bodies of plants and animals. Hence it is, that plants and animals, eſpecially, yield a very volatile alcaly ſalt; whereas the ſalts of minerals are found altogether *acid*, and much more fixed and concrete; though it is the ſame matter, in both caſes, under different aſſumed forms.

Thus the younger Lemery argues; that as animals feed on plants, and, reciprocally, in the inſtance of ſalt-petre, *&c.* plants feed on animals, inaſmuch as their vegetation is excited by manure; it happens, that what was real ſalt-petre in plants, becomes only a nitrous ſal armoniac in animals, and *vice verſa*.—The ſame author accounts for this double metamorphoſis, by ſuppoſing, that the nitrous principle remains the ſame in both caſes, and in both caſes is attached to the ſame matrix; with this only difference, that the matrix becomes more earthy in plants, and, by that means, fixed; and in animals it loſes its earthy parts, and aſſumes other oily ones, which render it volatile.

As to the manner wherein Acids *act on alcalies*, the *great number of little bubbles produced during their action*, and *the heat ariſing thereupon*; M. Homberg explains it thus.—The matter of light, which he ſuppoſes to be the chymical principle ſulphur, and to poſſeſs the whole extent of the univerſe, is kept in a perpetual motion by the continual impulſes which the ſun, and fixed ſtars, give it: but this motion happening, on ſome occaſions, to be ſlackened, may be retrieved again, and augmented, by the near approach of flame, which that author ſuppoſes the only matter capable of giving motion to light.—This motion of light cannot proceed, without continually ſtriking againſt the ſolid bodies, and even paſſing through all the porous ones it meets in its way.

Suppoſe, now, *Acids* to be little, ſolid, pointed bodies, ſwimming at liberty in an aqueous fluid, and kept in continual motion by the repeated impulſes of the matter of light; and alcalies to be ſpongious bodies, whoſe pores have formerly been filled with the points of *Acids*, and which ſtill retain the dents, or impreſſions thereof, and are ready to receive the like points, when driven into them. It is eaſy to conceive, that if ſome of thoſe porous alcalies float in the ſame liquor wherein the ſolid *Acids* float; theſe latter, being impelled by the matter of light, will enter the cavities of the former, which are framed, as it were, on purpoſe for their reception; and that they will do it the more readily, if the motion of the matter of light, wherewith they are impelled, have been accelerated by external heat.

This introduction of *Acids* into the body of alcalies is, in all appearance, effected with a great velocity, and a deal of friction; inaſmuch as it produces ſo conſiderable a degree of heat: and as the pores of the alcalies were before filled with an aereal matter, which is now expelled by the points of the *Acids*; that air is put in motion, and produces the bubbles, which are ſo much the more ſenſible, as the heat, accompanying the action, is the greater.

Sir I. Newton accounts for the effects of *Acids* in a different manner; *viz.* from the great principle of attraction.

‘ The particles of *Acids*, he obſerves, are of a ſize groſſer than thoſe of water, and therefore leſs volatile; but much ſmaller than thoſe of earth, and therefore much leſs fixed than they.—They are endued with a very great attractive force, wherein their activity conſiſts; it being by this that they affect and ſtimulate the organ of taſte; and by this, alſo, that they get about the particles of bodies, either of a metalline or ſtony nature, and adhere cloſely to them on all ſides, ſo as ſcarce to be ſeparable from them by diſtillation or ſublimation; and, when thus gathered about the particles of bodies, by the ſame power they raiſe, disjoin, and ſhake them one from another; that is, they diſſolve them.’

‘ By their attractive force, alſo, wherewith they ruſh towards the particles of bodies, they move fluid ones, and excite heat; ſhaking aſunder ſome particles, ſo as to turn them into air, and generate bubbles: and hence all violent fermentation; there being in all fermentation a latent *Acid*, which coagulates in precipitation.’

‘ *Acids*, alſo, by attracting water as much as they do the particles of other bodies, occaſion the diſſolved particles readily to mingle with water, or ſwim or float in it, after the manner of ſalts: and as this globe of earth, by the force of gravity attracting water more ſtrongly than it does lighter bodies, cauſes thoſe bodies to aſcend in water, and go upwards from the earth; ſo the particles of ſalts, by attracting the water, mutually avoid and recede from one another, as far as they can; and are thus diffuſed throughout the whole water.

‘ The particles of alcalies conſiſt of earthy and *acid* parts united together; but theſe *Acids* have ſo great an attractive force, that they cannot be ſeparated therefrom by fire; and that they even precipitate the particles of diſſolved metals, by attracting from them thoſe *acid* particles which before had diſſolved and kept them in ſolution.’

‘ If theſe *acid* particles be joined with earthy ones, in a ſmall quantity, they are ſo cloſely retained by the latter, as to be quite ſuppreſſed and loſt, as it were, in them; ſo that they neither ſtimulate the organ of ſenſe, nor attract water; but compoſe bodies which are not *acid*, *i. e.* fatty and ſweet bodies; as mercurius dulcis, brimſtone, luna cornea, *&c.*—From the ſame attractive force in theſe *acid* particles, thus ſuppreſſed, ariſes that property of fat bodies, that they ſtick or adhere to almoſt all bodies, and are eaſily inflammable.—Thus, the *Acid* that lies ſuppreſſed in ſulphureous bodies, by more ſtrongly attracting the particles of other bodies (earthy ones, for inſtance) than its own, promotes a gentle fermentation, produces and cheriſhes natural heat, and carries it on ſo far, ſometimes, as to the putrefaction of the compound; putrefaction ariſing hence, that the *acid* particles, which have long kept up the fermentation, at length inſinuate into the little interſtices that lie between the particles of the firſt compoſition; and ſo, intimately uniting with thoſe particles, produce a new mixture, or compound, which cannot be returned into its original form.’

‘ Water has no great diſſolving force, becauſe there is but a ſmall quantity of *Acid* in it: for whatever ſtrongly attracts, and is ſtrongly attracted, may be reputed an *Acid*: but in ſuch things as are diſſolved in water, the diſſolution is ſlowly performed, and without any efferveſcence.’

‘ When *Acids* are applied to the tongue, or any excoriated part of the body; leaving the ſubtile earth, wherewith they were before united, they ruſh upon the ſenſory, act there as menſtruums, and disjoin its parts; thus cauſing a painful ſenſation.’

The illuſtrious author, it muſt be owned, here carries the notion of *Acidity* a great length: diſſolution, according to him, is only effected by attraction, and is proportional to the degree of attractive power in the diſſolvent: but all bodies which attract much, are *Acids*, on his principle; and, conſequently, all powerful menſtruums muſt belong to that claſs.—And yet ſpirit of urine, which readily diſſolves iron or copper, even in the cold, is allowed an alcaly: and, accordingly, it makes a vehement conflict with aqua fortis.—Boyle *Imperfect. of Chym. Doct. of Qual.*

Some chymical philoſophers, in the laſt century, endeavoured to derive all the qualities of bodies, and the other phænomena of nature, from the conſideration of alcaly and *Acid.*

It has been a point much controverted among phyſicians, Whether, or no, there be any real *Acid* in human blood? The generality ſtand for the negative; and all Mr. Boyle's experiments, in his *Hiſtory of Blood*, ſeem to give the thing on that ſide.—But the accurate M. Homberg has, at laſt, turned the ſcale the other way; and ſhewn, by repeated experiments, that an *Acid*, or what is commonly called ſo, and judged ſuch by the change of colour it cauſes in a tincture of violets, may be drawn from the blood of all animals in general, and from human blood in particular.

Hence, and from the careful analyſis that author has made of the fleſh and excrements of divers animals, particularly man; he infers, that the *Acid*, or ſea-ſalt of the aliment taken into the bodies of animals, is not deſtroyed therein, but paſſes into the ſubſtance of them; the ſuperfluous portion being returned unaltered along with the excrements.

Acids are preſcribed, in medicine, as coolers, anti-febrifics, anti-ſcorbutics, diaphoretics, alexipharmics, *&c.*

'*Acids*, Mr. Boyle obſerves, not only diſturb the body, while 'they continue *acid*; but, in many caſes, create diſtempers, 'whereof they ſhould ſeem the remedies.—Though they be 'reputed to have an inciſive and reſolutive virtue, and ac'cordingly are preſcribed to cut tough phlegm, and diſſolve 'coagulated blood; yet there are ſome *Acids* which muſt 'evidently coagulate the animal fluids, and produce obſtruc'tions, with all their train of conſequences.—Thus, it is 'known, that milk readily curdles with ſpirit of ſea-ſalt, *&c.*'

ACID *Salts.* } See ACID.—See alſo SALT, SPIRIT, and
ACID *Spirits.* } PRINCIPLE.

ACIDITY, ACIDITAS, the quality which conſtitutes or denominates a body *acid*; or that ſenſation of ſharpneſs and ſourneſs which acids excite upon the taſte. See ACID.

A little vitriol leaves an agreeable *Acidity* in water.—Vinegar and verjuice have different ſorts of *Acidity.*

The predominancy of *Acidities* in the body, and their ill effect in coagulating the blood, *&c.* is prevented by either repelling and mortifying them with lixivious or urinous ſalts; or by ſheathing and abſorbing them with alcalious bodies.—Thus, out of the body, minium deſtroys the *Acidity* of ſpirit of vinegar; lapis calaminaris that of ſea-ſalt, *&c.*

ACIDULÆ *, in natural hiſtory, a ſpecies of mineral waters, diſtinguiſhed by a latent acidity in their nature.

* The word is a diminutive of *Acidus*; which is formed from the Greek *ακη*, point, edge; in regard the points of acid ſubſtances prick and vellicate the tongue.

Acidulæ are native waters, impregnated with particles of ſome acid mineral; as vitriol, allum, nitre, or ſalt.

Sometimes there is alſo a vinous flavour joined with the acid, by which they become peculiarly denominated vinous waters.

The claſs of *Acidulæ* are uſually very cold; whence ſome authors define *Acidulæ* to be all ſuch mineral or medicinal waters as are not hot.

The phyſicians alſo frequently include chalybeat and aluminous or ferruginous waters, under the claſs of *Acidulæ*. See CHALYBEAT, and FERRUGINOUS, *&c.*

ACIDULATED, any thing wherein acid juices have been put, in order to give it a coolneſs, and briſkneſs.

ACINI *, in botany, ſmall grains, or berries, growing in bunches, after the manner of grapes; alſo the ſtones or ſeeds of grapes.

* The word is Latin, formed from *acuo*, or the Greek *ακη*, a point.

Hence, anatomiſts have called ſome glands, of a ſimilar formation, *Acini Glanduloſi.*—See *Tab. Anat.* (*Splanch.*) *fig.* 41. *lit.* b b & d d, *&c.* See alſo GLAND.

ACINIFORMIS *Tunica*, the ſame with the *Tunica Uvea* of the eye. See UVEA.

ACME *, the height, or top, of any thing.

* The word is Greek, *ακμη*, point, tip; of *ακμαζω*, *vigeo*, to grow ſharp.

ACME is more eſpecially uſed to denote the height, or utmoſt vehemence, of a diſtemper.

Accordingly, ſome inſtitution-writers divide diſeaſes into four ſtates, or periods:

1°. Arche, the beginning, or firſt attack.—2°. Anabaſis, the growth.—3°. *Acme*, the height.—And 4°. Paracme, which is the declenſion of the diſtemper.

ACOEMETÆ *, or ACOEMETI, a name given to certain monks in the antient church, who flouriſhed, particularly, in the eaſt; and who were thus called, becauſe they had divine ſervice continually, and without interruption, performed in their churches.

* The word is Greek, *ακοιμητος*, formed of the privative *α*, and *κοιμαω*, to lie down, or ſleep in bed.

The *Acoemetæ* divided themſelves into three bodies, each of which officiated in their turn, and relieved the others: ſo that their churches were never ſilent, night nor day.

Nicephorus mentions one Marcellus as the founder of the *Acoemetæ*; whom ſome modern writers call Marcellus of Apamea.—In Bollandus we have 'the life of S. Alexander, 'inſtitutor of the *Acoemetæ*, who were unknown before him,' ſays the author of the life, who was a diſciple of Alexander. This ſaint, according to Bollandus, lived about the year 430. He was ſucceeded by Marcellus.

The Stylites were alſo ſometimes called *Acoemetæ*. See STYLITES.

There are a kind of *Acoemetæ* ſtill ſubſiſting in the Romiſh church; the religious of the Holy Sacrament coming properly enough under that denomination; in regard they keep up a perpetual adoration; ſome or other of them praying, before the ſacrament, day and night.

ACOLUTHI *, or ACOLYTHI, in antiquity, a term applied to ſuch perſons as were ſteady, and immoveable, in their reſolutions.

* The word is Greek, Ακολυθος, compounded of the privative *α*; and *κελευθος*, *via*, way; as ſtill perſiſting in their way, or courſe.

For this reaſon, the Stoics were called *Acolythi*; in regard nothing could ſhake or alter their reſolves.

Among the eccleſiaſtical writers, the term *Acolythus*, or *Acolythiſt*, is peculiarly applied to thoſe young people, who, in the primitive times, aſpired to the miniſtry; and, for that purpoſe, continually attended the biſhops: which aſſiduity occaſioned their being diſtinguiſhed by this appellation.

In the Romiſh church, *Acolythi* were of longer continuance; but their functions were different from thoſe of their firſt inſtitution. They were ſuch as had only received the firſt of the four leſſer orders, whoſe buſineſs was to light the tapers, carry the candleſticks, and the incenſe-pot, and prepare the wine and water.

At Rome there were three kinds of *Acolythi*; viz. *Palatini*, who waited on the pope; *Stationarii*, who ſerved in churches; and *Regionarii*, who, together with the deacons, officiated in other parts of the city.

ACONITE *, MYOCTONON, a plant, famous among the antients, both in quality of a poiſon, and a remedy. See POISON.

* *Aconitum* is ſaid, by ſome, to take its name from *Aconæ*, a city in Bithynia, where it grew in great abundance: though it is alſo found in other places, particularly the mountains about Trent, *&c.* Others derive it from *ακονη*, a rock naked or bare of earth, whereon the plant readily thrives. It was alſo called *μυοκτονον*, as killing mice with its bare ſmell, according to Pliny.—The poets feign it to have aroſe from the foam of the dog Cerberus, when Hercules dragged him out of hell.

The antient botaniſts give the name *Aconite* to ſeveral plants, of different kinds.—One ſpecies they called *Lycoctonum*, Λυκοκτονον, wolfs-bane; or Cynoctonon, Κυνοκτονον, dogs bane; from its effects: of theſe they had likewiſe their diviſions; as the *Napellus*, thus called *a napo*, becauſe its root reſembled the turnep kind: another called *Anthora*, *q. d. Anti-thora*, good againſt diſorders cauſed by the *Thora*, another kind of *Aconite.*

The claſs of *Aconites* is held extremely cauſtic, and acrimonious, in virtue whereof they produce mortal convulſions, or inflammations, which end in mortifications. The antients were ſo ſurpriſed at theſe effects, that they were afraid to touch the plants; and hence a thouſand ſuperſtitious precautions about the manner of gathering them.—Their roots are, however, held of ſervice in malignant fevers, by ſome; and, accordingly, make an ingredient in ſome orvietans, and other alexipharmic compoſitions.

The antients uſed this plant againſt the ſting of the ſcorpion, which is ſaid to be deadened by the touch of the *Aconite*, and reſtored to its vigour by that of hellebore.—Theophraſtus relates, that they had a way of preparing it, in thoſe days, ſo as it ſhould only deſtroy at the end of one, or two years.—Arrows dipt in its juice are ſaid to prove mortal, where-ever they wound.—The Indians uſe *Aconite*, corrected in cow's urine, with good ſucceſs againſt fevers.—*V. Lettr. Ediſ. & Cur.*

ACONTIAS *, a name uſed, by ſome authors, for a ſort of comet, or meteor, whoſe head appears round, or oblong, and its tail very long, and ſlender, reſembling a javelin. See COMET, and METEOR.

* It takes its denomination from a ſerpent thus called, frequent in Calabria and Sicily; where it is alſo named *ſaettone* (from *ſagitta*, an arrow), by reaſon of its flying at paſſengers like an arrow; in order to which, it winds itſelf up a tree, to ſpring thence with the greater violence. For the like reaſon the Greeks call it *Acontias*, of *ακοντιον*, a dart, or arrow.

ACOPUM *, among antient phyſicians, a topical medicine, compoſed of warm, and emollient things, intended to allay the ſenſe of wearineſs, occaſioned by too violent labour, exerciſe, or the like.

* The word is compounded of the privative *α*, and *κοπος*, labour.

ACORUS, a medicinal plant, of the flag kind; frequently confounded by the antients, and alſo by the modern apothecaries, with the *calamus aromaticus*.

They are diſtinguiſhed by this, that from the middle of ſome of the leaves of the latter, there ariſes a longiſh cluſter of an infinity of little flowers, the thickneſs of the little finger, and reſembling macropiper, or long pepper.—The other is the common flag-flower.

It is only the root of the *acorus* that is uſed in phyſic; and it is this we uſually call *acorus*.—The *calamus aromaticus* is brought from Lithuania and Tartary: it is knotty, rediſh without, and white within; as thick as the little finger, and half a foot long.

It is ſpicy and bitteriſh; and uſed in cephalic and ſtomachic compoſitions.—It is alſo an ingredient in the theriaca Andromachi.

Some rank galangals as a ſpecies of *acorus*. See Supplement, article Acorus.

ACOUSTICS *, Acoustica, the doctrine, or theory of hearing, or of ſounds.

* The word is formed of the Greek *ακυω*, *audio*, to hear.

Acouſtics, is the ſame with what we otherwiſe call *Phonics*. See Phonics.

Acoustics, Acoustica, or Acoustic *Medicines*, are remedies againſt the imperfections and diſorders of the ear; or of the ſenſe of hearing. See Ear, and Hearing.

Acoustic is particularly applied to inſtruments uſed by thoſe who are dull of hearing; to ſupply that defect.

Dr. Hook ſays, it is by no means impoſſible to hear the loweſt whiſper that can be made, to the diſtance of a furlong; and that he knows a way of hearing any perſon ſpeak through a ſtone-wall three feet thick.

Acoustic *Nerve*. See the article Auditory *Nerve*.

ACQUEST *, or Acquist, is underſtood in a legal ſenſe, of goods, or effects, not deſcended or held by inheritance; but acquired either by purchaſe, or donation. See Goods.

* The word is French; formed of the verb *acquerir*, from *acquirere*, to acquire, or get.

The French laws make a deal of difference between *acqueſts*, and hereditary effects. The civil law allows none. See Heir, Hereditary, *&c.*

Acquest is alſo popularly uſed for conqueſt, or a place acquired by the ſword.

ACQUIETANDIS *Plegiis*, a writ of juſtices lying for a ſurety againſt the creditor that refuſes to acquit him after the debt is paid. *Reg. Orig. fol.* 158. *cit. Cow.*

ACQUIETARE, in antient law-books, ſignifies to diſcharge, or pay the debts of a perſon deceaſed; as the heir thoſe of his father, *&c.*

ACQUISITION, the act of procuring a right or title to the enjoyment, or property of a thing.

Acquisition is alſo ſometimes uſed for an acqueſt. See Acquest.

ACQUITTAL, a diſcharge, deliverance, or ſetting free of a perſon from the guilt or ſuſpicion of an offence.

Acquittal is of two kinds; in *law*, and in *fact*.—When two are appealed or indicted of felony, one as principal, the other as acceſſory; the principal being diſcharged, the acceſſory is, by conſequence, alſo freed: in which caſe, as the acceſſory is *acquitted by law*, ſo is the principal *in fact*.

Acquittal is alſo uſed, where there is a lord meſn, and tenant, and the tenant holds land of the meſn, and the meſn holds over the lord paramount: here, the meſn ought to acquit the tenant of all ſervices claimed by any other for the ſame lands; the tenant being to do ſervice to the meſn only, and not to divers lords for one parcel of land. See Mesn.

ACQUITTANCE, or Quittance, a releaſe, or diſcharge in writing, or a ſum of money, or other duty, which ought to be paid, or done.

The verb *acquit*, the participle *acquitted*, and the noun *acquittal*, do all ſignify a diſcharge from an offence objected. —In which ſenſe, we meet with *acquitted* by proclamation.

ACRASIA, ΑΚΡΑΣΙΑ, is uſed by ſome writers in phyſic, for the exceſs or predominancy of one quality above another; either in a mixture, or in the conſtitution of a human body.

ACRE *, a quantity of land, containing four ſquare roods, or 160 ſquare poles, or perches. See Measure, Rood, and Perch.

* The word perhaps is formed from the Saxon *acere*, or German *acker*, field, of the Latin *ager*. Salmaſius derives it from *acra*, uſed for *acæna*, a land-meaſure among the antients, containing 10 feet.

By a ſtatute of 31 Eliz. it is ordained, that if any man erect a new cottage, he ſhall add four *acres* of land to it.

To find the quantity of *acres* in a piece of ground, *&c.* ſee Surveying.

The kingdom of England contains by computation 39038500 *acres*: the United Provinces 4382000, *&c.*

The French *acre*, *arpent*, contains 1¼ Engliſh *acre*, or 55206 ſquare Engliſh feet, whereof the Engliſh *acre* contains only 43560.—The Straſburg *acre* is about half an Engliſh *acre*. *Arbuth. Tab. ant. Coins*, &c. 33.

The Roman *acre* was properly the jugerum. See Jugerum.

Acre-*Tax*, a tax laid on land at ſo much per *acre* *.—In ſome places this is alſo called *acre-ſhot*.

* Impoſitions on lands in the great level are to be raiſed by a proportionable *acre-tax*, 20 *Car.* II. *c.* 8.—An acre-tax of 2 *s.* 6 *d. per* acre, for draining Hadenham-level, 13 *Geo.* I. *c.* 18.

ACREME, a term ſometimes uſed in antient law-books, for ten acres.

ACRIBEIA, a term purely Greek, Ακριβεια, literally denoting an exquiſite or delicate accuracy; it is ſometimes uſed in our language for want of a word of equal ſignificancy.

ACRIDOPHAGI *, in the antient geography, a nation, or people, ſaid to have fed on locuſts.

* The word is compounded of the Greek *ακρις*, locuſt, and *φαγω*, to eat.

The *Acridophagi* are repreſented as a people of Ethiopia, inhabiting near the deſarts. In the ſpring they made proviſion of a large kind of locuſts, which they ſalted, and kept for their ſtanding food all the year: they lived to forty years of age, then died, as is ſaid, of a ſort of winged worms generated in their bodies. See S. Jerom againſt Jovinian, L. II. and on S. John, C. 4. Diodor. Sicul. L. III. c. 3. and 29. and Strabo, L. XVI.—Pliny alſo ſpeaks of *Acridophagi* in Parthia; and S. Jerom, in Libya.

Though the circumſtances of theſe people be fabulous; yet may the *Acridophagia* be true; and to this day they are ſaid to eat locuſts in ſome parts of the eaſt. And hence S. John the baptiſt is ſaid to have lived on locuſts, *ακριδες*, and wild honey, Matth. c. 3. v. 4.

Yet is the rendering *ακριδες*, by locuſts, as the Engliſh tranſlators have done, much controverted.—Iſidore of Peluſium, in his 123d epiſtle, ſpeaking of this food of S. John, ſays, it was not animals, but the tops of herbs; and even charges thoſe who underſtood the word otherwiſe with ignorance: but S. Auguſtine, Beda, Ludolphus, and others, are of a different opinion. Accordingly, the Jeſuits of Antwerp reject, with contempt, the opinion of the Ebionites, who for *ακριδες* put *εγχριδες*, a delicious diet, prepared of honey and oil; that of ſome other innovators, who read *αχαριδες*, or *χαριδες*, ſea-crabs; and that of Beza, who reads *αχραδες*, wild pears.

ACRIMONY, that quality in things which renders them acrid, or acrimonious to the taſte. See Acrid.

Acrimony imports much the ſame with *aſperity*, or ſharpneſs; and expreſſes a quality in bodies, by which they corrode, deſtroy, or diſſolve others.

Salts are only cauſtic in virtue of their *acrimony*. The *acrimony* of the bile is ſuppoſed the cauſe of divers diſorders; and a catarrh is a defluxion of *acrimonious* humour.

ACROATICS *, a name given to Ariſtotle's lectures in the more difficult and nice parts of philoſophy; to which none but his diſciples and intimate friends were admitted. See Aristotelian, *&c.*

* The word is formed from *ακροαομαι*, to hear.

ACROMION *, Acromium, in anatomy, the upper proceſs of the ſcapula, or ſhoulder-blade. See Scapula.

* The word is derived from *ακρος*, *higheſt*, and *ωμος*, *ſhoulder*, *q. d.* the extremity of the ſhoulder: and not from *ancora*, on account of any reſemblance in figure, which the *acromion* bears to an anchor, as Dionis has imagined.

Some have thought the *acromion* of a nature different from other bones; in regard, during infancy, it appears no more than a cartilage, which oſſifies by little and little, and about the age of twenty years becomes hard and firm, like a common bone.

ACRONYCHAL *, Acronichus, in aſtronomy, is applied to the riſing of a ſtar, or other point, above the horizon, when the ſun ſets; or its ſetting when the ſun riſes. See the article Rising, and Setting.

* The word is originally Greek, Ακρονυχος; compounded of *ακρον*, extremity, and *νυξ*, night: *Acronichum, quod circa ακρον της νυκτος*; whence ſome write it *acronyctal*, agreeably enough with the etymon, but not with uſage.—Others write it corruptedly, *achronical*, or *achronichial*, from a miſtaken notion of its being derived from *α*, and *χρονος*, time.

The *acronychal* is one of the three poetical riſings, and ſettings of the ſtars; and ſtands diſtinguiſhed from *coſmical* and *heliacal*. See Cosmical, and Heliacal.

ACROSPIRE, in natural hiſtory, *&c.* the ſame with *Plumule.* See Plumule.

ACROSPIRED, is uſed in reſpect of barley; which, in the operation of making malt, is apt, after coming, or ſprouting, at the lower, or root-end, to become *acroſpired*, i. e. to ſprout alſo at the upper, or blade-end*. See Malt.

* By 6 G. I. *c.* 21. *Malt-makers* are forbid to wet or water their malt when on the floor, or couch; or to permit it to *acroſpire*.

ACROSTIC*, a kind of poetical compoſition, the verſes whereof are diſpoſed in ſuch manner, as that the initial letters make up ſome perſon's name, title, motto, or the like.

* The word is derived from the Greek *ακρος*, *ſummus*, that which is at one of the extreme; and *ϛιχος*, *verſus*.

There are alſo *acroſtics*, where the name or title is made up by the initial letters of the middle words, or the laſt of the final ones.—And others which go backwards; beginning with the firſt letter of the laſt verſe, and proceeding upwards. Some refiners in this trifling way, have even gone to *pentacroſtics*; where the name is to be repeated five times. See Pentacrostic.

Acrostic is alſo an appellation given by ſome authors to two antient epigrams in the firſt book of the *Anthology*; the one in honour of Bacchus, the other of Apollo. Each conſiſts of 25 verſes; the firſt whereof is the propoſition, or argument of the whole, and the other 24 compoſed of four epithets, beginning each with the ſame letter; and thus following in the order of the 24 letters of the Greek alphabet: ſo that the firſt of the 24 comprehends four epithets beginning with α; the ſecond as many, with β; and ſo of the reſt to ω; which makes 96 epithets for each god.

ACROTERIA*, or Acroters, in architecture, little pedeſtals, uſually without baſes, antiently placed at the middle, and the two extremes, of pediments; and ſerving alſo to ſupport ſtatues.

* The word, in its original Greek, ſignifies the (ακρον) extremity of any body; as the tip of a rock, *&c.*

Thoſe at the extremes ought to be half the height of the tympanum; and that in the middle, according to Vitruvius, ſhould be one eighth part more. See Pediment.

Acroteria ſometimes alſo ſignifies figures, whether of ſtone, or metal, placed as ornaments, or crownings, on the tops of temples, or other buildings.

Sometimes it alſo denotes thoſe ſharp pinacles, or ſpiry battlements, which ſtand in ranges about flat buildings, with rails and balluſters. See Pinnacle.

ACT, Actus, in phyſics, an effective exerciſe, or application of ſome power, or faculty.

In this ſenſe, *act* ſtands oppoſed to power, *potentia*, which is only the capacity of *acting*, not the exertion of that capacity.

Though the word *act*, properly and primarily, be only applicable where the power might exiſt without being drawn forth into *act*; yet the ſchoolmen extend it further; defineing it by the preſence of any power or perfection, even though it could not be abſent.

In which ſenſe, God himſelf is ſaid to be a moſt pure *act*; by reaſon his perfections are always and neceſſarily preſent. And thus, form is called an *act*; inaſmuch as the preſence hereof completes the power and perfection of matter.—Form, ſay ſome, is matter reduced into *act*. See Matter, and Form. Even exiſtence is termed an *act*; by reaſon, when this is given a being, nothing further is wanted.

The Greeks ſometimes call *act* *εντελεχεια*, a term denoting an actual poſſeſſion of perfection, by the Latins uſually rendered *Perfectihabia*.

Metaphyſicians give various diviſions of *act*, *viz.* into *infinite*, as the *act* of creating; and *finite*, as the *act* of moveing.—*Tranſient*, or thoſe exerciſed in other beings, as heating; and *immanent*, which remain in their own ſubject, as thinking.

Act, in logic, is particularly underſtood of an operation of the human mind.

Thus, to diſcern and examine, are *acts* of the underſtanding: to judge and affirm, are *acts* of the will.

There are voluntary *acts*, and ſpontaneous ones, which ſeem produced without the privity, or participation, of the ſoul.

Act, in a legal ſenſe, is an inſtrument, or other matter in writing; of uſe to declare, or juſtify the truth of a thing.—In which ſenſe, records, decrees, ſentences, reports, certificates, *&c.* are called *acts*, authentic *acts*, ſolemn *acts*, &c. See Deed.

Acts alſo denote the deliberations and reſolutions of an aſſembly, ſenate, council, or convocation; taken down by clerks, notaries, actuaries, or the like, and entered in a regiſter.

Acts of parliament are particularly denominated *Statutes.* The *acts* of the royal ſociety are called *Tranſactions*; thoſe of the royal academy of ſciences at Paris, *Memoirs*; thoſe of the ſocieties of Leipſic, *&c.* ſimply *acts*, *acta eruditorum*, &c.

The edicts and declarations of the council of the Roman emperors, were called conſiſtory *acts*, *acta conſiſtorii.*

***Clerk of the* Acts**, is an officer of the navy. See Clerk, and Navy.

Acts are alſo matters of fact tranſmitted to poſterity in certain authentic books, and memoirs.

In which ſenſe, we ſay, the *Acts* of the *Apoſtles*, *acts* of the martyrs, *&c.*

The book called *Acts* of Pilate, relating to Jeſus, is a falſe and ſuppoſititious relation of our Saviour's tryal before Pilate; impiouſly framed by the enemies of Chriſtianity; and filled with the blackeſt blaſphemy.—The emperor Maximin, by a ſolemn edict, ordered it to be ſent into all the provinces of the empire; and injoined the ſchoolmaſters to teach and explain it to their ſcholars, and make them learn it by heart.

The piece was written with ſo much careleſſneſs or ignorance, that our Saviour's death was therein referred to the 4th conſulate of Tiberius, that is, to the 7th of his empire; which is eleven years before our Saviour's paſſion, and five before Pilate was made governor of Judea. See Euſebius, L. IX. c. 4. and 6. Ruffin. L. I. c. 5. *&c.*

The true and genuine *Acts* of Pilate were ſent by him to Tiberius, who reported them to the ſenate; but they were rejected by that aſſembly, becauſe not immediately addreſſed to them: as is teſtified by Tertullian, in his *Apol.* C. 5. and 20, 21. Euſeb. *Hiſt.* L. II. c. 2.

There are alſo ſpurious *Acts* of the Apoſtles compoſed in Hebrew by one Abdias; tranſlated into Greek by his diſciple Eutropius; and thence into Latin, by Julius Africanus. Wolffgang Lazius publiſhed the piece in 1551. from a manuſcript near 700 years old; ſuppoſing it an authentic work.—A diſciple of Manes, named Leucius, or Seleucus, is alſo ſaid to have compoſed *Acts* of the Apoſtles, towards the cloſe of the third century.

There have formerly appeared numerous other pieces in this way; as the *Acts* of S. Thomas, the *Acts* of S. Andrew, the *Acts* of S. Paul and Thecla, the *Acts* of S. Matthew, *Acts* of S. Peter, *Acts* of S. John, *Acts* of S. Philip; all which have been declared apocryphal.—The laſt were the production of the heretic Leucius: and thoſe of S. Thecla were the work of a prieſt in Aſia minor, whom S. John degraded for his offence.

Act, in the univerſities, is a theſis maintained in public, by a candidate for a degree; or, to ſhew the capacity, and proficiency, of a ſtudent.

The candidates for a degree of bachelor and maſter of arts are to hold philoſophy *acts*; thoſe for bachelor of divinity are to keep divinity *acts*, &c. See University.

At Oxford, the time when the maſters or doctors complete their degrees, is alſo called the *act*; which is held with great ſolemnity: at Cambridge they call it the *commencement*.

Act *of faith*, Auto *da fe*, in the Romiſh church, is a ſolemn day held by the inquiſition, for the puniſhment of heretics, and the abſolution of the innocent accuſed. See Inquisition.

They uſually contrive the *auto* to fall on ſome great feſtival; that the execution may paſs with the more awe, and regard: at leaſt it is always on a Sunday.

The criminals are firſt led to church; where their ſentence is read to them, either of condemnation, or abſolution.—Thoſe condemned to death, are here ſurrendered up by the inquiſitors to the ſecular power, with an earneſt intreaty, that no blood may be ſhed.—If they perſiſt in their ſuppoſed errors, they are burnt alive.

Acts, in poetry, are certain diviſions, or principal parts, in a dramatic poem, contrived to give a reſpite, or breathing-time, both to the actors and ſpectators.

In the interval, between the *acts*, the theatre remains empty, and without any action viſible to the ſpectators; though it is ſuppoſed all the while there is one paſſing out of ſight.

It is not, however, purely for the ſake of the reſpite, that theſe *acts* are obſerved; but to give affairs a greater degree of probability, and render the intrigue more affecting. For the ſpectator who ſees the action prepared that is to paſs in the interval, cannot forbear acting, in his imagination, the part of the abſent actors; by which means, he is the more agreeably ſurpriſed when a new *act* coming upon the ſtage, he ſees the effects of that action, which before he could but gueſs at.

To this it may be added, that authors contrive to have the moſt dry and difficult parts of the drama tranſacted between the *acts*; that the ſpectators may have no notion of theſe, excepting what their fancy preſents them with at a diſtance; and that nothing may appear upon the ſtage, but what is natural, probable, and entertaining.

The antient Greek poets were unacquainted with this diviſion of a play into *acts*; though their epiſodes, or chorus's, ſerved almoſt the ſame purpoſe.

It is true, they conſidered their pieces as conſiſting of certain parts or diviſions, which they called *protaſis*, *epitaſis*, *cataſtaſis*, and *cataſtrophe*: but there were no real diviſions or interruptions anſwering to them in the repreſentation.

It was the Romans who firſt introduced *acts* into the drama; and in Horace's time, the five *acts* were grown into a law, as appears by the verſe,

> *Neu brevior quinto, neu ſit productior*, actu.

This law ſtands unrepealed to this day; though it ſeems to draw its force from the authority of Horace, rather than that of reaſon, or nature.—All plays are held irregular that have either more, or fewer, than five acts.

Some indeed have aſſerted, that every juſt action conſiſts of five diſtinct parts: and have undertaken to mark out the preciſe ſhare of the action, which each of the five *acts* ought to bear.

The firſt, they they, is to propoſe the matter or argument of the fable, and to ſhew the principal characters.—The ſecond, to bring the affair or buſineſs upon the carpet.—The third to furniſh obſtacles and difficulties.—The fourth either points a remedy for thoſe difficulties, or finds new ones in the attempt.—The fifth puts an end to all by a diſcovery.

Be this as it will, it is certain, on the principles of that great maſter of the drama, Ariſtotle, we may have a juſt and regular play, though only divided into three *acts*.

Theſe *acts* are ſubdivided into ſcenes. See SCENE.

ACTIAN *Games*, *Ludi* ACTIACI, ſolemn games, inſtituted, or, according to ſome, only reſtored, by Auguſtus, in memory of the victory at Actium.

Stephanus, and ſome others, will have them held every third year; but the more common opinion is that of Strabo, who ſays, they only returned every fifth, and were celebrated in honour of Apollo, ſince ſurnamed *Actius*.

By the way, it is a groſs overſight in ſome others, to imagine that Virgil inſinuates them to have been inſtituted by Æneas; from that paſſage Æn. III. v. 280.

> *Actiaque Iliacis celebramus littora ludis.*

It is true, the poet there alludes to the *Actian* games; but he only does it by way of compliment to Auguſtus, to attribute that to the hero from whom he deſcended, which was done by the emperor himſelf: as is obſerved by Servius.

ACTIAN *Years*, *Anni* ACTIACI, were a ſeries of years, commencing from the æra of the battle of Actium; called the æra of Auguſtus. See YEAR, and EPOCHA.

ACTION, in a general ſenſe, denotes the operation of a power. See ACT.

The idea of *action* is ſo familiar to us, that a definition may as eaſily obſcure as explain it.—Some ſchoolmen, however, attempt to expreſs its nature by 'a manifeſtation of the power 'or energy of a ſubſtance; made either within, or without 'it.'—Thus, ſay they, when the mind *acts*, what does it more, than perceive a vital power exerting itſelf; as, in reality, the ſeveral *actions* of the mind are no other than ſo many indications of its vitality?

It is a point controverted among the ſchoolmen, whether or no *action*, thus taken, be a thing diſtinct both from the agent, and the term, or effect. The modiſts ſtand for the affirmative, and the nominaliſts aſſert the negative.

Theſe latter obſerve, that the *action* may be conſidered two ways, *entitatively* and *connotatively*.

ACTION, *Entitatively* taken, is what we call a cauſe, or what may act. See CAUSE.

ACTION, *Connotatively* conſidered, is the ſame cauſe, only conſidered as acting, or connoting the effect it produces.

Now, ſay they, a cauſe may be without any *action*, connotatively taken, *i. e.* it may be conſidered as not producing an effect: but it cannot be without it entitatively, for that would be to be without itſelf. Hence they conclude, that the cauſe differs from the *action* connotatively, not entitatively taken; and the agent is the cauſe of the *action*, conſidered connotatively, not entitatively.

Actions are divided, with reſpect to their principle, into *univocal*, where the effect is of the ſame kind with the cauſe; as the production of man by man: and *equivocal*, where it is different; as the ſuppoſed production of frogs by the ſun. See UNIVOCAL, and EQUIVOCAL.—And again, into *vital*; as nutrition, reſpiration, the *action* of the heart, *&c.* And *not-vital*; as heating.

With reſpect to their ſubject, *actions* are divided into *immanent*; which are received within the agent that produced them: as are vital *actions*, cogitation, *&c.*—And *Tranſient*, which paſs into another.

In reſpect of duration, *actions* are again divided into *inſtantaneous*, where the whole effect is produced in the ſame moment; as the creation of light: and *ſucceſſive*, where the effect is produced by degrees; as corruption, fermentation, putrefaction, diſſolution, *&c.*

The Carteſians reſolve all phyſical *action* into metaphyſical. Bodies, according to them, do not act on one another; the *action* all comes immediately from the Deity; the motions of bodies, which ſeem to be the cauſe, being only the occaſions, thereof. See OCCASIONAL *cauſe*.

It is one of the laws of nature, that *action* and reaction are always equal, and contrary to each other.

For the *actions of powers*, &c. ſee POWER, WEIGHT, MOTION, RESISTANCE, and FRICTION.

For the laws of the *action of fluids*, &c. ſee FLUID, and SPECIFIC *gravity*.

ACTION, in ethics, or *moral* ACTION, is a voluntary motion, of a creature capable of diſtinguiſhing good, and evil; whoſe effect, therefore, may be juſtly imputed to the agent. See MORAL.

A *moral action* may be more fully defined to be whatever a man, conſidered as endued with the powers of underſtanding and willing, with reſpect to the end he ought to aim at, and the rule he is to regard in acting; reſolves, thinks, does, or even omits to do; in ſuch manner as to become accountable for what is thus done or omitted, and the conſequences thereof.

The foundation, then, of the morality of *actions*, is, that they are done knowingly, and voluntarily.

All moral *actions* may be divided, with reſpect to the rule, into *good* and *evil*.

ACTION, in oratory, is an accommodation of the perſon of the orator to his ſubject; or, a management of the voice and geſture, ſuited to the matter ſpoken, or delivered. See ORATORY.

Action makes one of the greateſt branches or diviſions of rhetoric, as uſually taught. The antients uſually call it *pronunciation*.

Action is a collateral or ſecondary method of expreſſing our ideas: and is ſuſceptible of a kind of eloquence as well as the primary.—It is an addreſs to the external ſenſes; which it endeavours to move, and bring into its party, by a well-concerted motion and modulation; at the ſame time that the reaſon and underſtanding are attacked by force of argument. Accordingly, Tully very pertinently calls it *Sermo Corporis*, the diſcourſe of the body; and *Corporis Eloquentia*, the eloquence of the body.—The Roman mimes and pantomimes, we read, had ſuch a copia in this kind, ſuch a compaſs even of mute *action*, that voice and language ſeemed uſeleſs to them: they could make themſelves underſtood to people of all nations; and Roſcius, the comedian, is particularly famed, as being able to expreſs any ſentence by his geſtures, as ſignificantly and variouſly as Cicero with all his oratory.

Quintilian gives us a ſyſtem of the rules of *action*; taken not only from the writings of the antient orators; but from the beſt examples of the forum. See his *Inſtitut. Orat.* L. XI. c. 3. *de Pronunciatione.*

The force and effects of *action*, at leaſt as practiſed among the antients, appear to be very great; ſcarce any thing was able to withſtand it. What we uſually attribute to eloquence, was really the effect of the *action* only, as ſome of the greateſt maſters in that way have frankly acknowleged.—Demoſthenes expreſly calls it, 'the beginning, the middle, and the end, of the orator's office;' and Cicero profeſſes, that 'it does not ſo much matter what the orator 'ſays, as how he ſays it.' *Neque tantum refert qualia ſunt quæ dicas, quam quomodo dicantur.* De Orat.—Hence, the great Greek orator is repreſented as practiſing and adjuſting his *action* in the glaſs: *Demoſthenes grande quoddam intuens ſpeculo componere* actionem *ſolebat.* Quintil.

Every part of the body is by them liſted into the ſervice, and marſhalled in its proper place: the hand, the eye, head, neck, ſides, cheeks, noſtrils, lips, arms, ſhoulders, *&c.*—*Præcipuum in actione*, Caput *eſt.*—*Cum geſtu concordet*, *&* Lateribus *obſequatur.* Oculi, Lacrymæ, Supercilium, Genæ, Rubor.—*Non manus ſolum, ſed &* Nutus.—*Dominetur autem maxime* Vultus.—*Quin & in vultu* Pallor.—Nares, Labia—Dentes, Cervix, Humeri, Brachia.—Manus *vero, ſine quibus trunca eſſet actio.*—V. *Quintil.* XI. 3.

The hand is maſter of a whole language, or ſet of ſigns, itſelf.—Even every finger is laid down by the antients as having its diſtinct office; and hence the different names they ſtill bear, *Pollex*, *Index*, &c. See HAND, and FINGER.

By ſuch a multitude of rules and obſervances, it is no wonder ſome of the orators of thoſe, as well as of our days, were perverted more than profited.—Rules only tend to perfect the *action*, which muſt have its origin from another ſource, *viz.* nature, and good ſenſe; where thoſe are deficient, rules will ſooner make an ape than an actor. *Eloquentiæ*, ſays Cicero, *ſicut & reliquarum rerum fundamentum, ſapientia.*—And hence we find the great maſters above-mentioned continually ſoftening, and even unſaying, and calling people off from the intemperate uſe of their own rules, *Nullæ argutiæ digitorum, non ad numerum articulus cadens.* Cicero even aſſures us, he was a whole year in learning to keep his hand within his gown. *Pro Cæl.*—The ſame author, recommending a motion of the whole body, ſays, the orator ſhould make more uſe of his trunk than of his hand; *Trunco magis toto ſe ipſe moderans, & virili laterum flexione.* Brut.

Walking, *inceſſus*, in oratory, is ſometimes recommended as highly deſerving to be cultivated; but Cicero will ſcarce allow it to be uſed at all. It ſeems, ſome of the active orators of that time had rendered it ridiculous, one of whom was pleaſantly aſked by Flavius Virginius, how many miles he had declaimed? Caſſius Severus, when he perceived an orator given to walking, uſed to cry out for a line to be drawn round him, to keep him within bounds.—The orator Tityus improved walking into a ſort of dancing; and it is hence, as we are told by Quintilian, that the dance Tityus took its name.—Junius rallied his father Curio's inceſſant libration, or toſſing from one ſide to another, by aſking, who that was haranguing in a ferry-boat? And to the like effect was that ſpeech of C. Sicinius, when Curio having ſpoken with his uſual buſtle near Octavius, who, by reaſon of his infirmities, had divers liniments and plaſters on his limbs; You can never be enough thankful, Octavius, to your good collegue, who has ſaved you this day from being eaten up by the flies.—Demoſthenes, being naturally apt to be too buſy, and eſpecially with his ſhoulders, is ſaid to have reformed himſelf by ſpeaking in a narrow pulpitum, and hanging a ſpear pointed juſt over his ſhoulders; that, if in the heat of his diſcourſe he ſhould forget himſelf, the puncture might remind him.

After all, it is a point that will bear being controverted, whether *action* ought to be practiſed, and encouraged at all? A thing that has ſo much command over mankind, it is certain, muſt be very dangerous; ſince it is as capable of being turned to our diſadvantage, as our advantage. It is putting a weapon in the hands of another, which, if he pleaſes, he may make uſe of to ſubdue and enſlave us: and, accordingly, hiſtory is full of the pernicious uſes made thereof.—For this reaſon, eloquence and *action* are generally diſcouraged in the modern policy; and both the bar, and the pulpit, are brought to a more frigid way of delivery.

Perhaps the foundation of all *action* may be vicious, and immoral.—Voice and geſture, we know, will affect brutes; not as they have reaſon, but as they have paſſions: ſo far as theſe are uſed in a diſcourſe, therefore, it does not regard an aſſembly of men, more than it would a herd of quadrupeds: that is, their whole effort is ſpent, not on the rational faculties, which are out of the queſtion, but on the animal ones, which alone they endeavour to poſſeſs and actuate, independent of reaſon.—Nay more, our reaſon, and the judgment itſelf, are intended to be byaſſed and inclined by them; *action* being only uſed as an indirect way of coming at the reaſon, where a direct and immediate one was wanting; *i. e.* where the judgment cannot be taken by the proper means, argument; it is to be taken indirectly, by circuition, and ſtratagem.

The natural order of things, then, is here inverted: our reaſon, which ſhould go before, and direct our paſſions, is dragged after them: inſtead of coolly conſidering, and taking cognizance of things; and according to what we perceive therein, raiſing ourſelves to the paſſions of grief, indignation, or the like; we are attacked the other way; the impreſſion is to be carried backwards, by virtue of the natural connexion there is between the reaſon and the paſſions: and thus the helm, the principle of our actions, is taken out of our own hand, and given to another. See Passion.

The caſe is much the ſame here, as in ſenſation and imagination: the natural and regular way of arriving at the knowlege of objects, is by ſenſe; an impreſſion begun there is propagated forward to the imagination, where the image is produced, ſimilar to that which firſt ſtruck on the organ.—But the proceſs is ſometimes inverted: in hypochondriac, lunatic, and other delirious caſes, the image is firſt excited in the imagination; and the impreſſion thereof communicated back to the organs of ſenſe: by which means, objects are ſeen, which have no exiſtence.

To ſay no more, *action* does not tend to give the mind any information about the caſe in hand; is not pretended to convey any arguments or ideas which the ſimple uſe of language would not convey. But is it not that which we ſhould form our judgments upon? and can any thing help us to make a juſt judgment, beſide what ſome way enlarges our underſtanding? When Cicero made Cæſar tremble, turn pale, and let fall his papers; he did not appriſe him of any new guilt which Cæſar did not know of: the effect had no dependence on Cæſar's underſtanding; nor was it any thing more than might have been produced by the unmeaning ſounds of a muſical inſtrument duly applied. Logs of timber and ſtone have often trembled on the like occaſions.

Action, in poetry, is an event, either real or imaginary, which makes the ſubject of an epic, or dramatic poem.

The *action* of a poem coincides nearly with the fable thereof; it being the uſual practice, not to take any real tranſaction of hiſtory, but to feign or invent one; or, at leaſt, to alter the hiſtorical fact, ſo as to render it in good meaſure fictitious.

F. Boſſu has two chapters, *Of real actions*, the recitals whereof are fables: and of *feigned actions*, the recitals whereof are hiſtorical.

The critics lay down four qualifications, as neceſſary to the epic and tragic *action*: the firſt, *unity*; the ſecond, *integrity*; the third, *importance*; and the fourth, *duration*; to which ſome add a fifth, viz. *continuity*.

For the unity of the epic *action*, ſee Unity.

This unity is not only to exiſt in the firſt draught, or model of the fable; but in the whole epiſodized *action*.

In order to the integrity of the *action*, it is neceſſary, according to Ariſtotle, that it have a beginning, middle, and end.—If the three parts of a whole ſeem to be generally denoted by the words, *beginning*, *middle*, and *end*; Boſſu interprets them more expreſly, thus: The cauſes and deſigns of a man's doing an *action*, are the beginning; the effects of thoſe cauſes, and the difficulties met withal in the execution of thoſe deſigns, are the middle of it; and the unravelling and extricating of thoſe difficulties, is the end of the *action*.

The poet, ſays Boſſu, ſhould ſo begin his *action*, that, on one hand, nothing ſhould be farther wanting for the underſtanding of what he afterwards delivers; and, on the other, that what thus begins require after it a neceſſary conſequence. The end is to be conducted after the like manner, only with the two conditions tranſpoſed; ſo that nothing be expected after it, and that what ends the poem be a neceſſary conſequence of ſomething that went before it. Laſtly, the beginning is to be joined to the end by a middle, which is the effect of ſomething that went before it, and the cauſe of what follows.

In the cauſes of an *action*, one may obſerve two oppoſite deſigns; the firſt, and principal, is that of the hero: the ſecond comprehends all their deſigns, who oppoſe the pretenſions of the hero. Theſe oppoſite cauſes do all produce oppoſite effects, *viz.* the endeavours of the hero to accompliſh his deſign, and the endeavours of thoſe who are againſt it.—As the cauſes and deſigns are the beginning of the *action*; ſo thoſe contrary endeavours are the middle of it; and form a difficulty, plot, or intrigue, which makes the greateſt part of the poem.

And the ſolution or clearing up of this difficulty, makes the unravelling.

The unravelling of the plot, or intrigue, may happen two ways; either with a diſcovery, or without.

The ſeveral effects which the unravelling produces, and the different ſtates to which it reduces the perſons, divides the *action* into ſo many kinds.—If it change the fortune of the principal perſon; it is ſaid to be with a peripetia; and the *action* is denominated *implex*, or mixed: if there be no peripetia, but the unravelling be a mere paſſing from trouble to repoſe; the *action* is ſimple.

For the duration of the epic *action*, Ariſtotle obſerves, it is not ſo limited as that of the tragic *action*: the latter is confined to a natural day; but the epopea, according to that critic, has no fixed time.—In effect, tragedy being full of paſſion, and, conſequently, of violence, which cannot be ſuppoſed to laſt long, requires a ſhorter time: and the epic poem being for the habits, which proceed more ſlowly, requires a longer time, either for them to take hold, or to be rooted up; and hence the difference between the epic and dramatic *action*, in point of duration.

Boſſu lays it down as a rule, that the more vehement the manners of the principal perſonages are, the leſs time ought the *action* to laſt: accordingly, the *action* of the *Iliad*, containing the wrath of Achilles, *&c.* holds but forty-ſeven days; whereas that of the *Odyſſey*, where prudence is the reigning quality, laſts eight years and a half: and that of the *Æneid*, where the prevailing character of the hero is piety and mildneſs, nearly ſeven years.

As to the importance of the epic *action*, there are two ways of providing for it: the firſt, by the dignity and importance of the perſons. This way alone Homer makes uſe of; there being, otherwiſe, nothing great and important in his models, but what might have happened to ordinary perſons.—The ſecond, by the importance of the *action* itſelf; ſuch as the eſtabliſhment, or downfal of a religion, or a ſtate; which is Virgil's *action*, and in which he has much the advantage of Homer.

Boſſu mentions a third way of making the *action* important, *viz.* by giving a higher idea of the perſonages, than what the readers conceive of all that is great among men.—This is done by comparing the men of the poem with the men of the preſent time.

Action is alſo uſed in painting and ſculpture, for the poſture of a figure; or the *action* it is ſuppoſed to be in; expreſſed by the diſpoſition of the body, or the paſſion appearing in the face.

In the manage, **Action** *of the Mouth*, denotes the agitation of the horſe's tongue, and mandible, or his champing on the bit; diſcoverable by a white, ropy foam thereon.—This, with the maſters, paſſes for a ſign of health, vigour, and mettle.

Action, in law, is a right of demanding, and purſuing, in a court of judicature, what is any man's due.

Or, *action* is any kind of proceſs which a perſon enters for the recovery of his right. See Cause, and Process.

Actions are divided, by Juſtinian, into two general kinds; *real*, or thoſe againſt the thing; and perſonal, or thoſe againſt the perſon.—For whoever brings an *Action*, either does it againſt one obnoxious to him, in reſpect either of contract, or of offence: in which caſe ariſe *Actions* againſt the perſon, which require the party to do, or give ſomething: or, he does it againſt one not obnoxious, yet with whom a controverſy is riſen touching ſome matter; as, if Caius hold a field, which Julius claims as his property, and brings his *Action* for the ſame. See the *Inſtit.* *L.* IV. *Tit.* 4. where the principal *Actions*, introduced by the Roman law, are ſummarily explained.

In common law, from the two claſſes of real and perſonal *Actions*, ariſes a third, called a *mixed Action*; which regards both the perſon, and thing.

Real ACTION, is that whereby the defendant claims title to lands, or tenements, rents, or commons, in fee-ſimple, fee-tail, or for life.

But real *Actions*, formerly ſo numerous and conſiderable, as writs of right, of entry, *&c.* with their appendages, as grand cape, petit cape, receipt, view, aid-prayer, voucher, counter-plea of voucher, counter-plea of warrantry, and recovery of value, are now much out of uſe; by reaſon of the uſual admixture of perſonal matters therewith, which change them into mixed *Actions*.

Perſonal ACTION, is that which one man hath againſt another, on account of a contract for money, or goods; or of an offence done by him, or ſome other perſon, for whoſe fact he is anſwerable.

Mixt ACTION, is that laid indifferently for the thing detained, or againſt the perſon of the detainer; being thus called, becauſe it has a mixed reſpect, both to the thing, and to the perſon.

Others better define it, a ſuit given by law to recover the thing demanded, and damages for the wrong done.

Such is, aſſize of novel diſſeiſin, which, if the diſſeiſor make a feoffment to another, the diſſeiſee ſhall have againſt the diſſeiſor, and the feoffee, or other ter-tenant; to recover not only the land, but damages alſo.—And the like in *Action* of waſte, Quare impedit, *&c.* See ASSIZE.

Actions are alſo divided into *civil* and *penal.*—*Civil* ACTION, is that which only tends to the recovery of what, by reaſon of a contract, or other like cauſe, is a man's due.—As, if a perſon by *Action* ſeek to recover a ſum of money formerly lent, *&c.*

Penal ACTION, aims at ſome penalty upon the party ſued; either corporal, or pecuniary.

Such is the *Actio Legis Aquiliæ*, in the civil law: and with us, the next friends of a man feloniouſly ſlain, or wounded, ſhall purſue the law againſt the offender, and bring him to condign puniſhment.

ACTION is alſo diſtinguiſhed, as it lies for the recovery either of the ſimple value of the thing challenged; or of the double, triple, quadruple, *&c.*

Thus, a *Decies tantum* lies againſt embracers; and againſt jurors that take money for their verdict, of either, or both parties.

To this claſs alſo belong all *Actions* on a ſtatute that puniſhes an offence by reſtitution, or fine, proportionable to the tranſgreſſion.

Action, again, is divided into *prejudicial*, called alſo *preparatory*, and *principal*.

Prejudicial ACTION, is that which ariſes from ſome queſtion, or doubtful point in the principal one.

As, if a man ſue his younger brother, for land deſcended from his father; and it be objected, he is a baſtard: this point of baſtardy muſt be tried, before the cauſe can proceed: whence the *Action* is termed *Præjudicialis, quia prius judicanda.*

ACTION, again, is either *anceſtrel*, or *poſſeſſory.*—*Anceſtrel Action*, is that which we have by ſome right deſcending from our anceſtor.—*Poſſeſſory*, ſometimes alſo called *perſonal Action*, is that which hath its beginning in and from ourſelves.

ACTION *upon the Caſe*, *Actio ſuper Caſum*, is a general *Action*, given for the redreſs of a wrong done any man without force, and not eſpecially provided for by law.

This, of all others, is now moſt in uſe.—Where there ariſes an occaſion of ſuit, that has neither fit name, nor certain form already preſcribed; the clerks of the chancery, antiently, conceived a proper form of *Action* for the thing in queſtion: which was called an *Action upon the Caſe*, by the civilians *Actio in factum.*

ACTION *upon the Statute*, *Actio ſuper Statutum*, is a writ or *Action*, brought againſt a man, upon an offence againſt a ſtatute whereby an *Action* is given that did not lie before. See STATUTE.

Thus, where one commits perjury to the prejudice of another, he who is damaged ſhall have a writ upon the ſtatute, and a cauſe accordingly.

ACTION *Popular*, only differs from an *Action* upon the ſtatute, in that, where the ſtatute gives the ſuit or *Action* to the party grieved, or otherwiſe to one ſingle perſon certain, it is called *Action* upon the ſtatute; and where the authority is given by the ſtatute to every one that will ſo ſue, it is an *Action popular.*

Action is alſo divided into *perpetual* and *temporal.*

Perpetual ACTION, is that whoſe force is not determined by any period or term of time.

Of this kind were all civil *Actions* among the antient Romans; *viz.* ſuch as aroſe from laws, decrees of the ſenate, and conſtitutions of the emperors; whereas *Actions* granted by the prætor died within the year.

We have alſo perpetual and temporary *Actions* now in England; all being perpetual, which are not expreſly limited.

Divers ſtatutes give *Actions*, on condition they be purſued within the time preſcribed.—Thus the ſtatute of 1 Edw. VI. gives *Action* for three years after the offences committed, and no longer; and the ſtatute of 7 Hen VIII. c. 3. does the like for four years; and that of 31 Eliz. c. 5. for one year, and no more.

But, as by the civil law no *Actions* were ſo perpetual, but that by time they might be preſcribed againſt; ſo, in our law, though *Actions* be called *perpetual*, in compariſon of thoſe that are expreſly limited by ſtatute; yet is there a means to preſcribe againſt real *Actions*, after five years, by a fine levied, or a recovery ſuffered. See PRESCRIPTION.

ACTION *of a Writ*, is when a perſon pleads ſome matter, whereby he ſhews, that the plaintiff had no juſt cauſe to have the writ he brought, though it be poſſible he might have another writ or *Action* for the ſame matter.—Such plea is called, a *plea to the* Action *of the writ.* See WRIT.

When by the plea it appears, that the plaintiff has no cauſe of any *Action* for the thing demanded; it is called, a *plea to the* Action.

ACTION, in affairs of commerce, or ACTION *of a Company*, is a part or ſhare in the company's ſtock or capital, which conſiſts of a number of ſuch *Actions.* See COMPANY, and CAPITAL.

Actions, in France and Holland, amount to the ſame with *ſhares*, or *ſubſcriptions*, in England.

Thus, the capital of a company, which has three hundred *Actions* of a thouſand livres each, conſiſts of three hundred thouſand livres. Hence, a perſon is ſaid to have four or ſix *Actions* in ſuch company, if he have contributed to the capital, and be intereſted therein for four or ſix thouſand livres.

ACTION alſo denotes an obligation or inſtrument, which the directors of ſuch companies deliver to thoſe who pay money into their ſtock. See ACTIONARY, and BANK.

Actions are always riſing, and falling; according as the company's credit gains or loſes. The ſmalleſt whiſper of an approaching war or peace, true or falſe, ſhall frequently occaſion a conſiderable alteration therein. In the year 1719. the French company of the weſt, ſince called the *India company*, arrived at ſuch an immenſe degree of credit; that in ſix months time, its *Actions* roſe to eighteen hundred *per cent.* a pitch no other company ever came near.

In 1672. the *Actions* of the Dutch Eaſt-India company were at ſix hundred and fifty *per cent.* which was the higheſt they were ever known at.—But the war with France then coming on; they fell 250 *per cent.* in a few months. After the peace of Nimeguen, they roſe again; and in 1718. were 600 *per cent.*

The French have three kinds of *Actions.*—*Simple*, which are intitled to a ſhare in all, both the profits and loſſes of the company.—*Rentieres*, intitled only to a profit of two *per cent.* ſure; for which the king is ſecurity.—And *intereſted Actions*, which claim the two *per cent.* ſecured by the king; and are alſo to ſhare the exceſs of the dividend with the ſimple *Actions.*

There were ſeveral other kinds of *Actions* introduced by the brokers, in the buſy days of the *Rue Quinquempoix*, but they have ſince dropt into oblivion; theſe were called mother *Actions*, daughter, grand-mother, grand-daughter *Actions*, *&c.*

To *melt* or *liquidate* an *Action*, is to ſell, or turn it into money, *&c.*

ACTIONARY, or ACTIONIST, a term frequent in foreign news-papers; denoting the proprietor of an *Action*, or ſhare in a company's ſtock.

ACTIVE, ACTIVUS, ſomething that communicates motion, or action, to another.

In this ſenſe, the word ſtands oppoſed to *paſſive.*

Thus we ſay, an *active* cauſe, *active* principles, *&c.*

The quantity of motion in the world, Sir I. Newton ſhews, muſt be always decreaſing, in virtue of the vis inertiæ, *&c.* So that there is a neceſſity for certain *active* principles to recruit it: ſuch he takes the cauſe of gravity to be, and the cauſe of fermentation. Adding, that we ſee but little motion in the univerſe, except what is owing to theſe *active* principles.

ACTIVE *Principles*, in chymiſtry, are thoſe which are ſuppoſed to act of themſelves, and do not need to be put in action by others.

Salt, ſulphur, and mercury, are uſually conſidered by the chymiſts as *active principles*; and phlegm and earth as paſſive ones.

M. Homberg, and ſome late chymiſts after him, only make one *active* principle, *viz.* ſulphur, or fire; which they take to be the ſource or principle of all the motion and action of the univerſe.

The term *active principles*, ſays Dr. Quincy, has been uſed to expreſs certain diviſions of matter, that are, by ſome particular modifications, comparatively *active*, in reſpect of others: ſuch are ſpirit, oil, and ſalt, whoſe parts are better fitted for motion than thoſe of earth and water; but with how much impropriety, will eaſily appear.

For, in a ſtrict ſenſe, all motion in matter is rather paſſion; and there is no *active* principle, unleſs we call ſo the known powers of gravitation, attraction, and repulſion, on which the Newtonian philoſophy is founded: ſo that let bodies exiſt under what modifications ſoever, there can be no alteration made of theſe univerſal properties.—Hence, the diviſion of matter into what, for diſtinction-ſake, may be called *ſpirit*, does not give it any properties inconſiſtent with this general law.

Active, in grammar, denotes a word that has a ſignification that ſerves to explain or denote an action.

Thus we ſay, a verb *active*, a conjugation *active*, &c. or an *active* participle.

Verbs **Active**, are ſuch as do not only ſignify doing, or acting, but have alſo nouns following them, to be the ſubject of the action or impreſſion.

Thus, to love, to teach, are verbs *active*; becauſe we can ſay, to love a thing, to teach a man.

Verbs neuter alſo denote an action, but are diſtinguiſhed from verbs *active*, in that they cannot have a noun following them.—Such are, to ſleep, to go, *&c.*

Some grammarians, however, make three kinds of verbs *active*: the *tranſitive*, where the action paſſes into a ſubject different from the agent; *reflected*, where the action returns upon the agent; and *reciprocal*, where the action turns mutually upon the two agents who produced it.

ACTIVITY, the power of acting, or the active faculty.

The *Activity* of fire exceeds all imagination.—The *Activity* of an acid, a poiſon, *&c.*—Bodies, according to Sir I. Newton, derive their *Activity* from the principle of attraction.

The *Sphere of* **Activity** of a body, is the ſpace which ſurrounds it, ſo far as its efficacy or virtue extends to produce any ſenſible effect.

ACTOR, one that acts. See Act.

Actor, in the drama, one who repreſents ſome perſon, or character, upon the theatre.

The drama, in its original, only conſiſted of a ſimple chorus, who ſung hymns in honour of Bacchus; ſo that the primitive actors were no more than ſinging men. Theſpis was the firſt who took upon him to introduce a perſona, or *Actor*; who was to eaſe the chorus, by reciting the adventures of ſome of their heroes. Thus came the recitation, or declamation, in uſe.

Æſchylus, finding a ſingle perſon tireſome, thought to entertain the audience more agreeably by the introduction of a ſecond perſon, who ſhould converſe and make dialogue with the firſt. He likewiſe dreſſed his *Actors* a little more decently than they had been before, and put them on the buſkin.

Sophocles, finding the two perſons of Æſchylus too few for the variety of incidents, added a third; and here the Greeks ſtopped; at leaſt, we do not find, in any of their tragedies, above three perſons in the ſame ſcene: though, in their comedies, they took a greater liberty.

The moderns have brought a much greater number of *Actors* upon the ſtage.—This heightens the trouble and diſtreſs that ſhould reign there, and makes a diverſity in which the ſpectator is ſure to be intereſted.

Horace ſpeaks of a kind of ſecondary *Actors*, in his time, whoſe buſineſs was to imitate the firſt; and leſſen themſelves, to become better foils to their principals. We have very little notion how theſe ſubaltern *Actors* behaved.

ACTUAL, ſomething that is real, and effective; or that exiſts truly and abſolutely.

In philoſophy, we ſay, *Actual heat*, or *cold*; in oppoſition to *virtual* or *potential*.

Actual heat, conſidered actively, is the act of producing heat: paſſively taken, it is the quality whereby a body is denominated *hot*.—Virtual or potential heat, actively taken, is the power or faculty of producing heat; paſſively taken, it ſhould be the power or faculty of being heated, or of receiving *actual heat*.

In theology, we ſay, *actual grace*; in oppoſition to *habitual grace*.

Actual grace is that which God gives us, to make or enable us to act, or do ſome action.—Habitual grace is a ſanctifying grace, a habit of charity, or a habit inherent in the ſoul, which renders us agreeable to God, and objects of eternal recompence.

So *actual ſin* is uſed in oppoſition to *original ſin*.

Actual ſin is that committed knowingly, by a perſon arrived at years of diſcretion. Original ſin is that we contract by deſcent, as being the children of Adam.

ACTUARIÆ *Naves*, in antiquity, a ſort of long ſhips, thus denominated, as being peculiarly contrived for ſwiftneſs and expedition; they anſwer to what the French call *brigantines*.

Cicero, in an epiſtle to Atticus, calls a ſhip *decem ſcalmorum*, of ten banks of rowers, *Actuariola*.

ACTUATE, to bring into act; or put a thing in action.

Thus, an agent is ſaid, by the ſchoolmen, to *actuate* a power, when it produces an act in a ſubject.—And thus the mind may be ſaid to *actuate* the body.

ACTUS, in the antient agriculture, the length of one furrow; or as far as a plough goes before it turns. *Plin. l.* 18. *c.* 3.

In Engliſh it may be rendered by a *furlong*.—It is alſo uſed as a determinate meaſure, where it contains 120 Roman feet.

Actus *minimus*, was 120 feet in length, and 4 in breadth; being equal to the ſextans, or ſixth part of the jugerum, or integer. See Jugerum.

Actus *major*, called alſo *Actus quadratus*, was the ſquare of 120 feet, or 14400; being the ſemis, or half of the jugerum.—This was alſo denominated *modius*, and *mina*. *Varro de re ruſt. l.* 1. *c.* 10.

ACUTE, *ſharp*, ſomething that terminates in a point, or edge; diſpoſed either for piercing, or cutting.

In this ſenſe, the word uſually ſtands oppoſed to *obtuſe*.

Acute *Angle*, in geometry, is that which is leſs than a right angle; or which does not ſubtend 90 degrees. See Angle.

Such is the angle AEC (*Tab. Geometry, fig.* 86.).

Acute-*Angle Triangle*, is that whoſe three angles are all *acute*; called alſo an *Oxygonous Triangle*. See Triangle.

Such is the triangle ACB (*Tab. Geometry, fig.* 68.).

Acute-*Angular Section*, of a cone, is uſed, by the antient geometricians, for the ellipſis.

Acute, in muſic, is underſtood of a ſound, or tone, which is ſharp, ſhrill, or high, in reſpect of ſome other.

In which ſenſe, the word ſtands oppoſed to *grave*.

Sounds conſidered as *acute*, and grave, that is, in the relation of gravity and *acuteneſs*, conſtitute what we call *tune*, the foundation of all harmony.

Acute *Accent*, in grammar, is that which denotes a ſyllable to be pronounced with a high or *Acute* tone of voice.

The *Acute accent* is a little line, or virgula, placed over the vowel, a little ſloping or inclined, in its deſcent, from right to left, as ʹ.—It is not ordinarily uſed, either in Engliſh, or Latin: the French, indeed, retain it; but it is only to mark the cloſe or maſculine é.

In the antient Greek manuſcripts, the *Acute accent* ſtoops a great deal more than in the modern writings, or editions.

Acute *Diſeaſe*, is that which terminates, or comes to its period, in a few days; or, as the phyſicians expreſs it, *cito & cum periculo terminatur*.

In this ſenſe, the word ſtands oppoſed to *chronical*.—All diſeaſes which hold above forty days, are reputed chronical.

Dr. Quincy thinks an *Acute diſeaſe* may be defined, that which is attended with an increaſed velocity of blood.

Acute diſeaſes are the more dangerous, in that, beſide the violence of the ſymptoms, if there be not time to empty the primæ viæ, it is very difficult to ſtop their progreſs, and ſave the patient.

Acute diſeaſes are uſually divided into thoſe ſimply called *Acute*; and thoſe which, by reaſon of the vehemence of the ſymptoms, are called *moſt Acute*.

ACUTENESS, in muſic, *&c.* that which conſtitutes, or denominates, a ſound *acute*.

There is no ſuch thing as *Acuteneſs*, or gravity, abſolutely ſo called; they are only relations: ſo that the ſame ſound may be either *acute*, or grave, according to that other ſound they refer, or are compared to.

The degrees of gravity, or *Acuteneſs*, make ſo many tones or tunes of voice, or ſound.

For the cauſe and meaſure of gravity and *Acuteneſs*, ſee Gravity, and Interval.

AD, a Latin prepoſition, ſignifying *to*—frequently uſed in compoſition; and ſometimes alſo prefixed to other terms: as—ad inquirendum—ad jura regis—ad octo—ad pondus omnium—ad quod damnum—ad terminum qui præteriit—ad ventrem inſpiciendum.—Which ſee, in the courſe of the alphabet.

ADAGE *, **Adagium**, a proverb, or popular ſaying.

* The word is compounded of *ad*, and *agor*, according to Scaliger; *quod agatur ad aliud ſignificandum*, becauſe made to ſignify ſome other thing.

Eraſmus has made a large and valuable collection of Greek and Roman *Adages*, from their poets, orators, philoſophers, *&c.*

Adage, proverb, and parœmia, are the ſame thing; but they differ from gnome, ſentence, and apophthegm.

ADAGIO, in muſic, one of the words uſed by the Italians to denote a degree or diſtinction of time.

Adagio expreſſes a ſlow time; the ſloweſt of any, except grave.

ADALIDES, in the Spaniſh policy, are officers of juſtice, for matters touching the military forces.

In the laws of king Alphonſus, the *Adalides* are ſpoken of, as officers appointed to guide and direct the marching of the forces in time of war.—Lopez repreſents them as a ſort of judges, who take cognizance of the differences ariſing upon excurſions, the diſtribution of plunder, *&c.*

ADAMANT, **Adamas**, in natural hiſtory, *&c.* an antient name for a precious ſtone, by us called a *diamond*. See Diamond.

ADAMI *Pomum*, Adam's *Apple*, in anatomy, a little prominence in the middle of the cartilago ſcutiformis. See Pomum *Adami*.

ADAMITES *, **Adamitæ**, a ſect of antient heretics, who took upon them to imitate the nakedneſs of Adam: as if man had been reinſtated in his original innocence.

* The critics explain the name Adam, אדם from whence the term ariſes, variouſly; ſome by *earth*, others by *red*, others by *acquieſcence*.—Some of the Greek interpreters explain it cabbaliſtically: according to them, the A ſignifies *ανατολη*, eaſt; D, *δυσις*, weſt; A, *αρκτος*, north; and M, *μεσημβρια*, ſouth; as being king of the four quarters of the world: or, in that he was to people it; or that he was a little world, or *μικροκοσμος*.

The *Adamites* aſſiſted in the temples naked, and had to do with women in public.

Prodicus was their author, according to the account given by Theodoret.—They were, in reality, a branch ſprung out of the Carpocratians, and Baſilidians. See Carpocratian, and Basilidian.

This ſect is ſaid to have ſtarted up afreſh in the 15th century, under Picard, their leader; who pretended to re-eſtabliſh the law of nature, which, according to him, conſiſted in two things; *viz.* community of women, and nakedneſs.—Theſe laſt walked naked in the public places; whereas the former only put off their cloaths in their aſſemblies.—Jovet ſpeaks of *Adamites* in England.

Præ-Adamites. See the article Preadamites.

ADAPTING. See the article Accommodation.

We ſay, to *adapt*, *i. e.* to fit, a recipient to the capital, *&c.* See Recipient.

ADDER-STUNG, is uſed in reſpect of cattle, when ſtung with any kind of venomous reptiles; as adders, ſcorpions, *&c.* or bid by a hedge-hog, or ſhrew.

ADDICE, or **Adze**, a ſharp tool, of the ax-kind, but different from the common ax.—It is made crooked, and by that means more convenient for cutting the hollow ſide of any board, or timber; being what the coopers generally make uſe of for that purpoſe.

ADDICTIO, **Addiction**, in the Roman law, a transferring, or paſſing over goods to another; whether by ſentence of a court, or, in the way of ſale, to him that bids moſt for them.

The word ſtands oppoſed to *abdictio*, or *abdication*. See Abdication.

It is formed of *addico*, one of the ſtated words uſed by the Roman judges, when they allowed the delivery of the thing or perſon on whom judgment had paſſed.

Hence, goods thus adjudged by the prætor, to the right owner, were called *bona addicta*; and the debtors delivered up, in like manner, to their creditors, to work out their debt, were called, *ſervi addicti*.

Addictio *in diem*, denoted the adjudging of a thing to a perſon for a certain price; unleſs by ſuch a day the owner, or ſome other perſon, gave more for it.

ADDITAMENT, **Additamentum**, a thing added to another.

Additaments, in phyſic and chymiſtry, are things ſuperadded to the ordinary ingredients of any compoſition.

ADDITION, the act of joining one thing to another: or of augmenting a thing, by the acceſſion of others thereto.

In matters of Holy Scripture, it is forbid to make any *Addition* to the text, for fear of corrupting and altering the ſenſe.—In phyſic we ſay, that natural bodies are formed by the *Addition* or aggregation of parts.

Addition is alſo uſed for the additament, or the thing added itſelf.—In the new editions of books, authors uſe to make *Additions*; and they frequently make needleſs *Additions*, in lieu of retrenching ſuperfluities and impertinencies.

It is an axiom, that if to equal quantities you *add* unequal ones; the exceſs of the whole will be the ſame as the exceſs of the *additional* parts.

Addition, in arithmetic, is the firſt of the four fundamental rules, or operations, of that art.

Addition conſiſts in finding the amount of ſeveral numbers, or quantities, ſeverally added one to another.—Or, *Addition* is the invention of a number, from two or more homogeneous ones given, which is equal to the given numbers taken jointly, or together.

The number, thus found, is called the *ſum*, or aggregate of the numbers given.

The character of *Addition* is +, which we uſually expreſs by *plus*. Thus $3+4$ denotes the ſum of 3 and 4; and is read 3 *plus* 4.

The *Addition* of ſimple numbers is eaſy. Thus it is readily perceived that 7 and 9, or $7+9$, make 16: and $11+15$ make 26.

In longer, or compounded numbers, the buſineſs is performed by writing the given numbers in a row downwards; homogeneous under homogeneous, *i. e.* units under units, tens under tens, *&c.* and ſingly collecting the ſums of the reſpective columns.

To do this, we begin at the bottom of the outmoſt row or column to the right; and if the amount of this column do not exceed 9, we write it down at the foot of the ſame column: if it do exceed 9, the exceſs is only to be written down, and the reſt reſerved to be carried to the next row, and added thereto; as being of the ſame kind or denomination.

Suppoſe, *e. gr.* the numbers 1357 and 172 were given to be added: write either of them, *v. gr.* 172, under the other, 1357; ſo, as the units of the one, *viz.* 2, ſtand under the units of the other, *viz.* 7; and the other numbers of the one, under the correſpondent ones of the other, *viz.* the place of tens under tens, as 7 under 5; and that of hundreds, *viz.* 1, under the place of hundreds of the other, 3.—Then, beginning, ſay, 2 and 7 make 9; which write underneath; alſo 7 and 5 make 12; the laſt of which two numbers, *viz.* 2, is to be written, and the other one reſerved in your mind to be added to the next row, 1 and 3: then ſay, 1 and 1 make 2, which added to 3 make 5; this write underneath, and there will remain only 1, the firſt figure of the upper row of numbers, which alſo muſt be writ underneath; and thus you have the whole ſum, *viz.* 1529.

1357
172
———
1529

So, to add the numbers $87899+13403+885+1920$ into one ſum, write them one under another, ſo as all the units make one column, the tens another, the hundreds a third, and the place of thouſands a fourth, and ſo on.—Then ſay, 5 and 3 make 8, and $8+9$ make 17; write 7 underneath, and the 1 add to the next rank; ſaying, 1 and 8 make 9, $9+2$ make 11; and $11+9$ make 20; and having writ the 0 underneath, ſay again, 2 and 8 make 10, and $10+9$ make 19, and $19+4$ make 23, and $23+8$ make 31; then, reſerving 3, write down 1 as before, and ſay again, $3+1$ make 4, $4+3$ make 7, and $7+7$ make 14; wherefore write 4 underneath: and laſtly, ſay $1+1$ make 2, and $2+8$ make 10, which in the laſt place write down, and you will have the ſum of them all.

87899
13403
1920
885
———
104107

Addition *of numbers of different denominations*, for inſtance, of pounds, ſhillings, and pence, is performed by adding or ſumming up each denomination by itſelf, always beginning with the loweſt; and if, after the *Addition*, there be enough to make one of the next higher denomination, for inſtance, pence enough to make one or more ſhillings, they muſt be added to the figures of that denomination, that is, to the ſhillings; only reſerving the odd remaining pence to be put down in the place of pence.—And the ſame rule is to be obſerved in ſhillings with regard to pounds.

For an inſtance, 5 pence and 9 pence make 14 pence; now in 14 there is once 12, or a ſhilling, and two remaining pence; the pence ſet down, and reſerve 1 ſhilling to be added to the next column, which conſiſts of ſhillings. Then 1 and 8 and 2 and 5 make 16: the 6 put down, and carry the 1 to the column of tens; 1 and 1 and 1 make three tens of ſhillings, or 30 ſhillings; in 30 ſhillings there is once 20 ſhillings, or a pound, and 10 over: write one in the column of tens of ſhillings, and carry 1 to the column of pounds; and continue the *Addition* of pounds, according to the former rules.

l.	*s.*	*d.*
120	15	9
65	12	5
9	8	0
195	16	2

So, half of an even ſum will be carried to the pounds; and the odd one (where it ſo happens) ſet under the tens of the ſhillings.

Addition *of Decimals*, is performed after the ſame manner as that of whole numbers; as may be ſeen in the following example. See alſo Decimal.

630.953

$$\begin{array}{r}630.953\\51.0807\\305.27\\\hline 987.3037\end{array}$$

Addition *of Vulgar Fractions*, ſee under the article Fraction.

Addition, in algebra, or the Addition *of Species*, is performed by connecting the quantities to be added, by their proper ſigns; and alſo by uniting into one ſum, thoſe that can be ſo united. See Quantity, Species, &c.

Thus a and b make $a+b$; a and $-b$ make $a-b$; $-a$ and $-b$ make $-a-b$; $7a$ and $9a$ make $7a+9a$; $-a\sqrt{ac}$ and $b\sqrt{ac}$ make $-a\sqrt{ac}+b\sqrt{ac}$, or $b\sqrt{ac}-a\sqrt{ac}$; for it is all one in whatever order they be written.

But, particularly, 1°, Affirmative quantities of the ſame ſpecies, or kind, are united by adding the perfixed numbers whereby the ſpecies are multiplied. See Positive.

Thus, $7a+9a$ make $16a$. And $11bc+15bc$ make $26bc$.

Alſo $3\frac{a}{c}+5\frac{a}{c}$ make $8\frac{a}{c}$; and $2\sqrt{ac}+7\sqrt{ac}$ make $9\sqrt{ac}$; $6\sqrt{ab-xx}+7\sqrt{ab-xx}$ make $13\sqrt{ab-xx}$. And in like manner $6\sqrt{3}+7\sqrt{3}$ make $13\sqrt{3}$. Again, $a\sqrt{ac}+b\sqrt{ac}$ make $\overline{a+b}\sqrt{ac}$, by ading together a and b, as numbers multiplying $\sqrt{ac}$. And ſo $\frac{\overline{2a+3c}\sqrt{3axx-x^3}}{a+x}+\frac{3a\sqrt{3axx-x^3}}{a+x}$ make $\frac{\overline{5a+3c}\sqrt{3axx-x^3}}{a+x}$ ſince $2a+3c$ and $3a$ make $5a+3c$.

2°, Affirmative fractions, which have the ſame denominator, are added together by adding their numerators.

Thus $\frac{1}{3}+\frac{2}{3}$ make $\frac{3}{3}$, and $\frac{2ax}{b}+\frac{3ax}{b}$ make $\frac{5ax}{b}$; and thus $\frac{8a\sqrt{cx}}{2a+\sqrt{cx}}+\frac{17a\sqrt{cx}}{2a+\sqrt{cx}}$ make $\frac{25a\sqrt{cx}}{2a+\sqrt{cx}}$ and $\frac{aa}{c}+\frac{bx}{c}$ make $\frac{aa+bx}{c}$.

3°, Negative quantities are added after the ſame manner as affirmative. See Negative.

Thus, -2 and -3 make -5; $-\frac{4ax}{b}$ and $-\frac{11ax}{b}$ make $-\frac{15ax}{b}$; $-a\sqrt{ax}$ and $-b\sqrt{ax}$ make $\overline{-a-b}\sqrt{ax}$.

When a negative quantity is to be added to an affirmative one; the affirmative muſt be diminiſhed by the negative one.

Thus, 3 and -2 make 1; $\frac{11ax}{b}$ and $-\frac{4ax}{b}$ make $\frac{7ax}{b}$; $-a\sqrt{ac}$ and $b\sqrt{ac}$ make $b-a\sqrt{ac}$.

And note, that when the negative quantity is greater than the affirmative, the aggregate ſum will be negative. Thus, 2 and -3 make -1; $-\frac{11ax}{b}$ and $\frac{4ax}{b}$ make $-\frac{7ax}{b}$; and $2\sqrt{ac}$ and $7\sqrt{ac}$ make $-5\sqrt{ac}$.

Addition *of irrational Quantities*.—If they be of different denominations, reduce them to the ſame denomination; and if they be then commenſurable, add the rational quantities without the vinculum; and to their ſum prefix the radical ſign.—The reſt as in the addition of rationals.

Thus, we ſhall find $\sqrt{8}+\sqrt{18}=2\sqrt{}+3\sqrt{2}=5\sqrt{2}=50$. On the contrary, $\sqrt{7}$ and $\sqrt{5}$ being incommenſurable, their ſum will be $\sqrt{7}+\sqrt{5}$.

Addition, in law, is that name, or title which is given to a man over and above his proper name, and ſurname; to ſhew of what eſtate, degree, or myſtery, he is; and of what town, village, or country.

Additions of Eſtate, or quality, are yeoman, gentleman, eſquire, and ſuch like.

Additions of Degree, are thoſe we call names of dignity; as knight, lord, earl, marquis, and duke.

Additions of Myſtery, are ſuch as ſcrivener, painter, maſon, and the like. See Chopchurch.

Additions of Place, are, of Thorp, of Dale, of Woodſtock.—Where a man hath houſhold in two places, he ſhall be ſaid to dwell in both; ſo that his *addition* in either may ſuffice. Knave was antiently a regular *addition*.

By ſtat. 1 Hen. V. it was ordained, that in ſuch ſuits or actions where proceſs of outlawry lies; ſuch *addition* ſhould be made to the name of the defendant, to ſhew his eſtate, myſtery, and place where he dwells; and that the writs, not having ſuch *additions*, ſhall abate, if the defendant take exception thereto; but not by the office of the court.—The reaſon of this ordinance was, that one man might not be troubled by the outlawry of another; but by reaſon of the certain *addition*, every perſon might bear his own burden.

Additional *Duty*. See Duty.

ADDOUBORS, in law. See the article Redubbors.

ADDRESS*, a diſcourſe preſented to the king, in the name of a conſiderable body of his people; to expreſs or notify their ſentiments of joy, ſatisfaction, or the like, on ſome extraordinary occaſion.

* The word is French, *adreſſe*, formed of the verb *adreſſer*, to ſend or direct any thing to a perſon.

We ſay, the lords *addreſs*, the commons *addreſs*.—*Addreſſes* were firſt ſet on foot under the adminiſtration of Oliver Cromwell.—At Paris, their office of intelligence is called *bureau d'adreſſe*.

Address is alſo uſed for dexterity, or good management.

ADDUCENT* *Muſcles*, or Adductors, are thoſe which bring forward, cloſe, or draw together, the parts of the body whereto they are annexed. See Muscle.

* The word is compounded of *ad*, to; and *ducere*, to draw or bring.

Adducents, or *adductors*, ſtand oppoſed to *abducents*, or *abductors*.

ADDUCTION, in anatomy, the motion, or action, of the adducent muſcles. See Adducent, and Adductor.

ADDUCTOR *Oculi*, a muſcle of the eye; ſo called, becauſe it inclines its pupil towards the noſe.

It is alſo called *bibitorius*; becauſe it directs the eye toward the cup in drinking.

Adductor *Pollicis*, is a muſcle of the thumb, which ariſes tendinous, and aſcends obliquely towards a broad termination, at the ſuperior part of the firſt bone of the thumb.—*See Tab. Anat. (Myol.) fig.* 1. *n.* 31. & *fig.* 7. *n.* 7.—Its office is to bring the thumb near the fore-finger.

ADDUCTOR *pollicis pedis*, called alſo *antithenar*, is a muſcle of the great toe, which ariſes from the inferior part of the os cuneiforme tertium, and is inſerted into the internal part of the oſſa ſeſamoidea of the great toe; which it draws nearer the reſt.

Adductor *indicis*, is a muſcle of the fore-finger, ariſing from the inſide of the bone of the thumb, and inſerted into the firſt bone of the fore-finger, which it draws towards the thumb.

Adductor *minimi digiti pedis*: the ſame as Transversalis *pedis*.

ADELING. See the article Atheling.

ADEMPTION, Ademptio, in the civil law, the revocation of a grant, donation, or the like. See Revocation.

The *ademption* of a legacy may be either *expreſs*; as when the teſtator declares in form, that he revokes what he had bequeathed: or *tacit*, as when he only revokes it indirectly, or implicitly. See Rescission.

ADEPS*, in anatomy, fat found in the cavities of the abdomen, or other parts.

* It is ſo called, as being *adeptus*, gotten, or as it were excremental.

The *adeps*, according to ſome, differs from the common fat, called *pinguedo*; in that it is thicker, harder, and of a more earthy ſubſtance.

Adeps is alſo uſed among phyſicians, as a general name for all animal fat.

The *adeps anſeris*, gooſe's fat; *adeps canis*, fat of a dog; *adeps hominis*, fat of a man; *adeps viperæ*, viper's fat; and *adeps urſi*, bear's fat; are all uſed in medicine, in quality ripeners, or drawers; as being of a penetrating nature, and thereby ſuited to diſſolve and rarefy the tumours, and bring them quickly to maturity. The ſpecific virtues, aſcribed to certain of them, do not however ſeem well warranted.

ADEPTS*, Adepti, a denomination given to the proficients in alchymy; particularly to thoſe who pretend to the ſecrets of the philoſophers ſtone, and the univerſal medicine.

* The word is Latin, *adeptus*, having obtained; formed from the verb *adipiſci*, to obtain.

Ripley, Lully, Paracelſus, Helmont, Hollandus, Sendivogius, &c. are the principal among the *adepti*.

It is a ſort of tradition among, the alchymiſts, that there are always twelve *adepti*; and that their places are immediately ſupplied by others, whenever it pleaſes any of the fraternity to die, or tranſmigrate into ſome other place, where he may make uſe of his gold: for in this wicked world it will ſcarce purchaſe them a ſhirt.—*Harris.*

ADEQUATE, Adæquatum, ſomething equal to, or coextended with, another; and filling the whole meaſure and capacity thereof.

In this ſenſe the word ſtands oppoſed to *inadequate*. See Inadequate.

Adequate *ideas*, or *notions*, are ſuch images or conceptions of an object, as perfectly repreſent it, or anſwer to all the parts and properties of it.

M. Leibnitz defines an *adequate notion* to be that, of whoſe ſeveral characters we have diſtinct ideas.—Thus, a circle being defined a figure bounded by a curve line which returns into itſelf, and whoſe points are all equally diſtant from a certain intermediate point therein; our notion of a circle is *adequate*, if we have diſtinct ideas of all theſe circumſtances, *viz.* a curve returning upon itſelf, a middle point, an equality of diſtance, &c.

All ſimple ideas are *adequate* and perfect; and the faculty, be it what it will, that excites them, repreſents them intire.

See *Simple* Idea.

Th

The ideas of modes are likewiſe *adequate*, or perfect; except of thoſe modes which occaſionally become ſubſtances; for when we ſpeak of modes ſeparately exiſting, we only conſider them ſeparate from the ſubſtance by way of abſtraction.

All abſtract ideas are alſo *adequate* and perfect; ſince they repreſent all that part of the ſubject which we then conſider.—Thus, the idea of roundneſs is perfect, or *adequate*, becauſe it offers to the mind all that is in roundneſs, in general.

Of the ſame kind are all ideas, of which we know no original, or external object really exiſting out of the mind, by occaſion of which they were excited in us, and of which we think them the images. Thus, when a dog is before us, it is the external object without us which raiſes the idea in our mind; but the idea of an animal, in general, has no external object to excite it: it is created by the mind itſelf, and muſt of neceſſity be *adequate* or perfect.

On the contrary, the ideas of all ſubſtances are *inadequate* and imperfect, which are not formed at the pleaſure of the mind, but gathered from certain properties, which experience diſcovers in them.

This is evident, in regard our knowlege of ſubſtance is very defective; and that we are only acquainted with ſome of their properties: thus, we know that ſilver is white, that it is malleable, that it melts, &c. but we do not know what further properties it may have; and we are wholly ignorant of the inward texture of the particles whereof it conſiſts.—Our idea of ſilver therefore not repreſenting to the mind all the properties of ſilver, is *inadequate*, and imperfect.

ADESSENARII *, a name given to thoſe who hold that Jeſus Chriſt is really preſent in the euchariſt; but in a manner different from what the Romaniſts hold.

* The name was firſt framed by Prateolus, from the Latin verb *adeſſe*, to be preſent.

The *Adeſſenarii*, called alſo *Impanatores*, are divided into four different opinions touching the point.—Some hold that the body of Jeſus Chriſt is in the bread; others, that it is about the bread; others, that it is with the bread; and laſtly, others, that it is under the bread. See IMPANATION.

ADFECTED *Equation* is that where the unknown quantity is found in two or more different degrees, or powers. *E. gr.* $x^3 - px^2 + qx = a^2b$. Where there are three different powers of x; *viz.* x^3, x^2, and x^1. See EQUATION.

ADHESION *, ADHERENCE, in phyſics, the act of two bodies which are joined or faſtened to each other, either by the mutual impreſſion of their own parts; or the compreſſion of external bodies. See COHESION.

* The word is compounded of the Latin, *ad*, to; and *hærere*, to ſtick or cleave.

Anatomiſts ſometimes obſerve proſphyſes, or *Adheſions* of the lungs to the ſides of the thorax, the pleura, and diaphragm, which give occaſion to various diſorders.

The *Adheſions* of two poliſhed planes, and two hemiſpheres, are phænomena urged in behalf of the weight and preſſure of the atmoſphere. See ATMOSPHERE.

ADHESION, in logic. The ſchoolmen diſtinguiſh two kinds of certitude: the one of ſpeculation, which ariſes from the evidence of the thing; and the other of *Adheſion*, or attachment, which has nothing to do with evidence, but ariſes purely from the importance of the matter, and the intereſt we have in its truth.

ADHESION, or ADHERENCE, is alſo uſed for the perſiſting in a former opinion or reſolution.—After the free conference between the two houſes, concerning the bill for preventing occaſional conformity, when the lords retired, and it came to the final vote of *adhering*, they were ſo equally divided, that in three queſtions put on different heads, the *adhering* was carried but by one vote in every one, and by a different perſon each time.—The commons likewiſe *adhered*: ſo the bill was loſt. *V. Burnet Hiſt. of own Time*, T. ii. p. 338.

ADJACENT *, or ADJOINING, ſomething ſituate near, or aſide of another.

* The word is compounded of *ad*, to; and *jacere*, to lie.

ADIAPHORISTS *, ADIAPHORISTÆ, or ADIAPHORITES, a name given in the ſixteenth century to the moderate Lutherans, who adhered to the ſentiments of Melanchthon; and afterwards to thoſe who ſubſcribed the interim of Charles V. See LUTHERAN.

* The word is originally Greek, αδιαφορος, compounded of the privative α, and διαφορος, different.

ADIAPHOROUS, ADIAPHORUS, is a name given by Mr. Boyle to a kind of ſpirit diſtilled from tartar, and ſome other vegetable bodies; and which is neither acid, vinous, nor urinous; but in many reſpects different from any other ſort of ſpirit.

ADJECTIVE *, in grammar, a kind of noun joined with a ſubſtantive either expreſſed, or implied, to ſhew its manner of being; that is, its qualities, or accidents.

* The word is formed of the Latin *adjicere*, to add to; as being to be added to a ſubſtantive, without which it has no preciſe ſignification at all.

Father Buffier defines *Adjectives* in a manner ſomewhat different from other grammarians.—Nouns, according to him, are ſubſtantives, when the objects which they repreſent are conſidered ſimply, and in themſelves, without any regard to their qualities: on the contrary, they are *Adjectives*, when they expreſs the quality of an object.

Thus, when I ſay ſimply, an heart; the word *heart* is a ſubſtantive, becauſe none of its qualities are expreſſed; but when I ſay, a generous heart, the word *generous* is an *Adjective*; becauſe it adds a quality, or attribute, to the heart. *Adjectives*, then, appear to be nothing elſe but modificatives.

—In effect, the end of an *Adjective* being only to expreſs the quality of an object; if that quality be the object itſelf whereof we ſpeak, it becomes a ſubſtantive; *e. gr.* if I ſay, *this book is good*; *good*, here, is an *Adjective*: but if I ſay, *good is always to be choſen*, it is evident *good* is the ſubject I ſpeak of; and conſequently, *good*, there, is the ſubſtantive.

On the contrary, it often happens in other languages, and ſometimes in our own, that a ſubſtantive becomes an *Adjective*; as for inſtance, in theſe words, *the king, hero as he is, remembers he is a man*: where the word *hero*, tho' ordinarily a ſubſtantive, is yet apparently an *Adjective*.

From this idea of an *Adjective*, it appears that many of the nouns, which, in the common grammars, are accounted ſubſtantives, are really *Adjectives*, and vice verſa; grammar in this and a thouſand other inſtances depending upon cuſtom.

AD INQUIRENDUM, a judicial writ, commanding inquiry to be made of any thing touching a cauſe depending in the king's court, for the better execution of juſtice; as of baſtardy, or the like.

ADJOINING, ADJUNCTIO, in philoſophy, &c. See ADJUNCTION.

ADJOINING is particularly uſed for the aſſociating of a perſon to another; or appointing him a collegue, or adjunct. See ADJUNCT, &c.

ADJOURNMENT *, in law, the putting off a court, or meeting; and appointing it to be kept at another time or place. See COURT.

* The word is formed of the Latin *ad*, to; and the French *jour*, day; *q. d.* another day.

In which ſenſe, we meet with the phraſe *Adjournment in eyre*, for an appointment of a day when the juſtices in eyre intend to ſit again.

Adjournments of parliament differ from prorogations.

And each houſe has the privilege of *adjourning* itſelf. See PARLIAMENT.

ADIPOSA *Membrana*, in anatomy, denotes a membrane inveſting the body, immediately under the cutis; ſuppoſed to be the baſis of the fat, which is lodged in the ſpaces between its fibres, and in peculiar cells formed herein.

Anatomiſts are divided as to the reality of this membrane; moſt of the later writers taking it to be no other than the exterior membrane of the membrana carnoſa, or muſculorum communis.

Vaſa ADIPOSA, fat-veſſels, making a part of the ſubſtance of the omentum, or caul. See OMENTUM.

ADIPOSE *Cells*, *Cellulæ* ADIPOSÆ, or *Loculi* ADIPOSI. See CELLULÆ *Adipoſæ*.

ADIPOSE *Ducts*, *Ductus* ADIPOSI. See DUCTUS *Adipoſi*.

Malpighi ſtarts a doubt, whether the *Adipoſe Ducts* may not be propagated from the fibres which abound in the ſpleen; or thoſe fibres from them?—As alſo whether there be not a yet undiſcovered communication between the omentum and the *membrana Adipoſa*?

ADIPOSUS, fat, or fatty. The word is chiefly uſed in anatomy, as an epithet of certain cells, ducts, membranes, and veſſels.

ADIT *of a Mine*, the hole or aperture whereby it is entered and dug, and by which the water and ores are carried away. See MINE.

ADJUDGING, in law, the act of paſſing a determinate ſentence in behalf of a perſon. See ADJUDICATION.

ADJUDICATION, the act of adjudging the property of a thing to a perſon by a legal ſentence, decree, or judgment.

ADJUDICATION is more particularly uſed for the addiction, or conſigning a thing ſold by auction, or the like, to the higheſt bidder.

ADJUNCT, ADJUNCTUM, in philoſophy, ſomething joined or ſuperadded to a being from without. See ADJUNCTION.

Or, an *Adjunct* is an additament or acceſſion to a thing, not eſſentially belonging to it, but only accidental thereto.

There are two kinds of *Adjuncts*; the one, a ſubſtance (whether ſpirit or body) accidentally ſuperadded to another, as its ſubject.—Such is water in a ſponge, or veſſel, and ſuch is the ſoul in the body.

The ſecond an attribute, or mode, accidentally likewiſe ſuperadded to a ſubſtance; whether body or ſpirit.—Such is figure in a body, knowlege in the mind, *&c.*

Some divide *adjuncts* into *abſolute*; which agree to the whole thing, without any limitation: thus, paſſions are *abſolute Adjuncts* of a man:—And *limited*; which only agree to their ſubject in reſpect of ſome certain part thereof: thus, man only thinks, conſidered as to his mind; only grows, as to his body, *&c.*

In ethics, we uſually reckon ſeven *Adjuncts*, popularly called *circumſtances*; *Quis*, *quid*, *ubi*, *quibus auxiliis*, *cur*, *quomodo*, *quando*.

ADJUNCTS, in rhetoric and grammar, are certain words or things added to others; to amplify the diſcourſe, or augment its force.

Such are adjectives, attributes, and epithets, which are added to ſubſtantives, ſubjects, *&c.* to expreſs their nature, qualities, accidents, *&c.*

Arguments drawn from *Adjuncts*, are ſupplements or enforcements of the proof ariſing from the circumſtances of the fact.

ADJUNCT is alſo uſed in civil concerns, for a collegue, or fellow-officer, aſſociated to another, to aſſiſt him in his miniſtry, and ſhare the functions thereof. See COLLEGUE.

ADJUNCTION, the act of joining, or adding, of one thing to another.

All *Adjunction* implies a ſubordination.—The *Adjunct* is for the ſake of the thing it is joined to, not contrary-wiſe; as, the cloaths for the man; not the man for the cloaths.—Whatever is a part of a thing, cannot be called an *Adjunct* of it.

There are various ſpecies of *Adjunction*; viz. by adheſion, by appoſition, adjacency, accubation, incubation, impoſition, aſſeſſion, *&c.* See ADHESION.

AD JURA REGIS, is a writ that lies for the king's clerk, againſt him that ſought to eject him, to the prejudice of the king's title in right of his crown.

ADJURATION *, a part of exorciſm, wherein the devil is commanded in the name of God, to depart out of the body of the poſſeſſed, or to declare ſomething.

* The word is Latin, formed of *adjurare*, to adjure: from *ad*, to; and *jurare*, to ſwear. See CONJURATION.

ADJUTAGE. See the article AJUTAGE.

ADJUTANT, in the military art, an officer in the army, whoſe buſineſs it is to aid and aſſiſt the major.

Adjutant is the ſame that we otherwiſe call *Aid-Major*.

ADJUTANT is ſometimes alſo uſed by the French for an *Aid de Camp*.

The word is formed of the Latin *adjutare*, to help, to aſſiſt.

ADJUTORIUM *, in anatomy, the humerus, or ſhoulder-bone. See HUMERUS.

* It is thus called from *adjuvare*, to help; on account of its office in lifting the arm up.

ADMEASUREMENT, ADMENSURATIO, in law, a writ which lies for the bringing thoſe to reaſon, or mediocrity, who uſurp more of any thing than their ſhare.

This writ lies in two caſes; termed,

ADMEASUREMENT *of Dower*, *Admenſuratio dotis*, where the widow of the deceaſed holds more from the heir, or his guardian, on account of her dower, than of right belongs to her. And,

ADMEASUREMENT *of Paſture*, *Admenſuratio paſturæ*; this lies between thoſe who have common of paſtures appendant to their freehold, or common by vicinage, in caſe any of them ſurcharge the common with more cattle than they ought. See COMMON.

ADMINICLE, or ADMINICULE, ADMINICULUM, a term uſed in ſome antient ſtatutes, for aid, help, or ſupport.

In the French juriſprudence, *Adminiculum* ſignifies the beginning of a proof; an imperfect proof; or a circumſtance on conjecture, tending to form or fortify a proof.

Among antiquaries, the term *Adminicules* is applied to the attributes, or ornaments, wherewith Juno and ſome other figures are repreſented on medals.

ADMINISTRATION imports the government or direction of affairs; and particularly the exerciſe of diſtributive juſtice.

Indolent princes confide the *Aminiſtration* of public affairs to their miniſters.—Civil wars are uſually raiſed on pretence of *male-Adminiſtration*; or of abuſes committed in the exerciſe of juſtice, *&c.*

ADMINISTRATION, in the Engliſh law, ſignifies the act, or office, of an adminiſtrator, in managing and diſpoſing of a man's goods, or eſtate, that died inteſtate, or without any will; with an intent to give an account thereof.

In this caſe, inſtruments, or powers, called letters of *Adminiſtration*, are taken out in the prerogative court.

ADMINISTRATION is ſometimes alſo uſed for the direction of the affairs of a minor, a pupil, a lunatic, or the like.

ADMINISTRATION is alſo uſed in reſpect of eccleſiaſtical functions.—The parſon has the *Adminiſtration* of the ſacraments in his pariſh.—*Adminiſtration* of the euchariſt is prohibited to perſons excommunicate.

In beneficiary matters, they diſtinguiſh two kinds of *Adminiſtration*; *temporal*, which relates to the temporalities of a benefice, dioceſe, *&c.* and *ſpiritual*, to which belong the power of excommunicating, *&c.*

ADMINISTRATOR, in law, he to whom the ordinary commits the *Adminiſtration* of the goods of a dead man, in default of an executor.

An action lies for, or againſt, an *Adminiſtrator*, as for, or againſt, an executor; and he ſhall be accountable to the value of the goods of the deceaſed, and no further:—Unleſs there be waſte, or other abuſe chargeable on him. If the *Adminiſtrator* die, his executors are not *Adminiſtrators*; but the court is to grant a new adminiſtration.—If a ſtranger, who is neither *Adminiſtrator*, nor executor, take the goods of the deceaſed, and adminiſter; he ſhall be charged, and ſued as an executor, not as an *Adminiſtrator*.

If a woman have goods thus committed to her charge, or adminiſtration, ſhe is called *Adminiſtratrix*: and is accountable, *&c.* in like manner as an *Adminiſtrator*.

ADMIRAL, ADMIRALIUS, ADMIRALLUS, a great officer, who commands the naval forces of a kingdom or ſtate, and takes cognizance by himſelf, or officers appointed by him, of all maritime cauſes.

Authors are divided about the origin and denomination of this important officer, whom we find eſtabliſhed, with ſome variation, in moſt kingdoms that border on the ſea.—Some borrow it from the Greeks; the captain of the ſeas, under the emperors of Conſtantinople, being called *Amiralius* or *Amiralis*, of ἁλμυρος, ſaline; or ἁλμη, ſalt water; and αρχος, *princeps*; in regard his juriſdiction lay on the ſea, which the Latin calls *ſalum*.—But it is to be obſerved, that this officer had not the ſupreme adminiſtration of naval affairs: that immediately belonged to the *dux magnus*, or grand general; to whom the *Amiralius* was ſubordinate, in quality of *protocomes*, firſt count, or aſſociate.

Others derive the name from the Arabic *Amir*, or *Emir*, lord; and the Greek ἁλιος, marine, *q. d.* chief of ſea-affairs; and accordingly we find Emir in Zonaras, Cedrenus, Nicetas, and other Greeks of that time, uſed in the ſenſe of a commander.—Add, that in the life of St. Peter Thomaſius, we meet with *Admiratus Jeruſalem*, for the governor of Jeruſalem, under the ſoldan of Egypt. And hence, ſome will have both the name, and the dignity, of oriental, and even Saracen extraction: in effect, there are no inſtances of *Admirals* in this part of Europe, before the year 1284. when Philip of France, who had attended St. Louis to the wars againſt the Saracens, created an *Admiral*.—To ſay no more, Du Cange aſſures, that the Sicilians were the firſt, and the Genoeſe the next after them, who gave the denomination *Admiral* to the commanders of their naval armaments; and that they took it from the Saracen, or Arabic *Amir*, a general name for any commanding officer.—The firſt *Admiral* we read of in our Engliſh affairs, was under Edward I.

The Lord High ADMIRAL *of England*, in ſome antient records called *Capitaneus Marinorum*, is judge, or preſident, of the court of admiralty.

He takes cognizance, by himſelf, his lieutenant, or deputies, of all crimes committed on the ſea, or the coaſt thereof; and all the civil, and marine tranſactions relating thereto: as alſo of what is done in all great ſhips, riding in any great river, beneath the bridges thereof next the ſea.

Antiently, the *Admiral* had alſo juriſdiction in all cauſes of merchants, and mariners; not only on the ſea, but in all foreign parts.—We have had no *High Admiral* for ſome years; the office being put in commiſſion, or under the adminiſtration of the lords *Commiſſioners of the Admiralty*. See COMMISSION, *&c.*

ADMIRAL is alſo uſed for the commander in chief of a ſingle fleet, or ſquadron.

Thus, we ſay, the *Admiral* of the red; the *Admiral* of the white; and *Admiral* of the blue. See SQUADRON, and NAVY.

The term ADMIRAL is alſo applied to all flag-officers: in which ſenſe it includes *Vice-Admirals*, and *Rear-Admirals*. See FLAG-*Officer*.

Rear-ADMIRAL. } See { REAR-*Admiral*.
Vice-ADMIRAL. }   { VICE-*Admiral*.

Vice-ADMIRAL is alſo an officer appointed by the lord *High Admiral*, in divers parts of the kingdom, with judges and marſhals ſubordinate to him; for the exerciſing of juriſdiction in maritime affairs, within his reſpective limits.

There are upwards of twenty *Vice-Admirals*.—From their deciſions and ſentences, appeal lies to the court of *Admiralty* in London.

There are alſo *Admirals of the Galleys*. See GALLEY.

Monſtrelet makes mention of an *Admiral of the Archers*, or croſs-bow-men. See ARBALET.

ADMIRAL is likewiſe the name of the principal veſſel of a fleet, which carries the *Admiral* on board.

When two ſhips of war, bearing the ſame colours, meet in the ſame port; that which arrived firſt, has the title and prerogative of *Admiral*; and the other, though of greater ſtrength and rate, ſhall only be accounted *Vice-Admiral.*—It is pretty much the ſame with the veſſels in the cod and whale fiſhery. That which arrives firſt, in any harbour or creek of Newfoundland, takes the title and quality of *Admiral*, which it retains during the whole fiſhing ſeaſon.—Such ſhip may ſecure to himſelf ſo much beech, or flakes, or both, as are neceſſary for the number of boats he ſhall uſe, with an overplus of one boat only more than he uſes.—The maſter of the ſecond ſhip is *Vice-Admiral*; and the maſter of the third *Rear-Admiral.* See FISHERY.

ADMIRAL'*s Court*, or the *High Court of* ADMIRALTY, is a court held by the *High Admiral*, or commiſſioners of the admiralty; to which belongs the deciſion of all maritime controverſies, tryals of malefactors, and the like.

The proceedings in this court, in all civil matters, are according to the civil law; becauſe the ſea is without the limits of the common law, and under the *Admiral*'s juriſdiction.

In criminal affairs, which ordinarily relate to piracy, the proceedings in this court were antiently likewiſe by information and accuſation, according to the civil law: but that being found inconvenient, in regard no perſon could be convicted without either their own confeſſion, or an eye-witneſs of the fact, ſo that the greateſt offenders often eſcaped with impunity; there were two ſtatutes made by Henry VIII. enacting, that criminals ſhould henceforth be there tried by witneſſes, and a jury; and this by ſpecial commiſſion from the king to the lord *Admiral:* wherein ſome of the judges of the realm are always to be commiſſioners; and the tryal according to the laws of England, directed by thoſe ſtatutes.

The court of *Admiralty* is ſaid to have been firſt erected in 1357. by king Edward III.—To the civil law, firſt introduced in it by the founder, were afterwards added, by his ſucceſſors, particularly Richard I. the laws of Oleron; and the marine uſes and conſtitutions of ſeveral people; as thoſe of Genoa, Piſa, Marſeilles, Meſſina, *&c.*

Under this court is alſo a court-merchant, or court of equity; wherein all differences between merchants are decided, according to the rules of the civil law.

Between the courts of *Admiralty* and common law, there ſeems to be *diviſum imperium*; for the ſea, ſo far as the low-water mark, is accounted *infra corpus comitatus adjacentis*; and the cauſes thence ariſing are determinable by the common law: yet when the ſea is full, the *Admiral* has juriſdiction there alſo, ſo long as the ſea flows, over matters done between the low-water mark and the ſhore.

ADMIRALTY.—*Court of* ADMIRALTY, *Commiſſioners of the* ADMIRALTY, *&c.* See ADMIRAL'*s Court*, *&c.*

Among the Hollanders, the five *Admiralties* are ſo many chambers, compoſed of the deputies of the nobles, the provinces, and the towns; to whom belong the equipping out of fleets, the furniſhing proviſions for them, and directing what relates to maritime matters.

ADMIRATION, in grammar, a note, or character, intimating ſomething worthy to be admired, or wondered at. —It is expreſſed thus (!). See CHARACTER.

ADMISSION, ADMISSIO, in the eccleſiaſtical law, an act whereby a biſhop, upon examination, *admits* or allows a clerk to be able, or competently qualified for the office; which is done by the formula *Admitto te habilem.*

ADMITTENDO *Clerico*, is a writ granted to him who hath recovered his right of preſentation againſt the biſhop in the common pleas.

ADMITTENDO *in Socium*, is a writ for the aſſociation of certain perſons to juſtices of aſſize formerly appointed. See JUSTICE, and ASSIZE.

ADNATA, in anatomy, a thick white membrane, inveſting the ball of the eye; and making the outermoſt coat thereof: called alſo *conjunctiva.*

It is the *tunica Adnata* that makes what we commonly call the *white of the eye*; whence it is alſo called the *Albuginea.* See ALBUGINEA, and EYE.

AD OCTO, *q. d.* to the eighth number; a term uſed by ſome antient philoſophers, to denote the higheſt, or ſuperlative degree: becauſe, in their way of diſtinguiſhing qualities, they reckoned no degree above the eighth.

ADOLESCENCE*, ADOLESCENTIA, the ſtate of growing youth; or that period of a perſon's age commenceing from his infancy, and terminating at his full ſtature, or manhood.

* The word is formed of the Latin *adoleſcere*, to grow.

The ſtate of *Adoleſcence* laſts ſo long as the fibres continue to grow, either in magnitude or firmneſs.

It is commonly computed to be between 15 and 25, or even 30 years of age; though in different conſtitutions its terms are very different.—The Romans uſually reckoned it from 12 to 25 in boys; and to 21 in girls, *&c.*—And yet, among their writers, *Juvenis* and *Adoleſcens* are frequently uſed indifferently, for any perſon under 45 years.

The fibres, being arrived at the degree of firmneſs and tenſion ſufficient to ſuſtain the parts, no longer yield and give way to the efforts of the nutritious matter, to extend them: ſo that their farther accretion is ſtopped from the very law of their nutrition.

ADONIA, in antiquity, ſolemn feaſts, in honour of Venus, and in memory of her beloved Adonis.

They were begun by the women; who imitated the cries and lamentations of Venus, for the death of her paramour. —When they were well weary of this, they changed their note, and ſung his praiſes, and made rejoicings, as if he were raiſed to life again: or rather, according to Meurſius, theſe two offices made two diſtinct feaſts, which were held at different times of the year, the one ſix months after the other; Adonis being ſuppoſed to paſs half the year with Proſerpine, and half with Venus.

ADONIC, in poetry, denotes a ſhort kind of verſe, conſiſting of a dactyl, and a ſpondee, or trochee.—As *Rara juventus.*

It takes its name from Adonis; as having been originally uſed in the Threnæ, or lamentations for that favourite.

The chief uſe of the *Adonic* verſe is at the end of each ſtrophe of Sapphic verſe; or among Ariſtophanic anapæſts in the antient tragedy.

ADOPTIANI, in church-hiſtory, a ſect of heretics in the eighth century, whoſe diſtinguiſhing tenet was, that Chriſt, as to his human nature, was not the proper, or natural, but only the adoptive Son of God.

The *Adoptiani* had their riſe under the empire of Charlemaign about the year 783. when Elipand, archbiſhop of Toledo, having conſulted Felix, biſhop of Urgel, about the manner of the filiation of Chriſt, received for anſwer, that Chriſt, in reſpect of his divine nature, is the true and proper Son of God, begotten naturally by the Father; but that the man Chriſt, or the ſon of Mary, was only the adoptive Son of God: to which Elipandus alſo ſubſcribed.

ADOPTION*, ADOPTIO, an act by which any one takes another into his family, owns him for his ſon, and appoints him his heir.

* The word is derived from *adoptare*; whence the Latin barbarous *adobare*, to make a knight: and hence alſo, *miles adobatus*, a knight newly made, or dubbed; he who knighted him, being ſuppoſed in ſome ſenſe to *adopt* him.

The cuſtom of *adopting* was very familiar among the antient Romans, who had an expreſs formula for it.—They firſt learnt it from the Greeks, among whom it was called ὑιοτης, filiation.

As *Adoption* was a ſort of imitation of nature, intended for the comfort of thoſe who had no children; eunuchs were not allowed to adopt; as being under an actual impotency of begetting children.

Neither was it lawful for a young man to *adopt* an elder; becauſe that would have been contrary to the order of nature; but it was even required, that the perſon who *adopted*, ſhould be eighteen years elder than his adoptive ſon; that there might at leaſt appear a probability of his being the natural father.

The Romans had two forms of *Adoption*; the one before the pretor: the other at an aſſembly of the people, in the times of the commonwealth, and afterwards by a reſcript of the emperor.

In the firſt, the natural father addreſſed himſelf to the pretor, declaring that he emancipated his ſon, reſigned all his authority over him, and conſented he ſhould be tranſlated into the family of the adopter.

The latter manner of *Adoption* was practiſed, where the party to be adopted was already free; and this was called *Adrogation.*

The perſon adopted changed all his names; aſſuming the prename, name, and ſurname, of the perſon who adopted him.

The Romans had likewiſe their *teſtamentary Adoptions*, wherein perſons were adopted by the laſt will of the deceaſed; but theſe were never eſteemed valid, till they had been confirmed by the people.

In later times another form of *Adoption* took place; *viz.* by cutting off the hair of a perſon, and delivering it to the father that was to adopt him.

It was this way that pope John VIII. adopted Boſon king of Arles; which perhaps is the only inſtance in hiſtory of *Adoption* in the order of eccleſiaſtics; a law that profeſſes to imitate nature, not daring to give children to thoſe in whom it would be thought a crime to beget any.

M. Bouſſac, in his *Noctes Theologicæ*, gives us divers modern forms of *Adoption*; ſome performed at baptiſm; others by the ſword, *&c.*

ADOPTIVE, ADOPTIVUS, or ADOPTITIUS, denotes a perſon adopted by another.

Adoptive children, among the Romans, were on the ſame footing with natural ones; for which reaſon, they were either to be inſtituted heirs, or expreſly diſinherited; otherwiſe the teſtament was null.

The emperor Adrian preferred *Adoptive* children to natural ones; by reaſon we chooſe the former, but are obliged to take the latter at random.

M. Menage has publiſhed a book of eloges, or verſes addreſſed to him; which he calls *Liber Adoptivus*, an *Adoptive* book; and adds it to his other works.—Heinſius, and Furſtemburg of Munſter, have likewiſe publiſhed *Adoptive* books.

ADOPTIVI, in church-hiſtory. See ADOPTIANI.

ADORATION *, the act of rendering divine honours; or of addreſſing God, or a being, as ſuppoſing it a god. See GOD, and WORSHIP.

* The word is compounded of *ad*, to; and *os*, *oris*, mouth; and literally ſignifies, to apply the hand to the mouth; *Manum ad os admovere*, *q. d.* to kiſs the hand; this being, in the eaſtern countries, one of the great marks of reſpect and ſubmiſſion.

The *Adoration* of idols is called *Idolatry*.

The Romaniſts profeſs a ſubordinate *Adoration* to ſaints, images, relics, the croſs, *&c.*

The election of popes is performed two ways, by *Adoration*, and by ſcrutiny.—In the election by *Adoration*, the cardinals ruſh haſtily, as if agitated by ſome ſpirit, and fall without more ado to the *Adoration* of ſome one among them, and proclaim him pope.

In the election by ſcrutiny, *Adoration* is the laſt thing, and follows the election; as in the other it is the election itſelf, or rather ſuperſedes the election.

AD PONDUS *Omnium*, to the weight of the whole; an abbreviation among phyſicians, *&c.* ſignifying, that the laſt preſcribed ingredient is to weigh as much as all the others put together.

AD QUOD *Damnum*, a writ directed to the ſheriff, commanding him to inquire what hurt may befal the king by granting a fair, or market, in any town, or place.

The ſame writ alſo iſſues for an inquiry to be made of what the king, or other perſon, may ſuffer, by granting lands in fee-ſimple to a convent, chapter, or other body politic; by reaſon ſuch land falls into mortmain; that is, into ſuch condition, that the chief lord loſes all advantage of heriots, ſervice of court, and eſcheats, upon any traiterous or felonious offence committed by the tenant; for that a body politic dies not, nor can perform perſonal ſervice to the king, or their meſn lords; as ſingle perſons may do. See MORTMAIN.

ADRAGANTH, or TRAGACANTH, a ſort of gum. See TRAGACANTH.

ADRESS, or ADDRESS. See the article ADDRESS.

ADROGATION *, in antiquity, a ſpecies of adoption, whereby a perſon who was his own maſter, was taken by another into the relation of a ſon.

* The word is compounded of *ad*, to; and *rogare*, to aſk; on account of a queſtion put in the ceremony of it, whether the adopter would take ſuch perſon for his ſon? and another to the adoptive, whether he conſented to become ſuch a perſon's ſon?

AD TERMINUM *qui præteriit*, is a writ of entry, which lies where a man, having leaſed lands or tenements for term of life, or years, is, after the term expired, held from them by the tenant, or other ſtranger, who enjoys the ſame, and deforceth the leſſor.—The ſame writ alſo lies for the leſſor's heir.

ADVANCE-FOSSE, or *Ditch*, in fortification, denotes a ditch of water round the eſplanade, or glacis of a place; to prevent its being ſurpriſed by the beſiegers. See FOSSE, and GLACIS.

ADVANCE-GUARD, or VAN-GUARD, is the firſt line, or diviſion of an army ranged, or marching in battle-array; or that part of it which is next the enemy, or which marches firſt toward them.

The whole body of an army is divided into *Advance-guard*, arrear-guard, and main-body.

The word is ſometimes alſo applied to a ſmall party of horſe, *viz.* 15, or 20, commanded by a lieutenant, beyond, and in ſight of, the main guard.

ADVANCER, among hunters, is one of the ſtarts, or branches of a buck's attire, between the back antler and the palm.

ADVENT, ADVENTUS, in the calendar, the time immediately preceding Chriſtmas; antiently employed in pious preparation for the *Adventus*, or coming on, of the feaſt of the Nativity.

Advent includes four ſundays, or weeks; commencing either from the Sunday which falls on St. Andrew's day, or that next before or after it, *i. e.* from the Sunday which falls between the 27th of November, and the third of December incluſive.—But it is to be noted, this rule has not always obtained.—In the Ambroſian office, there are ſix weeks marked for *Advent*; and St. Gregory, in his Sacramentary, allows five.

The firſt week of *Advent*, in our way of reckoning, is that wherein it begins; but it was antiently otherwiſe; the week next Chriſtmas being reputed the firſt; and the numeration carried backwards.

Great auſterity was practiſed in the antient church during this ſeaſon.—At firſt they faſted three days a week; but they were afterwards obliged to faſt every day: whence the ſeaſon is frequently called in antient writers, *Lent*, and *Quadrageſima S. Martini*.

The courts of juſtice were at one time all ſhut.—In advent, under king John, it was expreſly declared, that *in Adventu Domini nulla aſſiſa capi debet*: but this was afterwards altered by the ſtatute of Weſtminſter; and it was made lawful, in reſpect of juſtice and charity, which ought at all times to be regarded, to take aſſizes of novel diſſeiſin, mort d'anceſtre, and darrein preſentment, in the time of *Advent*, Septuageſima, and Lent.

ADVENT is alſo one of the times, from the beginning whereof, to the end of the octaves of the Epiphany, the ſolemnizing of marriage is forbid, without expreſs licence. See MARRIAGE.

ADVENTITIOUS, ſomething accruing, or befalling a perſon, or thing, from without.

Thus, *Adventitious* matter is ſuch matter as doth not properly belong to any body, but is caſually joined to it.

ADVENTITIOUS, in the civil law, is applied to ſuch goods as fall to a man, either by mere fortune, or by the liberality of a ſtranger, or by collateral, nor direct ſucceſſion.

In this ſenſe the word ſtands oppoſed to *Profectitious*; by which are ſignified ſuch goods as deſcend in a direct line, from father to ſon.

AD VENTREM *inſpiciendum*, in law. See VENTRE *inſpiciendo*.

ADVENTURE *, an extraordinary, and ſurpriſing enterprize, or accident, either real, or fictitious.

* The word is French, and literally denotes an event, or accident.

Novels, romances, *&c.* are chiefly taken up in relating the *Adventures* of cavaliers, lovers, *&c.*

Mine-ADVENTURE. See the article MINE-*Adventurer*.

ADVERB, ADVERBIUM, in grammar, a particle joined to a verb, adjective, or participle, to explain their manner of acting or ſuffering; or to mark ſome circumſtance or quality ſignified by them.

The word is formed from the prepoſition *ad*, to; and *verbum*, a verb; and ſignifies literally a word joined to a verb, to ſhew how, or when, or where, one is, does, or ſuffers: as, the boy paints *neatly*, writes *ill*; the houſe ſtands *there*, &c.

Not that the *Adverb* is confined purely to the verbs; but becauſe that is its moſt ordinary uſe. Whence it becomes ſo denominated κατ' ἐξοχην. We frequently find it joined to adjectives, and ſometimes even to ſubſtantives, particularly where thoſe ſubſtantives ſignify an attribute, or quality of the thing ſpoken of; *v. gr.* he is *very* ſick; he is *truly* king.

An *Adverb* is likewiſe joined ſometimes to another *Adverb*, to modify its meaning: *v. gr.* very devoutly, *&c.* Whence ſome grammarians chooſe rather to call *Adverbs* modificatives; compriſing under this one general term, both *Adverbs*, conjunctions, prepoſitions, and even adjectives.

Adverbs are very numerous; but they may be reduced under the general claſſes of *Adverbs* of time, of place, of order, of quantity, of quality, of manner, of affirmation, of doubting, and of compariſon.

ADVERSARIA, among the antients, was uſed for a book of accounts, like our journal or day-book.

Hence, ADVERSARIA is ſometimes alſo uſed among us for a *common-place-book*.

ADVERSARY *. See ANTAGONIST.

* The word is formed of the Latin prepoſition *adverſus*, againſt; from *ad*, to; and *vertere*, to turn.

ADVERSATIVE, in grammar.—A particle *Adverſative*, is that which expreſſes ſome difference, or oppoſition between what goes before, and what follows.

Thus, *or* is an *Adverſative*; *v. gr.* in yes, *or* no.

ADVERTISEMENT *, an intelligence, or information, given to perſons intereſted in an affair.

* The word is formed either of the French *Avertiſſement*, or from the Latin *advertere*, to turn to, to advert, conſider, regard.

ADULT *, ADULTUS, one who is arrived at years of diſcretion; and entered upon manhood, or the age of adoleſcence; and is old enough to have underſtanding, and diſcernment.

* The word is formed from the participle of the verb *adoleſcere*, to grow up. See ADOLESCENCE.

There is a notable difference between the proportions of infants and *Adults*.—A man, Mr. Dodart obſerves, formed like a fœtus, would be a monſter, and would ſcarce be acknowleged for one of the ſpecies.—The Anabaptiſts confer the ſacrament of baptiſm upon none but *Adults.* See BAPTISM, and ANABAPTIST.

ADULTERATION *, in a general ſenſe, the act of corrupting, or debaſing a thing that was pure, by ſome improper admixture.

* The word is Latin; formed of the verb *adulterare*, to corrupt, by mingling ſomething foreign (*ad alterum*, to another) to any ſubſtance.

We have laws againſt the *Adulteration* of coffee, tea, tobacco, ſnuff, wine, wax, hair-powder, *&c.*

To adulterate or debaſe the current coin, is a capital crime in all nations.—The antients puniſhed it with great ſeverity: among the Egyptians both hands were cut off; and by the civil law, the offender was thrown to wild beaſts: the emperor Tacitus enacted, that counterfeiting the coin ſhould be capital: and under Conſtantine it was made treaſon, as it is alſo among us. *Arbuth. Diſſ. p.* 8.

ADULTERINE, in the civil law, is particularly applied to a child iſſued from an adulterous amour, or commerce.

Adulterine children are more odious than the illegitimate offſpring of ſingle perſons.—The Roman law even refuſes them the title of natural children; as if nature diſowned them.

ADULTERY, ADULTERIUM (in antient law-books called ADVOWTRY), a crime committed by married perſons againſt the faith pledged to each other in marriage; by having carnal commerce with ſome other: or even by a perſon not married; by having to do with another that is.

The antient Romans had no formal law againſt *Adultery*; but both the accuſation, and puniſhment, were arbitrary.—The emperor Auguſtus was the firſt who brought them into a law; which he had the misfortune to ſee executed in the perſons of his own children.—This was the Julian law, by which *Adultery* was puniſhed with death. But though this law left the accuſation of *Adultery* open to every body; yet it is certain, *Adultery* has been always looked upon as a private and domeſtic crime, rather than a public one; ſo that ſtrangers were ſeldom ſuffered to proſecute, eſpecially where the couple were peaceable, and the huſband made no complaint.

Some of the ſucceeding emperors abrogated this law, which left the accuſation of *Adultery* open to ſtrangers; in regard ſuch accuſation could not be entered without ſetting the huſband and wife at variance, throwing the children into a ſtate of uncertainty, and bringing contempt and deriſion upon the huſband; for as the huſband is the nearlieſt intereſted in the matter, it is ſuppoſed he will examine his wife's actions with more circumſpection than any other: ſo that where he is ſilent, it is not fair any body elſe ſhould ſpeak for him.

For this reaſon, the law, in ſome caſes, has made the huſband both judge, and executioner, in his own cauſe; and has allowed him to revenge himſelf of the injury, by taking away the lives of the adulterers whom he ſhould apprehend in the act.—It is true, where the huſband made a trade of his wife's infamy, or where having ſeen her ſhame with his own eyes, he has yet ſuffered patiently, and diſſembled the affront; in theſe caſes, *Adultery* became a crime of public concern: and the Julian law provides puniſhment for ſuch huſbands, as well as for their wives.

In moſt European countries, at this day, *Adultery* is not a public crime; and none but the huſband is ſuffered to intermeddle, excepting where the ſcandal is very notorious.—Even the king's advocates, attorney, or the like, may not intermeddle.

Add, that though the huſband who violates the conjugal bond be guilty of *Adultery* as well as the wife, yet is not the wife allowed to accuſe or proſecute him for the ſame.

Socrates relates, that under the emperor Theodoſius, in the year 380. women convicted of *Adultery* were puniſhed by a public conſtupration.

Lycurgus puniſhed the adulterer as a parricide.—The Locrians tore out his eyes; and moſt of the orientals ſtill puniſh him very ſeverely.

The Saxons formerly burnt the adultreſs, and over her aſhes erected a gibbet, whereon the adulterer was hanged.—In England, king Edmund puniſhed *Adultery* as homicide; but Canutus ordained the man to be baniſhed, and the woman to have her noſe and ears cut off.—*Qui uxoratus faciet* Adulterium, *habet rex vel dominus ſuperiorem*; *Epiſcopus inferiorem.* L. Hen. I. *c.* 12. *De* Adulterio *per totam Chent* (*Cantium*) *habet Rex hominem*, *Epiſcopus mulierem.* Domeſday, tit. Ceſtre Civit.

In Spain, they puniſhed *Adultery* in men by cutting off that part which had been the inſtrument of the crime.

In Poland, before Chriſtianity was eſtabliſhed, they puniſhed *Adultery* and fornication in a very particular manner: the criminal they carried into the market-place, and there faſtened him by the teſticles with a nail: laying a razor within his reach, and leaving him under a neceſſity either of doing juſtice upon himſelf, or of periſhing in that condition.

By the civil law, as altered by Juſtinian, who, at the inſtance of his wife Theodora, mitigated the ſeverity of the *lex Julia*, *Adultery* is puniſhed with whipping, and ſhutting up in a convent for two years: during which time, if the huſband do not conſent to take her back again, ſhe is ſhaven and ſhut up for life.—This is called *authenticating*, as having been eſtabliſhed by an authentic.

At preſent the laws are ſtill more favourable.—To divorce, and ſtrip the adultreſs of her dower, is all her puniſhment among us: in the Romiſh countries, they alſo ſhut her up in a nunnery.—The whipping is omitted in France, to make the huſband leſs averſe to take her back again within the two years.

The Lacedemonians, inſtead of puniſhing *Adultery*, permitted it, or at leaſt tolerated it; as we are told by Plutarch.

According to ſome of the papal deciſions, *Adultery* renders marriage between the two criminals unlawful; this making what the ſchools call *impedimentum criminis*.

The Greeks, and other Chriſtians throughout the eaſt, adhere to the opinion, that *Adultery* diſſolves the bond of marriage: ſo that the huſband, without more ado, may marry another.—The council of Trent condemns that opinion; and even in ſome meaſure anathematizes thoſe who hold it, *Seſſ.* XXIV. *Can.* 7.

ADULTERY is alſo uſed by ſome fanciful aſtronomers and aſtrologers, for an eclipſe of the ſun, or moon; happening in an unuſual, and, as they ſuppoſe, irregular manner: as in the caſe of horizontal eclipſes; where, though the ſun and moon be diametrically oppoſite, yet they appear as if both above the horizon at the ſame time.

ADVOCATE *, ADVOCATUS, among the Romans, a perſon ſkilled in their law, and who undertook the defence of cauſes at the bar.

* The word is compounded of *ad*, to; and *vocare*, to call: *q. d.* I call to my aid or defence.

The Roman *Advocates* anſwered to one part of the office of a barriſter among us, *viz.* the pleading part; for, as to the giving counſel, they never meddled with it: that being the buſineſs of the juriſconſulti.

The Romans, in the firſt ages of their ſtate, held the profeſſion of an *Advocate* in great honour; and the ſeats of their bar were crouded with ſenators, and conſuls; they, whoſe voices commanded the people, thinking it an honour to be employed in defending them.

They were ſtiled, *Comites*, *Honorati*, *Clariſſimi*, and even *Patroni*; as if their clients were not leſs obliged to them, than freed-men to their maſters. See PATRON, and CLIENT.

The bar was not at that time venal.—Thoſe who aſpired to honours, and offices, took this way of gaining an intereſt in the people, and always pleaded *gratis*.

But no ſooner were luxury and corruption brought into the commonwealth, than the bar became a ſharer in them.—Then it was that the Senators lett out their voices for pay, and zeal and eloquence were ſold to the higheſt bidder.—To put a ſtop to this abuſe, the tribune Cincius procured a law to be paſſed, called from him, *Lex Cincia*, whereby the *Advocates* were forbid to take any money of their clients.—Fred. Brunnerus has publiſhed an ample comment upon this law.

It had before this been prohibited the *Advocates* to take any preſents or gratuities for their pleading.—The emperor Auguſtus added a penalty to it: notwithſtanding which, the *Advocates* played their part ſo well, that the emperor Claudius thought he did a great thing, when he obliged them not to take above eight great ſeſterces, which are equivalent to upwards of 64 pounds ſterling, for pleading each cauſe.

ADVOCATE is ſtill uſed in countries, and courts, where the civil law obtains, for thoſe who plead and defend the cauſes of clients truſted to them.

In Scotland they have a college, or *Faculty of Advocates*, 180 in number, appointed to plead in all actions before the lords of ſeſſion.—They have a dean, treaſurer, clerks, examinators, and a curator of their library.

By the articles of the union, none are to be named ordinary lords of ſeſſion, except thoſe who have been *Advocates*, or principal clerks of ſeſſion, for five years, *&c.*

In France, they have two kinds of *Advocates*, viz. pleading *Advocates*, *Avocats Plaidants*; and counſel *Advocates*, *Avocats Conſultants*.

This diſtinction was formed with a view to the two branches among the Romans, *Advocati*, and *Juriſconſulti.*—Yet there is this difference, that the function of the *Juriſconſulti*, who only gave their bare advice, was of a different kind from that of the *Advocati*; being a ſort of private, and perpetual magiſtrature, principally under the firſt emperors; and the *Advocati* never became *Juriſconſulti*. Whereas, on the other hand, in France, after the *Advocates* have attained to reputation, and experience enough at the bar, they quit ſo buſy a province, and become as it were chamber-counſel.—They have alſo their *Advocate* general, and king's *Advocate*, *Avocat du Roy*.

Lord ADVOCATE, in Scotland, is one of the officers of ſtate, whoſe buſineſs is to give his advice about the making and executing of laws; to defend the king's right and intereſt in all public meetings; to proſecute all capital crimes before the juſticiary; and to concur in all purſuits before ſovereign courts for breaches of the peace; and alſo in all matters wherein the king, or his donator, has intereſt.—He intents no proceſſes of treaſon, except by warrant of privy-council.

The *Lord Advocate* is ſometimes an ordinary lord of ſeſſion; in which caſe, he only pleads in the king's cauſes; otherwiſe, he is at liberty to plead in all cauſes.

Fiſcal ADVOCATE, *Fiſci* ADVOCATUS, was an officer inſtituted by the emperor Adrian, to defend the cauſe and intereſts of the *Fiſcus*, or private treaſury, in the ſeveral tribunals where that might be concerned. See FISCUS.

Conſiſtorial ADVOCATE, is an officer of the court of Rome, whoſe buſineſs it is to plead on the oppoſitions made to the proviſions of benefices in that court. See PROVISION. There are ten of theſe in number.

ADVOCATE *of a City*, or *Town*, is a magiſtrate eſtabliſhed in ſeveral places of Germany, for the adminiſtration of juſtice in that city, in the emperor's name. See ADVOWEE.

ADVOCATE * is more particularly uſed, in church-hiſtory, for a perſon appointed to defend the rights and revenues of a church, or religious houſe.

* In this ſenſe it amounts to the ſame with *Advowee*, *Defenſor*, *Conſervator*, *Oeconomus*, *Cauſſidicus*, *Mundiburdus*, *Tutor*, *Actor*, *Lay Paſtor*, *Vidame*, or *Scholaſticus*.

The word *Advocatus*, or *Advowee*, is ſtill retained, for what we uſually call the *Patron*, or he who has the advowſon, or right of preſentation, in his own name.

The abbeys and monaſteries had alſo all their *Advocates*, or *Advowees*.

ADVOCATIONE *Decimarum*, a writ which lies for the claim of the fourth part, or upward, of the tithes that belong to any church. See TITHE.

ADVOWEE*, in antient cuſtoms, and law-books, denotes the *advocate* of a church, religious houſe, or the like.

* The word is otherwiſe written *Avouee*, *Advouee*, and *Avowee*, ſometimes *Advoyer*; being derived from the French *Avouer*, to own, or acknowlege.

There were *Advowees* of cathedrals, abbeys, monaſteries, &c.—Thus, Charlemaign had the title of *Advowee* of St. Peter's; king Hugh, of St. Riquier; and Bollandus mentions ſome letters of pope Nicolas, by which he conſtituted king Edward the Conſeſſor, and his ſucceſſors, *Advowees* of the monaſtery at Weſtminſter, and of all the churches in England.

Theſe *Advowees* were the guardians, protectors, and, as it were, adminiſtrators of the temporal concerns of the churches, &c. and under their authority were paſſed all contracts which related thereto.

It appears alſo, from the moſt antient charters, that the donations made to churches were conferred on the perſons of the *Advowies*.—They always pleaded the cauſes of the churches in court, and diſtributed juſtice for them, in the places under their juriſdiction.—They alſo commanded the forces furniſhed by their monaſteries, &c. for the war; and even were their champions, and ſometimes ſtood duels for them.

This office is ſaid to have been firſt introduced in the fourth century, in the time of Stilico; though the Benedictines do not fix its origin before the eighth century. *Act. Sanct. Benedict.* S. III. P. 1. Præf. p. 91, &c.

By degrees, men of the firſt rank were brought into it, as it was found neceſſary, either to defend with arms, or to protect with power and authority. In ſome monaſteries, they were only called *Conſervators*; but theſe, without the name, had all the functions of *Advowees*.

There were alſo ſometimes ſeveral *Sub-Advowees*, or ſub-advocates, in each monaſtery, who officiated inſtead of the *Advowees* themſelves; which, however, proved the ruin of monaſteries; thoſe inferior officers running into great abuſes.

Hence alſo, huſbands, tutors, and every perſon in general, who took upon him the defence of another, were denominated *Advowees*, or advocates.—Hence ſeveral cities had their *Advowees*; which were eſtabliſhed long after the eccleſiaſtical ones, and doubtleſs from their example.—Thus, we read in hiſtory of the *Advowees* of Augſburg, of Arras, &c.

The vidames aſſumed the quality of *Advowees*; and hence it is, that ſeveral hiſtorians of the eighth century confound the two functions together. See VIDAME.

Hence alſo it is, that ſeveral ſecular lords in Germany bear mitres for their creſts, as having antiently been *Advowees* of the great churches.

Spelman diſtinguiſhes two kinds of eccleſiaſtical *Advowees*.—The one, of cauſes, or proceſſes, *Advocati Cauſarum*, the other, of territory, or lands, *Advocati Soli*.

The former were nominated by the king, and were uſually lawyers, who undertook to plead the cauſes of the monaſteries.

The other, which ſtill ſubſiſt, and are ſometimes called by their primitive name, *Advowees*, though more uſually patrons, were hereditary; as being the founders and endowers of churches, &c. or their heirs. See PATRON.

Women were ſometimes *Advowees*, *Advocatiſſæ*. And, in effect, the canon law mentions ſome who had this title, and who had the ſame right of preſentation, &c. in their churches, which the *Advowees* themſelves had.

In a ſtat. 25 *Edw.* III. we meet with *Advowee Paramoumt*, for the higheſt patron; that is, the king.

There were alſo *Advowees* of countries, and provinces.—In a charter of the year 1187. Berthold duke of Zeringhen is called *Advowee* of Thuringia; and in the *Notitia* of the Belgic churches, publiſhed by Miræus, the Count of Lovain is ſtiled count and *Advowee* of Brabant.—In the eleventh and twelfth centuries, we alſo meet with the *Advowees* of Alſatia, of Suabia, &c.

Raymond d'Agiles relates, that after the recovery of Jeruſalem from the Saracens, it being propoſed to elect a king thereof; the biſhops pleaded, *Non debere ibi eligi regem, ubi Deus paſſus & coronatus eſt*, &c. That "they ought by no "means to appoint a king, in a place where God had ſuf"fered and been crowned; but ſhould content themſelves "with electing an *Advowee*, or advocate of the city, to take "care of the gariſon, &c.—In effect, Dodechin, a German abbot, who wrote a voyage to the Holy Land in the twelfth century, calls Godfrey of Bulloign *Advowee of the holy ſepulchre*.

ADVOWING *, or AVOWING, ADVOCARE, in law, the juſtifying, or maintaining, an act formerly done.

* Bracton, and other antient lawyers, uſe the Latin term *Advocare*, in the ſame ſignification; as *Advocatio diſſeiſinæ*, L. IV. c. 26. Caſſaneus alſo uſes the ſubſtantive *Deſavobamentum*, for a diſavowing, or refuſing to *avow*.

Thus, if one take a diſtreſs of rent, or other thing, and he that is diſtrained ſues a replevin, the diſtrainer, juſtifying or maintaining the act, is ſaid to *avow*.

The original uſe of the word was this.—When ſtolen goods were bought by one, and ſold to another, it was lawful for the right owner to take them where-ever they were found; and he in whoſe poſſeſſion they were found, was bound *Advocare*, *i. e.* to produce the ſeller to juſtify the ſale, and ſo on till they came at the thief.

Afterwards, the term was applied to any thing which a man acknowleged to be his own, or done by himſelf; in which ſenſe, it is mentioned by Fleta, L. I. pars 4. *Si vir ipſum in domo ſua ſuſceperit, nutrierit &* advocaverit *filium ſuum*.

ADVOWSON, ADVOCATIO, the quality, or office, of an *Advowee*, or advocate.

ADVOWSON, or ADVOUZEN, in common law, ſignifies a right to preſent to a vacant benefice.

In this ſenſe, the word imports as much as *Jus patronatus* in the canon law. See PATRONAGE.

The reaſon of the name *Advowſon*, *Advocatio*, is, that antiently thoſe who had a right to preſent to a church, were maintainers of it, or great benefactors to it; and were ſometimes called *Patroni*, and ſometimes *Advocati*, or *Advowees*.

In the general, an *Advowſon* is where either a biſhop, dean and chapter, or a lay-patron, have a right to preſent whom they pleaſe to any ſpiritual benefice, when it becomes void.

This *Advowſon* is of two kinds.—*Advowſon in groſs*, that is, not immediately reſtrained, or adhering to any manor, as parcel thereof.

And *Advowſon appendant*, which depends on a manor, as appurtenant to it—This Kitchen calls an *incident*, which may be ſeparated from its ſubject.

Add, that as the builders and endowers of a church were the patrons of it; ſo thoſe who founded any religious houſe, had the *Advowſon* or patronage of it.

Sometimes the patron had the ſole nomination of the prelate, abbot, or prior; either by inveſtiture (*i. e.* delivery of a paſtoral ſtaff), or by direct preſentation to the dioceſan: and if a free election was left to the religious, yet a *congé d'élire*, or licence of election, was firſt to be obtained of the patron, and the perſon elected was confirmed by him.

If the founder's family became extinct, the patronage of the convent went to the lord of the manor.—Unleſs the ſeveral colleges in the univerſities be reſtrained in the number of *Advowſons* they may receive; it is argued they will in time acquire ſuch a ſtock, as to fruſtrate the deſign of their foundation (which is the education of youth) by creating too quick a ſucceſſion of fellows; ſo that there will not be in the colleges a ſufficient number of perſons of ſufficient age, knowlege, and experience,

rience, to inſtruct and form the minds of the youth.—In ſome colleges the number of *Advowſons* is ſaid to be already two thirds, or more, of the number of fellows.—'Tis objected, on the other ſide, that the ſucceſſion of fellows may be two ſlow, as well as too quick; whereby perſons well qualified may be detained ſo long in colleges, as not to have ſtrength or activity enough left for the diſcharge of parochial functions. V. *Kenn. Paroch. Antiq. in voc.*

ADVOWTRY. See the article ADULTERY.

ADUST *, ADUSTUS, among phyſicians, *&c.* is applied to ſuch humours, as by long heat become of a hot and fiery nature.

* The word is formed of the Latin *adurere*, to burn.

Such is choler ſuppoſed to be.—Melancholy is uſually conſidered as black, and *aduſt* bile.

Blood is ſaid to be *aduſt*, when, by reaſon of ſome extraordinary heat, its more ſubtile parts are all evaporated, leaving the groſſer, with all the impurities therein, half torrified, as it were.

ADYTUM *, Αδυτον, a ſecret or retired place in the Pagan temples, where oracles were given, and into which none but the prieſts were admitted.

* The word, originally Greek, ſignifies inacceſſible; being compounded of α, not; and δυω, or δυνω, to enter.

ADZE, or ADDICE, a cutting tool, of the ax-kind; having its blade made thin, and arching; and its edge at right angles to the handle; chiefly uſed for taking thin chips of timber or boards, and for paring away certain irregularities which the ax cannot come at.

The *Adze* is uſed by carpenters, but more by coopers, as being convenient for cutting the hollow ſides of boards, *&c.* It is ground from a baſe on its inſide to its outer edge; ſo that, when it is blunt, they cannot well grind it without taking its helve out of the eye.

AE, or Æ, a diphthong, or double vowel, compounded of A and E.

Authors are by no means agreed as to the uſe of the *æ* in Engliſh words.—Some, out of regard to etymology, inſiſt on its being retained in all words, particularly technical ones, borrowed from the Greek and Latin; while others, from a conſideration that it is no proper diphthong in our language, its ſound being no other than that of the ſimple *e*, contend, that it ought to be intirely diſuſed, except in words which retain the Latin and Greek form in every thing elſe.

For our own part, till the point is a little better ſettled, we muſt be contented to ſteer a kind of middle courſe; conforming ourſelves to cuſtom as nearly as may be.—Such articles, therefore, as are omitted under *Æ*, the reader may pleaſe to look for under *E*.

ÆACEA, in antiquity, ſolemn feaſts and combats, celebrated in Ægina, in honour of Æacus, who had been their king, and who, on account of his ſingular juſtice upon earth, was ſuppoſed to have a commiſſion given him, to be one of the judges in hell.

ÆCHMALOTARCHA, Αιχμαλωταρχης, in antiquity, a Greek term, ſignifying, the chief, or leader, of the Jewiſh captives in Babylonia.

The Jews, who refuſed to follow Zorobabel, and return with him to Jeruſalem, after the Babyloniſh captivity; created an *Æchmalotarch*, to govern them.—Not that the Jews themſelves called him by this name, as ſome authors have aſſerted; for that people ſpoke Hebrew, or Chaldee, not Greek. But Origen, and others, who wrote in the Greek tongue, rendered the Hebrew name ראשגלות *Roſch galuth*, q. d. *Chief of the Captivity*, by a Greek name of the like import, αιχμαλωταρχος, formed from αιχμαλωτος, captive; of αιχμη, point, ſpear, or war; and αρχων, commander, chief.

However, the Jews ſeem to have had officers of this kind before the return from Babylon: witneſs the hiſtory of Suſanna; the two elders, who condemned her, being ſuppoſed to have been *Æchmalotarchæ* that year.—The Jewiſh writers aſſure us, that the *Æchmalotarchæ* were only to be choſen out of the tribe of Judah.

ÆDES, in antiquity, a chapel, or inferior kind of temple, diſtinguiſhed by this, that it was not conſecrated by the augurs, as thoſe properly called temples were. See TEMPLE.

Such was the *Ærarium*, or treaſury; called *Ædes Saturni*. See ÆRARIUM.

ÆDILE *, ÆDILIS, in antiquity, a Roman magiſtrate, veſted with divers functions, chiefly that of ſuperintending the buildings, both public and private; as baths, aqueducts, roads, bridges, cauſeways, *&c.*

* The word is formed of *Ædes*, temple, or houſe; on account of their having the care of temples, houſes, *&c.*

The *Ædiles* at Rome correſponded to what the Greeks called *Agoranomi*, and *Aſtynomi*: they differed from *Oeconomi* and *Arcarii*, who were rather receivers of the revenues; alſo from *Logiſtæ*, *Curatores & Patres civitatis*.

To the *Ædiles* belonged the inſpection of the weights and meaſures. They fixed the rates of proviſions, and took care the people were not exacted on therein. The inquiry and cognizance of debauchees, and diſorders in public houſes, likewiſe belonged to them: they were alſo to reviſe comedies; and it belonged to them to treat the people with grand games, and ſpectacles, at their own expence.

To the *Ædiles* alſo belonged the cuſtody of the plebiſcita, and the cenſure and examination of books. They had the power, on certain occaſions, of iſſuing edicts; and, by degrees, they procured to themſelves a conſiderable juriſdiction, the cognizance of various cauſes, *&c.*—This office ruined numbers, by its expenſiveneſs; ſo that, in Auguſtus's time, even many ſenators declined it, on that account.

All theſe functions, which rendered the *Ædiles* ſo conſiderable, belonged at firſt to the *Ædiles* of the people, *Ædiles plebeii*, or *minores*: theſe were only two in number, and were firſt created in the ſame year as the tribunes: for the tribunes, finding themſelves oppreſſed with the multiplicity of affairs, demanded of the ſenate to have officers, whereon they might diſcharge themſelves of matters of leſs importance; and, accordingly, two *Ædiles* were created: and hence it was, that the *Ædiles* were elected every year, at the ſame aſſembly as the tribunes.

But theſe plebeian *Ædiles* having refuſed, on a ſignal occaſion, to treat the people with ſhews, as pleading themſelves unable to ſupport the expence thereof; the patricians made an offer to do it, provided they would admit them to the honours of the *Ædilate*.

On this occaſion, there were two new *Ædiles* created, of the number of the patricians, in the year of Rome 388. they were called *Ædiles curules*, or *majores*; as having a right to ſit on a *curule* chair, enriched with ivory, when they gave audience; whereas the plebeian *Ædiles* only ſat on benches. See CURULE.

Beſides that the curule *Ædiles* ſhared all the ordinary functions with the plebeian, their chief employ was, to procure the celebration of the grand Roman games, and to exhibit comedies, ſhews of gladiators, *&c.* to the people.

To eaſe theſe four firſt *Ædiles*, Cæſar created a new kind, called *Ædiles Cereales*, as being deputed chiefly to take care of the corn, which was called *donum Cereris*; for the heathens honoured Ceres as the goddeſs who preſided over corn, and attributed to her the invention of agriculture. Theſe *Ædiles Cereales* were alſo taken out of the order of patricians. In the municipal cities there were *Ædiles*, with the ſame authority as at Rome.

We alſo read of an *Ædilis alimentarius*, expreſſed in abbreviature by *Ædil. alim.* whoſe buſineſs ſeems to have been to provide diet for thoſe who were maintained at the public charge, though others aſſign him a different office.

In an antient inſcription we alſo meet with *Ædile* of the camp, *Ædilis caſtrorum*.

ÆGILOPS *, in medicine, a tumour, or rather ulcer, in the great angle of the eye; either with, or without, an inflammation.

* The word, in its original Greek, αιγιλωψ, ſignifies a goat's eye; compounded of αιξ, goat, and ωψ, eye; in regard, goats are ſuppoſed extremely liable to this diſtemper.

Authors frequently uſe the words *Ægilops*, *Anchilops*, and *Fiſtula Lachrymalis*, promiſcuouſly; but the more accurate, after Ægineta, make a difference.—The tumour, ere it becomes ulcerous, is properly called *Anchilops*; and, after it is got into the lachrymal paſſages, and has rendered the os lachrymale carious, *Fiſtula Lachrymalis*.

If the *Ægilops* be accompanied with an inflammation, it is ſuppoſed to take its riſe from the abundance of blood, which a plethoric habit diſcharges on the corner of the eye.—If it be without an inflammation, it is ſuppoſed to proceed from a viſcous pituitous humour, thrown upon this part. The method of cure is the ſame as that of the ophthalmia.

If the *Ægilops* be neglected, it burſts, and degenerates into a fiſtula, which eats into the bone. See FISTULA.

ÆGIPAN *, in antiquity, a denomination given to Pan, and the Panes. See SATYR.

* The word is compounded of αιξ, αιγος, goat; he being repreſented with the horns, legs, feet, *&c.* of that animal.

The antients alſo give the name *Ægipans* to a ſort of monſters mentioned by Pliny, Solinus, and Pomp. Mela, L. I. c. 8.—Salmaſius, in his notes on Solinus, takes *Ægipan* to have ſignified the ſame, in Libya, with *Sylvanus* among the Romans. See SYLVAN.

Voſſius rejects the opinion, and ſhews, that the *Ægipans* had not faces like men, as the Sylvans had; but like goats. In effect, the whole upper part of the body reſembled that animal; and as to the lower, they painted it with a fiſh's tail. The monſter repreſented on ſome medals of Auguſtus, by antiquaries called *Capricornus*, appears to be the true *Ægipan*.

ÆGIS, in the antient mythology, a name given to the ſhield, or buckler, of Jupiter, and Pallas.

The goat Amalthea, which had ſuckled Jove, being dead; that god is ſaid to have covered his buckler with the ſkin thereof: whence the appellation *Ægis*, from αιξ, αιγος, ſhe-goat.

Jupiter, afterwards reſtoring the beaſt to life again, covered it with a new ſkin, and placed it among the ſtars.

As to his buckler, he made a preſent of it to Minerva; whence that goddeſs's buckler is alſo called *Ægis*, in Virgil, *Æneid*, L. VIII. v. 354. and 435. and by other authors.

Minerva, having killed the Gorgon Meduſa, nailed her head in the middle of the *Ægis*, which henceforth had the faculty of converting into ſtone all thoſe who looked thereon; as Meduſa herſelf had done during her life. See *Hom. Iliad.* L. 5.

Others take the *Ægis* not to have been a buckler, but a cuiraſs, or breaſt-plate: and it is certain, the *Ægis* of Pallas, deſcribed by Virgil, *Æneid.* L. VIII. v. 435. muſt have been a cuiraſs; ſince the poet ſays expreſly, that Meduſa's head was on the breaſt of the goddeſs. But the *Ægis* of Jupiter, mentioned a little higher, v. 354. ſeems to have been a buckler. The words

Cum ſæpe nigrantem
Ægida *concuteret dextra*,

agreeing very well to a buckler; but not at all to a cuiraſs, or breaſt-plate.

Servius makes the ſame diſtinction on the two paſſages of Virgil: for on v. 354. he takes the *Ægis* for the buckler of Jupiter, made, as above-mentioned, of the ſkin of the goat Amalthea: and on verſe 435. he deſcribes the *Ægis* as the armour which covers the breaſt; and which, in ſpeaking of men, is called *Cuiraſs*; and *Ægis*, in ſpeaking of the gods. Many authors have overlooked theſe diſtinctions for want of going to the ſources.

ÆGYPTIACUM, in medicine, a name given to divers unguents of the detergent, or corroſive kind. See UNGUENT, *&c.*

We meet with a *black*, a *red*, a *white*, a *ſimple*, a *compound*, and a magiſtral *Ægyptiacum*.

The *ſimple Ægyptiacum*, which is that uſually found in our ſhops, is a compoſition of verdegris, vinegar, and honey, boiled to a conſiſtence: the preſcription is Meſue's.—It is uſually ſuppoſed to take its name from its duſky colour, wherein it reſembles that of the natives of Egypt.—It is improperly called an unguent; as there is no oil, or other fat, in it. Some chooſe to call it *Mel Ægyptiacum.* It is chiefly uſed for eating off rotten fleſh, and cleanſing foul ulcers; particularly venereal ones in the throat, *&c.* It alſo deſtroys thoſe cancerous eroſions, apt to grow in childrens mouths.

ÆNIGMA *, a propoſition put in obſcure, ambiguous, and generally contradictory terms, to puzzle, or exerciſe the wit, in finding out its meaning: or, an obſcure diſcourſe, covering ſome common and well known thing, under remote and uncommon terms.

* The word is Greek, Αινιγμα; formed of αινιττεσθαι, *obſcure innuere*, to hint a thing darkly; of αινος, an obſcure ſpeech, diſcourſe. The Latins ſometimes call it *ſcirpus*, *ſirpus*, or *ſcrupus*, Gel. l. 12. c. 6. The popular with us name it *riddle*; from the Belgic *raeden*, or the Saxon *aractban*, to interpret.

Fran. Junius defines an *Ænigma* to be an obſcure parable, or allegory; and makes two kinds: the one *greater*, rendering the ſentence more intricate and knotty, by a multitude of words; the other *leſſer*, conſiſting of only one or two remote words, or alluſions; as in Iſaiah, Ch. XI. 1. where Jeſus Chriſt is called נצר, *ſurculus*, rod, or branch.

Fa. Bouhours, in the memoirs of Trevoux, defines an *Ænigma*, a diſcourſe, or painting, including ſome hidden meaning, which is propoſed to be gueſſed.

Painted Ænigma's are repreſentations of the works of nature, or art, concealed under human figures, drawn from hiſtory, or fable. Thus Jeſus Chriſt, in the middle of the doctors, repreſents the bible, *&c.*

A *Verbal Ænigma* is a witty, artful, and abſtruſe deſcription of any thing. Bouhours.

Fa. Meneſtrier has given us a learned treatiſe of *Ænigma's*, and ænigmatical figures.

The uſe of *Ænigma's* was very great among the Egyptians. That people, Gale obſerves, covered their doctrines, both of divine, human, and natural things, under this ſort of diſguiſes. Thus ſome of the ſtars, Clemens Alexand. *Strom.* 5. obſerves, were, on account of their oblique motions, likened to ſerpents, the ſun to a crocodile, a ſhip, *&c.*

Gale thinks, they might borrow the cuſtom from the Hebrews, among whom, it is certain, the *Ænigmatic* way was not leſs in uſe. Witneſs Samſon's riddle, Judg. XIV. 12, 13. *I will now put forth a riddle to you*, &c. חידה *i. e.* according to Vatable, an *Ænigmatical* problem: the LXX render it, προβλημα. *Out of the eater came forth meat, and out of the ſtrong came forth ſweetneſs.* Where, by *eater* and *ſtrong*, is meant a lion; and by *meat*, honey. Solomon is ſaid to have been particularly ſkilful in the ſolution of *Ænigma's*, Joſeph. *Antiq. Lib.* V. *C.* 2. Clemens aſſures us, that the Egyptians placed Sphinges before their temples; to intimate that the doctrines of God and religion were *Ænigmatical* and obſcure. See HIEROGLYPHIC.

ÆOLIC, or ÆOLIAN, in grammar, denotes one of the five dialects of the Greek tongue.

It was firſt uſed in Bœotia; whence it paſſed into Æolia, and was that which Sappho and Alcæus wrote in.

The *Æolic* dialect generally throws out the aſpirate or ſharp ſpirit, and agrees in ſo many things with the Doric dialect, that the two are uſually confounded together. See DORIC.

ÆOLIPILE *, ÆOLIPILA, an hydraulic inſtrument, conſiſting of a hollow metalline ball, with a ſlender neck, or pipe, ariſing from the ſame. This, being filled with water, and thus expoſed to the fire, produces a vehement blaſt of wind. See WIND.

* This inſtrument, Des Cartes, and others, have made uſe of, to account for the natural cauſe, and generation, of wind.—And hence its name, *Æolipila*, q. d. *pila Æoli*, Æolus's ball; Æolus being reputed the god of the winds.

Sometimes the neck is made to ſcrew into the ball, which is the moſt commodious way; becauſe, then, the cavity may the more readily be filled with water. If there be no ſcrew, it may be filled thus:—Heat the ball red-hot, and throw it into a veſſel of water; the water will run in at the ſmall hole, and fill about two thirds of the cavity.

If, after this, the *Æolipile* be laid on or before the fire, ſo that the water and veſſel become very much heated; the water, being rarefied into a kind of momentary air, will be forced out, with very great noiſe and violence; but it will be by fits, and not with a conſtant and uniform blaſt.

Theſe phænomena the reader will be eaſily enabled to ſolve, from what is ſhewn under the articles, AIR, WATER, and RAREFACTION.

The air or vapour iſſuing out of the *Æolipile* is found ſenſibly hot near the orifice; but, at a farther diſtance, cold; like what we obſerve of our own breath: the cauſe of which is controverted.—The Corpuſcularians account for it hence; that the fire contained in the rarefied vapour, though ſufficient to be felt near the orifice, diſengages itſelf in the progreſs of the ſtream, and becomes inſenſible ere it be arrived at the journey's end. See FIRE.—The mechanical philoſophers, on the other hand, hold, that the vapour, at its exit from the ball, is endued with that peculiar ſpecies of circular motion, which conſtitutes the quality heat; and that the further it recedes therefrom, the more is this motion deſtroyed, by the reaction of the contiguous air; till the heat, at length, becomes inſenſible. See HEAT.

Chauvin ſuggeſts ſome further uſes of the *Æolipile.*—1°, He thinks it might be applied, inſtead of a bellows, to blow the fire, where a very intenſe heat is required. 2°, If a trumpet, horn, or other ſonorous inſtrument, were fitted to its neck, it might be made to yield muſic. 3°, If the neck were turned perpendicularly upwards, and prolonged by a tube or hollow cylinder fitted to it, and a hollow ball laid on the orifice of the tube; the ball would be blown up, and kept fluctuating, or playing up and down, as in the ſtream of a fountain. See FOUNTAIN.—And, 4°, It might ſerve to ſcent or fumigate a room, if filled with perfumed, inſtead of common water.

ÆON, ΑΙΩΝ, *age*; literally ſignifies the duration of a thing.

Some antient heretics have affixed another idea to the word *Æon*; in order to which, they have made uſe of the philoſophy of Plato, giving reality to the ideas which that philoſopher had imagined in God; and even perſonifying them, and feigning them diſtinct from God, and to have been produced by him; ſome male, others female. See IDEA, and PLATONISM.

Theſe ideas they call *Æons*; of an aſſemblage whereof they compoſe the deity, calling it πληρωμα, a Greek word, ſignifying *fulneſs*.

Simon Magus is ſaid to have been the firſt inventor of theſe *Æons*, which were afterwards brought to perfection by Valentinus; who, refining on thoſe who had preceded him in this way, produced a long genealogy of *Æons*, to the number of 30. The firſt, and moſt perfect, he particularly denominates Προων, *Proon*, that is, pre-exiſtent; beſide other names, the moſt uſual whereof was that of *Bythos*, Βυθος, depth.

This Bythos, he ſays, continued long alone with Εννοια, *Ennœa*, thought; whom Valentinus alſo called Χαρις, grace, and Σιγη, ſilence. At length, Bythos, with Sige, produced *Nous*, Νους, underſtanding; and Αληθεια, truth, her ſiſter. Nous begat two *Æons*; *Logos*, Λογος, word; and *Zoë*, Ζωη, life: which two begot others; *Anthropos*, Ανθρωπος, man; and Εκκλησια, church. And theſe eight *Æons* were the chief of all the reſt.

The word, Λογος; and life, Ζωη; begat ten other *Æons*: Man and the Church begat twelve more; among whom were the Paraclete, Faith, Hope, Charity, the Perfect, Τελειος, and Wiſdom, Σοφια. And thus were 30 *Æons* made up; which, all together, made the *Pleroma*, Πληρωμα, or ſpiritual and inviſible plenitude.

Theſe 30 *æons* the Valentinians hold to have been figured by the 30 years of our Saviour's private life. See GNOSTICS.

ÆQUATION.	See	EQUATION.
ÆQUATOR.		EQUATOR.
ÆQUILIBRIUM.		EQUILIBRIUM.
ÆQUINOX.		EQUINOX.
ÆQUINOCTIAL.		EQUINOCTIAL.
ÆQUIPOLLENT.		EQUIPOLLENT.
ÆQUIVALENT.		EQUIVALENT.
ÆQUIVOCAL.		EQUIVOCAL.
ÆQUIVOCATION, &c.		EQUIVOCATION, &c.

ÆRA*, in chronology, a fixed point of time, from whence to begin a computation of the years enſuing.

* The word is ſometimes alſo written, in antient authors, *Era*: its origin is conteſted, though it is generally allowed to have had its riſe in Spain. Sepulveda ſuppoſes it formed from A. ER. A. the note or abbreviatures of the words, *Annus Erat Auguſti*, occaſioned by the Spaniards beginning their computation from the time their country came under the dominion of Auguſtus, or that of their receiving the Roman calendar. This opinion, however ingenious, is rejected by Scaliger, not only on account that in the antient abbreviatures *A* never ſtood for *Annus*, unleſs when preceded by *V* for *vixit*; and that it ſeems improbable they ſhould put *E R* for *erat*, and the letter *A*, without any diſcrimination, both for *Annus* and *Auguſtus*. Voſſius, nevertheleſs, favours the conjecture; and judges it at leaſt as probable, as either that of Iſidore, who derives *Æra* from *Æs*, the tribute-money wherewith Auguſtus taxed the world; or that of Scaliger himſelf, who deduces it likewiſe from *Æs*, though in a different manner: *Æs*, he obſerves, was uſed among the antients for an *article*, or *item*, in an account. And hence it came alſo to ſtand for a ſum or number itſelf. From the plural *Æra*, came by corruption *Æra*, *Æram*, in the ſingular; much as *Oſtia*, *Oſtiam*, the name of a place, from *Oſtia*, the mouths of the Tyber. The opinion of Chriſtmannus carries ſtill leſs probability, who derives the word from the Arabic *Arach*, to compute: and the ſame may be ſaid of that of Iſ. Voſſius, who ſuppoſes *Æra* to be originally the ſame with *Hegira*, and to be derived from *Heger*, q. d. ſtranger; a name given by the Jews to Herod.

ÆRA is more particularly uſed in ſpeaking of the antient method of computing time among the Spaniards, which anticipated the common *Æra* from the birth of Chriſt by 37 years. See EPOCHA.

* This is by ſome called the *Æra* of *Cæſar*, by others the *Æra* of *Æras*, by the later writers the *Spaniſh Æra*.

ÆRARIUM*, the public treaſury of the Roman ſtate. See FISCUS.

* The temple of Saturn at Rome, being the great treaſury of the ſtate, was firſt called *Ærarium*; from *Æs*, *Æris*, copper; that being the only money in uſe before the year of Rome 485.

It was firſt erected under Auguſtus, and maintained by a yearly voluntary contribution; but that proving inſufficient, the twentieth part of all legacies and inheritances, except of ſuch as fell to the next of kin, or the poor, were conſigned to this treaſury.

For the cuſtody hereof, three of the emperor's lifeguard were conſtituted *Præfecti Ærarii*.

AERIAL, AERIUS, ſomething that conſiſts of, or has relation to, air. See AIR.

The Eſſeni, the moſt refined and rational ſect among the Jews, held, that the human ſoul conſiſted of an *aerial* ſubſtance.

Angels or ſpirits, whether good or evil, ſaid ſometimes to appear, are ſuppoſed to aſſume an *aerial* body, in order to become ſenſible.

Porphyry and Jamblicus admit a ſort of dæmons, or *aerial* ſpirits, to which they give various names.

And the Roſicrucians, and other viſionaries, fill the atmoſphere with *aerial* inhabitants.

AERIAL *Perſpective* is that which repreſents bodies weakened, and diminiſhed, in proportion to their diſtance from the eye. See PERSPECTIVE.

Aerial Perſpective has chiefly to do with the colours of objects whoſe force and luſtre it takes off more, or leſs, to make them appear as if more or leſs remote.

It is founded on this, that the longer column of air an object is ſeen through, the weaker do the viſual rays emitted from it affect the eye.

AERIANS, AERIANI, in antiquity, a religious ſect denominated from Aerius, an Armenian prieſt of the fourth century.

The *Aerians* had much the ſame ſentiments, in reſpect of the Trinity, as the Arians; beſide which, they had ſome dogmas of their own: and particularly this, that there is no difference between prieſts and biſhops; but that the prieſthood and epiſcopate are abſolutely one and the ſame order, or dignity: an opinion ſince ſtrenuouſly aſſerted by many modern divines. See BISHOP, PRIEST, PRESBYTER, &c.

Aerius built his doctrine chiefly on ſome paſſages in St. Paul; and, among others, that, in the firſt epiſtle to Timothy, Ch. IV. ver. 14. where that apoſtle exhorts him not to neglect *the gift he had received by the laying on of the hands of the preſbytery*. Here, obſerves Aerius, is no mention of biſhops; but Timothy evidently received his ordination from the preſbyters, or prieſts.

St. Epiphanius, *Hær*. 75. ſtands up briſkly for the ſuperiority of biſhops, againſt the Aerians.—The word *preſbytery* in St. *Paul*, he obſerves, includes both biſhops and prieſts; the whole ſenate, or aſſembly of the eccleſiaſtics of the place: and in ſuch an aſſembly had Timothy been ordained. See PRESBYTERY.

AEROMANCY*, AEROMANTIA, an antient ſpecies of divination, performed by the means of the air, and phænomena happening therein.

* The word is compounded of the Greek αηρ, air; and μαντεια, divination. See HYDROMANCY.

AEROMETRY*, AEROMETRIA, the art of meaſuring the air, its powers, and properties. See AIR.

* The word is compounded of αηρ, air; and μετρειν, to meaſure.

Aerometry includes the laws of the motion, gravitation, preſſion, elaſticity, rarefaction, condenſation, &c. of the atmoſpherical fluid.

The word *Aerometry* is but little uſed: in lieu hereof, we commonly call this branch of philoſophy, *Pneumatics*. See PNEUMATICS.

C. Wolfius, profeſſor of mathematics at Hall, having reduced many of the affections of this fluid to geometrical demonſtration; firſt publiſhed *Elements of Aerometry*, at Leipſic, 1709. in High-dutch; and afterwards more largely in Latin.—Thus is the doctrine of the air incorporated into the mathematical ſciences.

ÆRUGINOUS, ſomething partaking of, or like to, the ruſt of copper.

Authors do not ſeem perfectly agreed about the colour to be expreſſed by this word; ſome expreſſing by it green, others brown.

ÆRUGO denotes ruſt, eſpecially that of copper. See RUST.

ÆRUGO is alſo uſed for the common verdegriſe. See VERDIGREASE.

AERY, or AIRY*, in ſpeaking of hawks, eagles, or the like, anſwers to the neſt of other birds. See NIDUS.

* The word is formed from the French *Aire*; and that from the German *Ey*, egg; in the plural *Eyr*.

ÆS, a Latin term, ſignifying copper, money, &c.

ÆS, in antiquity, is frequently uſed for *As*. See AS.

ÆS *Grave* denotes money paid by weight, and not by tale. Liv. l. 4. *in fine*.

ÆS *Uſtum* is a chemical preparation, ordinarily made of copper cut into thin plates, put into a crucible with ſulphur and ſalt, *ſtratum ſuper ſtratum*; and thus ſet in a hot charcoal fire, till the ſulphur be conſumed.

It is very deterſive; and is uſed for eating of dead fleſh. They who make this uſe of it, are ordered to heat it red hot in the fire nine times; and quench it as often in linſeed oil: but this is a precaution rarely complied with.

ÆSCHYNOMENOUS *Plants*, among botaniſts, are thoſe popularly called *ſenſitive plants*. See SENSITIVE.

ÆSNECY, in law, priority of age among coparceners.

ÆSTIMATIO *Capitis*, in our antient law-books. See WERE, and WERELADE.

King Athelſtan, in a great aſſembly held at Exeter, declared what mulcts were to be paid *pro Æſtimatione capitis*, for offence committed againſt ſeveral perſons according to their degrees: the *Eſtimation* of the king's head to be 30000 thrymſæ; of an archbiſhop, or ſatrapa, or prince, 15000; of a biſhop, or a ſenator, 8000; of a prieſt, or a thane, 2000, &c. Creſſy's *Church Hiſt*. fol. 834. *b*. and L. *Hen*. I.

ÆSTIVAL, or ESTIVAL, of, or belonging to, ſummer.

Thus, we ſay, the *Æſtival* ſolſtice, &c. in oppoſition to brumal.

ÆSTUARY, ÆSTUARIUM, in geography, an arm of the ſea, running up a good way into the land. See SEA.

Such is Briſtol chanel, many of the firths of Scotland, &c. See ARM, BAY, and FRITH.

ÆSTUARY is ſometimes alſo uſed, in pharmacy, for a vapour-bath, *balneum vaporoſum*. See VAPOUR, and BATH.

ÆTHER* is uſually underſtood of a thin, ſubtile matter, or medium, much finer and rarer than air; which, commencing from the limits of our atmoſphere, poſſeſſes the whole heavenly ſpace.

* The word is Greek, αιθηρ; ſuppoſed to be formed from the verb αιθειν, to burn, to flame: ſome of the antients, particularly Anaxagoras, ſuppoſing it of the nature of fire. See FIRE.

The philoſophers cannot conceive that the largeſt part of the creation ſhould be perfectly void; and therefore fill it with a ſpecies of matter under the denomination of *Æther*.—But they vary extremely as to the nature and character of this *Æther*.—Some conceive it as a body *ſui generis*, appointed only to fill up the vacuities between the heavenly bodies; and therefore confined to the regions above our atmoſphere.—Others ſuppoſe it of ſo ſubtile and penetrating a nature, as to pervade the air, and other bodies; and poſſeſs the pores and intervals thereof.—Others deny the exiſtence of any ſuch ſpecific matter; and think the air itſelf, by that immenſe tenuity and expanſion it is found capable of, may diffuſe itſelf through the interſtellar ſpaces, and be the only matter found therein.

In effect, *Æther* being no object of our ſenſe, but the mere work of imagination, brought only upon the ſtage for the ſake of hypotheſis, or to ſolve ſome phænomenon, real or imaginary; authors take the liberty to modify it how they pleaſe.—Some ſuppoſe it of an elementary nature, like other bodies, and only diſtinguiſhed by its tenuity, and the other affections conſequent thereon; which is the philoſophical *Æther*.—Others will have it of another ſpecies, and not elementary; but rather a ſort of fifth element, of a purer, more refined, and ſpirituous nature, than the ſubſtances about our earth; and void of the common affections thereof, as gravity, *&c.* The heavenly ſpaces, being the ſuppoſed region or reſidence of a more exalted claſs of beings; the medium muſt be more exalted in proportion.—Such is the antient and popular idea of *Æther*, or *ætherial* matter.

The term *Æther* being thus embarraſſed with a variety of ideas, and arbitrarily applied to ſo many different things; the later and ſeverer philoſophers chooſe to ſet it aſide: and in lieu thereof ſubſtitute other more determinate ones.

Thus, the Carteſians uſe the term *Materia Subtilis*; which is their *Æther*: and Sir I. Newton, ſometimes a *Subtile Spirit*, as in the cloſe of his *Principia*; and ſometimes a *Subtile* or *Ætherial Medium*; as in his *Optics*.

The truth is, there are abundance of conſiderations, which ſeem to evince the exiſtence of ſome matter in the air, much finer than the air itſelf.—There is an unknown ſomething, which remains behind when the air is taken away; as appears from certain effects which we ſee produced *in vacuo*.—Heat, Sir I. Newton obſerves, is communicated through a vacuum, almoſt as readily as through air: but ſuch communication cannot be without ſome interjacent body, to act as a medium: and ſuch body muſt be ſubtile enough to penetrate the pores of glaſs; and may be very well concluded to penetrate thoſe of all other bodies; and, conſequently, be diffuſed through all the parts of ſpace: which anſwers to the full character of an *Æther*. See HEAT.

The exiſtence of ſuch an ætherial medium being ſettled, that author proceeds to its properties; inferring it to be not only rarer and more fluid than air, but exceedingly more elaſtic, and active: in virtue of which properties, he ſhews, that a great part of the phænomena of nature may be produced by it.—To the weight, *e. gr.* of this medium, he attributes gravitation, or the weight of all other bodies; and to its elaſticity, the elaſtic force of the air, and of nervous fibres, and the emiſſion, refraction, reflexion, and other phænomena of light; as alſo ſenſation, muſcular motion, *&c.*—In fine, this ſame matter ſeems the *primum mobile*, the firſt ſource or ſpring of phyſical action in the modern ſyſtem.

The Carteſian *Æther* is ſuppoſed not only to pervade, but adequately to fill, all the vacuities of bodies; and thus to make an abſolute plenum in the univerſe. See MATERIA *Subtilis*.

But Sir I. Newton overturns this opinion, from divers conſiderations; by ſhewing, that the celeſtial ſpaces are void of all ſenſible reſiſtance: for, hence it follows, that the matter contained therein muſt be immenſely rare, in regard the reſiſtance of bodies is chiefly as their denſity; ſo that if the heavens were thus adequately filled with a medium or matter, how ſubtile ſoever, they would reſiſt the motion of the planets and comets much more than quickſilver or gold.

ÆTHER *of Plants*. See ÆTHERIAL.

ÆTHERIAL, ÆTHERIUS, ſomething that belongs to, or partakes of the nature of, *Æther*.

Thus, we ſay, the *ætherial* ſpace; *ætherial* regions, *&c.*—Some of the antients divided the univerſe, with reſpect to the matter contained therein, into elementary and *ætherial*.

Under æther, or the *ætherial* world, was included all that ſpace above the uppermoſt element, *viz.* fire: this they ſuppoſed to be perfectly homogeneous, incorruptible, unchangeable, *&c.* See CORRUPTION, *&c.*

It is a point has been much controverted, whether or no the *ætherial* matter has the property of gravity?—Many late philoſophers, not only at home, but abroad, contend for its gravity; and even for its being the cauſe of gravity in all other bodies.—In effect, ſays Chauvin, bodies do not deſcend by any inherent principle; but by the impulſe, or truſion of ſomething external; which can be nothing but æther; in regard they fall *in vacuo* as readily, nay more ſo, than in open air: and from the ſame principle, they ſay, ariſes the coheſion of bodies.

ÆTHERIAL *Oil* is a fine, ſubtile, eſſential oil, approaching nearly to the nature of a ſpirit. See OIL.

Thus, the pure liquor riſing next after the ſpirit, in the diſtillation of turpentine, is called the *ætherial oil* of turpentine. See Supplement, article OIL ESSENTIAL.

Some chymiſts diſtinguiſh two principles in urine: the one a volatile urinous ſalt, reſembling ſpirit of nitre; the other an *ætherial oil*, or ſulphur; partaking of the nature of ſpirit of wine.

ÆTHERIAL *Heaven*. See *Ætherial* HEAVEN.

ÆTHIOPS *Mineral*, a preparation of mercury, uſually made by grinding equal quantities of crude quickſilver and flour of ſulphur, in a ſtone or iron mortar; till they become incorporated into a black powder.

It is preſcribed for the worms, and all crudities and acrimony of the humours; and is reputed infallible againſt the itch, and other cutaneous diſeaſes.

AETIANS, AETIANI, in church-hiſtory, a ſect or branch of Arians, ſo called from their leader *Aetius*, ſurnamed the *Atheiſt*, in the fourth century. See ARIAN.

The *Aetians* were of the ſtricter kind of Arians, who held that the Son, and Holy Ghoſt, are in all things diſſimilar to the Father. See HETEROUSIAN.

Whence, alſo, they are called *Anomœi*, and *Heterouſiani*; ſometimes *pure Arians*.

ÆTIOLOGY*, ÆTIOLOGIA, in medicine, a rationale, or diſcourſe of the cauſe of a diſeaſe.

* The word is compounded of the Greek αιτια, cauſe; and λογος, *ſermo*, diſcourſe.

In this ſenſe we ſay, the *Ætiology* of the ſmall-pox, of the hydrophobia, of the gout, the dropſy, *&c.*

ÆTITES*, in natural hiſtory, a flinty, or a cruſtated ſtone, hollow withinſide, and pregnant, as it were, with another; formerly in repute for ſeveral extraordinary medical, as well as magical powers.

* The word is formed from the Greek αετος, eagle; the popular tradition being, that it is found in the eagle's neſt, whither it is ſuppoſed to be carried while the female ſits, to prevent her eggs from being rotten.

The *lapis Ætites* is found in ſeveral parts: near Trevoux, in France, one can ſcarce dig a few feet, without finding conſiderable ſtrata, or beds, of the coarſer or ferruginous kind: this ſort is found of various forms and ſizes; but its texture or conſiſtence is pretty uniform; conſiſting of two or three lays or coats of a matter reſembling baked earth; eſpecially the innermoſt.—They are originally ſoft, and of the colour of yellow oker.

Dioſcorides ſays, it is of uſe in diſcovering a thief: for, by mixing it with his meat, he will be unable to ſwallow it.—Matthiolus informs us, that birds of prey never hatch their young without this ſtone; and that they ſeek it as far as the Indies.

The uſe now made of the ſtone is, to aſſiſt women in labour; to which end, they faſten it about the knee: it being a tradition, that, according as it is applied above or below the matrix, it has the faculty of retaining or excluding the child.

Hence, it is ſometimes directed to be borne about the arm, to prevent abortion. See Supplement, article ÆTITES.

AFFECTION*, in a proper ſenſe, denotes an attribute peculiar to ſome ſubject, and ariſing from the very idea or eſſence thereof. See ATTRIBUTE.

* The word is originally Latin; formed from *afficere*, to affect: the ſubject being here ſuppoſed in ſome meaſure affected, or acted on, by the thing attributed to it. See SUBJECT.

In this ſenſe, *Affection* is ſynonymous with *Property*, or with what the ſchoolmen call *Proprium quarto modo*.

Philoſophers are divided as to the doctrine and diviſion of *Affections*: according to Ariſtotle, they are either *ſubordinating*, or *ſubordinated*; under the firſt of which comes only *mode*; and under the ſecond *finiteneſs*, *place*, and *time*.

The generality of Peripatetics divide *Affections* into *internal*; as motion, and finiteneſs: and *external*; as place, and time. According to Sperlingius, *Affections* are better divided into *ſimple* or *united*, and *disjunct* or *ſeparate*: under the firſt come *quantity*, *quality*, *place*, and *time*; under the ſecond, *motion*, and *reſt*.

Sperlingius, then, ſeems to reject finiteneſs from the number of *Affections*; and Ariſtotle, and the Peripatetics, quantity, and quality: but the difference is not irreconcileable; ſince Sperlingius does not deny body to be finite; nor Ariſtotle, and his followers, that it has *quantum*, and *quale*: only they have not made peculiar heads and titles for theſe.

Affections are alſo diſtinguiſhed into thoſe of *body*, and thoſe of *mind*.

AFFECTIONS *of Body* are certain modifications thereof; occaſioned or induced by motion; in virtue whereof, a body comes to be ſo and ſo diſpoſed.

The *Affections of Body* are ſometimes ſubdivided into *primary* and *ſecondary*.

Primary AFFECTIONS are thoſe which ariſe either from the idea of matter; as quantity, and figure: or from that of form; as quality, and power: or from both together; as motion, place, and time.

Secondary, or *derivative* AFFECTIONS, are thoſe which ariſe from ſome of the primary, *e. gr.* from quantity; as diviſibility,

bility, continuity, contiguity, finity, impenetrability; from *figure*, as regularity and irregularity; from *quality*, as health, ſtrength, *&c.*

AFFECTIONS *of Mind* are what we more uſually call *paſſions*. See PASSION.

Mechanical AFFECTIONS. See MECHANICAL *Affection*.

AFFECTION is more peculiarly uſed, in medicine, for a morbid, or preternatural ſtate of the body, or ſome of its parts. See DISEASE, *&c.* Thus we ſay, an hypochondriacal, an hyſterical *Affection*. And, in like manner, ſuch a part of the body is *affected*, i. e. indiſpoſed, or ſeized with a diſeaſe. The ſick are frequently miſtaken as to the place *affected*, by reaſon of the conſent between the ſeveral parts, which often makes a diſorder in one part be felt in another.

Hypochondriacal AFFECTION. } See { HYPOCHONDRIACAL.
Hyſterical AFFECTION, *&c.* } See { HYSTERIC, *&c.*

AFFEERORS*, AFFERATORES, in law, perſons appointed in court-leets, and other places, upon oath, to ſettle and moderate the fines of ſuch as have committed faults arbitrarily puniſhable, or which have no expreſs penalty ſet down by ſtatute. See FINE.

* The word is formed, according to Cowel, of the French *affier*, to affirm; by reaſon thoſe appointed to this office do affirm, upon their oaths, what penalty they think, in conſcience, the offender hath deſerved. Others better derive it from *affeurer*, a word, in the cuſtomary of Normandy, rendered, by the Latin interpreters, *taxare*, to ſet the price of a thing; as *æſtimare, indicare*, &c.—Kitchin joins the three words as ſynonyma; *affidati, amerciatores, afferatores.*

AFFERI, in law. See the article AVERIA.

AFFIANCE, in law, the plighting of troth between a man and a woman, upon an agreement of marriage to be had between them.

AFFIDATIO *Dominorum* ſignifies an oath taken by the lords in parliament; thus called in the *Rot. Parl.* Hen. VI.

AFFIDATUS, or AFFIDIATUS, in our law-books, denotes a tenant by fealty.

Affidati are not properly vaſſals, but quaſi-vaſſals, or perſons who vow fealty to, and put themſelves under the protection of, another.

In this ſenſe they amount to the ſame with what are otherwiſe called *commendati*, and *recommendati*.

AFFIDAVIT, an oath, in writing, ſworn before ſome perſon who hath authority to take ſuch oath; and made uſe of, and read in court, upon motions; though not allowed upon trials.

In the court of Chancery is an *Affidavit-office*, under the direction of a maſter. See OATH.

AFFILIATION, ADFILIATIO, in middle-age writers, the ſame with adoption.

Among the antient Gauls, *Affiliation* was a ſort of adoption only practiſed among the great.—It was performed with military ceremonies: the father preſented a battle-ax to the perſon he was to adopt for his ſon, as an intimation that he was to preſerve the effects he thus called him to ſucceed to, by arms.

AFFINAGE is ſometimes uſed, in antient law-books, for the refining of metals.

AFFINITY * properly imports a relation contracted between one of two parties married, and the kindred of the other party.

* The word is originally Latin; compounded of *ad*, to; and *finis*, boundary, limit: by reaſon, as the lawyers ſay, that one of the families here approaches to the bounds of the other: *Quod duæ cognationes per nuptias copulantur, & altera ad alterius cognationis finem accedit.* Or, as another expreſſes it, *Quod utriuſque cognationis fines in unum locum conferuntur.*

In which ſenſe the word ſtands contradiſtinguiſhed from conſanguinity, which is a relation by blood.

In the Moſaical law there are ſeveral degrees of *Affinity*, wherein marriage is expreſly prohibited, which yet ſeem not at all prohibited by the law of nature.—Thus, Levit. Chap. XVIII. ver. 16. a man was forbid to marry his brother's widow, unleſs he died without iſſue; in which caſe, it became enjoined as a duty. So it was forbid to marry his wife's ſiſter, while ſhe was living, ver. 18. which was not forbidden before the law; as appears from the inſtance of Jacob.

The antient Roman law is ſilent on this head; and Papinian is the firſt who mentions it; on occaſion of the marriage of Caracalla.—The lawyers who came after him ſtretched the bonds of *Affinity* ſo far, that they placed adoption on the ſame foot with nature. See ADOPTION.

Affinity, according to the modern canoniſts, renders marriage unlawful to the fourth generation, incluſive; but this is to be underſtood of direct *Affinity*, and not of that which is ſecondary, or collateral.—*Affinis mei affinis, non eſt affinis meus.*

It is further to be obſerved, that this impediment of marriage does not only follow an *Affinity* contracted by lawful matrimony, but alſo that contracted by a criminal commerce; with this difference, that this laſt does not extend beyond the ſecond generation; whereas the other, as has been obſerved, reaches to the fourth.

The canoniſts diſtinguiſh three ſpecies of *Affinity*.—The *firſt*, that contracted between the huſband and the relations by blood of his wife; and between the wife and the relations by blood of her huſband.

The *ſecond*, between the huſband and thoſe related to his wife by marriage; and the wife, and thoſe ſo related to her huſband.

The *third*, between the huſband and the relations of his wife's relations; and the wife, and the relations of her huſband's relations.

By the fourth council of Lateran, held in 1213. it was decreed, that none but the firſt kind was any real *Affinity*; the reſt being mere refinements, which ought to be ſet aſide. *C. non debet, Tit. de Conſang. & Affin.*

The degrees are reckoned after the ſame manner in *Affinity*, as in conſanguinity; and therefore differently in the canon law from what they are in the civil law.

The Romaniſts talk of a *ſpiritual Affinity*, contracted by the ſacrament of baptiſm, and confirmation.—In that church, a godfather may not marry with his god-daughter, without a diſpenſation.

AFFIRMATION, AFFIRMATIO, a poſitive propoſition, alleging the truth or reality of ſomething.

Affirmation is defined, by the logicians, an act whereby we attribute one idea to another; as ſuppoſing it to belong, or agree thereto.—As when, conceiving perfection to agree to the Deity, we ſay, *God is perfect.*

This, on other occaſions, is called *enunciation, propoſition, compoſition*, and *judging*.

AFFIRMATION, in law, ſignifies the ratifying or confirming a former law, or judgment.

We ſay, to *affirm* a judgment; the houſe of lords, on an appeal, *affirmed* the lord chancellor's decree.

AFFIRMATION is alſo uſed, in grammar, by ſome late refiners upon that art, for what is uſually called a verb; in regard the office of that part of ſpeech is to expreſs what we *affirm* or attribute to any ſubject.

AFFIRMATION is alſo uſed for a ſolemn form of atteſting the truth, allowed to be uſed by the Quakers, inſtead of an oath, which they hold abſolutely unlawful to take. See QUAKER.

This people, by their refuſal of all oaths, lay liable to much trouble; particularly for declining the oath of allegiance, in the time of king Charles II.—But, by an act paſſed *Anno* 1689. it was decreed, that their ſolemn declaration of allegiance and fidelity ſhould be accepted, inſtead of an oath.

In 1695. they alſo obtained, by a temporary act, that their ſolemn *Affirmation* ſhould be accepted in all caſes where an oath is by law required; except in criminal caſes, upon juries, and in places of profit and truſt under the government. In this form:—*I, A. B. do declare, in the preſence of Almighty God, the witneſs of the truth of what I ſay*, &c.

This act was afterwards continued; and, at laſt, made perpetual.—But this form not being ſuch as was deſired, and having, in reality, all the eſſentials of an oath; they applied to the parliament for an alteration, which they obtained *Anno* 1721. when the following form was ſettled, to their general ſatisfaction; *viz.*—*I, A. B. do ſincerely, ſolemnly, and truly, declare and* affirm.—Which is the form now uſed, in the ſame manner, and under the ſame limitation, with the former.—Any perſon depoſing, upon his ſolemn *Affirmation*, a known falſhood, incurs the penalty of wilful and corrupt perjury.

AFFIRMATIVE, in logic, *&c.* is underſtood of a propoſition, or the like, which imports an affirmation; or that ſays, *a thing is.*

In which ſenſe, the word ſtands oppoſed to negative.

There are univerſal *affirmative* propoſitions; and ſuch, uſually, are the firſt of ſyllogiſms. See SYLLOGISM.

In algebra we have alſo *affirmative* or poſitive quantities. See QUANTITY, and POSITIVE.

AFFIRMATIVE *Sign*, or character. See CHARACTER.

In grammar, authors diſtinguiſh *affirmative* particles: ſuch is, *yes.*

The term *affirmative* is ſometimes alſo uſed ſubſtantively.—Thus we ſay, the *affirmative* is the more probable ſide of the queſtion: there were ſo many votes, or voices, for the *affirmative.*

AFFIRMATIVE is particularly applied, in the Roman inquiſition, to ſuch heretics as own the errors and opinions they are charged withal; and maintain the ſame, in their examination, with firmneſs and reſolution.

AFFORESTING, AFFORESTATIO, the turning ground into foreſt. See FOREST.

In this ſenſe, the word ſtands oppoſed to *deafforeſting.* See DEAFFORESTING.

The Conqueror, and his ſucceſſors, continued *afforeſting* the lands of the ſubject, for many reigns; till the grievance became ſo notorious, that the people, of all degrees and denominations, were brought to ſue for relief; which was, at length, obtained, and commiſſions were granted to ſurvey and perambulate the foreſt, and ſeparate all the new *afforeſted* lands, and re-convert them to the uſes of their proprietors, under the name and quality of *purlieu* or *pouralle land*. See the article PURLIEU.

AFFRAY, or AFFRAYMENT, in law, an affright put upon one or more perſons.

This, according to the lawyers, may be done without a word ſpoken, or a blow ſtruck.—As, where a man ſhews himſelf armed, or brandiſhes a weapon, it may ſtrike a fear into others unarmed.

Affray is a common injury; in which it differs from an aſſault, which is always a particular injury.

AFFREIGHTMENT*, or AFFRETAMENT, AFFRETAMENTUM, in law, ſignifies the freight of a ſhip. See FREIGHT.

* The word is formed from the French *Fret*, which expreſſes the ſame thing.

AFFRONTE'*, in heraldry, is underſtood of animals borne in an eſcutcheon as facing, or with their heads turned toward each other.—This is otherwiſe called *confronté*.

* The word is French; and literally ſignifies the ſame. It is compounded of *ad*, to; and *frons*, forehead.

AFILIATION. See the article AFFILIATION.

AFRICAN *Company*. See the article COMPANY.

AFT. See ABAFT.

AFTER-BIRTH, among midwives, the coat, or membranes, wherein the fœtus is incloſed *in utero*.

It is thus called, by reaſon it comes away ſome time after the fœtus; by way of a ſecond birth, or delivery.

Phyſicians uſually call it the *ſecundine*. It alſo includes the *placenta uterina*, popularly called the *womb-cake*. See SECUNDINE.

In brutes it is denominated the *heam*, or *cleaning*. See HEAM, &c.

AFTER-PAINS are pains felt in the loins, the groin, &c. after the birth is brought away. See DELIVERY.

They ſeem to ariſe from a diſtention of the ligaments of the uterus in time of delivery, and are ſeldom dangerous, unleſs aggravated by a detention of the lochia.—To prevent them, oil of ſweet-almonds, ſperma ceti, ſyrup of capillus Veneris, &c. are uſually preſcribed.

AFTER-MATH, among huſbandmen, the after-graſs, or ſecond mowings of graſs; or elſe graſs or ſtubble cut after corn.

AGA, in the language of the Mogols, &c. ſignifies a great man, lord, or commander.

In this laſt ſenſe, the term is alſo uſed among the Turks: thus, the *Aga* of the Janizaries, is their colonel; and the *Capi-Aga*, the captain of the gate of the ſeraglio.

The title *Aga* is alſo given, by way of courteſy, to ſeveral perſons of diſtinction, though not in any office, or command, to intitle them to it.

On ſome occaſions, in lieu of *Aga*, they ſay, *Agaſi*, or *Agaſſi*. Thus, the *Aga*, or governor of the pages, is called *Capi Agaſſi*; and the *Aga*, or general of the horſe, *Spahilar-Agaſſi*. See PAGE, ODA, and SPAHI.

AGAI, or AGIO. See the article AGIO.

AGAPES*, or AGAPÆ, in church-hiſtory, a kind of religious feſtival, celebrated, in the antient church, to keep up a harmony and concord among its members.

* The word is formed of the Greek *ἀγάπη*, *love*, dilection; of *ἀγαπάω*, *diligo*, I love.

In the primitive days the *Agapes* were held without ſcandal, or offence; but, in after-times, the heathens began to tax them with impurity.—This gave occaſion to a reformation of theſe *Agapæ*.

The kiſs of charity, with which the ceremony uſed to end, was no longer given between different ſexes; and it was expreſly forbidden to have any beds, or couches, for the conveniency of thoſe who ſhould be diſpoſed to eat more at their eaſe.

Notwithſtanding theſe precautions, the abuſes committed in them became ſo notorious, that the holding of them (in churches at leaſt) was ſolemnly condemned, at the council of Carthage, in the year 397.

Some critics will have it to be theſe *Agapæ* that St. Paul ſpeaks of, 1 Cor. ch. XI. under the name of the *Lord's Supper*; which, they contend, was not the euchariſt, but a feaſt accompanying it; held, by the Chriſtians of thoſe times, in commemoration of our Saviour's inſtituting that ſacrament, in his laſt ſupper with the apoſtles.—The text ſeems to intimate, that the feaſt was firſt held before the communion; but, by an ordinance afterwards made, they were obliged to communicate faſting: ſo that the *Agapæ* were poſtponed till the ſacrament was over.

Some authors imagine the *Agapæ* to have been, not a commemoration of our Saviour, but a cuſtom borrowed from the heathens: *Mos vero ille, ut referunt*, ſays Sedulius, on the XIth chapter of the epiſtle to the Corinth. *de Gentili adhuc ſuperſtitione veniebat*. And Fauſtus, the Manichee, is repreſented, in St. Auguſtine, as reproaching the Chriſtians, with converting the heathen ſacrifices into *Agapæ*: *Chriſtianos ſacrificia paganorum convertiſſe in Agapas*.

AGAPETÆ, in eccleſiaſtical hiſtory, a name given to certain virgins and widows, who, in the antient church, aſſociated themſelves with, and attended on, eccleſiaſtics, out of a motive of piety and charity.

In the primitive days there were women inſtituted deaconeſſes; who, devoting themſelves to the ſervice of the church, took up their abode with the miniſters, and aſſiſted them in their functions. See DEACONESS.

In the fervor of the primitive piety, there was nothing ſcandalous in theſe ſocieties; but they afterwards degenerated into libertiniſm: inſomuch, that St. Jerom aſks, with indignation, *unde Agopetarum peſtis in eccleſias introiit?* This gave occaſion to councils to ſuppreſs them.—St. Athanaſius mentions a prieſt, named Leontius, who, to remove all occaſion of ſuſpicion, offered to mutilate himſelf, to preſerve his beloved companion.

AGARIC, in pharmacy, a kind of fungous excreſcence, growing on the trunks and large branches of ſeveral trees; but, chiefly, on the larch-tree.

This is alſo called *Fungus Agarici*, by way of contradiſtinction from the *mineral Agaric*. Dioſcorides derives its name from a province of Sarmatia, called *Agaria*, whence it was firſt brought.

Several authors, and, among the reſt, Galen, took it for a root; but the common opinion is right, which makes it a fungus.—It is brought chiefly from the Levant, being found in Muſcovy and Tartary; though an inferior ſort alſo grows on the Alps, and the mountains of Dauphiné, and the Trentine. It is white, light, tender, ſmooth, brittle, of a bitter taſte, pungent, and a little ſtyptic.—This was what the antients called the *female Agaric*. For the *male*, it was uſually rough, yellowiſh, and woody, and was generally excluded out of phyſic, being only uſed in dyeing. It is probable, this latter was what grows on old oaks, and beech-trees, the former only on the larch.

Agaric was a medicine in mighty uſe among the antients, not only for the purging of phlegm, but in all diſtempers proceeding from groſs humours, and, obſtructions: as the epilepſy, madneſs, aſthma, &c.—Yet they complained, that it weakened the bowels, and purged too violently. They had divers correctors for it; theſe were chiefly of the aromatic kind: but Dr. Quincy ſays, that the beſt way is, to baniſh it for good and all, as the preſent practice has almoſt done; for that it rather makes people ſick, than purges them; being very nauſeous, and but little cathartic: ſlow in its operation, and, by ſtaying too long in the ſtomach, exciting terrible nauſeas, followed by ſweats, ſyncopes, and languors, which laſt a long time.

By a chymical ſolution, it paſſes almoſt wholly into oil: it yields no volatile ſalt, but abounds with a ſort of flaky earth, and an acid phlegm: as to texture, it ſeems much to reſemble colocynth.

We read of *Pilulæ de Agarico*, and *Troches of Agaric*; but they are diſuſed.—*Agaric* is alſo an ingredient in the theriaca Andromachi, where it is admitted in quality of a cordial; though its cardiac virtue is excepted to as much as its purgative.

AGARIC is alſo a denomination given to an earthy concretion, of the colour and conſiſtence of coagulated milk; which, by drying, forms a white, light, friable maſs, not unlike the vegetable *Agaric*.

This is more peculiarly called, *mineral Agaric*, ſometimes *ſtony Agaric*, *lac lunæ*, or *moon's milk*, *ſteinomarga*, *lithomarga*, &c. See Supplement, article LAC LUNÆ.

AGAT*, in natural hiſtory, a precious ſtone, partly tranſparent, and partly opake; uſually diverſified with a variety of colours, veins, ſpots, &c. and ſometimes exhibiting figures, or appearances, of natural objects.

* The word is ſometimes alſo written *Achat*; by the Greeks and Latins, Αχάτης, and *Achates*; a denomination taken from that of a river in Sicily, on the banks of which it was firſt found.

There are various kinds of *Agats*; which, according to their different colours, degrees of tranſparency, &c. have different names.—The principal may be reduced to theſe four; *viz.* the onyx, the calcedony, the black, and the German *Agats*.

The *Agat* has often a rediſh teint, and is finely variegated with ſpots and ſtains, many of which ſeem very naturally to repreſent woods, rivers, trees, animals, fruits, flowers, &c.—De Boot mentions one, of the ſize of a nail, wherein a biſhop, with his mitre, was very well repreſented; and, on turning it a little, a man and a woman's head were ſeen in its place.

The ſardians, and ſardonyx *Agats*, are very valuable: the latter is of a ſanguine colour, and is divided into zones, which ſeem to have been painted by art.—Pliny, Strabo, and Cicero, ſay, that Polycrates's ring was a ſardonyx. See SARDONYX.

Authors alſo ſpeak of Roman *Agats*, Egyptian *Agats*, onyx and ſardonyx *Agats*, &c.—The antients mention a red *Agat*, ſpotted with points of gold, found in Candia; and called *ſacred*, as being a preſervative againſt the poiſon of vipers, ſcorpions, and ſpiders.—Pliny has a whole chapter of the virtues of *Agats*.

Agat has always been eſteemed for ſeals, as being a ſtone that no wax will ſtick to.

The gold wire-drawers burniſh their gold with an *Agat*; whence the inſtrument, made uſe of on that occaſion, is alſo called an *Agat*.

Mr. Boyle takes *Agats* to have been formed of ſeparate beds, or ſtrata, of fine clay or earth, brought by a petrifying liquor to coagulate into a ſtone. The ſame author obſerves, that the fire will purge away the colours of *Agat*: he alſo mentions an *Agat* with a moveable ſpot, or cloud, in it.

M. du Fay has given the art of ſtaining *Agats* with divers beautiful colours. *Vid. Mem. Acad. R.* an. 1728. p. 71.

The figures and ramifications of *Agats*, whether natural or artificial, may be diſcharged with aqua fortis. *Vid. eund.* ibid. an. 1733. p. 38. See Supplement, articles AGAT, and SARDONIX.

AGE, properly denotes the natural duration of the life of man. See LIFE.

The ordinary *Age* of mankind has been occaſionally varied, in ſuch manner as to afford a fine inſtance of the wiſdom of Providence.

Age is alſo uſed, in chronology, for a century; or a ſyſtem, or period of an hundred years. See the article CENTURY.

In which ſenſe, *Age* amounts to much the ſame with *ſeculum*, and differs from *generation*.

Age is alſo underſtood of a certain ſtate or portion of the ordinary life of man: which is divided into four different *Ages*; *viz.* infancy, youth, manhood, and old *Age*.

Infancy, or childhood, *pueritia*, extends as far as the fourteenth year.

Youth, adoleſcence, or the *Age* of puberty, commences at 14, and ends at about 25.

Manhood, or the virile *Age*, terminates at 50.

Old *Age*, *ſenectus*, ſucceeds, which is the laſt: though ſome divide this into two; calling it *decrepit Age*, after 75. See LONGÆVITY.

Age, in horſemanſhip, makes a conſiderable point of knowlege; the horſe being an animal that remarkably ſhews the progreſs of his years, by correſpondent alterations in his body.

We have characteriſtics from his teeth, hoofs, coat, tail, and eyes.

The firſt year he has his foal's teeth, which are only grinders and gatherers: the ſecond, the four foremoſt change, and appear browner and bigger than the reſt: the third, he changes the teeth next to theſe; leaving no apparent foal's teeth, but two on each ſide above, and two below: the fourth year, the teeth next to theſe are changed, and no foal's teeth are left, but one on each ſide above and below: at five years, his foremoſt teeth are all changed, and the tuſhes on each ſide are complete: thoſe which come in the places of the laſt foal's teeth, being hollow, and having a little black ſpeck in the midſt; which is called the *mark in a horſe's mouth*: this continues till eight years of *Age*.—At ſix years, he puts out new tuſhes; near which appears a little circle of young fleſh, at the bottom of the tuſh; the tuſhes, withal, being white, ſmall, ſhort, and ſharp.—At ſeven years, the teeth are all at their growth, and the mark in the mouth appears very plain.—At eight, all his teeth are full, ſmooth, and plain, and the mark ſcarce diſcernible; the tuſhes looking yellowiſh.—At nine, the foremoſt teeth ſhew longer, yellower, and fouler, than before; and the tuſhes become bluntiſh.—At ten, no holes are felt on the inſide of the upper tuſhes; which till then are very ſenſible: add, that the temples begin to be crooked, and hollow.—At eleven years, his teeth are very long, yellow, black, and foul; but he will cut even, and his teeth ſtand directly oppoſite to one another.—At twelve, the upper teeth hang over the nether.—At thirteen, the tuſhes are worn cloſe to his chaps, if he have been much ridden; otherwiſe they will be black, foul, and long.

2°, As to the hoof.—If it be ſmooth, moiſt, hollow, and well-ſounding, it is a ſign of youth: on the contrary, if rugged, and as it were ſeamed, one ſeam over another, and withal dry, foul, and ruſty; it is a mark of old *Age*.

3°, For the tail.—Taking him by the ſtern thereof, cloſe at the ſetting on to the buttock, and griping it between the finger and thumb; if a joint be felt to ſtick out more than the reſt, the bigneſs of a nut, the horſe is under ten: but if the joints be all plain, he may be fifteen.

4°, The eyes being round, full, and ſtaring; the pits that are over them filled, ſmooth, and even with his temples; and no wrinkles to be ſeen, either under or above; are marks of youth.

5°, The ſkin being plucked up in any part betwixt the finger and thumb, and let go again; if it return ſuddenly to its place, and remain without wrinkles, he may be believed to be young.

6°, A dark-colour'd horſe, growing griſly above the eyebrows, or under the main; or a whitiſh horſe, growing meanelled, either with white or black, all over; may be infallibly concluded extremely aged.

Laſtly, a horſe being young, the bars of his mouth are ſoft and ſhallow; otherwiſe they are deep, and feel hard and rough. See BARS.

Age, in hunting, is an article of conſequence.—Deer, and other beaſts of game, have different denominations, according to their *Age*; which ſee, under the article HUNTING.

The *Age* of a hart, &c. is chiefly judged of by the furniture of his head.

The firſt head, called, in fallow deer, *Brockes*; and, in red deer, *Pricks*; does not come till the ſecond year of their *Age*: the next year, they bear four or ſix ſmall branches; the fourth year, eight or ten; the fifth, ten or twelve; the ſixth fourteen or ſixteen; the ſeventh year, they bear their heads beamed, branched, and ſumed, as much as ever they will be. The huntſmen have ſeveral other marks whereby to know an old hart without ſeeing him; as, the ſlot, entries, abatures, foils, fewmets, gate, and fraying poſts.

Age *of the Moon*, in aſtronomy, is underſtood of the number of days elapſed ſince the laſt conjunction, or new moon; called alſo her *quarter*. See CONJUNCTION, and QUARTER.

To find the Moon's AGE; ſee the article MOON.

Age, in chronology, and antiquity, is alſo uſed in ſpeaking of the time paſſed ſince the creation of the world.

The ſeveral *Ages* of the world may be reduced to three grand epochas; *viz.* the *Age* of the law of nature, from Adam to Moſes.—The *Age* of the Jewiſh law, from Moſes to Chriſt.—And the *Age* of grace, from Chriſt to the preſent year. The firſt *Age*, according to the Jews, conſiſted of 2447 years; according to Scaliger, of 2452; and according to Uſher, 2513.—The ſecond *Age*, according to the Jews, conſiſted of 1312 years; according to Scaliger, of 1508; and according to Uſher, of 1491.—Of the third *Age*, there have elapſed 1750 years; though this, too, is controverted by chronologers. Petavius will have our Saviour to have been born four years before the vulgar epocha; on which footing, the year 1749. ſhould be 1753. according to Cappella, it ſhould be 1754. and, according to Baronius and Scaliger, 1751. See INCARNATION.

The Romans diſtinguiſhed the time that preceded them, into three *Ages*; the *obſcure* or *uncertain Age*, which reached down as low as Ogyges, king of Attica; in whoſe reign the deluge happened in Greece.—The *fabulous*, or *heroic Age*, which ended at the firſt Olympiad; and the *hiſtorical Age*, which commenced at the building of Rome.

Among the poets, the four *Ages* of the world are, the *golden*, the *ſilver*, the *brazen*, and the *iron Age*. See the *Metamorphoſis* of Ovid, Lib. I. or rather Heſiod, in his poem, Εργα και ἡμεραι, *Opera & dies*, ver. 108, &c. He is the firſt that has deſcribed the four *Ages*, and the beſt.

The Eaſt-Indians alſo reckon four *Ages* ſince the beginning.—The firſt, which they repreſent as a ſort of golden *Age*, laſted, according to them, 1728000 years: in this the god Brahma was born, and the men were all giants; their manners were innocent: they were exempt from diſeaſes, and lived 400 years.—In the ſecond *Age*, which laſted 1296000, their Rajas were born: vice now crept into the world; mens lives were fallen to 300 years, and their ſize retrenched proportionally. Under the third *Age*, which laſted 8064000 years, vice being more increaſed, men only attained to 200 years.—The laſt *Age* is that wherein we now live, of which 4027200 years are already gone; and the life of man ſunk to one fourth of its original duration.

Age *of Medals*. See the article MEDAL.

Age, in law, is particularly underſtood of a certain ſtate or time of life, wherein a perſon is qualified for certain offices of civil ſociety, which before, for want of years, and diſcretion, he was incapable of.

By the common law, there are two principal *Ages* in man: at fourteen, he is at the *Age of diſcretion*; at twenty-one years, at *full Age*.

In a woman, there were antiently ſix *Ages* obſerved: at ſeven years, her father might diſtrain the tenants of his manor for aid to marry her; for at thoſe years ſhe may conſent to matrimony.—At nine years old ſhe is dowable; for then, or within half a year after, ſhe is ſaid to be able *promereri dotem, & virum ſuſtinere*.—At twelve years, ſhe is able finally to ratify, and confirm her former conſent to matrimony.—At fourteen, ſhe may take her lands into her own hands; and ſhould be out of ward, if ſhe were at this *Age* at her anceſtor's death.—At ſixteen ſhe ſhould be out of ward, though at the death of her anceſtor ſhe was under fourteen: the reaſon is, that then ſhe might take a huſband able to perform knight's-ſervice.—At twenty-one years, ſhe may alienate lands and tenements.

For a man; the *Age* of twelve years binds to appearance before the ſheriff and coroner, for inquiry after robberies, 52 H. III. 14. at the *Age* of fourteen he may chooſe his own guardian, and claim his lands held in ſocage. Though

Bracton limits this to fifteen years; with whom Glanville agrees.—At fourteen, a man may conſent to marriage, as a woman at twelve.—At fifteen he ought to be ſworn to the peace, an. 24 Edw. I. ſtat. 3.—At the *Age* of twenty-one, a man was obliged to be a knight, if he had twenty pounds land per annum in fee, or for term of life, anno 1 Edw. II. ſtat. 1. But this ſtatute is repealed, 17 Car. I. cap. 10.—The ſame *Age* alſo enables him to make contracts, and manage his own eſtate; which, till that time, he cannot do with ſecurity of thoſe who deal with him.

The *Age* of twenty-four years enables a man to enter into an order of religion, without conſent of parents, anno 4. Hen. IV. cap. 17.

AGE *Prier, ætatem precari*, a petition, or motion made in court, by one in his minority, having an action brought againſt him for lands coming to him by deſcent; requeſting, that the action may reſt till he come to full *Age*.—This the court, in moſt caſes, ought to grant.

It is otherwiſe in the civil law; which obliges children in their minority to anſwer to their tutors or curators. See CURATOR.

AGEMOGLANS*, or AZAMOGLANS, children of tribute raiſed every third year by the Grand Seignior, among the Chriſtians whom he tolerates in his dominions.

* The word, in its original, ſignifies a Barbarian's child, that is, a child not a Turk.—It is compounded of two Arabic words, 1°, אגם *Agem*, which among the Turks ſignifies as much as *barbarous* among the Greeks; the former people dividing the world into Arabs or Turks, and Agem: as the latter into Grecians and Barbarians. 2°, עלאם child.

The commiſſioners appointed for this levy take them by force even out of the houſes of Chriſtians; always claiming one in three, and pitching upon ſuch as ſeem the handſomeſt, and promiſe to be the moſt handy.

Theſe are immediately conveyed to Gallipoli or Conſtantinople; where they are firſt circumciſed, then inſtructed in the Mahometan faith, taught the Turkiſh language, and the exerciſes of war, till ſuch time as they beeome of age to bear arms: and out of theſe the order of Janizaries is formed: See JANIZARY.

Such as are not judged proper for the army, they employ in the loweſt and moſt ſervile offices in the ſeraglio; as in the kitchen, ſtables, &c.

AGENT, AGENS, in phyſics, that whereby a thing is done, or effected; or that which has a power whereby it acts on another; or by its action induces ſome change therein.

The word *Agent* is uſed promiſcuouſly with *efficient*; and in contradiſtinction to *patient*. See EFFICIENT, PASSIVE, &c.

The ſchools divide *Agents* into *natural* and *free*.

Natural or *Phyſical* AGENTS, are thoſe immediately determined by the Author of nature, to produce one ſort of effect; with an incapacity to produce the contrary thereto.—Such is fire, which only heats, and does not alſo cool.

Free or *Voluntary* AGENT, is that which may equally do any thing, or the oppoſite thereof; as acting not from any predetermination, but from choice.—Such is the mind ſuppoſed to be; which may either will, or nill, the ſame thing.

Natural Agents, again, are ſubdivided into *univocal*; which are ſuch as produce effects of the ſame kind and denomination with the *Agents* themſelves; and *equivocal*; whoſe effects are of a different kind, &c. from the *Agents*.

The ſchoolmen reckon the following circumſtances neceſſary to the being of an *Agent*; viz. that it be contiguous to the object, diſtinct from it, have a power over it, a ſphere of activity, and a proportion, or rate of acting.

AGENT is alſo uſed for a perſon entruſted with the management of affairs, either of a corporation, or a private perſon. In which ſenſe, the word coincides with *deputy*, *procurator*, *ſyndic*, *factor*, &c.

Among the officers in the exchequer, are four *Agents* for taxes. See EXCHEQUER.

AGENTS *of Bank and Exchange*, are public officers, eſtabliſhed in the trading cities of France, to negotiate matters between merchants, relating to bills of exchange, and the buying and ſelling of goods. Theſe amount to what, among us, are called *exchange-brokers*. See BROKER, and EXCHANGE.

AGENT *and Patient*, in common law, is where a perſon does, or gives, ſomething to himſelf; ſo that he is at the ſame time both the doer or giver, and the receiver or party it is done to.—Such is a woman, when ſhe endows herſelf with part of her huſband's inheritance.

AGEOMETRIA*, a defect in point of geometry, or a deviation from the ſtrict principles and concluſions of that ſcience. See GEOMETRY.

* This is otherwiſe called *Ageometreſia*: the words are both pure Greek, *Αγεωμετρια*, and *Αγεωμετρησια*; though ſometimes retained in Engliſh, and other writers.

Some have complained of the *Ageometria* of the ſcriptures in reſpect of the proportions of the brazen ſea, ark, &c. See ARK, &c.

AGER *Terræ*, in middle-age writers, the ſame with an acre of land.

AGERIUM. See AGISTMENT.

AGGLUTINANTS*, AGGLUTINANTIA, in medicine, a ſpecies of ſtrengthening medicines, whoſe office and effect is to adhere to the ſolid parts of the body, and thus recruit, and ſupply the place of what is worn off, and waſted, in the animal actions.

* *Agglutinants* are moſt of them of the glutinous kind, or ſuch as eaſily form themſelves into jellies, and gummy conſiſtencies: whence the name *Agglutinant*, which is formed of *ad*, to; and *gluten* glue. See GLUE, and AGGLUTINATION.

For the operation and uſe of *Agglutinants*, ſee STRENGTHENERS.

The principal ſimples which come under this claſs, found in the ſhops, are iſing-glaſs, olibanum, gum Arabic, dragons blood, caſſia, ſago, vermicelli, pulſe, comfrey, plantain, &c.

AGGLUTINATION, literally, denotes the act of joining, or cementing two bodies together, by means of a proper gluten, or glue. See CÆMENT, GLUE, &c.

In medicine, the term is peculiarly uſed for the appoſition or adherence of new ſubſtance; or the giving a greater conſiſtence to the animal fluids, to fit them the more for nouriſhment.

AGGRAVATION*, the act of augmenting a crime, or the puniſhment thereof. See CRIME, and PUNISHMENT.

* The word is compounded of *ad*, to; and *gravis*, heavy, grievous.

Aggravation, in the Romiſh canon-law, is particularly uſed for an eccleſiaſtical cenſure, threatening an excommunication, after three admonitions uſed in vain.

From *Aggravation*, they proceed to *re-aggravation*; which is the laſt excommunication. See EXCOMMUNICATION.

AGGREGATE*, the ſum, or reſult of ſeveral things *aggregated*, or added together.

* The word is formed of *ad*, to; and *grex*, *gregis*, a flock, or company.

Natural bodies are *Aggregates*, or aſſemblages of particles, or corpuſcle, bound together by the principles of attraction.

AGGREGATION, AGGREGATIO, in phyſics, a ſpecies of union, whereby ſeveral things, which have no natural dependence, or connexion with one another, are collected together, ſo as in ſome ſenſe to conſtitute one. See UNION.

Thus, a heap of ſand, or a maſs of ruins, are bodies by *aggregation*.

AGGREGATION is alſo uſed figuratively, for aſſociation. See ASSOCIATION.

We ſay, to be of a company, or community, by *Aggregation*.—An *Aggregation* of ſeveral doctors to the faculty of laws.—In Italy, *Aggregations* are frequently made of houſes, or families; by virtue whereof, they all bear the ſame name, and arms.

AGGRESSOR, in law, he, of two contending parties, who makes the aſſault, or attack; or who began the quarrel, encounter, or difference.

In criminal matters, it is always firſt inquired who was the *Aggreſſor*.

AGILD*, or AGILDE, in our antient cuſtoms, a perſon ſo vile, that whoever kill'd him was to pay no mulct for his death.

* The word comes from the privative *α*, and the Saxon *gildan*, *ſolvere*, to pay.

AGILITY, AGILITAS, a light and active habitude, or diſpoſition, of the members, and parts deſigned for motion.

AGILLARIUS, in antient law-books, a hayward, or keeper of a herd of cattle in a common field. See HAYWARD.

AGIO*, in commerce, is a term uſed, chiefly in Holland, and at Venice, for the difference between the value of bank notes, and current money.

* The word is originally Italian; where it ſignifies eaſy, or conveniency.

AGISTMENT* AGISTAGE, or AGISTATION, in law, the taking in, and feeding the cattle of ſtrangers in the king's foreſt, and gathering the money due for the ſame.

* The word is uſually ſuppoſed to be formed of the French *Giſte*, a bed, or lying place: though Kennet excepts to this etymon, and chooſes rather to derive it from *Ager*, the field, or feeding-place for cattle; imagining *Agiſtment* to have originally been the ſame with *Agrarium*, *Agerium*, *Agroticum*, the profit of feeding cattle on ſuch a piece of ground.

AGISTMENT is alſo uſed metaphorically for a charge, or burden on any thing.

In this ſenſe we meet with *Terræ ad cuſtodiam maris Agiſtatæ*, *i. e.* charged with a tribute to keep out the ſea.—So *Terræ Agiſtatæ*, are lands whoſe owners are bound to keep up the ſea-banks.

AGISTOR, or AGISTATOR, an officer of the foreſt, who takes in the cattle of ſtrangers, to feed therein; takes care they do not wander beyond their bounds, or ſtay beyond the ſtated time; and receives for the king's uſe, all ſuch tack-money as becomes due on that account.

In Engliſh, they are otherwiſe called, *Gueſt-takers*, or *Giſt-takers*; they are made, by letters patent, to the number of four, in every foreſt, where his majeſty has any pannage. See PANNAGE.

Their function is termed *Agiſtment*, and *Agiſtage*.

AGITATION, AGITATIO, properly ſignifies *ſhaking*; or a reciprocal motion of a body this way and that. See MOTION.

The prophets, quakers, Pythian prieſteſſes, *&c.* were ſubject to violent *Agitations* of body.

Among phyſiologiſts, the term is ſometimes appropriated to that ſpecies of earthquake, called *Tremor*, or *Arietatio*. See EARTHQUAKE.

Among the philoſophers, it is chiefly uſed for an inteſtine commotion of the parts of any natural body.

Thus, fire is ſaid to *agitate* the minute particles of bodies.—Fermentation, and effervescence, are attended with a briſk *Agitation* of the particles.

AGITATION *of Beaſts in the Foreſt*, antiently ſignified the driſt of beaſts in the foreſt. See DRIFT.

AGITATORS, in our Engliſh affairs, were certain officers, created by the army in 1647. to take care of the intereſts thereof.

Cromwel leagued himſelf with the *Agitators*, whom he found to have more intereſt than the council of war.—The *Agitators* undertook to make propoſals relating to the reformation of religion, and the ſtate.

AGLECTS, AGLETS, or AGLEEDS, among floriſts, the apices, or pendants hanging on the tip-ends of chives, or ſtamina; as in tulips, roſes, ſpike-graſs, *&c.* See CHIVE, and APICES.

AGNATI, in the Roman law, the male deſcendants from the ſame father.

Agnati ſtand contradiſtinguiſhed from *Cognati*, which include alſo the females deſcended from the ſame father. See COGNATI.

AGNATION *, in the civil law, the kinſhip, or relation, between the deſcendants of the ſame father, being males, and iſſued only from males.

* The word is originally Latin, formed from *ad*, to; and *naſci*, to be born.

Agnation differs from *Cognation*, as the latter is an univerſal name, under which the whole family, and even the *Agnati* themſelves, are contained; and *Agnation*, a particular branch of *Cognation*, which only includes the deſcendants in the male line. Again, *Agnation* is properly only a civil name, as that of *Gens*, or family; *Cognation*, a natural name, or derived from blood.

By the law of the twelve tables, males and females ſucceeded one another, according to the order of proximity, and without any regard to the ſex: but the laws were afterwards changed in this reſpect, by the *Lex Voconia*; and women were excluded from the privileges of *Agnation*, excepting ſuch as were within the degree of conſanguinity, *i. e.* excepting the ſiſters of him who died abinteſtate: and it was hence that the difference between *Agnati*, and *Cognati*, firſt took its riſe.

But this difference was again aboliſhed by Juſtinian (*Inſt.* 3. 10.); and the females were reinſtated in the right of *Agnation*; and all the deſcendants on the father's ſide, whether males or females, were appointed to ſucceed each other indiſcriminately, according to the order of proximity.

Hence, cognation came to take in all the relations of the mother as well as father; and *Agnation* to be reſtrained to thoſe of the father alone.

Adoptive children enjoy the privileges of *Agnation*; which was called *civil* in their reſpect, in oppoſition to the other, which was *natural*. See ADOPTION.

AGNOETÆ *, in church-hiſtory, a ſect of antient heretics, who maintained that Chriſt, conſidered as to his human nature, was ignorant of certain things, and particularly of the time of the day of judgment.

* The word is Greek, Αγνοηται, formed of αγνοεω, *ignoro*, to be ignorant of.

Eulogius, patriarch of Alexandria, aſcribes this hereſy to certain ſolitaries in the neighbourhood of Jeruſalem, who, in defence hereof, alleged divers texts of the New Teſtament, and among others, this of St. Mark, C. XIII. ver. 32. "Of that day and hour knoweth no "man; no not the angels who are in heaven, neither "the Son, but the Father only."—The ſame paſſage was made uſe of by the Arians; and hence the orthodox divines of thoſe days were induced to give various explications thereof: ſome allege, that our Saviour here had no regard to his divine nature, but only ſpoke of his human. Others underſtand it thus, That the knowlege of the day of judgment does not concern our Saviour conſidered in his quality of Meſſiah, but God only. Which is the moſt natural ſolution.

AGNOMEN, in antiquity, an epithet given to a perſon, either by way of praiſe, or diſpraiſe, or from ſome remarkable event, which became, as it were, an additional name, but peculiar to the perſon, and not deſcendible to his iſſue. Thus, one of the Scipio's was named *Africanus*, and the other *Aſiaticus*, from the brave atchievements which the one did in Africa, and the other in Aſia.

The *Agnomen* was the third in order of the three Roman names.—Thus in Marcus Tullius Cicero, Marcus is the prænomen, Tullius the nomen, and Cicero the *Agnomen*.

AGNUS CASTUS *, a medicinal ſhrub, having a monopetalous flower, and a narrow digitated leaf; famous among the antients as a ſpecific for the preſervation of chaſtity, and the preventing of all venereal deſires, pollutions, *&c.*

* The Greeks called it ἁγνος, chaſte; to which has ſince been added the reduplicative *Caſtus*, q. d. chaſte chaſte.

The Athenian ladies, who made profeſſion of chaſtity, lay upon leaves of *Agnus Caſtus*, during the feaſt of Ceres. See CEREALIA.

It is reputed a cooler, and particularly of the genital parts; and was antiently uſed in phyſic, to allay thoſe inordinate motions ariſing from ſeminal turgeſcences: but it is out of the preſent practice.

AGNUS DEI *, in the Romiſh church, denotes a cake of wax, ſtamped with the figure of a lamb, ſupporting the banner of the croſs, conſecrated in due form by the pope, to be diſtributed in preſents among the people, and ſuppoſed to have great virtues annexed to it.

* The name literally ſignifies *Lamb of God*; this being ſuppoſed an image, or repreſentation of the Lamb of God, who took away the ſins of the world.

They cover it up with a piece of ſtuff, cut in form of a heart, and carry it very devoutly in their proceſſions.—The Romiſh prieſts, and religious, make a good penny, by ſelling theſe *Agnus Dei*'s to ſome, and preſenting them to others. The pope conſecrates freſh ones once in ſeven years, the diſtribution whereof belongs to the maſter of the wardrobe; and they are received by the cardinals, with a world of reverence, in their mitres.—This ceremony they pretend to derive from an antient cuſtom of the church, wherein part of the paſchal taper, conſecrated on holy thurſday, was diſtributed among the people, to perfume their houſes, fields, *&c.* in order to drive away devils, and to preſerve them from ſtorms and tempeſts.

AGNUS DEI, is alſo a name popularly given to that part of the maſs, wherein the prieſt, ſtriking his breaſt three times, rehearſes, with a loud voice, a prayer beginning with the words *Agnus Dei*.

AGNUS *Scythicus*. See the article ZOOPHYTE. See alſo Supplement, article BAROMETZ.

AGON, in antiquity, a diſpute or conteſt for the maſtery, either in ſome exerciſe of the body, or of the mind.

There were *Agones* on certain days, in moſt of the antient feaſts, and other ceremonies in honour of the gods, or heroes.

There were alſo *Agones* eſtabliſhed expreſly, and not attached to any other ſolemnity.—Such was the *Agon Gymnicus*, at Athens; the *Agon Nemeæus*, inſtituted by the Argians in the 53d olympiad; the *Agon Olympius*, inſtituted by Hercules, 430 years before the firſt olympiad.

The Romans had alſo *Agones* inſtituted after the example of the Greeks: the emperor Aurelian eſtabliſhed the *Agon Solis*, *Agon* of the ſun: and Diocleſian, the *Agon Capitolinus*, which was held every fourth year, after the manner of the olympic games.—Hence, the years, inſtead of luſtra, are ſometimes numbered by *Agones*.

AGON was alſo a miniſter of ſacrifice, whoſe buſineſs was to ſtrike the victim.

The name is ſuppoſed to have been derived hence, that ſtanding ready to give the ſtroke, he aſked *Agon'?* or *Agone?* ſhall I ſtrike?

The *Agon* was alſo called *Popa*, *Cultrarius*, and *Victimarius*.

AGONALES, in antiquity, an epithet given to the Salii, conſecrated by Numa Pompilius to the god Mars ſurnamed *Gradivus*. See SALII.

They were alſo called *Quirinales*, from the *Mons Quirinalis*, where they officiated. Roſinus calls them *Agonenſes Salii*.

AGONALIA, in antiquity, feaſts celebrated by the Romans, in honour of Janus; or, as ſome will have it, in honour of the god *Agonius*, whom the Romans uſed to invoke upon their undertaking any buſineſs of importance.

Authors vary as to the etymology of this ſolemnity: ſome derive it from the mount *Agonus*, afterwards called *Mons Quirinalis*, whereon it was held.—Others ſuppoſe it taken from that ceremony in the feaſt, where the prieſt holding the naked knife, and ready to ſtrike the victim, which was a ram, aſked, *Agone?* ſhall I do it?—This laſt is Ovid's opinion, *Faſt.* L. I. v. 319.

AGONISTICI *, in antiquity, a name given by Donatus to thoſe of his ſect, whom he ſent into the neighbouring places, fairs, markets, *&c.* to preach his doctrine; for which reaſon they were alſo called *Circuitores*, *Circelliones*, *Catropitæ*, *Coropitæ*, and, at Rome, *Montenſes*.

* They were called *Agoniſtici*, from the Greek αγων, combat; in regard they were ſent, as it were, to fight, and ſubdue the people to their opinion.

AGONOTHETA * Agonothetes, in antiquity, a magiſtrate choſen, among the Greeks, to preſide, and have the ſuperintendency of their ſacred games, or combats; to defray the expences thereof, and to adjudge the prizes to the conquerors.

* The word is compounded of αγων, combat, ſacred ſport; and θετης, he who diſpoſes, appoints, ordains.

Among the Romans, the like officer was denominated *Deſignator*, and *Munerarius*.

AGONY *, Agonia, denotes the extremity of pain, or a diſeaſe; when nature makes her laſt effort, or ſtruggle, to throw off the evil that oppreſſes her.

* The word is formed from the Greek αγων, *certamen*, combat; this being a kind of ſtrife between life and death.

AGONYCLITÆ *, or Agonyclites, in antiquity, a ſect, in the ſeventh century, whoſe diſtinguiſhing principle it was, never to kneel, but to deliver all their prayers ſtanding. See Genuflection.

* The word is compounded of the privative particle α, γονυ, knee; and κλινω, to bend.

AGORANOMUS *, in antiquity, a magiſtrate of Athens, eſtabliſhed for the maintenance of good order and policy in the markets, ſettling the prices of proviſions, and deciding diſputes relating to buying and ſelling, inſpecting the weights, meaſures, and the like.

* The word is Greek; compounded of αγορα, market; and νομος, law.

The *Agoranomus* among the Greeks was much the ſame with the *Curule Ædile* among the Romans. See Ædile.

Ariſtotle diſtinguiſhes two kinds of magiſtrates, the *Agoranomi*, who had the intendance of the markets; and the *Aſtynomi*, who inſpected the buildings of the (αςεα) cities.

AGRARIAN *, in the Roman juriſprudence, a denomination given to ſuch laws as relate to the partition or diſtribution of lands.

* The word is formed of the Latin *Ager*, field.

There are fifteen or twenty *Agrarian* laws; whereof the principal are, the *Lex Apuleia*, made in the year of Rome 653. the *Lex Bæbia*; the *Lex Caſſia*, in the year 267. the *Lex Cornelia*, in the year 673. the *Lex Flaminia*, in the year 525. the *Lex Flavia*; the *Lex Julia*, in the year 691. the *Lex Licinia*, in 377. the *Lex Ælia Licinia*; the *Lex Livia*; the *Lex Marcia*; the *Lex Roſcia*, make after the taking of Carthage; two Sempronian laws, in the year 620. the *Lex Servilia*, in 690. the *Lex Thoria*, and the *Lex Titia*.

The Agrarian *Law*, *Lex* Agraria, abſolutely, and by way of eminence, ſo called, was a celebrated law, publiſhed by Spurius Caſſius, about the year 268. for an equal diviſion of the conquered lands among all the citizens, and for limiting the quantity of ground poſſeſſed by each perſon to a certain number of acres.—Thoſe other two in the Digeſt, the one publiſhed by Cæſar, and the other by Nerva, only relate to the limits or boundaries of grounds; and have no relation to that of Spurius Caſſius.

AGRARIUM. See Agistment.

AGREEMENT, Agreamentum, in law, a joining, or putting together, of two or more minds in any thing done, or to be done.

Of this there may be three ſorts.—The firſt, an *Agreement executed* at the beginning, mentioned in the ſtatute of 25 Edw. III. c. 3. which ſays, ‘That the goods bought by foreſtallers, being thereof attainted, ſhall be forfeited to the king; if the buyer thereof have made *Gree* with the ſeller:’ where the word *Gree*, otherwiſe called *Agreement executed*, ſignifies payment for the things, or ſatisfaction.

The ſecond is, an *Agreement after an act*, that is, where one does an act, and another *agrees* or aſſents thereto, afterwards.

The third is, an *Agreement executory*, which is, when both parties at one time are *agreed*, that ſuch a thing ſhall be done in time to come. It is called executory, in regard the thing is to be done afterwards.

AGRESSES, or Ogresses, in heraldry, the ſame as *Pellets*. See Pellets.

AGRICULTURE *, the art of tilling, or cultivating the earth, in order to render it fertile, and make it bear plants, trees, fruits, *&c.*

* The word is formed of the Latin *Ager*, field; and *cultura*, tilling; of *colere*, to till.

The principal and moſt general operations in *Agriculture*, are, manuring, ploughing, fallowing, ſowing, harrowing; as alſo, reaping, and mowing. See the articles Manure, Ploughing, Semination, *&c.*

To the operations of *Agriculture* do alſo belong the management of the productions of particular countries; as hops, hemp, vines, tobacco, ſaffron, liquorice, woad, *&c.*

To the ſame art belong, planting, tranſplanting, pruning, engrafting; the culture of foreſts, timber, copſes, *&c.* See Planting, Pruning, Engrafting, Timber, Tree, *&c.*

Even gardening, or horticulture itſelf, is only a branch of *Agriculture*. See Garden.

Among the antients, *Agriculture* is frequently called *Georgica*.

We forbear to ſay any thing about the antiquity or uſefulneſs of this art; every reader's imagination will ſupply that defect.—It has been cultivated by many of the greateſt men among the antients; as emperors, dictators, and conſuls; and has been treated of by ſome of their greateſt authors: Virgil, for inſtance, Cato, Varro, Columella, Conſtantine Porphyrogenitus, Palladius, *&c.*

The later authors on *Agriculture* are, Baptiſta Porta, Hereſbachius, and Agricola, in Latin; Alphonſo Herrera, in Italian; Stephens, Liebaut, De Serrée, Du Croiſcens, Bellon, and Chomel, in French; and Nourſe, Evelyn, Mortimer, Switzer, Bradley, Lawrence, Miller, and Tull, in Engliſh.

AGRIPPA *, a name applied, among the antients, to children delivered in an unuſual or irregular manner; particularly ſuch as come with the feet foremoſt, inſtead of the head.

* They were called *Agrippæ*, according to Pliny, on account of their being *(ægre parti)* born with difficulty.

AGRYPNIA, ΑΓΡΥΠΝΙΑ, a privation of ſleep; otherwiſe called *watching*, *waking*, *vigiliæ*, *pervigilium*, &c. See Watching.

AGUE, a periodical diſeaſe, of the fever kind, conſiſting in a cold ſhivering fit, ſucceeded by a hot one; and going off in a diaphoreſis, or ſweating.

If the coldneſs and ſhivering be inconſiderable, and only the hot fit felt; the diſeaſe is called an *intermitting fever*.

According to the periods or times of the returns of the fit, the diſeaſe is either a quotidian, tertian, or quartan *ague*, or fever. See Quotidian, Tertian, and Quartan.

The cauſe of *Agues* ſeems to be, an obſtructed perſpiration, or whatever, by overloading the juices, retards their motion, or occaſions a lentor in the blood.—The ſymptoms are, heavineſs, and reaching; a weak, ſlow pulſe; coldneſs and ſhivering felt firſt in the joints, thence creeping over the whole body; pain in the loins, and an involuntary motion of the under jaw.

A vernal *Ague* is eaſily cured; but an autumnal one is more obſtinate, eſpecially in aged and cachectical perſons; and, particularly, if complicated with a dropſy, peripneumony, *&c.*

When an *Ague* proves fatal, it is uſually in the cold fit, thro' the oppreſſion of the ſpirits.

The cure is uſually begun with an emetic of ipecacuanha, an hour before the acceſs, and completed with the cortex Peruvianus, adminiſtred in the interval between two fits; and continued, at times, to prevent a relapſe.

Quincy endeavours to account for the effect of the bark, from the irregularity, aſperity, and ſolidity, of its particles, which fit it to break thoſe viſcidities in the juices whereby the capillaries were obſtructed, and to draw up the ſolids into a tenſion, ſufficient, by the vigorous vibrations enſuing thereon, to prevent any future accumulation thereof.—The firſt intention, he obſerves, is anſwered by giving the blood a greater momentum; and the ſecond, by its corrugating the nerves, and rendering the contractions of the veſſels more briſk, and forcible.—Hence, alſo, its effects upon ſuch as are apt to ſweat immoderately. See Supplement, article Ague.

AGUGLIA. See Obelisk.

AID, or Ayde, Auxilium, literally denotes the help, ſuccour, or aſſiſtance, which any perſon lends another, when too weak to do, or avoid, ſomething.

* The word is French, formed, according to M. Menage, from the Italian *Aitare*; and that from the Latin *Adjutare*, to help, or aſſiſt.

Aid, or Ayde, in law, is when a petition is made in court, for the calling in of help from another perſon intereſted in the matter in queſtion; who, it is probable, may not only ſtrengthen the party's cauſe who thus prays for *Aid*, but alſo prevent a prejudice ariſing to his own right.—This is called *Aid prier*; but this courſe of proceeding is now much diſuſed.

A city, or corporation, holding a fee-farm of the king, may pray in *Aid* of him, if any thing be demanded of them relating thereto.

The *Aid prier* is ſometimes alſo uſed, in the king's behalf, to prevent any proceedings againſt him till his counſel be called, and heard what they have to ſay for avoiding the king's prejudice, or loſs.

Aid *de Camp*, an officer in an army, whoſe buſineſs is to attend the general officers, and receive and carry their orders, as occaſion requires.

When the king is in the field, he uſually appoints young volunteers of quality to carry his orders, who are called the king's *Aids de Camp*.

Aid *Major*, or *Adjutant*, is an officer, whoſe buſineſs is to eaſe the *Major* of part of his duty; and to perform it all in his abſence. See Major.

Some majors have ſeveral *Aid Majors*.—Each troop of guards has but one major, who has two *Aid Majors* under him; or more, according as the buſineſs requires.

Every regiment of foot has as many *Aid Majors* as it contains battalions.—When the battalion is drawn up, the *Aid Major's* poſt is on the left, beyond all the captains, and behind the lieutenant-colonel.

Aid, **Auxilium**, in our antient cuſtoms, denotes a ſubſidy or ſum of money due to the lord, from his tenants, on certain occaſions.

It differed from a *Tax*, which is impoſed at any time when wanted; whereas the *Aid* could only be levied where it was cuſtomary, and where the particular occaſion fell out.

Such was the *Aid de Relief*, due from the tenants in fee, upon the death of the lord meſn, to his heir; towards the charge of a relief of the fee, of the ſuperior lord.

Such alſo was the *Aid Chevel*, or *capital Aid*, due by vaſſals, to the chief lord, or the king, of whom they held *in capite*. See Capite.—Of this there are three kinds.

The firſt, of chivalry; or, as they call it, *Par faire fitz Chevalier*, towards making his eldeſt ſon a knight, when arrived at the age of 15 years: the ſecond of marriage, or *par fille marier*, towards marrying his eldeſt daughter.—Both theſe, with all charges incident thereto, are taken away by Stat. 12 Car. II. See Tenure, Service, &c.—Some will have them to have been firſt eſtabliſhed in England, by William the Conqueror; and afterwards transferred to Normandy: but the more common opinion is, that the Conqueror brought them with him.—The third was of ranſom, due when the lord was taken priſoner by the enemy. See Ransom.

In ſome provinces there was a fourth kind of *Aid*; due whenever the lord ſhould undertake an expedition to the holy land.

We alſo read of *Aids* paid the lord, when he was minded to purchaſe any new land, or tenement. Theſe were only granted once in his life.—Alſo *Aids* for the repairing, and fortifying of caſtles, ſeats, &c.

Aids were at firſt impoſed by the lord, or king, at what rate he pleaſed; but by a ſtatute of 3 Edw. I. a reſtraint was laid on common perſons being lords, and they were tied down to a fixed proportion: and by a ſubſequent ſtatute, the ſame rate was extended even to the king.

Aids ſeem to have been firſt eſtabliſhed with a view to the clients and freedmen of antient Rome, who made preſents to their patron towards his daughter's fortune, as alſo on his birth-day, and on other ſolemn occaſions.—Accordingly, Bouteiller relates, that in his time, theſe *Aids* depended on the courteſy and good will of the vaſſals; for which reaſon they were called, *Droits de Complaiſance*.

The biſhops alſo received *Aids* from their eccleſiaſtics, called *Synodals*, and *Pentecoſtals*. They were to be paid at the time of their conſecration; or when they had a king to entertain; or when called by the pope to his court, or to a council; as alſo when they went to receive the *Pallium*.

Add, that the archdeacons alſo exacted *Aids* from the clergy of their juriſdiction. See Procuration.

Aids are alſo uſed in matters of polity, for any extraordinary taxes, or impoſitions occaſionally levied by the king, and parliament, upon the ſubjects; to ſupport the charges of the government, when the ordinary revenue proves ſhort.

Royal **Aid** is a name frequently given to the land-tax.

Aids, in the manage, are helps, or aſſiſtances, by which the horſeman contributes towards the motion, or action required of the horſe; by a diſcreet uſe of the bridle, caveſon, ſpur, poinſon, rod, calf of the leg, and voice.

Such a horſe knows his *Aids*, anſwers his *Aids*, takes his *Aids* with vigour, &c.—The *Aids* are made uſe of, to avoid the neceſſity of corrections.—The ſame *Aids*, given in a different manner, become corrections.

The *Aids* uſed to make a horſe go in airs, are very different from thoſe required in going upon the ground. *Newcaſtle*.

The inner heel, inner leg, and inner rein, are called *inner Aids*.—The outer heel, outer leg, &c. are *outer Aids*.

Court of **Aids**, in France, is a ſovereign court, erected for the cognizance of matters relating to the taxes.—Appeals come to this from the court of elections, where matters relating to the taille are firſt heard.—The *Court of Aids* of a province is ſometimes ſeparated from the parliament of the province, and fixed in another city, as at *Montpelier*, *Montauban*, &c.

AIGLETTE, in heraldry. See the article Eaglet.

AIGUE *Marine*, in natural hiſtory. See Aqua *Marina*.

AIGUISCE', **Aiguisse'**, or **Eguisce'**, in heraldry, a term applied to a croſs, when its four ends are ſharpened, ſo however as to terminate in obtuſe angles. See Cross.

The croſs *Aiguiſcé* differs from the croſs fitchée, in that the latter goes tapering by degrees to a ſharp point; whereas only the ends of the former are tapered. See Fitche'e.

AILE *, or **Aiel**, in law, a writ which lies where the grandfather, or great grandfather called *Beſaile*, was ſeiſed of lands or tenements in fee-ſimple, on the day he died; and a ſtranger abates or enters the ſame day, and diſpoſſeſſeth the heir or grandchild. See Abatement.

* The word is formed of the French *Aieul, Avus*, grandfather.

AIR, **Aer**, in phyſics, a thin, fluid, tranſparent, compreſſible, and dilatable body; ſurrounding the terraqueous globe to a conſiderable height.

Air was conſidered by ſome of the antients as an element; but then, by element, they underſtood a different thing from what we do.

It is certain, that *Air*, taken in the popular ſenſe, is far from the ſimplicity of an elementary ſubſtance; though there may be ſomething in it, which bids fair for the appellation.—Hence, *Air* may be diſtinguiſhed into *vulgar*, or heterogeneous; and *proper*, or elementary.

Vulgar, or *Heterogeneous* **Air**, is a coalition of corpuſcles of various kinds, which together conſtitute one fluid maſs, wherein we live and move, and which we are continually receiving and expelling by reſpiration.—The whole aſſemblage of this makes what we alſo call the *atmoſphere*.

Where this *Air*, or atmoſphere, terminates, there æther is ſuppoſed to commence; which is diſtinguiſhed from *Air*, in that it does not make any ſenſible refraction of the rays of light, which *Air* does.

The ſubſtances whereof *Air* conſiſts, may be reduced to two kinds; *viz.* 1°, The matter of light, or fire, which is continually flowing into it from the heavenly bodies.—To which, probably, may be added the magnetical effluvia of the earth.

2°, Thoſe numberleſs particles, which in form either of vapours, or dry exhalations, are raiſed from the earth, water, minerals, vegetables, animals, &c. either by the ſolar, ſubterraneous, or culinary fire.

Elementary **Air**, or **Air** *properly ſo called*, is a certain ſubtile, homogeneous, elaſtic matter; the baſis, or fundamental ingredient, of the atmoſpherical *Air*, and that which gives it the denomination.

Nature and Origin of **Air**.—The peculiar nature of this *aerial* matter, we know but little of; what authors have advanced concerning it being chiefly conjectural. We have no way of examining it apart, or ſeparating it from the other matters it is mixed with; and conſequently no way of aſcertaining with evidence what belongs to it abſtractedly from the reſt.

Dr. Hook, and ſome others, will have it to be no other than the æther itſelf; or that fine, fluid, active matter, diffuſed through the whole expanſe of the celeſtial regions: which coincides with Sir I. Newton's *Subtile Medium*, or ſpirit.

In this view it is ſuppoſed a body *ſui generis*, ingenerable, incorruptible, immutable, preſent in all places, and in all bodies.

Others, conſidering only its property of elaſticity, which they account its eſſential and conſtituent character, ſuppoſe it mechanically producible; and to be no other than the matter of other bodies altered, ſo as to become permanently elaſtic.—Mr. Boyle gives us ſeveral experiments, which he made "for the production of *Air*; taking production for the obtaining a ſenſible quantity thereof, from bodies wherein it did not appear either at all, or in ſo great plenty."—Among the ſeveral ways of doing this, 'the fitteſt for practice,' he obſerves, 'are fermentation, corroſion, diſſolution, decompoſition, the boiling of water, and other fluids; and the mutual action of bodies, eſpecially ſaline ones, upon each other.' *Hiſt. of Air*.—He adds, 'that various ſolid and mineral bodies, unſuſpected of elaſticity, being plunged in corroſive unelaſtic menſtrua, will, by a proper comminution of their parts in the conflict, afford a conſiderable quantity of permanently elaſtic *Air*.' *Ubi ſupra*.

Of the ſame opinion is Sir I. Newton; 'The particles of denſe, compact, and fixed ſubſtances, cohering by a ſtrong attractive force, are not ſeparable without a vehement heat, or perhaps not without fermentation; and ſuch bodies, being at length rarefied by ſuch heat or fermentation, become true permanent *Air*.' *Optics*.—'Thus, the ſame author adds, gunpowder generates *Air* by exploſion.' *Ibid*.

We have here, therefore, not only the materials whereof *Air* ſhould be made; but the means of doing it: with regard to which, the *Air* is divided into real or permanent; and apparent or tranſient.—For, that all which appears to be *Air* does not continue ſuch, is evident from the inſtance of an æolipile; the water of which being ſufficiently rarefied by the fire, ruſhes out in a ſharp whiſtling blaſt, perfectly reſembling *Air*, while the motion laſts; but it ſoon loſes that reſemblance, eſpecially in the cold, and returns by condenſation into its original water: and the ſame may be obſerved of alcohol of wine, and other ſubtile and fugitive ſpirits, raiſed by diſtillation.—Whereas real *Air* is not reducible by any compreſſion, condenſation, or the like, into any other ſubſtance beſide *Air*. Water, then, though it may put on an *aerial* nature for a while, yet is not capable of perſiſting therein: and the ſame may be ſaid of other fluids.—The fartheſt they can go, is to become vapour; which is the matter of the fluid rendered much rarer, and put in a briſk motion.—For a ſubſtance to become permanent *Air*, it muſt be of a fixed kind: otherwiſe, it is not capable of undergoing the alteration neceſſary to be induced in it; but gives way, and flies off, too ſoon. So that the difference between permanent and tranſient *Air*, amounts to the ſame as that between vapour and exhalation; the one, *e. gr.* being dry, the other moiſt.

We can go a little further yet.—This elaſtic property of *Air* is ſuppoſed by many philoſophers, to depend on the figure of its corpuſcles, which they ſuppoſe to be ramous: ſome will have them ſo many minute flocculi, reſembling fleeces of wool; others conceive them rolled up like hoops, and curled like wires, or ſhavings of wood, or coiled like the ſprings of watches, and endeavouring to reſtore themſelves in virtue of their texture: ſo that to produce *Air*, muſt be to produce ſuch a figure and diſpoſition of parts; and thoſe bodies only are proper ſubjects, which are ſuſceptible of ſuch diſpoſition; which fluids, from the ſmoothneſs, roundneſs, and ſlipperineſs of their parts, are not.

But Sir I. Newton (*Optics*, p. 371.) puts the thing another way; ſuch a texture he thinks by no means ſufficient to account for that vaſt power of elaſticity obſerved in *Air*, which is capable of diffuſing into above a million of times more ſpace than it before poſſeſſed.—But, as all bodies are ſhewn to have an attractive and a repelling power; and as both theſe are ſtronger in bodies, the denſer, more ſolid and compact they are; hence it follows, that when by heat, or any other powerful agent, the attractive force is ſurmounted, and the particles of the body ſeparated ſo far as to be out of the ſphere of attraction; the repelling power commencing thence, makes them recede from each other with a ſtrong force, proportionable to that wherewith they before cohered; and thus they become permanent *Air*.—Hence, ſays the ſame author, it is, that as the particles of permanent *Air* are groſſer, and riſe from denſer bodies, than thoſe of tranſient *Air*, or vapour; true *Air* is more ponderous than vapour; and a moiſt atmoſphere is lighter than a dry one.

But, after all, there may ſtill be reaſon to doubt, whether the matter thus produced from ſolid bodies have all the properties of *Air*; and whether ſuch *Air* be not tranſient, as well as that from humid ones; though not to that degree.—Mr. Boyle argues, from an experiment made in the *Air*-pump with lighted match; that thoſe light and ſubtile fumes into which the fire itſelf ſhatters dry bodies, have no ſuch ſpring as *Air*; ſince they were unable to hinder the expanſion of a little *Air*, included in a bladder they ſurrounded. *Phyſ. Mech. Exper.*—Yet, in ſome ſubſequent experiments, by diſſolving iron either in oil of vitriol and water, or in aqua-fortis; a large *aerial* bubble was produced, which had a real ſpring; ſo as to hinder the ſurrounding liquor from regaining its place; and which, by the application of a warm hand, readily dilated itſelf like other *Air*, and broke into the liquor in ſeveral ſucceeding bubbles; and even through the liquor into the open *Air*. *Ubi ſupra.*

The ſame excellent perſon farther aſſures us, he procured a really elaſtic ſubſtance from divers other matters; as bread, grapes, muſt, ale, apples, peas, beef, *&c.* and from ſome bodies by only burning them in vacuo, particularly paper, hartſhorn, *&c.* which yet, upon farther examination, was ſo far from being pure *Air*, that animals incloſed in it not only could not reſpire it without harm; but even died ſooner than in vacuo, where there was nothing like *Air*. *Phyſ. Mechan. Exper.*

We may here add an obſervation of the members of the Royal Academy of Sciences at Paris; which imports, that the property of elaſticity is ſo far from conſtituting *Air*; that *Air* is rendered more elaſtic by the admixture of ſome other matters along with it, than it is in its purity.—Thus, from ſome experiments of M. de la Hire at Paris, and of M. Stancari at Boulogne, M. Fontenelle aſſures us, that *Air* moiſtened with water, is conſiderably more elaſtic, and expands farther, than when pure.—M. de la Hire even found the moiſt *Air* eight times more elaſtic than the dry. *V. Hiſt. de l' Acad.* an. 1708. But it muſt not be omitted, that Dr. Jurin explains the experiments another way; and endeavours to ſhew, that the concluſion does not neceſſarily follow from them. *V. Append. ad Varen. Geogr.*

Thus much for *Air* conſidered in itſelf.—But ſuch *Air*, we have obſerved, no-where exiſts in its purity.—That wherewith we are concerned, and whoſe properties and effects are chiefly conſidered, is acknowleged by Mr. Boyle to be the moſt heterogeneous body in the univerſe: Boerhaave even ſhews it to be an univerſal chaos, or colluvies of all the kinds of created bodies.—Whatever fire can volatilize is found in the *Air*; and there is no body that can withſtand the force of fire.

Hence, for inſtance, 1°, The whole foſſil kingdom muſt neceſſarily be found therein: for all of that tribe, as ſalts, ſulphurs, ſtones, metals, *&c.* are convertible into fume, and thus capable of being rendered part of the *Air*.—Gold itſelf, the moſt fixed of all natural bodies, is found to adhere cloſe to the ſulphur in mines; and thus to be raiſed along with it.

2°, All the parts of the animal kingdom muſt alſo be in the *Air*: for, beſides the copious effluvia continually emitted from their bodies, by the vital heat, in the ordinary courſe of perſpiration; by means whereof an animal, in the courſe of its duration, impregnates the *Air* with many times the quantity of its own body; beſide this, we find that any animal when dead, being expoſed to the *Air*, is in a certain time carried wholly off, bones and all. So that the whole of what before was an animal, *e. gr.* a man, an ox, or the like, is now in the *Air*.

By the way, it may be noted what huge ſwarms of the groſſer excrementitious matters of animals muſt ſwim in the *Air*: at Madrid, we are aſſured, they have no neceſſary houſes; and that they always make a jakes of their ſtreets over night: yet does the *Air* imbibe the filth as faſt as it is laid; inſomuch that there is no increaſe of any fetid ſmell.

3°, As to vegetables, nothing of that claſs can be ſuppoſed wanting; ſince we know that all vegetables by putrefaction become volatile; even the earthy or vaſcular part, in time, following the reſt.

Of all the effluvia floating in this grand ocean the atmoſphere; the principal, are the ſaline. Theſe, authors commonly conceive, are chiefly of the nitrous kind; but there is no doubt but that there are of all the ſorts, vitriolic, aluminous, and of the nature of ſea-ſalt, *&c.*

Mr. Boyle even obſerves, that there may be many compounded kinds of ſalts in the *Air*, which we have not on earth; ariſing from different ſaline ſpirits, fortuitouſly meeting, and mixing together.—Thus, the glaſs windows of antient buildings are ſometimes obſerved to be corroded, as if they had been worm-eaten; though none of the ſimple ſalts abovementioned have the faculty of corroding glaſs.

The ſulphurs, too, muſt make a conſiderable article in the *Air*; on account of thoſe many volcanos, grottos, caverns, and other ſpiracles chiefly affording that mineral, diſperſed through the globe.

And the aſſociations, ſeparations, attritions, diſſolutions, and other operations of one ſort of matter upon another, may be conſidered as a ſource of numerous other neutral or anonymous bodies, unknown to us.

Air, in this general ſenſe, is one of the moſt conſiderable and univerſal agents in all nature; being concerned in the preſervation of life, and the production of moſt of the phænomena relating to our world.—Its properties and effects, including a great part of the reſearches and diſcoveries of the modern philoſophers, have ſome of them been reduced to preciſe laws and demonſtrations; in which form they make a branch of mathematics, called *Pneumatics*. Which ſee.

Mechanical Properties and Effects of AIR. The moſt conſiderable of theſe are its fluidity, weight, and elaſticity.—I°, Fluidity.—That the *Air* is a fluid, is evident from the eaſy paſſage it affords to bodies through it; as in the propagation of ſounds, ſmells, and other effluvia: for this argues it a body whoſe parts give way to any force impreſſed, and, in yielding, are eaſily moved among themſelves; which is the definition of a fluid.

They who, with the Carteſians, make fluidity conſiſt in a perpetual inteſtine motion of the parts, find *Air* alſo anſwers to that character: thus, in a darkened room, where the ſpecies of external objects are brought in by a ſingle ray; they appear in a continual fluctuation; and thus even the more accurate weather-glaſſes are obſerved never to remain a moment at reſt. See WEATHER-*Glaſs*.

The cauſe of this fluidity of *Air* is attributed by ſome late philoſophers to the fire intermixed therewith; without which, they imagine, the atmoſphere would harden into a ſolid, impenetrable maſs.—And hence, the greater the degree of fire therein is, the more fluid, moveable, and pervious, is the *Air*: and thus, as the degree of fire is continually varying, according to the circumſtances and poſition of the heavenly bodies; the *Air* is kept in a continual reciprocation.

Hence, in a great meaſure, it is, that, on the tops of the higher mountains, the ſenſes of ſmelling, hearing, *&c.* are found very feeble. See MOUNTAIN.

II°, Weight, or gravity.—That the *Air* is heavy, follows from its being a body; weight being an eſſential property of matter.

But we have infinite arguments of the ſame thing alſo from ſenſe, and experiment: thus, the hand, applied on the orifice of a veſſel empty of *Air*, ſoon feels the load of the incumbent atmoſphere.—Thus, glaſs veſſels, exhauſted of their *Air*, are eaſily cruſhed to pieces by the weight of the *Air* without. So, two ſmall hollow ſegments of a ſphere, exactly fitting each other, being emptied of *Air*, are preſſed together with a force equal to an hundred pounds, by the pondus of the ambient *Air*. Farther, a tube, cloſe at one end, being filled with mercury, and the other end immerged in a baſon of the ſame fluid; and thus erected; the mercury in the tube will be ſuſpended to the height of about thirty inches above the ſurface of that in the baſon. The reaſon of which ſuſpenſion is, that the mercury in the tube cannot fall lower, without raiſing that in the baſon; which being preſſed down with the weight of the incumbent atmoſphere, cannot give way, unleſs the weight of the mercury in the tube exceeds that of the *Air* out of it.—That this is the caſe, is evident hence; that if the whole apparatus be included in an *Air*-pump; in proportion as the *Air* is exhauſted from the ſame, the mercury falls: and on gradually letting in the *Air* again, the mercury reaſcends to its former height.—This makes what we call the *Torricellian experiment.*

To ſay no more, we can actually weigh *Air*; for a veſſel, full even of common *Air*, by a very nice balance, is found to weigh more than when the *Air* is exhauſted; and the effect is proportionably more ſenſible, if the ſame veſſel be weighed full of condenſed *Air* in a receiver void of *Air*.

The weight of *Air* is continually varying, according to the different degree of heat, and cold.—Ricciolus eſtimates its weight to that of water, to be as 1 to 1000; Merſennus as 1 to 1300, or 1 to 1356; Lana, as 1 to 640; Galileo only makes it as 1 to 400.—Mr. Boyle, by a more accurate experiment, found it about London, as 1 to 938, and thinks, all things conſidered, the proportion of 1 to 1000 may be taken as a medium; for there is no fixing any preciſe ratio, ſince not only the *Air*, but the water itſelf, is continually varying. Add, that experiments made in different places neceſſarily vary, in regard of the different heights of the places, and the different conſiſtences of *Air* ariſing therefrom. Boyle, *Phyſ. Mechan. Exper.*

It muſt be added, however, that by experiments made ſince before the Royal Society; the proportion of *Air* to water was, firſt, found as 1 to 840; then, as 1 to 852; and a third time, as 1 to 860. *Phil. Tranſ.* N° 181.—And laſtly, by a very ſimple and accurate experiment of the late Mr. Hawkſbee, the proportion was ſettled as 1 to 885. *Phyſ. Mechan. Exper.*—But theſe experiments being all made in the ſummer months, when the barometer was twenty-nine inches ¼ high; Dr. Jurin thinks, that at a medium between heat and cold, when the barometer is thirty inches high; the proportion between the two fluids may be taken as 1 to 800.

Air, then, being heavy and fluid; the laws of its gravitation, or preſſure, may be inferred to be the ſame as in other fluids; and conſequently, its preſſure muſt be as its perpendicular altitude.

This is alſo confirmed by experiment.—For, removing the Torricellian tube to a more elevated place, where the incumbent column of *Air* is ſhorter; a proportionably ſhorter column of mercury is ſuſtained; it being found to deſcend at the rate of one fourth of an inch, for every hundred feet of aſcent.

On this principle depend the ſtructure and office of the barometer.

From hence, alſo, it follows, that the *Air*, like all other fluids, muſt preſs equally every way.—This is confirmed by what we obſerve of ſoft bodies ſuſtaining this preſſure without any change of figure; and brittle bodies, without their breaking, though the preſſure upon them be equal to that of a column of mercury thirty inches high, or a column of water of thirty-two feet.—It is obvious, that no other cauſe can preſerve ſuch bodies unchanged, but the equable preſſure on all ſides, which reſiſts as much as it is reſiſted. And hence, upon removing or diminiſhing the preſſure on one ſide only; the effect of the preſſure is ſoon perceived on the other.

For the quantity and effect of this preſſure of the atmoſphere on the human body, ſee ATMOSPHERE.

From this gravity of the *Air*, conſidered with its fluidity, ſeveral of its uſes and effects are deducible.—And, 1°, by means hereof, it cloſely inveſts the earth, with all the bodies on it; and conſtringes and binds them down with a force amounting, according to the computation of M. Paſchal, to 2232 pounds weight, upon every ſquare foot, or upwards of 15 pounds upon every inch ſquare.—Hence, it prevents, *e. gr.* the arterial veſſels of plants and animals, from being too much diſtended by the impetus of the circulating juices, or by the elaſtic force of the *Air* ſo plentifully contained in the blood.—Thus, we ſee, in the operation of cupping, that, upon a diminution of the preſſure of the *Air*, the parts of the body grow tumid; which neceſſarily alters the manner of the circulation through the capillaries, *&c.*

The ſame cauſe hinders the juices from ouſing and eſcaping through the pores of their containing veſſels: this is experienced by ſuch as travel up high mountains, who, in proportion as they aſcend, find themſelves grow more and more relaxed; and at length fall into a ſpitting of blood, and other hæmorrhages; by reaſon of the *Air* not ſufficiently binding up the veſſels of the lungs.—The like is obſerved of animals incloſed in the receiver of the *Air*-pump, who, as the *Air* is taken from them, ſwell, vomit, drivel, dung, urine, ſweat, *&c.* See VACUUM.

2°, The mixture of contiguous bodies, eſpecially fluid ones, is chiefly owing hereto.—Hence many liquids, as oils and ſalts, which readily and ſpontaneouſly mix in *Air*, upon taking that away, remain quietly in their ſtate of ſeparation.

3°, It determines the action of one body upon another.—Thus, the fire which burns wood immediately goes out, and its flame diſſipates upon removing the *Air*; by reaſon ſomething is then wanting to preſs the corpuſcles of fire againſt thoſe of the fuel, and prevent the too ſpeedy diffuſion of the flame. The ſame is obſerved of aqua-regia, and gold; that menſtruum ceaſing any longer to operate on the metal, after the *Air* is taken away. And upon the ſame determining power of the *Air* it is, that Papin's digeſtor is built.

Hence alſo it is, that on the tops of high mountains, as on the pike of Teneriffe, the moſt acrid bodies, as pepper, ginger, ſalts, ſpirit of wine, *&c.* have no ſenſible taſte; for want of their particles being preſſed upon the tongue, ſo as to enter its pores, but, inſtead thereof, being diſſipated, and blown away, by its heat. The only thing that there retains its ſavour, is Canary wine, which is chiefly owing to its unctuous quality; in virtue whereof, it adheres cloſely to the part, and is not eaſily blown away.

From this principle of gravity chiefly ariſe our winds; which are only *Air* put in motion by ſome alteration in the equilibrium thereof.

III°, Elaſticity,—or a power of yielding to an impreſſion by contracting its dimenſions; and, upon removing or diminiſhing the impreſſive cauſe, returning to its former ſpace or figure.—This elaſtic force is accounted the diſtinguiſhing property of *Air*; the other properties hitherto enumerated being common to it with other fluids.

Of this power we have numerous proofs.—Thus, a blown bladder being ſqueezed in the hand; we find the included *Air* ſenſibly reſiſt; ſo as upon ceaſing to compreſs, the cavities or impreſſions, made in its ſurface, are readily expanded again, and filled up.

On this property of elaſticity, the ſtructure and office of the *Air*-pump depend.

This niſus or endeavour to expand, every particle of *Air* always exerts; and thus ſtrives againſt an equal endeavour of the ambient particles; whoſe reſiſtance happening by any means to be weakened, it ſtrait diffuſes into an immenſe extent.—Hence it is, that thin glaſs bubbles, or bladders filled with *Air*, and exactly cloſed, being included in the exhauſted receiver of an *Air*-pump, burſt, by the force of the included *Air*. So a bladder quite flaccid, containing only the ſmalleſt quantity of *Air*, ſwells in the receiver, and appears quite full. The ſame effect is alſo found, by carrying the flaccid bladder to the top of an high mountain.

This power does not ſeem to have any limits aſſigned it; nor does it appear capable, by any means whatever, of being deſtroyed or diminiſhed.—Mr. Boyle made ſeveral experiments, with a view to diſcover how long *Air*, brought to the greateſt degree of expanſion he could reduce it to in his *Air*-pump, would retain its ſpring; and could never obſerve any ſenſible diminution; even though this poor thin *Air* was clogged ſome months with a weight which one would wonder how it ſhould ſupport a moment.

Yet, Mr. Hawkſbee, by a later experiment, has ſhewn, that the ſpring of the *Air* may be ſo diſturbed by a violent preſſion, as to require ſome time to return to its natural tone.

The weight or preſſure of the *Air*, it is obvious, has no dependence on its elaſticity; but would be the ſame, whether the *Air* had ſuch property or not.—But the *Air*, in being elaſtic, is neceſſarily affected by the preſſure, which reduces it into ſuch a ſpace, as that the elaſticity which re-acts againſt the compreſſing weight, is equal to that weight.

In effect, the law of this elaſticity is, that it increaſes as the denſity of the *Air* increaſes; and the denſity increaſes, as the force increaſes wherewith it is preſſed. Now, there muſt neceſſarily be a balance between the action and re-action: *i. e.* the gravity of the *Air*, which tends to compreſs it, and the elaſticity of the *Air*, which endeavours to expand it, muſt be equal.

Hence, the elaſticity increaſing, or diminiſhing, univerſally, as the denſity increaſes, or diminiſhes, *i. e.* as the diſtance between the particles diminiſhes, or increaſes; it is no matter whether the *Air* be compreſſed, and retained in ſuch ſpace, by the weight of the atmoſphere, or by any other means: it muſt endeavour, in either caſe, to expand with the ſame force.—And hence, if *Air* near the earth be pent up in a veſſel, ſo as to cut off all communication with the external *Air*; the preſſure of the incloſed *Air* will be equal to the weight of the atmoſphere. Accordingly, we find mercury ſuſtained to the ſame height, by the elaſtic force of *Air* incloſed in a glaſs veſſel, as by the whole atmoſpherical preſſure.

On the ſame principle may *Air* be artificially condenſed.

And hence the ſtructure of the wind-gun.

Dr. Halley aſſerts, in the *Philoſoph. Tranſactions*, that from the experiments made at London, and by the academy del Cimento at Florence, it may be ſafely concluded, that no force whatever is able to reduce *Air* into eight hundred times leſs ſpace than what it naturally poſſeſſes on the ſurface of our earth. In anſwer to which, Monſieur Amontons, in the memoirs of the French academy, maintains, that there is no fixing any bounds to its condenſation; that greater and greater weights will ſtill reduce it into leſs and leſs compaſs; that it is only elaſtic in virtue of the fire it contains; and that as it is impoſſible ever abſolutely to drive all the fire out of it, it is impoſſible ever to make the utmoſt condenſation.

The dilatation of the *Air*, by virtue of its elaſtic force, is found to be very ſurpriſing; and yet Dr. Wallis ſuggeſts, that we are far from knowing the utmoſt it is capable of.——In ſeveral experiments made by Mr. Boyle, it dilated firſt into nine times its former ſpace; then into 31 times; then into 60; then into 150. Afterwards, it was brought to dilate into 8000 times its ſpace; then into 10000, and even at laſt into 13679 times its ſpace: and all this by its own expanſive force, without any help of fire.

On this depend the ſtructure and uſe of the manometer.

Hence, it appears, that the *Air* we breathe, near the ſurface of the earth, is compreſſed by its own weight into at leaſt the 13679th part of the ſpace it would poſſeſs in vacuo.—But if the ſame *Air* be condenſed by art; the ſpace it will take up when moſt dilated, to that it poſſeſſes when condenſed, will be, according to the ſame author's experiments, as 550000 to 1.

Hence, we ſee how wild and erroneous was that obſervation of Ariſtotle, that *Air*, rendered ten times rarer than before, changes its nature, and becomes fire.

M. Amontons, and others, we have already obſerved, take the rarefaction of *Air* to ariſe wholly from the fire contained in it; and hence, by increaſing the degree of heat, the degree of rarefaction may be carried ſtill further than its ſpontaneous dilatation.

On this principle depend the ſtructure and office of the thermometer.

M. Amontons firſt diſcovered, that *Air*, the denſer it is, the more it will expand with the ſame degree of heat.

On this foundation, the ſame ingenious author has a diſcourſe, to prove "that the ſpring and weight of the *Air*, "with a moderate degree of warmth, may enable it to pro-"duce even earthquakes, and other of the moſt vehement "commotions in nature."

According to the experiments of this author, and M. De la Hire, a column of *Air* on the ſurface of the earth, 36 fathoms high, is equal in weight to three lines depth of mercury; and it is found, that equal quantities of *Air* poſſeſs ſpaces reciprocally proportional to the weights wherewith they are preſſed: the weight of the *Air*, therefore, which would fill the whole ſpace poſſeſſed by the terreſtrial globe, would be equal to a cylinder of mercury, whoſe baſe is equal to the ſurface of the earth, and its height containing as many times three lines, as the atmoſpherical ſpace contains orbs equal in weight to 36 fathoms of that wherein the experiment was made.—Hence, taking the denſeſt of all bodies, *e. gr.* gold, whoſe gravity is about 14630 times greater than that of *Air* in our orb, it is eaſy to compute, that this *Air* would be reduced to the ſame denſity as gold, by the preſſure of a column of mercury 14630 times 28 inches high, *i. e.* 409640 inches: ſince the bulks of *Air*, in that caſe, would be in the reciprocal ratio of the weights wherewith they are preſſed. This 409640 inches, therefore, expreſſes the height at which the barometer muſt ſtand, where the *Air* would be as heavy as gold, and the number $2\frac{51622}{409640}$ lines, the thickneſs to which our column of 36 fathoms of *Air* would be reduced in the ſame place.

Now, we know, that 409640 inches, or 43528 fathoms, is only the 74th part of the ſemidiameter of the earth: and therefore when you are paſt that, whatever matters there be, they muſt be heavier than gold. It is not improbable, therefore, that the remaining ſphere of 6451538 fathoms diameter may be full of denſe *Air*, heavier, by many degrees, than the heavieſt bodies among us.—Hence, again, as it is proved, the more *Air* is compreſſed, the more does the ſame degree of fire increaſe the force of its ſpring, and render it capable of ſo much the greater effect; and that, for inſtance, the heat of boiling water increaſes the ſpring of our *Air*, beyond what it ordinarily is, by a quantity equal to one third of the weight wherewith it is preſſed; we may infer, that a degree of heat, which in our orb can only produce a moderate effect, may have a very violent one in ſuch lower orb; and that as there may be many degrees of heat in nature, beyond that of boiling water, it is probable there may be ſome, whoſe violence, thus aſſiſted by the weight of the *Air*, may be ſufficient to tear aſunder the ſolid globe. *Mem. de l'Acad.* An. 1703.

This elaſtic power of the *Air* is the ſecond great ſource of the effects of this important fluid.—In virtue hereof, it inſinuates into the pores of bodies, carrying with it this prodigious faculty of expanding; and that ſo eaſy to be excited: whence it muſt neceſſarily put the particles of the bodies it is mixed withal, into perpetual oſcillations. In effect, the degree of heat, and the *Air's* gravity and denſity, and conſequently its elaſticity and expanſion, never remaining the ſame for two minutes together; there muſt be an inceſſant vibration, or dilatation and contraction, in all bodies.

This reciprocation we obſerve in ſeveral inſtances, particularly in plants, the tracheæ or *Air*-veſſels whereof do the office of lungs: for the contained *Air* alternately expanding and contracting, as the heat increaſes or diminiſhes, by turns preſſes the veſſels, and eaſes them again; and thus promotes a circulation of their juices.

Hence, we find, that no vegetation or germination will proceed in vacuo.—Indeed, beans have been obſerved to grow a little tumid therein; and this has led ſome to attribute that to vegetation, which was really owing to no other than the dilatation of the *Air* within them.

From the ſame cauſe it is, that the *Air* contained in the bubbles in ice, by its continual action, burſts the ice: and thus glaſſes and other veſſels frequently crack, when their contained liquors are frozen. Thus, alſo, intire columns of marble ſometimes cleave in the winter-time, from ſome little bubble of included *Air's* acquiring an increaſed elaſticity.

From the ſame principle ariſe all putrefaction and fermentation; neither of which will proceed, even in the beſt diſpoſed ſubjects, in vacuo.

In this we have a ſingular inſtance of the wonderful efficacy of *Air*, that it can change the two kingdoms, and convert vegetable ſubſtances into animal, and animal into vegetable.

In effect, all natural corruption and alteration ſeems to depend on *Air*; and metals, particularly gold, only ſeem to be durable and incorruptible, in virtue of their not being pervious to *Air*.—Accordingly, names ſlightly written in the ſand, or duſt, on the tops of high mountains, have been known to remain 40 years, without being in the leaſt altered or effaced.

Effects of the different ingredients of the Air.—*Air* not only acts by its common properties of gravity, and elaſticity, but there are numerous other effects, ariſing from the peculiar ingredients whereof it conſiſts.

Thus, 1°, It not only diſſolves and attenuates bodies by its preſſure and attrition, but as a chaos containing all kinds of menſtruums, and conſequently having wherewithal to diſſolve all kinds of bodies.

It is known, that iron and copper readily diſſolve, and become ruſty, in *Air*, unleſs well defended with oil.—Boerhaave aſſures us, he has ſeen pillars of iron ſo reduced by *Air*, that one might crumble them to duſt between the fingers; and for copper, it is converted by the *Air* into a ſubſtance much like the verdegriſe produced by vinegar.

Mr. Boyle relates, that in the ſouthern Engliſh colonies the great guns ruſt ſo faſt, that, after a few years lying in the *Air*, large cakes of crocus martis may be eaſily beat off them.—Acoſta adds, that in Peru the *Air* diſſolves lead, and conſiderably increaſes its weight.—Yet gold is generally eſteemed indiſſoluble by *Air*; being never found to contract ruſt, though expoſed to it ever ſo long. The reaſon hereof is, that ſea-ſalt, which is the only menſtruum capable of acting on gold, being very difficult to volatilize; there is but a ſmall proportion of it in the atmoſphere. In the chymiſts laboratories, where aqua regia is preparing; the *Air* becoming impregnated with an unuſual quantity of this ſalt; gold contracts a ruſt like other bodies.

Stones alſo undergo the common fate of metals.—Thus, Purbeck ſtone, whereof Saliſbury cathedral conſiſts, is obſerved gradually to become ſofter, and moulder away in the *Air*; and the like Mr. Boyle relates of Blackington ſtone. He adds, that *Air* may have a notable operation on vitriol, even when a ſtrong fire could act no further on it. The ſame author has even found the fumes of a ſharp liquor to work more ſuddenly and manifeſtly on a certain metal, when ſuſtained in the *Air*, than the menſtruum itſelf did which emitted fumes, on thoſe parts of the metals it covered: in this he ſeems to refer to the effect of the effluvia of vinegar on copper. See Supplement, article Copper.

2°, *Air* volatilizes fixed bodies. Thus ſea-ſalt being firſt calcined, then fuſed by the fire, and when fuſed expoſed to the *Air* to liquify; when liquified ſet to dry again, then fuſed again; and, the operation thus repeated; will by degrees be almoſt wholly evaporated; nothing remaining but a little earth behind.

Helmont mentions it as a mighty arcanum in chymiſtry to render fixed ſalt of tartar volatile: but the thing is eaſily effected by *Air* alone; for if ſome of this ſalt be expoſed to the *Air* in a place replete with acid vapours, the ſalt draw the acid to itſelf, and, when ſaturated therewith, is volatile.

3°, *Air* alſo fixes volatile bodies.—Thus, though ſpirit o nitre, or aqua-fortis readily evaporate by the fire; yet, there be any putrefied urine near the place, the volatile ſpiri will be fixed, and fall down in form of aqua ſecunda.

4°, Add, that *Air* brings many quieſcent bodies into action *i. e.* excites their latent powers.—Thus, if an acid vapou be diffuſed through the *Air*, all the bodies whereof that is proper menſtruum, being diſſolved thereby, are brought in a ſtate proper for action. See Acid, &c.

In chemiſtry, not only the preſence or abſence of the *Air*, but even its being barely open, or incloſed, is of great conſequence.—Thus, camphire fired in a cloſe veſſel, runs wholly into flowers; whereas, if, during the proceſs, the cover be removed, and a candle applied, the whole flies off in fume. So to make ſulphur inflammable, it requires a free *Air*: in a cloſe cucurbit, it may be ſublimed a thouſand times without kindling; whereas being put under a glaſs bell, and a fire applied, it riſes into ſpirit of ſulphur per campanam. So an ounce of charcoal, incloſed in a crucible well luted, will remain without loſs for fourteen days in the intenſeſt heat of a melting furnace; though the thouſandth part of the fire in open *Air* will preſently turn it into aſhes.—Helmont adds, that the charcoal remains all that while without any alteration of its black colour; but the minute *Air* is let in, it falls inſtantly into white aſhes. The ſame holds of the parts of all animals and vegetables; which can only be calcined in open *Air*: in cloſe veſſels they never become any other than black coals.

The *Air* is liable to abundance of alterations, not only in reſpect to its mechanical properties, gravity, denſity, &c. but alſo in reſpect of the ingredients it conſiſts of.—Thus, in places abounding with marcaſites, a fretting vitriolic ſalt is obſerved to predominate in the *Air*, which rots the hangings, and is often ſeen lying on the ground in a whitiſh eſſloreſcence.—At Faſhlun in Sweden, noted for copper-mines, the mineral exhalations affect the *Air* ſo ſenſibly, that their ſilver coin is frequently diſcoloured in their purſes; and the ſame effluvia change the colour of braſs.—Mr. Boyle was aſſured by a gentleman who poſſeſſed ſome ground wherein there were ſeveral veins of metals, and other minerals, that he had frequently ſeen pillars of fumes aſcending thence; ſome having no ſcent, ſome an ill one, and ſome few a good one.—In Carniola, Campania, &c. where there are mines of ſulphur, the *Air* at times becomes very unwholſome; whence frequent epidemic diſeaſes, &c.—It is added, that the mines near the cape of Good Hope emit ſuch horrible fumes from the arſenic that abounds there, that no animal can live near them; ſo that ſuch as have at any time been opened, were obliged to be immediately cloſed up again.

The effluvia of animals alſo have their effect in varying the *Air*; as is evident in contagious diſeaſes, plagues, murrains, and other mortalities which are ſpread by the *Air*.

The like is obſerved in vegetables.—Thus, a good part of the clove-trees which grew ſo plentifully in the iſland of Ternate, being felled at the ſolicitations of the Dutch, in order to heighten the value of that fruit; ſuch a change enſued in the *Air*, as ſhewed the ſalutary effect of the effluvia of the clove-trees, and their bloſſoms; the whole iſland, ſoon after they were cut down, becoming exceeding ſickly. This, a phyſician who had been upon the ſpot, and from whom Mr. Boyle had the relation, attributed to the noxious ſteams of a volcano there; the ill quality whereof had been corrected by the aromatic effluvia of thoſe ſpicy bloſſoms.

The *Air* is alſo liable to alterations from the ſeaſon of the year.—Thus, few ſubterraneous effluvia are emitted in the winter; by reaſon the pores are locked up by the froſt, or covered by ſnow; the ſubterraneous heat being all the while at work, and preparing a fund, to be diſcharged the enſuing ſpring.—Hence it is, that if the ſame ſeed be ſown in the ſame ſoil, in autumn and ſpring, and the degree of heat be the ſame, a very different effect will be found; and for the like reaſon, rain-water, gathered in the ſpring, is found to have a peculiar virtue in reſpect to corn; which, being ſteeped therein, affords a much larger quantity of ſpirits than otherwiſe.—Hence alſo, we ſee why a very ſevere winter is uſually followed by a wet ſpring, and fruitful ſummer; and *vice verſa*.

Again, from the winter's ſolſtice to the ſummer's, the ſun's rays growing ſtill more and more perpendicular; their impulſe on the earth's ſurface becomes more and more powerful; by which the glebe or ſoil is more and more relaxed, ſoftened, and putrefied; till he arrives at the tropic: where, with the force of a chemical agent, he reſolves the ſuperficial parts of the earth into their principles, water, oil, ſalt, &c. which are all ſwept away into the atmoſphere.

And hence we conceive the nature of meteors, which are either collections of ſuch effluvia, or diſperſions thereof.—Theſe meteors, too, have conſiderable effects on the *Air*; and thus thunder is known to put liquors upon fermenting afreſh.

In effect, whatever alters the degree of heat, will make a proportionable alteration in the matter of the *Air*. Mr. Boyle ſuggeſts ſomething farther on this head, *viz.* that the ſalts, &c. which in a warm ſtate of weather were kept in a fluor, and mixed together, ſo as to be in a condition to act conjunctly; upon a remiſſion of the warmth, may loſe their fluidity and motion, ſhoot into cryſtals, and thus ſeparate again.

The height and depth of the *Air* makes a farther alteration, the exhalations being few of them able to aſcend above the tops of high mountains, as appears from thoſe plagues, where the inhabitants of one ſide of a mountain have all periſhed without the leaſt diſorder on the other ſide.

Nor muſt drought and moiſture be denied their ſhare in varying the ſtate of the atmoſphere.—In Guinea, the heat, with the moiſture, conduces ſo much to putrefaction, that the pureſt white ſugars are often full of maggots; and their drugs ſoon loſe their virtue, and many of them grow verminous. It is added, that in the iſland of St. Iago, they are obliged to expoſe their ſweet-meats daily to the ſun, to exhale the moiſture they had contracted in the night, which would otherwiſe occaſion them to putrefy.

On this principle depend the ſtructure and office of the hygrometer.

Theſe diverſities in the *Air* are found to have an influence on the operations, experiments, &c. of philoſophers, chemiſts, and other operators.

Thus, it is very difficult to procure oil of ſulphur per campanam in a clear dry atmoſphere, its parts being then more ready to eſcape into the *Air*: but in a thick, moiſt *Air*, the oil comes in abundance.—So, all ſalts melt eaſieſt in a cloudy *Air*; and when melted, act moſt forcibly. And all ſeparations ſucceed beſt in ſuch weather.—If ſalt of tartar be expoſed in a place where any acid ſpirit is floating in the *Air*, it will imbibe the ſame; and of fixed become volatile. Hence, the experiments made of ſalts at London, where the *Air* is plentifully impregnated with ſulphur exhaled from ſea-coal, prove different from thoſe made on the ſame ſubjects in other parts of the kingdom, where wood, turf, &c. are the uſual fuel. Hence alſo, metalline utenſils, &c. ruſt much ſooner at London, than in other parts, where there are fewer acid corroſive corpuſcles in the *Air*; and fermentation, which is eaſily raiſed and carried on in a place free of ſulphur, is impracticable in places where ſulphureous exhalations abound.—If pure well-fermented wine be carried into a place where the *Air* is repleniſhed with the fumes of new wine then fermenting; it will begin to ferment afreſh. So ſalt of tartar ſwells, and as it were ferments, when carried into a place where ſpirit of nitre, vitriol, or ſea-ſalt, is preparing.—It is matter of common obſervation among brewers, diſtillers, vinegar-makers, &c. that at the time when the ſeveral plants uſe to be in flower, the reſpective juices ferment, and each proceſs ſucceeds the beſt. Add, that ſtains cauſed by vegetable juices, are obſerved to be beſt taken out of linen, at the time when the ſeveral plants that afford them are in their prime. This, Mr. Boyle obſerves, has been experienced in the ſtains of juice of quinces, hops, &c. one of which latter, eluding all the endeavours that could be uſed to get it out, has vaniſhed of itſelf the next hop-ſeaſon.

After all, ſome of our more curious and penetrating naturaliſts have obſerved certain effects of *Air*, which do not appear to follow from any of the properties, or the materials above recited.—On this view, Mr. Boyle has compoſed an expreſs treatiſe of *Suſpicions about ſome unknown properties of the* Air.—The phænomena of fire and flame in vacuo ſeem, according to him, to argue ſome odd unknown vital ſubſtance diffuſed through the *Air*, on account whereof that fluid becomes ſo neceſſary to the ſubſtance of flame: but whatever this ſubſtance be, it ſhould ſeem by its ſudden waſting or ſpoiling, that the quantity thereof is very inconſiderable, in proportion to the bulk of *Air* it impregnates with its virtue; in regard, when the flame can no longer ſubſiſt in it, the *Air*, upon examination, is not found to have undergone any alteration in any of its known properties.

Other inſtances to countenance ſuch ſuſpicions are, the appearance and growth of ſalts in many bodies, which either afford them not at all, or not in that plenty, unleſs expoſed to the *Air*. Mr. Boyle mentions ſome marcaſites dug from under-ground, which, being kept in a dry room, were ſoon covered over with a vitriolic eſſloreſcence, and in a little time, by the operation of the *Air* on them, were in great part crumbled into a powder exceeding rich in copperas; though they had probably lain many ages intire under ground: ſo the earth or ores of alum, and many other minerals, robbed of their ſalt, metals, or the like, it is ſaid, will in tract of time recover them; and the like is obſerved of the cinders of ſea-coal, and at the iron works. See SUPPLEMENT, article IRON.

Mr. Boyle adds, that ſome lime in old walls has in time gained a large eſſloreſcence of a nitrous nature, from which ſalt-petre was procurable. Add, that the colcothar of vitriol is not naturally corroſive, nor can any ſalt be procured from it, even by the affuſion of water; but being expoſed awhile to the *Air*, it yields a ſalt plentifully.

The exiſtence of ſuch hidden properties is alſo argued, from the acceſs of the *Air* rendering antimonial medicines emetic, and diſpoſed to produce faintings and heart-burnings; and from its ſpeedy corrupting and mouldering of trees dug from under-ground, which had for ages remained firm, and almoſt impervious to the ax.

To ſay no more, the ſilks in Jamaica, if expoſed to the *Air*, ſoon rot; even while they preſerve their colour: whereas, if kept from the *Air*, they hold their firmneſs and dye: and the ſable taffety worn at Braſil, becomes in a few days of an iron-grey colour in the *Air*; but in the ſhops preſerves its hue: and ſome leagues beyond Paraguay, white people ſoon grow tawny; but as ſoon recover their native colour, upon removing out of that quarter.—Theſe, out of a great number of inſtances tending the ſame way, may convince us, that notwithſtanding all the diſcoveries hitherto made concerning *Air*, there ſtill remains a field for future inquiries.

Whether *Air* be convertible into water, or water into *Air*, is alſo a problem among philoſophers.

AIR, in medicine, *&c.* makes one of the ſix non-naturals.

From obſervations on bleeding in rheumatiſms, and after taking cold, it is evident, the *Air* can enter with all its qualities, and vitiate the whole texture of the blood, and other juices.

From the palſies, vertigoes, and other nervous affections cauſed by damps, mines, *&c.* it is evident, that *Air* thus qualified can relax and obſtruct the whole nervous ſyſtem. And from the colics, fluxes, coughs, and conſumptions produced by damp, moiſt, and nitrous *Air*, it is evident it can corrupt and ſpoil the noble organs, *&c.*—See farther under the article ATMOSPHERE.

The ſalubrity of frequently changing the *Air* induced Dr. Henſhaw to contrive a method of doing it without removing from place to place, by means of an air-chamber fitted for the purpoſe. See his *Aero-chalin. c.* 5. *ap. Phil. Tranſ.* N° 133. *p.* 834.

Dr. Deſaguliers has lately contrived a machine for the like ſervice, viz. for changing the *Air* of a ſick perſon's room, by either drawing out the foul, or forcing in freſh *Air*, by what he calls a centrifugal wheel, without opening either door, or window: an expedient which may be of conſiderable uſe in hoſpitals, mines, *&c.*—Something of it is ſaid to have been actually put in practice over the houſe of commons, to draw away the hot ſteam from the candles, breath, ſweat, *&c.* of ſo many perſons in hot weather. Vid. *Phil. Tranſ.* N° 437. *p.* 41.

Innate **AIR** is a fine aerial ſubſtance, ſuppoſed, by ſome anatomiſts, to be incloſed in the labyrinth of the inner ear, and to miniſter to the due conveyance of ſounds to the ſenſory.

But the exiſtence of ſuch *innate Air* has of late been called in queſtion, and even diſapproved. See EAR.

AIR, in muſic, ſignifies the melody, or the inflexion of a muſical compoſition. See MELODY.

The word is alſo uſed for a tune, or ſong itſelf, that is, for a compoſition whoſe movements are juſt and equal; and the times, eſpecially the firſt of ſuch meaſure, well marked—being uſually to be played pretty quick, and lively; unleſs there be ſomething to indicate the contrary: as, *larga*, or *affettuoſa*, &c.

Thus we ſee an *Air* of Lully: Handel's airs, with their ſymphonies and accompanyments, are made into concertos for the violin, *&c.*

AIRS, in horſemanſhip, denote the artificial or practiſed motions of a managed horſe.

Such are the demi-volt, curvet, capriole, croupade, balotade, and ſtep and leap; alſo advancing, yerking, and bounding.

Some authors take *Airs* in a more extenſive ſenſe; and divide them into *low*, and *high*.

The *low Airs* include the natural paces, as walking, trotting, galloping, and terra-a-terra. See PACE, TROT, GALLOP, *&c.*—To which may be added, prancing, ſidling, ſtopping, and turning.

The *high*, or *raiſed Airs*, are all ſuch motions as riſe higher than the terra-a-terra; as the demi-volt, curvet, *&c.*

AIR-PUMP, a machine, by means whereof the *air* may be exhauſted out of proper veſſels. See AIR.

The uſe and effect of the *Air-pump* is, to make, what we popularly call, a *vacuum*; but this, in reality, is only a degree of rarefaction ſufficient to ſuſpend the ordinary effects of the atmoſphere.

By this machine, therefore, we learn, in ſome meaſure, what our earth would be without an atmoſphere; and how much all vital, generative, nutritive, and alterative power, depend thereon.

The principle on which the *Air-pump* is built, is the elaſticity of the *air*; as that on which the common, or water-pump is founded, is the gravity of the ſame *air*.

The ſtructure of the *Air-pump* is, in itſelf, more ſimple even than that of the water-pump.—The latter ſuppoſes two principles, gravity and elaſticity likewiſe: ſo that the water-pump muſt firſt be an *Air-pump*, *i. e.* it muſt rarefy the *air* before it can raiſe the water.—In effect, water, being a dormant unelaſtic fluid, needs ſome external agent to make it aſcend; whereas *air* aſcends in virtue of its own elaſtic activity: its natural tendency is, to ſeparate, and leave a vacuum; and all that remains to art, is to prevent the ambient *air* from ſupplying the place of what thus ſpontaneouſly flies away.

To make water aſcend, the force wherewith it is preſſed downwards, is either to be diminiſhed or increaſed in one part, more than another; like a balance in æquilibrio, one of whoſe ſcales may be made to raiſe, either by diminiſhing its own weight, or increaſing that of the other: the water, therefore, recedes from the common centre of gravity, by the very power wherewith it tends towards it, indirectly or ſecondarily applied; for that two ſimilar centripetal forces being made to act contrary to each other, what in the one over-balances the other, muſt have the effect of a centrifugal force.—Whereas, the principle whereby *air* rarefies or diminiſhes, does not reſpect the centre of the earth, but the centres of its own particles; being no other than a certain implanted power, whereby they immediately tend to recede from each other.

The invention of this noble inſtrument, to which the preſent age is indebted for ſo many fine diſcoveries, is aſcribed to Otto de Guerick, the celebrated conſul of Magdebourg; who exhibited his firſt public experiments therewith, before the emperor and the ſtates of Germany, at the breaking up of the imperial diet at Ratiſbon, in the year 1654.

Dr. Hook, and M. du Hamel, indeed, aſcribe the invention to Mr. Boyle; but that ingenious author frankly confeſſes de Guerick to have been beforehand with him. Some attempts, he aſſures us, he had made upon the ſame foundation, before he knew any thing of what had been done abroad: but the information he afterwards received from Schottus's *Mechanica Hydraulico-Pneumatica*, publiſhed in 1657. wherein was an account of de Guerick's experiments, firſt enabled him to bring his deſign to any thing of maturity.—From hence, with the aſſiſtance of Dr. Hook, after two or three unſucceſsful trials, aroſe a new *Air-pump*; more eaſy and manageable than the German one: and hence, or rather from the great variety of experiments that illuſtrious author applied it to, the engine came to be denominated *Machina Boyleana*.

Structure and uſe of the AIR-PUMP.—The baſis or eſſential part in the *Air-pump*, is a metalline tube, anſwering to the barrel of a common pump, or ſyringe; having a valve at the bottom, opening upwards: and a moveable piſton or embolus, anſwering to the ſucker of a pump, furniſhed likewiſe with a valve opening upwards.—The whole, duly fitted to a veſſel, as a recipient.

The reſt, being only circumſtances chiefly reſpecting conveniency, has been diverſified and improved from time to time, according to the ſeveral views and addreſs of the makers.—That of Otto de Guerick, being leſs artful, laboured under ſeveral defects, in reſpect of the force neceſſary to work it, which was very great; and the progreſs very ſlow: beſide that it was to be kept under water; and allowed of no change of ſubjects for experiments.

Mr. Boyle, by degrees, removed ſeveral of theſe inconveniences; and alleviated others: but ſtill the working of his pump was laborious, by reaſon of the preſſure of the atmoſphere, a great part of which was to be removed at every exſuction, after a vacuum was nearly arrived at.—But this inconvenience has ſince been removed by Mr. Hawkſbee, who by adding a ſecond barrel and piſton to the former, to riſe as the other fell, and fall as it roſe; made the preſſure of the atmoſphere on the deſcending one, of as much ſervice as it was of diſſervice in the aſcending one.

Some of the Germans have alſo brought the *Air-pump* to do the oppoſite office of a condenſer: but this is not to make the inſtrument ſo much the better, as more complex.

The ſtructure of the Air-pump, as now made among us, with all its advantages, is repreſented in Tab. *Pneumatics*, fig. 16.

It conſiſts of two brazen barrels or cylinders, repreſented by *a a a a*; which communicate with each other by a canal paſſing between them at *d d*; and with the receiver *o o o o*, by means of the hollow wire *h h*, one end whereof opens into the canal of communication, and the other into a like canal *n n*; which penetrating the plate *i i i i*, opens into the receiver.

Within the cylinders are two emboli, or ſuckers made of braſs, and fitted with cork and leather to the cavities of the barrels, ſo as exactly to fill the ſame; each being furniſhed with its valve, and terminating at top in a rack *c c*, by which it is worked.

At the bottom of either barrel is another valve, by which the *air* may paſs out of the communicating canal *d d*, and conſequently out of the hollow wire and the receiver itſelf, into the cylinder, below the piſton; from whence by the valves of the piſton it may proceed into the upper ſpace of the cylinder, and thus into the open *air*.

For the application of this mechaniſm.—The winch *b b* being turned upward and downward *; its ſpindle *f*, catching by its teeth into the racks, will raiſe and depreſs the two piſtons, alternately.—Now the conſequence of depreſſing a piſton is, that the *Air* before incloſed between it and the bottom of the cylinder, being thus crouded into a leſs compaſs, will, by its elaſtic force, which now exceeds the preſſure of the atmoſphere, puſh up the valve of the piſton, and thus eſcape; till what little remains be of the ſame denſity with the external *air* incumbent on the valve.

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* W.

* W. Vream, a late pneumatic operator, made an improvement in Hawkſbee's *Air-pump*, by reducing the alternate motion of the hand and winch to a circular one. In his method, the winch is turned quite round, yet the piſtons are raiſed and depreſſed alternately: by which the trouble of ſhifting the hand backward and forward, as well as the loſs of time, and the ſhaking of the pump, are prevented. See the contrivance for this purpoſe deſcribed in *Clare's motion of fluids*, p. 154.

This done, and the ſame piſton being again raiſed in its turn, from the bottom of the cylinder to the top; the little *air* before left, will of neceſſity expand itſelf, ſo as to poſſeſs the whole ſpace of the cylinder thus deſerted by the piſton: upon which, its force or preſſure upon the valve at the bottom of the cylinder being now inconſiderable; the other denſer *air* of the receiver, hollow wire, and canal of communication, by their ſuperior elaſtic force, will lift up the valve, and thus paſs into the cylinder of rarefied *air*, till both be of the ſame degree of denſity.

And thus is the *air* in the receiver diminiſhed at each elevation of the piſton, by the quantity of a cylinder-full; abating for what little remained between the depreſſed piſton, and the bottom: ſo that by thus repeating the operation again and again; the *air* in the receiver is at length rarefied to ſuch degree, that its denſity does not exceed the thin *air* remaining in the cylinder when the piſton is raiſed: which done, the effect of the *Air-pump* is at an end; the valve cannot now be opened, or, if it could, no *air* would paſs it; there being a juſt equilibrium between the *air* on each ſide.

To judge of the degree of exhauſtion, there is added a gauge, *l l*; conſiſting of a tube, whoſe upper orifice communicates with the receiver; the lower being immerged in a baſon of mercury, *m m*.—Hence, the *air* in the tube rarefying as faſt as that in the receiver; in proportion as the exhauſtion advances, the mercury will be raiſed by the preſſure of the column of external *air*, prevailing over that of the column of *air* included; till the column of *air*, and mercury together, become a balance to that of the external *air*. When the mercury is thus riſen to the ſame height as it ſtands in the barometer, which is indicated by the ſcale of inches added to the gauge; the inſtrument is a juſt Torricellian tube; and the vacuum may be concluded to be as perfect as that in the upper end of the barometer.

To let *air* again into the exhauſted receiver, the cock *n* is to be turned; which makes a communication with the external *air*; upon which the *air* ruſhing impetuouſly in, the mercury in the gauge immediately ſubſides into the baſon.

To the *Air-pump* belongs a large apparatus of other veſſels, accommodated to the divers kinds of experiments.

Laws of Rarefaction in the receiver of an AIR-PUMP.—1°, For the proportion of *air* remaining at any time in the receiver, we have the following general theorem.—'In a 'veſſel exhauſted by the *Air-pump*, the primitive or natural '*air* contained therein, is to the *air* remaining, as the ag'gregate of the capacity of the veſſel and of the pump (*i. e.* 'the cylinder left vacant in an elevation of the piſton, with 'the wire and other parts between the cylinder and the 'receiver) raiſed to a power whoſe exponent is equal to the 'number of ſtrokes of the piſton, to the capacity of the 'veſſel alone raiſed to the ſame power.'

M. Varignon gives an algebraical demonſtration of this theorem, in the *Memoires de l' Acad. R. an.* 1693. *p.* 233. *ſeq. It. an.* 1705. *p.* 397. *ſeq.* but it may be alſo demonſtrated pneumatically, thus:—Calling the *air* remaining after the firſt ſtroke, the *firſt reſidual*; that after the ſecond, the *ſecond reſidual*, &c. and remembring that the *air* in the receiver is of the ſame denſity as that in the cylinder, when the piſton is raiſed: it is evident, that the quantity of *air* in the receiver, is to the quantity of *air* in the cylinder, wire, *&c.* as the capacity of the receiver to that of the cylinder, *&c.* and conſequently, the aggregate of the *air* in the receiver and the cylinder, *i. e.* the whole primitive *air*, is to the *air* in the veſſel alone, *i. e.* to the firſt reſidual *air*, as the aggregate of the capacity of the receiver and the cylinder, to the capacity of the receiver alone.—After the ſame manner it may be proved, that the quantity of firſt reſidual *air*, is to the ſecond reſidual, as the aggregate of the capacity of the receiver and cylinder to the capacity of the veſſel alone. And the ſame proportion does the ſecond reſidual bear to the third, and ſo of the reſt.—Hence, the product of the primitive *air* into the firſt, ſecond, third, fourth, *&c.* reſiduals, is to the product of the firſt reſidual into the ſecond, third, fourth, fifth, *&c.* as the product of the capacity of the receiver and cylinder together, multiplied as oft into itſelf as the number of ſtrokes of the piſton contains units, is to the factum ariſing from the capacity of the receiver alone, multiplied ſo often by itſelf; that is, as the power of the aggregate of the capacity of the receiver and cylinder together, whoſe exponent is the number of ſtrokes of the piſton, to the capacity of the veſſel alone, raiſed to the ſame power.—Conſequently the primitive *air* is to the laſt reſidual, in the ratio of thoſe powers. *Q.E.D.*

2°, The number of ſtrokes of the piſton, together with the capacity of the receiver and cylinder with the wire, *&c.* being given; to find the ratio of the primitive *air* to the *air* remaining;

Subtract the logarithm of the capacity of the receiver, from that of the ſum of the capacity of the receiver and the cylinder; then, the remainder being multiplied by the number of ſtrokes of the piſton, the product will be a logarithm, whoſe natural number ſhews how oft the primitive *air* contains the remainder required.

Thus, if the capacity of the receiver be 460, that of the cylinder 580, and the number of ſtrokes of the piſton 6; the primitive *air* will be found to the remaining *air*, as $146\frac{4}{10}$ to 1.

For, ſuppoſe the capacity of the veſſel $=v$; that of the cylinder and veſſel together, $=a$; the number of ſtrokes of the piſton $=n$; and the remaining *air* $=1$. Since the primitive is to the remaining *air* as a^n to v^n; the primitive *air* will alſo be to the remaining *air*, as $a^n : v^n$ to 1. Conſequently, if the remaining *air* be 1, the logarithm of the primitive *air* is $a - v \times n$.

3°, The capacity of the receiver and the barrel being given; to find the number of ſtrokes of the piſton required to rarefy the *air* to a given degree.

Subtract the logarithm of the remaining *air* from the logarithm of the primitive *air*; and the logarithm of the capacity of the receiver, from that of the aggregate of the capacity of the receiver and cylinder; then, dividing the former difference by the latter, the quotient is the number of ſtrokes required.

Thus, if the capacity of the cylinder be ſuppoſed 580; that of the receiver 460; and the primitive *air* to the remaining *air*, as 1464 to 10: the number of ſtrokes required will be found to be 6.

Beſides the effects, and the phænomena of the *Air-pump*, recounted under the articles VACUUM, AIR, *&c.* we may add ſome others; which, related at large, make the ſubſtance of Mr. Boyle's *Phyſico-Mech. Exper.* As,—That the flame of a candle in vacuo uſually goes out in a minute, though it ſometimes laſts two, but the wick thereof continues ignited after; and even emits a ſmoke, which aſcends upwards.—That a kindled charcoal is totally extinguiſhed in about five minutes, though in open *air* it remain alive half an hour; that it goes out by degrees, beginning from the top and the outſides.—That red-hot iron is not affected by the abſence of the *air*; and yet that ſulphur or gunpowder will not be lighted thereby, but only fuſed. That a match, after lying ſeemingly extinct in vacuo, a long time; revives again upon the re-admiſſion of the *air*.—That a flint and ſteel ſtrike ſparks of fire as copiouſly in vacuo as out of it; and that the ſparks move in all directions, upwards, downwards, *&c.* here as in the *air*.—That magnets and magnetic needles, are the ſame in vacuo as in *air*.—That ſmoke in an exhauſted receiver, the luminary being extinct, gradually ſettles to the bottom in a darkiſh body, leaving the upper part clear and tranſparent; and that inclining the veſſel ſometimes on one ſide, and ſometimes another, the fume keeps its ſurface horizontal, after the nature of other fluids.—That the ſiphon does not run in vacuo.—That water freezes in vacuo.—That heat may be produced by attrition in the exhauſted receiver.—That camphire will not take fire in vacuo; and that gun-powder, though ſome grains of a heap be kindled by a burning-glaſs in vacuo, will not give fire to the contiguous grains.—That glow-worms loſe their light, in proportion as the *air* is exhauſted; and at length become totally obſcure: but upon the re-admiſſion of *air*, preſently recover it all.—That vipers and frogs ſwell much in vacuo, but will live an hour and half, or two hours; and though ſeemingly ſtark dead in that time, come to life again in ſome hours in the *air*.—That ſnails ſurvive ten hours; and efts or ſlow-worms, two or three days; leaches five or ſix.—That oyſters will remain alive in vacuo 24 hours without harm.—That the heart of an eel taken out of the body, continues to beat in vacuo, more nimbly than in *air*; and this for a good part of an hour.—That warm blood, milk, gall, *&c.* undergo a conſiderable intumeſcence and ebullition in vacuo.—That a mouſe, or other animal, may be brought, by degrees, to ſurvive longer in a rarefied *air*, than naturally it does.—That *air* may retain its uſual preſſure, after it is become unfit for reſpiration.—And that ſilk-worms eggs will hatch in vacuo.

AIRY, or AIRIE, of Hawks. See AERY.

AIRY *Triplicity*, among aſtrologers, the ſigns of Gemini, Libra, and Aquarius. See TRIPLICITY.

AISIAMENTA, in law. See the article EASEMENT.

AJUSTING. See the article ACCOMMODATION.

AJUTAGE, or ADJUTAGE, in hydraulics, part of the apparatus of an artificial fountain, or jet d'eau; being a ſort of tube, fitted to the mouth, or aperture of the veſſel: through which the water is to be played, and by it determined into this, or that figure.

* The word is French, formed of the verb *ajouter*, to add, adapt, adjuſt.

It is chiefly the diverſity in the *Ajutages*, that makes the different kinds of fountains.—And hence, by having ſeveral

Ajutages to be applied occaſionally, one fountain comes to have the effect of many.

Mariotte inquires into the beſt kind of *Ajutages*, or ſpouts for jets d'eau, affirming from experiment, that an even poliſhed round hole, in the end of the pipe, gives a higher jet than either a cylindric, or a conical *Ajutage*; of which yet the latter is the better. *V. Trait. du Mouvem. des Eaux*, part 4. *Phil. Tranſ.* N° 181. *p.* 121.

The various ſorts of *Ajutages*, their ſtructure, application, *&c.* ſee under the article FOUNTAIN.

AKOND, an officer of juſtice in Perſia, who takes cognizance of the cauſes of orphans, and widows; of contracts, and other civil concerns.—He is the head of the ſchool of law, and gives lectures to all the ſubaltern officers; he has his deputies in all the courts of the kingdom, who, with the ſecond ſadra, make all contracts.

AL, an Arabic particle, prefixed to words, to exalt, or give them a more emphatical ſignification.—As, in *Al*koran, *Al*gebra, *&c.*

AL, or **ALD**, in our antient writings, ſignifies as much as *old*, *antient*.—This, being prefixed to the names of places, expreſſes their antiquity; as Aldborough, Algate, *&c.*

ALA, a Latin term, literally ſignifying *wing*.

ALA is alſo uſed, in anatomy, for ſeveral parts of the body which bear ſome reſemblance to the figure of a wing.

Thus, the lobes of the liver are ſometimes called *Alæ*.

The ſoft, ſpongious bodies in the pudendum muliebre, uſually called the *Nymphæ*, are alſo denominated *Alæ*.

The two cartilages of the noſe, which form the noſtrils, are alſo called *Alæ*.

And the ſame denomination is given to the tip of the auricle. See AURICLE.

ALA is alſo uſed in botany, for the angle which the leaves, or the ſtalks or pedicles of the leaves, form with the ſtem, or branches of the plant from which they ariſe. See LEAF, *&c.* This angle is uſually acute, and always is directed upwards.

ALA is ſometimes alſo applied to the angle formed by the branches themſelves, with the ſtem; which is alſo obſerved to be very regular and uniform.

ALABASTER *, in natural hiſtory, a kind of ſtone, ſofter than marble, yet harder than plaſter of Paris: uſed for the making of figures, and other ornaments of ſculpture. See SUPPLEMENT, articles ALABASTRITES.

* Some derive the word from the Latin *albus*, becauſe of the whiteneſs of this ſtone.—Others, from the Greek αλαβαϛρον, which they form from the privative α and λαμϐανω, *capio*, to take; this ſtone being too ſmooth and ſlippery for the hand to faſten hold of it.

It is found of all colours; ſome extremely white, and ſhining, which is the moſt common; ſome rediſh or tawny; and ſome is called *Onyx* from its colour, which reſembles that of the onyx, though very different from it in its nature.

Alabaſter cuts very ſmooth and eaſy, and is much uſed among ſculptors, for little ſtatues, vaſes, and columns.

They ſometimes alſo employ it as plaſter of Paris: in order to which, they burn and calcine it; after which, mixing it up with water to a thin conſiſtence, it is caſt into a mould, where it readily coagulates into a firm body. See PLASTER.

Alabaſter, Mr. Boyle obſerves, being finely powdered, and thus ſet in a baſon over the fire, will, when hot, aſſume the appearance of a fluid, by rolling in waves, yielding to the ſmalleſt touch, and emitting vapour; all which properties it loſes again, on the departure of the heat, and diſcovers itſelf a mere incoherent powder. See FLUID, and FLUIDITY.

The *Alabaſter*-box of precious ointment, mentioned in St. Matthew XXVI. 7. Mark XIV. 3. and Luke VII. 37. has given the critics and interpreters ſome pain.—To ſuppoſe it a vaſe of *Alabaſter*, does not ſeem conſiſtent with its breaking ſo eaſily, as is intimated by St. Mark.

F. Kircher, in his *Oedip. Ægypt.* notes, that *Alabaſter*, *Alabaſtrum*, was not only uſed for a vaſe of odoriferous liquor, but alſo for an Egyptian meaſure, containing nine *koſli*, or Egyptian pounds; amounting, according to his computation, to twenty-four Roman ſextaries, or pounds.

ALABASTRA, in a plant, are thoſe little herbaceous leaves which encompaſs the bottoms of flowers, particularly the roſe. See CALIX, *&c.*

ALÆ, in the military art, the two wings or extremes of an army, ranged in form of battle.

ALÆ *Veſpertilionum*. See VESPERTILIONUM.

ALAISSEE, in heraldry, the ſame with HUMETTY.

A-LA-MIRE, in muſic. See NOTE, and GAMMUT.

ALAMODE *, in commerce, a thin, light, gloſſy black ſilk, not quilled or croſſed; chiefly uſed for womens hoods, and mens mourning ſcarves.

* The name is French, though not given in the country to this fabric, for which they have no other name but *tafetas noir luſtré*.

ALANORARIUS *, in our antient cuſtoms, a keeper or manager of ſpaniels, or ſetting-dogs, for the ſport of hunting, hawking, *&c.*

* The word is formed from the Gothic, *alan*, a greyhound.

ALARES, in antiquity, are ſuppoſed by ſome authors to have been a kind of militia, or ſoldiery among the Romans; ſo called from *ala*, a wing, becauſe of their lightneſs, and ſwiftneſs in the combat.

Others make them a people of Pannonia: but others, with more probability, take *Alares* for an adjective, or epithet; and apply it to the Roman cavalry; becauſe placed in the two wings, or *alæ* of the army; for which reaſon, a body of horſe was called *ala*.

ALARES *Muſculi*, in anatomy. See the article PTERYGOIDEUS.

ALARM *, properly denotes a ſudden apprehenſion, conceived from ſome noiſe, or report, which makes men run to their arms, and ſtand on their guard.

* The word is French, formed from the Italian, *all' arme*, to arms; whence *gridare all' arme*, *q. d.* to call to arms.

ALARM-*Poſt*, is the ground appointed to each regiment, by the quarter-maſter-general, for them to march to, in caſe of an *alarm*.

In a gariſon, the *Alarm-poſt* is the place where every regiment is ordered to draw up, on ordinary occaſions.

ALB, **ALBE**, **ALBA**, a robe, or veſtment of white linen, hanging down to the feet; wherein the Romiſh prieſts perform divine ſervice.

The *Alb* correſponds to the ſurplice among us.—It takes its name from its colour, *albus*, white.

ALBA FIRMA, or **ALBUM**, was a yearly rent, payable to the chief lord of a hundred; ſo called, becauſe paid wholly in white money, or ſilver, and not in corn, which was called *black-mail*.

ALBIGENSES, a ſect, or party of reformers about Tholouſe, and the Albigeois, in Languedoc; who, in the XIIth century, became remarkable for their oppoſition to the diſcipline and ceremonies of the church of Rome. See REFORMATION.

They were alſo known by various other names; as, Petrobruſſians, Arnoldiſts, Cathari, Patarins, Publicans, Tiſſerans, Bons-hommes, Paſſagers, *&c.*

It is pretended, they received their opinions from Bulgaria; which, having been infeſted by the Paulicians of America, diffuſed the ſame into Italy, Germany, *&c.* and that Peter Bruys was the firſt that brought them into Languedoc, about the year 1126. See PETROBRUSSIAN.

The Romaniſts tax the *Albigenſes* with abundance of heterodox opinious; as, for inſtance, that there are two Gods, the one infinitely good, and the other infinitely evil: that the good God made the inviſible world, and the evil one that which we live in; with the reſt of the Manichean tenets.

But this ſeems to be one of thoſe pious frauds allowed particularly in that church, which eſteems it a kind of merit to blacken heretics.

However this be, the *Albigenſes* grew ſo formidable in a little time, that a holy league, or croizade, was agreed upon among the catholics; and war denounced againſt them, the pope himſelf raiſing the firſt ſtandard.—In 1229. a peace was ſtruck up, and an inquiſition eſtabliſhed at Tholouſe, from which time the *Albigenſes* dwindled by little and little, till the times of the reformation; when ſuch of them as were left, fell in with the Vaudois, and became conformable to the doctrine of Zuinglius, and the diſcipline of Geneva. See WALDENSES.

ALBUGINEA *, in anatomy, the outermoſt coat, or tegument of the eye; otherwiſe called *adnata*, and *conjunctiva*.

* It takes its name *Albuginea* from its whiteneſs; it being this that forms what we call the *album*, or white of the eye. See EYE.

ALBUGINEA is alſo applied to the membrane immediately encompaſſing the teſticles.

ALBUGO, or **ALBUM** *Oculi*, the ſame with *albuginea*, or the *white of the eye*. See EYE, ALBUGINEA, *&c.*

ALBUGO alſo denotes a diſeaſe of the eye, wherein the horny tunic loſes its native colour, and becomes white and opake.

The *Albugo* is the ſame with what is otherwiſe called *Leucoma*, λευκωμα. See LEUCOMA.

ALBUM *Græcum*, dogs white dung, is a medicinal drug, in the preſent practice, uſed with honey, to cleanſe and deterge, chiefly in inflammations in the throat; and that principally outwardly, as a plaſter; but, as Dr. Quincy obſerves, ſeldom to any great purpoſe.

ALBUMEN *Ovi*, the white of an egg. See EGG.

It is uſed in medicine, as being of a glutinous or binding nature, on which account it is often mixed with bole armoniac, *&c.* to prevent any ſtrained part from riſing into a tumour, and reſtore it to its tone or elaſticity.—It is alſo an ingredient in ſome mixtures for conſolidating freſh wounds, and preventing too great a loſs of blood.

ALBURN, or **AUBURN** *Colour*, a whity brown, or mixt colour, compoſed of white brown.

ALCAICS, in the antient poetry, a name common to ſeveral

kinds

kind of verſes; ſo called from the poet Alcæus, the inventor thereof.

The firſt ſpecies of *Alcaics* conſiſts of five feet; of which the firſt may be either ſpondee, or iambic; the ſecond, is an iambic; the third, a long ſyllable; the fourth, a dactyl; and the fifth, a dactyl, or amphimacer: as theſe of Horace,

Omnes eodem cogimur, omnium
Verſatur urna, ſerius, ocyus,
Sors exitura——

The ſecond ſpecies of *Alcaics* conſiſts of two dactyls, and two trochees: as,

Exilium impoſitura cymbæ.

Beſides theſe two kinds of verſes, which are properly called *Dactylic Alcaics*, there is a third ſort, called ſimply *Alcaic*; whereof the firſt is an *Epitrite*, the ſecond and third are *Choriambus's*, and the fourth a *Bacchius*; as,

Cur timet fla|vum Tiberim | tangere? cur | olivum?

The Alcaic *Ode* conſiſts of four ſtrophes, each of which contains four verſes: the two firſt are *Alcaic* verſes of the firſt kind; the third an iambic dimeter hypercatalectic, *i. e.* of four feet, and a long ſyllable: as,

Sors exitura, & nos in æternum.

The fourth is an *Alcaic* of the ſecond kind.—The intire *Alcaic* ſtrophe is as follows:

Omnes eodem cogimur, omnium
Verſatur urna, ſerius, ocyus,
Sors exitura, & nos in æternum
Exilium impoſitura cymbæ.

ALCAID*, or Alcayde, among the Moors, a governor of a city, or caſtle, in Barbary, under the emperor of Morocco.

* The word is formed of the particle *al*, and the verb קאד *kad*, or *akad*, to govern, rule, adminiſter.

The juriſdiction of the *Alcaid* is ſovereign, both in civil and criminal concerns; and all fines and puniſhments lie wholly at his pleaſure.

ALCALDE, or Alcade, in the Spaniſh policy, a judge, or miniſter of juſtice; anſwering to a provoſt among the French. See Provost.

The Spaniards borrow their *Alcalde* from the Saracen *Alcaid*.

ALCALI, Alcaly, or rather Alkaly. See Alkaly.

ALCALIZATION, or Alkalization. See the article Alkalization.

ALCANNA, a coſmetic powder, much uſed in the Levant, made of the leaf of a ſpecies of ſhrub frequent in Barbary.

Alcanna, by the Turks called *Knâh*, is greeniſh in the powder, but, by infuſion in water, yields a red colour.—The Turkiſh and Jewiſh women uſe it to dye the nails of their fingers and toes, and ſometimes, alſo, their hair. V. *Mem. Acad. R. Scien.* an. 1732. p. 426. See Supplement, article Alcanna.

ALCANTARA.—*Order of* Alcantara, an antient military order, denominated from a city of that name in the province of Eſtremadura in Spain.

Alphonſus IX. having recovered *Alcantara* from the Moors, in the year 1212. committed the cuſtody and defence thereof firſt to the knights of Calatrava; and, two years afterwards, to the knights of the Pear-tree, another military order inſtituted in 1170. by Gomez Fernand, and approved by pope Alexander III. under the rule of St. Benedict; upon which they changed their name, and took the denomination of knights of *Alcantara*.

After the expulſion of the Moors, and the taking of Granada, the ſovereignty of the order of *Alcantara*, and that of Calatrava, was ſettled, in the crown of Caſtile, by Ferdinand and Iſabella. See Calatrava.

In 1540. the knights of *Alcantara* ſued for leave to marry; which was granted them.

ALCHYMY*, or Alchemy, a higher, or more refined kind of chymiſtry, employed in the more myſterious reſearches of the art. See Chymistry.

* The word ſeems compounded of the Arabic augmentative particle *al*, and the Latin *chymia*, Egyptian *kemia*, or Greek χημια, chymiſtry. Tho' ſome object to this origin, and deny the Arabic any ſhare in the compoſition of the word; urgeing, that *alchemia* occurs in an author who wrote before the Europeans had any commerce with the Arabians, or the Arabians any learning, *i. e.* before the time of Mahomet.

The name *Alchymy*, however, is really of no antient ſtanding: the firſt time it occurs, is in Julius Firmicus Maternus, an author who lived under Conſtantine the great, and who, in his *Matheſis*, 3. 55. ſpeaking of the influences of the heavenly bodies, affirms, 'that if the moon be in the houſe of Saturn, 'at the time a child is born, he ſhall be ſkilled in *Alchymy*.'

The great objects or ends purſued by *Alchymy*, are, 1°, The making of gold; which is attempted three different ways: by ſeparation; by maturation; and by tranſmutation; which laſt is to be effected by means of what they call the *philoſophers ſtone*.

With a view to this end, *Alchymy*, in ſome antient writers, is alſo called *ποιητικη, poetice*, and *χρυσοποιητικη, chryſo-poetice*, *q. d.* the art of making gold.—And hence, alſo, the artiſts themſelves are called *ποιηται, makers*; and *χρυσοποιηται, goldmakers*.

2°, An univerſal medicine, adequate to all diſeaſes. See Elixir.

3°, An univerſal diſſolvent, or alkaheſt. See Alkahest.

4°, An univerſal ferment; or a matter, which, being applied to any ſeed, ſhall increaſe its fecundity to infinity: if, *e. gr.* it be applied to gold, it ſhall change the gold into the philoſophers ſtone of gold; if to ſilver, into the philoſophers ſtone of ſilver, *i. e.* into a matter which tranſmutes every thing into ſilver; and if to a tree, the reſult is, the philoſophers ſtone of the tree, which tranſmutes every thing, it is applied to, into trees.

The origin and antiquity of *Alchymy* are much controverted.—If regard may be had to legend and tradition, it muſt be as old as the flood; nay, Adam himſelf is repreſented, by the *Alchymiſts*, as an adept. A great part, not only of the heathen mythology, but of the Jewiſh and Chriſtian revelations, are alſo ſuppoſed to refer hereto. Thus, Suidas will have the ſecret of the philoſophers ſtone couched in the fable of the Argonauts; and others find it in the books of Moſes, *&c.*

But, if the æra of the art be examined by the monuments of hiſtory, it will loſe a deal of this fanſied antiquity.—The learned Dane, Ol. Borrichius, has taken immenſe pains to prove it known to the antient Greeks and Egyptians. Her. Conringius, on the contrary, with equal addreſs, undertakes to ſhew its novelty.

In effect, not one of the antient poets, philoſophers, or phyſicians, from Homer till four hundred years after Chriſt, mention any ſuch thing.—The firſt author who ſpeaks of making gold, is Zoſimus the Panopolite, who lived towards the beginning of the fifth century, and who has an expreſs treatiſe, Περι της ιερας τεχνης της του χρυσου και του αργυρου ποιησεως, *Of the divine art of making gold and ſilver*, ſtill extant, in manuſcript, in the French king's library. The next is Æneas Gazeus, another Greek writer, towards the cloſe of the ſame century, in whom we have the following paſſage: 'Such as 'are ſkilled in the ways of nature, can take ſilver and tin, 'and, changing their nature, turn them into gold.' The ſame writer tells us, he was 'wont to ſtile himſelf χρυσοχοος, 'gold-melter; and χημευτης, chymiſt.'—Hence we may gather, there was a notion ſome ſuch art was in being in that age: but, as neither of theſe authors relate how long it had been known before; their teſtimony will not carry us back beyond the age wherein they lived.

We do not find any earlier, plainer traces of the univerſal medicine: not a ſyllable of any ſuch thing in all the phyſicians and naturaliſts, from Moſes to Geber the Arab, who is ſuppoſed to have lived in the ſeventh century. In that author's work, intituled, *The Philoſophers Stone*, mention is made of 'a medicine which cures all lepras:' this paſſage ſome authors ſuppoſe to have given the firſt hint of the matter; though Geber himſelf, perhaps, meant no ſuch thing: for, by attending to the Arabic ſtyle and diction of this author, which abounds in allegory, it appears highly probable, that by man he means gold; and by lepras, or diſeaſes, the other metals; which are all impure, in compariſon of gold.

Suidas accounts for this total ſilence of old authors, in reſpect of *Alchymy*, by obſerving, that Diocleſian procured all the books of the antient Egyptians to be burnt; and that it was in theſe the great myſteries of chymiſtry were contained.—Conringius calls this hiſtory in queſtion, and asks how Suidas, who lived but five hundred years before us, ſhould know what happened eight hundred years before him? To which Borrichius anſwers, that he had learnt it of Eudemus, Helladius, Zoſimus, Pamphilus, *&c.* as Suidas himſelf relates.

Kircher aſſerts, that the theory of the philoſophers ſtone is delivered at large in the table of Hermes; and that the antient Egyptians were not ignorant of the art, but declined to proſecute it. They did not need to tranſmute gold; they had ways of ſeparating it from all kinds of bodies, from the very mud of the Nile, and ſtones of all kinds: but, he adds, theſe ſecrets were never wrote down, or made public, but confined to the royal family, and handed down traditionally from father to ſon.

The chief point advanced by Borrichius, and on which he ſeems to lay the greateſt ſtreſs, is, the attempt of Caligula, mentioned by Pliny, for procuring gold from orpiment, *Hiſt. Nat.* L. XXXIII. c. 4.—But this, it may be obſerved, makes very little for that author's pretenſions; there being no tranſmutation, no hint of any philoſophers ſtone, but only a little gold was extracted or ſeparated from the mineral.

The principal authors in *Alchymy* are, Geber, Friar Bacon, Ripley, Lully, John and Iſaac Hollandus, Baſil Valentine, Paracelſus, Van Zuchten, and Sendivogius.

ALCMANIAN*, in the antient poetry, a kind of lyric verſe, or metre, conſiſting of two dactyls, and two trochees. Such, *e. gr.* is—*Virginibus pueriſque canto.*

* The word is formed from *Alcman*, the name of an antient Greek poet, in great eſteem for his Erotics, or amorous compoſitions.

ALCOHOL*, or **Alkool**, in chemiſtry, an Arabic term, chiefly underſtood of the pureſt ſpirit of wine, raiſed, or rectified, by repeated diſtillations, to its utmoſt ſubtilty, and perfection; ſo that, if fire be ſet thereto, it burns wholly away, without leaving the leaſt phlegm or fæces behind. See Supplement, article Alcohol.

* The word is formed from the Arabic or Hebrew קאל *kaal*, to attenuate, ſubtilize.

Alcohol is ſometimes alſo uſed for a very fine, impalpable powder.

ALCORAN, or **Al Koran**, the Mahometan goſpel; or revelations, doctrine, and prophecies, of the pretended prophet Mahomet.

The word *Alcoran* is Arabic, and literally denotes either reading, or collection; but it is in the firſt of theſe ſenſes that the *Alcoran* of Mahomet ſeems beſt underſtood: Mahomet purpoſing to have his book called *Reading*, by way of eminence; in imitation of the Jews and Chriſtians, who call the New and Old Teſtament, *Writing*, *Scripture*, הכתוב, *books*, *τα βιϐλια*, on the ſame account.

The Muſſulmen alſo call it אלפרקאן *Alforkan*; from the verb פרק *Pharaka*, to divide, or diſtinguiſh: either by reaſon it makes the diſtinction between what is true, and falſe; or between what is lawful to do, and what not; or elſe, on account of its containing the diviſions or heads of the law: in which, again, they imitate the Hebrews, who give divers books the like name פרקים *Perakim*, q. d. *capita*, *capitula*, chapters, heads; *e. gr.* the פרקי אבות *Capita Patrum*; פרקיר אליעזר *Capitula* R. Eliezer. Laſtly, the *Alcoran* is alſo denominated *Aldhichr*, advertiſement, or remembrance; as ſerving to retain or retrieve the knowlege of the law.

It is the common opinion among us, that Mahomet, aſſiſted by one Sergius, a monk, compoſed this book; but the Muſſulmen believe it as an article of their faith, that the prophet, who, they ſay, was an illiterate man, had no hand in it; but that it was given him by God, who, to that end, made uſe of the miniſtry of the angel Gabriel; that, however, it was communicated to him by little and little, a verſe at a time, and in different places, during the courſe of twenty-three years.—"And hence, ſay they, proceeds that diſorder 'and confuſion viſible in the work;' which, in truth, is ſo great, that all their doctors have never been able to adjuſt it. For Mahomet, or rather his copiſt, having put all theſe looſe verſes promiſcuouſly in a book together, it was impoſſible ever to retrieve the order wherein they were delivered.

Thoſe twenty-three years which the angel employed in conveying the *Alcoran* to Mahomet, are of wonderful ſervice to his followers; inaſmuch as they furniſh them with an anſwer to ſuch as tax them with thoſe glaring contradictions wherewith the book is full: thoſe contradictions they piouſly father upon God himſelf; alleging, that, in the courſe of ſo long a time, he repealed and altered ſeveral doctrines and precepts which the prophet had before received of him.

M. D'Herbelot thinks it probable, that when the hereſies of the Neſtorians, Eutychians, &c. had been condemned by œcumenical councils; many biſhops, prieſts, monks, &c. being driven into the deſarts of Arabia and Egypt, furniſhed the impoſtor with paſſages, and crude ill-conceived doctrines, out of the Scriptures: and that it was hence that the *Alcoran* became ſo full of the wild and erroneous opinions of thoſe heretics.

The Jews, alſo, who were very numerous in Arabia, contributed their quota to the *Alcoran*; nor is it without ſome reaſon that they boaſt twelve of their chief doctors to have been the authors of this deteſtable work.

The *Alcoran*, it is to be obſerved, while Mahomet lived, was only kept in looſe ſheets: his ſucceſſor, Abubeker, firſt collected them into a volume, and committed the keeping thereof to Haphſa, the widow of Mahomet, in order to be conſulted as an original: and there being a good deal of diverſity between the ſeveral copies already diſperſed throughout the provinces; Ottoman, ſucceſſor of Abubeker, procured a great number of copies to be taken from that of Haphſa; at the ſame time ſuppreſſing all the others not conformable thereto.

The chief differences, in the preſent copies of this book, conſiſt in the points, which were not in uſe in the time of Mahomet, and his immediate ſucceſſors; but were added ſince, to aſcertain the reading; after the example of the Maſſoretes, who put the like points to the Hebrew text of Scripture.

The work is divided into ſuras, or chapters; and the ſuras are ſubdivided into little verſes, which are all compoſed in a broken interrupted ſtyle, reſembling proſe rather than verſe.—The diviſion into ſuras is but of a late ſtanding: the uſual number of them is ſixty.

There are ſeven principal editions of the *Alcoran*; two at Medina, one at Mecca, one at Coufa, one at Baſſora, one in Syria, and the common, or vulgate edition. The firſt contains 6000 verſes, the others ſurpaſſing this number by 200, or 236 verſes: but the number of words and letters is the ſame in all; *viz.* 77639 words, and 323015 letters.

The number of commentaries on the *Alcoran* is ſo large, that the bare titles would make a huge volume.—Ben Oſchair has wrote the hiſtory thereof, intituled, *Tarikh Ben Oſchair*. The principal among them are, Reidhaori Thaalebi, Zamalchſchari, and Bacai.

Beſide the *Alcoran*, which is the baſis of the Mahometan faith, they have alſo a book containing their traditions, which they call *Sonna*.

The Mahometans have a poſitive theology, built on the *Alcoran* and tradition; as well as a ſcholaſtical one, built on reaſon.—They have likewiſe their caſuiſts, and a kind of canon law; wherein they diſtinguiſh between what is of divine, and what of poſitive right.

They have their beneficiaries too, chaplains, almoners, and canons, who read a chapter, every day, out of the *Alcoran*, in the moſques; and have prebends for ſo doing.—The hatib of the moſque is what we call the parſon of the pariſh; and the ſcheics are the preachers, who take their text out of the *Alcoran*.

Alcoran, among the Perſians, likewiſe ſignifies a kind of tower, or ſteeple; very high, and narrow; ſurrounded without by two or three galleries, one over another; whence the moravites, a ſort of prieſts, repeat their prayers thrice a day, with a very loud voice; making the tour of the gallery all the while, that they may be the better heard all around.

ALCOVE*, in building, a part of a chamber, ſeparated from the reſt by an eſtrade, or partition of columns, and other correſponding ornaments; in which is placed a bed of ſtate, and ſometimes ſeats, to entertain company.

* The word is derived from the Spaniſh *alcoba*; and that from the Arabic *elcauf*, a cabinet, or ſleeping-place; or from *elcobat*, a tent.

ALCYON. See the article Halcyon.

ALDEBARAN, an Arabian name for a fixed ſtar, of the firſt magnitude, in the eye of the ſign, or conſtellation, Taurus, or the Bull; and hence popularly called *The Bull's Eye.* Its longitude, latitude, &c. ſee among the reſt of the conſtellation Taurus.

ALDERMAN, an aſſociate to the mayor, or civil magiſtrate, of a city or town, for the better adminiſtration of his office.

The *Aldermen* are an order of magiſtrates, in our cities, and moſt of the municipal, or incorporate towns; who form a kind of council, and regulate things relating to the policy of the place.—They ſometimes alſo take cognizance of civil and criminal matters; but that very rarely, and only in certain caſes.

Their number is not limited; but in ſome places is more, in ſome leſs, from ſix to twenty-ſix.

Out of theſe are annually elected the mayors, or chief magiſtrates, of places; who, at the expiration of their mayoralty, return again into the body of the *Aldermen*, whoſe delegates they were before.

The twenty-ſix *Aldermen* of London preſide over the twenty-ſix wards of the city.

When any of them die, the wardmote return two, out of which the lord mayor and *Aldermen* chooſe one. Chamberl.

All the *Aldermen* that have been lord mayors, and the three eldeſt *Aldermen* who have not yet arrived at that dignity, are, by charter, juſtices of the peace.

Formerly, there were alſo *Aldermen* of the merchants, of hoſpitals, of hundreds, &c. See Senator.

Alderman*, among our antient Saxon anceſtors, was the ſecond of the three orders, or degrees, of nobility.

* The word, in its original, is Ealdorman; compounded of Æld, old; or Ældor, elder; and man, *q. d.* Elderman.—A late writer, with ſome probability, ſuppoſes, that, among the antient Germans, the chief of each clan, tribe, or branch was called Ealderman; not as denoting him *old*, but as denoting him the repreſentative of the *eldeſt* brother, according to the ſcheme of paternal government which obtained in that nation.—As a village generally conſiſted but of one tribe or branch of a family, the chief or head of ſuch tribe or branch, who, as ſuch, had a ſort of juriſdiction over the village, was called the Ealderman of the village.

Thomas Elienſis, in the life of St. Ethelred, interprets *Alderman* by prince, or count; *Egelwinus, qui cognominatus eſt* Alderman, *quod intelligitur princeps, ſive comes.*—Matthew Paris, in lieu of *Alderman*, uſes the word *juſticiarius*; and Spelman obſerves, that it was the Norman kings who, inſtead of the Saxon *Alderman*, introduced the word *juſtice*.

Atheling was the firſt rank of nobility, *Alderman* the ſecond, and *thane* the loweſt. See Atheling, and Thane.

The *Alderman* was the ſame as our earl, or count; which appellation, after king Athelſtan's time, took place in lieu of *Alderman*.

Alderman, in the time of king Edgar, was alſo uſed for a judge, or juſtice.

In this ſenſe, Alwin, ſon of Athelſtan, is ſtiled *Aldermannus totius Angliæ*; which Spelman interprets, *Capitalis Juſticiarius Angliæ*.

ALE, a popular drink, made from malt.

For the method of brewing *Ale*, ſee Brewing.

TAB. ALGEBRA

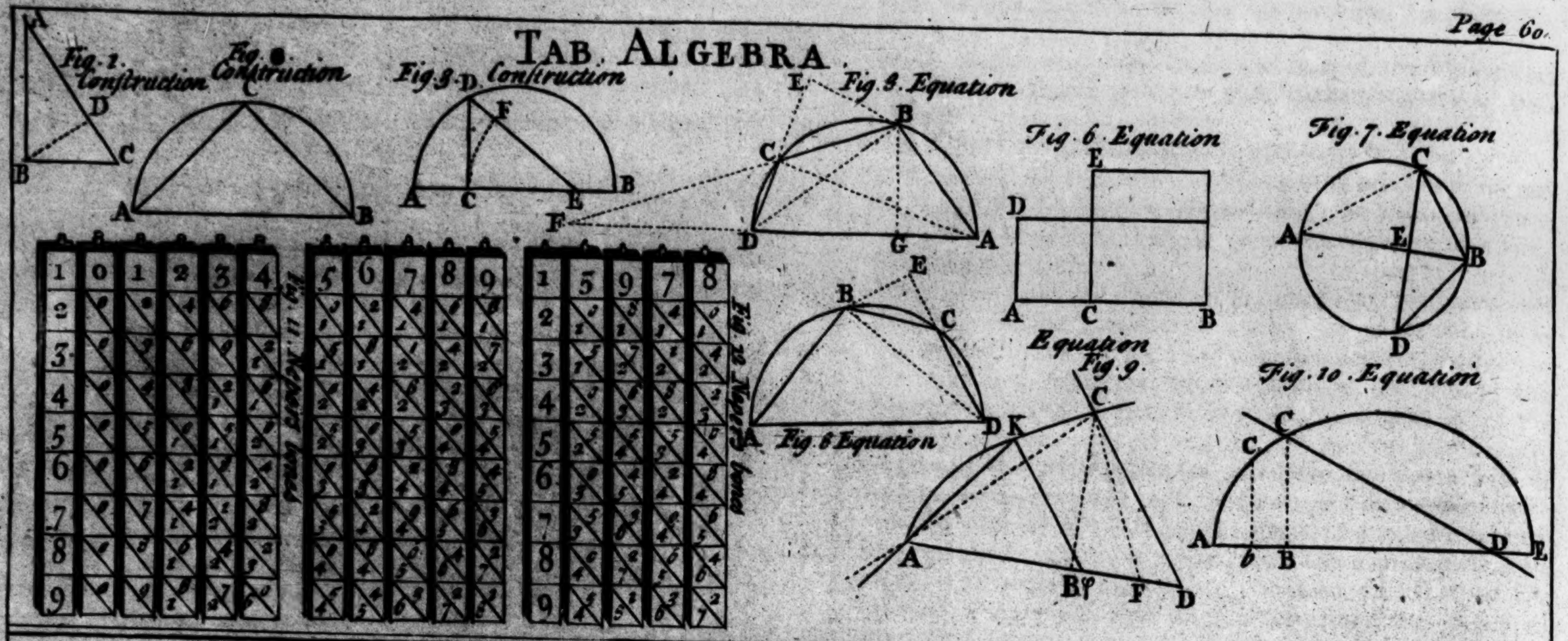
Fig. 1. Construction
Fig. 2 Construction
Fig. 3. Construction
Fig. 8. Equation
Fig. 6 Equation
Fig. 7. Equation
Fig. 11. Napers bones
Fig. 12 Napers bones
Fig. 6 Equation
Equation Fig. 9
Fig. 10 Equation

TAB. ANALYSIS

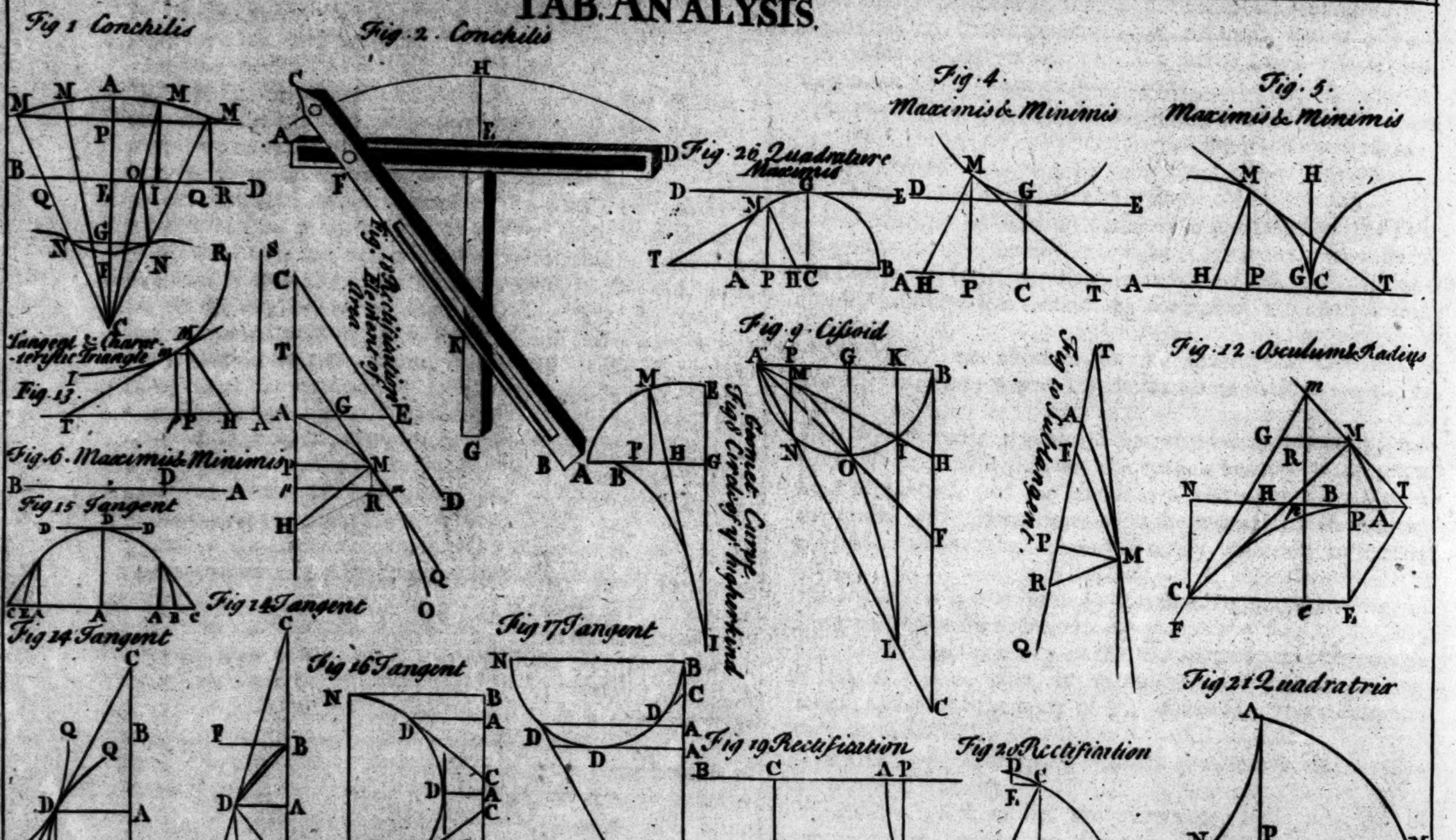
Fig 1 Conchilis
Fig. 2. Conchilis
Fig. 26 Quadrature Maxima
Fig. 4 Maximis & Minimis
Fig. 5 Maximis & Minimis
Tangent & Characteristic Triangle
Fig. 13
Fig. 9 Cissoid
Geomet. Curve Fig 8 Circles of Higher kind
Fig 10 Subtangent
Fig. 12 Osculum & Radius
Fig. 6. Maximis & Minimis
Fig 15 Tangent
Fig 18 Tangent
Fig 14 Tangent
Fig 16 Tangent
Fig 17 Tangent
Fig 19 Rectification
Fig 20 Rectification
Fig 21 Quadratrix
Fig 22 Logist. Spiral and Quadratrix
Fig 23 Quadratrix
Fig 24 Quadrature
Fig 25 Quadrature
Fig 27 Quadrature
Fig 28 Quadrature
Fig 29 Locus
Fig 30 Locus
Fig 31 Locus
Fig 32 Locus
Fig 33 Locus
Fig 34 Locus
Fig 35 Locus
Fig 36 Locus
Fig 37 Logistic Curve

Ale is chiefly diſtinguiſhed from beer, another potable liquor made from the ſame ingredients, by the quantity of hops uſed therein; which is greater in beer, and therefore renders the liquor bitterer, and fitter to keep.

The brewers alſo diſtinguiſh pale, or fine *ale*, brown *ale*, *&c.* Their ſeveral properties, effects, *&c.* ſee under the article Malt-*Liquor*.

The *Zythum*, and *Curmi* mentioned by Tacitus, as the beverage of the antient Germans, are ſuppoſed by Matthiolus, to correſpond to our *ale*, and beer.

Ale, *Cereviſia*, is alſo a denomination given to divers medicated liquors, or diet-drinks, whereof *ale* is the baſis or vehicle. The medicated *ales* make a large article in our old diſpenſatories. Such are the cereviſia oxydorica, for the eyes; cereviſia anti-arthritica, againſt the gout; cereviſia cephalica, for the head; cereviſia epileptica, *&c.*

Gill Ale, is prepared by infuſing the dry leaves of hedera terreſtris, *i. e.* ground ivy, in malt-liquor; which hereby becomes impregnated with the virtues of that ſimple; and is therefore reputed abſterſive, and vulnerary; good in diſorders of the breaſt, and againſt obſtructions of the viſcera.

Gill is an Engliſh name of ground-ivy.

Dr. Butler's purging Ale is prepared of polypody, ſena, ſarſaparilla, aniſeeds, ſcurvygraſs, agrimony, and maiden-hair, put up in a bag, and hung in a veſſel of *ale*.

We alſo meet in ſome diſpenſatories with ſyrup of *ale*, made by boiling that liquor to a conſiſtence: this is uſed againſt obſtructions in the kidneys, and the fluor albus.

Ale-*Beer*. See the article Beer.

Ale-berry, is *ale* boiled with bread, and mace; ſweetened, ſtrained, and drunk hot.

Ale-conner, an officer in the city of London, whoſe buſineſs is to inſpect the meaſures of the public-houſes.—There are four of them, and they are choſen by the common hall of the city.

Ale-silver a rent, or tribute, yearly paid to the lord mayor of London, by thoſe who ſell *ale* within the city.

Ale-measure. See the article Measure.

Ale-taster is an officer appointed, and ſworn, in every court-leet, to look that there be a due ſize, and goodneſs of bread, *ale*, and beer, ſold within the juriſdiction of the leet.

ALECTORIA*, in natural hiſtory, a ſtone ſaid to be found in the ſtomach, liver, or rather gall-bladder, of old cocks.

* The word is derived from αλεκτωρ, a cock.

It is ordinarily of the figure of a lupine, and ſeldom exceeds the bigneſs of a bean.—It has abundance of virtues attributed to it; but moſt of them are fabulous. See Supplement, article Alectorius Lapis.

ALECTOROMANTIA*, an antient kind of divination, performed by means of a cock.

* The word comes from the Greek αλεκτωρ, a cock, and μαντεια, divination.

This art was in uſe among the Greeks; and the uſual manner of it was this.—A circle was made on the ground, and divided into twenty-four equal portions, or ſpaces: in each of which ſpaces was written one of the letters of the alphabet, and upon each of theſe letters was laid a grain of wheat.

This done, a cock was turned looſe in the circle, and careful obſervation was made of the grains he pecked.—The letters correſponding to thoſe grains, were afterwards formed into a word; which word was to be the anſwer deſired.

It was thus that Libanius and Jamblichus ſought who ſhould ſucceed the emperor Valens; and the cock anſwering to the ſpaces ΘΕΟΔ, they concluded upon Theodore, but by a miſtake inſtead of Theodoſius.

ALEMBIC*, or Limbec, a chemical veſſel, conſiſting of a matraſs or body, fitted with a roundiſh head, terminating in a ſloping tube, for the condenſed vapours to paſs through in diſtillation.

* The word is formed of the Arabic particle *al*, and the Greek αμβιξ, a ſort of earthen culinary veſſel, mentioned by Athenæus, and Heſychius. Though Matthæus Sylvaticus, in his *Pandecta Medicinæ*, aſſerts the word *Alembic* to be Arabic, and that it literally denotes the upper Part of a diſtilling veſſel.

Alembic is popularly underſtood of the whole inſtrument of diſtillation, with all its apparatus; but in the proper ſenſe of the word, it is only a part hereof, *viz.* a veſſel uſually of copper, whereto a concave, globular, metalline head is cloſely luted; ſo as to ſtop the riſing vapours, and direct them into its roſtrum, or beak.

The heat of the fire raiſing the volatile parts of the ſubject expoſed in the bottom of the veſſel; they are received into its head, where they are condenſed, either by the coldneſs of the ambient air, or by water externally applied; and become a liquor, which runs out at the beak into another veſſel called the *recipient*.

The head, or capital of the *Alembic*, is ſometimes incompaſſed with a veſſel full of cold water, by way of refrigeratory; though this intention is now more commonly anſwered by a worm-tub.

There are divers kinds of *Alembics*: as an *open Alembic*, where the head and cucurbit are two ſeparate parts; and a *blind Alembic*, or blind head, where the capital is ſealed hermetically upon the cucurbit.

ALEXANDRIN, or Alexandrian, in poetry, the name of a kind of verſe, which conſiſts of twelve, or of twelve and thirteen ſyllables, alternately; the reſt, or pauſe, being always on the ſixth ſyllable.

It is ſaid to have taken its name from a poem on the life of Alexander, intitled, the *Alexandriad*; written, or at leaſt tranſlated into this kind of verſe by ſome French poets: though others will have it ſo denominated from one of the tranſlators, Alexander Paris.

This verſe is thought by ſome very proper in the epopea, and the more ſublime kinds of poetry; for which reaſon it is alſo called *Heroic Verſe*.

It anſwers in our language to the hexameters in the Greek, and Latin.—Chapman's tranſlation of Homer conſiſts wholly of *Alexandrians*.

ALEXIPHARMIC*, in medicine, expreſſes that property which a remedy, either ſimple or compound, hath to reſiſt or deſtroy every thing of a poiſonous or malignant nature.

* The word is derived from the Greek αλεξεω, *arceo*, I drive or expel; and φαρμακον, *veneum*, poiſon.

The antients had a notion, that there was a poiſon in all malignant diſeaſes, and in the generality of thoſe whoſe cauſe was unknown. Whence *Alexipharmic* became a denomination for all remedies and antidotes againſt malignant diſeaſes.

Alexiterial, *cardiac*, *antidote*, *alexipharmic*, and *counterpoiſon*, are all terms nearly of the ſame ſignification.

Alexipharmics are ordinarily divided into ſuch as are general; and thoſe more particular, ſuppoſed only to combat ſome particular diſeaſe.—But this diviſion is founded more on ſpeculation, than experience.

Alexipharmic medicines in general contain a great number of volatile parts, and ſuch as render the maſs of blood fluid. The greateſt part of them are aromatic, and pungent to the taſte.—Among the reſt, it is true, there are ſome acid plants and juices; but theſe are only reckoned in the number, on account of their uſe in malignant and colliquative fevers.

Alexipharmics chiefly act by exciting, or increaſing a diaphoreſis, or perſpiration; by which the noxious matter is thrown off.

Alexipharmics, whether ſimple or compound, are alſo eſteemed preſervatives againſt malignant and peſtilential fevers: but they are to be uſed with caution; ſome of them being only proper in condenſations, and others only in colliquations of the blood.

Alexipharmic *Waters*, *&c.* See Water, *&c.*

ALEXITERIAL*, in medicine, a term of the ſame import with *alexipharmic*; but chiefly applied to the milk-water of that name.

* It is formed from the Greek αλεξεω, *arceo*, I drive away; or *opitulor*, I aſſiſt.

ALFET antiently ſignified a large caldron, in which boiling water was put, for the accuſed to plunge his hand in up to the elbow, by way of trial or purgation.

ALGAROT, or Algarel, in the Arabian chemiſtry, a powder prepared of butter of antimony; being in reality no more than the regulus of that mineral, diſſolved in acids, and ſeparated again by means of ſeveral lotions with lukewarm water, which imbibes thoſe acids.

This is alſo called *Mercurius Vitæ*, or ſimply *Emetic Powder*.—It purges violently both upwards and downwards. And is more properly called antimonium mortis.

By collecting all the lotions, and evaporating two third parts, what remains is a very acid liquor, called *Spirit of philoſophical Vitriol*.

ALGEBRA*, a method of reſolving problems by means of equations.

* Menage derives the word from the Arabic *alginbarat*, which ſignifies the reſtitution of any thing broken; ſuppoſing that the principal part of *Algebra* is the conſideration of broken numbers.—Others rather borrow it from the Spaniſh *algebriſta*, a perſon who replaces diſlocated bones; adding, that *Algebra* has nothing to do with fraction; in that it conſiders broken numbers as if they were intire, and even expreſſes its power by letters, which are incapable of fraction.—Some, with Mr d'Herbelot, are of opinion, that *Algebra* takes its name from Geber, a celebrated philoſopher, chemiſt, and mathematician, whom the Arabs call *Giaber*; and who is ſuppoſed to have been the inventor.—Others, from *Gefr*, a kind of parchment made of the ſkin of a camel, whereon *Ali* and *Giafar Sadek* wrote in myſtic characters the fate of Mahometaniſm, and the grand events that were to happen till the end of the world.—But others, with more probability, derive it from *Geber*, a word whence, by prefixing the particle *al*, we have formed *Algebra*, which is pure Arabic, and properly ſignifies the reduction of broken numbers to a whole number.—However, the Arabs, it is to be obſerved, never uſe the word Algebra alone, to expreſs what we mean by it; but always add to it the word *Macabelah*, which ſignifies *oppoſition* and *compariſon*.—Thus *Algebra-almocabelah*, is what we properly call *Algebra*.

Some authors define *Algebra* the art of ſolving all problems capable of being ſolved: but this is rather the idea of analyſis, or the analytic art.

The Arabs call it, the *Art of reſtitution and compariſon*; or, the *Art of reſolution and equation.*—Lucas de Burgo, the firſt European who wrote of *Algebra*, calls it, the *Rule of reſtoration, and oppoſition.*—The Italians call it, *regula rei & cenſus*, that is, the rule of the root and the ſquare; the root with them being called *Res*, and the ſquare *Cenſus.*—others call it *Specious arithmetic*; others *Univerſal arithmetic.*

Algebra is a peculiar kind of arithmetic, which takes the quantity ſought, whether it be a number, or a line, or any other quantity, as if it were granted; and by means of one or more quantities given, proceeds by conſequence, till the quantity at firſt only ſuppoſed to be known, or at leaſt ſome power thereof, is found to be equal to ſome quantity or quantities which are known, and conſequently itſelf is known.

Algebra is of two kinds, *numeral*, and *literal*.

Numeral, or vulgar ALGEBRA, is that of the antients, which only had place in the reſolution of arithmetical queſtions.—In this, the quantity ſought is repreſented by ſome letter or character; but all the given quantities are expreſſed by numbers.

Literal, or *ſpecious* ALGEBRA, or the *new* ALGEBRA, is that wherein the given or known quantities, as well as the unknown, are all expreſſed or repreſented by their ſpecies, or letters of the alphabet.

This eaſes the memory and imagination of that vaſt ſtreſs or effort, required to keep ſeveral matters, neceſſary for the diſcovery of the truth in hand, preſent to the mind: for which reaſon this art may be properly denominated *metaphyſical geometry.*

Specious Algebra is not, like the numeral, confined to certain kinds of problems; but ſerves univerſally for the inveſtigation or invention of theorems, as well as the ſolution and demonſtration of all kinds of problems, both arithmetical, and geometrical.

The letters uſed in *Algebra* do each ſeparately repreſent either lines or numbers, as the problem is arithmetical or geometrical; and together, they repreſent planes, ſolids and powers more or leſs high, as the letters are in a greater or leſs number.—For inſtance, if there be two letters, *a b*, they repreſent a rectangle, whoſe two ſides are expreſſed, one by the letter *a*, and the other by *b*; ſo that by their mutual multiplication they produce the plane *a b*. Where the ſame letter is repeated twice, as *a a*, they denote a ſquare.—Three letters *a b c*, repreſent a ſolid, or a rectangled parallelepiped, whoſe three dimenſions are expreſſed by the three letters *a b c*; the length by *a*, the breadth by *b*, and the depth by *c*: ſo that by their mutual multiplication they produce the ſolid *a b c*.

As the multiplication of dimenſions is expreſſed by the multiplication of letters, and as the number of thoſe may be ſo great as to become incommodious; the method is, only to write down the root, and on the right hand to write the index of the power, that is, the number of letters whereof the power to be expreſſed does conſiſt; as a^2, a^3, a^4, a^5: the laſt of which ſignifies as much as *a* multiplied five times into itſelf; and ſo of the reſt.

For the ſymbols, characters, *&c.* uſed in *Algebra*, with their application, *&c.* ſee the articles CHARACTER, and QUANTITY, *&c.*

For the method of performing the ſeveral operations in *Algebra*, ſee ADDITION, SUBTRACTION, and MULTIPLICATION.

As to the origin of this art, we are much in the dark.—The invention is uſually attributed to Diophantus, a Greek author, who wrote thirteen books, though only ſix of them are extant, firſt publiſhed by Xylander, in 1575. and ſince commented on and improved by Gaſper Bachet, of the French academy; and ſince by M. Fermat.

And yet *Algebra* ſeems to have been not wholly unknown to the antient mathematicians, long before the age of Diophantus: we ſee the traces, the effects of it, in many places; though it looks as if they had deſignedly concealed it.—Something of it there ſeems to be in Euclid, or at leaſt in Theon upon Euclid, who obſerves that Plato had begun to teach it.—And there are other inſtances of it in Pappus, and more in Archimedes and Apollonius.

But the truth is, the analyſis uſed by thoſe authors is rather geometrical than *algebraical*; as appears by the examples thereof which we find in their works: ſo that we make no ſcruple to ſay, that Diophantus is the firſt, and only author among the Greeks, who has treated of *Algebra* profeſſedly.

This art, however, was in uſe among the Arabs much earlier than among the Greeks. And it is ſaid, that the Arabs too borrowed it from the Perſians, and the Perſians from the Indians.—It is added, that the Arabs carried it into Spain; whence, ſome are of opinion, it paſſed into England, before Diophantus was known among us.

The firſt who wrote on the ſubject in this part of the world, was Lucas Paccioius, or Lucas de Burgos, a Cordelier; whoſe book, in Italian, was printed at Venice in 1494.—This author makes mention of Leonardus Piſanus, and ſome others, of whom he had learned the art; but we have none of their writings.—He adds, that *Algebra* came originally from the Arabs; and never mentions Diophantus: which makes it probable, that that author was not at that time known in Europe.—His *Algebra* goes no further than ſimple and quadratic equations.

After Pacciolus appeared Stifelius, a good author; but, neither did he advance any farther.

After him, came Scipio Ferreus, Cardan, Tartagila, and ſome others; who reached as far as the ſolution of ſome cubic equations. Bombelli followed theſe, and went a little farther.—At laſt came Nunnius, Ramus, Schoner, Salignac, Clavius, *&c.* who all of them took different courſes, but none of them went beyond quadratics.

About the ſame time, Diophantus was firſt made public; whoſe method is very different from that of the Arabs, which had been followed till then.

In 1590. Vieta entered on the ſtage, and introduced what he called his *Specious arithmetic*, which conſiſts in denoting the quantities, both known and unknown, by ſymbols or letters.—He alſo introduced an ingenious method of extracting the roots of equations, by approximations; ſince much facilitated by Raphſon, in his *Analyſis Æquationum*.

Vieta was followed by Oughtred, who in his *Clavis Mathematica*, printed in 1631. improved Vieta's method; and has invented ſeveral compendious characters, to ſhew the ſums, differences, rectangles, ſquares, cubes, *&c.*

Mr. Harriot, another Engliſhman, cotemporary with Oughtred, left ſeveral treatiſes at his death; and among the reſt, an *Analyſis*, or *Algebra*, which was printed in 1631. where Vieta's method is brought into a ſtill more commodious form, and this is much eſteemed to this day.

In 1657. Des Cartes publiſhed his geometry, wherein he made uſe of the literal calculus and the *algebraic* rules of Harriot; and as Oughtred in his *Clavis*, and Marin. Ghetaldus, in his books of *mathematical compoſition and reſolution* publiſhed in 1630. applied Vieta's arithmetic to elementary geometry, and gave the conſtruction of ſimple and quadratic equations; ſo Des Cartes applied Harriot's method to the higher geometry, explaining the nature of curves by equations, and adding the conſtructions of cubic, biquadratic, and other higher equations.

Des Cartes's rule for conſtructing cubic and biquadratic equations was further improved by Tho. Baker, in his *Clavis Geometrica Catholica*, publiſhed in 1684. and the foundation of ſuch conſtructions, with the application of *Algebra* to the quadratures of curves, queſtions de maximis & minimis, the centrobaryc method of Guldinus, *&c.* was given by R. Sluſius, in 1668. as alſo by Fermat, in his *Opera Mathematica*; Roberval, in the *Mem. de Mathem. & de Phyſique*; and Barrow, in his *Lect. Geomet.*—In 1708. *Algebra* was applied to the laws of chance and gaming, by R. de Montmort; and ſince by de Moivre, and James Bernoulli.

Thus much for the progreſs of *Algebra.*—The *elements of the art* were compiled and publiſhed by Kerſy in 1671. wherein the ſpecious arithmetic, and the nature of equations, are largely explained, and illuſtrated by variety of examples: the whole ſnbſtance of Diophantus is here delivered; and many things added concerning mathematical compoſition and reſolution, from Ghetaldus. The like has been ſince done by Preſtet in 1694. and by Ozanam in 1703.—But theſe authors omit the application of *Algebra* to geometry; which defect is ſupplied by Guiſnee in a French treatiſe expreſly on the ſubject, publiſhed in 1704. and l'Hopital in his *Analytical Treatiſe of the conic Sections*, in 1707.—The rules of *Algebra* are alſo compendiouſly delivered by Sir I. Newton, in his *Arithmetica Univerſalis*, firſt publiſhed in 1707. which abounds in ſelect examples, and contains ſeveral rules and methods invented by the author.

Algebra has been alſo applied to the conſideration and calculus of infinities; from whence a new and extenſive branch of knowlege has ariſen, called the *Doctrine of Fluxions*, or *Analyſis of Infinities*, or the *Calculus Differentialis*. See FLUCTIONS.—The authors on this ſubject, ſee under the article ANALYSIS.

ALGEBRAICAL, ſomething that relates to *Algebra*.

Thus we ſay, *Algebraical* characters, or ſymbols, curves, ſolutions, *&c.* See CHARACTER.

ALGEBRAICAL *Curve*, is a curve, wherein the relation of the abſciſſes to the ſemiordinates may be defined by an *Algebraical* equation.

Theſe are alſo called *geometrical lines*, or *curves*.

Algebraical curves ſtand contradiſtinguiſhed to mechanical or tranſcendental ones. See MECHANICAL, and TRANSCENDENTAL.

ALGEBRAICAL *Solution*. See the article RESOLUTION.

ALGENEB, or ALGENIB, in aſtronomy, a fixed ſtar of the ſecond magnitude, on the right ſide of Perſeus.—Its longitude, latitude, *&c.* ſee among the reſt of the conſtellation PERSEUS.

ALGOL, or *Meduſa's Head*, a fixed ſtar of the third magnitude, in the conſtellation Perſeus.—Its longitude, latitude, *&c.* ſee under the article Perseus.

ALGORITHM, an Arabic term, which ſome authors, and eſpecially the Spaniards, make uſe of to ſignify the practical operation of the ſeveral parts of ſpecious arithmetic, or algebra.

Sometimes it is alſo uſed for the practice of common arithmetic, by ten numeral figures.

Algorithm is properly the art of numbering truly, and readily; and comprehends the ſix common rules of arithmetic.—It is ſometimes called *Logiſtica Numeralis*.

We ſay, the *algorithm* of integers, the *algorithm* of fractions, the *algorithm* of ſurds, *&c.*

ALGUAZIL, in the Spaniſh policy, a ſerjeant or official of a judge, or magiſtrate, appointed to ſee his decrees executed.

ALHANDAL *, a term in the Arabian pharmacy, ſignifying colocynth.—The troches of *Alhandal*, *Trochiſci Alhandal*, are a kind of troches, compoſed of colocynthis, bdellium, and gum tragacanth. See Troche.

* The word is formed of the Arabic *Handal*, or *Handhal*, a name for colocynthis.

They are eſteemed good purgatives, and are uſed on divers occaſions.

ALHIDADE *, or Alidade, the index or label of an aſtronomical, or geometrical inſtrument, for taking of heights or diſtances.

* The word is Arabic, where it ſignifies the ſame thing.—In Greek and Latin, it is called διοπτρα, *Dioptra*, and *Linea Fiduciæ*, fiducial line.

The *alhidade* is a kind of ruler, moveable on the centre of the inſtrument; and carrying two ſights, which are erected perpendicularly at the two extremities of it. See the article Sights.

ALICATICA, an antient Arabian weight.

ALIEN, in law, a ſtranger; or perſon born out of the king's allegiance; or under the juriſdiction of ſome other ſovereign; and not naturalized, or made a denizen.

Of theſe there are two kinds; *viz. alien friends*, who are of thoſe countries which are at peace and league with us; and *alien enemies*, who are of countries at war with us.

A man born out of the land, ſo it be within the limits of the king's obedience beyond the ſeas; or of Engliſh parents out of the king's obedience, ſo the parents at the time of the birth be of ſuch obedience; is no *alien*, but a ſubject of the king, ſtat. 2. 25 Edw. III. commonly called the Statute *De natis ultra mare*.

Add, that if one born out of the king's allegiance come and dwell in England; his children begotten here are not *aliens*, but denizens.

Scavage, package, and balliage, payable to the city of London, are properly *aliens duties*.

On what footing *aliens* are permitted to import foreign commodities into Great Britain, ſee Duty.

Alien *Priories*, a ſubordinate kind of monaſteries in England, belonging to, and dependent on, other monaſteries in foreign countries.

ALIENATION, Alienatio, in law, the act of making a thing another man's; or the altering and transferring the property and poſſeſſion of lands, tenements, or other things, from one man to another.

To *alienate*, or alien, in mortmain, is to make over lands or tenements to a religious community, or other body politic. See Mortmain.

To *alienate* in fee, is to ſell the fee-ſimple of any land, or other incorporeal right.

Crown lands are only *alienable* under a faculty of perpetual redemption.

The council of Lateran, held in 1123. forbids any clerk to *alienate* his benefice, prebend, or the like.

Alienatio *à familia*. See Abdication.

Alienation-*Office*, is an office to which all writs of covenants and entry, upon which fines are levied, and recoveries ſuffered, are carried, to have fines for *alienation* ſet and paid thereon.

ALIFORMES * *Muſculi*, a pair of muſcles, ariſing from the pterygoid bone, and ending in the neck of the lower jaw, towards the internal ſeat of the head.

* They are thus called from the Latin *ala*, wing, and *forma*, ſhape; as reſembling wings.

Aliformes *Proceſſus*, in anatomy, the prominences of the os cuneiforme. See Cuneiforme.

ALIMENT *, Alimentum, in a phyſical ſenſe, is whatever may be diſſolved, and turned into chyle, by the liquor of the ſtomach, or the natural heat; ſo as to be afterwards converted into blood, for augmenting the body, or repairing the continual expence of parts.

* The word is Latin, formed of the verb *alere*, to nouriſh.

ALIMENTARY, Alimental, ſomething that relates to aliment, or food.

The antient phyſicians hold, that every humour conſiſts of two parts; an *alimentary*, and an excrementitious one.

Alimentary *Duct*, *Ductus Alimentalis*, is a name given, by Dr. Tyſon and ſome others, to that part of the body through which the food paſſes, from its reception into the mouth, to its exit at the anus; including the gula, ſtomach, and inteſtines.

Dr. Morgan conſiders the whole *alimentary* tube (including the ſtomach, inteſtines, and lacteals), as conſtituting one gland; of the like nature, ſtructure, and uſe, with the other glands of the body.

Every gland has its vaſa deferentia, ſecretoria, and expurgatoria, together with its common ventricle, where the matter brought thither is firſt prepared by digeſtion, *&c.*—In this grand primary concoctive gland, the gula, from the mouth of the œſophagus to its vas deferens the ſtomach, is its common receptacle, the lacteals are its vaſa ſecretoria, or recipient ſtrainers, and the inteſtines from the pylorus to the anus conſtitute its vas expurgatorium, or common expurgatory duct.

The actions therefore of this, as of every other gland, are principally four, *viz.* ſolution, ſeparation, glandular colature or ſecretion, and evacuation or expurgation. *V. Mech. Pract. of Phyſ.* p. 27.

Alimentary *Duct* is ſometimes alſo underſtood of the thoracic duct.

Alimentary *Law*, Lex Alimentaria, was an old law among the Romans, whereby children were obliged to find ſuſtenance for their parents.

Alimentarii *Pueri*, *&c.* were certain children, maintained and educated by the munificence of the emperors, in a ſort of public places, not unlike our hoſpitals.

Trajan was the firſt that brought up any of theſe *alimentary* boys. He was imitated by Adrian. Antoninus Pius did the ſame for a number of maids, at the ſolicitation of Fauſtina: and hence, in ſome medals of that empreſs, we read PVELLAE FAVSTINIANAE.—Alexander Severus did the like, at the requeſt of Mammæa; and the maids thus educated were called Mammæanæ.

ALIMONY, Alimonia, properly ſignifies nouriſhment, or maintenance; but in a more modern ſenſe, in law, it denotes that portion, or allowance, which a married woman ſues for, upon any occaſional ſeparation from her huſband, wherein ſhe is not charged with elopement or adultery.

This was antiently called *Rationabile Eſtoverium*, reaſonable maintenance, and was recoverable only in the ſpiritual court; but now it is recoverable alſo in chancery.

ALIQUANT *Part*, is that which will not meaſure or divide any number exactly, but ſome remainder will ſtill be left.—Or, an aliquant part, is that which, being taken any number of times, is always either greater or leſſer than the whole. See Part, Measure, *&c.*

Thus, 5 is an *aliquant part* of 12; for being taken twice, it falls ſhort; and when taken three times, it exceeds 12.

The *aliquant parts* of a pound, or 20*s.* are

3*s.* an *aliquant part* compoſed of a tenth and 20th.
6*s.* of a 5th and a 10th.
7*s.* of a 4th and a 10th.
8*s.* of two 5ths.
9*s.* of a 4th and a 5th.
11*s.* of a half and a 20th.
12*s.* of a half and a 10th.
13*s.* of a half, a 10th, and 20th.
14*s.* of a half and a 5th.
15*s.* of a half and a 4th.
16*s.* of a half, a 5th, and 10th.
17*s.* of a half, a 4th, and 10th.
18*s.* of a half and two 5ths.
19*s.* of a half, a 4th, and 5th.

To multiply by *aliquant parts*, ſee the article Multiplication.

ALIQUOT * *Part*, is ſuch part of any number, or quantity, as will exactly meaſure it, without any remainder.—Or, it is a part, which being taken a certain number of times, becomes equal to the whole, or integer.

* The word is formed of the Latin *aliquoties*, any number of times.

Thus, 3 is an *aliquot part* of 12; becauſe, being taken four times, it will juſt meaſure it.

The *aliquot parts* of a pound of 20*s.* are

10*s.* make half of 20*s.*
5*s.* a fourth.
4*s.* a fifth.
2*s.* a tenth.
1*s.* a twentieth.
6*s.* 8*d.* a third.
3*s.* 4*d.* a ſixth.
2*s.* 6*d.* an eighth.
1*s.* 8*d.* a twelfth.
1*s.* 4*d.* a fifteenth.
1*s.* 3*d.* a ſixteenth.
10*d.* a twenty-fourth.
5*d.* a forty-eighth.

To multiply by the help of *aliquot parts*, ſee the article Multiplication.

ALKAHEST, or Alcahest, in chymiſtry, a moſt pure and univerſal menſtruum, or diſſolvent, wherewith ſome chymiſts have pretended adequately to reſolve all bodies into their firſt matter, and perform other extraordinary and unaccountable operations.

The two eminent adepts, Paracelſus and Helmont, expreſly declare, that there is a certain fluid in nature, capable of reducing all ſublunary bodies, as well homogeneous as mixed, into their ens primum, or original matter whereof they are compoſed; or into an uniform equable and potable liquor, that will unite with water, and the juices of our bodies; yet will retain its ſeminal virtues; and if mixed with itſelf again, will thereby be converted into pure elementary water.—Whence they alſo imagined, it would at length reduce all things into water.

This declaration, ſeconded by the aſſeveration of Helmont, who religiouſly ſwears himſelf poſſeſſed of the ſecret, has excited the ſucceeding chymiſts and alchymiſts to the purſuit of ſo noble a menſtruum. Mr. Boyle was ſo fond of it, that he frankly acknowleges he had rather have been maſter thereof than of the philoſophers ſtone.

Indeed, it is not difficult to conceive, that all bodies might originally ariſe from ſome firſt matter, which was once in a fluid form.—Thus, the primitive matter of gold is, perhaps, nothing more than a ponderous fluid, which from its own nature, or a ſtrong attraction between its parts, afterwards acquires a ſolid form.—And hence, there does not appear any abſurdity in the notion of an univerſal ens, that reſolves all bodies into their ens genitale.

The *alkaheſt* is a ſubject that has been canvaſſed by an infinite number of authors; as Pantaleon, Philalethes, Tachenius, Ludovicus, *&c.*—Boerhaave ſays, a library might be collected of them; and Weidenfelt, in his treatiſe *De Secretis Adeptorum*, has given us all the opinions that have been entertained about it.

The term *alkaheſt* is not peculiarly found in any language: Helmont declares he firſt obſerved it in Paracelſus, as a word that was unknown before the time of that author, who in his ſecond book, *De viribus membrorum*, treating of the liver, has theſe words: *Eſt etiam* alkaheſt *liquor, magnam hepatis conſervandi & confortandi*, &c. "There is alſo the liquor *alkaheſt*, of great efficacy in preſerving the liver; as alſo in curing hydropical and all other diſeaſes ariſing from diſorders of that part. If it have once conquered its like, it becomes ſuperior to all other hepatic medicines; and though the liver itſelf were broken and diſſolved, this medicine ſhould ſupply its place."

It is this ſingle paſſage of Paracelſus, that excited the ſucceeding chymiſts to an inquiry after the *alkaheſt*; there being but one other indirect expreſſion about it in all his work.

Now it being a frequent practice with this author to tranſpoſe the letters of his words, and to make uſe of abbreviations, and other ways of concealment; as in tartar, which he would write *Sutratur*; for *Nitrum*, *Mutrin*, &c. it is ſuppoſed *alkaheſt* may be a word thus diſguiſed.—Hence ſome imagine it formed of *alkali eſt*; and accordingly, that it was the alkaline ſalt of tartar volatilized. This ſeems to have been Glauber's opinion; who indeed performed ſurpriſing things with ſuch a menſtruum upon ſubjects of all the three kingdoms.

Others will have it the German word *algeiſt*, q. d. wholly ſpirituous, or volatile; others are of opinion, that *alkaheſt* is taken from *ſaltz-geiſt*, which ſignifies ſpirit of ſalt; for the univerſal menſtruum, it is ſaid, is to be wrought from water; and Paracelſus himſelf calls ſalt the centre of water, wherein metals ought to die, *&c.*—In effect, ſpirit of ſalt was the great menſtruum he uſed on moſt occaſions.—The commentator on Paracelſus, who gave a Latin edition of his works at Delft, aſſures that the *alkaheſt* was mercury, converted into a ſpirit.—Zwelfer judged it to be a ſpirit of vinegar rectified from verdegris—And Starkey thought he diſcovered it in his ſoap.

There have been ſome ſynonymous and more ſignificant words uſed for the *alkaheſt*.—The elder Helmont mentions the *alkaheſt* by the compound name of *Ignis-aqua*, fire-water: but he here ſeems to mean the circulated liquor of Paracelſus; which he terms *fire*, from its property of conſuming all things; and *water*, on account of its liquid form.—The ſame author calls it *Ignis gehennæ*, infernal fire; a word alſo uſed by Paracelſus: he alſo intitles it '*Summum & feliciſſimum omnium ſalium*, the higheſt and moſt ſucceſsful among ſalts; which having obtained the ſupreme degree of ſimplicity, purity, and ſubtility, alone enjoys the faculty of remaining unchanged and unimpaired by the ſubjects it works on, and of diſſolving the moſt ſtubborn and untractable bodies, as ſtones, gems, glaſs, earth, ſulphur, metals, *&c.* into real ſalt, equal in weight to the matter diſſolved; and this with as much eaſe as hot water melts down ſnow.'—'This ſalt, continues he, by being ſeveral times cohobated with Paracelſus's *Sal circulatum*, loſes all its fixedneſs; and at length becomes an inſipid water, equal in quantity to the ſalt it was made from.'

Helmont is expreſs, that this menſtruum is intirely the product of art, and not of nature.—'Though, ſays he, a homogeneal part of elementary earth may be artificially converted into water, yet I deny, that the ſame can be done by nature alone; for no natural agent is able to tranſmute one element into another.' And this he offers as a reaſon why the elements always remain the ſame.—It may let ſome light into this affair, to obſerve that Helmont, as well as Paracelſus, took water for the univerſal inſtrument of chymiſtry, and natural philoſophy; and earth for the unchangeable baſis of all things: that fire was aſſigned as the efficient cauſe of all things: that ſeminal impreſſions were lodged in the mechaniſm of earth; and that water, by diſſolving and fermenting with this earth, as it does by means of fire, brings every thing forth; whence originally proceeded the animal, vegetable, and mineral kingdoms; even man himſelf being thus at firſt created, agreeably to the account of Moſes.

The great character or property of the *alkaheſt*, we have obſerved, is, to diſſolve and change all ſublunary bodies; water alone excepted.—The changes it induces proceed thus:

1°, The ſubject expoſed to its operation, is converted into its three principles, ſalt, ſulphur, and mercury; and afterwards into ſalt alone; which then becomes volatile; and at length is wholly turned into inſipid water.—The manner of application is by touching the body propoſed to be diſſolved, *e. gr.* gold, mercury, ſand, or the like, once or twice with the pretended *alkaheſt*; and if the liquor be genuine, the body will on this be converted into its own quality of ſalt.

2°, It does not deſtroy the ſeminal virtues of the bodies diſſolved thereby.—Thus, gold is, by its action, reduced to a ſalt of gold; antimony to a ſalt of antimony; ſaffron to a ſalt of ſaffron, *&c.* of the ſame ſeminal virtues or characters with the original concrete.—By ſeminal virtues, Helmont underſtands thoſe virtues which depend upon the ſtructure or mechaniſm of a body, and which make it what it is. Hence an actual and genuine aurum potabile might readily be gained by the *alkaheſt*, as converting the whole body of gold into ſalt, retaining its ſeminal virtues, and being withal ſoluble in water.

3°, Whatever it diſſolves, may be rendered volatile by a ſand-heat: and if, after volatilizing the ſolvend, it be diſtilled therefrom, the body is left pure inſipid water, equal in quantity to its original ſelf, but deprived of its ſeminal virtues.—Thus, if gold be diſſolved by the *alkaheſt*, the metal firſt becomes ſalt, which is potable gold; but when the menſtruum by a further application of fire is diſtilled therefrom, it is left mere elementary water. Whence it appears, that pure water is the laſt production or effect of the *alkaheſt*.

4°, It ſuffers no change or diminution of force by diſſolving the bodies it works on, and therefore ſuſtains no reaction from them; being the only immutable menſtruum in nature.

5°, It is incapable of mixture, and therefore remains free from fermentation and putrefaction; coming off as pure from the body it has diſſolved, as when firſt put thereon; without leaving the leaſt foulneſs behind.

ALKALINE, or Alkalizate *Bodies*, among chymiſts, are ſuch as have their pores naturally ſo formed, that they are fit to be pierced, and put into motion, by the points of an acid poured upon them.

ALKALIZATION, Alkalizatio, in chymiſtry, the act of impregnating a liquor with an *alkaline* ſalt.

This is done either to make it a better diſſolvent, for ſome particular purpoſes; or to load the phlegm, ſo as it may not riſe in diſtillation, whereby the ſpirituous parts may go over more pure.

ALKALY, Alkali, or Alcaly, in chymiſtry, a name originally given by the Arabians to a ſalt extracted from the aſhes of a plant called *Kali*; and by us *glaſs-wort*; becauſe uſed in the making of glaſs.

Afterwards, the term *alkaly* became a common name for the lixivious ſalts of all plants; that is, for ſuch ſalts as are drawn by lotion from their aſhes.

And hence, again, in regard the original *alkaly* was found to ferment with acids; the name has ſince become common to all volatile ſalts, and all terreſtrial ſubſtances, which have that property.

Alkaly, then, in its modern extenſive ſenſe, is any ſubſtance, which being mixed with an acid, an ebullition and effervescence enſue thereon.

And hence ariſes the grand diviſion of natural bodies into the two oppoſite claſſes of *acids* and *alkalies*.

Boerhaave ſcarce takes this circumſtance to be enough to conſtitute any determinate claſs of bodies.—In effect, *alkalies* are not of one ſimilar homogeneous nature: but there are two ſeveral ſorts of them.

The firſt are obtained from vegetable and animal ſubſtances, by calcination, diſtillation, putrefaction, *&c.* ſuch are ſpirit of urine, ſpirit of hartſhorn, ſalt of tartar, *&c.*—The ſecond are of the terreſtrial kind; as ſhells, chalk, *&c.*

Theſe two ſpecies of *alkalies*, Boerhaave obſerves, differ widely from each other; having ſcarce anything in common, but their being efferveſcible with acids.—The one is a claſs of native, fixed, ſcentleſs, inſipid, mild, aſtringent bodies: the other a ſet of ſuch as are volatile, odorous, ſapid, cauſtic, aperitive, and are procured by art.

Hence, adds the ſame author, mere efferveſcence with acids muſt be allowed to be of itſelf inſufficient to determine the nature of an *alkaly*: and that ſuch a name, which properly denotes a cauſtic, fiery ſubſtance, ſhould not be affixed to any mild and gentle body, as chalk, *&c.* but other properties and conſiderations are to be taken in, and particularly their taſte, the manner of procuring, and the change of colour they produce in bodies.

With regard to this laſt circumſtance, thoſe liquors which, being poured on ſyrup of violets, change it to a green colour, are *alkalies*; as thoſe which turn it red, are acids.—Thus oil of tartar turns it of a kindly green; and oil of vitriol of a carmine red: and if to the ſyrup thus made red by oil of vitriol, oil of tartar be poured, it turns that part, wherewith it comes in contact, green; leaving the reſt red: and the like holds of oil of vitriol, poured on ſyrup made green by oil of tartar.

To the like effect M. Homberg obſerves, that ‘ a mere heat ‘ and bubbling ariſing upon the admixture of a body with an ‘ acid does not ſeem an adequate criterion of the *alkaline* ‘ nature; ſince diſtilled oils of all kinds are found to do thus ‘ much; and that many of them with more vehemence than ‘ *alkalies* themſelves; ſo as ſometimes even to take fire, ‘ which *Alkalies* never do.’

To the definition and character of an *alkaly*, therefore, M. Homberg adds this circumſtance; ‘ that after the action, ‘ the mixture coaleſces and ſhoots into a ſalt, or ſaline matter.’ ‘ —This excludes the oils above-mentioned; which do not, after efferveſcence, unite with the acids into a ſaline ſubſtance, but rather compoſe a reſinous one.

All lixivious ſalts have theſe characters of *alkaly*.—And not only lixivious, but alſo all urinous ſalts, which are conſtantly found to imbibe acids with great eagerneſs, and, after ebullition, to unite and cryſtallize with them.

Hence we have two kinds of *alkaly Salts*, viz. *fixed*, or *lixivious*; and *volatile*, or *urinous* ones.

But beſide *alkaly* ſalts, there are an infinity of other bodies, not ſaline; which anſwer to the characters of *alkaly*, *i. e.* which produce much the ſame effects with acids, as the *alkaly* ſalts above-mentioned.—And theſe *alkaline* matters are, in other reſpects, of different natures.

Some, *e. gr.* are merely earthy; as quick-lime, marble, chalk, *&c.*—Others are metalline; among which, ſome have their peculiar and appropriate acids to act on them, as gold, tin, and antimony, which only diſſolve with aqua-regia; ſilver, lead, and mercury, with aqua-fortis; and the others with other ſorts of acids, as iron, copper, zink, biſmuth, *&c.*—There are others of the animal claſs; conſiſting, 1°, Of ſtony matters found in the viſcera of certain ſpecies; as the calculus humanus, bezoards, crabs eyes, *&c.*—2°, Teſtaceous matters and ſhells; as pearls, oyſter-ſhells, cuttle-fiſh bones, the ſhells or coats of lobſters, crabs, *&c.*—3°, The parts of animals, which by length of time, or ſome other cauſe, are become ſtony, or even earthy; as the foſſil unicorn's horn, *&c.*—And laſtly, almoſt all ſtony marine plants, as coral, *&c.*

After all, the *alkaline* property in fixed ſalts does not appear to be native, but rather producible by art.—This opinion ſeems to have been firſt ſtarted by Helmont: before him, it was the ſtanding opinion, that fixed *alkalies* pre-exiſted in mixed bodies; and were only ſeparated or extricated from the parts of the compound. Helmont advanced, that they did not thus pre-exiſt in their *alkaline* form, but were productions of the fire, by whoſe violent action, part of the ſalt, which in the concrete is all volatile, lays hold of ſome part of the ſulphur of the ſame body; and both melting together, are fixed into an *alkaly*: which fixation he exemplieſis, by what happens when ſalt-petre and arſenic, though both volatile, being expoſed to the fire, are fluxed by the operation thereof, and made to fix each other.

Some late chymiſts, and particularly M. Geoffroy, carry the point ſomething farther; and aſſert, that all *alkaly* ſalts whatever, both fixed and volatile, are wholly the effect of fire; in that, before any action of the fire, they did not pre-exiſt in the mixt, wherein they afterwards appeared.

Notwithſtanding all the ſeeming oppoſition and hoſtility between acids and *alkalies*, they may be converted into one another; at leaſt, acids are convertible into *alkalies*; as is ſhewn at large by M. Geoffroy in a diſcourſe expreſs, in the *Mem. de l'Acad.* an. 1717. where the nature and origin of *alkalies* are ingeniouſly explained.

Alcaly ſalts, according to this author, are only acids concentrated in little molecules of earth, and united with certain particles of oil, by means of fire.

When an acid, which we conceive in the general as a ſmall, ſolid, pointed ſpiculum, happens to be abſorbed or concentrated in a proper portion of earth; the whole becomes denominated a *ſaline*, *compound*, *neutral*, or *intermediate ſalt*; by reaſon the acid, thus incloſed in a ſheath, cannot excite the ſame ſavour as when diſengaged therefrom; and yet excites a ſaline taſte: and for this reaſon is compound, *&c.*

Now, fire is the only agent capable of diſengaging the acid from the earth it is thus inveſted withal. Upon this, the acid, being lighter than the earth, riſes and evaporates; leaving the earth at the bottom of the veſſel; which for this reaſon is called *fixed*, in contradiſtinction to the acid, which is *volatile*. This earth, thus bereaved of its acid, is left with its pores open and empty, which before were filled; and withal, in ſuſtaining the action of fire, it neceſſarily retains ſome of the particles thereof, which give it an acrimonious taſte, that mere earth could never have.—From this taſte it is called *ſalt*; and from its pores being open, and thus diſpoſed to admit and imbibe new acids, it is called *alkaly ſalt*.

Now, it is not to be imagined, that an earth, which has once been impregnated with acids, can ever be perfectly diveſted thereof; there will ſtill remain ſome, though much leſs than before. So that an *alkaly* may be conceived as only a too ſmall quantity of acid, incloſed in too large a quantity of earth.

The viſible and ſenſible fire is not the only agent capable of ſeparating acids from their earth; fermentation has the ſame effect, in virtue of that pure active fire produced or concerned therein. *Alkalies*, therefore, are the production, either of the one, or of the other fire; and the ſame may be ſaid of the acids diſengaged therefrom; it being the diſunion of the parts of the ſame ſalt occaſioned by fire that produces both, the acids as well as the *alkalies*. All the difference is, that the *alkaly* imbibes and retains certain corpuſcles of the fire, whereas nothing foreign is ſuperadded to the acid.

On this principle every acid is volatile, and every *alkaly* ſhould be fixed, if the *alkaly* were only earth: but in regard the little acid ſtill remaining in the *alkaly*, may be united with a portion of oil, as well as a portion of earth; and oil is known to be volatile; the compound, that is, the *alkaly*, muſt be volatile, in caſe the oil prevail therein.

In this caſe, the *alkaly* is found to have a ſtrong, penetrating, urinous taſte and ſmell; and is what we call a *volatile urinous alkaly ſalt*.

Theſe things well conſidered, it will be eaſy to aſſign what muſt enſue upon the ſeparations, or new unions, of the parts of a mixt.

An acid, it is evident, may become an *alkaly*, in that after having been ſeparated from its matrix, it may be reſtored in a ſmall quantity to another matrix, either wholly earthy, or earthy and oleaginous.—In the firſt caſe, it will become a fixed *alkaly*: in the ſecond, it may be, a volatile *alkaly*, if in the ſuppoſed matrix the proportion of oil prevail over that of earth; and in this caſe it will be urinous.

Again, what before was a fixed *alkaly*, may become volatile and urinous, by depoſiting or letting go part of its earth, and taking oil in its ſtead.

Theſe tranſmutations are not found equally eaſy and practicable in the three different kinds of mixts, or the three kingdoms; by reaſon of the diverſity of circumſtances that muſt concur thereto.—They are much the moſt rare and difficult in the mineral realm; by reaſon, no doubt, that the parts of minerals are more cloſely tied together, and have, as it were, leſs play. The only inſtance chymiſtry hath hitherto produced, of a mineral acid's being converted into a fixed *alkaly*, is in the operation of fixing ſalt-petre.

The vegetable kingdom, it is obſerved, furniſhes a very large quantity of fixed *alkaly* ſalt; and very little volatile *alkaly*: the animal kingdom, on the contrary, affords a deal of volatile *alkaly* ſalt, and but little fixed. The foſſil kingdom affords a very little native fixed *alkaly* ſalt, as the Egyptian natrum, and the ſalts procured by lotion from ſaline earths about Smyrna, and ſome other places of the Eaſt; and the chymiſts have alſo found a method of converting nitre into a fixed *alkaly*: but nobody hath hitherto produced a volatile *alkaly* from the acids of the mineral kingdom.—And yet, if acid ſalts of the vegetable kind be convertible either into fixed or volatile *alkalies*, why may not mineral acids be ſuſceptible of the ſame change? ſince vegetable acids are originally no other than mineral ones; for, from whence but the earth ſhould plants derive their acid juice?

In effect, M. Geoffroy has at length ſhewn the operation feaſible, by an actual transformation of the ſame acid nitre into a volatile urinous *alkaly*. See the *Mem. de l Acad.* ubi ſupra.

By the way, it is to be noted, that the inſtance of Egyptian natrum, or nitre, furniſhes an objection againſt the general aſſertion of all *alkalies* being artificial, or produced by fire: Mr. Boyle, who had ſome of this ſalt ſent him by the Engliſh embaſſador at the Porte, found that vinegar would work briſkly on it, even in the cold: “ Whence, ſays he, it appears, that the Egyptian nitre, acknowleged to be a native “ ſalt, and made only by the evaporation of the ſuperfluous “ water of the Nile, is yet of a lixivious nature, or at leaſt “ abounds with particles that are ſo, though produced with-

“out any precedent incineration, and the matter of it expoſed to the violence of the fire, to make it afford an *alkaly.*” *Producib. of Chym. Princip.*—He adds, “However, he does not know any other body in nature, except this, wherein the *alkaline* properties are not produced.” *Ibid*—And proceeds to give inſtances of *alkalies* being made from ſea-ſalt, and other acids; and ſhews, “how the ſame body, without the addition of any other ſalt, may, by varying the manner of the fire's application, be made either to afford little elſe than acids, or a greater or leſs quantity of *alkaly.*” *Ibid.*

Hypotheſis of ALKALY *and acid.*—Tachenius and Sylvius de la Boe, followed by the tribe of vulgar chymiſts, ſtrenuouſly aſſert ſal *alkaly* and acid to be the only univerſal principles of all bodies; and by means hereof, they account for the qualities of bodies, and the reſt of the phænomena of nature; particularly thoſe in the animal œconomy.—In a word, *alkaly* and acid are ſubſtituted in the ſtead of matter and motion.

Mr. Boyle and Bohnius attack this hypotheſis with great force of argument.—In effect, it is at beſt but precarious to affirm, that acid and *alkaline* parts are found in all bodies.

When the chymiſts ſee aqua-fortis diſſolve filings of copper, they conclude, that the acid ſpirits of the menſtruum meet in the metal with an *alkaly*, upon which they work; but how unſafe a way of arguing this is, appears hence, that ſpirit of urine, which is allowed a volatile *alkaly*, and accordingly makes a great conflict with aqua-fortis, readily diſſolves filings of copper, and that even more genuinely than the acid liquor.—So, when they ſee the magiſtery of pearl or coral, prepared by dropping oil of tartar into the ſolution of thoſe bodies made with ſpirit of vinegar; they aſcribe the precipitation to the fixed *alkaly* of the tartar, which mortifies the acidity of the ſpirit of vinegar: whereas the precipitation would no leſs enſue, if, inſtead of the *alkalizate* oil of tartar, that ſtrong acid, oil of ſulphur per campanam, were uſed.

It may alſo be doubted, whether it be juſt to ſuppoſe, that when an acid is diſcovered in a body, the operation of that body on another, abounding with an *alkaly*, muſt be the effect of a conflict between theſe two principles?—For, an acid body may do many things, not ſimply as an acid, but on account of a texture or modification, which endows it with other qualities as well as acidity. Thus, when the chymiſts ſee an acid menſtruum, as aqua-fortis, ſpirit of ſalt, oil of vitriol, *&c.* diſſolve iron, they preſently aſcribe the effect to an acidity in the liquors; though well dephlegmated urinous ſpirits, which they hold to have a great antipathy to acids, will alſo readily diſſolve crude iron, even in the cold.

Further, the patrons of this hypotheſis ſeem arbitrarily to have aſſigned offices to each of their two principles; as the chymiſts do to each of their tria prima; and the peripatetics to each of their four elements.—But it is not enough to ſay, that an acid, for inſtance, performs theſe things, and an *alkaly* thoſe; and that they divide the operations and phænomena of natural bodies between them: aſſertions of ſuch moment ought not to be received, without further proof.

Indeed, the very diſtribution of ſalts into acids and *alkalies*, has ſomewhat arbitrary in it; there being not only ſeveral things wherein the acids agree with *alkalies*, but alſo ſeveral things wherein each differs from itſelf.—To ſay nothing of the diverſity of fixed and volatile *alkalies* above-mentioned; ſome, as ſalt of tartar, will precipitate the ſolution of ſublimate into an orange-tawny; others, as ſpirit of blood and hartſhorn, precipitate the ſame ſolution into a milky ſubſtance; and oil of tartar very ſlowly operates upon filings of copper, which ſpirits of urine and hartſhorn will readily diſſolve on the fire. And among acids themſelves the difference is no leſs; for ſome of them will diſſolve bodies which others will not: and this even where the menſtruum that will not diſſolve the body, is reputed much ſtronger than that which does; as dephlegmated ſpirit of vinegar will diſſolve lead reduced to minute parts in the cold, which is an effect that chymiſts expect not from ſpirit of ſalt. Nay, one acid will often precipitate what another has diſſolved, and *è contra*; as, ſpirit of ſalt will precipitate ſilver out of ſpirit of nitre. Add, the properties peculiar to ſome particular acids; as, that ſpirit of nitre, or aqua-fortis, diſſolves camphire into an oil, and coagulates common oil into a conſiſtent ſubſtance like tallow; and though it will both corrode ſilver, copper, lead, and mercury, and keep them diſſolved, it quickly lets fall almoſt the whole body of tin.

It is no wonder that the definitions given of acid and *alkaly* ſhould be inaccurate and ſuperficial; ſince the chymiſts themſelves do not ſeem to have any determinate notion, or ſure marks, whereby to know them diſtinctly.—For, to infer, that, becauſe a body diſſolves another, which is diſſoluble by this or that known acid, the ſolvent muſt alſo be acid; or to conclude, that, if a body precipitates a diſſolved metal out of a confeſſedly acid menſtruum, the precipitant muſt be an *alkaly*, is precarious: ſince filings of ſpelter will be diſſolved by ſome *alkalies*, *viz.* ſpirit of ſal ammoniac, *&c.* as well as by acids; and bodies may be precipitated out of acid menſtrua, by other acids, and by other liquors wherein there appears not the leaſt *alkaly*. Add, that a ſolution of biſmuth, made in aqua-fortis, would be precipitated both by ſpirit of ſalt, and by common water.—Nor does that other criterion of acids and *alkalies*, *viz.* the heat, commotion, and bubbles excited upon their being put together, appear more determinate; ſince almoſt any thing fitted variouſly and vehemently to agitate the minute parts of a body, will produce heat in it.—Thus, though water be neither an acid, nor an *alkaly*, it will quickly grow very hot, not only with the highly acid oil of vitriol, but with the *alkalizate* ſalt of tartar.

Neither is the production of bubbles on the mixture, though accompanied with a hiſſing noiſe, a certain ſign; ſuch production not being a neceſſary effect of heat, excited by conflict, but depending on the peculiar diſpoſition of the bodies put together, to extricate, produce, or intercept, particles of air.—Hence, as oil of vitriol, mixed in a due proportion with fair water, may be brought to make the water very hot, without exciting bubbles; ſo Mr. Boyle has found, that *alkalizate* ſpirit of urine, drawn with ſome kinds of quick-lime, being mixed with oil of vitriol moderately ſtrong, would afford an intenſe heat, while it produced either no manifeſt bubbles at all, or ſcarce any; though the urinous ſpirit was ſtrong, and in other trials operated like an *alkaly*; and though, with the ſpirit of urine made *per ſe*, in the common way, oil of vitriol will produce a great hiſſing, and a multitude of conſpicuous bubbles. On the other ſide, ſome acid ſpirits, as that of verdegris, made pure, poured on ſalt of tartar, will frequently make a conflict, and produce a large froth; though not accompanied with any manifeſt heat.

Many make the taſte the touchſtone whereby to try acids and *alkalies*: but there are a multitude of bodies, wherein we can ſo little diſcern by the taſte which of the principles is predominant, that one would not ſuſpect there was a grain of either of them therein: ſuch are diamonds, moſt gems, and many ignobler ſtones; gold, ſilver, mercury, *&c* There are alſo bodies abounding with acid or *alkalizate* ſalts; which either have no taſte at all, or a quite different one from that of theſe chymical principles.—Thus, though glaſs be in great part compoſed of a fixed *alkaly*, it is inſipid on the palate: and cryſtals of ſilver and lead, made with aqua-fortis, and containing numerous acid particles of the menſtruum, manifeſt nothing of acidity in the mouth; the latter having a ſaccharine ſweetneſs, and the former an extreme bitterneſs. And even in vegetable ſubſtances of a manifeſt taſte, it is not eaſy to know by that, whether it be the acid or the *alkaline* principle which predominates in them: as, in the eſſential oil of ſpices, and the groſs empyreumatical oils of wood; and even in alcohol of wine, which ſome contend to be an acid, and others an *alkaly*. See ACID. *Imperfect. of Chym. Doct. of Qual.*

ALKEBLA, or ALKIBLIA. See the article KEBLA.

ALKEKENGI, a medicinal fruit or berry, produced by a plant of the ſame denomination; popularly alſo called the *winter-cherry*: of ſome uſe as an abſtergent, diſſolvent, and diuretic.

The plant is properly a ſpecies of ſolanum, or nightſhade; whence it is frequently called in Latin by that name, with the addition or epithet of *veſicarium*, to expreſs the bladders the fruit is contained in.—It is ſometimes alſo called *halicacabum*.

The fruit is celebrated for its lithontriptic quality; and preſcribed to cleanſe the urinary paſſages of gravel, and other obſtructions. Its deterſive quality alſo recommends it againſt the jaundice, and other diſorders of the viſcera.

The *Trochiſci Alkekengi*, prepared from it, are but little preſcribed in the modern practice.

ALKERMES, in medicine, *&c.* a term borrowed from the Arabs, denoting a celebrated remedy, of the form and conſiſtence of a confection; whereof the kermes are the baſis.

The other ingredients are roſe-water, ſugar, ambergris, muſk, cinnamon, aloes wood, pearls, and leaf-gold, *&c.*—But the ſweets are uſually omitted.

The *Confectio Alkermes* is chiefly made at Montpelier, which place ſupplies moſt parts of Europe therewith. It is ſaid to be better made there than can be elſewhere; the reaſon of which doubtleſs is, that the drug, which gives it the denomination, is no-where found ſo plentifully as there. The manner of preparing the grain for making the confection is deſcribed in the *Philoſ. Tranſact.* N° 20. p. 362. See alſo *Ray, Trav.* p. 392.

It is much uſed as a cordial; eſpecially, ſays Dr. Quincy, among female preſcribers, and in complaiſance to them: but that author decries its value in that intention, and thinks it ought only to be regarded as a ſweetener.

ALKOOL. See the article ALCOHOL.

ALKORAN. See the article ALCORAN.

ALLANTOIS*, ALLANTOIDES, in anatomy, a thin, ſmooth, membranous ſubſtance, or veſicle, inveſting the fœtus of divers animals, and replete with urinous liquor conveyed to it from the urachus.

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* The word is derived from αλλας, *farcimen*, a gut; and ειδος, *forma*, ſhape; becauſe in many brutes it is in the ſhape of a gut-pudden, though in ſome others it is round.

The *allantois* makes a part of the ſecundine.—It is conceived as an urinary tunic, placed between the amnion and chorion; which, by the navel and urachus, receives the urine that comes out of the bladder.

It is a point controverted among anatomiſts, whether the *allantois* be found in the human ſpecies?—M. Drelincourt, profeſſor of anatomy at Leyden, in an expreſs diſſertation on this membrane, maintains it peculiar to the ruminating kind.

Dr. Hale, on the contrary, has given an accurate deſcription of the human *allantois*; and aſſigned the reaſon why even thoſe, who believed its exiſtence, had not before fully found it out; and alſo an anſwer to thoſe who yet deny its reality. See *Philoſoph. Tranſact.* Nº 271.

ALLAY. See the article ALLOY.

ALLEGATION, is uſed for the producing of acts, or inſtruments, to authorize a thing.

Allegation, in a literary ſenſe, denotes the act of citing or quoting an author, or paſſage of ſome book.

ALLEGIANCE, the legal faith, and obedience, which every ſubject owes to his prince.

This was antiently called *ligeantia*, or *ligence*; from the Latin *ligare*, and *alligare*, to bind; *q. d. ligamen fidei*.

Oath of ALLEGIANCE, is an oath given, in England, to the king, in quality of a temporal prince, or ſovereign; to diſtinguiſh it from the oath given to him as primate, or ſupreme head of the church, which is called the *Oath of Supremacy*.

The Quakers are diſpenſed with not taking the oath of *allegiance*; and, in lieu thereof, are only injoined a declaration.

ALLEGORICAL, ſomething containing an *allegory*.

The divines find divers ſenſes in Scripture; as a literal, a myſtical, and an *allegorical* ſenſe.

The prophecies, in particular, delivered in the Old Teſtament, are ſaid to be, many of them, accompliſhed in the new; not in their primary and literal, but in their ſecondary, or *allegorical* ſenſe. See PROPHECY.

The fathers, and other antient interpreters of Scripture, are almoſt all *allegoriſts*: as Origen, Clemens Alexandrinus, St. Auguſtine, Gregory Nazianzen, *&c.* See further, under the article TYPE.

ALLEGORY, ALLEGORIA, a figure in rhetoric, whereby we make uſe of terms which, in their proper ſignification, mean ſomething elſe than what they are brought to denote: or it is a figure whereby we ſay one thing, expecting it ſhall be underſtood of another, to which it alludes.

An *allegory* is, properly, a ſeries or ſtring of metaphors. Such is that beautiful *allegory* in Horace, Lib. I. Od. 14.

> *O navis, referunt in mare te novi*
> *Fluctus*, &c.

Where the *ſhip*, is uſually held to ſtand for the *republic*; *waves*, for *civil war*; *port*, for *peace* and *concord*; *oars*, for *ſoldiers*; and *mariners*, for *magiſtrates*.

The Old Teſtament is ſuppoſed, by many, to be a perpetual *allegory*, or typical repreſentation of the myſteries of the New.

In effect, *allegories* have a good ſhare in moſt religions.—The Jews, we know, abound with them: Philo Judæus has three books, of the *allegories* in the hiſtory of the ſix days.

Nor are the heathens without *allegories* in their religion: it may even be ſaid, that the uſe hereof is of a much earlier ſtanding in the Gentile, than in the Jewiſh world.—Some of their philoſophers, undertaking to give a rationale of their faith, and to ſhew the reaſon and ſcope of their fables, and the antient hiſtories of their gods, found it neceſſary to put another conſtruction on them, and maintain, that they ſignified ſomething very different from what they ſeemed to expreſs.—And hence came the word *allegory*; for a diſcourſe that, in its natural ſenſe, αλλο αγορευει, ſignifies ſomething other than what ſeems intended by it; makes what we properly call an *allegory*.

This ſhift they had recourſe to, in order to prevent people from being ſhocked with thoſe abſurdities which the poets had introduced into their religion; and to convince the world, that the gods of Greece had not been thoſe vile perſons which their hiſtories repreſented them to be. By this means, the hiſtory, as well as the religion, of Greece, was at once converted into *allegory*; and the world left to ſeek for them both in a heap of fables, few of which have been ſolved, to any purpoſe, to this day.

The Jews, finding the advantages of this way of explaining religion, made uſe of it to interpret the ſacred writings, ſo as to render them more palatable to the Pagans.

The ſame method was adopted by the primitive writers of Chriſtianity. See PROPHECY.

ALLEGRO, in muſic, a word uſed by the Italians to denote one of the ſix diſtinctions of time. See TIME.

Allegro expreſſes a ſprightly, quick motion, the quickeſt of all excepting preſto.

The uſual ſix diſtinctions ſucceed each other in the following order: grave, adagio, largo, vivace, *allegro*, and preſto.

It is to be obſerved, that the movements of the ſame name, as adagio, or *allegro*, are ſwifter in triple than in common time.—The triple $\frac{3}{8}$ is uſually *allegro*, or vivace; the triples $\frac{6}{4}$, $\frac{6}{8}$, $\frac{9}{8}$, $\frac{12}{8}$, are moſt commonly *allegro*.

ALLELUJAH. See the article HALLELUJAH.

ALLEMAND, ALMAIN, a kind of grave, ſolemn muſic, where the meaſure is good, and the movement ſlow.

ALLER *good*, in our antient writers.—The word *aller* ſerves to make the expreſſion of ſuperlative ſignification.—So, *aller good* is the greateſt good. Sometimes it is written *alder*.

ALLERION*, or ALERION, in heraldry, a ſort of eaglet, repreſented without either beak, or feet.

* The name is French; and is ſaid to have been introduced for the word *eaglet*: it is added, that the practice of calling eaglets, *allerions*, and of repreſenting them ſpread, without feet and beaks, is not above an hundred years old, and is of French invention; introduced to repreſent the Imperialiſts as ſubdued. Hence, Menage derives the word from *aquilario*, a diminutive of *aquila*.

The *allerion* repreſented *Tab. Heraldry*, *fig.* 1. appears much the ſame with the martlet, except that the wings of the latter are cloſe, and it is repreſented, as it were, paſſant; whereas the *allerion* is ſpread, and is repreſented in pale. Add, that, among our heralds, the martlet has a beak, which the *allerion* wants.

ALLEU, or ALLODE, in our antient cuſtoms. See ALLODIAL, and ALLODIUM.

ALLEVIARE, in old records, to levy or pay an accuſtomed fine or compoſition. See LEVY.

ALLEVIATION*, denotes the art of making a thing lighter, and eaſier to bear or endure.

* The word is originally Latin, compounded of *ad*, to; and *levis*, light.

In which ſenſe, *alleviation* is ſynonymous with *lightening*, and ſtands oppoſed to *aggravation*.

ALLEY*, in gardening, a ſtrait parallel walk, bordered or bounded on each hand with trees, ſhrubs, or the like.

* The word *alley* is derived from the French verb *aller*, to go; the ordinary uſe of an *alley* being for a walk, paſſage, or thorough-fare from one place to another.

Alleys are uſually laid either with graſs or gravel.

An *alley* is diſtinguiſhed from a *path*, in this; that in an *alley* there muſt always be room enough for two perſons, at leaſt, to walk a-breaſt: ſo that it muſt never be leſs than five feet in breadth; and there are ſome who hold, that it ought never to have more than fifteen.

Counter-ALLEYS are the little *alleys* by the ſides of the great ones.

Front ALLEY is that which runs ſtrait in the face of a building.

Tranſverſe ALLEY, that which cuts the former at right angles.

Diagonal ALLEY is that which cuts a ſquare, thicket, parterre, *&c.* from angle to angle.

Sloping ALLEY is that which, either by reaſon of the lowneſs of the point of ſight, or of the ground, is neither parallel to the front, nor to the tranſverſe *alleys*.

ALLEY *in Ziczac* is that which has too great a deſcent, and which, on that account, is liable to be damaged by floods; to prevent the ill effects whereof, it has platbands of turf run acroſs it from ſpace to ſpace, which help to keep up the gravel.

This laſt name is likewiſe given to an *alley* in a labyrinth, or wilderneſs, formed by ſeveral returns of angles, in order to render it the more ſolitary and obſcure, and to hide its exit.

ALLEY *in Perſpective* is that which is larger at the entrance than at the exit; to give it the greater appearance of length.

ALLEY *of Compartiment* is that which ſeparates the ſquares of a parterre.

ALLIANCE*, the union or connexion of two perſons, or two families, by means of marriage; otherwiſe called *affinity*.

* The word ſeems formed of the Latin *adligatio*, *q. d.* a tying together.

The law of the twelve tables forbids all *alliance* between perſons of unequal rank and condition.—And, in Portugal, we are told, the daughters of the nobility are prohibited to *ally* with ſuch as have never been in the wars.

ALLIANCE is alſo extended to the leagues or treaties concluded between ſovereign princes, and ſtates, for their mutual ſafety and defence.

The *triple alliance*, between England, Holland, and Sweden, is famous.—So is the *quadruple alliance*, between England, Holland, the Emperor, and the king of France.

In which ſenſe, we ſay, *allies*, for confederates: the king and his *allies*; the *allies* of the treaty of *Hanover*, &c.

Though the title of *allies*, *ſocii*, of the Romans, was a ſort of ſervitude, it was much coveted. Ariarathes, we are told by Polybius,

bius, offered a ſacrifice to the gods by way of thankſgiving for having obtained this alliance. The reaſon was, that thenceforwards people were ſure not to receive any injuries except from them.

There were divers ſorts of *Allies*: ſome only united to them, by a participation of the privileges of Romans, as the Latini and Hernici; others by their very foundation, as the colonies; others by the benefactions they received from them, as Maſſiniſſa, Eumenes, and Attalus, who owed their kingdoms to Rome: others by free treaties, which laſt by a long alliance became ſubjects, as the kings of Bithynia, Cappadocia, Egypt, and moſt of the cities of Greece: laſtly, others by compulſive treaties, and the law of ſubjection, as Philip and Antiochus. For they never granted peace to an enemy, without making an alliance with him; that is, they never ſubdued any people without uſing it as a means of ſubduing others. V. *Conſid. ſur les cauſ. de la grand. des Rom. c.* 6. *p.* 62. *ſeq.*

ALLIGATION *, in arithmetic, a rule or operation, whereby queſtions are reſolved, relating to the mixture of divers commodities or ingredients together, with the value, effect, &c. thereof in compoſition.

* The word is formed of the Latin *alligare*, to tie together, by reaſon, perhaps, of a ſort of vincula, or circular ligatures, ordinarily uſed to connect the ſeveral numbers together.

Alligation is of two kinds, *medial* and *alternate*.

ALLIGATION *medial* is, when, from the ſeveral quantities and rates of divers ſimples given, we diſcover the mean rate of a mixture compounded out of them.

The ſeveral caſes hereof will come under the following rules.

The quantity of the ingredients, and the prices of each, being given; to find the price or value of ſome part of the mixture.—Multiply the ingredients ſeverally by their own prices, and divide the ſum of thoſe products by the ſum of the ingredients, and the quotient anſwers the queſtion.

The prices of the ſeveral ingredients, and the ſum paid or received for the mixture, being given; to find what quantity of each was bought or ſold.—Divide the ſum paid or received, by the ſum of the particular prices; the quotient is the anſwer.

The ingredients of a mixture being given, to augment or diminiſh the mixture proportionally.—Sum up the ingredients; then ſay, as that ſum is to the augmentation or diminution, ſo is the quantity of each parcel of the mixture, to the quantity of the mixture deſired.

The nature, quality, &c. of the ſeveral ingredients of a mixture being given, to find the temperament or degree of fineneſs reſulting from the whole.—Place the ſeveral quantities of the mixture in rows; againſt which place orderly their ſeveral qualities or fineneſs; and multiply each quantity by its own quality or degree of fineneſs: then, as the ſum of the quantities is to their products, ſo is unity, to the quality or fineneſs of the mixture.

The quantities of a mixture being given; to find the particular quantities of any ingredient in any part of the mixture.—If the mixture be of only two things, ſay, as the total of the ingredients in the compoſition is to the part of the mixture propoſed; ſo is the quantity of the ingredient propoſed in the whole compoſition, to the quantity of the ingredient in the part deſired.—If the mixture conſiſts of more ingredients, repeat the work for each.

Give the total of a mixture, with the whole value, and the values of the ſeveral ingredients; to find the ſeveral quantities mixed, though unequally.—Multiply the total of the mixture by the leaſt value; ſubtract the product from the total value; and the remainder is the firſt divided: then take the ſaid leaſt value from the greateſt valued ingredient, and the remainder is the firſt diviſor. The quotient of this diviſion ſhews the quantity of the higheſt-priced ingredient, and the other is the complement to the whole. And when more ingredients than two are in the compoſition, the diviſors are the ſeveral remains of the leaſt value, taken from the other: the dividends are the remains left upon the diviſions till none remain there; which will be one ſhort of the number of ingredients: and this defective ingredient is to be ſupplied as a complement; and in diviſion, no more muſt be taken in every quotient, than that there may remain enough for the other diviſors; and the laſt to leave nothing remaining. See DIVISION.

ALLIGATION *alternate* is, when the rates or qualities of divers ſimples are given; and the quantity of each is required neceſſary to make a mixture of the given rate or quality.

Alligation alternate ſhews the due proportion of ſeveral ingredients; and counterchanges the places of ſuch exceſſes or differences as ariſe between the mean price and the extremes; aſcribing that to the greater extreme, which proceeds from the leſſer; and contrarily.

The rules which obtain in *Alligation alternate* are as follow:

Every greater extreme is to be linked with one leſſer.

If either of the extremes be ſingle, and the other extremes plural; the ſingle extreme is to be linked to all the reſt.

If both greater and leſſer extremes be not plural, they may be linked ſo diverſly, that ſeveral differences may be taken, and a variety of anſwers be made to the queſtion, yet all true: but if one of the extremes be ſingle, there can be but one anſwer.

The numbers being linked, take the difference of each from the mean or common price; and place this difference againſt the number it is linked to, alternately.

Every number, linked with more than one, muſt have all the differences of the numbers it is linked to, ſet againſt it.

Theſe differences reſolve the queſtion, when the price of every one of the ingredients is given without their quantities; and the demand is, to mix them ſo as to ſell a certain qnantity at a mean rate.

But when the quantity of one, with the price of all the ingredients, is given; and the demand is to know the quantities of the other ingredients; then, the rule of three is to be uſed.

And when the price of every ingredient is given, without any of their quantities, and the demand is to make up a certain quantity to be ſold at a mean rate; then all the differences added together will be the firſt number in the rule of three; the whole quantity to be mixed, the ſecond number; and each difference apart, the ſeveral third numbers: and ſo many ſorts mixed, ſo many operations of the rule of three.

We ſhall add an example, wherein both the kinds of *Alligation* have place.—Suppoſe a mixture of wine of 119 quarts, required to be made of wines of the following prices, 7 *s.* 8 *d.* 14 *d.* and 15 *d. per* quart; and ſo, as that the whole may be afforded at 12 *d. per* quart.

Having linked 8 to 14, and 7 to 15, and counterchanged their differences from the common price, 12 *d.* the ſum of their difference is found to be 14; by which dividing 119, the quotient is $8\frac{7}{14}$, or $8\frac{1}{2}$, or for convenience in operation $\frac{17}{2}$.

$$\begin{array}{rl@{\qquad}l}
 & & \text{Quarts.} \\
8 & \left.\begin{matrix}2\\3\end{matrix}\right\} & \frac{17}{2}+2=\frac{34}{2}=17 \\
14 & & \frac{17}{2}+4=\frac{68}{2}=34 \\
7 & \left.\begin{matrix}4\\5\end{matrix}\right\} & \frac{17}{2}+3=\frac{51}{2}=25\frac{1}{2} \\
15 & & \frac{17}{2}+5=\frac{85}{2}=42\frac{1}{2} \\
\hline
 & 14 & \qquad\qquad\qquad 119
\end{array}$$

ALLIOTH, in aſtronomy, a ſtar in the tail of the great bear, whoſe obſervation is much uſed at ſea.

The longitude, latitude, &c. of *Allioth*, ſee among the reſt of URSA *Major*.

To find the latitude, or elevation of the pole, by this ſtar; ſee LATITUDE, and POLE.

ALLOCATION, ALLOCATIO, the admitting or allowing of an article in an account; and paſſing it as ſuch. See ACCOUNT.

ALLOCATION is alſo an allowance made upon an account; uſed in the exchequer. See ALLOCATIONE.

ALLOCATIONE *facienda*, a writ directed to the lord treaſurer, and barons of the exchequer, upon the complaint of ſome accountant; commanding him to allow him ſuch ſums as he hath in execution of his office lawfully expended.

ALLODIAL, in antient cuſtoms. See ALLODIUM.

Terra ALLODIA, or ALLODIAL *land*, is that whereof a perſon has the abſolute property; or which he holds without paying any ſervice or acknowlegement to any ſuperior lord.

Such an inheritance is *Allodial*; *i. e.* it is not ſubject to any charge, ſervice, &c.

In this ſenſe, *Allodial* ſtands oppoſed to *feudal*, or *beneficiary*.

ALLODIUM *, or ALLEUD, land held of a man's own right.

* The origin of the word is infinitely controverted. Caſſeneuve ſays, it is almoſt as obſcure as the head of the Nile. Few of the European languages, but one etymologiſt or other has derived it from: yet ſome, not improbably, take it for a primitive French word without etymon.

Bollandus explains *Allodium*, to be *prædium*, *ſeu quævis poſſeſſio libera*, *juriſque proprii*, *& non in feudam clientelari onere accepta*.

After the conqueſt of the Gauls, the lands were divided in two manners; *viz.* into benefices, *beneficia*; and *allodia*.

Benefices conſiſted in lands given by the king to his officers and ſoldiers; either for life, or for a time fixed.

Allodia, or *alleuds*, were ſuch lands as were left in property to the antient poſſeſſors.—The ſixty-ſecond title of the Salic law, is, *de allodiis*; where the word ſignifies hereditary lands, or thoſe derived from a man's anceſtors. Whence, *allodium* and *patrimonium* are frequently uſed indiſcriminately.

In the antient capitulars of Charlemaign, and his ſucceſſors, we find *Allodium* conſtantly oppoſed to *fee*; but, toward the period of the ſecond race of kings, it loſt the prerogative; the feudal lords obliging the proprietots of *Allodial* lands to hold of them for the future. The ſame change alſo happened in Germany, &c.

The uſurpation of the feudal lords over the *Allodial* lands went ſo far, that they were almoſt all either ſubjected to them, or converted into fees: whence the maxim, *nulla terra ſine domino*, no land without a lord.

ALLOM. See the article **Allum.**

ALLONGE *, in fencing, a thruſt, or paſs at the enemy. See **Pass.**

* The word is French, formed of the verb *allonger*, to lengthen out a thing.

ALLOTTING, or **Allotment** *of goods*, in matters of commerce, is when a ſhip's cargo is divided into ſeveral parts, bought by divers perſons, whoſe names are written on as many pieces of paper, which are applied by an indifferent perſon to the ſeveral lots or parcels; by which means the goods are divided without partiality; every man having the parcel which the lot with his name on is appropriated to. See **Inch of Candle.**

ALLOY *, or **Allay**, in matters of coinage, &c. a proportion of a baſer metal, mingled with a finer, or purer.

* The word ſeems derived from the French, *loy*, law; in regard the *Alloy* is fixed by law.

Such is the quantity of copper mingled with gold and ſilver, in the coining of ſpecies of thoſe metals. The original intention of *Alloy* was, to give the minted metal a due hardneſs, that it might not waſte with wearing; and to increaſe its bulk and weight, ſo as to countervail the charges of coinage.

Gold or ſilver, that has more of this than it ought to have, is ſaid to be of a coarſer or worſe *Alloy*, or below ſtandard.

The proportion of *Alloy* for ſtandard gold is two carrats in a pound troy of gold—and for ſterling ſilver, 18 penyweight *Alloy* in a pound troy of ſilver.

The *Alloy* uſed in gold coins is ſilver and copper: that in ſilver coins is copper alone.

ALLUM *, **Allom**, or **Alum**, a kind of mineral ſalt, of an auſtere taſte, leaving in the mouth a ſenſe of ſweetneſs, accompanied with a conſiderable degree of aſtringency.

* The word *Allum* comes from the Greek ἅλς, ſalt; or perhaps from the Latin *lumen*, light; becauſe it gives luſtre to colours.

The antient naturaliſts allow of two ſorts of *Allum*; the one *native*, the other *factitious.*—The *natural* was found in the iſland of Milo, being a kind of whitiſh ſalt, very light, friable, and porous; and ſtreaked with filaments.

The *factitious Allum* is prepared in different manners, according to the different materials whereof it is made. Hence ariſe, *red*, *Roman*, and *citron Allums.*—To which add *ſaccharine*, and *burnt Allums.*

England, Italy, and Flanders, are the countries where *Allum* is principally produced.

The Engliſh *roche Allum*, *alumen rupeum*, is made from a bluiſh mineral ſtone, frequent in the hills of Yorkſhire and Lancaſhire. This ſtone they calcine on a hearth or kiln; then ſteep it ſucceſſively in ſeveral pits of water: then boil it for about twenty-four hours: laſtly, letting it ſtand for about two hours, the impurities ſubſide, and leave a pure liquor; which, removed into a cooler, and ſome urine being added to it, begins, in three or four days, to gather into a maſs; which being roached, *i. e.* taken out, waſhed, and melted over again, is fit for uſe.

At Whitby in Yorkſhire the proceſs of making *Allum* is as follows. The mineral ſtone, before it is calcined, being expoſed to the air, will moulder in pieces, and yield a liquor whereof copperas may be made; but being calcined, it is fit for *Allum.*—As long as it continues in the earth, or in water, it remains a hard ſtone.—Sometimes a liquor will iſſue out of the ſide of the ore, which by the heat of the ſun is turned into a natural *Allum.*

In the *Allum-works* at Civita Vecchia, the proceſs, as deſcribed by M. Geoffroy, is ſomewhat different.—The ſtone, which is of a ruddy hue, being calcined, they boil and diſſolve the calx in water; which, imbibing the ſalt, *i. e.* the *Allum*, ſeparates itſelf from the uſeleſs earth. Laſtly, leaving the water thus impregnated with ſalt to ſtand for ſome days, it cryſtallizes of itſelf, like tartar about a but, and makes what they call *Roche*, or *Roman Allum.*

At Solfatara, near Puzzuoli, there is a conſiderable oval plain, the ſoil whereof is wholly ſaline; and ſo hot, that the hand cannot long endure it.—From the ſurface hereof, in ſummer-time, there ariſes a ſort of flour, or ſaltiſh duſt; which being ſwept up, and caſt into pits of water at the bottom of the plain, the heat of the ground, *i. e.* of certain ſubterraneous ſpiracles, over which the coppers are placed, without any other fire, evaporates the water, and leaves an *Allum* behind.

Allum is made at Cypſella in Thrace, by gently calcining the ſtone, and letting it diſſolve afterwards in the air by the dews and rains; then boiling and cryſtallizing the impregnated waters. *Belon, in Ray's Trav. t.* 2. *p.* 351.

Allum diſſolves in water; what remains undiſſolved at bottom is a ſort of calx, which diſſolves readily enough in oil, or ſpirit of vitriol.—And hence there ariſes ſome doubt, whether *Allum*, as it does not leave an earth behind, does properly belong to the claſs of ſalts?—Mr. Boyle aſſures us, that *Allum* ore, robbed of its ſalt, does in tract of time recover it again from the air.

The Swediſh *Allum* is made of a mineral which contains a great deal of ſulphur and vitriol, not to be taken away but calcination or diſtillation. The matter remaining in the iron veſſels uſed in ſeparating the ſulphur from the mineral, being expoſed to the air for ſome time, becomes a kind of bluiſh aſhes, which they lixiviate, cryſtallize, and thus obtain the *Allum.*

Allum is of ſome uſe in medicine, in quality of an aſtringent; but, being apt to excite vomiting, is not much uſed inwardly, and rarely without ſome ſmooth aromatic, as a corrector.—It is uſed outwardly in aſtringent lotions, and is an ingredient in ſeveral dentrifices, and coſmetics.

It is a principal ingredient in dyeing and colouring; neither of which can be well performed without it.—It ſerves to bind the colour upon the ſtuffs, and has the ſame uſes there, that gum-water and glutinous oils have in painting. It likewiſe diſpoſes ſtuffs to take the colour, and adds a degree of briſkneſs and delicacy to it; as we ſee viſibly in the cochineal, and the ſcarlet-grain.

The effect of *Allum* ſeems alſo owing to its ſtyptic, or aſtringent quality, by which it binds the finer parts of colours together, and prevents their exhaling. Hence alſo it preſerves paper that has been dipped in its water, from ſinking when written upon.

Saccharine **Allum** bears a near reſemblance to ſugar.—It is a compoſition of common *Allum* with roſe-water, and whites of eggs, boiled together to the conſiſtence of a paſte, and thus moulded at pleaſure. As it cools, it grows hard as ſtone. It is uſed as a coſmetic.

Burnt **Allum**, *Alumen uſtum*, is *Allum* calcined over the fire, and thus rendered whiter, more light, and eaſily pulverized.

Plume **Allum**, *Alumen plumoſum*, is a ſort of ſaline mineral, of various colours, moſt commonly white bordering on green; reſembling Venetian talc, except that, inſtead of ſcales, it riſes in threads or fibres, reſembling thoſe of a feather; whence its name from *pluma*, feather.

Some will have this to be the *lapis amianthus* of the antients. See Supplement, articles **Alumen**, and **Amianthus.**

ALLUM-WATER. See the article **Water.**

ALLUMINOR, in ſome antient ſtatutes, one who by trade coloureth, or paints upon paper, or parchment.

ALLUSION *, **Allusio**, in rhetoric, a figure whereby ſomething is applied to, or underſtood of, another, by reaſon of ſome ſimilitude of name, or ſound.

* The word is formed of the Latin *ad*, and *ludere*, to play.

Camden defines *Alluſion* a dalliance, or playing with words like in ſound, but unlike in ſenſe; by changing, adding, or ſubtracting a letter, or two; whence words reſembling one another become applicable to different ſubjects.

Thus the Almighty, if we may uſe ſacred authority, changed Abram, *i. e.* high father, into Abraham, *i. e.* father of many.—Thus the Romans played on their tippling emperor Tiberius Nero, by calling him Biberius Mero: and thus in Quintilian the ſour fellow Placidus is called Acidus.

Alluſions come very near to what we popularly call *puns.*

ALLUVION *, **Alluvio**, in the civil law, a gradual addition or accretion made along the ſea-ſhore, or the banks of large rivers.

* The word is formed of the Latin *adluo*; I waſh to; compounded of *ad*, and *lavo*.

The civil law places *Alluvion* among the lawful means of acquiſition; and defines it to be a latent, imperceptible accretion.—Hence, where any conſiderable portion of ground is torn away at once, by an inundation; and joined to ſome neighbouring eſtate; this is not acquired by right of *Alluvion*; but may be claimed again by the former owner.

ALLY. See the article **Alliance.**

ALMACANTARS, **Almacantaras**, or **Almicancharath**, in aſtronomy. See **Almucantars.**

Almacantars *Staff.* See **Almucantars** *Staff.*

ALMAGEST, the name of a celebrated book, compoſed by Ptolemy; being a collection of many of the obſervations and problems of the antients, relating both to geometry and aſtronomy.

In the original Greek it was called συνταξις μεγιστη, *q. d.* greateſt conſtruction, or collection; which laſt word *megiſte*, joined to the particle *al*, gave occaſion to its being called *Almageſt* by the Arabians, who tranſlated it into their tongue about the year 800. by order of the caliph *Al Maimon.*—The Arabic word is *Almagheſti.*

Ricciolus has alſo publiſhed a body of aſtronomy, which he intitles, after Ptolemy, the *New Almageſt*; being a collection of antient and modern obſervations and diſcoveries in that ſcience.

ALMANAC, a calendar or table, wherein are ſet down the days, and feaſts of the year, the courſe of the moon, &c. for each month of the year.

The original of the word is much controverted among grammarians.—Some derive it from the Arabic particle *al*, and *manah*, to count.—Others, and among them Scaliger, rather derive it from *al*, and *μανακος*, the courſe of the months: which is contradicted by Golius, who advances another opinion. He ſays, that, throughout the eaſt, it is the cuſtom for ſubjects, at the beginning of the year, to make preſents to their princes; and, among the reſt, the aſtrologers preſent them with their ephemerides for the year enſuing; whence thoſe ephemerides came to be called *Almanha*, i. e. handſels, or new-year's gifts.—To ſay no more, Verſtegan writes the name *Almon-ac*; and makes it of Saxon original. Our anceſtors, he obſerves, uſed to carve the courſes of the moon, of the whole year, upon a ſquare ſtick, or block of wood, which they called *Al-monaght*, q. d. *Al-moon-heed*.

The modern *Almanac* anſwers to the *faſti* of the antient Romans.

The neceſſaries for making an *Almanac*, the reader will find under the article CALENDAR.

Henry III. of France very prudently decreed, by an ordonnance of 1579. that 'No *Almanac*-maker ſhould preſume to give predictions relating to civil affairs, either of ſtates, or private perſons, in terms either expreſs or covert.'

In the *Philoſoph. Collect.* we have a perpetual *Almanac*, deſcribed by Mr. R. Wood.

ALMANDIN, or ALABANDIN, a precious ſtone, of the ruby kind, ſomething ſofter than the oriental ruby; and, as to colour, partaking more of that of the granat than the ruby.

It is ranked among the richeſt of ſtones, and takes its name from Alabanda, a city of Caria, whence Pliny ſays it was brought. See Supplement, article ALMANDINE.

ALMARIA, in our antient records, the archives of a church, or the like.

ALMERY. See the article AMBRY.

ALMOIN, in law. See the article FRANK-*almoin*.

ALMOND *, *amygdala*, a kind of medicinal fruit, incloſed in a thick ſtone, and under a thin ſkin; the whole being contained under a thick, pulpy, oily huſk.

* The word *Almond* comes from the French *amande*, which Menage derives from the Latin *amandala*, a term occurring in the capitulars of Charlemaign: others rather derive it from the Greek *αμυγδαλη*, which ſignifies the ſame thing.

The *Almond* is the produce of a pretty tall tree, of the nut-bearing kind, reſembling a peach-tree; frequent in Germany, France, and the neighbouring countries; as alſo in Barbary, *&c.*—Its flowers are pentapetalous, and ranged in the roſe manner: the piſtil becomes a fleſhy fruit, containing a ſeed, which is the *Almond*; and which drops out, when the fruit is arrived at maturity.

Almonds are chiefly of two kinds, *ſweet* and *bitter*.

Sweet **ALMONDS**, *amygdalæ dulces*, are of a ſoft, grateful taſte; and are reputed cooling, healing, emollient, and nutritive: they are much preſcribed in emulſions, and found of good effect in all diſorders from choleric and acrimonious humours.—The oil of ſweet *Almonds*, drawn without fire, is a ſafe and uſeful remedy in nephritic pains: it is alſo of good repute for coſtiveneſs, and for gripes in children.

For the manner of procuring the oil of ſweet *Almonds*, ſee the article OIL.

Bitter **ALMONDS**, *amygdalæ amaræ*, are held aperient, deterſive, and diuretic; and, on thoſe accounts, they are commended in obſtructions of the liver, ſpleen, uterus, *&c.*—Some eſteem them good to take off the effects of drunkenneſs. Accordingly, Plutarch relates, that Druſius's phyſician, a ſtout drinker, took down at every cup five bitter *Almonds*, to allay the heat and fumes of the wine.

The expreſſed oil of bitter *Almonds* is as taſteleſs as that of the ſweet: it is much uſed to ſoften and deterge the wax out of the ear.—Some affirm, that bitter *Almonds*, bruiſed, kill or ſtupefy fowl; ſo that they may be taken with the hands: which, they ſay, is a ſecret practiſed among the Bohemians: and that the huſks, remaining after the oil is expreſſed, have the ſame effect.

Almonds give the denomination to a great number of preparations in confectionry, cookery, *&c.* whereof they are the baſis; as *Almond* cakes, *Almond* cream, criſped *Almonds*, *Almond* milk, *Almond* paſte, *Almond* ſnow, *&c.*—With ſweet *Almonds* blanched (that is, put into warm water a while, which makes them ſlip their ſkins) and water, is made *Almond* milk, frequently uſed as a cooler in emulſions, *&c.* V. *Hought. Collect.* N° 434.

ALMONDS, *amygdalæ*, in anatomy, denote two glands of the fauces, more properly called the *tonſils*.

Theſe are commonly called *Almonds of the ears*; but ought rather to be denominated *Almonds of the throat*.

They are two rough glands placed on the ſides of the baſis of the tongue, under the common membrane of the fauces, with which they are covered.

Each of them has a large oval ſinus, which opens into the fauces; wherein are contained a great number of leſſer ones, which diſcharge through the great ſinus a mucous and ſlippery matter into the fauces, larynx, and œſophagus, for the moiſtening and lubricating of thoſe parts.

When the œſophagus muſcle acts, it compreſſes the *Almonds*; and as they are ſubject to inflammation, they frequently are the occaſion of what the common people call a *ſore throat*.

ALMOND, or ALMAN-*Furnace*, is a peculiar kind of furnace, uſed in refining; to ſeparate all kinds of metals from cinders, parts of melting-pots, teſts, bricks, *&c.*

The *Almond-furnace*, called alſo the *ſweep*, is uſually ſix feet high, four wide, and two thick: it is built of brick, and having an hole in the middle of the top, eight inches over, which grows narrower towards the bottom, where, on the fore part, it ends in a point, encompaſſed with a ſemicircle of iron, to keep in the melted metal.—About the middle of the back, there is another hole, to receive the noſe of a pair of bellows, which require the continual ſtrength of two men to work.

The matter, then, on which the operation is to be performed, being beat ſmall, they kindle charcoal in the furnace, to anneal it; and, when hot, they throw in two or three ſhovels of coals to one of the forementioned ſtuff; and ſo proceed during the whole work, putting lay upon lay, of one and the other. After eight or ten hours, the metal begins to run; and when the receiver below is pretty full, they lade it out with an iron ladle, and caſt it in ſows, in cavities or forms made with aſhes.

ALMONER, antiently alſo written AMNER, an officer in a king's, prince's, or prelate's houſhold, whoſe buſineſs is to diſtribute alms to the poor.

The *lord Almoner*, or *lord high Almoner*, of England, is an eccleſiaſtical officer, uſually a biſhop; who is to viſit and relieve the ſick, poor widows, priſoners, and others in neceſſity: for which purpoſe, he has the forfeiture of all deodands, and the goods of felo's de ſe, which he is to diſpoſe of to the poor.

He has likewiſe, by an antient cuſtom, a privilege to give the firſt diſh, from the royal table, to whatſoever poor perſon he pleaſes; or, inſtead thereof, an alms, in money.

He alſo diſtributes to twenty-four poor men, nominated by the pariſhioners of the pariſh adjacent to the king's place of reſidence, to each, four-pence a day in money, and an alms of bread and ſmall beer; each perſon firſt repeating the Creed, and the Lord's prayer, in preſence of one of the king's chaplains, deputed by the lord *Almoner* to be his *ſub-Almoner*; who is alſo to ſcatter new-coined two-pences in the towns and places through which the king paſſes in his progreſs.

He has alſo the charge of ſeveral poor penſioners to the crown, below-ſtairs; conſiſting of ſuch as have ſpent their youth, and beoome ſuperannuated, in the king's ſervice; or the widows of ſuch houſhold ſervants as died poor, and were not able to provide for their wives and children; whom he duly pays.

Under the lord *Almoner*, beſides the *ſub-Almoner*, there is a yeoman, and two grooms of the *almonry*, choſen by his lordſhip.

ALMONRY, or AUMBRY, the office or lodgings of the almoner; alſo the place where the alms are given. See AMBRY.

ALMS, *eleemoſyna*, ſomething given out of charity or pity to the poor.

The eccleſiaſtics were antiently ſubſiſted wholly on *Alms*.—The *Alms* of the primitive Chriſtians were divided into three parts; one whereof belonged to the biſhops, another to the prieſts, and a third to the deacons and ſubdeacons.—Sometimes they divided them into four; the laſt whereof went to the poor, and to the repairing of churches.

Chrodedang, biſhop of Metz, in the ſeventh century, injoins, in the forty-ſecond chapter of his rule, that a prieſt to whom any thing was offered for ſaying of maſs, or for confeſſion; or a clerk, for ſinging of pſalms, or hymns; ſhould not receive it on any other condition than as *Alms*.

M. Tillemont obſerves, upon the Theodoſian Code, p. 257. that from the time of the fourth century there were women employed to collect *Alms* for the priſoners. In all probability theſe were the deaconeſſes of the churches.

St. Paul, in his ſecond epiſtle to the Corinthians, c. IX. explains the manner of collecting *Alms* in the aſſemblies of the primitive Chriſtians.—This practice they had borrowed from the Jewiſh ſynagogue, where it ſtill obtains. Leo de Modena deſcribes it in the firſt book of the *ceremonies and cuſtoms* of thoſe of his nation, c. XIV.

The Romaniſts alſo extend the term *Alms*, to what is given to the church, or to other pious uſes.—Hence, what the church holds on this footing, is called *tenure* in *Alms*. See AUMONE.

ALMSFEOH, or ALMESFEOH, among our Saxon anceſtors, *alms-money*; that is, Peter-pence, antiently paid in England on the firſt of Auguſt; called alſo *romefeoh*, *romeſcot*, and *heorthpening*. See PETER-*pence*.

ALMS-HOUSE, a petty hoſpital; or an edifice built by a perſon in a private capacity, and endowed with a revenue, for the maintenance of a certain number of poor, aged, or diſabled people.

ALMUCANTARS*, in aſtronomy, are circles parallel to the horizon, imagined to paſs through all the degrees of the meridian.

* The word is formed of the Arabic *almocantharat*.

As the meridians paſs through the ſeveral degrees of the equator; the *almucantars* paſs through thoſe of the meridian of any place.

The *almucantars* are the ſame thing with regard to the azimuths and horizon, that the parallels are with regard to the meridians and horizon.

They ſerve to ſhew the height of the ſun and ſtars; and are deſcribed on many quadrants, &c. being alſo called *parallels of altitude*. See PARALLEL *of altitude*..

ALMUCANTARS-*Staff*, is an inſtrument uſually made of peartree or box, having an arch of fifteen degrees; uſed to take obſervations of the ſun, about the time of its riſing and ſetting: in order to find the amplitude, and conſequently the variation of the compaſs.

ALNAGE*, or AULNAGE, *q. d.* ell-meaſure; the meaſureing of woollen manufactures with an ell, and the other functions of the *alnager*. See ALNAGER.

* The word is French, formed of *aune*, or *alne*, an ell.

All the attempts which our forefathers made for regulating of manufactures, when left to the execution of any particular officer, in a ſhort time reſolved into a tax on the commodity without reſpect to the goodneſs thereof.—As is moſt notorious in the caſe of *aulnage*, which was intended for a proof of the goodneſs of the commodity; and to that purpoſe a ſeal was invented, as a ſignal that the commodity was made according to their ſtatute: which ſeals, it is ſaid, may now be bought by thouſands, and put on what the buyers pleaſe.—Sir *Joſ. Child Diſc. on Trade*, *p.* 2. *ſeq.*

ALNAGER, ALNEGER, or AULNEGER; *q. d. meaſurer by the ell*; ſignifies a ſworn public officer, who by himſelf, or deputy, is to look to the aſſize of woollen cloth made throughout the land, *i. e.* the length, width, and work thereof; and to the ſeals for that purpoſe ordained.

There are now three officers relating to the *aulnage*, or regulation of cloth; all which were antiently compriſed in one perſon.—Theſe bear the diſtinct names of *ſearcher*, *meaſurer*, and *alnager*.

A duty being impoſed on woollen cloths, for the maintenance of an office to look to that manufacture, and the loyalty, as they call it, of the ſtuffs produced therein; the *alnager*, who had the direction of the whole, is now become only the collector of that duty, or ſubſidy granted to the king: though he ſtill hold the antient denomination, becauſe the collection of that ſubſidy was committed to him.—Nor was he abridged of meaſuring and ſearching, till by his own neglect it was thought proper to ſeparate the two offices. So that there is now a peculiar meaſurer, diſtinct from the *alnager*, or collector, to allow the aſſize of the length and breath of every cloth made in England and Wales.

ALOES, in medicine and pharmacy, the inſpiſſated juice of a plant of the ſame name; much uſed as a purgative remedy. The *aloe*-plant grows in divers parts of the Eaſt and Weſt Indies; and is alſo found in ſome countries of Europe, as Spain, and particularly the mountains of Sierra Morena.—Its leaves are green, very thick, hard, and prickly, yielding a kind of ſtrong threads, whereof laces may be made. Out of the middle of the leaves ariſes a ſtem, which bears the flowers, and the fruit, the ſeed whereof is very light, and hemiſpherical.

Dioſcorides, Pliny, and the antient naturaliſts, ſeem only to have been acquainted with one ſpecies of *aloe*; which is the *aloe vulgaris* above deſcribed: but the late travels into Aſia, Africa, and America, have occaſioned the diſcovery of a vaſt many more ſorts, unknown to antiquity. Mr. Bradley aſſures us, he had in his time ſeen above ſixty ſeveral kinds in the phyſic-garden at Amſterdam, and the number is greatly increaſed ſince. So that the name *aloe* is now become the denomination of a very large genus.—Among the number, however, there are not above twelve, that yield the purgative juice above-mentioned.

The juice or extract of *aloes* is uſually diſtinguiſhed into three kinds.—The firſt, which is called *Succotrine*, as being brought from *Succotra*, is the pureſt and moſt tranſparent; being friable, inodorous, black in the lump, but of a beautiful yellow colour when broken.—It is brought in ſkins from the Levant and Eaſt-Indies.

The ſecond is called *hepatic*, becauſe of its liver-colour: it is reſinous, ſmells ſomewhat like myrrh, has a yellow colour when pounded, and is brought from China.—Some confound this with the following ſort; as, in effect, there are but two ſorts commonly known in our ſhops.

The third is the moſt impure, the blackeſt, and the ſtrongeſt.—It was formerly uſed by the Indians to pitch their veſſels withal: and is of little uſe among us, excepting for horſes and cattle; for which reaſon it is called *caballine*, *i. e.* horſe-*aloes*.—It is prepared in Jamaica and Barbados, and brought over in large gourds.

Some have imagined, that theſe differences of *aloes* were owing only to the greater, or leſs purification of the juice: but this is a miſtake; it having been found that no diſſolutions, or purifications, how often ſoever repeated, will change hepatic into ſuccotrine, nor caballine into the true hepatic *aloes*.

The manner of procuring *aloes* is very eaſy, there being nothing to do but to cut the leaves of the plant, and to expoſe the juice that ouſes out of them either ſpontaneouſly, or by preſſing, to the ſun, till it becomes of a proper conſiſtence.

Aloes are extremely bitter, and purgative; whence ſome have called it *fel naturæ*; externally applied, either in ſubſtance or tincture, it prevents putrefaction and gangrene.—Its bitterneſs makes it ſo nauſeous, that it is rarely uſed in liquid forms; but it is generally made into pills, whereof half a drachm is an ordinary doſe.—Scarce any of the officinal purging pills are without this in their compoſition.

Its cathartic virtue is beſt employed in watery, cold, and corpulent conſtitutions, as it heats and attenuates; being bad for thin and hectic conſtitutions. It is accounted efficacious in promoting the menſes; and is alſo good to deſtroy worms.—Guy Patin decries *aloes* as a ſorry and noxious drug, which heats and dries the liver, diſpoſes towards a dropſy, cauſes the piles, &c. *Let. Choiſ. p.* 126.

Mr. Boulduc, by his analyſis of *aloes*, has found that the Succotrine ſcarce contains half the reſin, or ſulphureous part, but one third more of the ſaline part, than is found in the hepatic. Hence the Succotrine comes to be preferable for internal uſes, and the hepatic for external.

ALOE *Roſata*, is a preparation of the Succotrine *aloes*, made by diſſolving it in juice of damaſk roſes, and evaporating it to the conſiſtence of a paſte. Then, more juice is added, and the evaporation repeated, again and again.—This is held a gentler and ſafer cathartic than the *aloes* alone.

ALOES alſo gives the denomination to a kind of fragrant Indian wood; much uſed in the Eaſt as a perfume: thus called from its exceeding bitterneſs, which reſembles that of the *aloes* juice.

The *aloes* wood is infinitely valued; and divers ſtrange fables have been invented as to the origin of the tree that yields it; ſome feign that it grew in paradiſe, and was only conveyed to us by means of the rivers overflowing their banks, and ſweeping off the trees in their way. Others ſuppoſe it to grow on inacceſſible mountains; where it is guarded by certain wild beaſts, &c.—The Siameſe embaſſadors to the court of France, in 1686. who brought a preſent of this wood from their emperor, firſt gave the Europeans any conſiſtent account of it.

The tree grows in China, Lao, and Cochinchina; and is much about the ſize and figure of our olive-trees.—The trunk conſiſts of three ſorts of wood, very different in colour and properties: immediately under the bark it is ſaid to be black, compact, and heavy; and this is called by the Portugueſe, *pao d'aquila*, *q. d.* eagle-wood.—The next under this, is of a tan-colour, light, and veiny, reſembling rotten wood; and called *calambo*.

The heart, or innermoſt part, is called *tambac*; and is more valued by the Indians than gold itſelf. It affords a very ſtrong, but agreeable ſmell; and is uſed as a perfume; and is withal held a ſovereign remedy againſt the palſy, deliquiums, weakneſſes, &c.

It is the calambo alone that is known among us.—It is brought in ſmall bits of a very fragrant ſcent; eſpecially when caſt on the fire. The beſt is of a blackiſh purple colour, and ſo light as to ſwim on water: it is hot and drying; and is eſteemed a great ſtrengthener of the nerves.

Some pharmaceutical writers make a diſtinction between *aloes*, *lignum aloes*, and *xylo-aloes*; which may amount to the three orders of the word above-mentioned; though among us they are the ſame thing, as their names import.

ALOETICS*, medicines wherein aloe is the chief, or fundamental ingredient.

* The word is formed of *aloe*, which is by ſome further derived from ἁλς, the ſea, that plant being chiefly found near the ſea-coaſts.

ALOGIANS*, ALOGI, or ALOGIANI, a ſect of antient heretics, who denied that Jeſus Chriſt was the *Logos*, or eternal Word; and on this ground alſo rejected the goſpel of St. John as ſpurious.

* The word is compounded of the privative α, and Λογος, *q. d.* without *Logos*, or Word.

Some aſcribe the origin of the name, as well as of the ſect of *Alogians*, to Theodore of Byzantium, by trade a currier, who, having apoſtatized under the perſecution of the emperor Severus, to defend himſelf againſt thoſe who reproached him therewith, ſaid, that it was not God he denied, but only man. Whence his followers were called in Greek αλογοι, in regard they rejected the Word. But others, with more probability, ſuppoſe the name to have been firſt given them by Epiphanius in the way of reproach.

Moor **ALONGST**. See the article MOOR.

ALOOF, a ſea term, ſignifying as much as, keep your luff: being a word of command from him that conns, to the man at the helm, to keep the ſhip near the wind, when ſhe ſails upon a quarter-wind.

ALOPECIA, in medicine, a total falling off of the hair from certain parts, occaſioned either by the defect of nutritious

Juice, or by the vitious quality thereof corroding the roots of it, and leaving the ſkin rough and colourleſs.

* The word is formed from *αλωπηξ*, *vulpes*, a fox; whoſe urine, it is ſaid, will occaſion baldneſs; or becauſe it is a diſeaſe which is common to that creature.

ALPHA *, the name of the firſt letter of the Greek alphabet.

* The word is originally Hebrew, formed from *aleph*, the name of the firſt letter in the Hebrew alphabet.

The Greek *alpha* anſwers to what in Engliſh we call ſimply A. See the article A.

Alpha, according to Plutarch, was placed at the head of all the letters, by reaſon in the Phœnician language it denotes an ox; which, with regard to uſe and ſervice, is the firſt among beaſts.

Alpha, in compoſition, denotes, ſometimes, *privation*, in the ſame ſenſe with *ατερ*, without; ſometimes augmentation, as *αγαν*, much; and ſometimes union, as *ἁμα*, together. See A.

Alpha is alſo uſed as a letter of order, to denote the *firſt*; and of number, to ſignify *one*; but when it was a numerical letter, a little ſtroke, or an acute accent, was drawn above it thus ′A, to diſtinguiſh it from the mere A, which was a letter of order.

Alpha *and Omega*, in the divine writings, ſignify the beginning and the end, or the firſt and the laſt (*viz.* before and after all things); and therefore the hieroglyphic of God is formed of theſe two letters A and Ω.

ALPHABET *, the ſeveral letters of a language, diſpoſed in their natural, or accuſtomed order.

* The word is formed from the names of the two firſt letters of the Greek *alphabet*, *alpha*, *beta*; which were borrowed from thoſe of the Hebrew, *aleph*, *beth*.

In the Engliſh *alphabet* we reckon 26 letters, *viz.* *a b c d e f g h i j k l m n o p q r ſ t u v w x y z*. See each under its proper article, A, B, C, &c.

But as there is a much greater number of different ſounds in our language; it is not without reaſon that ſome grammarians maintain, that there ought to be a greater number of letters: as alſo, that the double letters, *x*, *y*, and *w*, and the ſuperfluous ones, *k* and *g*, ſhould be retrenched.

The French *alphabet* only contains 23 letters.—Paſquier indeed maintains it to conſiſt of 25, by reaſon he adds the two double letters & for *et*, and ꝰ for *us*; but thoſe are only abbreviatures. The abbé d'Angeau, on better grounds, reckons 34 different ſounds in the French tongue; and urges, that the *alphabet* ought of conſequence to conſiſt of 34 different characters, ſetting aſide the double letters *x* and *y*, and the ſuperfluous one *q*.

The difference between languages, with reſpect to the number of letters, in their *alphabets*, is very conſiderable: the Hebrew, Chaldee, Syriac, and Samaritan *alphabets*, have each 22; the Arabic 28; the Perſian 31; the Turkiſh 33; the Georgian 36; the Cophtic 32; the Muſcovite 43; the Greek 24; the Latin 22; the Sclavonic 27; the Dutch 26; the Spaniſh 27; the Italian 20; the Indians of Bengal 21; the Baramas 19.

The Ethiopic has no leſs than 202 letters in its *alphabet*, there being 7 vowels, which they combine with each of their 26 conſonants; to which they add 20 other aſpirated ſyllables.—The like is ſaid of the Tartarian; each of their letters is a ſyllable; having one of the vowels joined to its conſonant; as *la*, *le*, *li*, &c.

The Chineſe have no *alphabet*, properly ſpeaking; except we call their whole language their *alphabet*; their letters are words, or rather hieroglyphics, and are in number about 80,000.

In effect, *alphabets* were not contrived with deſign, according to the juſt rules of reaſon and analogy; but have been ſucceſſively framed, altered, &c. as occaſion offered.—And hence many grievous complaints as to their deficiencies; and divers attempts to eſtabliſh new, and more adequate ones, in their place. Biſhop Wilkins charges all the *alphabets* extant with great irregularities, with reſpect both to the order, number, power, figure, &c.—As to the order, it appears inartificial, precarious, and confuſed; in that the vowels and conſonants are not reduced into claſſes, with ſuch order of precedence and ſubſequence as their natures will bear.—Even the Hebrew order is not free from this imperfection.

As to number, they are both redundant, and deficient: redundant, either by allotting ſeveral letters to the ſame power, and ſound; as in the Hebrew ס and ש, and the ordinary Latin *c* and *k*, *f*, and *ph*: or by reckoning double letters among the ſimple elements of ſpeech; as in the Hebrew צ, the Greek ξ and ψ, the Latin *q cu*, *x cs*, and the *j* conſonant, or jod.—Deficient in divers reſpects, eſpecially in regard of vowels, of which there are ſeven or eight kinds commonly uſed; though the Latin *alphabet* only takes notice of five; whereof two, *viz.* *i* and *u*, according to our Engliſh pronunciation, are not properly vowels, but diphthongs.

Add, that the difference among vowels in reſpect of long and ſhort, is not ſufficiently provided for: the antients, we know, uſed to expreſs a long vowel by doubling its character; as *amaabam*, *naata*, *ree*, *ſeedes*, *ſanctiſſimiis*; though the vowel *i*, inſtead of being doubled, was frequently prolonged, as ÆDILIS, PISO, VIVUS.—The ways uſed in Engliſh for lengthening and abbreviating vowels, *viz.* by adding *e* quieſcent to the end of a word, for prolonging a ſyllable; and doubling the following conſonants, for the ſhortening of a vowel, as *wane wann*, *ware warr*, &c. or elſe by inſerting ſome other vowel, for the lengthening of it, as *meet met*, *read red*, &c. are all improper; in that the ſign ought ever to be where the ſound is.

As to their powers, again, thoſe are not always fixed to the ſame ſignification: the vowels, for inſtance, are generally acknowleged to have each of them ſeveral ſounds: *vocales omnes pluriſonæ*, ſays Lipſius; and Voſſius aſſures us, the antients uſed their vowels very different ways, *aliquando tenuius exiliuſque, nunc craſſius, nunc intermedio ſono.* Thus the power of the vowel *e* is expreſſed in writing no leſs than ſix ſeveral ways, *viz.* by *e*; as in *he*, *me*, *ſhe*, *ye*:—by *ee*, in *thee*, *free*, *wee*: by *ie*, in *field*, *yield*, *ſhield*, *chief*;—by *ea*, in *near*, *dear*, *hear*; by *eo*, in *people*;—by *i*, in *privilege*. So is the power of the vowel *a*; as in *all*, *aul*, *aw*, *fault*, *caught*: which are only various ways of writing the ſame long vowel; beſides the other diſtinct ways of expreſſing the ſame vowel when uſed ſhort: again, the power of the vowel *o* is written five ways; *o*, as in *to*, *who*, *move*;—*oe*, as in *doe*;—*oo*, in *ſhoo*, *moon*, *noon*;—*ou*, in *could*, *would*;—*wo*, in *two*; and ſo of the reſt.—Nor are the conſonants of more determinate powers: witneſs the different pronunciation of the ſame letter (*c*) in the ſame word *circo*; and of *g* in *negligence*.—To ſay no more, the letters *c*, *ſ*, *t*, are uſed alike, to denote the ſame power; and the letter *ſ*, is commonly uſed for *z*: and, which is yet worſe, ſome letters of the ſame name and ſhape, are uſed at one time for vowels, and at another for conſonants; as *j*, *v*, *w*, *y*; which yet differ from one another, ſays biſhop Wilkins, *ſicut corpus & anima*.

From this confuſion in the power of letters, there ariſe divers irregularities; as, that ſome words are diſtinguiſhed in writeing, which are the ſame in pronunciation, *e. gr.* *Ceſſio* and *Seſſio*, &c. and others are diſtinguiſhed in pronunciation, which are the ſame in writing; as *give*, *dare*, and *give*, *vinculum*, &c. Hence alſo the Latin *malè*, is a diſyllable, and the Engliſh *male*, is a monoſyllable.

The names alſo, in moſt *alphabets*, are very improperly expreſſed by words of divers ſyllables; as *alpha*, *beta*, &c. in which reſpect, the Roman and our Engliſh *alphabets*, which only name the letters by their powers, have a great advantage over the reſt.

Laſtly, their figures are not well concerted; there being nothing in the characters of the vowels anſwerable to the different degrees of apertion: nor in the conſonants, analogous to the agreements or diſagreements thereof.

All theſe imperfections are demonſtrated in the natural *alphabet* attempted by Dr. Wallis, Dr. Holder, &c. (ſee NATURAL *Alphabet*); and are endeavoured to be obviated in the *univerſal alphabets*, or characters, of Mr. Lodowic, biſhop Wilkins, &c. See *Univerſal* CHARACTER.

In the French king's library, is an Arabic work, intitled, *Sephat Alacam*; containing divers ſorts of imaginary *alphabets*, which the author diſtributes into prophetical, myſtical, philoſophical, magical, taliſmanical, &c.

Monſieur Leibnitz had it in view to compoſe an *Alphabet of Human Thoughts*. *Mem. de l'Acad. R.* an. 1716.

It is no wonder that the number of letters in moſt languages ſhould be ſo ſmall, and that of the words ſo great; ſince from a calculation made by Mr. Preſtet, it appears, that, allowing only twenty-four letters to an *alphabet*, the different words or combinations that may be made out of thoſe twenty-four letters, taking them firſt one by one, then two by two, three by three, &c. would amount to the following number, 1391,724288,887252,999425,128493,402200.

It may be here obſerved, that every combination may make a word, even though that combination have not any vowel in it; becauſe the *e* mute or quieſcent inſinuates itſelf imperceptibly between the conſonants, or after the conſonants, where there are but two, the latter of which would not be heard without it.—The uſe of this ſilent *e* is very remarkable in the Armenian, Welſh, and Dutch languages; wherein the generality of words have ſeveral conſonants together.

Nor muſt it be omitted, that every ſingle letter may make a word: which is very apparent, where the letter is a vowel; words of that kind being found in moſt languages. Thus, *α* and *ω* make words in the Greek; *a*, *o*, in the Latin; *a*, *i*, *o*, in Engliſh; *a*, *o*, *y*, in French; *a*, *e*, *i*, *o*, in Italian; *a*, *y*, in Spaniſh; *a*, *o*, in the Portugueſe; *o*, in moſt languages, and even in the Dutch and Swediſh. Any conſonant alſo becomes a word, by adding an *e* mute to it in pronunciation.

In fine, though a conſiderable number of the poſſible combinations of twenty-four letters were retrenched, yet the number remaining would ſtill be immenſe, and vaſtly ſuperior to that of the words in any language known.

Of all known languages, the Greek is looked upon as one of the moſt copious, the radices of which are only eſteemed about 3244; but then it abounds exceedingly in compounds, and derivatives. Biſhop Wilkins thinks theſe may be moderately computed at about ten thouſand.

Hermannus Hugo, indeed, aſſerts, that no language has ſo few as 100000 words; and Varro is frequently quoted by learned men, as if he affirmed that there are in the Latin no leſs than 5000000: but upon inquiring into the ſcope of the paſſage, biſhop Wilkins obſerves, that this number is not intended by him to expreſs the juſt number of words in the Latin; but the great variety made thereof, by the inflexion and compoſition of verbs.—To this purpoſe he lays it down, that there are above one thouſand radical verbs in the Latin; and that each verb admits of five hundred ſeveral varieties: he further ſuppoſes, that each of theſe may be compounded with nine prepoſitions; as *ceſſit*, *receſſit*, *acceſſit*, *deceſſit*, *præceſſit*, *proceſſit*, *ſucceſſit*, *&c.* which amounts to five millions. See WORD.

ALPHABET, in matter of polygraphy, is a duplicate of the key or cipher, which each of the parties correſponding are to keep by them.

It is properly an *alphabet* of the uſual letters diſpoſed in their order; oppoſite, or underneath which, are the ſecret characters correſponding thereto, with the blank or uſeleſs letters, and the other ſigns or ſymbols ſerving to obſcure, and render it difficult to decipher. See DECIPHERING.

ALPHETA, in aſtronomy, a fixed ſtar in the northern crown; otherwiſe called *lucida coronæ*.

Its longitude, latitude, *&c.* ſee among the reſt of the conſtellation CORONA *Septentrionalis*.

ALPHONSIN, is the name of a ſurgeon's inſtrument, uſed in the extraction of bullets from the body.

The *Alphonſin*, ſo called from its inventor Alphonſus Ferrier, a phyſician of Naples, conſiſts of three branches, which are cloſed together by means of a ring.—The inſtrument, thus cloſed, being conveyed into the wound to the bullet, the operator draws back the ring towards the handle, upon which the branches opening themſelves, lay hold of the ball: after this he puſhes the ring again from the haft, whereby the branches graſp the bullet ſo firmly, that it muſt needs come out with them. *Bib. Anat. Med.* t. 1. 517.

ALPHONSINE *Tables.* See the article TABLE.

ALPHOS, in medicine, a diſtemper deſcribed by Celſus, under the name of *vitiligo*; wherein the ſkin is rough, and becomes ſprinkled as it were with drops of white.

ALPINE. See the article CISALPINE.

ALRAMECH, or ARAMECH, in aſtronomy, the Arabic name of a ſtar of the firſt magnitude, otherwiſe called *Arcturus.* See ARCTURUS.

ALT *, in muſic. See DIAGRAM, and SCALE.

* The word is formed of the Latin, *altus*, high.

ALTAR, ALTARE, ARA, a place or pile whereon to offer ſacrifice to ſome deity.

The Jews had their brazen *altar*, for burnt-offerings, and a golden *altar*, or *altar* of incenſe.

Among the Romans, the *altar* was a kind of pedeſtal, either ſquare, round, or triangular; adorned with ſculpture, with baſſo-relievo's, and inſcriptions, whereon were burnt the victims ſacrificed to idols.

According to Servius, thoſe *altars* ſet apart for the honour of the celeſtial gods, and gods of the higher claſs, were placed on ſome pretty tall pile of building; and for that reaſon were called *altaria*, from the words *alta* and *ara*, a high elevated *altar*.—Thoſe appointed for the terreſtrial gods, were laid on the ſurface of the earth, and called *aræ*.—And on the contrary, they dug into the earth, and opened a pit, for thoſe of the infernal gods, which they called Βοθροι, λακκοι, *ſcrobiculi*. But this diſtinction is not every-where obſerved: the beſt authors frequently uſe *ara* as a general word, under which are included the *altars* of the celeſtial and infernal, as well as thoſe of the terreſtrial gods. Witneſs Virgil, *Ecl.* 5.

——*En quatuor aras.*

Where *aræ* plainly includes *altaria*; for whatever we make of Daphnis, Phœbus was certainly a celeſtial god. So Cicero, pro Quint. *Aras delubraque Hecates in Græcia vidimus.*

The Greeks alſo diſtinguiſhed two ſorts of *altars*; that whereon they ſacrificed to the gods, was called βωμος, and was a real *altar*; different from the other, whereon they ſacrificed to the heroes, which was ſmaller, and called ἐσχαρα. Pollux makes this diſtinction of *altars* in his *Onomaſticon*: he adds, however, that ſome poets uſed the word ἐσχαρα, for the *altar* whereon ſacrifice was offered to the gods.—The ſeptuagint verſion does ſometimes alſo uſe the word ἐσχαρα, for a ſort of little low *altar*, which may be expreſſed in Latin by *craticula*; being a hearth, rather than an *altar*.

The Jews alſo gave the name *altars* to a kind of tables occaſionally raiſed in the country or field, whereon to ſacrifice to God.—In ſuch a place, *he built an* altar *to the Lord.*

ALTAR is ſometimes alſo uſed, among Chriſtians, for a ſquare table, placed on the eaſtern ſide of a church, raiſed a little above the floor, and ſet apart for the celebration of the Euchariſt. Its form is not borrowed, either from that of the heathen *altars*, or even from that of the Jews in the temple; but in regard the Euchariſt was inſtituted by Jeſus Chriſt at ſupper, and upon a table, the modern *altar* is made in form of a table; whence it is more uſually, and even more ſignificantly, denominated *Communion Table.*

In effect, the denomination *altar* is founded on this ſuppoſition, that the Euchariſt is a proper ſacrifice: which, though the ſtanding doctrine of the church of Rome, is utterly denied by moſt of the Reformed.

In the primitive church, the *altars* were only of wood; as being frequently to be removed from place to place.—But the council of Paris, in 509. decreed, that no *altar* ſhould be built but of ſtone.

At firſt there was but one *altar* in each church; but the number ſoon increaſed; and from the writings of Gregory the Great, who lived in the ſixth century, we learn, that there were ſometimes in the ſame church twelve or thirteen.—In the cathedral of Magdeburg there are no leſs than 49 *altars*.

The *altar* is ſometimes ſuſtained on a ſingle column, as in the ſubterraneous chapels of St. Cæcilia at Rome, *&c.* and ſometimes, by four columns, as the *altar* of St. Sebaſtian of Crypta Arenaria; but the cuſtomary form is, to be a maſſive of ſtone-work, ſuſtaining the *altar-table.*

Theſe *altars* bear a reſemblance to tombs: in effect, we read in church-hiſtory, that the primitive Chriſtians chiefly held their meetings at the tombs of the martyrs, and celebrated the myſteries of religion thereon. For which reaſon, it is a ſtanding rule to this day in the church of Rome, never to build an *altar*, without incloſing the relics of ſome ſaint therein.

In lieu of proper *altars*, the Greeks in proceſs of time made uſe of antimenſia. See ANTIMENSIUM.

ALTAR *of Protheſis*, is a name given by the modern Greeks to a ſmaller, preparatory kind of *altar*, whereon they bleſs the bread, before it be carried to the large *altar*, where the ſolemn liturgy is performed.

F. Goar maintains, that the table of protheſis was antiently in the ſacriſty, or veſtry; which he makes appear from ſome Greek copies, where ſacriſty is made uſe of in lieu of protheſis. See SACRISTY.

ALTAR is alſo uſed, in church-hiſtory, for the oblations, or contingent incomes of a church.

In antient days they diſtinguiſhed between the church and the *altar*.—The tithes, and other ſettled revenues, were called the *church*, *eccleſia*; and the other incidental incomes, the *altar*.

ALTAR, *Ara*, in aſtronomy, one of the conſtellations of the ſouthern hemiſphere; not viſible in our climate. It conſiſts of ſeven ſtars; whereof five are of the fourth magnitude, and two of the fifth.—Some call it the *Cenſer*.

Miniſters of the ALTAR. See the article MINISTERS.

ALTARAGE, includes not only the offerings made upon the altar, but alſo the profit that ariſes to the prieſt on account of the altar.

ALTERANT, or ALTERATIVE, in medicine, a property, or power, in certain remedies, whereby they induce an *alteration* in the body, and diſpoſe it for health or recovery, by correcting ſome indiſpoſition, without occaſioning any ſenſible evacuation.

Under *alterants*, therefore, come all medicines which are not evacuants.

It is a point much queſtioned by ſome, whether there really be any ſuch thing as an *alterant* in this ſenſe; *i. e.* any thing which tends to cure a diſorder otherwiſe than by eliminating or expelling ſome peccant matter?

Quincy has made it probable, that remedies uſually reputed *alterants*, act in the ſame manner on the remoter, and more intimate, parts of the habit, as emetics, purgatives, *&c.* do on the ſtomach and inteſtines.

Dr. Morgan denies, that there is the leaſt ground from any obſervations or experiments, to conclude that medicines by any alterative or ſpecific operation on the blood can transform any morbid matter, or preternatural ferment, into good blood and humours: or that, any ſuch corrupt virulent matter being once formed and fixed, there can be any remedy for it, otherwiſe than by throwing it out of the body by ſome of the natural evacuations. V. *Morg. Mechan. Pract. Phyſ.* p. 53.

Alteratives, therefore, are better defined, ſuch medicines as have no immediate ſenſible operation, but gradually gain upon the conſtitution, by changing the humours from a ſtate of diſtemperature to health.

ALTERATE. See the article SESQUIALTERATE.

ALTERATION, ALTERATIO, in phyſic, the act of changing the circumſtances and manner of a thing; its general nature and appearance remaining the ſame.—Or, it is an accidental, and partial change in a body; without proceeding ſo far, as to make the ſubject quite unknown, or to take a new denomination thereupon.—Or, it may be defined, the acquiſition or loſs of ſuch qualities as are not eſſential to the form of the body.

Thus, a piece of iron, which before was cold, is ſaid to be *altered*, when it is made hot; ſince it may ſtill be perceived to be iron, is called by that name, and has all the properties thereof.

By this, *alteration* is diſtinguiſhed from *generation* and *corruption*; thoſe terms expreſſing an acquiſition or loſs of the eſſential qualities of a thing.

The modern philoſophers, after the antient chymiſts and corpuſcularians, hold all *alteration* to be effected by means of local motion: according to them, it always conſiſts either in the emiſſion, acceſſion, union, ſeparation, or tranſpoſition, of the component particles.

Ariſtotle makes a peculiar kind of motion, which he calls the *Motion of Alteration*.

ALTERCATION *, a debate or conteſt between two friends, or acquaintance.

* The word comes from the Latin *altercari*; which antiently ſignified to converſe or hold diſcourſe together.

Thus, we ſay they never come to an open quarrel; but there is continually ſome little *altercation* or other.

ALTERN *Baſe*, a term in trigonometry, contradiſtinguiſhed from *true baſe*, thus—In an oblique triangle, the true baſe is either the ſum of the ſides; in which caſe, the difference of the ſides is called the *altern* baſe: or, the true baſe is the difference of the ſides; in which caſe, the ſum of the ſides is called the *altern baſe*.

ALTERNATE, or ALTERNATIVE, is underſtood of ſeveral things which ſucceed, or are diſpoſed after each other by turns.

We ſay, an *alternate* or *alternative* office or truſt, which is that diſcharged by turns: ſo, two general officers, who command each his day, are ſaid to have the command *alternately*.

In botany, the leaves of a plant are ſaid to be *alternate*, or placed *alterniatively*, when there is a correſpondence between the two ſides of a branch; the leaves of the one ſtanding a little above thoſe of the other, not one oppoſite to the other.

ALTERNATE, in arithmetic. See ALLIGATION.

ALTERNATE *Angles*, in geometry, are the internal angles made by a line cutting two parallels, and lying on the oppoſite ſides of the cutting line; the one below the firſt parallel, and the other above the ſecond.

Thus, *x* and *u*, and *z* and *y* (*Tab. Geometry*, *fig.* 46.), are *alternate* angles.

There are alſo two external angles, *alternately* oppoſite to the internal one. See OPPOSITE.

Alligation, ALTERNATE. See ALLIGATION.

ALTERNATE *Ratio*, or *Proportion*, is where the antecedent of one ratio is to its conſequent, as the antecedent of another, to its conſequent; the very ſame ratio, in this caſe, holding *alternately* in reſpect of the antecedents to each other, and the conſequents to each other.

Thus, if A:B::C:D; then, *alternately*, A:C::B:D. See PROPORTION.

ALTERNATE, in heraldry, is uſed in reſpect of the ſituation of the quarters. See QUARTER.

Thus, in quarterly, *ecartelé*, the firſt and fourth quarters are *alternate*; and are uſually of the ſame nature. And the like holds of the ſecond and third.

ALTERNATIONS, a term ſometimes uſed to expreſs the divers changes, or alterations of order, in any number of things propoſed.

This is alſo called *permutation*, &c. and is eaſily found by a continual multiplication of all the numbers, beginning at unity.

Thus, if it be required to know how many changes or *alternations* can be rung on ſix bells, multiply the numbers 1, 2, 3, 4, 5, 6, continually one into another; and the laſt product gives the number of changes.

ALTERNATIVE, is particularly uſed for the choice of two things propoſed.—In this ſenſe, we ſay, to take the *alternative* of two propoſitions.

ALTIMETRY *, ALTIMETRIA, the art of taking or meaſuring altitudes or heights; whether acceſſible or inacceſſible. See ALTITUDE.

* The word is compounded of the Latin *altus*, high, and *μετρεω*, *metior*, to meaſure.

Altimetria makes the firſt part of geometry; including the doctrine and practice of meaſuring both perpendicular and oblique lines; whether in reſpect of height, or depth.

ALTITUDE, ALTITUDO, in geometry, the third dimenſion of body; conſidered with regard to its elevation above the ground—called alſo *height* or *depth*.

ALTITUDE *of a Figure*, is the diſtance of its vertex from its baſe, or the length of a perpendicular let fall from the vertex to the baſe. See FIGURE, BASE, and VERTEX.

Thus, KL (*Tab. Geometry*, *fig.* 19.) being taken for the baſe of the rectangle-triangle, KLM; the perpendicular KM will be the *altitude* of the tirangle.

Triangles of equal baſes and *altitudes* are equal; and parallelograms, whoſe baſes and *altitudes* are equal to thoſe of triangles, are juſt the double thereof.

ALTITUDE, in optics, is uſually conſidered as the angle ſubtended between a line drawn through the eye, parallel to the horizon, and a viſual ray emitted from an object to the eye.

For the laws of the viſion of *altitude*, ſee VISION.

If through the two extremes of an object, S and T (*Tab. Optics*, *fig.* 13.), two parallels, TV and SQ, be drawn; the angle TVS, intercepted between a ray paſſing through the vertex S, and terminating the ſhadow thereof in V, makes, with the right line TV, what is called, by ſome writers, the *Altitude of the Luminary*.

ALTITUDE, in coſmography, is the perpendicular height of an object, or its diſtance from the horizon, upwards.

Altitudes are divided into acceſſible and inacceſſible. See ACCESSIBLE, and INACCESSIBLE.

There are three ways of meaſuring *altitudes*, *viz.* geometrically, trigonometrically, and optically.—The firſt is ſomewhat indirect and unartful; the ſecond is performed by means of inſtruments for the purpoſe; and the third by ſhadows.

The inſtruments chiefly uſed in meaſuring of *altitudes*, are the quadrant, theodolite, geometric quadrat, or line of ſhadows, *&c.* the deſcriptions, applications, *&c.* whereof, ſee under their reſpective articles, QUADRANT, THEODOLITE, and QUADRAT.

To take acceſſible ALTITUDES. To meaſure an acceſſible *altitude*, *geometrically*.—Suppoſe it required to find the *altitude* AB (*Tab. Geometry*, *fig.* 88.); plant a ſtaff DE perpendicularly in the ground, of ſuch height as may equal the height of the eye. Then, lying proſtrate on the ground, with your feet to the ſtaff; if E and B prove in the ſame right line with the eye C; the length CA is equal to the *altitude* AB. If ſome other lower point, as F, prove in the line with E, and the eye; you muſt remove the ſtaff, *&c.* nearer to the object: on the contrary, if the line continued from the eye over E, mark out ſome point above the *altitude* required; the ſtaff, *&c.* are to be removed farther off, till the line CE raſe the very point required.—Thus, meaſuring the diſtance of the eye C from the foot of the object A; the *altitude* is had; ſince CA=AB.

Or thus:—At the diſtance of thirty, forty, or more feet, plant a ſtaff DE (*fig.* 89.); and at diſtance herefrom, in C, plant another ſhorter one, ſo as that the eye being in F, E and B may be in the ſame right line therewith. Meaſure the diſtance between the two ſtaves, GF; and between the ſhorteſt ſtaff and the object, HF; as alſo, the difference of the heights of the ſtaves, GE.—To GF, GE, and HF, find a fourth proportional BH.—To this add the *altitude* of the ſhorter ſtaff, FC. The ſum is the *altitude* required, AB.

To meaſure an acceſſible *altitude*, trigonometrically.—Suppoſe it required to find the *altitude* AB (*Tab. Trigonom. fig.* 23.); chooſe a ſtation in E; and with a quadrant, theodolite, or other graduated inſtrument duly placed, find the quantity of the angle of *altitude* ADC.

Meaſure the ſhorteſt diſtance of the ſtation from the object, *viz.* DC; and this of conſequence is perpendicular to AC.

Now, C being a right angle, it is eaſy to find the line AC; ſince, in the triangle ACD, we have two angles, *viz.* C and D, and a ſide oppoſite to one of them, CD, to find the ſide oppoſite to the other: for which we have this canon. —As the ſine of the angle A is to the given ſide oppoſite thereto DC; ſo is the ſine of the other angle D, to the ſide required CA. See TRIANGLE.

To the ſide thus found, adding BC, the ſum is the perpendicular *altitude* required.

The operation is beſt performed by logarithms. See LOGARITHM.

If there happen an error in taking the quantity of the angle A (*fig.* 24.), the true *altitude* BD will be to the falſe one BC, as the tangent of the true angle DAB to the tangent of the erroneous angle CAB.

Hence, ſuch error will be greater in a greater *altitude* than in a leſs: and hence alſo, the error is greater, if the angle be leſſer, than if it be greater. To avoid the inconveniences of both which, the ſtation is to be pitched on at a moderate diſtance: ſo as the angle of *altitude*, DEB, may be nearly half right.

Again, if the inſtrument were not horizontally placed, but inclined, *e. gr.* to the horizon in any angle; the true *altitude* will be to the erroneous one, as the tangent of the true angle to that of the erroneous one.

To meaſure an acceſſible *altitude* optically, by the ſhadow of the body, ſee SHADOW.

To meaſure an acceſſible *altitude* by the geometrical quadrat. —Suppoſe it required to find the *altitude* AB (*Tab. Geom. fig.* 20.), chooſing a ſtation at pleaſure in D, and meaſuring the diſtance thereof from the object DB; turn the quadrat this and that way, till the top of the tower A appear through the ſights.

If, then, the thread cut the right ſhadows, ſay, as the part of the right ſhadow cut off, is to the ſide of the quadrat; ſo is the diſtance of the ſtation DB, to the part of the *altitude* AE.—If the thread cut the verſed ſhadows, ſay, as the ſide of the quadrat is to the part of the verſed ſhadow cut off, ſo is the diſtance of the ſtation D B, to the part of the *Altitude* A E.

A E, therefore, being found in either caſe, by the rule of three; and the part of the *Altitude* B E added thereto; the ſum is the *Altitude* required.

To meaſure an inacceſſible ALTITUDE, *geometrically.*—Suppoſe A B (*fig.* 89.) an inaceſſible *Altitude*, ſo that you cannot meaſure to the foot thereof. Find the diſtance C A, or F H, as taught under the article DISTANCE; then proceed with the reſt as in the article for acceſſible diſtances.

To meaſure an inacceſſible *Altitude, trigonometrically.*—Chooſe two ſtations, G and E (*Tab. Trigonom. fig.* 25.), in the ſame right line with the required *Altitude* A B, and at ſuch diſtance from each other, D F, as that neither the angle F A D be too ſmall, nor the other ſtation G too near the object A B.—With a proper inſtrument take the quantity of the angles ADC, AFC, and CFB. See ANGLE.—And alſo meaſure the interval FD.

Then, in the triangle AFD, we have the angle D, given by obſervation; and the angle AFD, by ſubtracting the obſerved *Altitude* AFC, from two right angles; and conſequently the third angle D A F, by ſubtracting the other two from two right ones: and alſo the ſide FD; from whence the ſide AF is found by the canon above laid down, in the problem of acceſſible *Altitudes:* and again, in the triangle ACF, having a right angle C, an obſerved angle F, and a ſide AF; the ſide A C, and the other C F, are found by the ſame canon. Laſtly, in the triangle F C B, having a right angle C, obſerved angle C F B, and a ſide C F; the other ſide C B, is found by the ſame canon.

Adding, therefore, AC, and CB; the ſum is the *Altitude* required, AB.

To find an inacceſſible *Altitude* by the ſhadow, or the geometrical quadrat.—Chooſe two ſtations in D and H (*Tab. Geom. fig.* 90.), and find the diſtance D H, or C G: obſerve what part of either the right or verſed ſhadow is cut by the thread.

If the right ſhadows be cut in both ſtations, ſay, As the difference of the right ſhadows in the two ſtations, is to the ſide of the ſquare; ſo is the diſtance of ſtations G C to the *Altitude* E A.—If the thread cut the verſed ſhadow at both ſtations, ſay, As the difference of the verſed ſhadows marked at the two ſtations, is to the leſſer verſed ſhadow; ſo is the diſtance of the ſtations G C, to the interval G E.—Which being had, the *Altitude* E B is alſo found by means of the verſed ſhadow in G; as in the problem for acceſſible *Altitudes.* Laſtly, if the thread in the firſt ſtation G, cut the right ſhadows; and in the latter, the verſed ſhadows; ſay, As the difference of the product of the right ſhadow into the verſed ſubtracted from the ſquare of the ſide of the quadrat, is to the product of the ſide of the quadrat into the verſed ſhadow; ſo is the diſtance of the ſtations G C, to the *Altitude* required A E.

The utmoſt diſtance at which an object may be ſeen, being given; to find its *Altitude.*—Suppoſe the diſtance D B (*Tab. Geography, fig.* 9.), turn this into degrees; by which means, you will have the quantity of the angle C: from the ſecant of this angle ſubtract the whole ſide B C, the remainder will be AB, in ſuch parts, whereof B C, is 10000000.—Then ſay, As 10000000 is to the value of A B in ſuch parts, ſo is the ſemidiameter of the earth B C 19695539, to the value of the *Altitude* A B in Paris feet.

Suppoſe, *e. gr.* the *Altitude* be required of a tower A B, whoſe top is viſible at the diſtance of five miles: then will D C B 20′, from whoſe ſecant 10000168, ſubtracting the whole ſine 10000000; the remainder A B is 168, which will be found 331 Paris feet.

ALTITUDE *of the Eye*, in perſpective, is a right line let fall from the eye, perpendicular to the geometrical plane.

ALTITUDE, in aſtronomy, is the diſtance of a ſtar, or other point, in the mundane ſphere, from the horizon.

This *Altitude* may either be *true* or *apparent.*—If it be taken from the rational, or real horizon; the *Altitude* is ſaid to be *true*, or *real:* if from the apparent, or ſenſible horizon; the *Altitude* is *apparent.*—Or rather, the apparent *Altitude* is ſuch as it appears to our obſervation; and the *true* is that from which the refraction has been ſubtracted. See TRUE, APPARENT, *&c.*

The *Altitude* of a ſtar, or other point, is properly an arch of a vertical circle, intercepted between the aſſigned point and the horizon. See VERTICAL.—Hence,

Meridian ALTITUDE.—The meridian being a vertical circle: a *meridian Altitude*, that is, the *Altitude* of a point in the meridian, is an arch of the meridian intercepted between it and the horizon.

To obſerve the meridian *Altitude* of the ſun, of a ſtar, or other phænomenon, by means of the quadrant, ſee MERIDIAN *Altitude.*

To obſerve a meridian *Altitude* by means of a gnomon, ſee GNOMON.

The ſun's *Altitude* may alſo be found without a quadrant, or any the like inſtrument, by erecting a pin or wire perpendicularly, as in the point C (*Tab. Aſtronomy, fig.* 62.), from which point you had deſcribed the quadrantal arch A F. Make C E equal to the height of the pin or wire, and through E draw E D parallel to C A, and make it equal to C G, the length of the ſhadow; then will a ruler, laid from C to D, interſect the quadrant in B; and B A is the arch of the ſun's *Altitude*, when meaſured on the line of chords.

M. Parent ſuggeſts a new method of taking *Altitudes* at ſea, by a common watch.—'Tis obvious, that, in an oblique ſphere, the difference between the riſing and ſetting of two ſtars, on the ſame meridian, is greater, as they are farther diſtant from one another.

Now, the aſtronomical tables furniſhing us with tables of the right aſcenſions and declinations of all the fixed ſtars; it is eaſy, after obſerving the difference of time between the riſing of two ſtars, to diſtinguiſh that part of the difference which accrues from their different poſition from that, which ariſes from the obliquity of the ſphere.—But ſuch difference is the preciſe height of the pole of the place of obſervation.

Indeed, the ſhip not being immoveable, but changing place between the two obſervations; ſeems to lay the method under ſome difficulty: but to this M. Parent anſwers, that a ſmall alteration either of the ſhip's longitude or latitude, will make no ſenſible error; and that if ſhe have gone a large diſtance between the two obſervations, it is eaſy reckoning how much it is, and accordingly allowing for it. See SAILING.

In taking of *Altitudes* from the viſible horizon, where great exactneſs is required, an allowance is to be made for refraction, and the height of the obſerver's eye above the ſurface of the ſea.

ALTITUDE *of the Pole*, is an arch of the meridian, intercepted between the pole and the horizon.

The *Altitude of the pole* coincides with the latitude of the place.—To obſerve the *Altitude* or elevation of the pole, ſee ELEVATION, and POLE.

ALTITUDE *of the Equator*, is the complement of the *Altitude* of the pole to a quadrant of a circle. See ELEVATION *of the Equator.*

To find the ALTITUDE of the ſtars, *&c.* by the globe. See GLOBE.

ALTITUDE *of the Nonageſimal*, is the *Altitude* of the 90th degree of the ecliptic, reckoned from the orient, or eaſt point. See NONAGESIMAL.

Refraction of ALTITUDE, is an arch of a vertical circle, as S *s* (*Tab. Aſtronomy, fig.* 28.), whereby the *Altitude* S E, of a ſtar, or other body, is increaſed by means of the refraction.

Parallax of ALTITUDE, is the difference C B (*Tab. Aſtron. fig.* 27.) between the true and apparent place of a ſtar; or, the difference B C, between the true diſtance of a ſtar A B, and the obſerved diſtance A C, from the zenith A.

The parallax diminiſhes the *Altitude* of a ſtar, or increaſes its diſtance from the zenith.—To find the parallax of *Altitude*, *&c.* ſee PARALLAX.

ALTITUDE *of Motion*, is a term uſed by Dr. Wallis for the meaſure of any motion, eſtimated according to the line of direction of the moving force.

Circles of ALTITUDE. See the article CIRCLES.

Parallels of ALTITUDE. See the article PARALLELS.

Quadrant of ALTITUDE. See the article QUADRANT.

ALTO & BASSO, or *in* ALTO & *in* BASSO, in law, ſignifies the abſolute reference of all differences, ſmall and great, high and low, to ſome arbitrator, or indifferent perſon.—*Pateat univerſis per præſentes, quod Willielmus Tylar de Yetton, & Thomas Gower de Almeſtre, poſuerunt ſe in* Alto & *in* Baſſo, *in arbitrio quatuor hominum*; viz.—*de quadam querela pendente inter eos in curia.—Nos & terram noſtram* altè & baſſè *ipſius domini Regis ſuppoſuimus voluntati.* Du Cang.

ALTO *Relievo.* See the article RELIEVO.

ALUDELS, in chemiſtry, ſubliming pots, or veſſels uſed for the ſublimation of mineral flowers.

Aludels are a large range of earthen tubes or pots without bottom; fitted, one over another, and diminiſhing as they advance towards the top.—The loweſt is adapted to a pot, placed in the furnace, wherein the matter to be ſublimed is lodged.—And at the top is a head, to retain the flowers which aſcend higheſt.

ALVEARIUM, in anatomy, the bottom of the concha, or hollow of the auricle, or outer ear. See EAR.

The *Alvearium* auriculæ is a cavity, terminating at the meatus auditorius, wherein that bitter yellowiſh excrement is collected, called *cerumen*, or ear-wax.

ALVEOLI, in anatomy, thoſe little ſockets in the jaws, wherein the teeth are ſet.

The *Alveoli* are lined with a membrane of exquiſite ſenſe, which ſeems to be nervous, and is wrapt about the roots of each tooth; from whence, and from the nerve, proceeds that pain called *odontalgy*, or tooth-ach.

ALVIDUCA *, a term uſed by ſome writers for laxative or purgative medicines.

* The word is compounded of *alvus*, and *duco*, I draw.

ALUM, ALUMEN. See the article ALLUM.

ALVUS, among anatomiſts, is ſometimes uſed to expreſs the lower belly, or venter.

ALVUS is more uſually taken, among phyſicians, for the ſtate and condition of the fæces, or excrements, contained within that cavity.

Thus, when a perſon is laxative, it is called *Alvus liquida*; and when coſtive, *Alvus adſtricta*.

AMABYR, or AMVABYR, in ſome antient cuſtoms, the price of a maidenhead; or a ſum of money to be paid the lord upon marrying a maid of his manor.—This cuſtom is ſaid to have antiently obtained in Wales, where *Amabyr* was paid to the prince: alſo in the honour of Clun belonging to the earl of Arundel, till earl Henry, in the time of queen Mary, in conſideration of ſixty pounds, releaſed it to all his tenants by the name of the cuſtom of *Amabyr* and *chevage*.

AMAIN, or AMAYNE, a ſea term, uſed by a man of war, to his enemy; and ſignifying, *yield*.

Hence, *to ſtrike Amain*, is, to lower, or let fall, the topſails.

AMALGAMA *, or AMALGAM, in chemiſtry, a maſs of mercury, united and incorporated with a metal. See MERCURY, and METAL.

* The word *Amalgama* is formed of the Greek ἅμα, *ſimul*, together; and γαμεῖν, *jungere*, to join.

The *Amalgama* of mercury with lead, is a ſoft, friable ſubſtance, of a ſilver colour.

By waſhing and grinding this *Amalgama* with fair warm water in a glaſs mortar, the impurities of the metal will mix with the water; and by changing the water, and repeating the lotion again and again, the metal will be further and further purified.—Boerhaave mentions it as one of the greateſt ſecrets in chemiſtry, to contrive to bring off the liquor, at laſt, as clear and unſullied as when firſt poured on the *Amalgama*; which, he ſays, might afford a method of making the nobler metals, or procuring them from the baſer.

This philoſophical way of purifying metals, may be eaſily applied to all the metals, except iron and copper.

AMALGAMATION, in chemiſtry, the operation of making an *amalgama*, *i. e.* of diſſolving and incorporating ſome metal, eſpecially gold, with mercury.

This operation is denoted, among chymiſts, by the letters AAA.

Amalgamation is performed by fuſing, or at leaſt igniting, the metal; and, in this ſtate, adding a proportion of mercury thereto; upon which, they mutually attract, and incorporate with, each other.

All metals, except iron and copper, ſpontaneouſly unite and *amalgamate* with mercury; but gold with the greateſt facility; ſilver the next; then lead, and tin; copper does it with difficulty, and iron ſcarce at all. See METAL, *&c.*

The *Amalgamation* of gold is uſually performed by heating the laminæ or plates of that metal red-hot; after which, quickſilver is to be poured upon them, and the mixture is to be ſtirred with a little iron rod, till it begins to riſe into ſmoke.—It is then thrown into a veſſel full of water, where it coagulates, and becomes manageable.

This *Amalgamation* is in great uſe among goldſmiths and gilders; who, by this means, render gold fluid and ductile for their purpoſes.—Such mixture or *amalgama* being laid on any other metal, for inſtance, copper; and this afterwards placed on the fire to evaporate; the gold will be left alone on the ſurface of the copper: which makes what we call *gilding*.

The blackneſs adhering to the *amalgama* may be waſhed away with water; and a deal of the mercury may be preſſed out through a linen cloth: and the reſt being evaporated in a crucible, the gold remains behind in an impalpable powder.—Gold retains about thrice its own weight of mercury.

AMATORII *Muſculi*, in anatomy, an appellation ſometimes given to thoſe muſcles of the eyes which give them a caſt ſideways, and aſſiſt in that particular look by ſome called *ogling*.

When the *abductor* and *humilis* act together, they give this oblique motion.

AMAUROSIS *, in medicine, a deprivation of ſight; the eye remaining fair, and ſeemingly unaffected.

* The word is Greek, αμαυρωσις, *q. d.* darkneſs; formed of αμαυροω, *obſcuro*, I darken.

Amauroſis is the ſame with what the Latins more uſually call *gutta ſerena*. See GUTTA *Serena*.

AMAXOBII, or rather HAMAXOBII. See the article HAMAXOBII.

AMAZON, in antiquity, denotes a bold, courageous woman; capable of daring, hardy atchievements.

AMAZONS, in a more peculiar ſenſe, denote an antient nation of warlike women, whood found an empire in Aſia Minor, near the river Thermodoon, along the coaſts of the Black Sea.

The *Amazons* are ſaid to have formed a ſtate out of which men were excluded. What commerce they had with that ſex, was only with ſtrangers; they killed all their male children, and cut off the right breaſts of their females, to make them more fit for the combat.—From which laſt circumſtance it is, that they are ſuppoſed to take their name; *viz.* from the privative α, and μαζος, *mamma*, breaſt.

It is a point controverted, even among antient writers, whether ever there really were ſuch a nation of *Amazons?*—Strabo, Palæphatus, and others, abſolutely deny it: on the contrary, Herodotus, Pauſanias, Diodorus Siculus, Trogus Pompeius, Juſtin, Pliny, Mela, Plutarch, *&c.* expreſly aſſert it.

Hippocrates mentions a law among the *Amazons*, whereby they were doomed to remain virgins, till ſuch time as they had ſlain three men of their enemies.—He adds, that the reaſon of their cutting off the right breaſt was, to make the right arm the ſtronger; as ſuppoſing this would now receive the whole nutriment, which would otherwiſe have been divided between both.

Some authors relate, that, inſtead of killing, they only twiſted the legs of their male children; to prevent their being able to contend with them for the maſtery.

M. Petit, a French phyſician, publiſhed a Latin diſſertation, in 1685. to prove, that there really was a nation of *Amazons*: it contains abundance of curious inquiries, relating to their habit, their arms, the cities built by them, *&c.*—On medals, the *Amazons* buſt is uſually armed with a little ax, called *bipennis*, or *ſecuris*, borne on the ſhoulder, and a buckler, in form of a half-moon, by the Latins called *pelta*, on the left arm.—Hence that of the poet:

> *Non tibi Amazonia eſt pro me ſumenda ſecuris,*
> *Aut exciſa levi pelta gerenda manu.*
>
> *Ov. ex Pont.*

Some modern geographers and travellers mention *Amazons* ſtill in being.—John de los Sanctos, a Portugueſe Capuchin, in his deſcription of Ethiopia, ſpeaks of a race of *Amazons* in Africa: and Æneas Silvius gives us a very preciſe account of a republic of real *Amazons*, in Bohemia, which laſted nine years; founded by the courage of a maid named Valaſca.

AMBAGES, *circumlocution*; an indirect diſcourſe, or phraſe, tending to expreſs or ſhew ſomething by a compaſs of words or ſentiments fetched from afar.

AMBARVALIA, in antiquity, a feaſt, or ceremony, among the Romans; celebrated annually, to expiate their grounds, and procure of the gods a happy harveſt.

At theſe feaſts, they ſacrificed a bull, a ſow, and a ſheep; which, before the ſacrifice, were led in proceſſion thrice around the fields; whence the feaſt is ſuppoſed to have taken its name: from the Greek αμφι, about; or the Latin *ambio*, I go round; and *arvum*, field.—Though others write it *ambarbalia*, and *ambarbia*, and deduce it from *ambire urbem*, to go round the city.

From the beaſts offered in ſacrice, the ceremony was alſo called *Suovetaurilia*.

It is not certain whether this feaſt was fixed, or moveable; nor whether it was celebrated once or twice a year; authors being of different opinions on both thoſe heads.

The *ambarvale carmen* was a prayer preferred on this occaſion; whereof we have the formula preſerved in Cato, C. 141. *De Re Ruſtica*.

The prieſts who chiefly officiated at the ſolemnity, were called *Fratres Arvales*.

AMBASSADOR. See the article EMBASSADOR.

AMBE, in anatomy, a ſuperficial jutting out of a bone. See BONE.

The word is alſo uſed as the name of an antient chirurgical inſtrument, with which they reduced diſlocated bones.—The *Ambe*, or *commander*, is mentioned by Hippocrates, and has its partizans among the moderns, eſpecially for replacing the arm. V. *Bib. Anat. Med.* t. 1. p. 667.

AMBER *, *Succinum*, or *Karabe*, in natural hiſtory, *&c.* a yellow tranſparent ſubſtance, of a gummous or bituminous form or conſiſtence, of a reſinous taſte, and a ſmell like oil of turpentine; chiefly found in the Baltic ſea, along the coſts of Pruſſia, *&c.* and of uſe in medicine, and other arts.

* The word is originally Arabic, *ambar*, or *anbar*, which ſignifies the ſame.

Naturaliſts are infinitely divided as to the origin of *Amber*, and what claſs of bodies it belongs to; ſome referring it to the vegetable, others to the mineral, and ſome even to the animal kingdom.—Its natural hiſtory, and its chemical analyſis, afford ſomething in favour of each opinion.

Pliny deſcribes it as 'a reſinous juice, ouſing from aged pines, 'and firs (others ſay, from poplars, whereof there are whole 'foreſts on the coaſts of Sweden); and diſcharged thence into 'the ſea; where, undergoing ſome alteration, it is thrown, in 'this form, upon the ſhores of Pruſſia, which lie very low: 'he adds, that it was hence the antients gave it the denomi'nation *ſuccinum*; from *ſuccus*, juice.' *Nat. Hiſt.* Lib. XXXVII. c. 3.

This opinion of the antient naturaliſt ſeems confirmed by obſervations of many of the modern ones; particularly of the learned Father Camelli. *Philoſ. Tranſact.* N° 290.

Some have imagined it a concretion of the urine of a beaſt; others, the ſcum of the lake Cephiſis, near the Atlantic; others, a congelation formed in the Baltic ſea, and in ſome fountains where they ſay it is found ſwimming like pitch.

Others ſuppoſe it a bitumen, trickling into the ſea from ſubterraneous ſources; and there concreted into this form, and thrown aſhore by the waves.

This laſt opinion was a long time the moſt popular; and ſeemed to have the beſt ground: but this, too, is now diſcarded; as good *Amber* having been found in digging at a conſiderable diſtance from the ſea, as that gathered on the coaſt.

Others ſuppoſe *Amber* a compound ſubſtance.—Pruſſia, ſay they, and the other countries which produce *Amber*, are moiſtened with a bituminous juice, which mixing with the vitriolic ſalts abounding in thoſe places, the points of thoſe ſalts fix its fluidity, whence it congeals; and the reſult of that congelation makes what we call *Amber*; which is more or leſs pure, tranſparent, and firm, as thoſe parts of ſalt and bitumen are more or leſs pure, and are mixed in this or that proportion.

The chemiſts are as much divided on this head as the naturaliſts. *Amber* being found by diſtillation to yield an acid ſpirit, which precipitates into a ſalt, is inferred, by ſome, to be of a mineral nature; this being a circumſtance peculiar to that kingdom, and never found in the diſtillation of vegetables: to which may be added, that *Amber* diſſolves in alcohol, not in water; and melts at the fire, and is inflammable; which are characters, that ſeem to refer it to the claſs of ſulphurs, or bitumens.

Others, on the contrary, argue it to be of the vegetable kind, from its reſolving into the ſame principles with vegetables; *viz.* water, ſpirit, ſalt, and oil.—Boerhaave reſembles it to camphire, which is a concrete oil of the aromatic plants of hot countries, elaborated by heat into a cryſtalline form.

There are ſeveral indications which diſcover where *Amber* is to be found.—The ſurface of the earth is there covered with a ſoft ſcaly ſtone; and vitriol in particular always abounds there, which is ſometimes found white, ſometimes reduced into a matter, like melted glaſs, and ſometimes figured like petrified wood.

Amber aſſumes all figures in the ground: that of a pear, an almond, a pea, *&c.* In *Amber*, there have been ſaid to be letters found very well formed; and even Hebrew, and Arabic characters.—Within ſome pieces of *Amber*, have likewiſe been found leaves, inſects, *&c.* included; which ſeems to indicate, either that the *Amber* was originally in a fluid ſtate; or that having been expoſed to the ſun, it was once ſoftened, and rendered ſuſceptible of the leaves, inſects, *&c.* which came in its way. The latter of theſe ſeems the more agreeable to the phænomenon, in regard thoſe inſects, *&c.* are never found in the centre of the pieces of *Amber*, but always near the ſurface.

It is obſerved by the inhabitants of the places where *Amber* is produced, that all animals, whether terreſtrial, aereal, or aquatic, are extremely fond of it; and that they frequently find pieces of it in their excrements, and in their bodies when opened.

The moſt remarkable property of *Amber* is, that, when rubbed, it draws or attracts other bodies to it; and this, it is obſerved, it does, even to thoſe bodies which the antients thought it had an antipathy to; as oily bodies, drops of water, ſweat of human bodies, *&c.*

Add, that by the friction it is brought to yield light pretty copiouſly in the dark; whence it is reckoned among the native phoſphori.

Amber is reputed of ſome medicinal efficacy; being uſed in ſuffumigations, to remove defluxions; and in powder, as an alterant, abſorbent, ſweetener, and aſtringent.

In times of the plague, thoſe who work in *Amber* at Koningſberg are ſaid to be never infected; whence it is held a preſervative.—It is alſo eſteemed a lithontriptic, diuretic, and promoter of the menſes.

Some diſtinguiſh *Amber*, with regard to its colours, into *yellow*, *white*, *grey*, and *black*.—But the two latter are properly of a different nature and denomination; the one called *jet*, the other *ambergris*. See AMBERGRIS, and JET.

The *white* is moſt valued for medicinal uſes, as being beſt digeſted, of the moſt odoriferous ſmell, and containing the greateſt quaintity of volatile ſalt.—The *yellow* is moſt prized by thoſe who work it into beads, and other toys, by reaſon of its tranſparency.

Kerkring pretends to be maſter of the ſecret of making coffins of *Amber*, without deſtroying its tranſparency. It is probable he took the hint from the Ethiopians, who bury their dead in glaſſes. An Ethiopian, tho' black, makes a fine figure in a Venice cryſtal; much more would he do ſo in a cover of yellow *Amber*.

The *Amber* gathered on the Pruſſian coaſts, yields that prince a handſome revenue.—Authors make mention of many other places where it is alſo found; as on the banks of the Po; the coaſts of Marſeilles; and divers parts of Aſia, Africa, and America: but Hartman, who has written the hiſtory of the Pruſſian *Amber*, *Succini Pruſſici Hiſtoria*, &c. treats all theſe accounts as fables, and denies *Amber* to be found anywhere but in the northern countries of Europe, *viz.* in Poland, Sileſia, and Bohemia, rarely; Jutland; Holſtein, Denmark, oftener; more frequently ſtill on the coaſts of Samogitia, Courland, Livonia, and Pomerania; but moſt of all, in Pruſſia, in the country called Sambia, from Neve Tiff to Urantz Urug. See Supplement, articles AMBAR, SUCCINUM, and CARABE.

Spirit of AMBER, is an acid liquor, procured from *Amber*, by pulverizing and diſtilling it with a ſand-heat, with or without the addition of tobacco-pipes, bricks, ſand, *&c.*

It is chiefly uſed externally in rheumatic pains and aches; and internally, in inveterate gleets, *&c.*

Oil of AMBER, is a fine, tranſparent, ponderous, yellow oil; procured after the ſpirit, by increaſing the degree of fire.—This, by rectification, becomes a good antihyſteric, and emmenagogue; being very ſubtile and penetrative.

Volatile Salt of AMBER.—The principal chemical production of *Amber*, is a peculiar acid ſalt; which riſes after the oil, and fixes in the neck of the retort, *&c.*

It is a good cephalic, and detergent: and Quincy ſays, it extremely attenuates, and cuts, and penetrates, the moſt remote and minute receſſes; and thus ſcours, as it were, the whole nervous ſyſtem. Its chief tendency, he adds, is to ſecretion, and what it carries along with it, is by urine. It alſo contributes, with alexipharmics, to promote a diaphoreſis; and is ſcarce ever omitted in preſcription for chronic caſes, as epilepſies, palſies, *&c.*

The great conſumption of this medicine, and the ſmall proportion that *Amber* yields of it, occaſions it to be frequently adulterated with ſal ammoniac, nitre, cream of tartar, ſalt of coral, *&c.*

Tincture of AMBER is procured by digeſtion in ſpirit of wine with a ſand-heat.—It is preſcribed with the ſame intentions as the ſalt of *Amber*.

Black AMBER, *Gagates*. See the article JET.

Liquid AMBER, is a kind of native balſam, or reſin, like turpentine; of a pleaſant ſmell, ſomewhat like ambergris.

It flows liquid, from an inciſion made in the bark of a fine large tree in New Spain (called, by the natives *oſoſol*); but it hardens as it grows older, and is brought to us in barrels.

It is reputed an excellent balſam; and mollifies, conſolidates, and is good againſt the ſciatica, weakneſs of the nerves, *&c.*

Balſam of liquid AMBER. See the article BALSAM.

AMBERGRIS, AMBER GREASE, AMBRA GRISIA, a fragrant drug, that melts almoſt like wax; and is commonly of a greyiſh or aſh-colour, and is uſed both as a perfume, and a cordial.

It is found on the ſea-coaſts, in ſeveral countries; as, along the ſouthern, and eaſtern parts of Africa, Madagaſcar, the Maldives, ſome parts of the Mediterranean; and in the Weſt-Indies, about the iſlands of Bermudas and Jamaica; alſo on the coaſts of Carolina, and the weſtern coaſts of Ireland. It is ſometimes whitiſh, browniſh, and ſtreaked with yellow, blackiſh, *&c.*

There is a great variety of opinions among naturaliſts with regard to its origin and production: to rehearſe them all, would make a volume. Klobius recites eighteen; to which we could add half as many more.—The principal may be reduced to theſe which follow.

1°, Some take it for the excrement of a bird, called in the Madagaſcar language *aſchibobuch*; which being melted by the heat of the ſun, and waſhed off the ſhore by the waves, they ſay is ſwallowed up by whales; who return it back in the condition we find it. Or, as Barboſa relates, from the Mooriſh inhabitants of the Maldives; the excrements above-mentioned are altered and refined by lying on the rocks, expoſed to the ſun, moon, and air; from whence they are afterwards waſhed off by the riſing ſea. They add, that the whales frequently ſwallow pieces thereof: that thoſe pieces we meet withal of a black colour, tooh that hue in the ſtomachs of thoſe animals; that the brown are ſuch as have floated long on the water; and the white, ſuch as have only been a ſhort time there, which they value the moſt. *Ramuſio*, Tom. I. fol. I. 313.—To this opinion does Klobius alſo adhere.

2°, Others ſpeak of it as the excrement of a cetaceous fiſh; becauſe ſometimes found in the inteſtines, and ſometimes in the fæces themſelves, of ſuch animals.—Juſtus Klobius, in his hiſtory of *Amber*, deſcribes the animal; which he ſays is a whale, and called the *trunk*; adding, that the ſperma ceti is taken out of the head of the ſame creature.—Others, with the Perſians, ſuppoſe the fiſh that yields the *ambergris*, a ſea-calf; others, with the Africans, make a peculiar ſpecies of fiſh, named *ambracan*; others a crocodile, by reaſon its fleſh is perfumed, *&c.*

But to both theſe hypotheſes it is objected, that we have no inſtance of any excrement capable of melting like wax. Add, that if it were the excrement of a whale, it ſhould rather be found in ſuch places where thoſe animals abound, as about Greenland, *&c.* than about the Maldive iſlands, Soffala, Melinda, Cape Comorin, *&c.* where no whales are found.

3°, Others take it for a kind of wax, or gum, which diſtils from trees, and drops into the ſea, where it congeals, and becomes *ambergris*.

4°, Others, and particularly many of the orientals, imagine it ſprings out of the bottom of the ſea, as naphtha does out of ſome fountains.—They add, that the only ſprings hereof are in the ſea of Ormus, between the Arabian and Perſian gulphs. Edriſſi, who is of this opinion, in the firſt climate of his geography, mentions pieces of *Ambergris* on thoſe coaſts, weighing a full quintal.—Paludanus and Linſchotten alſo ſpeak of it as a ſort of bitumen, gradually working up from the bottom of the ſea, and hardening in the ſun.

5°, Others take it for a ſea-muſhroom, torn up from the bottom by the violence of tempeſts; it being obſerved, that *Ambergris* is never found but during the ſouth-weſt monſoons, after ſtorms.

6°, Others aſſert it is a vegetable production, iſſuing out of the root of a tree, whoſe roots always ſhoot toward the ſea, and diſcharge themſelves into the ſame.—This account we have in the Philoſophical Tranſactions, from one of the Dutch factors at Batavia; and the ſame is confirmed by Mr. Boyle, *Of Taſte and Odors*.

7°, Others ſuppoſe it a ſpongious kind of earth, which the working of the ſea waſhes from off the rocks, where, being lighter than water, it floats.—Others are of opinion, that it is a bituminous matter; that it is at firſt liquid, and runs into the ſea; and that it is there condenſed, and reduced into a maſs.

8°, Others maintain, that *Ambergris* is made from the honey-combs which fall into the ſea from the rocks, where the bees had formed their neſts.—This opinion ſeems to have ſomething of experience on its ſide; ſeveral perſons having ſeen pieces that were half *Ambergris*, and half plain honey-comb: and others, again, having found large pieces of *Ambergris*, which when broken, honey-comb, and honey too, were found in the middle. *V. Tredway, Phil. Tranſ. ap. Lowth*, p. 492.

9°, Dr. Boylſton, and Mr. Dudley in the Philoſophical Tranſactions, aſſert that the *Ambergris* is a true, animal concrete, formed in balls, in the body of the male ſperma-ceti whale, and lodged in a large oval bag, over the teſticles, at the root of the penis. *V. Phil. Tranſ.* N° 385. and 387.

It is certain, the whale-catchers in thoſe parts have divers times found *Ambergris* in their ſperma-ceti whales, and that chiefly in the larger and older ſort: and 'tis from the informations of Mr. Atkins, and other whale-catchers, that Mr. Dudley chiefly drew his account.—But, beſides that it is added, that it is not one ſperma-ceti whale in 100, that is found to have *Ambergris*; Mr. Neumann abſolutely denies it to be an animal ſubſtance, as not yielding, in the analyſis, any one animal principle.—It may indeed, he ſays, be found in whales; but it muſt have been ſwallowed by them.

Mr. Neumann, chemiſt to the king of Pruſſia, after an ample recital of all the different opinions advanced by others, gives us his own; which is, that *Ambergris* is a bitumen, iſſuing out of the earth into the ſea; at firſt of a viſcous conſiſtence, but hardening, by its mixture with ſome liquid naphtha, into the form wherein we find it. *V. Phil. Tranſ.* N° 433. p. 350. N° 434. p. 371. N° 435. p. 417.

The pieces frequently ſeem compoſed of divers ſtrata, laid one over another; with ſtones and other bodies incloſed therein; and the ſtrata are ſometimes full of little ſhells, which ſeem a ſpecies of concha anatifera: whence it may be conjectured, that the *Ambergris* has originally been in a fluid ſtate; or, at leaſt, that it has been diſſolved; and in that ſtate has formed itſelf afreſh, and inveloped ſuch bodies as happened to be in its way.

It is of conſiderable uſe among perfumers, who melt it over a gentle fire, and make extracts, eſſences, and tinctures, of it.—It would be of more uſe in phyſic too, were not its ſmell apt to occaſion vapours.

We have various inſtances in authors, of vaſt pieces of this matter: the largeſt that has been known in Europe, was brought by the Dutch Eaſt-India company, toward the cloſe of the laſt century; and kept in their houſe for ſome years. It was almoſt round; meaſured two feet in diameter, and weighed an hundred and eighty-two pounds. The great duke of Tuſcany offered fifty thouſand crowns for it. See Supplement, article Ambergris.

Amber-seed, or *Muſk-ſeed*, is a ſeed that is ſomewhat like the millet, of a bitteriſh taſte, and brought dry to us from Martinico and Egypt.—The Egyptians uſe it internally, as a cordial, to fortify the heart, ſtomach, and head, and to provoke luſt.—It gives a grateful ſcent to the breath, after eating; but it is not proper for thoſe who are inclinable to vapours.

AMBIDEXTER *, one who uſes both hands alike, the left as well as right, or in caſes where only the uſe of one is neceſſary.

* The word is Latin, *ambidextra*, compounded of *ambo*, both; and *dexter*, right-hand; by analogy to the Greek ἀμφιδέξιος, which ſignifies the ſame.

Women, according to the obſervation of Hippocrates, are never *ambidextrous*. But this is denied by ſome moderns, who give inſtances of the contrary; though it is owned, they are but few in compariſon of what are found in the other ſex.

Ambidexter, in a legal ſenſe, denotes a perſon who takes money from both of the contending parties to further them in their cauſe.—In this ſenſe the word may be applied to a judge, juror, a ſollicitor, or the like.—The penalty on a juror, in ſuch caſe, is to forfeit *decies tantum*, ten times as much as he receives.

AMBIENT *, a term applied to ſuch things as encompaſs others round about.

* The word is formed of the Latin *ambire*, to encompaſs, go round.

Thus, the bodies ſituate around another body, are called *Ambient*, and often the *circum-ambient* bodies.—The whole body of air, becauſe it encompaſſes all things on the face of the earth, is often by phyſical writers called, by way of eminence, the *Ambient*, or *Ambient* air. See Circum-ambient.

AMBIGENAL *Hyperbola*, in geometry, is that which has one of infinite legs inſcribed, and the other circumſcribed. See Hyperbola.

AMBIGUOUS *, ſomething dubious, obſcure, or which may be taken in different ſenſes. See Equivocal.

* The word is formed of the Latin *ambo*, both, and *ago*, I drive; *q. d.* that which keeps the mind wavering, or in ſuſpenſe; not knowing which ſide to chooſe.

The anſwers of the antient oracles were always *Ambiguous*.

AMBIT, Ambitus, of a figure, in geometry, denotes the perimeter; or the ſum of all the lines, that conſtitute, or include it.

AMBITUS, among the antient Romans, the act of ſoliciting or making intereſt, for offices, or honours.

The candidates, in this caſe, went about the city; and into all public places, and aſſemblies, to beg votes; which was called *Ambitus*; *am*, in the antient Latin, ſignifying *circum*, about, or round, and *ire*, to go.

The Ambitus was the great trade of Rome, and demanded a conſtant ſupply of great ſums of money. Tully aſſigns this as the cauſe of the high rate of intereſt, and tells us, it had raiſed it from 4 to 8 per cent. *Cic. Ep.* 2. *ad Quint. Frat.*—Bribery was come to the pitch of 80729 *l.* per tribe: and there being no leſs than thirty-five tribes, it is obvious, how expenſive this corruption was grown.—It is alſo well known where it ended. *Arbuth. Diſſ.* p. 213.

AMBLE, Ambling, in horſemanſhip, a peculiar kind of pace, wherein a horſe's two legs, of the ſame ſide, move at the ſame time.

The *Ambling* horſe changes ſides at each remove; two legs of a ſide being always in the air, and two on the ground, at the ſame time: an *Amble* is uſually the firſt natural pace of young colts; which, as ſoon as they have ſtrength enough to trot, they quit.—There is no ſuch thing as an *Amble*, in the manage; the riding-maſters allowing of no other paces, beſide walk, trot, and gallop: their reaſon is, that a horſe may be put from a trot to a gallop, without ſtopping him; but not from an *Amble* to a gallop, without ſuch ſtop; which loſes time, and interrupts the juſtneſs and cadence of the manage.

There are various practices and methods of diſcipline, for bringing a young horſe to *Amble*: ſome chooſe to toil him in his foot-pace through new-plowed lands; which naturally inures him to the ſtroke required in the *Amble*. But its inconveniences are, the weakneſs and lameneſs that ſuch diſorderly toil may bring on a young horſe.

Others attempt it by ſudden ſtopping, or checking him in the cheeks, when in a gallop; and thus putting him into an amazedneſs, between gallop and trot; ſo that loſing both, he neceſſarily ſtumbles upon an *Amble*.—But this is apt to ſpoil a good mouth and rein; and expoſes the horſe to the danger of a hoof-reach, or ſinew-ſtrain, by over-reaching, &c.

Others prefer *Ambling* by weights, as the beſt way; and to this end, ſome overload their horſe with exceſſive heavy ſhoes; which is apt to make him interfere, or ſtrike ſhort with his hind feet.—Others fold leaden weights about the fetlock paſterns; which are not only liable to the miſchiefs of the former, but put the horſe in danger of incurable ſtrains, cruſhing of the coronet, and breeding of ring-bones, &c.—Others load the horſe's back with earth, lead, or the like maſſy ſubſtance; but this may occaſion a ſwaying of the back, overſtraining the fillets, &c.

Some endeavour to make him *Amble* in hand, ere they mount his back, by means of ſome wall, ſmooth pail or rail, and by checking him in the mouth with the bridle-hand; and correcting him with a rod on the hinder hoofs, and under the belly, when he treads falſe. But this is apt to drive a horſe to a deſperate phrenſy, before he can be made to underſtand what they would have of him; and to rear, ſpraul out his legs, and to make other antic poſtures, which are not eaſily quitted again. Others think to effect it by a pair of hind ſhoes with long ſpurns or plates before the toes; and of ſuch length, that if the horſe offers to trot, the hind-foot beats the fore-foot. But this occaſions wounds of the back-ſinews, which often bring on an incurable lameneſs.

Some attempt to procure an *Amble*, by folding fine, ſoft liſts ſtrait about his gambrels, in the place where he is gartered for a ſtiffle ſtrain; and turn him thus to graſs for two or three weeks, and afterwards take away the liſt.—This is a Spaniſh method, but diſapproved; for though a horſe cannot then trot but with pain, yet the members muſt be ſufferers; and though the *amble* be gained, it muſt be ſlow and unſightly; becauſe attended with a cringing in the hind-parts.—In effect, *ambling* by the tramel, as practiſed by us, appears the neareſt to nature, and the beſt and moſt aſſured way.

There are divers errors however uſually practiſed in this method: as, that the tramel is often made too long, and ſo gives no ſtroke; but makes a horſe hackle and ſhuffle his feet confuſedly; or too ſhort, which makes him volt and twitch up his hind-feet ſo ſuddenly, that by cuſtom it brings him to a ſtring-halt; from which he will ſcarce ever be recovered. Sometimes the tramel is miſplaced, and to prevent falling put about the knee, and the hind-hoof.—In which caſe, the beaſt cannot give any true ſtroke, nor can the fore-leg compel the hind to follow it: or if, to evade this, the tramel be made ſhort and ſtrait, it will preſs the main ſinew of the hind-leg, and the fleſhy part of the fore-thighs; ſo that the horſe cannot go without halting before, and cringing behind.

As to the matter of the tramel; ſome make it all of leather, which is inconvenient; in that it will either ſtretch or break, and thus confound the certainty of the operation. In a true tramel, the ſide-ropes are to be ſo firm, as not to yield a hair's breadth; the hoſe ſoft; and to lie ſo cloſe, as not to move from its firſt place; and the back-band flat, no matter how light, and to deſcend from the fillet ſo as not to gall.

When the horſe, by being trameled on one ſide, has attained to *amble* perfectly in the hand, it is to be changed to the other ſide, and that is to be likewiſe brought to rule.

When, by this changing from one ſide to another, with a half-tramel, the horſe will run and *amble* in the hand readily and ſwiftly, without ſnappering and ſtumbling; which is ordinarily done by two or three hours labour; the whole tramel is to be put on, with the broad, flat, back-band, and both ſides trameled alike.

AMBLYGON *, or Amblygonium, in geometry, denotes a triangle, one of whoſe angles is obtuſe, or conſiſting of more than ninety degrees.

* The word is Greek; compoſed of αμβλυς, obtuſe; and γωνια, angle.

AMBLYOPY *, Amblyopia, in medicine, a diſeaſe of the eyes, otherwiſe called, *gutta ſerena*, and *amauroſis*. See Gutta *Serena*, &c.

* The word comes from αμϐλυς, *obtuſus*, dull; and οπτομαι, *video*, I ſee.

AMBO *, or Ambon, a kind of pulpit or deſk, in the antient churches, where the prieſts and deacons ſtood to read or ſing part of the ſervice, and preach to the people: called alſo *Analogium*.

* The term is derived from αναϐαινειν, to mount—The *Ambo* was mounted upon two ſides; whence ſome alſo derive the appellation from the Latin *ambo*, both.

The *ambo* was aſcended by ſteps: which occaſioned that part of the office performed there to be called the *Gradual*.—The goſpel was read at the top of the *ambo*; the epiſtle a ſtep lower.

AMBROSIA *, in the heathen theology, *&c.* a delicious kind of food, whereon the gods were ſuppoſed to feed.

* The word is compounded of the privative particle α, and βροτος, *mortal*; in regard it rendered thoſe who fed thereon immortal, or becauſe it was the food of the immortals.

Lucian, raillying the poetical gods, tells us, that *ambroſia* and *nectar*, of which one is the meat and the other the drink of the gods, were not ſo excellent as the poets deſcribe them; ſince theſe deities would leave them for blood and fat, which they come to ſuck from the altars like flies.

AMBROSIAN *Rite*, or office, denotes a particular office or formula of worſhip, uſed in the church of Milan; which is ſometimes alſo called the *Ambroſian* church.

The denomination takes its riſe from St. Ambroſe, archbiſhop of Milan in the fourth century, who is uſually ſuppoſed to have been the author of this office. Yet ſome are of opinion that the church of Milan had an office different from that of the Roman, and other churches of Italy, before the time of that father. In effect, till the time of Charlemaign, each church had its ſeveral office: and when in after-days the pope took on him to impoſe the Roman office on all the other churches of the weſt, that of Milan ſheltered itſelf from the impoſition, under the name and authority of St. Ambroſe; from which time, the phraſe *Ambroſian rite* has obtained, in contradiſtinction to the Roman rite.

We alſo meet with the *Ambroſian chant*, or ſong; which was diſtinguiſhed from the Roman, in that it was ſtronger and higher.

The public library of Milan is alſo called the *Ambroſian library*.

AMBRY, the place where the arms, plate, veſſels, and every thing belonging to houſe-keeping, were formerly kept.

Hence, probably the *ambry* at Weſtminſter was ſo called, becauſe formerly ſet apart for that uſe; or rather, from *aumonery*, a houſe adjoining to an abbey, in which the charities were laid up, and diſtributed to the poor. See Alms, and Almonry.

AMBULATION, or walking. See the article Exercise.

Ambulation, in phyſic, is uſed by ſome for the ſpreading of a gangrene or mortification.

AMBULATORY *, a term antiently applied to ſuch courts, *&c.* as were not fixed to any certain place; but held ſometimes in one place, and ſometimes in another.—In oppoſition to ſedentary courts.

* The word is formed of the Latin *ambulare*, to walk.

The court of parliament was antiently *ambulatory*; ſo alſo were the courts of king's-bench, *&c.*

We ſometimes alſo ſay, in a moral ſenſe, a man's will is *ambulatory*, to the time of his death; meaning, that he has it always in his power to revoke it.

The Poles, even the nobility and court, find no pleaſure but in the *ambulatory* or rambling life. *Dalerac.* T. 2. Op. 76. c. 4.—It is in vain men have pretended to fix themſelves in cities: the continual deſire in the inhabitants to be travelling out of them, this way or that, ſhews, that the itinerant or ſcenite life is the life of nature.

AMBURBIUM *, or Amburbiale *Sacrum*, in antiquity, a religious feaſt, or ceremony, practiſed among the Romans; wherein they made proceſſions around their city.

* The word is compounded of *ambio*, I go round; or of *amb*, or *ambu*, an antient prepoſition, ſignifying *around*, and *urbs*, a city.

Scaliger, in his notes on Feſtus, followed by many others, maintains the *amburbia* to be the ſame with *ambarvalia*. See Ambarvalia.

Hence, alſo, we have *amburbiales victimæ*, the victims carried along in the proceſſion; and afterwards ſacrificed.

AMBUSCADE, Ambush, Ambushment, a body of men who lie in a wood, *&c.* in readineſs to ruſh out upon, or incloſe an enemy unawares.—Or, the place wherein ſuch a corps hide themſelves.

AMBUSTIO, in medicine, a burn. See Burn, and Burning.

AMEL, or *Enamel*. See the article Enamel.

AMEN, a church-term, uſed as the concluſion of all ſolemn prayers, *&c.* and ſignifying, *ſo be it*, or *fiat*.

The Hebrews had four kinds of *amen*. That juſt mentioned they called *amen paſt*; which was accompanied with the greateſt attention and devotion: in this ſenſe, the word has paſſed into almoſt all languages, without any alteration.

Some authors are of opinion, that the word *amen* is formed of the initial letters of theſe words, *Adonai Melech Neeman*, *Dominus Rex Fidelis*; an uſual expreſſion among the Jews, when they would give weight or ſanction to any thing they ſaid. In effect, it is known, that to expreſs the words ארוני מלך נאמן *Adonai Melech Neeman*, in the ordinary way of abbreviatures; the rabbins only take the initial letters; which, joined together, are really the letters of the word אמן *amen*.

On the other hand, there are ſome of their cabbaliſts, who, according to their uſual manner of finding a hidden meaning in words, which they call *notaricon*, out of the letters of the word *amen* form the whole phraſe, *Adonai Melech Neeman*.

Yet it is certain alſo, that the word *amen* was in the Hebrew tongue before ever there were any ſuch things as cabbala or cabbaliſts in the world: as appears from Deuteronomy, Chap. XXVII. ver. 15.

The primitive of the word *amen* is the verb *aman*, which, in the paſſive voice, ſignifies to be true, faithful, conſtant, *&c.*—Hence came the noun אמן *amen*, which ſignifies, *truth*. And, laſtly, of this noun *amen* they made a kind of affirmative adverb, which, when placed at the end of any phraſe or propoſition, ſignifies, *ſo be it*, *be it true*, *I acquieſce in it*, &c. Thus, in the paſſage above cited from Deuteronomy, Moſes ordered the Levites to cry aloud to the people, Curſed is he that makes any graven or molten image, *&c.* and all the people ſhall ſay, *Amen*, *i. e.* yes, may he be curſed, we deſire, we agree to it.—But at the beginning of a phraſe, as in ſeveral paſſages of the New Teſtament, it ſignifies truly, verily—When it is redoubled, or repeated twice together, as is always done by St. John, it has the effect of a ſuperlative; agreeably to the genius of the Hebrew tongue, and her two daughters, the Chaldee and Syriac.—In this ſenſe we are to underſtand *amen, amen, dico vobis*. The evangeliſts uſually preſerve the Hebrew word *amen*, in their Greek αμην, though St. Luke ſometimes renders it by αληθως, *truly*, or ναι, *certainly*.

AMENABLE, or Amainable, is applied in our law-books to a woman, who is ſuppoſed to be governable by her huſband.

AMEND, or Amende, in the French cuſtoms, a mulct, or pecuniary puniſhment, impoſed by a ſentence of the judge; for any crime, falſe proſecution, or groundleſs appeal.

AMENDE Honorable denotes an infamous kind of puniſhment, uſed in France, *&c.* on traitors, parricides, ſacrilegious perſons, and other heinous criminals.

It conſiſts in this, that the offender is delivered up to the common hangman; who, having ſtript him to his ſhirt, and put a rope about his neck, and a wax taper in his hand, leads him to the court, where he is to beg pardon of God, the king, the court, and his country.

Sometimes the puniſhment ends here; and ſometimes death, or the galleys, are added.

The phraſe *amende honorable* is alſo uſed by way of alluſion; where a perſon is condemned to come into court, or into the preſence of ſome perſon injured, and make an open recantation, aſk pardon, *&c.*

AMENDMENT, in law, the correction of an error committed in a proceſs, and eſpied before judgment.

If the error be committed in giving judgment, *viz.* if a wrong judgment be given, there they cannot amend it; but the party aggrieved muſt bring his writ of error.—However, where the fault appears to be in the clerk who writ the record, it may be amended; chiefly if it be in matter of fact, not in point of law.

AMERCEMENT, or AMERCIAMENT, in law, a pecuniary puniſhment impoſed upon offenders, at the diſcretion of the court; frequently alſo called *miſericordia.*

There is this ſtated difference between fines and *amercements*; that fines are puniſhments certain, and determined by ſome ſtatutes; but *amercements* are arbitrary impoſitions, proportioned to the fault, and wholly at the mercy of the court. —Manwood, in his *Foreſt-law*, makes another difference; as if an *amercement* were a more eaſy and merciful penalty, and a fine a more ſharp and grievous one.

In the new terms of the law, *amercement* is ſaid to be properly a penalty aſſeſſed by the peers or equals of the party *amerced*, for an offence done; for which he puts himſelf upon the mercy of the lord.

Amerciament royal is uſed by ſome to denote a pecuniary puniſhment laid upon a ſheriff, coroner, or ſuch-like officer of the king, by juſtices, for ſome offence or abuſe in his office.

AMERICAN *Ocean.* See the article OCEAN.

AMERICAN *Weights.* See the article WEIGHTS.

AMETHYST, in natural hiſtory, a precious ſtone, of a violet colour, bordering on purple.

Plutarch ſays, the *amethyſt* takes its name from its colour; which, according to him, reſembles that of wine mixed with water; and not from its preventing drunkenneſs: which, however, was a common opinion, and gave occaſion to its being hung about the necks of great drinkers.—Thoſe who aſcribe this virtue to the *amethyſt*, derive its name from the privative *α*, and μεϑυσκω, to inebriate. See GEM.

There are divers ſorts of *amethyſts*:—The Oriental, which is the hardeſt, the ſcarceſt, and moſt valuable, and which is of a deep-purple colour; the German, which is of a violet colour; and the Spaniſh, which has the colour of a panſy.

There are ſome orientals alſo of a paler colour, and others white, and like the diamond.—There are alſo beautiful ones found in the Pyreneans, and in the mountains of Auvergne.

Amethyſts are dug in a hill named St. Sigminont, two leagues from Vict in Catalonia.—They find the ſtones by following a vein of rediſh or black earth, or a vein in the rock ſo coloured. They are all hexangular, and pointed like cryſtal. There are three ſorts: the beſt are the blackeſt or deepeſt violet; others are almoſt quite white; and ſome few are tinctured with yellow. Sometimes there is a great number found ſticking together, like the Briſtol diamonds; but theſe are never good: the beſt are found looſe in the chinks of the rock, in a fatty rediſh or yellowiſh earth. They rake out this earth with long narrow knives, which enter the chinks; and then crumble it with their fingers to feel for the ſtones. V. *Ray. Trav.* p. 402.

The Occidental *amethyſt* is not extremely hard; but may be cut with a leaden wheel, ſmeared with emery moiſtened in water.—It is poliſhed on a pewter wheel with tripoli.—It is eaſily engraven on, either in creux or relievo. See Supplement, article AMETHYST.

AMETHYST, in heraldry, ſignifies the purple colour in the coat of a nobleman, which, in gentlemens eſcutcheons below that degree, is called *purpure*; and in thoſe of ſovereign princes, *mercury.*

AMIABLE *Numbers*, denote numbers which are mutually equal to the whole ſum of each other's aliquot parts.—Such are the numbers 284 and 220. See NUMBER.

AMIANTHUS *Lapis*, in natural hiſtory, the ſame with aſbeſtos. See ASBESTOS.

AMICTUS, in our antient writers, the uppermoſt of the ſix garments, worn by prieſts.—It was tied round the neck, *Ne inde ad linguam tranſeat mendacium*; and covered the breaſt and heart, *Ne vanitates cogitet.*

AMISS *Drawing*, ſee the article DRAWING.

AMISSA *Lex.* See the article LEX.

AMITTERE *Legem Terræ*, a law-phraſe, ſignifying, the forfeiture of the right of ſwearing in any court or cauſe; or the becoming infamous. See LAW.

This is the puniſhment of a champion overcome, or yielding in the combat; of jurors found guilty in a writ of attaint; and of perſons outlawed.

AMMA, or HAMMA, a girdle, or truſs uſed in ruptures; to hinder the inteſtines from bearing down too much.

AMMI, or *Semen* AMMEOS, a kind of aromatic ſeed, of ſome uſe in medicine; the produce of a plant of the ſame name, called in Engliſh *Biſhops-weed.*

The ſeed is brought from the Levant: it is found to contain a great deal of eſſential oil, and volatile ſalt; and to be attenuating, aperitive, hyſteric, carminative, cephalic, and alexipharmic; being one of the four leſſer hot ſeeds.—It expels wind, provokes the menſes, *&c.*

According to Lemery, the plant takes its name *ammeos* from *αμμος*, *arena*; its ſeed being very like grains of ſand.

AMMON, or HAMMON, in antiquity, an epithet given to Jupiter in Libya; where was a celebrated temple of that deity under the denomination of *Jupiter Ammon.*

There has been a great diſpute about the origin of this name. — Some derive it from the Greek αμμος, ſand; in regard the temple was ſituate in the burning ſands of Libya; others borrow it from the Egyptian *anam*, a ram; as having been firſt diſcovered by that animal. — Others will have *Ammon* to ſignify the ſun; and the horns wherewith he is repreſented, the ſunbeams.

However this be, Jupiter *Ammon* was uſually repreſented under the figure of a ram; though in ſome medals he appears of a human ſhape, having only two rams horns growing out beneath his ears.

Cornu AMMONIS, in natural hiſtory. See CORNU *Ammonis.*

AMMONIAC.—*Gum* AMMONIAC; or, as it is ſometimes, though improperly, called, ARMONIAC; is a kind of gum, brought from the Eaſt-Indies; and ſaid to ouſe from an umbelliferous plant.

Dioſcorides ſays, it is the juice of a kind of ferula growing in Barbary; and that the plant that produces it was called *agaſyllis.*

Pliny calls the plant whence it flows, *metopion*; and ſays, the gum takes its name from the temple of Jupiter *Ammon*, nigh which it grows.

It ought to be in dry drops, white within, yellowiſh without, eaſily fuſible, reſinous, ſomewhat bitter, and of a very ſharp taſte and ſmell, ſomewhat like garlick.

The good *ammoniac* is of a pale colour, and not mixed with any ſcrapings of wood, ſtone, or ſand; this by the Greeks was called ϑραυσμα, fragment.—The other, which is full of ſtone or ſand, was called φυραμα, that is, mixture.

Some ſay, this gum ſerved the antients for incenſe in their ſacrifices.

It enters ſeveral medicinal compoſitions, as an attenuant and detergent, againſt diſorders ariſing from viſcidities, and grumes. — Outwardly applied, it is reſolutive and ſuppurative; and, as ſome ſay, will of itſelf draw out ſplinters, *&c.*

Some diſſolve the gum in vinegar, and other liquors, and call theſe *lac ammoniaci*; much uſed in aſthmas, and obſtructions of the lungs. It is frequently alſo given in pills.

Sal AMMONIAC is alſo a kind of ſalt; more uſually written ARMONIAC. See ARMONIAC.

AMMUNITION *, in general, ſignifies all ſorts of warlike ſtores and proviſions, more eſpecially powder and ball.

* The word is formed of the Latin *amonitio*, which, according to Du Cange, was uſed in the corrupt ſtate of that language for *ſubſiſtence.*

AMMUNITION-*Bread*, is what is provided for, and diſtributed daily to, the ſoldiers of an army or gariſon.

Such an officer has ſo many rations of *ammunition-bread*, &c.

AMNESTY *, or AMNISTY, a kind of general pardon, which a prince grants to his ſubjects, by a treaty, or edict; wherein he declares, that he forgets and annuls all that i paſt, and promiſes not to make any farther inquiry into th ſame.

* The word is Greek, αμνηϛια, *amneſtia*; which was th name of an antient law of this kind, paſſed by Thraſybulu upon the expulſion of the thirty tyrants out of Athens.—Andocides, an Athenian orator, whoſe life is written by Plutarch, and of whom we have an edition, of the year 1575 gives us, in his oration *upon myſteries*, a formula of the *amneſty*, and the oaths taken thereupon.

Amneſties are uſually practiſed upon reconciliations of the ſovereign with his people, after rebellions, general defections *&c.*—Such, *e. gr.* was the act of oblivion granted at kin Charles's reſtoration.

AMNIOS *, or AMNION, in anatomy, the innermoſt membrane, wherewith the fœtus of the womb is immediately i veſted.

* The word ſeems to be derived from the Greek αμνος, a lam *q. d. pellis agnina*, lambs-ſkin.

The *Amnios* is a white, ſoft, thin, tranſparent membran making part of the ſecundine, and lying under the chorion.

It contains a limpid liquor, like a thin gelly-broth; wi whi which the ſtomach of the fœtus being always found full, it is ſuppoſed to be the matter of its nouriſhment.

On its outſide lies the allantois, or urinary membrane. In ſome ſubjects, the urinary membrane and chorion ſtick ſo cloſe to one another, that they appear to be but one. The *Amnios* hath all its veſſels from the ſame origin as the chorion.

AMOMUM, in the antient botany, a ſmall and rich aromatic fruit, growing in bunches like grapes, valued highly for its medicinal virtues.

The commentators on Pliny, and Dioſcorides, have never been able to agree upon the antient *amomum*; the generality of them pitch on fruits different from ours.—Some will have the roſe of Jericho paſs for it.—F. Camelli is poſitive he has diſcovered the real *amomum* of Dioſcorides, and that it is the Tugus, or Birao, or Caropi, growing in the Philippine iſlands; the grains or berries whereof are worn by the natives about their necks; both on account of their agreeable odour, and of their ſuppoſed virtue in preſerving from infection, curing the ſting of the ſcolopendra, &c. *Phil. Tranſact.* N° 248.

Scaliger is confident, that the *amomum* of the antients was not a fruit; but the wood itſelf, which bore ſome reſemblance to a bunch of grapes, and was particularly uſed in embalming of bodies: and hence, ſays he, the term *mummy* was given to the bodies of Egyptians, embalmed with it.

The modern *amomum*, uſed in the ſhops, under the denomination of *amomum vulgare*, or *amomum officinarum*, appears to be the ſeed of the *ſiſon* or *ſium* of the antients, anſwering to what in Engliſh we call *baſtard-ſtone parſley*.

The true *amomum* of the antients reſembles the muſcat grape; and grows like it, in cluſters; it is about the bigneſs of a large chich-pea, round, membranous, and divided into three cells, which contain ſeveral brown angular grains; of a very ſtrong aromatic taſte and ſmell; and is of the cardamom kind.

This fruit is brought from the Eaſt-Indies; and makes part of the compoſition of Venice-treacle.—It is of a hot, ſpicy taſte and ſmell. *Vid. Rauwolf. Trav. p.* 85.

Beſides this, there is likewiſe another paler ſeed, which bears the name *amomum*; but neither this nor the former are in much uſe in phyſic.

AMORTIZATION *, or AMORTISEMENT, in law, the act of turning lands into mortmain, *i. e.* of alienating or transferring them to ſome corporation, guild, or fraternity, and their ſucceſſors.

* The word is formed of the French *amortir*, to extinguiſh, put out, &c. See EXTINGUISHMENT.

The term is alſo uſed for the licence or privilege which the king or ſuperior lord grants, to enable ſuch a corporation, &c. thus to receive lands in mortmain: which otherwiſe they cannot do.—There is always ſuppoſed to be ſome fine or acknowlegement paid the king, or the lord, in conſideration hereof; to make them ſatisfaction for ſeveral incidental dues and profits, which would have fallen to them in the common way; which are hereby cut off.

This practice was borrowed from the antient *Lex Papiria*, whereby it was forbidden to conſecrate any land to religious uſes, without the conſent of the people.

AMOVING, the act of removing or expelling another from his place, office, or the like.—We have a ſtatute for *amoving* papiſts out of London and Weſtminſter, and ten miles round the ſame. 1 *W.* and *M. c.* 9.

AMOVING *a guardian*, *amovendo cuſtode.* See CUSTODE.

AMPELITES, cannal coal, in natural hiſtory, a black, bituminous ſubſtance that diſſolves in oil; uſed to blacken the eye-brows, and the hair, withal: called alſo *pharmacitis.* See Supplement, article AMPELITES.

AMPHIARTHROSIS *, in anatomy, a neutral or dubious kind of articulation; diſtinguiſhed from the diarthroſis, in that it has no conſpicuous motion; and from the ſynarthroſis, in its not being without ſenſible motion.

* The word is derived from αμφι, both, and αρθρωσις, articulation; the *amphiarthroſis* being compounded of both the other ſorts.—Whence ſome alſo call it *diarthroſis ſynarthroidalis.*

Of this kind is the articulation of the ribs with the vertebræ; and that of the carpus with the metacarpus.

AMPHIBIOUS *, in natural hiſtory, a term applied to a ſort of animals which live both on land, and in the water; that is, which breathe the air, but paſs part of their time in the water, as affording them their chief food.

* The word comes from the Greek αμφι, *utrimque*, both ways, and ϐιος, *vita*, life; as living in either place.

Such are the frog, caſtor, otter, tortoiſe, ſea-calf, crocodile, &c.—Moſt of the *amphibious* kind, the caſtor and otter excepted, have peculiar proviſions in their ſtructure, to fit them for ſo various a way of living; particularly in the heart, lungs, foramen ovale, &c.

The term AMPHIBIOUS is ſometimes alſo extended to men, who have the faculty of living a long time under water.

We have divers inſtances of ſuch *amphibious* men; the moſt remarkable is of a Sicilian, named the *fiſh-colas.* Kircher relates, that, by a long habitude from his youth, he had ſo accuſtomed himſelf to live in water, that his nature ſeemed to be quite altered: ſo that he lived rather after the manner of a fiſh, than a man. The pearl-fiſhers alſo arrive at a ſurpriſeing art of this kind. See PEARL-FISHING.

AMPHIBIOUS *Plants.* See the article PLANTS.

AMPHIBLESTROIDES *, in anatomy, a tunic, or coat of the eye, more uſually called *retina.*

* The word is Greek, αμφιϐληςροειδης, compounded of αμφιϐληςρον, *rete*, net, and ειδος, form; by reaſon of its net-like texture: whence the Latins alſo call it *retiformis.*

AMPHIBOLOGY *, or AMPHIBOLIA, in grammar, a fault in language, whereby it is rendered obſcure, and liable to be underſtood in a double ſenſe. See AMBIGUOUS.

* The word comes from the Greek αμφιϐολος, ambiguous, and λογος, diſcourſe.

Amphibology is chiefly uſed in reſpect of a phraſe; as equivocal is in reſpect of a word.

Of this kind was that anſwer which Pyrrhus received from the oracle; *Aio te, Æacida, Romanos vincere poſſe:* where the *amphibology* conſiſts in this, that the words *te* and *Romanos*, may either of them precede, or either of them follow, the words *poſſe vincere*, indifferently. See ORACLE.

The Engliſh language uſually ſpeaks in a more natural manner, and is not capable of any *amphibologies* of this kind: nor is it ſo liable to *amphibologies* in the articles, as the French and moſt other modern tongues.

AMPHIBRACHYS *, the name of a foot in the Latin and Greek poetry; conſiſting of three ſyllables, the firſt and laſt whereof are ſhort, and that in the middle long.

* The word comes from αμφι, *circum*, and βραχυς, *brevis*, *q. d.* a foot ſhort at both ends, and long in the middle.—Among the antients it is alſo called *janius*, and *ſcolius. Diom.* iii. *p.* 475.

Such are the words *ămārĕ*, *ăbīrĕ*, *pătērnŭs*, Ὅμηρος, &c.

AMPHICTYONS, AMPHICTYONES, in antiquity, the deputies of the cities and people of Greece, who repreſented their reſpective nations in a general aſſembly; having a full power to concert, reſolve, and appoint, what they ſhould think fit, for the ſervice of the common cauſe.

The *Amphictyones*, in good meaſure, were the ſame with the ſtates general of the United Provinces; or rather, with what in Germany they call the diet of the empire.

The firſt aſſembly of this kind was held by the direction of *Amphictyon*, the third king of Athens, who propoſed by that means to bind the Greeks more firmly together; ſo as to render them a terror to the barbarous nations, their neighbours.—Theſe met twice a year at Thermopylæ, in the temple of Ceres, which was built in a large plain, near the river Aſopus; and were called *Amphictyons* from the name of the founder.

Pauſanias, in his liſt of the ten nations which compoſed that aſſembly, mentions only the Ionians, Dolopians, Theſſalians, Ænianians, Magneſians, Melians, Phthians, Dorians, Phocians, and Locrians. He ſays nothing of the Achaians, Eleans, Argians, Meſſenians, &c. Æſchines alſo gives an account of the cities admitted into it, in his oration, *De falſa Legatione.*

Acriſius afterwards inſtituted a new council of *Amphictyones*, on the model of the antient ones; who met twice a year in the temple of Delphos.—Each kind were indifferently called Αμφικτυονες, Πυληγοραι, Ἱερομνημονες, and their aſſembly Πυλαια.

The Romans never thought fit to ſuppreſs the meeting of the *Amphictyons.*—Strabo even aſſures us, that they aſſembled in his time.

AMPHIDROMIA, in antiquity, a feaſt celebrated the fifth day after the birth of a child.

AMPHIMACER *, a foot in the antient poetry, conſiſting of three ſyllables; the firſt and laſt whereof are long, and that in the middle ſhort. See FOOT, &c.

* The word is from the Greek αμφι, *circum*, and μακρος, *longus*, by reaſon both extremes are long.

Such are the words *ōmnĭūm*, *cāſtĭtās*, γρᾱμμᾰτων, &c.—This foot is alſo called *Creticus*, and ſometimes *Feſcennius. Diom.* iii. *p.* 475. *Quintil. l.* 9. c. 4.

AMPHIPOLES, in antiquity, archons, or chief magiſtrates of the city of Syracuſe. See ARCHON.

They were firſt eſtabliſhed by Timoleon, after his expulſion of Dionyſius the tyrant.—They governed Syracuſe for the ſpace of three hundred years; and Diodorus Siculus aſſures us, they ſubſiſted even in his time.

AMPHIPROSTYLE *, in the antient architecture, a kind of temple, which had four columns in front, and as many behind.

* The word is derived from the Greek αμφι, about, προ, before, and ςυλος, column.

AMPHISCII *, in geography and aſtronomy, the people who inhabit the torrid zone.

* The word comes from αμφι, about, and σκια, ſhadow.

They are thus denominated, as having their ſhadow turned ſometimes one way, and ſometimes another, *i. e.* at one time of the year to the north, and at another to the ſouth. See SHADOW.

The *amphiſcii* are called alſo *aſcii*. See Ascii.

AMPHISMILA*, or Amphismela, an anatomical knife, edged on both ſides.

* The word is formed from αμφι, *utrimque*, on both ſides; and σμιλη, knife.

AMPHITHEATRE*, a ſpacious building, of an oval figure, having its area or arena encompaſſed with ſeveral rows of ſeats, riſing gradually one over another; with portico's both within and withoutſide.

* The word is derived from the Greek αμφι, about; and θεατρον, theatre; which comes from θεαομαι, *ſpecto, contemplor*; ſo that an *amphitheatre*, ſtrictly ſpeaking, is a place whence a perſon may ſee all around him.

Among the antients, the *amphitheatre* was appointed for the exhibiting of ſpectacles or ſhews to the people: as the combats of gladiators, and thoſe of wild beaſts.

Their theatre was built in form of a ſemicircle, only exceeding a juſt ſemicircle by one fourth part of the diameter; and the *amphitheatre* was nothing elſe but a double theatre, or two theatres joined together: ſo that the longeſt diameter of the *amphitheatre* was to the ſhorteſt, as 1 ½ to 1. See Theatre.

There are *amphitheatres* ſtill ſtanding at Rome, at Pola (1), at Niſmes, &c.—The *amphitheatre* of Veſpaſian, called the Coliſeum, and that at Verona in Italy, are the moſt celebrated now remaining of all antiquity (2). See Coliseum.—Remains of *amphitheatres* are ſhewn alſo at Arles, Bourdeaux, &c.

(1) The *amphitheatre* at Pola, an antient republic of Iſtria, is very intire: it conſiſts of two orders of Tuſcan pillars, one over the other.—The lower have pedeſtals, which is extraordinary; this order having ſcarce ever more than baſes to ſupport them. *Vernon, in Ray's Trav. t. 2. p.* 355.

(2) The *amphitheatre* of Titus is computed to have been capable of holding 85,000 ſpectators—That of Verona is the beſt preſerved: for, though moſt of the great and beſt ſtones of the outſide are picked out; yet the great vault, on which the rows of the ſeats are laid, is intire: the rows alſo (which are 44 in number, are intire. Every row is a foot and a half high, and as much in breadth; ſo that a man ſits conveniently in them: and allowing, for a ſeat, a foot and a half, the whole will hold 23,000 perſons.

Pliny mentions an *amphitheatre* built by Curio, which turned on large iron pivots; ſo that of the ſame *amphitheatre* two ſeveral theatres were occaſionally made, whereon different entertainments were ſometimes preſented at the ſame time.

AMPHORA, in antiquity, an earthen veſſel, which ſerved as a kind of liquid meaſure, among the antient Greeks and Romans *.

* It is called in Homer Αμφιφορευς, and by ſyncope Αμφορευς, on account of its two anſæ or handles for carriage.—It is the ſame with the *quadrantal*.

The *amphora* was the twentieth part of the culeus, and contained forty-eight ſextaries; amounting to about ſeven gallons one pint, Engliſh wine-meaſure. *Arbuth.*

Suetonius tells us of a man who ſtood for the queſtorſhip, and who drank an *amphora* of wine at one meal, with the emperor Tiberius.

Amphora was ſometimes alſo uſed as a dry meaſure, containing three buſhels; the ſtandard whereof was kept at Rome in the Capitol, to prevent falſe meaſures.

Amphora is alſo uſed to denote the largeſt liquid meaſure in uſe among the Venetians. The *amphora* contains four bigots, ſeventy-ſix muſtachi, or two boats or muids.

AMPLIFICATION, in rhetoric, part of a diſcourſe or ſpeech, wherein a crime is aggravated, a praiſe or commendation heightened, or a narration enlarged, by an enumeration of circumſtances; ſo as to excite the proper emotions in the ſouls of the auditors.

Such is the paſſage in Virgil, where, inſtead of ſaying merely, that Turnus died, he *amplifies* his death.

—Aſt illi ſolvuntur frigore membra,
Vitaque cum gemitu fugit indignata ſub umbras.

Amplification, according to Cicero, is a vehement argumentation; a forcible affirmation, that perſuades by moving the paſſions.

Some authors define *amplification*, after Iſocrates, to be a diſcourſe which makes great things of little; or which raiſes and exaggerates little things ſo as to make them appear great.—But, in this ſenſe, *amplification* ſhould rather become a ſophiſt or juggler, than an orator.

The maſters of eloquence make *amplification* to be the ſoul of diſcourſe.—Longinus ſpeaks of it as one of the principal means which contribute to the ſublime; but he cenſures thoſe who define it a diſcourſe which magnifies things; this equally agreeing to the ſublime, the pathetic, &c.—The ſame author diſtinguiſhes *amplification* from the ſublime by this, that the latter conſiſts wholly in the elevation of words and ſentiments, whereas the former conſiſts alſo in their multitude: the ſublime is ſometimes found in a ſingle thought; but *amplification* cannot ſubſiſt, excepting in abundance.

There is likewiſe a difference between the *amplification*, and the proof; in that the one ſerves to clear the point, and the other to heighten, and exaggerate it.

There are two general kinds of *amplification*; the one *of things*, the other of words.—The firſt is produced in divers manners; as, 1°, By a multitude of definitions: thus it is Cicero *amplifies* on hiſtory: *Hiſtoria eſt teſtis temporum, lux veritatis, vita memoriæ, magiſtra vitæ, nuntia vetuſtatis.*—2°, By a multitude of adjuncts; of which we have a fine inſtance in Virgil's lamentation for Cæſar's death, by enumerating the many prodigies and monſters that either preceded or ſucceeded it.—*Vox quoque per lucos vulgo exaudita ſilentes ingens, & ſimulacra modis pallentia miris viſa ſub obſcurum noctis; pecudeſque locutæ; infandum! ſiſtunt amnes, terræque dehiſcunt; et mæſtum illacrymat templis ebur, æraque ſudant.* 3°, By a detail of cauſes and effects.—4°, By an enumeration of conſequences.—5°, By compariſons, ſimilitudes, and examples. See Comparison, &c.—6°, By the contraſt of antithets, and by rational inference.

Amplification by words is effected ſix ways.—1°, By uſing metaphors. 2°, By hyperboles.—3°, By ſynonyma.—4°, By ſplendid and magnificent terms; as that of Horace, *Scandit æratas vitioſa naves cura, nec turmas equitum relinquit, ocyor cervis, & agente nimbos ocyor euro.*—5°, By periphraſes, or circumlocutions.—6°, By repetition.—To which may be added, by gradation.

AMPLITUDE *of the range of a projectile*, denotes the horizontal line ſubtending the path in which it moved. See Projectile.

Amplitude, in aſtronomy, an arch of the horizon, intercepted between the true eaſt or weſt point thereof, and the centre of the ſun, or a ſtar, at its riſing or ſetting.

Amplitude is of two kinds; *eaſtern*, or ortive; and *weſtern*, or occiduous.

Eaſtern, or *riſing* Amplitude, *amplitudo ortiva*, is the diſtance between the point where the ſtar riſes, and the true point of eaſt, wherein the equator and horizon interſect.

Weſtern, or *ſetting* Amplitude, *amplitudo occidua*, is the diſtance between the point wherein the ſtar ſets, and the true point of weſt in the equinoctial.

The eaſtern and weſtern *amplitudes* are alſo called *northern* and *ſouthern*, as they fall in the northern and ſouthern quarters of the horizon.

The complement of the eaſtern or weſtern *amplitude* to a quadrant, is called the *azimuth*.

To find the ſun's or a ſtar's *amplitude*, either riſing or ſetting, by the globe; ſee Globe.

To find the ſun's *amplitude* trigonometrically; having the latitude, and the ſun's declination, given.—Say, as the coſine of the latitude is to radius, ſo is the ſine of the preſent declination to the ſine of the *amplitude*.—Suppoſe, *e. gr.* the latitude 15° 30′, and the common 11° 50′;

Sine comp.	74,30	57310
Sine of declin.	11,50	9,31184
		9,88494

amplitude required 50° 7′.

Magnetical Amplitude is an arch of the horizon, contained between the ſun, at its riſing, and the eaſt or weſt point of the compaſs; or it is the difference of the riſing or ſetting of the ſun, from the eaſt or weſt points of the compaſs.

It is found by obſerving the ſun, at its riſing or ſetting, by an azimuth compaſs. If the compaſs had no variation, the *magnetical amplitude* would be the ſame as the true one.

AMPUTATION, in chirurgery, the operation of cutting off a limb, or other part of the body, with an inſtrument of ſteel.

In caſes of mortification, recourſe is frequently had to *amputation*.

The uſual method of performing it, in the inſtance of a leg, is as follows.—The proper part for the operation being four or five inches below the knee; the ſkin and fleſh are firſt to be drawn very tight upwards, and ſecured from returning by a ligature two or three fingers broad: above this ligature another looſe one is paſſed, for the gripe; which, being twiſted by means of a ſtick, may be ſtraitened to any degree at pleaſure.

Then, the patient being conveniently ſituated, and the operator placed on the inſide of the limb; which is to be held by one aſſiſtant above, and another below, the part deſigned for the operation; and the gripe being ſufficiently twiſted, to prevent too large an hæmorrhage; the fleſh is, with a ſtroke or two, to be ſeparated from the bone with the diſmembring-knife. Then the perioſteum being alſo divided from the bone with the back of a knife, ſaw the bone aſunder with as few ſtrokes as poſſible.—When two parallel bones are concerned, the fleſh that grows between them muſt likewiſe be ſeparated before the uſe of the ſaw.

This being done, the gripe may be ſlackened; to give an opportunity for ſearching for the large blood-veſſels, and ſecuring the hæmorrhage at their mouths, either by the actual cautery, the ligature, ſtitching them up, applying vitriol buttons, or the like. After this a dry pledget of lint, or one dipped in ſpirit of wine, and ſprinkled with diapente, may be applied to the ſtump: then looſen the firſt ligature, and pull both the ſkin and fleſh as far as conveniently may be, over the ſtump, to cover it; and ſecure them with the croſs-ſtitch, made at the depth of half, or three quarters, of an inch in the ſkin.

It remains, to apply over the whole ſtump two large pledgets, dipped in oxycrate and dried, and afterwards charged with aſtringents; and over theſe to apply a plaſter of the deminio, or ſimple diachylon; and over all theſe, an ox-bladder, wetted in oxycrate; and finally, over all, a croſs-cloth pretty tight, ſecured with rollers.

After all this, the gripe may be ſlackened, ſo as to be made eaſy to the patient; or even intirely taken away, after he is put to bed; in which he muſt lie with the ſtump ſomewhat raiſed; an aſſiſtant for twelve or fourteen hours keeping faſt the dreſſing with his hand, to prevent any violent hæmorrhage.—In three or four days the dreſſing may be removed; and proper digeſtives, mixed with aſtringents, applied; having an actual cautery, or ſome powerful ſtyptic, in readineſs, in caſe of a violent hæmorrhage at the firſt opening. M. Sabourin, ſurgeon of Geneva, is recorded in the hiſtory of the Royal Academy of Sciences, an. 1702. for an improvement in the method of *Amputation*, propoſed to that academy.—The whole ſecret conſiſts in ſaving a piece of fleſh and ſkin, a little lower than the place where the ſection is to be; wherewith the ſtump is to be afterwards covered.—The advantages hereof are, that, in leſs than two days time, this fleſh unites with the extremes of the divided veſſels, and ſo ſaves the neceſſity either of binding the ends of thoſe veſſels with thread, or of applying cauſtics or aſtringents; which are methods very dangerous, or at leaſt very incommodious. Add, that the bone, thus covered up, does not exfoliate.

AMSDORFIANS, in church-hiſtory, a ſect of Proteſtants, in the ſixteenth century; ſo denominated from their leader *Amſdorf*.

Saunders, *Hær*. 186. repreſents them as maintaining, that good works were not only unprofitable, but even oppoſite and pernicious to ſalvation.—The *Amſdorfians* were rigid confeſſioniſts.

AMULET*, Amuletum, a kind of external medicament, to be worn about the neck, or other part of the body; to prevent, or remove, diſeaſes.

* The word *Amulet* is formed of the Latin *amoletum*, *amolimentum*; of *amoliri*, to remove, drive away.

Such are quills of quickſilver, or arſenic, which ſome hang on the neck, or wear under the ſhirt, againſt the plague, and other contagious diſeaſes; as alſo the blood-ſtones worn by others againſt hæmorrhages; and that worn by the women of the Eaſt-Indies to bring the menſes.

Amulets are alſo frequently no other than a ſort of ſpells, or charms; conſiſting of quaint words and characters, ſuppoſed to have the virtue of warding off ill.—Pliny makes frequent mention of them.

The Greeks called theſe kind of remedies *φυλακτηρια*, phylacteries; *περιαπτα*, periapta; *αποτελεσματα*, *περιαμματα*, *βρεβια*, and *εγκολπια*.—The Latins call them *amuleta*, *appenſa*, *pentacula*, *&c.*

The council of Laodicea forbids eccleſiaſtics to wear ſuch *Amulets* and phylacteries, on pain of degradation. St. Chryſoſtom and St. Jerom are likewiſe zealous againſt the ſame practice. *Hoc apud nos*, ſays this laſt father, *ſuperſtitioſæ mulierculæ, in parvulis evangeliis, & in crucis ligno, & iſtiuſmodi rebus, quæ habent quidem zelum Dei, ſed non juxta ſcientiam, uſque hodie factitant*. See Kirch. *Oedip. Ægypt*.

Amulets are now much fallen from the repute they were antiently in; yet the great Mr. Boyle alleges them as an inſtance of the ingreſs of external effluvia into the habit; in order to ſhew the great poroſity of the human body.—He adds, that he is perſuaded ſome of theſe external medicines do anſwer: for that he himſelf, having once been ſubject to bleed at the noſe, and reduced to uſe ſeveral remedies to check it; found the moſs of a dead man's ſkull, though only applied ſo as to touch the ſkin till the moſs was warm thereby, the moſt effectual of any.

A memorable thing of this kind was communicated to Zwelfer, by the chief phyſician to the ſtates of Moravia; who, having prepared ſome troches of toads after Helmont's manner, not only found, that, being worn as *Amulets*, they preſerved him and his domeſtics and friends from the plague; but being put on the plague-ſores of others, they were greatly relieved, and even ſaved, thereby.

The ſame Mr. Boyle ſhews how the effluvia, even of cold *Amulets*, may, in tract of time, pervade the pores of a living animal; by ſuppoſing an agreement between the pores of the ſkin, and the figure of the corpuſcles. Bellini has demonſtrated the poſſibility of the thing in his laſt propoſitions, *De Febribus*; and the like is done by Dr. Wainwright, Dr. Keill, *&c.*

Amulet, in cookery. See the article Omelet.

AMURCA, in pharmacy, a medicine made of the refuſe, or recrement, of expreſſed olives.—It is an aſtringent. See Olive.

AMY*, in law, the perſon next of kin to an orphan, or infant; who is to be intruſted for him: properly called *procheín amy*. See Prochein, *&c.*

* The word is French, and literally ſignifies *Friend*.

AMYGDALÆ. See the article Almond.

AMYGDALATE, an artificial milk, or emulſion, made of blanched almonds, *&c.*

AMYLUM. See the article Starch.

AMYNTICA *emplaſtra*, in pharmacy, defenſative, or ſtrengthening, plaſters.

ANA, āā, in medicine, denotes an equal quantity of any things, whether in liquid or dry meaſure.

Hence *anatica proportio* is uſed by ſome writers to ſignify the *ratio*, or *proportion of equality*.

Ana, in matters of literature, a Latin termination, adopted into the titles of ſeveral books in other languages.—*Ana's*, or *books in ana*, are collections of the memorable ſayings of perſons of learning, and wit; much the ſame with what we otherwiſe call *table-talk*.

Wolfius has given the hiſtory of books in *ana*, in the preface to the *Caſauboniana*: he there obſerves, that though ſuch titles be new, the thing itſelf is very old; that Xenophon's books of the deeds and ſayings of Socrates, as well as the dialogues of Plato, are *Socratiana*: that the apophthegms of the philoſophers, collected by Diogenes Laertius; the ſentences of Pythagoras, and thoſe of Epictetus; the works of Athenæus, Stobæus, and divers others: are ſo many *Ana's*. Even the *Gemara* of the Jews, with ſeveral other oriental writings, according to Wolfius, properly belong to the ſame claſs. To this head of *Ana* may likewiſe be referred the *Orphica*, the *Pythagoræa*, *Æſopica*, *Pyrrhonea*, &c.

The *Scaligerana* was the firſt piece that appeared with a title in *Ana*. It was compoſed by Iſan de Vaſſan, a young Champanois recommended to Joſ. Scaliger by Caſaubon. Being much with Scaliger, who was daily viſited by the men of learning at Leyden, De Vaſſan wrote down whatever things of any moment he heard Scaliger ſay.—And thus aroſe the *Scaligerana*, which was not printed till many years after at Geneva in 1666. *Patin*, *Lett*. 431.—Soon after came the *Perroniana*, *Thuana*, *Naudæana*, *Patiniana*, *Sorberiana*, *Menagiana*, *Anti-menagiana*, *Fureteriana*, *Chevræana*, *Leibnitziana*, &c. to *Arlequiniana*.

ANABAPTISTON. See the article Abaptiston.

ANABAPTISTS*, a religious ſect, whoſe diſtinguiſhing tenet is, that children are not to be baptized till they arrive at years of diſcretion; as holding it requiſite, that they give a reaſon of their faith, before they can receive a regular baptiſm.

* The word is compounded of *ανα*, *denuo*, again; and *βαπτιζω*, *I baptize*; of *βαπτω*, *I waſh*; it being their practice to re-baptize ſuch as had been baptized in their infancy.

There were *Anabaptiſts* even in the primitive church; that is, there were heretics who baptized a ſecond time: ſuch were the Novatians, Cataphrygians, and Donatiſts.

There were alſo in the third century ſeveral Catholic biſhops in Aſia and Africa, who held the baptiſm of heretics invalid; and therefore re-baptized ſuch as were converted to orthodoxy.—But theſe antient re-baptiſts were not called *Anabaptiſts*.

In the twelfth century, the Waldenſes, Albigenſes, and Petrobruſſians, are alſo recorded as of the ſame belief; but neither was this denomination given them.

Thoſe properly called *Anabaptiſts*, are a ſect of Proteſtants, who firſt appeared in the ſixteenth century, in ſome provinces of Germany, particularly in Weſtphalia, where they committed ſeveral outrages.—They taught that baptiſm was not to be conferred on children; that it was unlawful to ſwear, or bear arms; that a true Chriſtian cannot be a magiſtrate, *&c.*

It is not known who was the author of this ſect: ſome charge it on Carloſtad; others on Zuinglius. Cochlæus ſays, it was Balthazar Pacimontanus, who began to teach in 1527. and was burnt at Vienna ſome time afterwards.—Mezorius affirms, it was firſt broached by Pelargus, in 1522. who was ſeconded by Stubner, Bodenſtein, Carloſtadius, Weſtenberg, Quiccou, Didymus, More, *&c.*

But the common opinion fathers it on Thomas Munſter, or rather Munzer, of Zwickau, a city of Miſnia; and Nic. Storck or Pelargus, of Stalberg in Saxony; two perſons originally diſciples of Luther, from whom they took occaſion to ſeparate, on pretence that his doctrine was not perfect enough; that he had only carried the reformation half-way; and that, to arrive at the true eſſential religion of Chriſt, immediate revelation muſt be added to the dead letter of Scripture: *ex revelationibus divinis judicandum eſſe dicebat, & ex bibliis, Muncerus*.—In effect, if theſe two perſons were not the firſt inventors of the doctrine; they appear, at leaſt, to have been the firſt teachers, and propagators thereof.

Sleidan furniſhes the beſt account of the origin of the *Anabaptiſts*, in his *Hiſtorical Commentaries*.—Luther, he obſerves, had preached up ſo ſtrenuouſly for the evangelical liberty, that the peaſants of Suabia, flocking together, leagued themſelves againſt the eccleſiaſtical powers, on pretence of defending the evangelical doctrine, and ſhaking off the yoke of ſervitude: *obducta cauſa quaſi & evangelii doctrinam tueri, & ſervitutem ab ſe profligare vellent.* Luther wrote them ſeveral exhortations to lay down their arms, but in vain: they retorted his own doctrine upon him; maintaining, that having been made free by the blood of Jeſus Chriſt, it was injurious to the name of Chriſtian, that they had hitherto been reputed ſervants: *quod hucuſque ſint habiti velut conditione ſervi.* Accordingly, they proclaimed every-where, that they only took up arms, by reaſon they eſteemed themſelves obliged thereto by the commandment of God.

Luther, finding all his exhortations ineffectual, publiſhed a book, wherein he invited all the world to take up arms againſt thoſe fanatics who thus abuſed the word of God.—He was obliged to write a ſecond, ſoon after, to juſtify his conduct; which to many appeared too ſevere, and even cruel.

The *Anabaptiſts*, however, to the number of forty thouſand, ravaged all the places where-ever they came. John of Leyden, who headed them, declared himſelf their king; and never ſtirred out, or appeared in public, without a large retinue of principal officers: two young men always rode immediately after him, the one bearing in his hand a crown, and the other a naked ſword.—Their pretence was, to eſtabliſh the new reign of Jeſus Chriſt on earth, by force of arms; condemning all uſe of arms for other purpoſes.

Calvin wrote a treatiſe againſt the *Anabaptiſts*, ſtill extant in his *Opuſcula*.—What they chiefly ſupported their great doctrine on was, thoſe words of our Saviour, *He that believes, and is baptized, ſhall be ſaved*, Mark *c.* xvi. *v.* 16. As none but adults are capable of believing, they argued, that no others were capable of baptiſm; eſpecially as there is no paſſage, in all the New Teſtament, where the baptiſm of infants is clearly enjoined. Calvin, and other writers againſt them, are pretty much embarraſſed to anſwer this argument; and are obliged to have recourſe to tradition, and the practice of the primitive church. In this point they have apparently the advantage over them; mention being made of infant-baptiſm by Origen, the author of the queſtions attributed to Juſtin; a council held in Africa, ſpoken of by St. Cyprian, where the baptiſm of infants, immediately after they were born, was expreſly enjoined; and ſeveral other councils, of Autun, of Maſon, of Giron, of London, of Vienna, *&c.* beſides other fathers; as Irenæus, Jerom, Ambroſe, Auguſtine, *&c.*

It muſt be added, that very conſiderable arguments may be drawn againſt the *Anabaptiſts*, even from Scripture: children, we are told, are capable of the kingdom of heaven; Mark x. 14. Luke xviii. 16. and our Saviour made ſuch be brought near him, and bleſſed them. Yet he aſſures us, in St. John iii. 5. that unleſs a man be baptized, he cannot enter the kingdom of God. Whence it follows, that children, inaſmuch as they are capable of entering into heaven, are alſo capable of being baptized.—The *Anabaptiſts* anſwer, that thoſe here ſpoken of by our Saviour were grown big, ſince they could come to him; and conſequently were capable of an act of faith: but this is contrary to the expreſs terms of Scripture, which in St. Matthew, and St. Mark, calls them παιδια; and in St. Luke, βρεφη, little children. The ſame St. Luke writes, that they were brought to Jeſus; which is a preſumption that they were not yet able to walk.

Another argument, much inſiſted on, is drawn from theſe words of St. Paul to the Romans, *c.* v. *v.* 17. 'If by one 'man's offence death reigned; much more they who re'ceive abundance of grace, and of the gift of righteouſneſs, 'ſhall reign in life by one, Jeſus Chriſt.' For, if all become criminal by one; then are children criminal: conſequently, if all are juſtified by one, then are children juſtified. But this cannot be without faith; and conſequently children may have the faith required for the receiving of baptiſm, *i. e.* an actual faith, preceding the ſacrament, as a diſpoſition requiſite thereto. This faith they have, not of themſelves, but by others; *viz.* their parents, or their godfathers or godmothers, who anſwer for them. Nor is there any thing in the whole diſpenſation, but what is very equitable; it being but juſt, that as they had ſinned in the will of another, they might alſo be juſtified by the will of another.

The *Anabaptiſts* adopted ſeveral other dogmata from the Gnoſtics, *&c.* touching the incarnation, *&c.* but thoſe who now retain the name, have abandoned the greateſt part thereof; and, in lieu of the fanatic zeal of the antient founders of the ſect, have given into an exemplary ſimplicity in their actions, diſcipline, dreſs, *&c.* not much unlike the modern Quakers.

As they multiplied, they divided into a great number of ſects; which took particular denominations, either from the leaders thereof, or the peculiar opinions which they ſuperadded to the general ſyſtem of *anabaptiſm*.—The principal were, the Muncerians, Cathariſts, Enthuſiaſts, Silentes, Adamites, Georgians, Independents, Hutites, Melchiorites, Nudipedalians, Mennonites, Bulcholdians, Auguſtinians, Servetians, Monaſterians, Libertins, Deorelictians, Semperorantes, Polygamites, Ambroſians, Clancularians, Manifeſtarians, Babularians, Pacificators, Paſtoricides, Sanguinarii, *&c.*

ANABASII*, in antiquity, the couriers who travelled on horſeback, or in chariots, for the greater expedition. See COURIER, and POST.

* The word comes from the Greek αναβασις, *adſcenſus*, mounting.

ANABASIS*, Αναβασις, is a Greek word, ſignifying aſcenſion.

* Αναβασις is derived from αναβαινω, to aſcend.

ANABASIS, in medicine, the ſtate of a diſeaſe in its growth.

ANABIBAZON, in aſtronomy, the *Dragon's Tail*; or the ſouthern node of the moon, where ſhe paſſes the ecliptic from north to ſouth latitude.

ANABROSIS*, in medicine, otherwiſe called *diabroſis*, the iſſuing of blood at a hole worn in a vein by corroſion.

* The word is Greek, αναβρωσις, *q. d. eroſio.*

ANACALYPTERIA*, Ανακαλυπτηρια, in antiquity, feaſts celebrated among the heathens on the day that the bride was permitted to lay aſide her veil, and to be ſeen in public.

* They were thus called from the Greek ανακαλυπτειν, to diſcover, uncover.

ANACAMPTIC ſignifies as much as *reflecting*; and is frequently uſed in reference to echoes, which are ſaid to be ſounds produced *anacamptically*, or by reflexion.

Hence, alſo, *Anacamptics* is by ſome uſed for the ſcience of reflected rays; otherwiſe called *catoptrics.*

ANACARDINA *Confectio*. See the article CONFECTION.

ANACATHARTIC* is uſually underſtood of a vomit, or a purging medicine that works upwards.

* The word comes from ανα, *ſupra*, upwards; and καθαιρω, *purgo*, I purge.

ANACEPHALÆOSIS*, in rhetoric, a recapitulation; or a ſhort and ſummary repetition of the heads of a diſcourſe.

* The word comes from the Greek ανα, which, in compoſition, ſignifies *again*; and κεφαλη, *head.*

ANACHORET*, ANACHORETA, a hermit, or devout perſon, living alone in ſome deſart; to be further out of the reach of the temptations of the world, and more at leiſure for meditation.

* The word comes from the Greek αναχωρεω, I retire into a bye-place.

Such were St. Anthony, St. Hilarion, *&c.* Paul the Hermit was the firſt of the tribe of *Anachorets.*

Anachorets, popularly *Anchorets*, are very numerous among the Greeks, conſiſting principally of monks; who, not caring for the fatigues and offices of the monaſtery, purchaſe a little ſpot of ground, with a cell, whither they retreat, and never appear in the monaſtery again, excepting on ſolemn days. Theſe are ſometimes alſo called *aſcetæ*, and *ſolitaries*. See ASCETIC, *&c.*

The *Anachorets* of Syria and Paleſtine retire into the moſt obſcure and unfrequented places; hiding themſelves under rocks and mountains, and living on the ſpontaneous productions of the earth.

There have alſo been *Anachorets* in the weſt: Peter Damian, who was of the order of hermits, frequently ſpeaks of them with great praiſe. He repreſents them as by far the moſt perfect ſort of monks; holding them in much higher opinion and veneration than the Cœnobites, or monks reſiding in monaſteries.

Many of theſe retire, with the leave of their abbots, and have an allowance from the monaſtery.—The people, in regard of their piety, preſent them with good ſums of money, which they carefully hoard up, and, at their death, bequeath it to the monaſtery they had belonged to.

ANACHRONISM*, in matters of chronology, an error in computation of time; whereby an event is placed earlier than it really happened.

* The word is compounded of the Greek ανα, *ſurſum, ſupra, retrorſum*, higher, backwards; and χρονος, *tempus*, time.

Such is that of Virgil, who placed Dido in Africa at the time of Æneas; though, in reality, ſhe did not come there till 300 years after the taking of Troy.—An error on the other ſide, whereby a fact is placed later and lower than it ſhould be, is called a *parachroniſm.*

ANACLATICS, that part of optics which conſiders refracted light.

Anaclatics are the ſame with what we more uſually call *dioptrics.*

ANACLETERIA*, in antiquity, ſolemn feaſts celebrated in honour of kings and princes when they came of age, and took upon them the adminiſtration of their ſtate, and made a ſolemn declaration thereof to the people.

* The word is formed of ανα, and καλεω, *voco*, I call.

ANACREONTIC, in the Greek and Latin poetry, ſomething invented by Anacreon; or in the manner and taſte of Anacreon.

Anacreon, a poet of Teios, who lived upwards of 400 years before Chriſt, was famous for the delicacy of his wit; and the exquiſite, yet eaſy and natural, turn of his poeſy.—We have ſeveral of his odes ſtill extant; and few of the modern poets but have written *Anacreontics* in imitation hereof. They are moſt of them compoſed in verſes of ſeven ſyllables; or rather, of three feet and an half, ſpondees and iambus's, though ſometimes anapæſts.

Hence, verſes in that meaſure are uſually called *Anacreontics*, or *Anacreontic verſes*.

ANADIPLOSIS, Αναδιπλωσις, denotes a repetition of the laſt word of the former verſe or member in the beginning of the next: *e. gr.*

> *Addit ſe ſociam timidiſque ſupervenit Ægle,*
> *Ægle Naïadum pulcherrima*———
> ———*ſequitur pulcherrimus Aſtur,*
> *Aſtur equo fidens*————

If children, then heirs, heirs of God, and joint heirs with Chriſt.

ANADIPLOSIS, in medicine, denotes the redoubling or return of the paroxyſm of a fever, chiefly of a ſemitertian.

This is otherwiſe called *epanalepſis*, and *epanadiploſis*.

ANAGLYPHICE *, or ANAGLYPTICE, denotes that ſpecies of ſculpture wherein the ſtrokes or figures are prominent, or imboſſed.

* The word comes from the Greek *αναγλυφω*, *exſculpo*.

ANAGOGICAL *, *Tranſporting*, ſomething that raiſes the mind to things eternal, and divine; the great objects of the next life.

* The word is derived from the Greek *αναγωγη*, raviſhing, carrying away, overturning; which is formed of the prepoſition *ανα*, *ſurſum*, upwards; and *αγωγη*, leading; of *αγω*, *duco*.

The term is principally uſed in ſpeaking of the divers ſenſes of Scripture.—The literal ſenſe is the firſt, and natural ſenſe: the myſtical ſenſe is founded on the natural ſenſe, from whence it is taken by analogy or compariſon, by ſimilitude or reſemblance of one thing to another; and is divided into ſeveral kinds.

Where it regards the church, and matters of religion, it is called the *allegorical* ſenſe.

Where it regards our morals, it is called the *tropological* ſenſe.

And where it regards eternity, or the life to come, it is called the *anagogical* ſenſe.

ANAGOGY, ANAGOGE, a rapture or elevation of the ſoul, to things celeſtial, and eternal.

ANAGRAM *, ANAGRAMMA, a tranſpoſal of the letters of a name; with a combination thereof in ſome new manner, ſo as to exhibit one or more words, either to the advantage or diſadvantage of the perſon to whom it belongs.

* The word is formed from the Greek *ανα*, backwards; and *γραμμα*, letter.

Thus, the *Anagram* of Galenus is *angelus*; that of Logica, *caligo*; that of Alſtedius, *ſedulitas*; that of Sir Edmundbury Godfrey, *I find murdered by rogues*, or *by Rome's rude finger die*; that of Loraine, is *alerion*; on which account it was, that the family of Loraine took alerions for their armoury.—Calvin, in the title of his *Inſtitutions*, printed at Straſburg in 1539. calls himſelf *Alcuinus*, which is the *Anagram* of Calvinus, and the name of an eminently learned perſon in the time of Charlemaign, who contributed greatly to the reſtoration of learning in that age. Barclay, in his *Argenis*, *anagrammatizes* Calvinus by a leſs creditable name, *Uſinulca*: and Rabelais, to be revenged of the ſame Calvin, who had made an *Anagram* of his name, found in that of Calvin, *Jan. Cul.*

Such as keep cloſe to the definition of *Anagram*, take the liberty to omit or retain the letter H, and that letter only; but ſuch as ſtand up for the poetical licence, make bold ſometimes to uſe E for Æ, V for W, S for Z, and C for K; and *vice verſa*.

This way of writing was ſcarce known among the antients: Daurat, a French poet in the reign of Charles IX. is uſually ſaid to be the firſt that broached it; yet Lycophron, who wrote under Ptolemy Philadelphus, about 280 years before Chriſt, appears to have been no ſtranger to the art of making *Anagrams*. Canterus, in his *Prolegomena* to Lycophron, gives us two of his pieces in this kind; the firſt on the name of king Ptolemy, Πτολεμαιος, in which he found *απο μελιτος*, *of honey*; to inſinuate the ſweetneſs and mildneſs of that prince; the ſecond was on queen Arſinoe, Αρσινοη, of whom he made Ιον Ἡρας, *Juno's violet*.

The Cabbaliſts among the Jews are profeſſed *anagrammiſts*; the third part of their art, which they call *themura*, *i. e.* changing, being nothing but the art of making *Anagrams*, or of finding hidden and myſtical meanings in names: which they do by changing, tranſpoſing, and differently combining the letters of thoſe names.—Thus, of נח the letters of Noah's name, they make חן *grace*; and of משיח *the Meſſiah*, they make ישמח *he ſhall rejoice*.

There are two manners of making *Anagrams*: for, 1°, Some only conſiſt in dividing a ſingle word into ſeveral: thus the ænigma of the god Terminus, mentioned by Aulus Gellius, lib. XII. c. 6. is founded on the *Anagram* TER MINUS: and thus Suſtineamus yields *ſus tinea mus*.—This kind alone ſeems to have been uſed among the Romans.

The ſecond is, where the order and ſituation of the letters is changed: ſuch are thoſe above-mentioned; and alſo theſe, *Roma*, *Maro*, *Amor*; *Julius*, *Livius*; *Corpus*, *Porcus*, *Procus*, *Spurco*.

To find all the ANAGRAMS any name will admit of, algebraically, ſee the articles CHANGES, and COMBINATION.

The fineſt and happieſt of all the *Anagrams* extant, is that on the queſtion put by Pilate to Jeſus Chriſt; *Quid eſt veritas?* which *anagrammatically* makes, *Eſt vir qui adeſt*: the *anagram*, here, is the beſt and juſteſt anſwer that could poſſibly be given.

Beſides the antient kind of *Anagram*, there have been new ones invented: as, the mathematical *Anagram*, invented in 1680. by which the abbot Catelan found, that the letters of the name of Lewis XIV. made *vrai heros*, i. e. *true hero*.

We are now likewiſe furniſhed with the numerical *Anagram*, more properly called *chronogram*; where the numeral letters (*i. e.* ſuch as in the Roman cyphering ſtood for numbers) taken together, according to their numerical values, expreſs ſome epocha: of which kind is that diſtich of Godart on the birth of the late French king, in the year 1638. on a day wherein there was a conjunction of the eagle with the lion's heart:

> *e*X*or*I*ens* D*e*L*ph*I*n aq*VIL*æ* C*or*DI*ſq*V*e* L*eon*I*s*
> C*ongreſſ*V *ga*LL*os ſpe* L*æt*I*t*I*aq*V*e refe*CI*t.*

ANALECTA *, a Greek term, uſed for a *collection* of ſmall pieces or compoſitions.

* The word is formed of *αναλεγω*, I gather.

ANALEMMA *, a planiſphere, or projection of the ſphere, on the plane of the meridian, orthographically made, by ſtrait lines and ellipſes; the eye being ſuppoſed to be at an infinite diſtance, and in the eaſt or weſt points of the horizon.

* The word is derived from the Greek *αναλημμα*, of *αναλαμβανω*, *reſumo*, I take backwards.

ANALEMMA is alſo uſed for a gnomon, or aſtrolabe, conſiſting of the furniture of the ſame projection, drawn on a plate of braſs, or wood; with an horizon or curſor fitted to it.

Its uſe is for finding the time of the ſun's riſing and ſetting, the length of the longeſt day in any latitude, and the hour of the day.

The *Analemma* is alſo of conſiderable uſe among dialliſts, for laying down the ſigns of the zodiac, with the length of days, and other matters of furniture, upon dials.

ANALEPTICS *, in medicine, reſtoratives; or remedies proper to reſtore the body, when waſted or emaciated, either by the continuance of a diſeaſe, or by the want of food.

* The word is Greek, Αναληπτικος; derived of Αναλαμβανω, I re-eſtabliſh, reſtore.

ANALOGICAL *Syllogiſm*. See the article SYLLOGISM.

ANALOGY *, a certain relation, proportion, or agreement, which ſeveral things, in other reſpects different, bear to each other.—Such is that between the bull in the heavens, and the animal ſo called on earth.

* The word is Greek, Αναλογια; which the Latins uſually render by *comparatio*, and *proportionalitas*.

Among geometricians, *Analogy* is frequently uſed for a ſimilitude of ratio's; called alſo *proportion*.

Reaſonings by *Analogy* may ſerve to explain and illuſtrate, but not to prove any thing; yet is a great deal of our philoſophiſing no better founded.

In matters of language, we ſay, new words are formed by *Analogy*, *i. e.* new names are given to new things, conformable to the eſtabliſhed names of other things of the like nature and kind.—The difficulties and obſcurities in a language are chiefly to be cleared up by *Analogy*.

The ſchoolmen define *Analogy* to be a reſemblance, joined with ſome diverſity. Its foundation, according to them, is laid in the proportion of ſeveral things, conſidered as that proportion proceeds upon different conſiderations.

Thus, a ſound animal, a ſound food, and a ſound propoſition, agreeing in this, that they have a common denomination, but the reaſon or quality whereon the denomination is founded, different; are ſaid to have an *Analogy*, or to be *analogous*. Accordingly, *analogous* things are defined to be ſuch as have a common name, but the thing immediately ſignified by that common name, different; yet with ſome correſpondence or relation diſcernible therein.

Philoſophers uſually diſtinguiſh three kinds of *Analogy*; *viz.*—of inequality, wherein the reaſon of the common denomination is the ſame in nature, but not in degree or order; in which ſenſe, animal is *analogous* to man and brute.—Of attribution; where though the reaſon of the common name be the ſame, there is a difference in its habitude or reſpect thereto: in which ſenſe, healthy is *analogous* both to a man, and an exerciſe.—Of proportionality; where, though the reaſons of the common name do really differ, yet they bear ſome proportion to each other: in this ſenſe, the gills of fiſhes are ſaid to be *analogous* to the lungs in terreſtrial animals: and thus, the eye and the underſtanding are ſaid to bear an *Analogy* to each other.

ANALOGISM, ANALOGISMUS, in logic, denotes an argument from the cauſe to the effect.

ANALYSIS *, in logic, a method of applying the rules of reaſoning, to reſolve a diſcourſe into its principles; in order to a diſcovery of its truth, or falſhood.—Or it is an examination of ſome diſcourſe, propoſition, or other matter, by ſearching into its principles, and ſeparating and opening its parts; in order to conſider them more diſtinctly, and arrive at a more preciſe knowlege of the whole.

* The word is Greek, *αναλυσις*, which literally ſignifies reſolution; formed of *ανα*, and λυω, *ſolvo*, *reſolvo*, I looſen, I reſolve.

Analyſis makes one great branch or ſpecies of method; called alſo *reſolution*.

ANALYSIS, in mathematics, a method of ſolving or reſolving mathematical problems.

There are two general methods of finding truth in mathematics; ſyntheſis, and *Analyſis*.—*Analyſis* is the demonſtration, or conſideration of the conſequences drawn from any propoſition; in which a man proceeds till he comes to ſome known truth, by means whereof, he may be able to give a ſolution of the problem.

The method of *Analyſis* conſiſts more in the judgment and readineſs of apprehenſion, than in any particular rules, where pure geometry is made uſe of, as it was among the antients; but at preſent algebra is principally uſed on this occaſion, which furniſhes certain rules to perform or arrive at the end propoſed.

This method, under its preſent improvements, muſt be allowed the apex or height of all human learning; being the great inſtrument or means whereby ſo many ſurpriſing diſcoveries have been of late years made, both in mathematics, and philoſophy.—It furniſhes the moſt perfect inſtances and examples of the art of reaſoning; gives the mind a ſurpriſing readineſs at deducing and diſcovering things unknown, from a few data; and, by uſing ſigns for ideas, preſents things to the imagination, which otherwiſe ſeemed out of its ſphere.—By this, geometrical demonſtrations may be wonderfully abridged; and a long ſeries of argumentations, wherein the mind cannot without the utmoſt effort and attention diſcover the connexion of ideas, are hereby converted into ſenſible ſigns, and the ſeveral operations required therein, effected by the combination of thoſe ſigns.—But, what is yet more extraordinary, by means of this art, a number of truths are frequently expreſſed by a ſingle line, which, in the common way of explaining and demonſtrating things, would fill whole volumes.—Thus, by mere contemplation of one ſingle line, whole ſciences may ſometimes be learnt in a few minutes time; which otherwiſe could ſcarce be attained in many years.

ANALYSIS is divided, with regard to its object, into that of *finites*, and that of *infinites*.

ANALYSIS *of finite Quantities*, is what we otherwiſe call *ſpecious arithmetic*, or *algebra*. See *Specious* ARITHMETIC.

ANALYSIS *of Infinites*, called alſo the *new* ANALYSIS, is particularly uſed for the *Method of Fluxions*, or the *Differential Calculus*. See FLUXIONS.

ANALYSIS is alſo uſed, in chymiſtry, for the decompounding of a mixt body; or the reduction thereof into its principles.

To *analyſe* bodies, or reſolve them into their component parts, is indeed the chief object of the art of chymiſtry.—The *Analyſis* of bodies is principally effected by means of fire.

All bodies, by a chymical *Analyſis*, reſolve into water, earth, ſalt, ſulphur, and mercury; though every body does not afford all theſe parts; but ſome more, ſome fewer, of them, according to the kingdom they belong to.

The *Analyſis* of vegetables is eaſy; that of foſſils, particularly of metals, and ſemi-metals, difficult.

The many *Analyſes* that have been made of plants by Bourdelin, and others, have generally proved uſeleſs with regard to any diſcoveries of the properties and virtues of the plants analyſed. The moſt ſalutary plants, in this way of treatment, yield much the ſame principles as the moſt poiſonous. The reaſon apparently is, that the too great action of the fire, in diſtillation, changes the plants, and their principles: on this account, inſtead of diſtillation, M. Boulduc has made his *Analyſes* by decoction only. *Vid. Mem. Acad. R. Scienc. an.* 1734. p. 139. hiſt. 63.

Some bodies of the foſſil tribe conſiſt of particles ſo very minute, and ſo firmly united, that the corpuſcles thereof need leſs heat to carry them off, than to ſeparate them into their principles: ſo that the *Analyſis* is impracticable in ſuch bodies.—Hence ariſes the difficulty of *analyſing* ſulphur.

The anatomical diſſection of an animal, is alſo a kind of *Analyſis*.

ANALYSIS is alſo uſed for a kind of ſyllabus, or table of the principal heads or articles of a continued diſcourſe; diſpoſed in their natural order and dependency.

Analyſes are more ſcientifical than alphabetical indexes; but they are leſs uſed, as being more intricate.

ANALYTIC, ANALYTICAL, ſomething that belongs to, or partakes of, the nature of analyſis.

Thus, we ſay, an *analytical* demonſtration; *analytical* inquiry; *analytical* table, or ſcheme; *analytical* method, *&c.*

The *analytic* method ſtands oppoſed to the ſynthetic.—‘ As
‘ in mathematics, ſays Sir I. Newton, ſo in natural philoſo-
‘ phy, the inveſtigation of difficult things by the *analytic* me-
‘ thod ought to precede the method of compoſition. This
‘ analyſis conſiſts in making experiments, and obſervations,
‘ and in drawing general concluſions therefrom by induction;
‘ and admitting of no objections againſt the concluſions, but
‘ ſuch as are drawn from experiments, and other certain
‘ truths. And though the arguing from experiments and
‘ obſervations by induction be no demonſtration of general
‘ concluſions; yet it is the beſt way of arguing which the
‘ nature of the things admits of; and may be eſteemed ſo
‘ much the ſtronger, as the induction is more general. And
‘ if no exception occur from phænomena, the concluſion
‘ may be pronounced generally. By this way of *analyſis*, we
‘ may proceed from compounds to their ingredients; from
‘ motions to the forces producing them; and, in general,
‘ from effects to their cauſes, and from particular cauſes to
‘ more general ones, till the argument end in the moſt gene-
‘ ral.—This is the *analytic* method.
‘ The ſynthetic conſiſts in aſſuming the cauſes diſcovered and
‘ eſtabliſhed as principles, and by them explaining the phæ-
‘ nomena proceeding from them, and proving the explana-
‘ tions.’ See SYNTHESIS.

ANALYTICS, ANALYTICA, the ſcience, or doctrine, and uſe, of analyſis.

The great advantage of the modern mathematics above the antient is, in point of *Analytics*.

The authors on the antient *Analytics* are enumerated by Pappus, in the preface to his ſeventh book of mathematical collections; being, Euclid, in his *Data*, and *Poriſmata*; Apollonius, *de Sectione Rationis*; Apollonius, in his *Conics*, *Inclinations*, and *Tactions*; Ariſtæus, *de Locis ſolidis*; and Eratoſthenes, *de mediis Proportionalibus*. But the antient *Analytics* were very different from the modern.

To the modern *Analytics*, principally, belongs algebra; the hiſtory of which, with the ſeveral authors thereon, ſee under the article ALGEBRA.

The chief writers upon the analyſis of infinites are, its inventor, Sir Iſaac Newton, in his *Analyſis per Quantitatum Series, Fluxiones, & Differentias, cum enumeratione Linearum tertii ordinis*; and *de Quadratura Curvarum*: and M. Leibnitz, in *Act. Eruditor.* an. 1684. the Marquis De l'Hôpital, in his *Analyſe des infiniment petites*, 1696. Carre, in his *Methode pour la meſure des Surfaces, la dimenſion des Solides*, &c. *par l'application du calcul integral*, 1700. G. Manfredi, in a poſthumous piece, *De Conſtructione Æquationum differentialium primi gradus*, 1707. Nic. Mercator, in *Logarithmotechnia*, 1668. Cheyne, in *Methodus Fluxionum inverſa*, 1703. Craig, in *Methodus figurarum lineis rectis & curvis comprehenſarum Quadraturas determinandi*, 2685. and *de Quadraturis figurarum curvilinearium & locis*, &c. 1693. Dav. Gregory, in *Exercitatio Geometrica de dimenſione figurarum*, 1684. and Nieuwentiit, in *Conſiderationes circa Analyſews ad quantitates infinitè parvas applicatæ, principia*, 1695.—The ſum of what is found in l'Hôpital, Carre, Cheyne, Gregory, and Craig, is collected into one volume, and very well explained, by C. Hayes, under the title of, *A Treatiſe of Fluxions*, &c. 1704.—And the ſubſtance of moſt of the reſt in Pere Reyneau's *Analyſe demontrée*, 2 vol. 4to, 1728.

ANALYTICS is alſo uſed by ſome for a part of logic, which teaches to decline and conſtrue reaſon, as grammar does words. See LOGIC.

ANAMORPHOSIS *, in perſpective and painting, a monſtrous projection; or a repreſentation of ſome image, either on a plane or curve ſurface, deformed; which at a certain diſtance ſhall appear regular, and in proportion.

* The word is Greek; compounded of *ανα*, and *μορφωσις*, *formatio*; of *μορφη*, form.

To make an *Anamorphoſis*, or monſtrous projection on a plane.—Draw the ſquare AECD (*Tab. Perſpective*, *fig.* 19. N° 1.) of a bigneſs at pleaſure, and ſubdivide it into a number of areolas, or leſſer ſquares.—In this ſquare, or reticle, called the *craticular prototype*, let the image to be diſtorted be drawn.—Then draw the line *a b* (*fig.* 19. N° 2.) = AB; and divide it into the ſame number of equal parts, a the ſide of the prototype AB; and in E, the middle thereof, erect the perpendicular EV, ſo much the longer; draw VS perpendicular to EV, ſo much the ſhorter, as the image is deſired to be more diſtorted. From each point of diviſion draw right lines to V, and join the points *a* and S, by the right line *a* S. Through the points *d e f g* draw lines parallel to *a b*; then will *a b c d* be the ſpace that the monſtrous projection is to be delineated in; called the *craticular ectype.*

Laſtly, in every areola, or ſmall trapezium of the ſpace *a b c d*, draw what appears delineated in the correſpondent areola of the ſquare ABCD: by this means you will obtain a deformed image, which yet will appear in juſt proportion to an eye diſtant from it the length FV, and raiſed above the height VS.

It will be diverting to manage it ſo, that the deformed image do not repreſent a mere chaos; but ſome other image: thus, we have ſeen a river with ſoldiers, waggons, *&c.* marching along the ſide of it; ſo drawn, that when viewed by an eye in the point S, it appears to be the ſatirical face of a man.

An image alſo may be diſtorted mechanically, by perforating it here and there with a needle, and placing it againſt a candle or lamp; and obſerving where the rays, which paſs through theſe little holes, fall on a plane, or curve ſuperficies; for they will give the correſpondent points of the image deformed; by means whereof, the deformation may be compleated.

To draw the ANAMORPHOSIS, *or deformation of an image, upon the convex ſurface of a cone.*—It is manifeſt from the former caſe, that all here required is, to make a craticular ectype on the ſuperficies of the cone, which ſhall appear to an eye duly placed over its vertex, equal to the craticular prototype.

Let the baſe ABCD, therefore, of the cone (*fig.* 20.) be divided by diameters into any number of equal parts, that is, the periphery thereof; and let ſome one radius be likewiſe divided into equal parts; and through each point of diviſion draw concentric circles: thus will the craticular prototype be made.—With double the diameter AB, as a radius, deſcribe the quadrant EFG (*fig.* 21.), ſo as the arch EG be equal to the whole periphery: then this quadrant, folded duly up, will form the ſuperficies of a cone, whoſe baſe is the circle ABCD. —Divide the arch AB into the ſame number of equal parts as the craticular prototype is divided into; and draw radii from each of the points of diviſion. Produce GF to I, ſo that FI= FG; and from the centre I, with the radius IF, draw the quadrant FKH; and from I to E draw the right line IE. Divide the arch K F into the ſame number of equal parts as the radius of the craticular prototype is divided into; and draw radii through each of the points of diviſion, from the centre I meeting EF, in 1, 2, 3, *&c.* Laſtly, from the centre F, with the radii, F 1, F 2, F 3, *&c.* deſcribe the concentric arches.—Thus will the craticular ectype be formed, the areolæ whereof will appear equal to each other.

Hence, what is delineated in every areola of the craticular prototype, being transferred into the areolæ of the craticular ectype; the images will be diſtorted or deformed: yet an eye being duly raiſed over the vertex of the cone, will perceive it in juſt proportion.

If the chords of the quadrants be drawn in the craticular prototype, and chords of the fourth part in the craticular ectype, all things elſe remaining the ſame; you will have the craticular ectype in a quadrangular pyramid.

And hence it will be eaſy to deform any image, in any other pyramid, whoſe baſe is any regular polygon.

Becauſe the eye will be more deceived, if from contiguous objects it cannot judge of the diſtance of the parts of the deformed image; therefore, theſe kinds of deformed images are to be viewed through a ſmall hole.

ANANAS, in natural hiſtory, by ſome called *nanas*, by others *jayama*, and by us popularly the *pine-apple*, on account of the reſemblance it bears to the cones of pines and firs, is a fine Indian fruit, which grows on an herbaceous plant, with leaves like thoſe of the aloe.

The fruit is adorned on the top with a little crown. The pulp is fibrous, but diſſolves in the mouth; having the delicious taſte of the peach, the quince, and the muſcadine grape, all together.

—F. du Tertre deſcribes three kinds of *ananas*: Boerhaave enumerates ſix. They make a wine from the juice, which is almoſt equal to Malmſey ſack, and will intoxicate as ſoon. It is good to ſtrengthen the heart and nerves, againſt nauſeas, to refreſh the ſpirits; and it excites urine powerfully; but is apt to occaſion abortion in women. — They ſometimes make a confection of the *ananas* on the ſpot, which they bring hither whole; and which is found of good ſervice to reſtore a decayed or aged conſtitution.

The *ananas*, or Weſt-India pine-apple, is generally allowed, both for its rich and delicious flavour, and its beautiful colour, to be the king of fruits.—Great endeavours have of late been uſed to cultivate the plant in Europe; in which they have ſucceeded, and there are now produced delicious fruits of this kind, in ſeveral gardens in England. See Supplement, article ANANAS.

ANAPÆST*, ANAPÆSTUS, a foot in the Greek and Latin poetry, conſiſting of two ſhort, and one long ſyllable. See FOOT.

* The word is derived from αναπαιω, *contra ferio*, becauſe, in dancing this meaſure, the ground was ſtruck in a contrary order from what it was in the dactyl. Whence alſo the Greeks called it αντιδακτυλος. *Diom.* iii. *p.* 474.

◡ ◡ – ◡ ◡ – ◡ ◡ –
Such are the words *Legerent*, *Sapiens*, Κυριες.

Anapæſtic verſes, *i. e.* verſes wholly compoſed of ſuch feet, were much in vogue among the antients.

ANAPHORA*, in rhetoric, a figure whereby one or more words are repeated in the beginning of ſeveral ſentences or verſes.

* The word is Greek, αναφορα, ſignifying *relation* or *repetition.*

Such, *e. gr.* is this of the pſalmiſt: The voice of the Lord is powerful: the voice of the Lord is full of majeſty: the voice of the Lord ſhaketh the wilderneſs.

ANAPLEROTICS*, in medicine, ſuch remedies as incarnate, and fill up ulcers and wounds with new fleſh.

* The word comes from the Greek αναπληροω, *I fill up.*

Anaplerotics are the ſame with what we otherwiſe call *incarnatives.* See INCARNATIVE.

ANARCHY*, the want of government in a nation, where no ſupreme authority is lodged, either in the prince, or other rulers; but the people live at large, and all things are in confuſion.

* The word is derived from the Greek privative α, and αρχη, *command, principality.*

ANASARCA, Ανασαρχα, in medicine, a ſort of univerſal dropſy, wherein the whole ſubſtance of the body is ſtuffed or bloated with pituitous humours.

The *anaſarca* is the ſame with what is otherwiſe called *leucophlegmatia.*—It is conſidered by ſome as a very great degree of a cachexia.

In an *anaſarca*, the legs ſwell at the beginning, eſpecially towards night, and then pit remarkably: the urine is pale, the appetite decays; at length the ſwelling riſes higher, and appears in the thighs, belly, breaſt, and arms. The face becomes pale and cadaverous; the fleſh ſoft and lax; and a difficulty in reſpiration comes on, attended with a ſlow fever. See Supplement, article ANASARCA.

ANASTOMASIS*, or ANASTOMOSIS, in anatomy, is ſometimes uſed to expreſs ſuch aperture of the mouths of the veſſels as lets out their contents.

* The word is formed of the Greek ανα, *per*, through, and ϛομα, *os*, mouth.

ANASTOMASIS is more frequently uſed to denote the opening of two veſſels into one another; or the union and juncture of the mouths of two veſſels, whereby they come to communicate with one another.

There are various *anaſtomaſes* of this kind, *e. gr.* of an artery with an artery, a vein with a vein, and of a vein with an artery. See ARTERY, and VEIN.

The circulation of the blood in the fœtus is effected by means of the *anaſtomaſes*, or inoſculations of the vena cava with the pulmonary vein; and of the pulmonary artery with the aorta.

The circulation is alſo performed in adults by the *anaſtomaſes*, or continuations of the capillary arteries with the veins.

After the circulation of the blood through the heart, lungs, and large blood-veſſels, was demonſtrated by Harvey, it was only gueſſed how the extremities of the arteries tranſmitted the blood to the veins; till Leewenhoeck's microſcopes had diſcovered the continuations of the extremities of thoſe veſſels, in fiſhes, frogs, *&c.*—However, there were not wanting thoſe who doubted of the like continuations of the extremities of the arteries and veins in human bodies, and quadrupeds; ſince thoſe animals it had hitherto been chiefly ſeen in ſatisfactorily, were either ſuch fiſh, or amphibious kinds, as have but one ventricle in their hearts, and whoſe blood is actually cold, beſide that in them it does not circulate with ſuch rapidity, as in animals whoſe hearts have two ventricles.

This difference in the principal organs of circulation moved Mr. Cowper to make experiments on animals whoſe organs differ only from the human in their groſs figure, and not in their intimate ſtructure.—The reſult was a plain diſcovery of the like inoſculations of the arteries and veins, in the omentum of a cat.

George Frederic Francus, of Frankenau, a phyſician of Copenhagen, publiſhed, in the year 1705. a learned and copious work, intituled, *Anaſtomaſis Retecta.*

ANASTOMATICS*, or ANASTOMATIC medicines, are ſuch as have a faculty of opening and dilating the cavities of the veſſels; and by that means of making the blood circulate the more freely.

* The word comes from the Greek αναϛομοω, *I open, unſtop.*

ANATHEMA*, in an eccleſiaſtical ſenſe, denotes an excommunication, attended with execrations and curſes. See EXCOMMUNICATION.

* In this ſenſe the word is uſually written in Greek, Αναθεμα; to diſtinguiſh it from an offering to the gods, called Αναθημα; though it is certain ſeveral of the Greek fathers do not obſerve this diſtinction; but uſe Αναθημα indifferently for either.

There are two kinds of *anathemas*; the one *judiciary*, the other *abjuratory*.

The former can only be pronounced by a council, a pope, biſhop, or other qualified perſon; and differs from a ſimple excommunication in this, than an excommunication only prohibits the criminal from entering within the church, or from holding communion with the faithful; whereas an *anathema* cuts him off from the body, the ſociety, and even the commerce of the faithful, and delivers him over to the devil.

The latter kind of *anathema* uſually makes a part of the ceremony of abjuration; the convert being obliged to *anathematize* the hereſy he abjures. See ABJURATION.

The critics and commentators are divided about the manner wherein St. Paul wiſhes to be *anathema* for his brethren, Romans, chap. ix. 3. Some render it by *accurſed for*, others by *ſeparated from*, &c.

ANATOCISM *, ANATOCISMUS, an uſurious contract, wherein the intereſts ariſing from the principal ſum are added to the principal itſelf, and intereſt exacted upon the whole.

* The word is originally Greek, but is uſed by Cicero in Latin; whence it is deſcended into moſt other languages. It comes from the prepoſition ανα, which in compoſition ſignifies *repetition* or *duplication*, and τοκος, *uſury*.

Anatociſm is what we properly call *intereſt upon intereſt*, or *compound intereſt*.

This is the worſt kind of uſury, and has been ſeverely condemned by the Roman law, as well as by the common laws of moſt other countries.

ANATOMICAL *Injections*. } See { INJECTION.
ANATOMICAL *Repertory*. } See { REPERTORY.
ANATOMICAL *Theatre*. } See { THEATRE.

ANATOMY *, the art of diſſecting, or artificially taking to pieces, the ſolid parts of animal bodies; in order to an exact diſcovery of their ſtructure and œconomy.

* The word is Greek, ανατομη, q. d. *ſection*, or *cutting*; formed of ανατεμνω, *diſſeco*, *I cut aſunder*.

Anatomy makes a great branch of that diviſion of medicine called *phyſiology*.

It is ſometimes divided, with regard to its end, into *ſpeculative* and *practical*; a diviſion of very little uſe and moment. —It is alſo divided, with regard to its ſubject, into *human* and *comparative*.

Comparative ANATOMY, is that which conſiders brutes, and other animals, and even vegetables; chiefly with a view to illuſtrate the human ſtructure.

Human, which is abſolutely and properly denominated ANATOMY, is that employed on the human body; by ſome called alſo *anthropology*.

The ſubject of *anatomy*, *viz.* the body, is variouſly divided into parts, *organical*, and *inorganical*; *ſimilar*, and *diſſimilar*; *ſpermatic*, &c.

Its more obvious diviſion is into *ſolids* and *fluids*, or into the containing and contained parts.

Under the ſolids come the bones, muſcles, nerves, arteries, veins, cartilages, ligaments, membranes, &c.—Under the fluids come chyle, blood, milk, fat, lymph, &c. See each under its proper article.

The antient writers of *anatomy*, Hippocrates, Democritus, Ariſtotle, Galen, and others, looked upon this as the moſt important part of phyſic, and that, without which the uſes of the parts of an human fabric, and conſequently the cauſes of diſeaſes incident thereto, could no-way be diſcovered. And yet this art, uſeful as it is, was intirely diſcontinued for ſeveral ages; till in the ſixteenth century it began to flouriſh afreſh.—The diſſection of an human body was looked upon as ſacrilege before that time; and we have ſeen a conſultation which the emperor Charles V. appointed to be held by the divines of Salamanca, in order to be ſatisfied, whether or no it were lawful, in point of conſcience, to diſſect a dead carcaſe?—We may add, that to this day the uſe of anatomy and ſkeletons is forbid in Muſcovy; the firſt as inhuman, the latter as ſubſervient to witchcraft: and Olearius aſſures us, that one Quirin, a German chirurgeon, being found there with a ſkeleton, hardly eſcaped with life; and the ſkeleton, after being ſolemnly dragged about the ſtreets, was burnt in form. *Boyle's Uſefulneſs of Philoſophy*.

Veſalius, a Flemiſh phyſician, who died in 1564. was the firſt who ſet *anatomy* on any tolerable footing. He was ſeconded by Carpus, Sylvius, Fernelius, Fallopius, Euſtathius, Fabricius, Pareus, Bauhinus, Hoffman, Riolanus, &c.

Theſe were ſucceeded by others, to whom ſome of the fineſt diſcoveries in *anatomy* are owing.—Aſellius, in the year 1622. diſcovered the lacteal veins; and in 1628. the immortal Harvey publiſhed his admirable diſcovery of the circulation of the blood.—Pecquet diſcovered the reſervoir of the chyle, and the thoracic duct, in 1651.—Rudbecks, a Swede, and Bartholine, a Dane, found out the lymphatic veſſels, in 1650. and 1651. Wharton, in 1655. diſcovered the lower ſalival ducts; and Steno the upper ſalival ducts, thoſe of the palate, the noſtrils, and eyes, in 1661. Wirtſungus, in 1642. dicovered the pancreatic duct. —Willis, who came after him, publiſhed an *anatomy* of the brain, and nerves, in a manner much more exact than had been done before him; yet he had omitted ſome conſiderable things, which were afterwards obſerved by Vieuſſens. —In effect, Gliſſon treated particularly of the liver; Wharton of the glands; Havers of the bones; Graaf of the pancreatic juice, and the parts of generation; Lower of the motion of the heart; Thurſton of reſpiration; Peyer, of the glands of the inteſtines; Brown, of the muſcles; and Drelincourt, of the conception of the ova in women, the placenta, and the membranes of the fœtus.

Malpighi, who died in 1694. is one of thoſe to whom *anatomy* owes the moſt: he made a great number of diſcoveries in the lungs, brain, liver, ſpleen, glands, and lymphatics, by help of the microſcope, &c. Nor muſt it be omitted, that Ruyſch, who died in 1727. has let great light into many of the finer and more intricate parts of the human frame, particularly the glands; by means of his injections.

Magnet, and Le Clerc, two phyſicians of Geneva, have given us a *Bibliotheca Anatomica*; containing all the new diſcoveries that have been made in this art.—The beſt ſyſtems of the art, as it now ſtands, are thoſe of Verheyen, Drake, Keil, Heiſter, Winſlow, Albinus, &c.

ANATOMY is ſometimes uſed to denote the ſubject to be anatomized. Thus (by 39 H. VIII. cap. 22.) the company of barbers and ſurgeons may have and take yearly four perſons condemned, adjudged, and put to death for felony, for *anatomies*; and to make inciſion of the ſame dead bodies.

ANATOMY is alſo uſed for an artificial repreſentation of the ſtructure and parts of the human body in metal, plaſter, wax, or the like.—In this ſenſe we ſay, the wax-work *anatomy*: R. Dickenſon, ſtatuary, finiſhed an human *anatomy* in plaſter of Paris, repreſenting a man ſtanding upright, with his ſkin flayd off.

ANATOMY *of Plants*. See PLANT.

ANATRON, or NATRON, a kind of native ſalt-petre, or nitre, found in Egypt.

ANATRON is alſo uſed for the ſalt and ſcum of the compoſition of glaſs, when in fuſion.

When pounded, it yields a kind of powder; which being diſſolved in the air, or in a proper liquor, becomes common ſalt, after coagulation.

ANATRON is likewiſe the name of a nitrous juice, which condenſes in vaults, arches, and other ſubterraneous places.

ANATRON is alſo uſed by ſome writers for a compound ſalt, made of quicklime, alum, vitriol, common ſalt, and nitre; uſed as a flux to promote the fuſion and purification of metals.

ANBURY, or AMBURY, a kind of wen, or ſpongy wart, growing upon any part of a horſe, or cow, and being full of blood.

ANCESTORS *, *progenitors*; or thoſe from whom a perſon is deſcended.

* The word is derived from the Latin *anceſſor*, written, by contraction, for *anteceſſor*, *q. d.* goer before.

The law diſtinguiſhes between *anceſtor*, and predeceſſor; the former being applied to a natural perſon, as ſuch an one, and his *anceſtor*; and the latter to a body politic or corporate, as a biſhop, and his predeceſſors.

Diſability by the act of ANCESTOR. See DISABILITY.

ANCESTREL, in law, ſomething relating to a man's anceſtors.—Thus,

Homage ANCESTREL, ſignifies homage that hath been done or performed by one's anceſtors.

Action ANCESTREL. See ACTION.

ANCHILOPS, in medicine, denotes an abſceſs, or collection of matter between the great angle of the eye, and the noſe.

The ſame abſceſs when broken is no longer denominated *anchilops*, but *ægilops*. See ÆGILOPS.

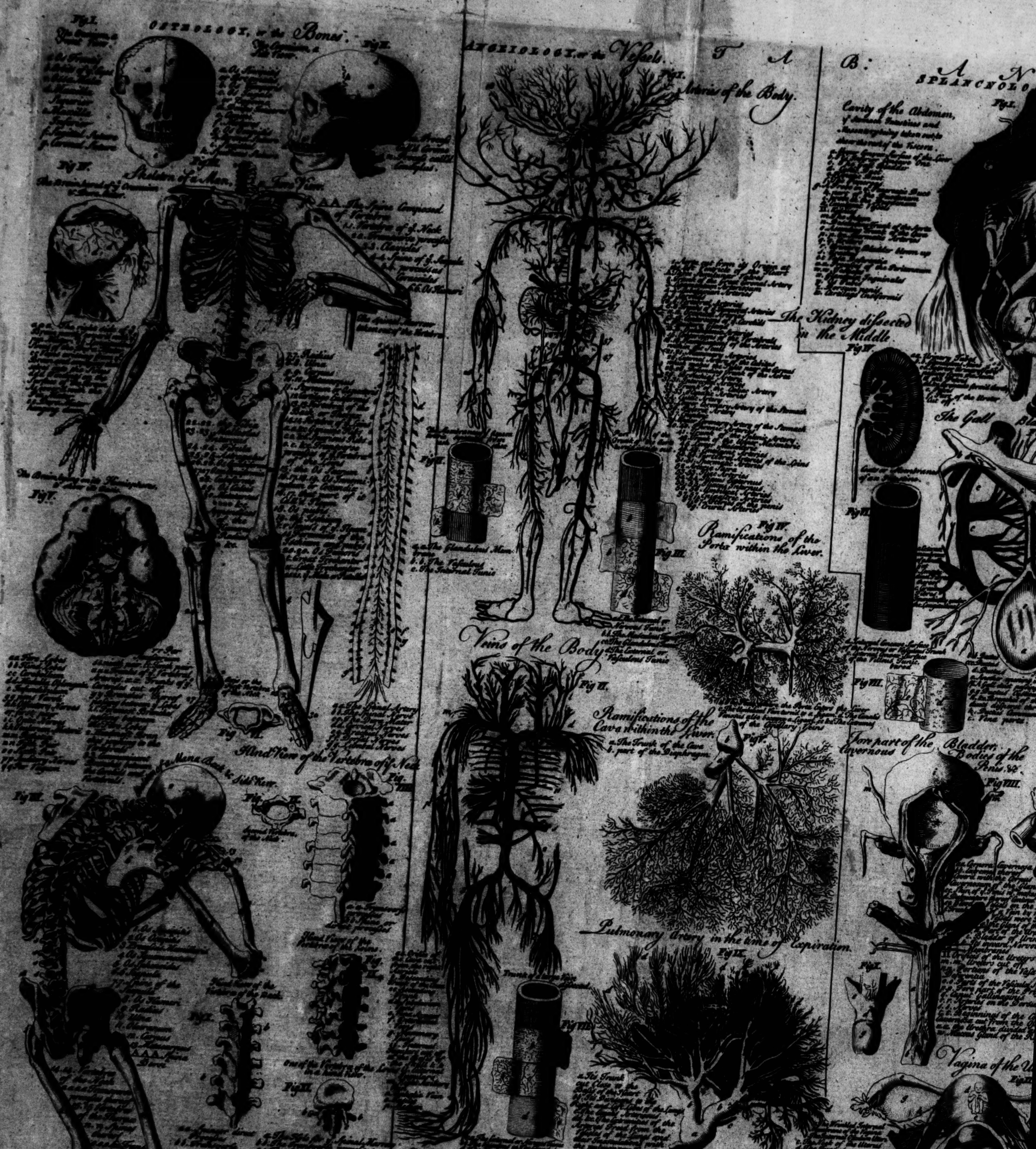
ANCHOR *, ANCHORA, an inſtrument uſed at ſea, and in rivers, to retain and faſten a veſſel by.

* The word comes from the Latin *ancora*, or *anchora*, of the Greek αγκυρα, which comes from αγκυλος, *incurvus*, crooked.

An *anchor* is a large, ſtrong piece of iron, crooked at one end, and formed into two barbs, reſembling a double hook; and faſtened at the other end by a cable.

The goodneſs of the *anchor* is a point of great importance; the ſafety and conſervation of the veſſel depending principally thereon.—Great care is to be taken, that the metal it is made of be neither too ſoft, nor too brittle; the latter rendering it liable to break, and the former to ſtraiten.

Travellers tell us of people in the Indies who make uſe of wooden *anchors* in their navigation.—The inhabitants of the iſland of Ceylon, in lieu of *anchors*, uſe huge round ſtones; and, in other places, their *anchors* are a kind of machines of wood, loaden with ſtones.


OSTEOLOGY, or the Bones.
Fig. I.
The Cranium, a Front View.
a. Os Frontis
b. Orbit of ye Eye
c. Ossa Nasi
d. Maxilla Superior
e. Maxilla Inferior
f. Sagittal Suture
g. Coronal Suture
Fig. II.
The Cranium, a Side View.
Fig. IV.
The Brain bared of ye Cranium & Dura Mater.
Fig. III.
Skeleton of a Man, a Fore View.
A A. The Spine Composed of Vertebræ
1.1. Vertebræ of ye Neck
2.2. Transverse processes
3.3. Clavicles
4.4. Spine of ye Scapula
5.5. processus Coracoides
6.6. Os Humeri
Fig. V.
Hind View of the Vertebræ of ye Neck
Fig. VII.
Inside of the Os Ileum
Fig. XII.
The Os Temporis laid bare.
Fig. XIII.
Teeth
ANGEIOLOGY, or the Vessels.
T A B: A N
Fig. I.
Arteries of the Body.
Veins of the Body.
Fig. II.
Fig. III.
Fig. IV.
Ramifications of the Porta within the Liver.
Ramifications of the Cava within the Liver.
Fig. V.
Pulmonary Artery in the time of Expiration.
Fig. IX.
Fig. X.
SPLANCHOLO
Fig. I.
Cavity of the Abdomen, ye Stomach, Intestines and Mesentery being taken out to shew the rest of the Viscera.
The Kidney dissected in the Middle.
Fig. IV.
The Gall Bladder
Fig. VI.
Fig. VII.
Fore part of the Bladder & Cavernous Bodies of the Penis &c.
Fig. VIII.
Vagina of the Uterus
Placenta & Funiculus Umbilicalis
Back part of the Penis
Fig. XI.

NATOMY

NOLOGY, or the Viscera

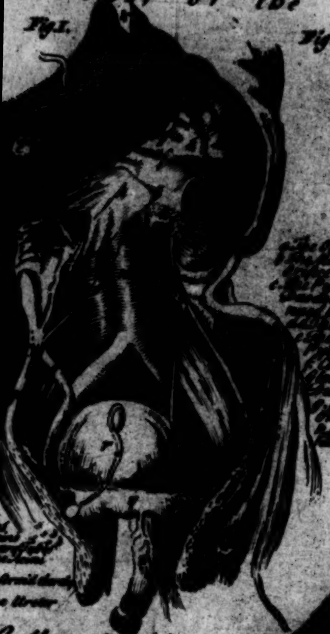


Fig. I.

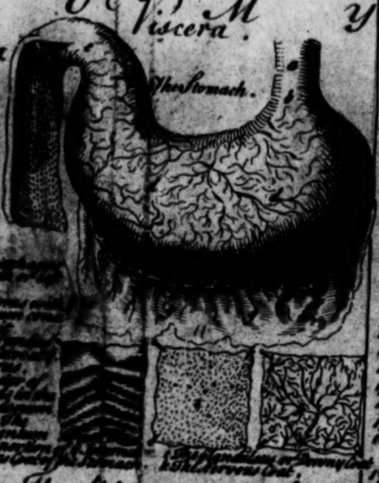
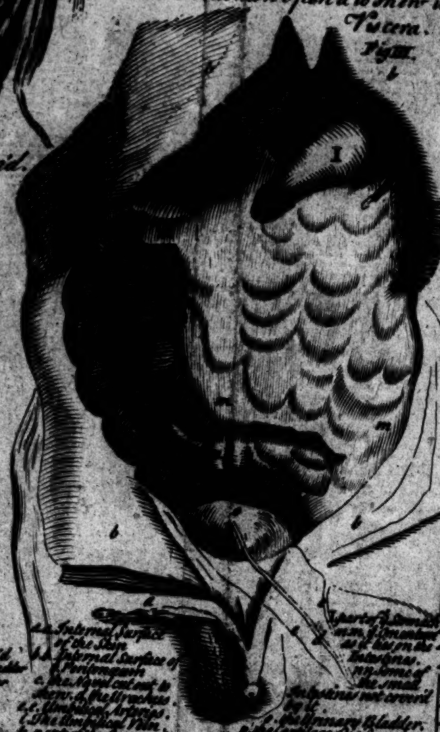
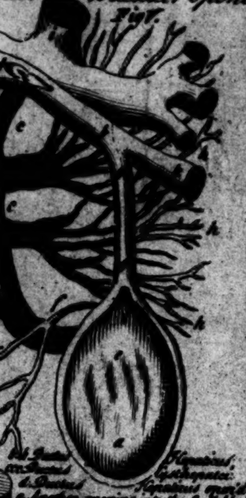
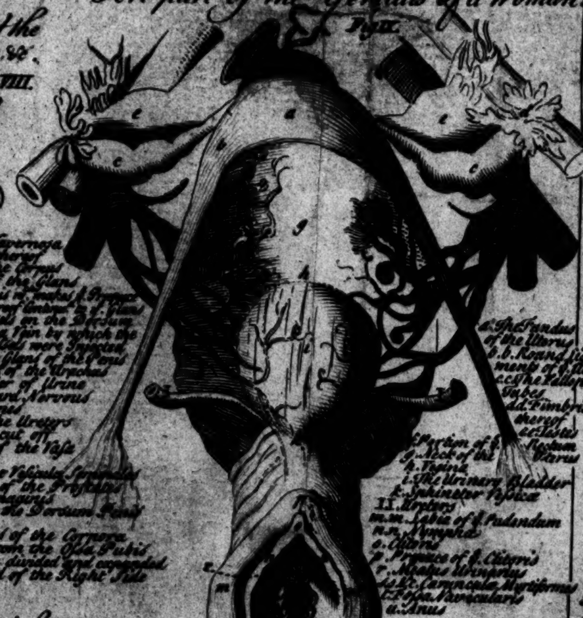


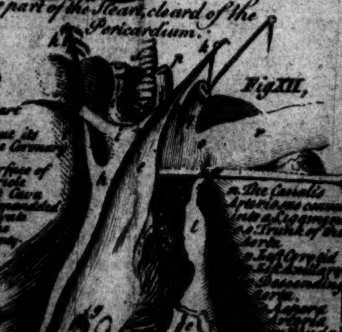
Fig. II.


The Abdomen open'd to shew its Viscera. Fig. III.


Bladder open'd


Fore part of the Genitals of a Woman

Vagina of the Uterus open'd


Fore part of the Heart cleared of the Pericardium. Fig. XII.

the Penis, Prostata &c.

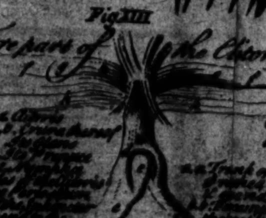
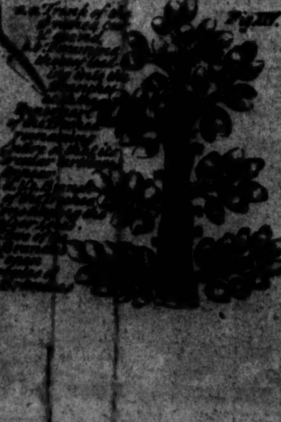


Fig. XIII. Fore part of the Clitoris


A Lobe of the Lungs divided into Lobules

MYOLOGY, or the Muscles.

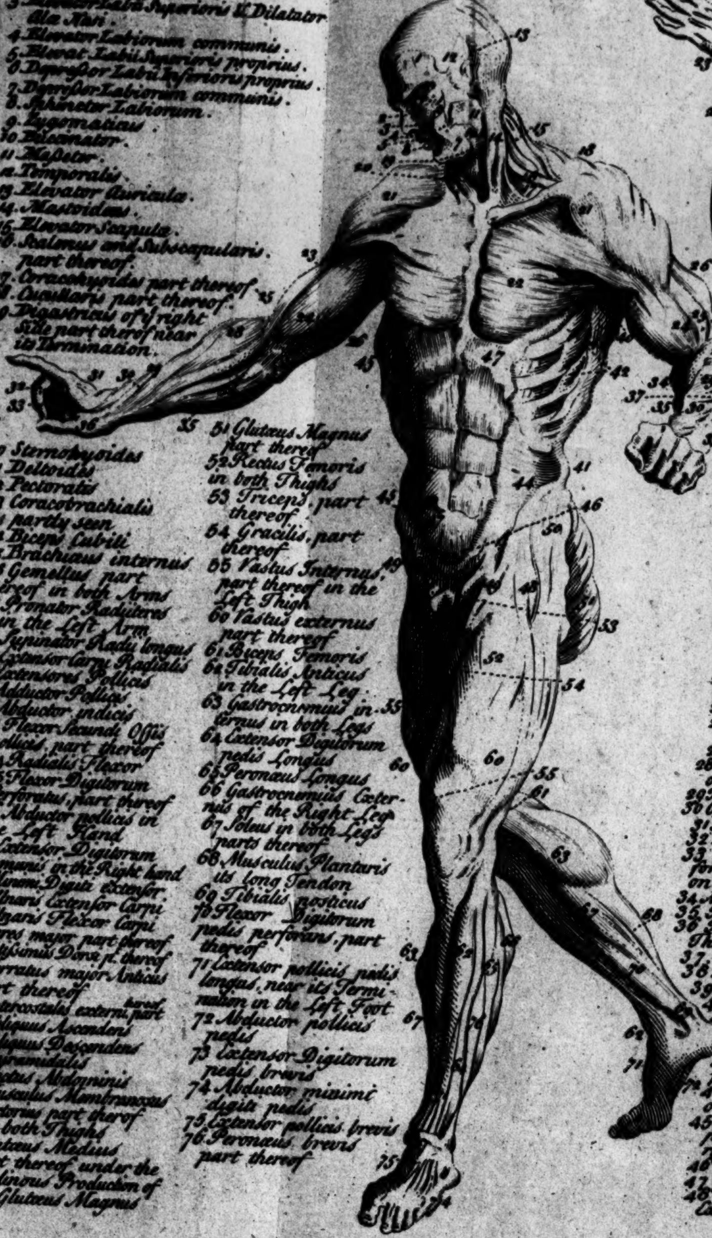


Fig. I. Exterior Muscles of the Fore Parts of the Body.

1 Frontalis.
2 Orbicularis Palpebrarum.
2 Elevator Alæ Nasi.
3 Elevator Labii Superioris & Dilatator Alæ Nasi.
4 Elevator Labiorum communis.
5 Elevat. Labii Superioris proprius.
6 Depressor Labii Inferioris proprius.
7 Depressor Labiorum communis.
8 Sphincter Labiorum.
9 Zygomaticus.
10 Buccinator.
11 Maſſeter.
12 Temporalis.
13 Elevator Auriculæ.
14 Mastoideus.
15 Elevator Scapulæ.
16 Scalenus and Subscapularis part thereof.
17 Coracohyoides part thereof.
18 Cucullaris part thereof.
19 Digastricus of ye right Side part thereof near its Termination.
20 Sternohyoides
21 Deltoides
22 Pectoralis
23 Coracobrachialis partly seen
24 Biceps Cubiti
25 Brachiæus internus
26 Gemellus part thereof in both Arms
27 Pronator Radii teres in the Left Arm
28 Supinator Radii longus
29 Extensor Carpi Radialis
30 Extensores Pollicis
31 Adductor Pollicis
32 Abductor indicis
33 Flexor Secundi Oſſis pollicis, part thereof
34 Radialis Flexor
35 Flexor Digitorum Perforatus, part thereof
36 Abductor pollicis in the Left Hand
36 Extensor Digitorum communis in the Right hand
37 Minimi Digiti extensor.
38 Ulnaris Extensor Carpi
39 Ulnaris Flexor Carpi
40 Teres major part thereof
41 Latiſsimus Dorsi pt. thereof
42 Serratus major Anticus part thereof
43 Intercostales externi, part thereof
44 Obliquus Ascendens
45 Obliquus Descendens
46 Pyramidalis
47 Rectus Abdominis
48 Musculus Membranosus
49 Sartorius part thereof on both Thighs
50 Glutæus Medius part thereof under the Tendinous Production of the Glutæus Magnus
51 Glutæus Magnus part thereof
52 Rectus Femoris in both Thighs
53 Triceps, part thereof
54 Gracilis, part thereof
55 Vastus Internus, part thereof in the Left Thigh
60 Vastus externus part thereof
61 Biceps Femoris
62 Tibialis Anticus in the Left Leg
63 Gastrocnemius internus in both Legs
64 Extensor Digitorum pedis Longus
65 Peronæus Longus
66 Gastrocnemius Externus of the Right Leg
67 Soleus in both Legs parts thereof
68 Musculus Plantaris its long Tendon
69 Tibialis posticus
70 Flexor Digitorum pedis perforans, part thereof
71 Extensor pollicis pedis longus, near its Termination in the Left Foot
72 Abductor pollicis pedis
73 Extensor Digitorum pedis brevis
74 Abductor minimi digiti pedis
75 Extensor pollicis brevis
76 Peronæus brevis part thereof

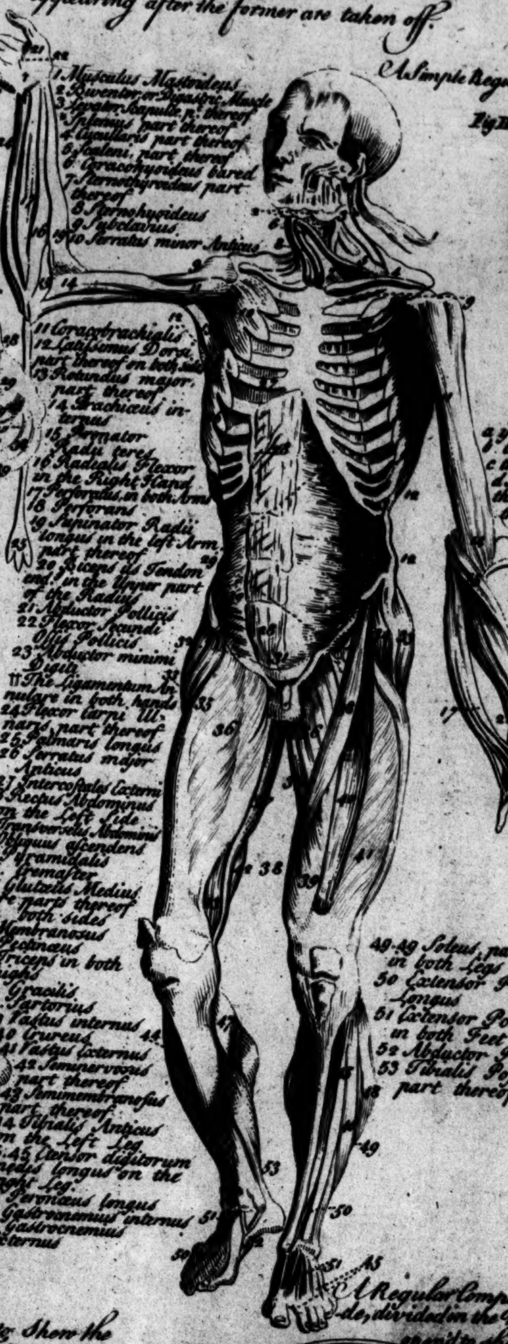
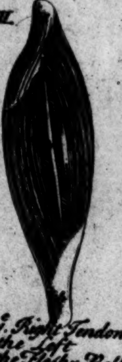


Fig. II. Interior Muscles of the Body, appearing after the former are taken off.

1 Musculus Mastoideus
2 Biventer or Digastric Muscle
3 Levator Scapulæ p. thereof
Infraspinatus part thereof
4 Cucullaris part thereof
5 Scaleni, part thereof
6 Coracohyoideus bared
7 Sternothyroideus part thereof
8 Sternohyoideus
9 Subclavius
10 Serratus minor Anticus
11 Coracobrachialis
12 Latiſsimus Dorsi part thereof on both sides
13 Rotundus major, part thereof
14 Brachiæus internus
15 Pronator Radii teres
16 Radialis Flexor in the Right Hand
17 Perforatus in both Arms
18 Perforans
19 Supinator Radii longus in the left Arm part thereof
20 Biceps its Tendon end. in the Upper part of the Radius
21 Abductor Pollicis
22 Flexor Secundi Oſſis Pollicis
23 Abductor minimi Digiti
†† The Ligamentum Annulare in both hands
24 Flexor Carpi Ulnaris part thereof
25 Palmaris longus
26 Serratus major Anticus
27 Intercostales Externi
28 Rectus Abdominis on the Left Side
29 Transversalis Abdominis
30 Obliquus aſcendens
31 Pyramidalis
32. Cremaster
33. Glutæus Medius fore parts thereof on both sides
34 Membranosus
35 Pectinæus
36 Triceps in both Thighs
37. Gracilis
38. Sartorius
39 Vastus internus
40 Crureus
41 Vastus Externus
42 Seminervosus part thereof
43 Semimembranosus part thereof
44 Tibialis Anticus on the Left Leg
45.45 Extensor digitorum pedis longus on the right Leg.
46 Peronæus longus
47 Gastrocnemius internus
48 Gastrocnemius Externus
49.49 Soleus, part thereof in both Legs
50 Extensor Pollicis Longus
51 Extensor Pollicis brevis in both Feet
52 Abductor Pollicis
53 Tibialis Posticus part thereof


A Simple Regular Muscle. Fig. III.

a ye Right Tendon
b the Left
c the Fleshy Belly
d An Opening thereof to Shew the transverse Fibres

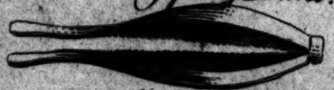


Fig. IV. A Simple Muscle open'd, to Shew the Inner Series of fleshy Fibres.

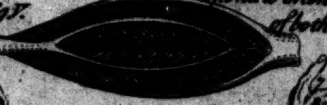
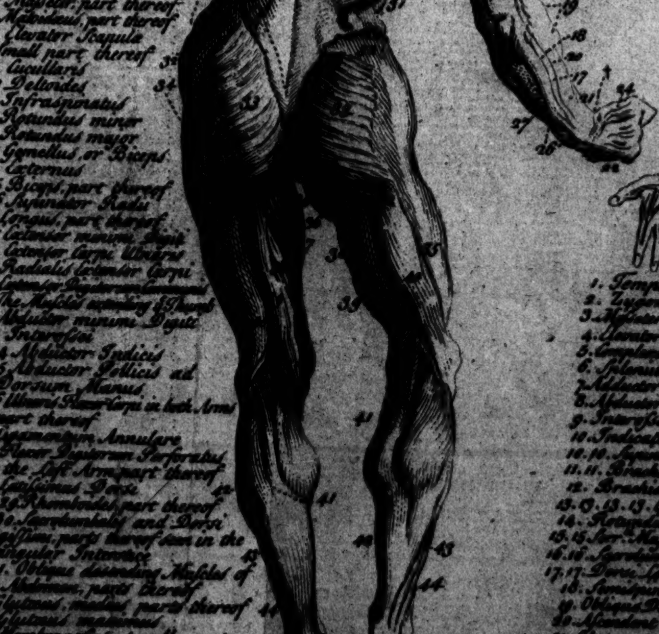
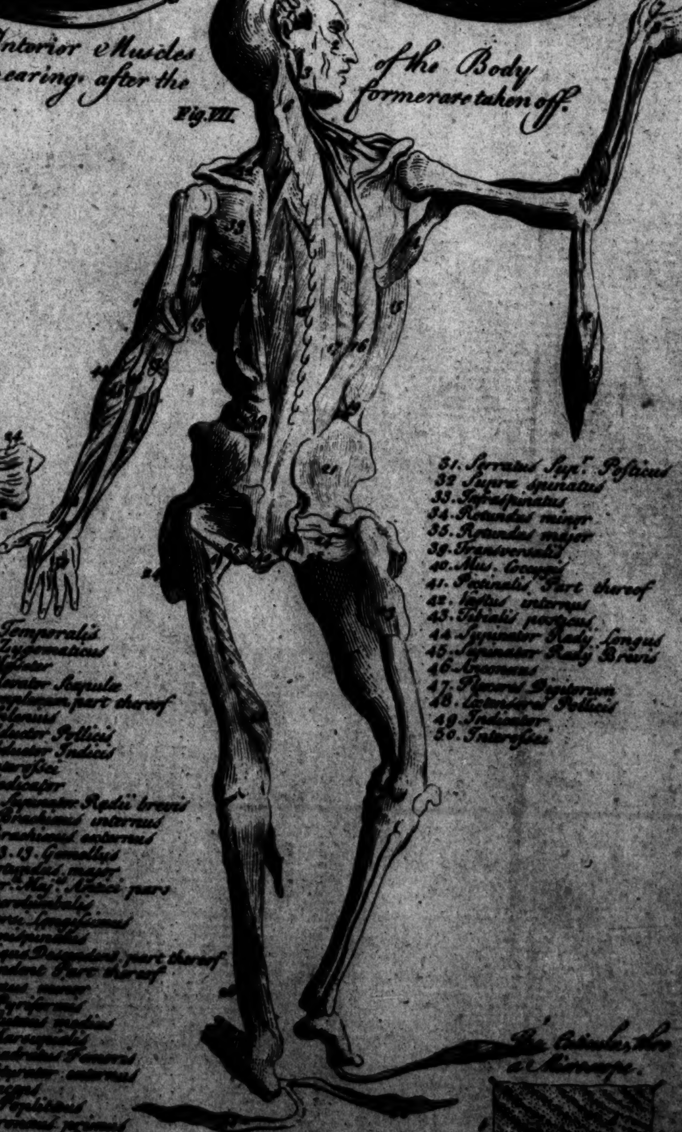


Fig. V. A Regular Compound Muscle, divided in the Middle and open'd to shew ye Inside of both Bellies.


Exterior Muscles of the back part of the Body. Fig. VI.

1 Musculus Occipitalis
2 Temporalis p. thereof
3 Elevator Auriculæ
4 Zygomaticus
5 Splenius, part thereof
6 Maſſeter, part thereof
7 Mastoideus, part thereof
8 Elevator Scapulæ Small part thereof
9 Cucullaris
10 Deltoides
11 Infraspinatus
12 Rotundus minor
13 Rotundus major
14 Gemellus, or Biceps Externus
15 Biceps, part thereof
16 Supinator Radii Longus, part thereof
17 Extensor minimi Digiti
18 Extensor Carpi Ulnaris
19 Radialis Extensor Carpi
20 Extensor Digitorum Communis
21 The Muſcles extending ye Thumb
22 Abductor minimi Digiti
23 Interoſsei
24 Abductor Indicis
25 Abductor Pollicis ad Dorsum Manus
26 Ulnaris Flexor Carpi in both Arms part thereof
† Ligamentum Annulare
27 Flexor Digitorum Perforatus in the Left Arm part thereof
28 Latiſsimus Dorsi
29.29 Rhomboides part thereof
30.30 Sacrolumbalis and Dorsi longiſsimus, parts thereof seen in the Triangular Interstice
31.31. Oblique descending Muſcles of the Abdomen, parts thereof
32. Glutæus medius parts thereof
33. Glutæus maximus
34. Membranosus, small part thereof
35. Vastus externus
36. Triceps, parts thereof
37. Gracilis in the Right Thigh
38. Semimembranosus
39. Seminervosus
40. Biceps
41.41. Gastrocnemius externus and internus
42. Soleus
43. Peronæus primus
44. Peronæus Secundus
45. Abductor minimi Digiti


Interior Muscles of the Body appearing after the former are taken off. Fig. VII.

1. Temporalis
2. Zygomaticus
3 Maſseter
4. Elevator Scapulæ
5. Complexus part thereof
6. Splenius
7. Adductor Pollicis
8. Abductor Indicis
9. Interoſsei
10. Indicator
10.10. Supinator Radii brevis
11.11. Brachiæus internus
12. Brachiæus externus
13.13.13.13. Gemellus
14. Rotundus major
15.15 Ser. Maj. Antici pars
16.16 Sacrolumbalis
17.17. Dorsi Longiſsimus
18. Semispinalis
19. Obliquus Descendens part thereof
20. Aſcendent Part thereof
21. Glutæus minor
22.22. Pyriformis
23. Glutæus medius
24.24. Marsupialis
25. Quadratus Femoris
25. Obturator internus
26. Triceps
27.27.27. Popliteus
28. Peronæus primus
28. Peronæus Secundus
29. Flexor Pollicis longus
30. Flexor 3m Internodiy Digitorum perforans
31. Serratus Sup. Posticus
32 Supra spinatus
33. Infraspinatus
34. Rotundus minor
35. Rotundus major
39. Transversalis
40. Mus. Coccygæi
41. Pectinalis Part thereof
42. Vastus internus
43. Tibialis posticus
44. Supinator Rady Longus
45. Supinator Rady Brevis
46. Anconæus
47. Flexores Digitorum
48. Extensores Pollicis
49. Indicator
50. Interoſsei

Fig. VIII.
The Cuticle & Skin, thro' a Microscope.

aa &c. Papillæ
bb &c. Furrows between ye Papillæ
dd. Sweat Vessels
ee &c. Hairs arising out of the Sweat Vessels

Fig. IX.
The Cuticle, thro' a Microscope.

aa &c. Sweat Pores
bb &c. Sulci or Furrows

T. Jefferys sculp.

The parts of an *anchor* are, 1°, The *ring*, into which the cable is faſtened: 2°, The *beam*, or *ſhank*, which is the longeſt part of the *anchor*: 3°, The *arm*, which is that which runs down into the ground: at the end of which is, 4°, The *flouke*, or *fluke*, by ſome called the *palm*; being that broad and piked part, with its barbs, like an arrow-head, which faſtens into the ground: 5°, The *ſtock*, a piece of wood faſtened to the beam, near the ring, ſerving to guide the fluke, ſo that it may fall right, and fix in the ground.

There are three kinds of *anchors* commonly uſed: the *kedger*, the *grapnel*, and the *ſtream-anchor*. See STREAM-ANCHOR, and KEDGING.

Aubin in his dictionary of ſea-affairs, printed at Amſterdam in 1702. obſerves, that the *anchor* of a large heavy veſſel is ſmaller, in proportion, than that of a leſſer and lighter one. The reaſon he gives, is, that though the ſea employs an equal force againſt a ſmall veſſel as againſt a great one, ſuppoſing the extent of wood upon which the water acts to be equal in both; yet the little veſſel, by reaſon of its ſuperior lightneſs, does not make ſo much reſiſtance as the greater; the defect whereof muſt be ſupplied by the weight of the *anchor*. But the validity of this reaſon we will not be anſwerable for.

Weighing **ANCHOR**. See the article WEIGHING.

ANCHOR, in architecture and ſculpture, denotes an ornament in form of an *anchor*, or arrow's-head; frequently carved on the echinus, or quarter-round, in the Tuſcan, Doric, and Ionic capitals, as well as in the bed-moulding of the Doric, Ionic, and Corinthian corniches.—See *Tab. Archit. fig.* 10.

The *anchors* are uſually intermixed with repreſentations of eggs; whence the echinus itſelf is popularly called *eggs and anchors*. See ECHINUS, and QUARTER-*Round*.

ANCHOR, a meaſure. See ANKER.

ANCHORAGE, ground fit to hold a ſhip's *anchor*, ſo that ſhe may ride ſafely.

The beſt ground for a ſhip to anchor in is ſtiff clay, or hard ſand; and the beſt riding at anchor is when a ſhip is land-locked, and out of the tide.

ANCHORAGE, in law, denotes a duty taken of ſhips for the pool of the haven, where they caſt anchor.

The ground in all ports and havens being the king's, no man can let an anchor fall in any port, without paying for it to the king's officer appointed by patent.

ANCHORED, or **ANKERD**, or in heraldry.—A croſs *anchored*, or *ancree*, is a form of croſs, ſo called, becauſe the four extremities reſemble the fluke of an anchor.

This croſs is ſo like the croſs molin, that the reſemblance has occaſioned many miſtakes in heraldry. See CROSS.

ANCHOVY *, in matters of commerce, &c. a little ſea-fiſh, much uſed by way of ſawce, or ſeaſoning.

* The word is derived from the Spaniſh *anchova*, or rather from the Italian, *anchioe*, which ſignifies the ſame.

Scaliger deſcribes the *anchovy* as of the herring kind, about the length of a finger, having a pointed ſnout, a wide mouth, and no teeth, but gums as rough as a ſaw.—Others make it a ſort of ſardine, or pilchard: but others, with better reaſon, hold it a peculiar ſpecies, very different from either.

The *anchovy* is caught in the months of May, June, and July, on the coaſts of Catalonia, Provence, &c. at which ſeaſon, it conſtantly repairs up the ſtreights of Gibraltar, into the Mediterranean. Collins ſays, they are alſo found in plenty on the weſtern coaſts of England and Wales. *Coll. Salt. and Fiſh.* p. 101.

The fiſhing for them is chiefly in the night-time; when a light being put out on the ſtern of their little fiſhing-veſſels, the *anchovies* flock round, and are caught in the nets.

When the fiſhery is over, they cut off the heads, take out their gall and guts; and then lay them in barrels, and ſalt them —The common way of eating *anchovies* is with oil, vinegar, &c. in order to which they are firſt boned, and the tails, fins, &c. ſlipped off.—Being put on the fire, they diſſolve in almoſt any liquor. Or they are made into ſawce by mincing them with pepper, &c. *V. Hought. Collect.* N° 550. t. 2. p. 309.

ANCHYLOPS, in medicine. See ANCHILOPS.

ANCIENT *, or **ANTIENT**, in its uſual ſenſe, denotes a thing, which exiſted in times long ago.

* The word comes from the French *ancien*, of the Italian *anciano*, and that of the Latin *antiquus*, which denotes the ſame.

In which ſenſe *ancient* ſtands oppoſed to *modern*. See MODERN.

Ancient differs from *antique* as the genus from its ſpecies. See ANTIQUE.

We ſay *ancient* nations, *ancient* architecture, ſculpture, philoſophy, &c. *ancient* manner, ceremonies, poets, phyſicians, and the like.

ANCIENT *Academy*. See the article ACADEMY.

ANCIENT *Aſtronomy*. See the article ASTRONOMY.

ANCIENT *Character*. See the article HEBREW.

ANCIENT *Coins*. See the article COINS.

ANCIENT *Comedy*. See the article COMEDY.

ANCIENT *Hours*. See the article HOURS.

ANCIENT *Medals*, &c. See the article MEDALS, &c.

ANCIENT *Money*. See the article MONEY.

ANCIENT *Roman Year*. See the article YEAR.

ANCIENT *Tenure*.—Barons by *ancient* tenure. See BARON.

ANCIENT *Weights*. See the article WEIGHT.

ANCIENT is ſometimes oppoſed to *young*, or *new*.—The French ſay, the *ancient* biſhop of ſuch a city, when he has reſigned his ſee, and a new one is put in his place: the *ancient* biſhop of Frejus, ſince cardinal de Fleury.

ANCIENTS in church-diſcipline. See the article ELDERS.

ANCIENTS, in inns of court, imports a diſtinction of a certain degree. Thus,—The ſociety of Gray's-inn conſiſts of benchers, *ancients*, barriſters, and ſtudents under the bar: here the *ancients* are the elder barriſters.

In the inns of chancery there are only *ancients*, and ſtudents or clerks; and among the *ancients*, one is yearly the principal, or treaſurer.—In the Middle-temple, *ancients* are ſuch as have gone through, or are paſt their reading.

ANCIENT is ſometimes alſo uſed in a military ſenſe, for the colours, or an enſign.

ANCIENT, in the naval armament, is the flag, or ſtreamer, borne in the ſtern of a ſhip.

ANCIENT *Demeſne*, or *Demain*, in law, is a tenure, whereby all manors belonging to the crown in William the conqueror's and St. Edward's time, were held. See TENURE.

The numbers, names, &c. hereof were entered by the Conqueror, in a book called *domeſday-book*, yet remaining in the exchequer; ſo that ſuch lands as by that book appeared to have belonged to the crown at that time are called *ancient demeſne*. See DOMES-DAY.

The tenants in *ancient Demeſne* are of two ſorts; one who hold their lands frankly by charter; the other by copy of court-roll, or by the verge, at the will of the lord, according to the cuſtom of the manor.

The advantages of this tenure are, 1. That tenants holding by charter cannot be rightfully impleaded out of their manor; and, when they are, they may abate the writ, by pleading the tenure. 2. They are free from toll for all things relating to their livelihood, and huſbandry; nor can be impanelled on any inqueſt.

Theſe tenants held originally by plowing the king's land, plaſhing his hedges, and the like ſervices, for the maintenance of his houſhold; and it was on this account that ſuch liberties were given them, for which they may have writs of monſtraverunt to ſuch as take the duties of toll, &c.

No lands are to be accounted *ancient demeſne*, but ſuch as are held in ſocage.

ANCIENTY, in ſome ancient ſtatutes, is uſed for elderſhip or ſeniority.

The eldeſt ſiſter can demand no more than her other ſiſters, beſide the chief meſne, by reaſon of her *ancienty*.

ANCON, Αγκων, in anatomy, denotes the curvation or flexure of the arm, whereon we reſt in leaning.

This is otherwiſe called *olecranum*. See OLECRANON.

ANCON, in architecture, is uſed to denote the corners or quoins of walls, croſs beams, or rafters.

ANCONÆUS *Muſculus*, in anatomy, the ſixth muſcle of the elbow; ſo called, as being ſituate behind the folds of the *ancon*, or elbow.—See *Tab. Anat.* (Myol.) fig. 7. n. 46.

It ariſes from the back part of the extremities of the humerus, paſſes over the elbow, and is inſerted into the lateral and internal part of the cubitus about three or four fingers breadth above the olecranum.—Its uſe is to aſſiſt in extending the arm.

ANCONY, in the iron mines, a bloom wrought into the figure of a flat iron bar, about three feet long, with two ſquare rough knobs, one at each end. See IRON.

ANCREE, in heraldry, the ſame with *anchored*. See ANCHORED.

ANCYLE *, in antiquity, denotes a ſmall kind of brazen ſhield, ſaid to have fallen from heaven into the hands of Numa Pompilius, at the ſame time that a voice was heard, that Rome ſhould be miſtreſs of the world, while ſhe preſerved that ſhield.

* Authors are divided as to the orthography and origin of the word: Camerarius and Muretus will have it Greek, and ſuppoſe it formed from αγκυλος, crooked: agreeably to this ſyſtem, they write *ancyle*, and *ancylia*, with a *y*. It is certain we find αγκυλια in Plutarch; and Juba in his hiſtory will abſolutely have the word to be of Greek extraction: but this orthography ſeems overturned both by medals and manuſcripts, where the word is written ANCILIA. Varro derives the name *ancilia*, *ab ancîſu*; and ſuppoſes this denomination given to a kind of ſhields, becauſe cut in, or indented on both ſides, after the manner of the Thracian *peltæ*. Plutarch himſelf gives this figure to the *ancilia*; but he differs from Varro, in this, that he pretends the *peltæ* were not in this ſhape, but quite round, and without indenting. Ovid ſeems alſo to ſay, that the *ancile* was round, and that it came hence to be denominated *ancile*, *q. d. anciſum*, of *am*, and *cædo*, cut equally round. Other etymons are alſo mentioned by Plutarch; one from αγκων, elbow, by reaſon the *ancile* was borne on the elbow.

Though there was but one *ancyle* that fell from heaven; yet were there twelve preſerved; Numa, by the advice, as it is ſaid, of the nymph Egeria, having ordered eleven others, perfectly like the firſt, to be made by Veturius Mamurius; that if any ſhould attempt to ſteal it, as Ulyſſes did the Palladium, they might not be able to diſtinguiſh the true *ancyle* from the falſe ones.

Theſe *ancylia* were preſerved in the temple of Mars; and were committed to the care of twelve prieſts, or *Salii*, inſtituted for that purpoſe.

They were carried every year, in the month of March, in proceſſion all around Rome; and the thirtieth day of that month they were again depoſited in their place.

ANCYLE is alſo uſed, in anatomy, for the contraction of the ham.

ANCYLOBLEPHARON, *Inviſcatio*, or *Adglutinatio Palpebrarum*, a diſeaſe wherein the eye-lids are ſtuck faſt, or glued together—The cure is by manual operation. *V. Bibl. Anat. Med.* T. 2. p. 278.

ANCYLOGLOSSUS, Αγκυλογλωσσος, one that is tongue-tied, or has an impediment in his ſpeech, ariſing from a contraction of the frænum of the tongue.

ANCYLOSIS *, a diſeaſe in the junctures of an human body; where the nervous liquor that ſhould lubricate the bones, and make their motions eaſy, growing too thick, clogs up, and as it were cements the bones, and contracts the joint.

* The word is derived from the Greek αγκυλωσις, which comes from αγκυλη, a hardneſs, or contraction of a joint.

ANCYROIDES, Αγκυροειδης, is uſed by ſome writers in anatomy for the proceſs or ſhooting forth of the ſhoulder-bone, in form of a beak; otherwiſe called *coracoides*.

ANDABATÆ, in antiquity, a kind of gladiators, who fought hoodwinked; having on a ſort of helmet that covered the eyes, and even the face. See GLADIATOR.

They were called, *andabatæ*, *quaſi* αναβαται, *aſcenſores*, becauſe they fought mounted on horſeback, or out of chariots.

ANDREW.—Knights of St. *Andrew*, or the thiſtle. See THISTLE.

ANDREW'S *Croſs*, is a badge worn in the hat, by the people of Scotland, on the day of the feaſt of that ſaint.

It conſiſts of blue and white ribbands, diſpoſed into a croſs, or ſaltier; and is intended as a commemoration of the crucifixion of St. Andrew, the tutelary ſaint of Scotland.

ANDROGYNUS*, or ANDROGYNOUS, an hermaphrodite, or one born with two ſexes, being male and female in the ſame perſon. See HERMAPHRODITE.

* The word comes from the Greek ανδρογυνος a compound of ανηρ, man, and γυνη, woman, *q. d.* man-woman.

Many of the rabbins are of opinion, that Adam was created *androgynous*; that he was male on one ſide, and female on the other; and that he had even two bodies, the one of a man, and the other of a woman: ſo that God, to create Eve, only ſeparated thoſe two from each other. V. *Manaſſ. Ben-Iſrael, Maimonid. &c. ap. Heidegg. Hiſt. Patriarch. tom.* I. *p.* 128.

Plato tells us, that in the beginning certain people were born double, and with both ſexes; but that this duplicity of members giving them too much ſtrength and vigour, they became inſolent, and even declared war againſt the gods.—Upon which, Jupiter, to tame their pride, ſplit each of them into two; but ſo as that each moiety ſtill retained a ſtrong paſſion to be reunited: and hence that philoſopher derives the natural love between the two ſexes. *Conviv. p.* 1185. *ed.* 1602.

The aſtrologers alſo give the appellation *androgynous* to ſuch of the planets as are ſometimes hot, and ſometimes cold; as mercury, which is reputed hot and dry when near the ſun, and cold and moiſt when near the moon.

ANDROIDES *, an automaton, in the figure of a man; which, by virtue of certain ſprings, &c. duly contrived, walks, ſpeaks, and performs other external functions of a man. See AUTOMATON.

* The word is compounded of the Greek, ανηρ, ανδρος, man, and ειδος, form.

Albertus Magnus is recorded as having made a famous *androides*.

ANDROLEPSY *, ANDROLEPSIA, in antiquity.—If an Athenian were killed by a citizen of ſome other place; and ſuch city refuſed to deliver up the criminal to puniſhment; it was held lawful to take three inhabitants of that city, and puniſh the homicide in them.—This the Greeks called *androlepſia*, and the Romans *clarigatio*. See CLARIGATIO.

* The word is formed of ανηρ, man, and λαμβανω, *capio*, I take.

Some authors alſo uſe *androlepſia* for reprizals. See REPRIZAL.

ANDROMACHI *Theriaca*, or *Treacle of* ANDROMACHUS, in pharmacy, is a capital alexipharmic compoſition; called alſo *Venice Treacle*. See THERIACA.

ANDROTOMY, or ANDRATOMY, the anatomy or diſſection of human bodies. See DISSECTION.

It is thus called in oppoſition to *zootomy*, which is uſed to denote that of brutes.

Anatomy is the genus, and comprehends all diſſections in general, whether of men, beaſts, or plants; and *androtomy* and zootomy are the ſpecies. See ANATOMY.

ANECDOTES *, ANECDOTA, a term uſed by ſome authors, for the titles of *Secret Hiſtories*; that is, of ſuch as relate the ſecret affairs and tranſactions of princes; ſpeaking with too much freedom, or too much ſincerity, of the manners and conduct of perſons in authority, to allow of being made public.

* The word is Greek, ανεκδοτα, *q. d.* things not yet known, or hitherto kept ſecret.

Procopius gives this title to a book which he publiſhed againſt Juſtinian, and his wife Theodora; and he ſeems to be the only perſon among the antients, who has repreſented princes ſuch as they are in their domeſtic relation.—Varillas has publiſhed *anecdotes* of the houſe of Medicis.

ANECDOTES is alſo an appellation given to ſuch works of the antients as have not yet been publiſhed.

In which ſenſe, M. Muratori gives the name *Anecdota Græca* to ſeveral writings of the Greek fathers, found in the libraries, and firſt publiſhed by him.—F. Martene has given a *Theſaurus Anecdotarum Novus*, in folio, 5 vol.

ANELE, or ANIL, the ſame with *indigo*. 23 El. c. 9.

ANEMIUS * *Furnus*, among chymiſts, a wind-furnace; uſed to make fierce fires for melting, &c.

* The word is formed of the Greek ανεμος, wind.

ANEMOMETER *, a machine wherewith to meaſure the ſtrength of the wind.

* The word is compounded of the Greek ανεμος, wind, and μετρον, meaſure.

The *anemometer* is variouſly contrived. In the Philoſophical Tranſactions we have one deſcribed, wherein the wind being ſuppoſed to blow directly againſt a flat ſide, or board, which moves along the graduated limb of a quadrant, the number of degrees it advances ſhews the comparative force of the wind.

Wolfius gives the ſtructure of another, which is moved by means of ſails, ABCD (*Tab. Pneumatics, fig.* 17.), like thoſe of a wind-mill; which raiſe a weight, L, that, ſtill the higher it goes, receding farther from the centre of motion, by ſliding along an hollow arm KM, fitted on to the axis of the ſails, becomes heavier and heavier, and preſſes more and more on the arm, till being a counterpoiſe to the force of the wind on the ſails, it ſtops the motion thereof. An index, then, MN, fitted upon the ſame axis at right angles with the arm, by its riſing or falling, points out the ſtrength of the wind, on a plane divided like a dial-plate into degrees.

M. d'Ons en Bray has invented a new *anemometer*, which of itſelf expreſſes on paper, not only the ſeveral winds that have blown during the ſpace of twenty-four hours, and at what hour each began, and ended, but alſo the different ſtrengths, or velocities, of each. *V. Mem. Acad. Scienc.* an. 1734. p. 169.

ANEMOSCOPE * is ſometimes uſed for a machine invented to foretel the changes of the wind.

* The word is derived from the Greek ανεμος, wind, and σκεπτομαι, I look, or conſider.

It has been obſerved, that hygroſcopes made of cat's-gut, &c. prove very good *anemoſcopes*; ſeldom failing, by the turning of the index about, to foretel the ſhifting of the wind. See HYGROSCOPE.

The *anemoſcope* uſed by the antients ſeems, by Vitruvius's deſcription of it, to have been intended rather to ſhew which way the wind actually blew, than to foretel into which quarter it would change.

Otto de Gueric alſo gave the title *anemoſcope* to a machine invented by him, to foretel the change of the weather, as to fair and rain.

It conſiſted of a little wooden man, who roſe and fell in a glaſs tube, as the atmoſphere was more or leſs heavy.—Accordingly, M. Comiers has ſhewn, that this *anemoſcope* was only an application of the common barometer. See BAROMETER. *V. Merc. gal.* 1683. *Act. erud.* 1684. p. 26.

ANEURYSM *, ANEURYSMA, in medicine, a ſoft, throbbing, ruddy tumour, occaſioned by a dilatation, or by a wound of an artery.

* The word comes from the Greek ανευρυνω, *dilato*, I dilate.

Aneuryſm is a diſeaſe of the arteries, in which, either by a preternatural weakneſs of any part of them, they become exceſſively dilated; or, by a wound through their coats, the blood is extravaſated among the adjacent cavities.

Aneuryſms uſually proceed from an artery being accidentally cut, or pricked in bleeding; or from ſome preternatural diſtenſion, or obſtruction, or a corroſion of its coats, &c. *V. Mem. Acad. R. Scienc.* an. 1732. p. 592.

If an artery happen to be cut, the blood guſhes out impetuouſly, by ſtarts, and is not eaſily ſtopped: and an inflammation and diſcoloration of the part ſucceeds, with a tumour, and inability to move the part. The ſymptoms are nearly the ſame in caſe of a corroſion of the coats of the artery; only in this caſe they are leſs violent.

If the blood ceaſe to flow from the wounded artery, and pour itſelf between the interſtices of the muſcles; recourſe is had to manual operation; which being neglected, the extirpation of the limb frequently becomes unavoidable.—An *Aneuryſm*, from a diſtention of the canal, is ſeldom fatal; though reckoned, when large, incurable: the chief inconveniencies are, the magnitude of the tumour, and the pulſation.

M. Littre gives us the hiſtory of an *aneuryſma* of this kind, in the aorta; the cauſe whereof he attributes to an extraordinary diminution of the cavity of the axillary and ſubclavian arteries. *Hiſt. de l' Acad. R.* an. 1712.—Another hiſtory of an *aneuryſma* of the ſame part we have, by Mr. Lafage, in the Philoſoph. Tranſactions. It was occaſioned by ſome violent ſhocks the patient received on the breaſt, which threw him into ſpitting of blood, and ſoon after formed the tumour, whereof he died. Upon diſſection, the *aneuryſma* was found ſo big, that it filled the whole cavity of the thorax on the right ſide. N° 265.

ANGARIA is uſed, in a general ſenſe, for any burden, or incumbrance, forcibly impoſed on perſons.

Some define *angariæ*, by perſonal ſervices, which a party is compelled to diſcharge in his own perſon, or to ſerve at his own expence.—Or, ſuch ſervices impoſed on lands, whereby a perſon is obliged to work for another, either with his horſe, his aſs, or the like.

ANGEIOGRAPHIA *, the knowlege, or deſcription, of all kinds of antient inſtruments, veſſels, and utenſils, both domeſtic, military, and nautical.

* The word is compounded of αγγειον, *vas*, veſſel, and γραφω, *ſcribo*, I deſcribe.

Angeiography alſo includes the conſideration of the weights, meaſures, *&c.* uſed by the ſeveral nations. See MEASURE, WEIGHT, VESSEL, *&c.*

ANGEIOLOGY *, ANGEIOLOGIA, in anatomy, the hiſtory, or deſcription, of the veſſels in a human body; *e. gr.* the nerves, veins, and lymphatics.—See *Tab. Anat. Part* II. See alſo the article VESSEL.

* The word is derived from αγγειον, a veſſel, and λογος, ſpeech, or diſcourſe.

Angeiology is a branch of ſarcology. See SARCOLOGY.

ANGEL, a ſpiritual, intelligent ſubſtance; the firſt in rank and dignity among created beings.

The word *angel* is not properly a denomination of nature, but of office; denoting as much as *nuntius*, meſſenger, a perſon employed to carry one's orders, or declare his will.—Thus it is St. Paul repreſents *angels*, Heb. I. 14. where he calls them *miniſtring ſpirits:* and for the ſame reaſon the name is given, in the prophet Malachi, c. II. 7. to prieſts; and by St. Matthew, c. XI. 10. to St. John Baptiſt. Jeſus Chriſt himſelf, according to the ſeptuagint, is called in Iſaiah, c. IX. 6. the *angel* of the mighty council *; a name, ſays Tertullian, *De Carne Chriſti*, c. IV. which ſpeaks his office, not his nature.—So the Hebrew word uſed in ſcripture, for *angel*, is alſo a name of office, and not of nature מלאך; q. d. legate, envoy, miniſter: and yet cuſtom has prevailed inſomuch, that *angel* is now commonly taken for the denomination of a particular nature.

* And, in the opinion of moſt commentators, we are to underſtand this denomination to belong to Chriſt, in ſeveral other places of ſcripture; Ravanel ſays, 30. See Gen. XLVIII. 16. Exod. XXIII. 20. Jud. II. 1. Dan. X. 13. XII. 1. Mal. III. 1. Jude 9. Rev. XII. 7.

The exiſtence of *angels*, is ſuppoſed in all religions, though it is incapable of being proved à priori.—Indeed, the antient Sadducees are repreſented as denying all ſpirits; and yet the Samaritans and Caraïtes, who are reputed Sadducees, openly allow them: witneſs Abuſaid, the author of an Arabic Verſion of the Pentateuch; and Aaron, a Caraïte Jew, in his comment on the Pentateuch; both extant in manuſcript in the king of France's library.

In the Alcoran, we find frequent mention of *angels.*—The Muſſelmans believe them of different orders or degrees, and to be deſtined for different employments both in heaven, and on earth. They attribute exceeding great power to the *angel* Gabriel; as, to be able to deſcend in the ſpace of an hour from heaven to earth; to overturn a mountain with a ſingle feather of his wing, *&c.* The *angel* Aſrael, they ſuppoſe, appointed to take the ſouls of ſuch as die; and another *angel*, named Eſraphil, they ſay, ſtands with a trumpet ready in his mouth to proclaim the day of judgment.

The heathen philoſophers and poets were alſo agreed as to the exiſtence of intelligent beings, ſuperior to man; as is ſhewn by St. Cyprian, in his treatiſe of the vanity of idols, from the teſtimonies of Plato, Socrates, Triſmegiſtus, *&c.*

Some Chriſtian writers, after Lactantius, *Inſtit. lib.* 1. c. xv. allege the energumeni, and the operations of magic, as convincing proofs thereof. St. Thomas produces other conſiderations, in behalf of the opinion, *lib.* II. *contra gentes*, c. xlvi.

Authors are not ſo unanimous about the nature as about the exiſtence of *angels.*—Clemens Alexandrinus believed they had bodies; which was alſo the opinion of Origen, Cæſarius, Tertullian, and ſeveral others. Athanaſius, St. Baſil, St. Gregory Nicene, St. Cyril, St. Chryſoſtom, *&c.* hold them to be mere ſpirits.

Eccleſiaſtical writers make an hierarchy of nine orders of *angels.* See HIERARCHY.

ANGEL is more particularly underſtood of a ſpirit of the ninth and loweſt claſs, or order of the hierarchy, or heavenly choir.

The ſcripture makes mention of the devil and his *angels*—We alſo ſay, the fallen *angels*, guardian *angels*, *&c.*

In the apocalypſe, the denomination *angel* is alſo given to the paſtors of ſeveral churches; who are called, The *angel* of the church of Epheſus; the *angel* of the church of Smyrna, *&c.*

Du Cange adds, that the ſame name was antiently given to certain popes, and biſhops; by reaſon of their ſingular ſanctity, *&c.*

ANGEL is alſo uſed in commerce, for an antient gold coin ſtruck in England; ſo called from the figure of an *angel* impreſſed upon it.

Its value in 1 Hen. VI. was 6*s.* 8*d.* in 1 Hen. VIII. 7*s.* 6*d.* in 34 Hen. VIII. 8*s.* in 6 Edw. VI. it was 10*s.* in 2 Eliz. it was 10*s.* and in 23 Eliz. the ſame.—And the *half angel*, or, as it was ſometimes called, the *angelet*, was the moiety of this; and the *quarter angelet*, proportionable. *V. Lownd. Eſſ. Amend. Silv. Coin*, p. 38. *ſeqq.*

The *angel* now ſubſiſts no otherwiſe than as a money of account: denoting [illegible]o*s.*

The French have alſo had their *angels*, *demi-angels*, and *angelets*; but they are now diſuſed.

ANGELIC, or ANGELICAL, ſomething belonging to, or that partakes of, the nature of *angels.* See ANGEL.

We ſay an *angelical* life, *&c.*—St. Thomas is ſtiled the *angelical doctor.*—The *angelical* ſalutation is called by the Romaniſts *Ave Maria*; ſometimes ſimply *angelus*, or the *pardon.*

The Greeks diſtinguiſh two kinds of monks: thoſe who profeſs the moſt perfect rule of life are called *monks of the great* or *angelical habit.*—The ſee of Rome has been ſometimes denominated the *angelical ſee.*

ANGELIC *Art.* See the article ART.

ANGELIC *Garment*, ANGELICA *Veſtis*, among our anceſtors, was a monkiſh garment, which laymen put on a little before their death, that they might have the benefit of the prayers of the monks.

It was from them called *angelical*, becauſe they were called *angeli*, who by theſe prayers *animæ ſaluti ſuccurrebant.*—Hence, where we read the phraſe *monachus ad ſuccurrendum* in our old books, it muſt be underſtood of one who had put on the habit when he was at the point of death.

ANGELICA, a medicinal plant, thus named, on account of its great virtue as an alexipharmic, or counterpoiſon.

It is of a ſweet ſmell, and aromatic taſte; and is loaded with a highly exalted oil, and volatile ſalt.—It is reputed cordial, ſtomachic, cephalic, aperitive, ſudorific, vulnerary, reſiſts poiſon, *&c.* though the chief intention where it is now preſcribed among us, is, as a carminative.---Its root is in the moſt eſteem; though the leaves are alſo uſed in diſtillation, *&c.*

The ſeeds have the ſame virtue with the root, and are of a more agreeable taſte.

ANGELICA-WATER is one of the compound waters of the ſhops; thus called from the *angelica* roots, which are the baſis thereof.

ANGELICA, Αγγελικη, was alſo a celebrated dance among the antient Greeks, performed at their feaſts.

It was thus called, from the Greek αγγελος, *nuntius*, meſſenger; by reaſon, as Pollux aſſures us, the dancers were dreſſed in the habit of meſſengers.

ANGELICI, an antient order of knights, inſtituted in 1191. by Iſacius Angelus Flavius Comnenus, emperor of Conſtantinople.

They were divided into three claſſes; but all under direction of one grand maſter.—The firſt were called *Torquati*, from a collar which they wore, and theſe were fifty in number.—The ſecond were called the *Knights of Juſtice*, and were eccleſiaſtics.—And the third were called *Knights Servitors.*

Juſtiniani will have this order to have been inſtituted in the year 313. by Conſtantine; and ſuppoſes the occaſion thereof to have been the appearance of an angel to that emperor, with the ſign of a croſs, and theſe words, *In hoc ſigno vinces:* but, that there was ſuch a thing as any military order in thoſe days, is a mere fable.

ANGELICI were alſo a ſect of antient heretics.—St. Auguſtine ſuppoſes them thus called from their yielding an extravagant worſhip to angels, and ſuch as tended to idolatry: though Epiphanius derives the name from their holding, that the world was created by angels.

ANGERONALIA, in antiquity, ſolemn feaſts, held by the Romans, the 21ſt of December, in honour of Angerona, or Angeronia, the goddeſs of patience and ſilence.

Feſtus and Julius Modeſtus, quoted by Macrobius, *Saturn. l.* 1. *c.* 10. derive the name from *angina*; ſquinancy; and ſuppoſe the goddeſs to have been thus denominated, by reaſon ſhe preſided over that diſeaſe.—Others ſuppoſe it formed from *angor*, grief, pain; to intimate that ſhe gave relief to thoſe afflicted therewith. Others deduce it from *angeo*, I preſs, I cloſe; as being reputed the goddeſs of ſilence, *&c.*

ANGINA *, in medicine, an inflammation about the muſcles of the larynx, or pharynx, attended with an acute fever, difficulty of ſwallowing, and danger of ſuffocation.

* The word is derived immediately from the Latin *ango*, I vex, formed of the Greek *αγχω*, *ſuffoco*, *ſtrangulo*.

The *angina* is the ſame with that we popularly call *quinzy*, or *ſquinancy*. See QUINZY.

ANGLE, ANGULUS, in geometry, the aperture or mutual inclination of two lines, which meet, and form an *angle* in their point of interſection.

Such is the *angle* B A C (*Tab. Geometry*, *fig.* 91), formed by the lines A B, and A C, meeting in the point A.—The lines A B, and A C, are called the *legs* of the *angle*; and the point of interſection, the *vertex*.

Angles are ſometimes denoted by a ſingle letter affixed to the vertex, or angular point, as A; and ſometimes by three letters, that of the vertex being in the middle, as B A C.

The meaſure of an *angle*, whereby its quantity is expreſſed, is an arch, D E, deſcribed from its vertex A, with any radius at pleaſure, between its legs, A C and A B. See ARCH, and MEASURE.

Hence *angles* are diſtinguiſhed by the ratio of the arches which they thus ſubtend, to the circumference of the whole circle. See CIRCLE, and CIRCUMFERENCE.—And thus, an *angle* is ſaid to be of ſo many degrees, as are the degrees of the arch D E.

Hence alſo, ſince ſimilar arches, A B and D E, *fig.* 87. have the ſame ratio to their reſpective circumferences; and the circumferences contain each the ſame number of degrees; the arches A B and D E, which are the meaſures of the two *angles* A C B, and D C E, are equal: and therefore the *angles* themſelves muſt be ſo too.—Hence, again, as the quantity of an *angle* is eſtimated by the ratio of the arch, ſubtended by it to the periphery; it does not matter what radius that arch is deſcribed withal: but the meaſures of equal *angles* are always either equal arches, or ſimilar ones; and contrarily.

It follows, therefore, that the quantity of the angle remains ſtill the ſame, though the legs be either produced or diminiſhed.—And thus in ſimilar *angles*, and in ſimilar figures, the homologous or correſponding *angles* are alſo equal.

The *taking of angles* is an operation of great uſe and extent in ſurveying, navigation, geography, aſtronomy, *&c.* The inſtruments chiefly uſed for this purpoſe are quadrants, theodolites, circumferentors, *&c.*

Mr. Hadley has invented a new and excellent inſtrument for taking *angles*, uſeful where the motion of the object, or any circumſtance cauſing an unſteadineſs in the common inſtruments, renders the making obſervations difficult or uncertain. *V. Phil. Tranſ.* N° 420. p. 147. *item*, N° 425. p. 341.

To meaſure the quantity of an ANGLE.—1°, On paper.—Apply the centre of a protractor on the vertex of the *angle* O (*Tab. Surveying*, *fig.* 29.); ſo that the radius O *p* lie on one of the legs: the degree ſhewn in the arch, by the other leg of the *angle*, will give the *angle* required.—To do the ſame with a line of chords, ſee CHORD.

2°, On the ground.—Place a ſurveying inſtrument, *e. gr.* a ſemicircle (*fig.* 16.), in ſuch manner as that a radius thereof C G may lie over one leg of the *angle*, and the centre C over the vertex.—The firſt is obtained by looking through the ſights F and G, towards a mark fixed at the end of the leg; and the latter, by letting fall a plumbet from the centre of the inſtrument.—Then, the moveable index H I being turned this way and that, till through its ſights you diſcover a mark placed at the extreme of the other leg of the *angle*; the degree it cuts in the limb of the inſtrument ſhews the quantity of the *angle*.

To take the angle with a quadrant, theodolite, plain table, circumferentor, compaſs, *&c.*

To plot or lay down any given *angle*; i. e. the quantity of the *angle* being given, to deſcribe it on paper. See PLOTTING.

To biſſect a given *angle*, as H I K (*fig.* 92.), from the centre I, with any radius at pleaſure, deſcribe an arch L M. From L and M, with an aperture greater than L M, ſtrike two arches, mutually interſecting each other in N. Then, drawing the right line I N, we have H I N =N I K.

To triſſect an *angle*, ſee TRISSECTION.

ANGLES are of various kinds and denominations.—

With regard to the form of their legs, they are divided into *Rectilinear*, *Curvilinear*, and *Mixed*.

Rectilinear, or *right-lined* ANGLE, is that whoſe legs are both right lines: as B A C (*Tab. Geometry*, *fig.* 91.).

Curvilinear ANGLE is that whoſe legs are both of them curves.

Mixt, or *Mixtilinear* ANGLE, is that, one of whoſe ſides is a right line, and the other a curve.

With regard to their quantity, *angles* are again divided into *right*, *acute*, *obtuſe*, and *oblique*.

Right ANGLE is that formed by a line falling perpendicularly on another; or that which ſubtends an arch of 90 degrees.—Such is the *angle* K L M (*fig.* 93.).

The meaſure of a right *angle*, therefore, is a quadrant of a circle; and conſequently all right *angles* are equal to each other.

Acute ANGLE is that which is leſs than a right *angle*, or than 90°—as A E C (*fig.* 86.).

Obtuſe ANGLE is that greater than a right *angle*, or whoſe meaſure exceeds 90°—as A E D.

Oblique ANGLE is a common name both for acute and obtuſe *angles*.

With regard to their ſituation in reſpect of each other, *angles* are divided into *contiguous*, *adjacent*, *vertical*, *alternate*, and *oppoſite*.

Contiguous ANGLES, are ſuch as have the ſame vertex, and one leg common to both.—Such are F G H and H G I (*fig.* 94.).

Adjacent ANGLE is that made by producing one of the legs of another *angle*.—Such is the *angle* A E C (*fig.* 86.), made by producing a leg E D, of the *angle* A E D, to C.

Two *adjacent angles*, *x* and *y*, or any other number of *angles* made on the ſame point E, over the ſame right line C D, are together equal to two right ones; and conſequently to 180°.—And hence, one of two contiguous *angles* being given, the other is likewiſe given; as being the complement of the former to 180°.

Hence alſo, to meaſure an inacceſſible *angle* in a field; taking an adjacent acceſſible *angle*, and ſubtracting the quantity thereof from 180°, the remainder is the *angle* required.

Again, all the *angles* *x*, *y*, *o*, E, *&c.* made around a given point E, are equal to four right ones; and therefore all make 360°.

Vertical ANGLES are thoſe whoſe legs are continuations of each other—Such are the *angles* *o* and *x* (*fig.* 86.).

If a right line A B, cut another, C D, in E, the vertical *angles* *x* and *o*, as alſo *y* and E, are equal.—And hence, if it be required to meaſure, in a field, or any other place, an inacceſſible *angle*, *x*; and the other vertical *angle*, *o*, be acceſſible; this latter may be taken in lieu of the former.

Alternate ANGLE.—See ALTERNATE.—Such are the *angles* *x* and *y* (*fig.* 36.).

The alternate *angles* *y* and *x* are equal. See OPPOSITE *angles*.

Oppoſite ANGLES. See OPPOSITE.—Such are *u* and *y*, and alſo *z* and *y*.

External ANGLES are the *angles* of any right-lined figure made without it, by producing all the ſides ſeverally.

All the external *angles* of any figure, taken together, are equal to four right *angles*: and the external *angle* of a triangle is equal to both the internal and oppoſite ones, as is demonſtrated by Euclid, *lib.* 1. *prop.* 32.

Internal ANGLES are the *angles* made by the ſides of any right-lined figure within.

The ſum of all the internal *angles* of any right-lined figure is equal to twice as many right *angles* as the figure hath ſides, excepting four. This is eaſily demonſtrated from Euclid, *prop.* 32. *lib.* 1.

The external *angle* is demonſtrated to be equal to the internal oppoſite one; and the two internal oppoſite ones are equal to two right ones.

Homologous ANGLES are ſuch *angles* in two figures, as retain the ſame order from the firſt, in both figures.

ANGLE *at the Periphery* is an *angle* whoſe vertex and legs do all terminate in the periphery of a circle—Such is the *angle* E F G (*fig.* 95.).

Angle in the SEGMENT is the ſame with that at the periphery.

It is demonſtrated by Euclid, that all the *angles* in the ſame ſegment are equal to one another; that is, any *angle* E H G, is equal to any *angle* E F G in the ſame ſegment E F G.

The *angle* at the periphery, or in the ſegment, is comprehended between two chords E F and F D, and ſtands on the arch E D. See CHORD, *&c.*

The meaſure of an *angle* without the periphery G (*fig.* 96.), is the difference between half the concave arch L M, whereon it ſtands, and half the convex arch N O intercepted between its legs.

ANGLE *in a Semicircle* is an *angle* in a ſegment of a circle, whoſe baſe is a diameter thereof.

It is demonſtrated by Euclid, that the *angle* in a ſemicircle is a right one; in a ſegment greater than a ſemicircle, it is leſs than a right one; and in a ſegment leſs than a ſemicircle, is greater than a right one.

Since an *angle* in a ſemicircle ſtands on a ſemicircle, its meaſure is a quadrant of a circle; and therefore is a right *angle*.

ANGLE *at the centre* is an *angle* whoſe vertex is in the centre of a circle, and its legs terminated in the periphery thereof.—Such is the *angle* C A B (*fig.* 95.).

The *angle* at the centre is comprehended between two radii, and its meaſure is the arch B C.

Euclid demonſtrates, that the *angle* at the centre B A C is double of the *angle* B D C, ſtanding on the ſame arch B C.—And hence, half of the arch B C is the meaſure of the *angle* at the periphery.

Hence alſo, two or more *angles* H L I, and H M I (*fig.* 97.), ſtanding on the ſame or equal arches, are always equal.

ANGLE *without the centre*, H I K, is that whoſe vertex K is not in the centre, but its legs H K and I K are terminated in the periphery.

The meaſure of an *angle* without the centre is half of the arches H I and L M, whereon it and its vertical K do ſtand.

ANGLE *of Contact* is that made by the arch of a circle and a tangent in the point of contact.—Such is the *angle* H L M, (*fig.* 43.). See CONTACT.

The *angle* of contact, in a circle, is proved by Euclid to be leſs than any right-lined *angle*: but from hence it does not follow, that the *angle* of contact is of no quantity, as Peletarius, Wallis, and ſome others, have imagined. *V. Wall. Algeb.* p. 71—105.—Sir Iſaac Newton ſhews, that if the curve HAE (*fig.* 98.) be a cubic parabola, the *angle* of contact, where the ordinate D F is in the ſubtriple ratio of the abſciſſe A D, the *angle* BAF, contained under the tangent AB in its vertex, and the curve, is infinitely greater than the circular *angle* of contact B A C; and that, if other parabola's of higher kinds be deſcribed to the ſame axis and vertex, whoſe abſciſſes A D are as the ordinate DF^4, DF^5, DF^6, &c. you will have a ſeries of *angles* of contact going on infinitely, of which any one is infinitely greater than that next before it.

ANGLE *of a Segment* is that made by a chord with a tangent, in the point of contact.—Such is the *angle* M L H (*fig.* 43.).

It is demonſtrated by Euclid, that the *angle* M L C is equal to any *angle* M *a* L in the alternate ſegment M *a* L.

For the Effects, Properties, Relations, &c. *of* ANGLES, *when combined into Triangles, Quadrangles, and polygonous Figures,* ſee TRIANGLE, QUADRANGLE, SQUARE, PARALLELOGRAM, POLYGON, FIGURE, &c.

Equal ANGLES. } See the articles { EQUAL.
Similar ANGLES. } See the articles { SIMILAR.

ANGLES are again divided into *plane*, *ſpherical*, and *ſolid*.

Plane **ANGLES** are thoſe we have hitherto been ſpeaking of: which are defined by the inclination of two lines in a plane, meeting in a point.

Spherical **ANGLE** is the inclination of the planes of two great circles of the ſphere.

The meaſure of a ſpherical *angle* is the arch of a great circle at right *angles* to the planes of the great circles forming the *angle* intercepted between them.—For the properties of ſpherical *angles*, ſee SPHERICAL *Angle*.

Solid **ANGLE** is the mutual inclination of more than two planes, or plane *angles*, meeting in a point, and not contained in the ſame plane.—For the meaſure, properties, &c. of ſolid *angles*, ſee SOLID *Angle*.

We alſo meet with other leſs uſual ſorts of *angles* among ſome geometricians; as,

Horned **ANGLE**, *angulus cornutus*, that made by a right line, whether a tangent or ſecant, with the periphery of a circle.

Lunular **ANGLE**, *angulus lunularis*, is that formed by the interſection of two curve lines; the one concave, and the other convex. See LUNE.

Ciſſoid **ANGLE**, *angulus ciſſoides*, is the inner *angle* made by two ſpherical convex lines interſecting each other. See CISSOID.

Siſtroid **ANGLE**, *angulus ſiſtroides*, is that in figure of a ſiſtrum. See SISTRUM.

Pelecoid **ANGLE**, *angulus pelecoides*, is that in figure of a hatchet. See PELECOIDES.

ANGLE, in trigonometry. See TRIANGLE, and TRIGONOMETRY.

For the ſines, tangents, and ſecants of *angles*, ſee SINE, TANGENT, and SECANT.

ANGLE, in mechanics.—*Angle of Direction*, is that comprehended between the lines of direction of two conſpiring forces. See DIRECTION.

ANGLE *of Elevation* is that comprehended between the line of direction of a projectile, and a horizontal line.—Such is the *angle* ARB (*Tab. Mechanics, fig.* 47.); which is comprehended between the line of direction of the projectile A R, and the horizontal line A B.

ANGLE *of Incidence* is that made by the line of direction of an impinging body, in the point of contact.—Such is the *angle* DCA (*fig.* 63.).

ANGLE *of Reflexion* is that made by the line of direction of the reflected body, in the point of contact from which it rebounds.—Such is the *angle* ECF.

ANGLE, in optics.—*Viſual*, or *Optic angle*, is the *angle* included between the two rays drawn from the two extreme points of an object to the centre of the pupil.—Such is the *angle* ABC (*Tab. Optics, fig.* 69.), comprehendedb etween the rays AB, and BC.

Objects ſeen under the ſame, or an equal *angle*, muſt always appear equal.

ANGLE *of the Interval*, of two places, is the *angle* ſubtended by two lines directed from the eye to thoſe places.

ANGLE *of Incidence*, in catoptrics, is the leſſer *angle*, made by an incident ray of light, with the plane of a ſpeculum; or, if the ſpeculum be concave or convex, with a tangent in the point of incidence.—Such is the *angle* A B D (*fig.* 26.).

Every incident ray, A B, makes two *angles*, the one acute, ABD, the other obtuſe, ABE; though ſometimes both right.—The leſſer of ſuch *angles* is the *angle* of incidence.

ANGLE *of Incidence*, in dioptrics, is the *angle* ABI (*fig.* 56.), made by an incident ray, AB, with a lens or other refracting ſurface, HI.

ANGLE *of Inclination* is the *angle* A B D, contained between an incident ray, AB, and the axis of incidence, DB. See AXIS, &c.

ANGLE *of Reflexion*, } in catoptrics. See REFLECTION.
Reflected **ANGLE**, } in catoptrics. See REFLECTION.

ANGLE *of Refraction*, } in dioptrics. See REFRACTION.
Refracted **ANGLE**, } in dioptrics. See REFRACTION.

ANGLE, in aſtronomy.—ANGLE *of communication*. See COMMUNICATION.

ANGLE *of Elongation*, or, ANGLE *at the earth*.

Parallactic **ANGLE**. See PARALLACTIC *Angle*.

ANGLE *at the Sun, the Inclination* is the *Angle* R S P (*Tab. Aſtronomy, fig.* 25.); under which the diſtance of a planet P, from the ecliptic P C, is ſeen from the ſun.

ANGLE *of the Eaſt*. See NONAGESIMAL.

ANGLE *of Obliquity*, of the ecliptic. See OBLIQUITY, and ECLIPTIC.

The *angle* of inclination of the axis of the earth, to the axis of the ecliptic, is 23°, 30′; and remains inviolably the ſame in all points of the earth's annual orbit. By means of this inclination, ſuch inhabitants of the earth as live beyond 45° of latitude have more of the ſun's heat, taking all the year round; and thoſe who live within 45° have leſs of his heat, than if the earth always moved in the equinoctial.

ANGLE *of Longitude* is the *angle* which the circle of a ſtar's longitude makes with the meridian, at the pole of the ecliptic.

ANGLE *of right Aſcenſion* is the *angle* which the circle of a ſtar's right aſcenſion makes with the meridian at the pole of the world. See *Right* ASCENSION.

ANGLE, in navigation.—ANGLE *of the Rhumb*, or *Loxodromic* ANGLE. See RHUMB, and LOXODROMY.

ANGLES, in fortification, are underſtood of thoſe formed by the ſeveral lines uſed in fortifying, or making a place defenſible.

Theſe are of two ſorts; *real*, and *imaginary*.—*Real angles* are thoſe which actually ſubſiſt and appear in the works.—Such are the *flanked angle*, the *angle of the epaule*, *angle of the flank*, and the *re-entering angle of the counterſcarp*.—*Imaginary* or *occult angles* are thoſe which are only ſubſervient to the conſtruction, and which ſubſiſt no more after the fortification is drawn.—Such are the *angle of the centre*, *angle of the polygon*, *flanking angle*, *ſaliant angle of the counterſcrap*, &c. Savin. Nouv. Ecol. milit. p. 36. and 38.

ANGLE *of*, or *at*, *the Centre*, is the *angle* formed at the centre of the polygon, by two ſemidiameters drawn thither from the two neareſt extremities of the polygon.—Such is the *angle* CKF (*Tab. Fortificat. fig.* 1.).

ANGLE *of the Circumference* is the mixt *angle* made by the arch drawn from one gorge to the other.

ANGLE *of the Counterſcarp* is that made by the two ſides of the counterſcarp, meeting before the middle of the curtin.

ANGLE *of the Curtin*, or *of the Flank*, is that made by, or contained between, the curtin and the flank; ſuch is the *angle* BAE.

ANGLE *of the Complement of the Line of Defence*, is the *angle* ariſing from the interſection of the two complements one with another.

Diminiſhed **ANGLE** is the *angle* which is made by the meeting of the exterior ſide of the polygon with the face of the baſtion.—Such is the *angle* BCF.

ANGLE *of the Polygon* is the *angle* GHM, intercepted either between the two internal ſides GH, and HM, or the two external ſides.

ANGLE *of the Epaule*, or *Shoulder*, is that formed by the flank and the face of the baſtion. – Such is the *angle* ABC.

ANGLE *of the interior Figure* is the *angle* GHM, made in H, the centre of the baſtion, by the meeting in the innermoſt ſides of the figure GH and HM.

Flanking ANGLE *outward*, or ANGLE *of the Tenaille*, is that made by the two raſant lines of defence, *i. e.* the two faces of the baſtion when prolonged.

ANGLE *flanking inward* is the *angle* CIH, made by the flanking line with the curtin.

ANGLE *flanked*, by ſome called the ANGLE *of the Baſtion*, is the *angle* BCS, made by the two faces of the baſtion, BC, CS; being the outermoſt part of the baſtion, and that moſt expoſed to the enemy's batteries, and therefore by ſome called the *point of the baſtion*.

ANGLE *of the Flank* is that formed by the flank and the curtin.

ANGLE *forming the Flank* is that conſiſting of one flank, and one demi-gorge.

ANGLE *forming the Face*, is that compoſed of one flank and one face.

ANGLE *of the Triangle*, in fortification, is half the *angle* of the polygon.

ANGLE *of the Moat* is that made before the curtin, where it is interſected.

Re-entering, or *Re-entrant* ANGLE, is that whoſe vertex is turned inwards, towards the place.

Saillant ANGLE is that which advances its point toward the field.

ANGLE *of the Tenaille*, or *the outward flanking angle*, called alſo *the angle of the moat*, or *the dead angle*, is made by the two lines fichant in the faces of the two baſtions, extended till they meet in an *angle* towards the curtin.—This always turns its point in towards the work.

ANGLE *of a Wall*, in architecture, is the point or corner where the two ſides or faces of a wall meet.

ANGLES *of a Battalion*, in the military art, are thoſe ſoldiers placed where the ranks and files terminate. See BATTALION.

The *angles* of a battalion are ſaid to be *blunted*, when the ſoldiers at the four corners are removed, ſo that the ſquare battalion becomes octagonal: this was an evolution very common among the antients, though now diſuſed.

ANGLES, in anatomy, are underſtood of the canthi, or corners of the eye, where the upper eye-lid meets with the under.

That next the noſe is called the *great* or *internal*, and that towards the temples, the *leſs*, or *external angle* or *canthus*. See CANTHUS.

ANGLES, in aſtrology, denote certain houſes of a figure, or ſcheme of the heavens.—Thus the horoſcope of the firſt houſe is termed *the angle of the eaſt*.

ANGLICANÆ *Guttæ*. See the article GUTTÆ.

ANGLICANUS *Sudor*. See the article SUDOR.

ANGLICISM, a word, or phraſe, in the Engliſh idiom; or a manner of ſpeech peculiar to the Engliſh tongue. See IDIOM, and ENGLISH.

ANGLING, the art of catching fiſh, by means of a rod, with a line, hook, and bait, fitted thereto.

There are ſeveral prudential rules obſerved by thorough anglers; ſuch as, not to wear any white or ſhining apparel, but be cloathed in a dark ſky colour: to invite the fiſh to the place intended for *angling*, by caſting in, from time to time, proper foods, as boiled corn, worms, and garbage: to keep them together in the time of *angling*, by throwing in grains of ground malt; or ſinking a box of worms, with ſmall holes for them to creep ſlowly out at, &c. To draw ſalmon or trout together, they uſe a compoſition of fine clay incorporated with blood, and malt ground.

To learn what bait is beſt for any fiſh at any time; after having caught one, they ſlit his gills, and take out the ſtomach; and thus find what he laſt fed on.

The ſeveral methods of *angling* for ſalmon, trout, carp, tench, perch, pike, dace, gudgeons, roach, flounder, &c. ſee under the articles *Salmon*-FISHING, *Trout*-FISHING, &c.

ANGLING *Fly*. See the article FISHING *Fly*.

ANGLING *Hook*. See the article FISHING *Hook*.

ANGLING *Line* is either made of hair, twiſted; or of ſilk; or the Indian weed. —The beſt colours are the ſorrel, white, and grey; the two laſt for clear waters, the firſt for muddy ones. Nor is the pale watery green deſpiſable: this colour is given artificially, by ſteeping the hair in a liquor made of alum, ſoot, and the juice of walnut-leaves boiled together.

ANGLING *Rod*. See FISHING *Rod*.

In *angling*, they obſerve, after having ſtruck a large fiſh, to keep the rod bent; which will hinder him from running to the utmoſt length of the rod-line, by which he would be enabled to break his hold, or the hook.

ANGUINEAL *Hyperbola*. See HYPERBOLA, and CURVE.

ANGULAR, ſomething that relates to, or hath, *angles*. See ANGLE.

Angular objects at a diſtance appear round; the little inequalities diſappearing at a much leſs diſtance than the bulk of the body.

ANGULAR *Motion* is a compound kind of motion, wherein the moveable both ſlides and revolves at the ſame time.

Such is the motion of the wheel of a coach, or other vehicle.

The phænomena, &c. of ſuch motion, ſee accounted for under the article ROTA *Ariſtotelica*.

Acute ANGULAR *Section*.	See the articles	ACUTE.
ANGULAR *Capital*.		CAPITAL.
ANGULAR *Column*.		COLUMN.
ANGULAR *Niche*.		NICHE.

ANGULAR *Motion*, in aſtronomy, is the increaſe of the diſtance between any two planets, revolving round any body as the common centre of their motion.

The quantity of this motion is expreſſed by two right lines, drawn from the ſaid centre to the revolving bodies; which will open wider, and conſequently the angle will grow greater, as the revolving bodies part farther and farther from one another.

ANGUSTICLAVIA*, or ANGUSTUS CLAVUS, in antiquity, a tunica, embroidered with little purple ſtuds, worn by the knights.

* The word is compounded of *anguſtus*, narrow, ſmall; and *clavus*, nail or ſtud: in regard thoſe ornaments were ſmaller in this garment than in the Laticlavia, which was worn by the ſenators.

ANHELITUS* ſignifies a ſhortneſs and thickneſs of breath: as in an aſthma. See RESPIRATION, and ASTHMA.

* The word is Latin, formed of the verb *anhelo*, I puff and blow.

ANIL, in natural hiſtory, the ſhrub from whoſe leaves and ſtalks indigo is prepared. See INDIGO.

ANIMA*, a ſoul; whether rational, ſenſitive, or vegetative. See SOUL.

* The word is pure Latin, formed of the Greek ανεμος, *ventus*, wind, or breath.

ANIMA *Articulorum* is a denomination ſometimes given to hermodactyls; on account of their efficacy in diſorders of the joints. See HERMODACTYL.

ANIMA *Hepatis*, ſoul of the liver; a term applied by the chymiſts to the *ſal martis*, ſalt of iron or ſteel; on account of its uſe in diſtempers of that part.

It is more uſually preſcribed under the name of *vitriolum martis*.

ANIMA *Mundi*, *q. d.* ſoul of the world, or of the univerſe, denotes a certain pure, ethereal ſubſtance or ſpirit, diffuſed, according to many of the antient philoſophers, through the maſs of the world, informing, actuating, and uniting the divers parts thereof into one great, perfect, organical, and vital body or animal.

Plato treats at large of the ψυχη τȣ κοσμȣ, in his *Timæus*; and is even ſuppoſed to be the author of the dogma: yet are interpreters much at a loſs about his meaning. Ariſtotle, however, taking it in the common and obvious ſenſe, ſtrenuouſly oppoſes it.

Seranus, on Plato's *Timæus*, explains this doctrine thus: 'Our philoſopher will have the univerſe ζωον εμψυχον εννȣν, 'conſiſting of body and ſpirit; the ſpirit he makes to be that 'analogy, or ſymmetry, whereby things of different nature 'are amicably aſſociated in the grand compages of all things. 'In which ſenſe the *anima mundi* ſignifies as much as the 'form of the univerſe.'

Others will have the *anima mundi* to ſignify I know not what ignific virtue, or vivific heat, infuſed into the chaos, and diſſeminated through its whole frame; for the conſervation, nutrition, and vivification thereof.

Hence that of the poet.

Igneus eſt ollis vigor, & cæleſtis origo.—Virg. Æn. 4. 730.

Others ſuppoſe Plato, by his *anima mundi*, to have meant God, or the ſpirit of God; and to have taken the hint from Moſes, who, in his account of the firſt day's creation, ſays, *The ſpirit of God moved on the face of the deep.*

The modern Platoniſts explain their maſter's *anima mundi* by a certain univerſal, ethereal ſpirit, which in the heavens exiſts perfectly pure, as retaining its proper nature; but on earth, pervading elementary bodies, and intimately mixing with all the minute atoms thereof, it aſſumes ſomewhat of their nature; and becomes of a peculiar kind.—So the poet:

Spiritus intus alit, totoſque infuſa per artus
Mens agitat molem, & magno ſe corpore miſcet.

They add, that this *anima mundi*, which more immediately reſides in the celeſtial regions as its proper ſeat, moves and governs the heavens in ſuch manner, as that the heavens themſelves firſt received their exiſtence from the fecundity of the ſame ſpirit: for that this *anima*, being the primary ſource of life, every-where breathed a ſpirit like itſelf, by virtue whereof various kinds of things were framed conformable to the divine ideas.

The notion of an *anima mundi* is rejected by moſt of the modern philoſophers; though M. du Hamel thinks, without any great reaſon, for the generality of them admit ſomething very much like it. Thus the Peripatetics have recourſe to celeſtial influxes, in order to account for the origin of forms, and the ſecret powers of bodies.

The Carteſians have their ſubtile matter, which anſwers to moſt of the uſes and intentions of Plato's *anima mundi*; being ſuppoſed to flow from the ſun, and the other heavenly bodies, and to be diffuſed through all the parts of the world, to be the ſource or principle of all motion, *&c.*

Some later philoſophers in the place of theſe ſubſtitute fire; and others a ſubtile elaſtic ſpirit or medium diffuſed through all the parts of ſpace.

The principal thing objected, on the Chriſtian ſcheme, againſt Plato's doctrine of the *anima mundi*, is, that it mingles the Deity too much with the creatures; confounds, in ſome meaſure, the workman with his work, making this, as it were, a part of that, and the ſeveral portions of the univerſe ſo many parts of the godhead.—Yet is the ſame principle aſſerted by Seneca, Epiſt. 92. *Totum hoc quo continemur, & unum eſt, & Deus. Et ſocii ejus ſumus, & membra*——

ANIMA *Pulmonum*, was uſed for crocus, or ſaffron; by reaſon of its ſuppoſed great uſe in diſeaſes of the lungs.

ANIMADVERSION * ſometimes ſignifies *correction*; and ſometimes remarks or obſervations made on a book, *&c.* and ſometimes, a ſerious conſideration and reflection on any ſubject, by way of criticiſm.

* The word is formed of the Latin *animadvertere*, to animadvert: of *animus*, the mind; and *adverto*, I turn to, or toward.

ANIMAL *, a being, which, beſides the power of growing, increaſing, and producing its like, which vegetables likewiſe have, is further endowed with ſenſation, and ſpontaneous loco-motion.

* The word is derived from the Latin *anima*, ſoul; and literally denotes ſomething endued with a ſoul.

An *animal*, reſpect being only had to the body, not the ſoul, may be defined with Boerhaave to be an organical body, conſiſting of veſſels and juices, and taking in the matter of its nutriment, by a part called a *mouth*; whence it is conveyed into another called the *inteſtines*, into which it has roots implanted, whereby it draws in its nouriſhment, after the manner of plants.

According to this definition, an *animal* is diſtinguiſhed from a foſſil, in that it is an organical body; and from a vegetable by this, that it has roots within itſelf, whereas a plant has them without itſelf.

In effect, the inteſtines of an *animal* are, in reality, no more than its earth, or the body it adheres to; into which it ſends forth its roots; that is, the lacteal veſſels, which thence draw the matter of its life and increaſe.

An *animal* is better defined from its mouth than its heart; ſince we do not know whether the whole tribe have ſuch a part; for as ſeveral have ſixteen hearts, particularly the ſilkworm, and ſome even ſixty, ſo it is poſſible others may have none at all.

Nor can any general character of an *animal* be taken from the brains, the lungs, or the like, ſince we know of many quite deſtitute thereof.

The genuine characteriſtic, then, of an *animal* is, to be free and at large with reſpect to the ſubject it derives its nouriſhment from: for every thing is taken in by the mouth; and the mouth does not adhere to any thing: whereas all plants are connected, in ſome manner or other, to the body which furniſhes them food.

Hence it follows, that a fœtus, while it remains in the mother's womb, is a real plant; as being connected by the funiculus umbilicalis to the placenta, and by the placenta to the uterus, from whence it receives its nutriment.—If it did not derive its food by the ſaid funiculus, but by its mouth, it were an *animal*; and if it drew it by both, it would be a zoophyte, or plant-animal.

Some have defined *animals* from their loco-motion, as being capable of ſhifting from place to place; and plants, from their ſticking faſt to the ſame ſubject: but on this principle, oyſters, muſſels, cockles, *&c.* would be almoſt excluded from the claſs of *animals*, inaſmuch as they uſually adhere, or grow to rocks, *&c.* yet it is certain, that thoſe creatures are real *animals*, as they have mouths and ſtomachs to take in their food, and lacteals and meſenteric veins to receive it, and ſometimes can even move from place to place on occaſion.—Indeed, muſſels ſeem an exception from the former definition. If, as is ſaid, that anomalous creature breathes, and receives its nouriſhment, not at the mouth, but by the anus; the part which we account its head, though without either eyes, ears, or tongue, or any other apparatus, ſave a hole, which we may call its mouth, is an immoveable part; being faſtened to one of the ſhells, ſo that it cannot ſeek for food, but the food muſt come to ſeek it. This food is water, which, as the ſhells open, enters in at the anus of the muſſel, which opens at the ſame time; and paſſing thence into certain canals, between the inner ſurface of the ſhell, and the outer ſurface of the *animal*, is ſaid to be conveyed thence into its mouth, by a certain motion, which the *animal* can produce at pleaſure.

We chooſe therefore, with Dr. Tyſon, to fix the criterion of an *animal* in a ductus alimentalis, *i. e.* a gula, ſtomach, and inteſtines: all which make but one continued canal.

All *animals*, according to the moſt probable and received opinion, come from eggs, and are there incloſed, as it were in epitome, till the ſeed of the male penetrate their covering, and ſtretch them, ſo as they become ready for hatching.

There then enters into their veſſels a chylous juice; which, being puſhed forwards by the ſpirits, circulates through the whole habit of the little body, nouriſhes and dilates it by little and little, and thus produces what we call *growth*.

This circulation, repeated ſeveral times, refines and attenuates the juices, till at length they become of a red colour, and are converted into what we call *blood*.—This natural operation bears a great reſemblance to ſeveral chymical proceſſes, by which, in attenuating and diſſolving oily or ſulphureous ſubſtances, they aſſume a red colour.

The philoſophers comprehend man under the ſpecies of *animals* *; and define him, a reaſonable *animal*: though among naturaliſts, *&c.* the term animal is uſually reſtrained to irrationals.

* Man, ſays Liſter, is as very an animal as any quadruped of them all: and moſt of his actions are reſolvable into inſtinct, notwithſtanding the principles which cuſtom and education have ſuperinduced. *Journ. to Paris.*

St. Auguſtine relates, that a great many ſcrupulous perſons in his time extended that prohibition of the law, *Thou ſhalt not kill*, to all *animals*: they grounded their opinion on ſome paſſages of ſcripture wherein God ſpeaks of *animals* as if they had ſome principle of reaſon; declaring that he will require the blood of man at the hand of beaſts, Gen. c. ix. adding in the ſame place, that he makes a covenant not only with man, but with every living creature.

Pliny relates, that in Africa the ſpecies of *animals* are various and changeable; for that the great ſcarcity of water bringing all ſorts of beaſts to the ſame pools to drink, the males often mix with the females of other ſpecies: inſomuch that it was become a proverb in Greece, *that Africa was always producing ſome new monſter.*—Hiſt. Nat. l. 8. c. 16.—But this is no-ways warranted by the obſervations of modern naturaliſts: according to Dr. Shaw, the ordinary courſe of things is much the ſame in Barbary as elſewhere; each ſpecies, as far as ever he could be informed, keeping inviolably to itſelf. If we except the mule and the kumizah, which are procreated from animals under the direction of mankind, and not properly left to themſelves, few, if any, inſtances can be produced in favour of the antient proverb, *Semper aliquod novi Africam afferre*—V. Shaw. *Trav. p.* 261.

ANIMALS are ordinarily divided into *terreſtrial*, *aquatic*, *volatile*, *amphibious*, *inſects*, &c.

Terreſtrial animals, are either *quadrupeds*, or *reptiles*.—Quadrupeds have either the feet cloven, as the bullock; or intire, as the horſe; or divided into ſeveral toes or claws, as the dog, lion, *&c.* The other diviſions will be found under the words FISH, BIRD, *&c.*

For a general account of the various kinds of *animals*, we ſhall here ſubjoin Mr. Ray's ſcheme.

Animals are either,

- *Sanguineous*, that is, ſuch as have blood, which breathe either by
  - Lungs, have either
    - Two ventricles in their heart, and thoſe either
      - Viviparous,
        - Aquatic, as the whale-kind. See WHALE.
        - Terreſtrial, as quadrupeds.
      - Oviparous, as birds.
    - But one ventricle in the heart, as frogs, tortoiſes, and ſerpents.
  - Gills, as all ſanguineous fiſhes, except the whale-kind.
- *Exanguineous*, or without blood, which may be divided into
  - Greater; and thoſe either
    - Naked,
      - Terreſtrial, as naked ſnails.
      - Aquatic, as the poulp, cuttle-fiſh, *&c.*
    - Covered with a tegument, either
      - Cruſtaceous, as lobſters and cray-fiſh.
      - Teſtaceous, either
        - Univalve, as limpets.
        - Bivalve, as oyſters, muſſels, cockles, *&c.*
        - Turbinate, as periwinkles, ſnails, *&c.*
  - Leſſer, as inſects of all ſorts.

Viviparous hairy *animals*, or quadrupeds, are either

- Hoofed, which are either
  - Whole-footed, or hoofed, as the horſe and aſs:
  - Cloven-footed, having the hoof divided into
    - Two principal parts, called *biſulca*, either
      - Such as chew not the cud, as ſwine.
      - Ruminant, or ſuch as chew the cud, divided into
        - Such as have perpetual and hollow horns:
          - Beef-kind,
          - Sheep-kind,
          - Goat-kind.
        - Such as have ſolid, branched, and deciduous horns, as the deer-kind.
    - Four parts, or *quadriſulca*, as the rhinoceros and hippopotamus.
- Claw'd or digitate, having the foot divided into
  - Two parts or toes, having two nails, as the camel-kind.
  - Many toes or claws, either
    - Undivided, as the elephant.
    - Divided, which have either
      - Broad nails, and an human ſhape, as apes.
      - Narrower and more pointed nails, which, in reſpect of their teeth, are divided into ſuch as have
        - Many fore-teeth or cutters in each jaw:
          - The greater, which have
            - A ſhorter ſnout, and rounder head, as the cat-kind.
            - A longer ſnout and head, as the dog-kind.
          - The leſſer, the vermin or weazel-kind.
        - Only two large and remarkable fore-teeth, all which are phytivorous, and are called the hare-kind.

For particulars relating to animals, their number, analogous ſtructure, ſagacity, inſtinct, &c. ſee CREATION, ARK, HEAD, NECK, TAIL, FOOT, HORN, HOOF, STORGE, INSTINCT, &c.

ANIMALS conſiſt of *ſolids*, or firm parts, as fleſh, bones, membranes, &c. and *fluids*, as blood, &c.—Of an intermediate kind may perhaps be reckoned fat, &c.

The ſolids are mere earth, bound together by ſome oily humour; and accordingly they are reducible by fire into ſuch earth again.

Thus a bone, being perfectly purged of all its moiſture by calcination, is found a mere earth, which the leaſt force will crumble into duſt, for want of the natural gluten: yet the ſame bone, by immerging it in water or oil, becomes firm and ſtrong again; and more ſo in oil than in water. And thus cupels are made of animal earth, which will ſuſtain the utmoſt effect of fire.

The fluid parts of *animals* are the cruder as they are leſs diſtant from the lacteals, and abſorbent veſſels.—Thus chyle is little elſe but a vegetable juice; but in its farther progreſs, it gradually lays aſide its vegetable characters, till after a number of circulations it becomes a perfect animal juice under the denomination of blood, from whence the other humours are all derived.

Animal ſubſtances are diſtinguiſhed from thoſe of vegetables by two circumſtances: the firſt, that when burnt they are found perfectly inſipid; all animal ſalts being volatile, and flying off with heat: the contrary of which is found in vegetables, which conſtantly retain ſome fixed ſalt in all their aſhes.

The ſecond, that no ſincere acid is contained in any animal juice; nor can any acid ſalt be extracted from the ſame: the contrary of which is found in all vegetables.

Yet are *animals* reconverted into their vegetable nature, by putrefaction.

Oviparous ANIMALS.	See the articles	OVIPAROUS.
Rapacious ANIMALS.		RAPACIOUS.
Generation of ANIMALS.		GENERATION.

ANIMALS make the ſubject of that branch of natural hiſtory called *Zoology*.

The ſtructure of *animals*, with their diſorders, remedies, &c. make the ſubject of anatomy, medicine, &c.

ANIMALS make the principal matter of heraldry; both as bearings, and as ſupporters, &c.

It is an eſtabliſhed rule among the heralds, that in blazoning, *animals* are always to be interpreted in the beſt ſenſe; that is, according to their moſt noble and generous qualities, and ſo as may redound moſt to the honour of the bearers.

Thus the fox, being reputed witty, and withal given to filching for his prey; if this be the charge of an eſcutcheon, we are to conceive the quality repreſented to be his wit and cunning, not his theft.

Guillim adds, that all ſavage beaſts are to be figured in their fierceſt action; as, a lion erected, his mouth wide open, his claws extended, &c. Thus formed, he is ſaid to be *rampant*.—A leopard, or wolf, is to be pourtrayed going, as it were pedetentim: which form of action, ſaith Chaſſanæus, fits their natural diſpoſition, and is termed *paſſant*.—The gentler kinds are to be ſet forth in their nobleſt and moſt advantageous action; as, a horſe running or vaulting, a grey-hound courſing, a deer tripping, a lamb going with ſmooth and eaſy pace, &c.

Every *animal* is to be moving, or looking, to the right ſide of the ſhield; and it is a general rule, that the right foot be placed foremoſt, becauſe the right ſide is reckoned the beginning of motion: add, that the upper part is nobler than the lower; ſo that things conſtrained either to look up or down, ought rather to be deſigned looking upwards.—It muſt be noted, that notwithſtanding theſe ſolemn precepts of Guillim, and the other maſters of armory, we find by experience, that there are lions paſſant, couchant, and dormant, as well as rampant; and that moſt *animals* in arms look down, and not up.

ANIMAL is alſo uſed adjectively, to denote ſomething that belongs to, or partakes of, the nature of an animal body.

Thus we ſay *animal* food, *animal* œconomy, &c.

ANIMAL *Actions* are thoſe peculiar to animals; or which belong to animals, as ſuch.

Such are ſenſation, and muſcular motion. See SENSATION, &c.

ANIMAL *Motion* is the ſame with what we call *muſcular motion*.

It is divided into two branches; natural or involuntary, and ſpontaneous.

ANIMAL *Functions*, among phyſicians. See FUNCTION.

Moraliſts frequently oppoſe the *animal* part, which is the ſenſible, fleſhy part of man, to the rational part, which is the underſtanding.

ANIMAL *Secretion* is the act whereby the divers juices of the body are ſecreted or ſeparated from the common maſs of blood, by means of the glands.

The theory of animal ſecretion is one of the improvements in phyſic, for which we are indebted to geometrical reaſoning. —The ſum of what our late writers on this ſubject have ſhewn, may be reduced to the following heads:

1. Different juices may be ſeparated from the common maſs of blood, by means of the different diameters of the orifices of the ſecretory ducts. For all particles, whoſe diameters are leſs than thoſe of the ducts, will paſs through them; ſo that any matter may be evacuated by any of the glands, provided the diameters of its particles be made leſſer than thoſe of the ſecretory duct, either by a comminution of the matter to be ſeparated, or by an enlargement of the ſeparating paſſage.

2. By the different angle which the ſecretory duct makes with the trunk of the artery. For all fluids preſs the ſides of the containing veſſels in a direction perpendicular to its ſides; which is evident in the pulſation of the arteries, it being to that preſſure that the pulſation is wholly owing. It is likewiſe evident, that the blood is urged forward by the force of the heart; ſo that the motion of ſecretion is compounded of both theſe motions. Now the lateral preſſure is greater when the direct velocity is ſo, but yet not in proportion to ſuch velocity: for the lateral preſſure is conſiderable, even when the fluid is at reſt; being then in proportion to the ſpecific gravity of the fluid: and in a fluid like the blood in the arteries, which is thrown in a right direction, or a direction parallel to the axis of the veſſel, the lateral preſſure will be in a proportion compounded of both: from whence it will follow, that if two particles of equal diameters, but of unequal ſpecific gravities, arrive, with the ſame velocity, at an orifice capable of admitting them, yet they will not both enter in it and paſs, becauſe their motion of direction will be different: ſo that the diverſity of the angles which the ducts make with the trunk of the artery, is altogether neceſſary to account for all the poſſible diverſity of ſecerned fluids, even ſuppoſing their diameters and figures to be the ſame.

3. By the different velocities with which the blood arrives at the orifice of the ſecretory ducts.—For ſince the ſecretions are made in a fluid form; no poſſible reaſons can be aſſigned, why ſome *animals* have a ſoft looſe texture of the ſolid parts, and why one part of the body is of an eaſily ſeparated texture, and others of a firmer, but this different velocity of the blood at the orifices of the ſecretory ducts, whereby the particles ſecerned for nouriſhment, and accretion, are driven or impacted into the vacuola that receive them, with a greater or leſs force; it being difficult to imagine, that ſuch a diverſity in texture can altogether proceed from the different ſolidities and contacts of the conſtituent parts. See further under the article SECRETION.

ANIMAL *Spirits* are a fine ſubtile juice or humour in animal bodies; ſuppoſed by many to be the great inſtrument of muſcular motion, ſenſation, &c.

The antients diſtinguiſhed ſpirits into three kinds, viz. *animal*, vital, and vegetative: but the moderns have reduced them to one ſort, *viz. animal*: about the nature of which, and the matter whence they formed, great diſputes have ariſen among anatomiſts, though their very exiſtence has never been fairly proved.

As it is hard to define what could never yet be brought under the judgment of our ſenſes, all that we ſhall here offer concerning them, is, that they muſt needs be extremely ſubtile bodies, which eſcape all manner of examination by the ſenſes, though ever ſo well aſſiſted; and pervade the tracts of the nerves, which yet have no diſcoverable cavity or perforation; nor could ever by any experiment be collected; yet are conſtantly moving in vaſt quantities, as they muſt of neceſſity be, to perform all thoſe mighty operations which are aſcribed to them.—However, the antiquity of the opinion claims ſome reverence.

By the help of theſe, we are furniſhed with a vaſt number of precarious ſolutions of great phænomena; and without them we muſt leave a great chaſm in the philoſophical hiſtory of *animal* bodies.

They are ſuppoſed to be ſeparated in the brain, from the ſubtileſt parts of the blood; and thence carried, by the nerves, to all parts of the body, for the performance of all *animal* and vital functions.

ANIMAL *Hunger*.	See the articles	HUNGER.
ANIMAL *Oeconomy*.		OECONOMY.
ANIMAL *Oil*.		OIL.

ANIMALCULE, ANIMALCULUM, a diminutive of animal; expreſſing ſuch a minute creature as is either ſcarce, or not at all, diſcernible by the naked eye.

Such are thoſe numerous inſects which croud the water in the ſummer months; changing it ſometimes of a deep or pale-red colour, ſometimes of a yellow, &c. Theſe often ſeem to be of the ſhrimp-kind, and the moſt common one is called by Swammerdam, *Pulex aquaticus arboreſcens*. The cauſe of their concourſe at this time, Mr. Derham obſerves, is to perform their coit. He adds, that they afford a comfortable food to many water-animals.—The green ſcum, on the top of ſtagnant waters, is often nothing elſe but prodigious numbers of another ſmaller order of *animalcules*; which, in all probability, ſerve for food to the pulices aquatici.

The microſcope diſcovers legions of *animalcules* in moſt liquors, as water, wine, vinegar, beer, dew, &c. In the Philoſoph. Tranſact. we have obſervations of the *animalcules* in rain-water, in ſeveral chalybeat waters, infuſions of pepper, bay-berries, oats, barley, wheat, &c. See MICROSCOPE.

The human ſeed has been obſerved by divers authors to contain great numbers of *animalcules*; which gave occaſion to the ſyſtem of generation *ab animalculo*.

ANIMATE, ANIMATED, ſomething endued with life, or a living ſoul.

In mechanics, *animate power* is uſed to denote a man, or brute; in contradiſtinction to *inanimate power*, as ſprings, weights, &c.

ANIMATED *Mercury*, among chymiſts, ſignifies quickſilver impregnated with ſome ſubtile and ſpirituous particles, ſo as to render it capable of growing hot when mingled with gold.

ANIMATED *Needle*, a needle touched with a load-ſtone. See NEEDLE, MAGNET, &c.

ANIMATION ſignifies the informing of an animal body with a ſoul.

Thus the fœtus of the womb is ſaid to come to its *animation*, when it begins to act as a true animal; or after the female that bears it is *quick*, as the common way of expreſſion is.

The common opinion is, that this happens about forty days after conception. But Jer. Florentinus, in a Latin treatiſe entitled, *Homo dubius, ſive de baptiſmo abortivorum*, ſhews this to be very precarious.

ANIME, or *Gum* ANIMÆ, in pharmacy, a kind of gum, or reſin; whereof there are two kinds, the *weſtern*, and *eaſtern*.

The weſtern flows from an inciſion of a tree in New Spain, called *courbaril*; it is tranſparent, and of a colour like that of frankincenſe: its ſmell is very agreeable, and it eaſily conſumes in the fire.

The eaſtern gum *anime* is diſtinguiſhed into three kinds: the firſt is white; the ſecond blackiſh, in ſmell like myrrh; the third pale, reſinous, and dry.

All the ſeveral kinds of *anime* are uſed in perfumes, by reaſon of their agreeable ſmell; they are alſo applied externally in cold diſorders of the head and nerves, and in palſies and catarrhs; but they are little known among us; inſomuch that our apothecaries uſually ſell bdellium for gum *animæ*.

ANISCALPTOR, in anatomy, a muſcle, otherwiſe called *latiſſimus dorſi*. See LATISSIMUS *Dorſi*.

ANISE-SEED, a medicinal ſeed, produced by an umbelliferous plant of the ſame name, common in ſome gardens.

It has a ſweetiſh taſte, intermixed with ſomething pungent and bitter; is reputed an aromatic, and preſcribed not barely as a carminative againſt wind, but alſo as a pectoral, ſtomachic, and digeſtive.

It yields, by diſtillation, a white cordial oil, called *eſſence of aniſeed*, of a very ſtrong penetrating ſmell, and efficacious in its medicinal operation; it being alſo uſed by the confectioners to ſcent their pomatums, &c.

In diſtilling the *aniſe-ſeed* for the oil, there is procured a limpid water called *aniſe-ſeed* water, which has much the ſame virtues with the oil.

ANKER, ANCHOR, a liquid meaſure chiefly uſed at Amſterdam, &c.

The *anker* is the fourth part of the awn, and contains two ſtekans: each ſtekan conſiſts of ſixteen mengles; the mengle being equal to two Paris pints.

ANNALS, ANNALES, an hiſtorical account of the affairs of a ſtate, digeſted in the order of years.

The difference between *annals* and hiſtory is variouſly aſſigned by various authors.—Some ſay that hiſtory is properly a recital of things which the author has ſeen, or been a by-ſtander to. What they build upon is, the etymology of the word; hiſtory, in the Greek, ſignifying the knowlege of things preſent, and, in effect, ἱστορειν properly ſignifies to *ſee*. On the contrary, *annals*, ſay they, relate to the tranſactions of others, and ſuch as the writer never ſaw.

Of this opinion the great *annaliſt*, Tacitus himſelf, ſeems to have been; in regard the firſt part of his work, which treats of former times, he calls *annals*; whereas, when he comes down to his own times, he changes his title, and calls it hiſtory.

Aulus Gellius is of a different opinion, and pretends, that hiſtory and *annals* only differ from one another as the genus does from the ſpecies; the hiſtory is the genus, and implies a narration, or recital of things paſſed; and that *annals* are the ſpecies, and are alſo a recital of things paſſed, but with this difference, that theſe laſt are digeſted into certain periods, or years.

The ſame author gives us another opinion, which he ſays he borrows from Sempronius Aſellio: according to that writer, *annals* are a bare relation of what paſſes each year; whereas hiſtory relates not only to the tranſactions themſelves, but alſo the cauſes, motives, and ſprings thereof. The *annaliſt* has nothing to do but to lay down his facts, but the hiſtorian reaſons and deſcants on them.

Of this laſt opinion ſeems Cicero to be, when, ſpeaking of *annaliſts*, he ſays, *Unam dicendi laudem putant eſſe brevitatem, non exornatores rerum, ſed tantum narratores.* He adds, that hiſtory, in its original, was the compoſition of *annals*.

The ſame Cicero relates the origin of *annals*: to preſerve the memory of tranſactions, the *pontifex maximus*, ſays he, wrote what paſſed each year; and expoſed it on a table, in his own houſe, where every one was at liberty to read it.—This they called *annales maximi*; and this cuſtom was kept up till the year of Rome 620.

Several other writers, in imitation hereof, took to this ſimple and naked way of relating facts; and were hence denominated *annaliſts*.—Such were Cato, Pictor, Piſo, Antipater, &c.

The *annals of Grotius* is abook finely written, and contains very good things. It is not ſo particular as Strada, but it is more profound, and comes much nearer to Tacitus. *Patin. Lett. Choiſ.* 120.

Lucas Holſtenius, canon of St. John de Lateran, aſſured Naudé, that he was able to ſhew 8000 falſhoods in Baronius's *annals*, and prove them from MSS. in the Vatican library, of which he had the cuſtody. *Patin. Lett. Choiſ.* 165.

ANNATES, ANNATA, in eccleſiaſtical writers, denotes a year's income, due antiently to the pope upon the death of any biſhop, abbot, or pariſh-prieſt; and to be paid by his ſucceſſor.

Annates are alſo called from the Latin *annus*, year, becauſe their rate is after the value of one year's purchaſe.

Annates are the ſame with what of latter days are called *primitiæ*, or firſt fruits.—With this only difference, that firſt-fruits with us are paid to the king.

The firſt pope that impoſed *annates* in England ſeems to have been Clement V. who, according to Matthew of Weſtminſter, exacted *annates* of all the vacant benefices in the kingdom, for the ſpace of two years; or, according to Walſingham, for three years. His ſucceſſor John XXII. introduced the like in France.

Yet Polydore Virgil, and ſome others, take *annates* to be of a much elder ſtanding; and to have obtained long before they were paid to the pope.—'Tis certain, at leaſt, that from the twelfth century there were biſhops and abbots, who, by ſome peculiar cuſtom or privilege, took *annates* of the benefices depending on their dioceſe or abbey.

Matthew Paris, in his hiſtory of England, for the year 746. relates, that the archbiſhop of Canterbury, in virtue of a grant or conceſſion of the pope, received *annates* of all the benefices that became vacant in England.—But, in after-times, the holy ſee thought fit to take theſe away from the biſhops and archbiſhops, and appropriate them to themſelves.—And from the popes the parliament under Henry VIII. took them, and gave them to the crown, 25 *H.* VIII. *c.* 20. Finally queen Anne reſtored them to the church, by appropriating them to the augmentation of poor livings.

ANNEALING, or, as it is popularly called, *Nealing*. See the article NEALING.

One fine uſe of ſilver, ſays Mr. Boyle, was only diſcovered ſince the art of *annealing* upon glaſs came to be practiſed.—For prepared ſilver, or even the crude metal, being burnt on a glaſs plate, will tinge it of a fine yellow, or golden colour. And there are ſeveral mineral earths, and other coarſe matters, of uſe in this art, which, by means of fire, impart tranſparent colours to glaſs, and ſometimes very different ones from thoſe of the bodies themſelves.

ANNEALING *Furnace*. See the article FURNACE.

ANNEXATION, in a legal ſenſe, the act of joining or uniteing ſome leſs conſiderable thing to a greater.

ANNEXED, ſomething joined to, or dependent on another.—Thus we ſay, ſuch a farm, ſuch an advowſon, is *annexed* to ſuch a fee, ſuch a manor, &c. Charles VIII. in the year 1486. *annexed* Provence to the crown of France.

ANNIENTED*, or rather ANIENTED, a term ſometimes uſed in law-books, in the ſenſe of fruſtrated, or annulled.

* It is of French original; being formed of the verb *aneantir*, to bring to nothing, or to annihilate.

ANNIHILATION*, the act of reducing a ſubſtance into nothing; or of totally deſtroying and taking away its exiſtence.

* The word is compounded of *ad*, to, and *nihil*, nothing.

Annihilation ſtands oppoſed to creation: the one ſuppoſes ſomething made out of nothing, the other nothing made out of ſomething.

All *annihilation* muſt be metaphyſical or ſupernatural: bodies naturally admit of changes and alterations in their form; but not of *annihilation*.

Some philoſophers object againſt this notion of *annihilation*; in that it ſuppoſes an act required thereto: whereas, according to them, *annihilation* muſt enſue upon God's merely ceaſing to act, or to create a thing. For, if the conſervation of a thing be a continued creation thereof, as is almoſt univerſally allowed; it is evident a thing can no longer endure, than while God continues thus to create.

ANNIHILATION is alſo uſed in a moral ſenſe.—The capital of the South-Sea is reduced to one half; and unleſs care be taken to prevent male-practices of factors, &c. another *annihilation* will ſoon become neceſſary: eſpecially as the dividend on the ſtock is reduced from ſix to three *per cent.* which is one *per cent.* leſs than is paid the company by the government.

ANNI *Nubiles*, among law-writers, the legal age, at which a maid becomes fit for marriage; which is at twelve years.

ANNIS *communibus*. See the article COMMUNIBUS.

ANNISEED. See the article ANISE-SEED.

ANNIVERSARY* is properly the yearly return of any remarkable day: antiently alſo called a *year-day*, or *mind-day*, that is, a memorial-day.

* The word is formed from *annus* and *verto*, in regard of its returning every year.

ANNIVERSARY *Days*, *dies anniverſarii*, among our anceſtors more particularly denote thoſe days wherein the martyrdoms of the ſaints were yearly celebrated in the church; as alſo days whereon, at every year's end, men were wont to pray for the ſouls of their deceaſed friends.—*Anniverſaria dies ideo repetitur defunctis, quoniam neſcimus qualiter eorum cauſa habeatur in alia vita.*—This was the reaſon given by Alcuinus in his divine offices.

ANNO *Domini*, q. d. in the *year of our Lord*; the computation of time from the epocha of the incarnation of Jeſus Chriſt.

ANNOISANCE, or *Nuſance*, in law, a hurt or offence, either to a public place, as a highway, bridge, or common river; or to a private one, by laying any thing that may breed infection, by incroaching, or by the like means. See NUSANCE.

ANNOISANCE is alſo uſed for a writ brought upon this tranſgreſſion. See NUSANCE.

ANNOTATION*, a ſuccinct commentary, or remark on a book, or writing; in order to clear up ſome paſſages, or to draw ſome induction, or conſequence from it.

* The word is formed of the Latin *adnotatio*; of *ad*, and *nota*, note.—The critics of the laſt age have made learned *annotations* on the ſcriptures, claſſics, &c.

ANNUAL, ſomething which returns every year, or cloſes at the end of the year.

Thus we ſay, an *annual*, or yearly feaſt, office, commiſſion, rent, revenue, income, &c.

The *annual* motion of the earth, ſee proved under the article EARTH.

ANNUAL is ſometimes uſed for the yearly rent, or income of a prebendary, &c.

ANNUAL *Argument of Longitude*. See ARGUMENT.

ANNUAL *Epacts*. See the article EPACT.

ANNUAL *Equation* of the mean motion of the ſun and moon, and of the moon's apogee and nodes.

The *annual equation* of the mean motion of the ſun depends on the eccentricity of the earth's orbit; and is $16\frac{14}{12}$ of thoſe parts, whereof the mean diſtance between the ſun and the earth is 1000: whence, by ſome, it is called the *equation of the centre*, and, when greateſt, is 1 degree, 56′, 20″.

The greateſt *annual equation* of the moon's mean motion is 11′, 40″, of its apogee 20′, and of its node 9′, 30″.

Theſe four *annual equations* are always proportionable; ſo that when any of them is at the greateſt, the three others are alſo greateſt; and *vice verſa*.—Hence the *annual equation* of the centre (of the ſun) being given, the other three correſponding *equations* will be given; ſo that one table (that is, of the central *equation*) may ſerve for all.

ANNUAL *Leaves*, are ſuch *leaves* of plants, as come up afreſh in the ſpring, and periſh in winter.—Theſe ſtand oppoſed to *ever-greens*.

ANNUAL *Plants*, called alſo ſimply *annuals*, are ſuch as only live their year, *i. e.* come up in the ſpring, and die again in autumn: and accordingly are to be recruited every year.

ANNUALIA, yearly oblations antiently made by the relations of deceaſed perſons, on the day of their death.

This day they called *year-day*, &c. and on it, maſs was celebrated with great ſolemnity.

ANNUENTES* *Muſculi*, in anatomy, a pair of tranſverſe muſcles, at the root of the vertebræ of the back, called alſo by Mr. Cowper, *Recti interni minores*, becauſe they lie under the *Recti majores*. See RECTI.

* They are called *annuentes*, from *annuere*, to nod towards, becauſe they help to nod the head, or draw it directly downwards and forwards. See HEAD, MUSCLE, &c.

ANNUITY, a yearly rent or revenue, paid either for term of life, or of years, or in fee, and for ever.

In common law, the difference between a rent, and an *annuity*, conſiſts in this, that rent is payable out of land; whereas an *annuity* charges only the perſon of the grantor: and that, for the recovery of a rent, an action lies; whereas for that of an *annuity*, there only lies a writ of *annuity* againſt the grantor, his heirs and ſucceſſors. Add, that *annuities* are never taken for aſſets; as being no freeholds in law.

The computation of the value of *annuities* on lives, &c. belongs to political arithmetic. See POLITICAL *arithmetic*.

Dr. Halley, in his obſervations on the Breſlaw bills of mortality (Phil. Tranſ. ap. Lowth. 3. p. 669.) ſhews, that it is 80 to 1, a perſon of 25 years of age does not die in a year.—That it is $5\frac{1}{2}$ to one, a man of 40 lives 7 years; and that one of 30 may reaſonably expect to live 27 or 28 years. So great a difference is there between the life of man at different ages; that it is 100 to 1, one of 20 lives out a year; and but 38 to 1, that one of 50 doth ſo.

Whence, and from ſome other obſervations, he conſtructed the following table; ſhewing the value of *annuities* for every fifth year of life to the 70th.

Age.	Years Purchaſe.	Age.	Years Purchaſe.
1	10,28	40	10,57
5	13,40	45	9,91
10	13,44	50	9,21
15	13,33	55	8,51
20	12,78	60	7,60
25	12,27	65	6,54
30	11,72	70	5,32
35	11,12		

ANNULAR, ANNULARIS, ſomething that relates to, or reſembles a ring, by the Latins called *annulus*.

ANNULAR *Cartilage*, or ANNULARIS, is the ſecond cartilage of the larynx, being round, and inveſting the whole larynx; called alſo *cricoides*.

ANNULAR *Ligament*, *Ligamentum* ANNULARE, is a ſtrong ligament, encompaſſing the carpus or wriſt; after the manner of a bracelet.

Its uſe is to connect or bind the two bones of the arm together; and alſo to reſtrain the tendons of the ſeveral muſcles of the hand and fingers, and prevent their flying out of their places, when in action.

The ligament of the tarſus is alſo denominated *annular* ligament. See TARSUS.

Add, that the ſphincter muſcle of the anus is alſo called *annularis*, or *annular* muſcle; from its figure.

ANNULAR *Proceſs* or *Protuberance*, is a proceſs of the medulla oblongata; thus called by Dr. Willis, in regard it ſurrounds the ſame, much like a ring. See MEDULLA *Oblongata*.

ANNULAR is alſo an epithet given the fourth finger; popularly called the *ring finger*. See FINGER.

ANNULET, *little ring*, in heraldry, is a difference or mark of diſtinction, which the fifth brother of any family ought to bear in his coat of arms. See DIFFERENCE.

Annulets are alſo part of the coat-armour of ſeveral families. They were antiently reputed a mark of nobility and juriſdiction; it being the cuſtom of prelates to receive their inveſtiture *per baculum & annulum.*

ANNULETS, in architecture, are ſmall ſquare members, in the Doric capital, placed under the quarter round.—See *Tab. Architect. fig.* 28. *lit. q.* and *fig.* 24. *lit. n.* and *fig.* 1.

They are alſo called *Fillets*, *Liſtels*, &c.

ANNULET is alſo uſed for a narrow flat moulding, common to other parts of a column; *viz.* the baſes, *&c.* as well as the capital; ſo called, becauſe it encompaſſes the column around.—In which ſenſe *Annulet* is frequently uſed for *baguette*, or little aſtragal.

ANNULLING*, the aboliſhing of an act, procedure, ſentence, or the like.

* The word is compounded of *ad* and *nullus*, none; *q. d.* undoing.

ANNUNCIATE, ANNUNTIADA, or ANNUNTIATA, a denomination common to ſeveral orders, both religious and military; inſtituted with a view to the annunciation.

The firſt religious order of this kind was inſtituted in 1232. by ſeven Florentine merchants.—Theſe are alſo called *Servites*, *q. d. Servants.*

The ſecond was a nunnery at Bourges, founded by Joan, queen of France, after her divorce from Lewis XII.

The third was alſo a nunnery, founded by a Genoeſe lady in 1600.—The fourth was a friary, founded by cardinal Torrecremata, at Rome; which laſt are grown ſo very rich, that they give fortunes of ſixty Roman crowns to above 400 girls, on the anniverſary of the annunciation.

Knights of the ANNUNCIATA, or ANNUNTIADA, was a military order, inſtituted in 1409. by Amadeus, duke of Savoy.

It was at firſt called the order of the true lovers knots; in memory of a bracelet of hair preſented to the founder by a lady: but, upon the election of Amadeus VIII. to the pontificate, it changed its name for that of the *Annunciate.*

ANNUNCIATION*, the tidings which the angel Gabriel brought to the holy virgin, of the myſtery of the incarnation.

* The word is compounded of the Latin *ad* and *nuncio*, I tell, I declare; of *nuntius*, meſſenger.—The Greeks call it Ευαγγελισμος, good tidings; and χαιρετισμος, ſalutation.

ANNUNCIATION is alſo the name of a feaſt, celebrated annually on the 25th of March, popularly called *Lady-day*, in commemoration of that wonderful event.

This feaſt appears to be of great antiquity in the Latin church. Among the ſermons of St. Auguſtine, who died in 430. we have two on the *Annunciation*; *viz.* the 17th and 18th *de ſanctis*: and yet there are much earlier teſtimonies of its uſe in the Greek church. Proclus, who died in 446. Chryſoſtom, in 407. and even Gregory Thaumaturgus, in 295. have all of them diſcourſes on the *Annunciation.* Rivet, Perkins, and ſome other Proteſtant writers after them, have indeed queſtioned the authenticneſs of the two homilies of Gregory Thaumaturgus, on the *Annunciation*; but Voſſius acknowleges them the genuine productions of that father.

Add, that ſome authors are of opinion, that the feaſt was originally ſolemnized in honour of our Saviour; and that the holding it in the name and honour of the virgin is of a much later ſtanding.

Several of the eaſtern churches celebrate the *Annunciation* at a different ſeaſon from thoſe of the weſt.—The Syrians call it *baſcarach*, *q. d.* ſearch, inquiry; and mark it in their calendar for the firſt day of December. The Armenians hold it on the 5th of January; thus anticipating the time, to prevent its falling in Lent: but the Greeks make no ſcruple of celebrating the feſtival even in Lent.

The Jews alſo give the title *Annunciation* to part of the ceremony of their paſſover; *viz.* that, wherein they explain the origin and occaſion of that ſolemnity.—This explanation they call הגדה Haggada, *q. d.* the *Annunciation.*

ANNULUS, a *ring.* See the article RING.

ANODYNE*, in phyſic, is underſtood of ſuch remedies, as calm and aſſwage pain.

* The word is derived from the privative α, and ὀδυνω, *doleo*, to be in pain.

Anodynes are of two kinds; the firſt, *proper*, called alſo *paregorics.*

The ſecond *ſpurious*, or improper, which rather ſtupefy than alleviate; acting only by inducing a ſtupor, drowſineſs, or ſleep.

Theſe are more properly called *narcotics*, *hypnotics*, or *opiates.* The true *Anodynes* are applied externally to the part affected.—Such, among the claſs of ſimples, are, the onion, lily, root of mallows, leaves of violets, elder, *&c.*

We have alſo certain compound medicines in the ſhops, prepared with this intention, and called by this name.—Such is the *Anodyne balſam*, made of Caſtile ſoap, camphor, ſaffron, and ſpirit of wine; digeſted in a ſand-heat. It is recommended not only for procuring eaſe in the moſt racking extremities of pain, but alſo for aſſiſting in diſcharging the peccant matter that occaſioned it. This balſam is much the ſame with the modern *opodeldoc.*

ANOINTED. See the articles CHRIST, and MESSIAH.

Lord's ANOINTED. See the article LORD's *Anointed.*

ANOMALISTICAL *Year*, in aſtronomy, called alſo *periodical year*, is the ſpace of time wherein the earth paſſes through her orbit.

The *anomaliſtical*, or common year, is ſomewhat greater than the tropical year; by reaſon of the preceſſion of the equinox. See PRECESSION.

ANOMALOUS*, *irregular*; ſomething that deviates from the ordinary rule and method of other things of the ſame kind.

* The word is not compounded of the privative α, and νομος, law; as is uſually imagined: for whence, on ſuch ſuppoſition, ſhould the laſt ſyllable, *al*, ariſe? But it comes from the Greek ανωμαλος, uneven, rough, irregular; formed of the privative α, and ομαλος, plain, even.

ANOMALOUS *verbs*, in grammar, are ſuch as are irregular in their conjugations; deviating from the rules or formula's obſerved by others.

There are *anomalous* verbs, or irregular inflexions of verbs, in all languages.—In the Engliſh, all the irregularity in our *anomalous* verbs lies in the formation of the preter tenſe, and paſſive participle; though this only holds of the native Teutonic or Saxon words, and not of the foreign words, borrowed from the Latin, French, *&c.*

The principal irregularity ariſes from the quickneſs of our pronunciation, whereby we change the conſonant *d* into *t*, cutting off the regular ending *ed.*

Thus for *mixed*, we write *mixt* or *mix'd*; for *dwelled*, *dwelt* or *dwell'd*; for *ſnatched*, *ſnatcht*, &c.—But this properly is rather of the nature of a contraction than an irregularity; and is complained of by ſome of our politer writers as an abuſe, to the diſadvantage of our language, tending to disfigure it; and turn a tenth part of our ſmootheſt words into cluſters of conſonants: which is the more inexcuſable, in that our want of vowels has been the general complaint of the beſt writers.

Another irregularity relates to the preter tenſe, and paſſive participle.—Thus *give*, if it were regular, or formed according to the rule, would make *gived* in the preter tenſe, and the paſſive participle; whereas it makes *gave* in the preter tenſe, and *given* in the paſſive participle.

ANOMALY, in grammar, denotes an irregularity in the accidents of a word, whereby it deviates from the common rules or paradigms whereby other words of the like kind are governed.

ANOMALY, in aſtronomy, is the diſtance of a planet from the aphelion or apogee: or it is an irregularity, in the motion of a planet, whereby it deviates from the aphelion or apogee.

Kepler diſtinguiſhes three kinds of theſe *Anomalies*; mean, eccentric, and true.

Mean or *Simple* ANOMALY, in the antient aſtronomy, is the diſtance of a planet's mean place from the apogee.

In the modern aſtronomy, it is the time wherein the planet moves from its aphelion A, to the mean place or point of its orbit I (*Tab. Aſtronomy*, *fig.* 1.).

Hence, as the arch, or the angle, or the elliptic area ASI, is proportional to the time wherein the planet deſcribes the arch AI; that area may repreſent the mean *Anomaly.* Or thus, the area SKA, found by drawing a line LK, through the planet's place, perpendicular to the line of the apſides PA, till it cuts the circle DA, and drawing the line SK; may repreſent the mean *Anomaly*: for this area is every-where proportional to the former area SIA, as is demonſtrated by Dr. Gregory, *lib.* 3. *Elem. Aſtron. Phyſic. Math.*—V. *Philoſ. Tranſ.* Nº 447. p. 218.

ANOMALY *of the eccentric*, or *of the centre*, in the new aſtronomy, is an arch of the eccentric circle AK (*fig.* 1.) included between the aphelium A, and a right line KL, drawn through the centre of the planet I, perpendicularly to the line of the apſides AP. See EXCENTRIC.

In the antient aſtronomy, it is an arch of the zodiac, terminated by the line of the apſides, and the line of the mean motion of the centre.—See the methods of finding the *Anomaly of the excentric*, in *Phil. Tranſ.* Nº 447. p. 218.

True or *equated* ANOMALY is the angle at the ſun ASI, which a planet's diſtance from the aphelium, AI, appears under; or it is the angle or area, taken proportional to the time in which the planet moves from the mean place I, to its aphelion A.

And hence, in the ſun's motion, it will be the diſtance of his true place from the apogee.

The true *Anomaly* being given, the mean one is eaſily found: but it is difficult to find the true *Anomaly* from the mean one given.

The geometrical methods of Wallis and Newton, by the protracted cycloid, are not fit for calculation; nor yet the method of ſeries, as being too laborious. Hence aſtronomers are forced to have recourſe to approximation. Ward, in his *Aſtronomia Geometrica*, takes the angle A S I, at the focus where the ſun is not, for the mean *Anomaly*; which will nearly repreſent it, if the orbit of the planet be not very excentric; and thus eaſily ſolves the problem. But this method does not hold of the orbit of Mars, as being more excentric than thoſe of the other planets.

Sir Iſaac Newton ſhews how to effect even this; and when his correction is made, and the problem ſolved according to Ward's hypotheſis, Sir Iſaac affirms, that, even in the orbit of Mars, there will ſcarce ever be an error of above a ſecond.

ANOMOEANS *, Anomoei, in church-hiſtory, antient heretics, who denied any ſimilitude between the eſſence of the Father and that of the Son. See Trinity.

* The word is Greek; compoſed of the privative α, and ὁμοιος ſimilar, reſembling; *q. d.* different, diſſimilar.

Anomœans was the name whereby the pure Arians were diſtinguiſhed in the fourth century, in regard that they not only denied the conſubſtantiality of the Word, but even aſſerted, that he was of a nature different from that of the Father: in contradiſtinction to the Semi-Arians, who indeed denied the conſubſtantiality of the Word; but who owned, at the ſame time, that he was like the Father.

The Semi-Arians condemned the *Anomœans* in the council of Seleucia; and the *Anomœans* condemned the Semi Arians, in their turn, in the councils of Conſtantinople and Antioch; eraſing the word ὁμοιος out of the formula of Rimini, and that of Conſtantinople; and proteſting, that the Word had not only a different ſubſtance, but alſo a will different from that of the Father. Whence they came to be called ανομοιοι.

ANONYMOUS *, ſomething that is nameleſs; or to which no name is affixed.

* It is derived from the Greek ανωνυμος, without name; formed of the privative α, ονομα, *nomen*, name.

The term is chiefly applied to books which do not expreſs their author's name, and to authors whoſe names are unknown. Decker advocate of the imperial chamber of Spires, and Placcius of Hamburgh, have given treatiſes of *anonymous* books.—Burc. Gotth. Struvius treats of learned men who have endeavoured to divine the authors of *anonymous* books.

ANOREXY *, Anorexia, in medicine, an inappetency, or loſs of appetite.

* The word is compounded of the privative α, and ορεγομαι, *appeto*, I deſire.

Anorexia is properly a longer continuance than is natural, without a deſire to eat.

If the thought, or the ſight, of proper food create a ſickneſs in the ſtomach, or a tendency to vomit; the caſe is more properly called a *nauſea*.

Anorexia is chiefly conſidered as a ſymptom of ſome other diſorder, from which the curative indications are to be taken, and afterwards ſtomachics uſed.

ANSÆ *, Anses, in aſtronomy, thoſe apparently prominent parts of the planet Saturn's ring, diſcovered in its opening, and appearing like handles to the body of that planet.

* The word is Latin; and literally ſignifies handles, or ears, of divers utenſils.

ANSCOTE, in our antient law-books, the ſame with *anhlote*. See Scot.

ANSEL *Weight*. See Aunsel *Weight*.

ANSELM's *Art*. See the article Art.

ANSES. See Ansæ.

ANSPESSADES *, or Lanspessades, a kind of inferior officers in the foot, below the corporals, and yet above the common centinels.

* The word is formed of the Italian *lancia ſpezzata*, *q. d.* broken lance; which was occaſioned hence, that they were originally diſbanded gendarmes, who, for want of other ſubſiſtence, ſued for a place of ſome diſtinction in the infantry.

There are uſually four or five in each company.

ANSWER, in a law-ſenſe, *&c.* See Rejoinder.

Foreign Answer. See the article Foreign.

ANTA *, in the antient architecture, a ſquare column, or pilaſter, placed at the corners of the walls of temples, and other edifices.

* Theſe took their name, according to Mr. Perrault, from the prepoſition *ante*, before; becauſe placed before the walls and coins of buildings, to ſecure or ſtrengthen them.

The *Antæ* ſtood out of the wall, with a projecture equal to one eighth of their face, provided there were no ornament that had a greater projecture; but it was a rule, that the projecture of the *Antæ* ſhould always equal that of the ornaments.

ANTAGONIST *, Antagonista, among the antients, denotes an adverſary in battle.

* The word is formed from the Greek αντι, *contra*, againſt; and αγωνιζω, I contend, or ſtruggle.

In this ſenſe the word is rather uſed in ſpeaking of ſportive combats, or games, than in ſerious fighting.

Antagonist alſo denotes one of the parties in literary combats or diſputes.

Antagonist *Muſcles*, in anatomy, are thoſe which have oppoſite functions.

Such are the flexor and extenſor of any limb, the one whereof contracts it, and the other ſtretches it out.

We have ſolitary muſcles, without any *Antagoniſts*; as the heart, *&c.*

ANTANACLASIS *, a figure in rhetoric; whereby the ſame word is repeated, but in a different, and ſometimes doubtful ſignification.—As, Let the dead bury the dead.

* The word comes from the Greek αντι, and ανακλαω, *repercutio*, I ſtrike again.

ANTANAGOGE, ανταναγωγη, a figure in rhetoric; when, not being able to anſwer the accuſation of the adverſary, we return the charge, by loading him with the ſame or other crimes.

ANTARCTIC * *Pole*, denotes the ſouthern pole, or end of the earth's axis.

* The word is compoſed of αντι, *contra*; and αρκτος, *urſa*, bear; as being oppoſite to the Arctic pole.

The ſtars near the *Antarctic* pole never appear above our horizon.

Antarctic *Circle* is one of the leſſer circles of the ſphere, parallel to the equator, at the diſtance of 29 deg. 30 min. from the ſouth pole.

It takes its name from its being oppoſite to another circle, parallel likewiſe to the equator, and at the ſame diſtance from the north pole, called the *Arctic circle*. See Arctic *Circle*.

ANTARES, in aſtronomy, the ſcorpion's heart; a fixed ſtar of the firſt magnitude, in the conſtellation Scorpio.—Its longitude, latitude, *&c.* ſee among the reſt of the conſtellation Scorpio.

ANTECEDENT *, in the ſchools, ſomething that precedes, or goes before, another, in reſpect of time.

* The word is compounded of the Latin prepoſition *ante*, before; and *cedens*, of *cedere*, to go.—In which ſenſe it ſtands oppoſed to *ſubſequent*.

Antecedent *Decree* is a decree preceding ſome other decree, or ſome action of the Creator, or the previſion of action.—It is a point much controverted, whether predeſtination be a decree *antecedent* to faith, or ſubſequent thereto.

Antecedent *Will*, or *Deſire*, is that which precedes ſome other will or deſire, or ſome knowlege or previſion.—Thus we ſay, God by a ſincere, but *antecedent* deſire, wills all men to be ſaved: that is, this ſincere deſire of God precedes, and does not ſuppoſe, the knowlege of their faith and repentance.

By the way it muſt be noted, that the term *Antecedent* is only applied to God in reſpect of the order of nature, not of an order of ſucceſſion; for that God, by reaſon of his infinite perfections, ſees and foreſees both at the ſame time: after the ſame manner he alſo wills, and that not ſucceſſively, one thing after another.—Yet does not this hinder, but that God may will one thing on occaſion of another, or have ſuch a deſire on occaſion of ſuch a previſion; which divines call the *order of nature*, in contradiſtinction to that of time.

Antecedent *Neceſſity*. See the article Necessity.

Antecedent, in logic, denotes the firſt propoſition of an enthymeme, or of an argument which only conſiſts of two members.

In oppoſition hereto, the latter is called the *conſequent*. See Consequent, Conclusion, *&c.*

Thus, in the argument, *cogito, ergo ſum*, I think, and therefore I exiſt; *cogito* is the *Antecedent*: being thus called, becauſe it precedes the *ergo*, or the *copula* of the argument.

Antecedent *of a Ratio* denotes the firſt term, or that which is compared with the other. See Ratio, and Term.

Thus, if the ratio be *a* : *b*, or of *a* to *b*; *a* is ſaid to be the *Antecedent*.

Antecedent *Signs* are ſuch ſymptoms of diſorder as appear before a diſtemper is ſo formed as to be reducible to any particular claſs, or proper denomination.

Antecedent, in grammar, the word which a relative refers to.

ANTECEDENCY, Antecedence. See Antecedent, and Antecedentia.

ANTECEDENTIA, among aſtronomers.—When a planet appears to move weſtward, contrary to the order or courſe of the ſigns; as from Taurus towards Aries; it is ſaid to move *in Antecedentia*.

On the contrary, when it goes eaſtward, or forward, from Aries towards Taurus; it is ſaid to move *in conſequentia*. See Precession *of the equinox*.

ANTECESSOR, one that goes before, or that leads another. See Precursor, Predecessor, *&c.*

The term is particularly uſed in ſome univerſities for a public profeſſor, who teaches or lectures the civil law.

ANTECHAMBER *, or ANTICHAMBER, an outer chamber, before the principal chamber of an apartment; where the ſervants wait, and where ſtrangers ſtay, till the perſon to be ſpoken withal is at leiſure, &c.

* The word is formed of the Latin *ante camera*. See CHAMBER.

ANTECHRIST. See the article ANTICHRIST.

ANTEDATE, a ſpurious date, prior to the true date of a writing, inſtrument, act, deed, or the like. See DATE.

ANTEDILUVIAN, or ANTIDILUVIAN, ſomething that exiſted or happened before the deluge.

In this ſenſe, thoſe generations from Adam, till Noah's flood, are called *Antediluvians*; and thoſe ſince deſcended from Noah, to the preſent time, are called *poſtdiluvians*.

Dr. Burnet, and Dr. Woodward, differ very widely about the *Antediluvian* world; the former imagines its face and appearance to have been ſmooth, equable, and in all reſpects different from what we now find it to be.

The latter, on the contrary, endeavours to prove, that the face of the terraqueous globe before the deluge was the ſame as it is now, *viz.* unequal, diſtinguiſhed into mountains, and dales, and having likewiſe a ſea, lakes, and rivers; that this ſea was ſalt as ours is; was ſubject to tides; and poſſeſſed nearly the ſame ſpace and extent that it now does; and that the *Antediluvian* world was ſtocked with animals, vegetables, metals, minerals, &c. that it had the ſame poſition, in reſpect of the ſun, which ours now hath, its axis not being parallel, but inclined, as at preſent, to the plane of the ecliptic; conſequently, that there were then the ſame ſucceſſion of weather, and the ſame viciſſitudes of ſeaſons, as now.

ANTEJURAMENTUM, or PRÆJURAMENTUM, by our anceſtors alſo called *juramentum calumniæ*; an oath which both the accuſer and accuſed were antiently obliged to make before any trial or purgation.

The accuſer was to ſwear, that he would proſecute the criminal; and the accuſed was to make oath, on the very day that he was to undergo the ordeal, &c. that he was innocent of the fact with which he was charged.

If the accuſer failed, the criminal was diſcharged; if the accuſed, he was underſtood to be guilty, and was not to be admitted to purge himſelf by the ordeal.

ANTEPAGMENTA, or ANTIPAGMENTA, in the antient architecture, the jambs of a door, or lintels of a window.

The word is alſo uſed for the intire *chambranle*, *i. e.* the door-caſe, or window-frame.

ANTEPENULTIMA *, or ANTEPENULTIMATE, in grammar, the third ſyllable of a word, reckoning from the latter end; or the laſt ſyllable except two.

* The word is compounded of the prepoſition *ante*, before; and *penultimate*, laſt but one.

It was upon this ſyllable, that the Greeks placed their acute accents.—The *Antepenultimate* of a dactyle is always long.

ANTEPREDICAMENTS, ANTEPRÆDICAMENTA, in logic, certain previous matters, requiſite to a more eaſy and clear apprehenſion of the doctrine of predicaments or categories. See PREDICAMENT.

Such are definitions of common terms; as equivocals, univocals, &c. See DEFINITION, DIVISION, &c.

They are thus called, becauſe treated by Ariſtotle, before the predicaments; that the thread of the diſcourſe might not afterwards be interrupted.

ANTERIOR *, or ANTERIOUR, ſomething before another, chiefly in reſpect of place.

* The word is Latin, formed of the prepoſition *ante*, before.

In which ſenſe the term amounts to the ſame with *prior*, and ſtands oppoſed to *poſterior*.

ANTERIOR *Ramus*. See the article RAMUS.

ANTESTATURE, in fortification, a ſmall retrenchment, made of paliſadoes, or ſacks of earth, ſet up in haſte, to diſpute with the enemy the remainder of a piece of ground, part whereof hath been already gained.

ANTHELIX, in anatomy, the inner circuit of the auricle; thus called from its oppoſition to the outer circuit, called the *helix*.

ANTHELMINTICS *, medicines good to deſtroy worms.

* The word is compounded of *αντι*, *contra*, againſt; and ἑλμινς, *vermis*, worm.

ANTHEM, a church-ſong, performed in cathedral and other ſervice, by the choriſters, divided for that purpoſe into chorus's, who ſing alternately.

The word was originally uſed both for pſalms and hymns, when thus performed.

Socrates repreſents St. Ignatius as the author of this way of ſinging among the Greeks; and St. Ambroſe among the Latins.—Theodoret attributes it to Diodorus and Flavian.

Amalarius Fortunatus has written expreſly of the order of *Anthems*, *de antiphonarum ordine*.

At preſent the term is uſed in a ſomewhat narrower ſenſe; being applied to certain paſſages taken out of the pſalms, &c. and often accommodated to the particular ſolemnity in hand.

ANTHERÆ, in pharmacy, a term uſed by ſome authors for the yellow, or ruddy globules in the middle of certain flowers, as of lilies, ſaffron, &c.

Some confine the *Anthera* to the yellowiſh globules in the middle of roſes.—Theſe are held more aſtringent than the reſt of the plant.

Others apply the name ANTHERÆ to thoſe little tufts or knobs which grow on the tops of the ſtamina of all other flowers; more uſually called *Apices*. See APICES.

ANTHESPHORIA *, in antiquity, a feaſt celebrated in Sicily, in honour of Proſerpine.

* The word is derived from the Greek ανϑος, flower, and φερω, I carry, in regard that goddeſs was forced away by Pluto, when ſhe was gathering flowers in the fields. Yet Feſtus does not aſcribe the feaſt to Proſerpine; but ſays it was thus called, by reaſon ears of corn were carried on this day to the temples.

Antheſphoria ſeems to be the ſame thing with the *floriſertum* of the Latins; and anſwers to the harveſt-home among us.

ANTHESTERIA *, in antiquity, was a feaſt celebrated by the Athenians, in honour of Bacchus.

* The moſt natural derivation of the word is from ανϑος, *flos*, a flower; it being the cuſtom at this feaſt to offer garlands of flowers to Bacchus.

Some are of opinion it took its name from the month *antheſterion*, wherein it was celebrated.—Others pretend, that this was not the name of any particular feaſt, but that all the feaſts of Bacchus were called *Antheſteria*.

The *Antheſteria* laſted three days, the eleventh, twelfth, and thirteenth day of the month; each of which days had a name ſuited to the proper office of the day.—The firſt day of the feaſt was called πιϑοιγια, *i. e.* opening the veſſels, in regard on this day they tapped the veſſels, and taſted the wine.—The ſecond they called χοες, *congii*, the name of a meaſure, containing the weight of about ten pounds: on this day they drank the wine prepared the day before.—The third day they called χυτροι, kettles: on this day they boiled all ſorts of pulſe in kettles; which, however, they were not allowed to taſte, as being all to be offered to Mercury.

ANTHOLOGION *, a church-book in uſe among the Greeks. See GREEK.

* It was called ανϑολογιον, *q. d. florilegium*, or a collection of flowers. See ANTHOLOGY.

The *Anthologion* is a ſort of breviary or maſs-book, containing the daily offices addreſſed to our Saviour, the virgin, and the principal ſaints; with other common offices of prophets, apoſtles, martyrs, pontiffs, and confeſſors, according to the Greek rite. See BREVIARY, MASS, and OFFICE.

ANTHOLOGY *, ANTHOLOGIA, a diſcourſe or treatiſe of flowers; or of beautiful paſſages from any authors.

* Thus called from ανϑος, *flos*, a flower, and λογος, *ſermo*, diſcourſe.—Though others chooſe rather to derive *anthology* from ανϑος, *flos*, a flower, and λεγω, I gather; and uſe it to ſignify a collection of flowers.

ANTHOLOGY is frequently uſed for a collection of epigrams of divers Greek poets.

ANTHONY—Knights of St. *Anthony*, an order of knighthood, eſtabliſhed in 1382. by Albert of Bavaria, &c. who had then taken a reſolution to make war againſt the Turks.

The knights of this order wore a collar of gold, with a hermit's girdle, to which hung a crutch, and a little bell.

Some authors mention another order of St. *Anthony* in Ethiopia, inſtituted in 370.

St. ANTHONY'S *Fire*. See ERYSIPELAS.

ANTHORA *, a medicinal plant, of the aconite kind, having yellow flowers, reſembling helmets; growing chiefly on the mountains in Switzerland and Savoy.

* This is otherwiſe called *antithora*, as being reputed an antidote againſt the thora; ſometimes *aconitum ſalutiferum*, in Engliſh the *helmet-flower*. See ACONITE.

The root is chiefly in uſe. It is of a warm bitteriſh taſte, and is reputed a cardiac and alexipharmic, much of the ſame qualities with contrayerva-root; on which account ſome alſo denominate it the *German contrayerva*, though it now only obtains in few officinal compoſitions.

ANTHOS, Ανϑος, in its original Greek, ſignifies flower; but by way of excellency is appropriated to roſemary, ſo as to expreſs only that plant.

ANTHOSATUM *Acetum*. See ACETUM.

ANTHRACOSIS *, a diſeaſe of the eyes, occaſioned by a corroſive ulcer, either in the bulb of the eye, or the eyelids, covered with ſkin, and attended with a general ſwelling of the parts adjoining.

* The work is Greek, ανϑρακωσις, and denotes an inflammation reſembling a coal; ανϑραξ ſignifying a coal. See ANTHRAX.

ANTHRAX*, Ανθραξ, literally ſignifies a coal; and figuratively, a ſcab or blotch, made by a corroſive humour, which, as it were, burns the ſkin, and occaſions ſharp pricking pains.

* The *Anthrax* is the ſame with what is otherwiſe denominated *carbo* and *carbunculus*.

ANTHROPOLOGY*, Anthropologia, a diſcourſe, or treatiſe, upon man, or human nature; conſidered as in a ſound, or healthy ſtate.

* The word is compounded of ανθρωπος, man; and λογος, diſcourſe.

Anthropology includes the conſideration both of the human body and ſoul, with the laws of their union, and the effects thereof; as ſenſation, motion, &c.

Anthropology is particularly uſed, in theology, for a way of ſpeaking of God, after the manner of men; by attributing human parts and paſſions to him; as eyes, hands, ears, anger, joy, &c.

We have frequent inſtances of *Anthropology* in holy Scripture; by which we are only to underſtand the effect, or the thing which God does, as if he had hands, &c.

ANTHROPOMANCY*, Anthropomantia, a method of divination, performed by inſpecting the viſcera of a perſon deceaſed.

* The word is compounded of ανθρωπος, man; and μαντεια, divination.

ANTHROPOMORPHITE*, in a general ſenſe, one who attributes to God the figure of a man.

* The word comes from the Greek ανθρωπος, man; and μορφη, ſhape.

Anthropomorphites were a ſect of antient heretics, who, taking every thing ſpoken of God in the Scriptures in a literal ſenſe, imagined he had real hands, feet, &c.—They alſo held, that the patriarchs ſaw God in his proper divine ſubſtance, with their natural eyes.

The paſſage they chiefly inſiſted on was that in Geneſis, where it is ſaid, that God made man after his own image.—The orthodox, who held the contrary, *viz.* that God is incorporeal, and without any bodily form, the *Anthropomorphites* branded by the name of *Origeniſts*, by reaſon Origen taught how to allegorize thoſe expreſſions.

Epiphanius calls the *Anthropomorphites*, *Audiani*, or *Odiani*, from Audius, the ſuppoſed founder of the ſect; who lived, about the time of Arius, in Meſopotamia. St. Auguſtine calls them *Vadiani*.

ANTHROPOPATHY*, a figure, expreſſion, or diſcourſe, whereby ſome paſſion is attributed to God, which properly belongs only to man.

* The word is compounded of ανθρωπος, man; and παθος, paſſion.

Anthropopathy is frequently uſed promiſcuouſly with anthropology; yet, in ſtrictneſs, they ought to be diſtinguiſhed, as the genus from the ſpecies.—Anthropology may be underſtood of any thing human attributed to God; but *Anthropopathy*, only of human affections, paſſions, ſenſations, &c.

ANTHROPOPHAGI*, people who feed on human fleſh.

* The word is compounded of the Greek ανθρωπος, man; and φαγειν. *edere*, to eat.

The Cyclopes, the Leſtrygons, and Scylla, are all repreſented in Homer as *Anthropophagi*, or man-eaters; and the female phantoms, Circe, and the Syrens, firſt bewitched with a ſhew of pleaſure, and then deſtroyed.—This, like the other parts of Homer's poetry, had a foundation in the manners of the times preceding his own. It was ſtill in many places the age ſpoken of by Orpheus,

When men devour'd each other like the beaſts,
Gorging on human fleſh.———

Some remains of the uſage ſubſiſted much longer, even among the moſt civilized nations, in the practice of offering human ſacrifices.

The primitive Chriſtians were accuſed of *Anthropophagia* by the Heathens: of celebrating Thyeſtea epula, and allowing Oedipodei concubitus; as appears from Tatian, Tertullian in his *Apologetics*, cap. VII. and Salvian *de Provid.* lib. IV. They affirmed, that, in the myſteries of their religion, the Chriſtians killed a child, and feaſted on its fleſh. This calumny was grounded on their miſunderſtanding what they had heard of the Euchariſt, and the Communion.

ANTHROPOPHAGIA, the act or habit of eating human fleſh.

Some authors trace the original of this barbarous cuſtom as high as the deluge; and attribute it to the giants.—Pliny mentions Scythians and Sauromatans; Solinus, Ethiopians; and Juvenal, Egyptians; who accuſtomed themſelves to this horrible repaſt. *Vid. Plin. hiſt. nat. l.* 4. *c.* 12. *l.* 6. *c.* 17. 30. *l.* 7. *c.* 2. *Solin. Polyb. c.* 33.—Livy tells us, that Hannibal made his ſoldiers eat human fleſh, to render them more fierce and daring in battle.—In the ſouthern parts of Africa, and in ſome parts of America, this horrid practice is ſaid ſtill to obtain.

Anthropophagy, in effect, ſeems not to have been the vice of any country, or nation, but of the age. Before the arts of life had reached and ſoftened them, moſt nations practiſed it. Orpheus is ſaid to have been the firſt who drew men from this ſavage cuſtom; which gave riſe to the fable of his taming lions and tygers.

Sylveſtres homines, ſacer, interpreſque deorum
Cædibus & victu fœdo *deterruit Orpheus:*
Dictus ob hoc lenire tigres, rapidoſque leones. Hor.

Some phyſicians vainly think they have diſcovered the principle of *Anthropophagy*; and that it conſiſts in an acrid atrabilary humour, which, being lodged in the coats of the ventricle, produces this voracity. And they give ſeveral inſtances of this inhuman hunger, even among their own patients.—M. Petit has diſputed the queſtion, Whether or no *Anthropophagy* be contrary to nature?

ANTI, Αντι, is a prepoſition uſed in compoſition with ſeveral words, both in Greek, Latin, Engliſh, &c. in different ſenſes. In Engliſh, it ſometimes ſignifies before; as in antichamber, a place before the chamber.—In which caſe it has the ſame meaning with the Latin, *ante*, before.

Sometimes, again, it ſignifies *contrary*, or *oppoſite*; and is then derived from the Greek αντι, *contra*, againſt.

In this latter ſenſe, the word makes part of the name of various medicines, to denote ſome peculiar or ſpecific virtue in them againſt certain diſeaſes: ſuch, *e. gr.* are antivenereals, antiſcorbutics, antinephritics*, &c.

* Patin ſpeaks of a quack in his time, at Paris, who made no ſcruple to ſell anti-ecliptic, and anti-cometic medicines; preſervatives, forſooth, againſt the noxious effects of eclipſes, and comets. *Lett. Choiſ.* 344.

The prepoſition is frequently, however, omitted on theſe occaſions, without any alteration of the ſenſe; as in nephritics, arthritics, aſthmatics, &c.

Anti, in matters of literature, is a title given to divers pieces written by way of anſwer to others, whoſe names are uſually annexed to the *Anti*.

See the *Anti* of M. Baillet; and the *Anti-Baillet* of M. Menage: there are alſo *Anti-Menagiana*, &c. Cæſar the dictator wrote two books by way of anſwer to what had been objected to him by Cato, which he called *Anti-Catones*; theſe are mentioned by Juvenal, Cicero, &c.—Vives aſſures us, he had ſeen Cæſar's *Anti-Catones* in an antient library.

ANTIADES, a term uſed by ſome writers for the glandules, and kernels, more commonly called *tonſils*, and *almonds of the ears*. See Tonsil.

ANTIADIAPHORISTS*, Antiadiaphoristæ, oppoſite to the *adiaphoriſts*. See Adiaphorist.

* The word is compounded of the Greek αντι, *contra*, againſt; and αδιαφορος, indifferent.

This name was given, in the fourteenth century, to the rigid Lutherans, who diſavowed the epiſcopal juriſdiction, and many of the church-ceremonies, retained by the moderate Lutherans. See Lutheran.

ANTIBACCHIUS, in the antient poetry, a foot, conſiſting of three ſyllables; the two firſt whereof are long, and the third ſhort.

Such are the words *cantare*, *virtute*, Ἑλληνες, &c.

It is ſo called as being contrary to the *Bacchius*, the firſt ſyllable whereof is ſhort, and the two laſt long. See Bacchius.

Among the antients, this foot is alſo denominated *palim-bacchius*, and *Saturnius*; and, by ſome, *proponticus*, and *theſſaleus*. Diom. iii. p. 475.

ANTICARDIUM*, in anatomy, &c. that hollow part under the breaſt, juſt againſt the heart, commonly called the *pit of the ſtomach*: called alſo *ſcrobiculus cordis*.

* The word is compounded of αντι, *contra*, againſt; and καρδια, *cor*, heart.

ANTICHRESIS, in the civil law, a covenant, or convention, whereby a perſon borrowing money of another engages, or makes over his lands or goods to the creditor, with the uſe and occupation thereof, for the intereſt of the money lent. This covenant was allowed of by the Romans; among whom uſury was prohibited: it was afterwards called *mortgage*, to diſtinguiſh it from a ſimple engagement, where the fruits of the ground were not alienated, which was called *vif gage*.

ANTICHRIST*, in a general ſenſe, denotes an adverſary of Chriſt, or one who denies that the Meſſiah is come.

* The word is compounded of the Greek αντι, *contra*, againſt; and χριστος, Chriſt.

In this ſenſe, Jews, Infidels, &c. may be ſaid to be *Antichriſts*.

Antichrist is more particularly uſed for a tyrant who is to reign on earth, toward the end of the world; to make the ultimate proof of the elect; and to give a ſhining inſtance of the Divine vengeance, before the laſt judgment.

The bible and the fathers all ſpeak of *Antichriſt* as a ſingle man; though they aſſure, withal, that he is to have divers precurſors, or forerunners.—Yet many Proteſtant writers apply to the Romiſh church, and the pope, who is at the head of it, the ſeveral marks and ſignatures of *Antichriſt* enumerated in the Apocalypſe; which would rather imply *Antichriſt* to be a corrupt ſociety, or a long ſeries of perſecuting pontiffs, than a ſingle perſon.

However, the point having been maturely debated at the council of Gap, held in 1603, a reſolution was taken thereupon, to inſert an article in the confeſſion of faith, whereby the pope is formally declared to be *Antichriſt*.—Pope Clement VIII. we read, was ſtung to the life with this deciſion; and, even king Henry IV. of France, was not a little mortified, to be thus declared, as he termed, an imp of *Antichriſt*.

The learned Grotius maintains, that Caligula was *Antichriſt*; but neither does this quadrate with his appearance at the end of the world.

Father Malvenda, a *Spaniſh* Jeſuit, has publiſhed a large and learned work, *de Antichriſto*, in thirteen books.—In the firſt, he relates all the opinions of the fathers with regard to *Antichriſt*. In the ſecond, he ſpeaks of the time when he ſhall appear; and ſhews, that all the fathers, who ſuppoſed *Antichriſt* to be near at hand, judged the world, alſo, was near its period. In the third, he diſcourſes of his origin and nation; and ſhews, that he is to be a Jew, of the tribe of Dan: this he founds on the authority of the fathers; on that paſſage in Geneſis XLIX. *Dan ſhall be a ſerpent by the way*, &c. on that of Jeremy VIII. 16. where it is ſaid, *The armies of Dan ſhall devour the earth*; and on the Apocalypſe, chap. VII. where St. John, enumerating all the tribes of Iſrael, makes no mention of that of Dan. In the fourth and fifth books, he treats of the ſigns of *Antichriſt*. In the ſixth, of his reign and wars. In the ſeventh, of his vices. In the eighth, of his doctrine and miracles. In the ninth, of his perſecutions; and, in the reſt, of the coming of Enoch and Elias, the converſion of the Jews, the reign of Jeſus Chriſt, and the death of *Antichriſt*, after his having reigned three years and a half.

ANTICHTHONES *, in geography, are thoſe people who inhabit countries diametrically oppoſite to each other.

* The word is compounded of *αντι*, *contra*; and *χθων*, *terra*, earth. They are ſometimes alſo called, by Latin writers, *antigenæ*.

In which ſenſe *Antichthones* amounts to much the ſame with what we more uſually call *Antipodes*.

ANTICHTHONES is alſo uſed, in antient writers, to denote the inhabitants of contrary hemiſpheres.

In which ſenſe *Antichthones* differ from *Antœci* and *Antipodes*. The antients conſidered the earth as divided by the equator into two hemiſpheres, the northern and ſouthern; and all thoſe who inhabited one of theſe hemiſpheres, were reputed *Antichthones* to thoſe of the other.

ANTICIPATION, the act of preventing, or being beforehand with, a perſon or thing; or of doing a thing before the time.

Anticipating a payment denotes the diſcharging it before it falls due.—Such a debt was not yet become due; he *anticipated* the time of payment.

ANTICIPATION, in philoſophy. See PRÆNOTION.

Commiſſion of ANTICIPATION. See COMMISSION.

ANTICOR, ANTICOEUR, or *avant cœur*, among farriers, is uſually deſcribed as a preternatural ſwelling, of the ſize and figure of an apple, occaſioned by a ſanguine and bilious humour, and appearing in a horſe's breaſt, oppoſite to his heart. A late writer affirms, that the generality of authors on that ſubject have been miſtaken as to this diſeaſe; attributing it to the heart, whence it is by Solleyſel called, the *ſwelling of the pericardium*; whereas it is really an inflammation in the gullet and throat; and is the ſame that, in human bodies, is called the *angina*, or *ſquinancy*.

ANTICUS.—*Serratus major* ANTICUS.	See	SERRATUS.
Serratus minor ANTICUS.		
Peronæus ANTICUS.		PERONÆUS.
Tibialis ANTICUS.		TIBIALIS.

ANTIDACTYLUS, a name given by ſome to a kind of poetical foot, which is the reverſe of a dactyl, as conſiſting of three ſyllables, whereof the firſt two are ſhort, and the laſt long.

ANTIDATE. See ANTEDATE.

ANTIDICOMARIANITES *, a ſect of antient heretics, who pretended, that the holy Virgin did not preſerve a perpetual virginity, but that ſhe had ſeveral children by Joſeph after our Saviour's birth.

* Theſe are otherwiſe called *Antidicomaritæ*, and *Antidicomarites*, and *Antidicomarianiſts*; ſometimes alſo *Antimariani*.

The opinion was grounded on ſome expreſſions of our Saviour, wherein he mentions his brothers, and his ſiſters; and on that text of St. Matthew, where he ſays, that Joſeph knew not Mary till ſhe had brought forth her firſt-born ſon. The *Antidicomarianites* were the diſciples of Helvidius and Jovinian, who appeared in Rome toward the cloſe of the fourth century.

ANTIDILUVIAN. See the article ANTEDILUVIAN.

ANTIDOTE *, a remedy taken either to prevent, or cure, ſome contagious, malignant, or other dangerous diſeaſe.

* The word is borrowed from the Greek *αντι*, againſt; and *διδωμι*, I give; as being ſomething given againſt poiſon, either by way of cure, or preſervative.

ANTIDOTE is alſo uſed to ſignify a medicine taken to prevent the ill effects of ſome other; for inſtance, poiſon.

In which ſenſe the word has the ſame ſignification with alexipharmic, alexiterial, and counterpoiſon.

ANTIENT. See ANCIENT.

ANTIHECTICS, ANTIHECTICA, remedies againſt hectical diſorders.

ANTIHECTICUM *Poterii*, in pharmacy, a celebrated chymical preparation, made of equal quantities of tin and chalybeated regulus of antimony, by melting them in a large crucible, and putting to them, by little and little, three times the quantity of nitre: the detonation being over, the whole is to be waſhed with warm water till no ſaltneſs remains.

This is a very penetrating medicine, making way into the minuteſt paſſages, and ſearching even the nervous cells; whence its uſe in hectic diſorders, from which it derives its name. It is applied to good purpoſe in heavineſſes of the head, giddineſs, and dimneſs of ſight, from whence proceed apoplexies and epilepſies; and in all affections and foulneſſes of the viſcera of the lower belly, it is reckoned inferior to nothing. Thus it does ſervice in the jaundice, dropſies, and all kind of cachexies.—Quincy adds, that there is ſcarce a preparation in the chymical pharmacy of greater efficacy in moſt obſtinate chronic diſtempers.

ANTILOGARITHM, the complement of the logarithm of a ſine, tangent, or ſecant; or the difference of that logarithm from the logarithm of ninety degrees. See LOGARITHM, and COMPLEMENT.

ANTILOGY *, ANTILOGIA, a contradiction between two expreſſions, or paſſages, in an author.

* The word is Greek, *αντιλογια*, *q. d.* contrary ſaying.

Tirinus has publiſhed a large index of the ſeeming *antilogies* in the bible, *i. e.* of texts which apparently contradict each other, but which are all explained and reconciled by him, in his comments on the bible.—Dom. Magri, a Malteſe of the oratory in Italy, has attempted the like; but he has done little more than rehearſe what occurs of that kind in the principal commentators.

ANTIMENSIUM, Αντιμινσιον, a kind of conſecrated tablecloth, occaſionally uſed in the Greek church, in places where there is no proper altar.

F. Goar obſerves, that, in regard the Greeks had but few conſecrated churches, and that conſecrated altars are not things eaſy to be removed; that church has, for many ages, made uſe of certain conſecrated ſtuffs, or linens, called *antimenſia*, to ſerve the purpoſes thereof.

ANTIMONARCHICAL, ſomething that oppoſes, or ſtands againſt, monarchy, or kingly government.

Antimonarchical is frequently uſed in the ſenſe of *republican*.

ANTIMONIALS, in medicine, denote preparations of antimony; or remedies whereof antimony is the baſis, or principal ingredient.

Antimonials are chiefly of an emetic tendency; though they may be ſo qualified, as to become either cathartic, or diaphoretic, or even only alterative. See WARD'S PILL.

Quincy aſſures us, that there are no medicines in pharmacy to be compared with theſe in maniacal affections; for that there are no emetics, or cathartics, of any other tribe, that are ſtrong enough for ſuch patients, unleſs in an over-doſe; which might be dangerous.

An *antimonial* cup, made either of glaſs of *antimony*, or of *antimony* prepared with ſalt-petre, though a ſubſtance indiſſoluble by the ſtomach, will give a ſtrong cathartic, or emetic quality to any liquor poured into it, without any diminution of its own weight.

ANTIMONY, ANTIMONIUM, in natural hiſtory, a mineral ſubſtance, of a metalline nature; having all the ſeeming characters of a real metal, excepting only malleability.

Antimony is the *ſtibium* of the antients; by the Greeks called *στιμμι*.—The reaſon of its modern denomination, *antimony*, is uſually referred to Baſil Valentine, a German monk, who, as the tradition relates, having thrown ſome of it to the hogs, obſerved, that, after purging them violently, they immediately grew fat upon it. This made him think, that, by giving his fellow-monks a like doſe, they would be the better for it. The experiment, however, ſucceeded ſo ill, that they all died of it; and the medicine, thenceforward, was called *antimony*, q. d. *anti-monk*.

Its ſingular properties and effects have occaſioned it various other denominations; as *Proteus*, by reaſon of its various forms and appearances, *lupus*, *devorator*, *Saturn of the philoſophers*, *balneum ſolis*, *lavacrum leproſorum*, *radix metallorum*, *magneſia Saturni*, &c. all chiefly reſpecting its faculty of deſtroying and diſſipating whatever metals are fuſed along with it, except gold; whence its great uſe in refining and purifying.

Antimony, is what we properly call a *ſemi-metal*; being a foſſile ſubſtance compoſed of ſome undetermined metal, combined with a ſulphureous and ſtony ſubſtance.

It is found in mines of all metals; but chiefly in thoſe of ſilver and lead: that in gold mines is uſually held the beſt.—It has alſo its own peculiar mines; particularly in Hungary, Tranſylvania, and Germany, and in ſeveral provinces of France; as alſo with us, in ſome parts of Cornwall.

Antimony is found in clods of ſeveral ſizes, bearing a near reſemblance to black lead; only that it is lighter and harder: whence alſo it is called *marcaſite of lead*; and its metalline part has been by ſome ſuppoſed to be of that ſpecies.

Its texture is ſomewhat particular, being full of little ſhining veins or threads, like needles, brittle as glaſs.—Sometimes there are veins of a red, or golden colour intermixed, from which it is called *male antimony*; that without them being denominated *female*.—It fuſes in the fire, though with ſome difficulty.

When dug out of the earth, it is put into large crucibles, fuſed by a violent fire, and then poured into cones, or antimonial horns, which makes the common, or crude *antimony* of the ſhops; the apex whereof is always the beſt and pureſt part, as the baſis, or broadeſt part, is the fouleſt.

Antimony is ſuppoſed, by many of the chymiſts, to contain the ſeminal principles of all kind of metals; and, accordingly, the character whereby it is denoted in their writings is the ſame with the character of the earth; to denote that *antimony* is a kind of microcoſm.

The uſes of *antimony* are very numerous, and important.—It is a common ingredient in ſpecula, or burning concaves, ſerving to give the compoſition a finer texture.—It makes a part in bell-metal; and renders the ſound more clear.—It is mingled with tin to make it more hard, white, and ſounding; and with lead, in the caſting of printers letters, to render them more ſmooth and firm. It is alſo a general help in the melting of metals, and eſpecially in caſting of cannon-balls.

Antimony is particularly uſed in pharmacy, under various forms, and with various intentions, chiefly as an emetic.—Its medicinal virtue is ſuppoſed to ariſe from the ſulphureous part in its compoſition, which, being diſſolved by any proper menſtruum, ſets at liberty an active volatile ſalt, or ſome other unknown principle, to which its operation is chiefly owing.

Before the fourteenth century, *antimony* had no place in medicine, otherwiſe than as an ingredient in ſome coſmetics for blackening the eye-brows: but, about that time, Baſil Valentine, having found a method of preparing and correcting the dangerous qualities of its ſulphur, publiſhed a book, intituled *Currus triumphalis antimonii*, wherein he maintained it a ſure remedy for all diſeaſes.—But, in ſpite of all he could ſay in its behalf, though confirmed by experience, *antimony* remained in a general neglect upwards of an hundred years; till about the beginning of the ſixteenth century, when it was brought into vogue by Paracelſus.—The parliament of Paris, immediately upon this reſtoration, condemned the uſe of it in form; and a phyſician, named Beſnier, having been found delinquent herein, was expelled the faculty. It ſeems, a great deal of miſchief had been done by it, for want of knowing the proper ways of giving it; ſo that the arret of parliament repreſents it as a mere poiſon, incapable of being corrected by any method of preparation, and not to be taken inwardly, without the utmoſt damage.

Several learned men complained of ſo ſevere and unjuſt a prohibition; and, by a courſe of happy experiments, at length brought it into eſteem again: whence, in ſpite of all the invectives made againſt *antimony* by divers authors, it was at length replaced, in the year 1637. by public authority, among the number of purgative drugs; and was inſerted, accordingly, in the pharmacopœia, publiſhed by the faculty the ſame year.

Patin did all he could to decry *antimony*: in his letters we find an unuſual vehemence expreſſed againſt it.—He had even compiled a large regiſter of perſons whom the phyſicians had killed by it; which he called, *the Martyrology of antimony.*

Butter of ANTIMONY is a white and thick liquor; otherwiſe called *icy oil of antimony*. It is uſually prepared of crude (though ſometimes of regulus of) *antimony*, and corroſive ſublimate, by pulverizing, mixing, and diſtilling them by a gentle heat: upon which the butter riſes into the neck of the retort; from which, when full, it is to be melted down into a receiver, by the application of live coals.

It is of a very fiery, corroſive nature, ſo as to be a poiſon when uſed internally. Externally it is applied as a cauſtic, to ſtop gangrenes, and cure caries's, cancers, &c.

This butter may be converted into an oil, called alſo *rectified butter of antimony*; by gently diſtilling it a ſecond time; which renders it more fluid, ſubtile, volatile, and efficacious.—This, digeſted with thrice its weight of alcohol, makes the purple tincture of *antimony*; a ſecret highly valued by Mr. Boyle, as an excellent vomit.

The ſame butter precipitates, by warm water, into a white, ponderous powder, or calx, called *mercurius vitæ*, and powder of *algarot*: which is a very violent emetic.

Of butter of *antimony* is alſo prepared the bezoar mineral; by diſſolving the rectified butter with ſpirit of nitre; then drying the ſolution, and applying more ſpirit of nitre, and repeating this a third time. The white powder remaining at laſt, kept nearly red-hot for half an hour, is the bezoardicum minerale.

Ceruſs, or Calx of ANTIMONY, is the regulus diſtilled with ſpirit of nitre, in a ſand-furnace; what remains after the fumes are all ſpent, is a white powder; which, being waſhed ſweet, is the ceruſs required.—It is diaphoretic; and, by many, is ſet on a footing with the mineral bezoar.

Cinnabar of ANTIMONY is prepared of mercury, ſulphur, and *antimony*, mixed and ſublimed in a luted bolt-head, and a naked fire.—It is a good diaphoretic, and alterative.

There is alſo a cinnabar of *antimony* procured after the butter of *antimony* has done riſing, by increaſing the degree of fire.—This, ſublimed a ſecond time, makes a yet better cinnabar.

Clyſſus of ANTIMONY. See the article CLYSSUS.

Crocus, or *liver of* ANTIMONY, is the ſame with what we otherwiſe call *crocus metallorum*; excepting that this latter is more mild, and leſs emetic; being made by repeated lotions of the former, in warm water, and then drying it again to a powder. See CROCUS *Metallorum.*

It is alſo called *opaline Magneſia*, *terra ſancta Rulandi*, *terra aurea*, *terra rubra*, &c.

Crude ANTIMONY, or *antimony in ſubſtance*, is the native mineral *antimony*, melted down and caſt in cones as above-mentioned.—It is much uſed in diet-drinks, and decoctions of the woods, and in compoſitions againſt the ſcurvy, as a diaphoretic, and deobſtruent.

Diaphoretic ANTIMONY is prepared of *antimony*, powdered, and mixed with three times the quantity of nitre; and the mixture thrown, at ſeveral times, into an ignited crucible: upon which, a detonation enſues. What remains, being kept in fuſion a quarter of an hour, turns into a white maſs, called *antimonium diaphoreticum nitratum*, or *diaphoretic antimony with nitre*; the *antimony* being hereby bereaved of its emetic and purgative virtue, and rendered only diaphoretic.

If the air have acceſs to it, it will again become emetic.

There is alſo a kind of ſweet diaphoretic *antimony*, made of the former, by pulverizing, boiling it in water, and filtrating the decoction: upon which a white powder will be left in the filtre; which being waſhed by repeated affuſions of warm water, and dried, is the *dulcified diaphoretic antimony*.—This is given as an alexipharmic in malignant fevers, ſmall-pox, &c. particularly in caſe of deliriums. It is alſo applied in ſcorbutic and venereal diſorders: but the learned Boerhaave abſolutely decries it, as a mere metalline calx, deſtitute of all medicinal virtue, and only fit to load and choak up the body, by its inactivity and weight.

Diaphoretic nitre of ANTIMONY is made by exhaling the ſolution of the preceding preparation over a gentle fire to a drineſs; upon which, there remains a ſalt compoſed of nitre, and the ſulphur of the *antimony*, called *nitrum antimoniatum*.—It is no other than a ſort of ſal prunellæ, or ſal polychreſtum; and accordingly is found aperitive, cooling, diuretic; and good in inflammatory fevers, &c.

Flower of ANTIMONY is *antimony* pulverized, and ſublimed in an aludel; the volatile parts whereof then ſtick to the ſubliming-pot.

This alſo is a powerful vomitive; and is of ſingular efficacy in maniac caſes; being the Herculean remedy, by which ſome have gained ſo much reputation.

Another ſort of flowers are made of the regulus of *antimony*, with ſal armoniac, ſublimed as before; which make a remedy ſomewhat gentler than the former.—Helmont alſo gives us a preparation of purging flowers of *antimony*.

Glaſs of ANTIMONY, *vitrum antimonii*, is crude *antimony*, ground and calcined by a vehement fire, in an earthen crucible, till it ceaſe to fume; which is a proof, that its ſulphur is evaporated.—The calx is then vitrified in a wind-furnace; upon which it becomes tranſparent, ruddy, and ſhining.

This is the ſtrongeſt emetic of any preparation of *antimony*. See EMETIC.—Yet, if diſſolved in ſpirit of urine, it ceaſes to be either emetic or cathartic; even though the menſtruum be afterwards drawn from it.

Magiſtery of ANTIMONY is crude *antimony*, digeſted with aqua-regia eight or ten days; to which water is then put, but poured off again ere it ſettle: this to be repeated till there remain nothing behind but a yellowiſh powder; which, being ſuffered to ſettle, and the water decanted off, becomes, by repeated ablutions, an inſipid magiſtery.

Its operation is rather cathartic than emetic, though ſometimes only ſudorific.

Regulus of ANTIMONY, or purification of *antimony*, See REGULUS *of antimony.*

Of this are made the pilulæ perpetuæ, vinum emeticum, &c.

Golden ſulphur of ANTIMONY is made of the ſcoria which ariſe in preparing the regulus; by boiling it, filtrating the hot decoction, and adding diſtilled vinegar: upon which the whole coagulates, changes into a brown colour, emits a ſtercoraceous odour, and precipitates a red powder. The whole maſs being waſhed by repeated affuſions of water, till the liquor come away ſcentleſs and inſipid, and then dried, it becomes a red powder, called the *golden ſulphur*, or *precipitate of antimony*, either on account of its own colour, or the yellow one it gives to glaſs, metals, *&c.*—It either proves emetic, cathartic, diuretic, or ſudorific, as its force happens to be determined.

Prepared ANTIMONY is either crude *antimony* levigated, or that which has undergone ſome chymical proceſs, whereby its nature and powers are altered or abated; and this differently, according to the circumſtances of the preparation.

Antimony, ſays Mr. Boyle, alone, or aſſociated with one or two other ingredients, by a variety of operations and compoſitions, might be brought to furniſh a whole apothecary's ſhop: it will anſwer the phyſician's intention, whether he wants to employ a cathartic, or an emetic, a diuretic, diaphoretic, deobſtruent, bezoardic, or cordial.

Revivified ANTIMONY, *antimonium reſuſcitatum*, is prepared of flowers of *antimony* and ſal-ammoniac, digeſted in diſtilled vinegar; then exhaled, and the remainder ſweetened by ablution.—It is emetic, and ſometimes alſo ſudorific, and is good in maniacal caſes, *&c.*

All theſe preparations of *antimony*, how ſevere ſoever alone, may yet be ſo managed, as to operate little or nothing at all in the primæ viæ, nor be perceived till they are got into the ſmalleſt veſſels.—And then it is they are qualified to combat the gout, pox, evil, *&c,*

ANTINOMY *, ANTINOMIA, a contradiction between two laws, or between two articles of the ſame law. See LAW.

* The word is derived from the Greek *αντι*, *cont a*; and *νομος*, *lex*, law.

ANTINOMY ſometimes alſo ſignifies an oppoſition to all law. Whence a ſect of enthuſiaſts, who are for carrying goſpel liberty above all moral regards, and who ſlight the motives of virtue as inſufficient to ſalvation, are called *Antinomians*; and ſometimes *Anomians*.

ANTINOUS, in aſtronomy, a part of the conſtellation *Aquila*. or the eagle. See AQUILA.

ANTIPAGMENTS, *Antipagmenta*. See ANTIPAGMENTA.

ANTIPATHY *, ANTIPATHIA, a natural enmity or averſion of one body to another.—In which ſenſe the word ſtands oppoſed to *ſympathy*.

* The word is compounded of the Greek *αντι*, *contra*, againſt; and *παθος*, paſſion.

Such an averſion is commonly ſaid to be between the ſalamander and the tortoiſe, the vine and the elm, the toad and the weeſel, the ſheep and the wolf, the olive and the oak, *&c.*

Porta (*Mag. natur.* 20. 7.) and Merſenne (*Quſt. Comment. in Geneſ.*) give other more extraordinary, not to ſay ridiculous inſtances; as, that a drum made of a wolf-ſkin, will break another made of a ſheep-ſkin: that hens will fly at the ſound of a harp ſtrung with fox-gut ſtrings, *&c.* See other matters relating to this head, under the articles SOUND, MUSIC, TUNE, TARANTULA, *&c.*

Mr. Boyle mentions "a lady, who having a ſtrange *antipathy* to honey; her phyſician, conceiving it in great "meaſure imaginary, mixed a little honey in a medicine applied to her foot: but he ſoon repented his curioſity; for "it cauſed a ſtrange diſorder in her, which ceaſed, however, "upon removing of the medicine. *Uſeful Philoſoph.*"—Dr. Mather relates, that "a gentlewoman in New-England "ſwooned upon ſeeing any one cut their nails with a knife; "but was not the leaſt affected, if the ſame was done with a "pair of ſciſſars." *Phil. Tranſact.* N° 339.

The Peripatetics account for *antipathies*, from certain occult qualities inherent in the bodies.

Some think that the term *antipathy* can only be applied to any certain purpoſe, when uſed with the reſtriction of modern philoſophers; among whom it ſignifies no more than a *vis centrifuga*, or repelling power. See Supplement, article ANTIPATHY.

ANTIPERISTALTIC *, in anatomy, a motion of the inteſtines contrary to the periſtaltic motion. See PERISTALTIC.

* The word is derived from the Greek *αντι*, againſt; *περι*, about; and *σαλτικος*, that which hath the power of compreſſing.

As the periſtaltic motion is a contraction of the fibres of two inteſtines from above, downwards; the *antiperiſtaltic* motion is their contraction from below, upwards.

ANTIPERISTASIS *, in philoſophy, the action of two contrary qualities; one whereof, by its oppoſition, excites and heightens the force of the other.

* The word is Greek, Αντιπεριςασις; formed of *αντ'*, *contra*, againſt; and *περιςαμαι*, to ſtand round: *q. d. circumobſiſtentia*, or the renitency againſt any thing that ſurrounds or beſets another.

Antiperiſtaſis is uſually defined, "the oppoſition of a con"trary quality, whereby the quality it oppoſes becomes "heightened, or intended: or the action whereby a body, "attacked by another, collects itſelf, and becomes ſtronger "by ſuch oppoſition: or it is an intention of the activity of "one quality, cauſed by the oppoſition of another."

Thus cold, ſay the ſchool-philoſophers, on many occaſions, exalts the degree of heat, and drineſs that of moiſture.

Thus it is, that quick-lime is ſet on fire by the affuſion of cold water: and ſo water becomes warmer in winter than in ſummer, by *antiperiſtaſis*: and to the ſame cauſe it is owing, that thunder and lightning are excited in the middle region of the air, which is continually cold.

This *antiperiſtaſis* was a principle of great uſe and extent in the Peripatetic philoſophy.—"'Tis neceſſary," according to the authors of that claſs, "that cold and heat be both "of them endued with a ſelf-invigorating power, which "each may exert when ſurrounded by its contrary; and "thereby prevent their mutual deſtruction. Thus it is ſup"poſed, that in ſummer the cold, expelled from the earth "and water by the ſun's ſcorching beams, retires to the "middle region of the air, and there defends itſelf againſt "the heat of the ſuperior and inferior air. And thus, alſo, "in ſummer, when the air about us is ſultry hot, we find "that cellars and vaults have the oppoſite quality: ſo in "winter, when the external air freezes the lakes and rivers, "the internal air, in the ſame vaults and cellars, becomes "the ſanctuary of heat; and water, freſh drawn out of deep "wells and ſprings, in a cold ſeaſon, not only feels warm, "but manifeſtly ſmokes."

Mr. Boyle has canvaſſed this doctrine thoroughly, in his hiſtory of cold.—It is certain, that *a priori*, or conſidering the reaſon of the thing abſtracted from the experiments alleged to prove an *antiperiſtaſis*, it appears highly abſurd; ſince, according to the courſe of nature, one contrary ought to deſtroy, not to ſtrengthen another: beſide, that it is an axiom, that natural cauſes act as much as they can; which, as to inanimate creatures, muſt be allowed phyſically demonſtrative; in regard that theſe act not by choice, but by a neceſſary impulſe.

It is commonly, indeed, alleged, as a proof of a power nature has given bodies of flying their contraries, that drops of water, falling on a table, collect into little globules, to avoid the contrary quality in the table, and keep themſelves from being ſwallowed up by the dry wood; but this we can account for on more intelligible principles, *viz.* the power of attraction, and repulſion. As to the *antiperiſtaſis* of cold and heat, the Peripatetics talk of thoſe qualities being ſurrounded by their oppoſites, as if each of them had an underſtanding and foreſight, that in caſe it did not gather up its ſpirits, and guard againſt its antagoniſt, it muſt infallibly periſh: but this is to transform phyſical agents into moral ones.

In effect, not only reaſon, but experiment alſo, concludes againſt the notion of an *antiperiſtaſis*: the leading argument urged in behalf of it is, the heating of quick-lime in cold water: now, who can ſufficiently admire at the lazineſs and credulity of mankind, who have ſo long and generally acquieſced in what they might ſo eaſily have found to be falſe? for if, inſtead of cold water, the lime be quenched with hot water, the ebullition will always be far greater than if the liquor were cold.

Again; in freezing a baſon to a joint-ſtool, with a mixture of ſnow and ſalt, by the fire-ſide, it is pretended, that the fire ſo intends the cold, as to enable it to congeal the water that ſtagnated upon the ſurface of the ſtool, betwixt that and the bottom of the veſſel. But how little need there is of an *antiperiſtaſis* in this experiment, appears hence, that Mr. Boyle has purpoſely made it with good ſucceſs, in a place where there neither was, nor ever, probably, had been, a fire.

The patrons of an *antiperiſtaſis* uſually plead that aphoriſtical ſaying of Hippocrates, "The viſcera are hotteſt in "winter," in behalf of their opinion: but the only proof uſually brought of ſuch greater heat, is, that men then have a greater appetite; ſo that the aphoriſm ſuppoſes digeſtion to be made in the ſtomach by heat, which is eaſily refuted.

Another argument, urged in favour of an *antiperiſtaſis*, is borrowed from the production of hail, which is preſumed to be generated in ſummer only, not in winter; and, according to the ſchools, is made in the loweſt region of the air, by the cold of the falling drops of rain being ſo highly intended by the warmth they meet with in the air near the earth, as to congeal into a ſolid form.

As to the refreſhing coldneſs which ſubterraneous places afford in ſummer, it may be denied, that they are then really colder than in winter; though, if the contrary were allowed, it would not neceſſarily infer an *antiperiſtaſis*.—It is certain the ſmoking of waters, drawn from deep places in froſty weather, does not neceſſarily infer ſuch water to be warmer than at other times when it does not ſmoke; ſince that effect may proceed, not from the greater warmth of the water, but from the greater coldneſs of the air. For a man's breath in a clod ſummer, or in mild winter weather, becomes very viſible; the cold ambient air ſuddenly condenſing the fuliginous ſteams diſcharged by the lungs; which, in warmer weather, are readily diffuſed in imperceptible particles through the air. See the articles COLD, and EFFLUVIA.

ANTIPHONY, ANTIPHONA, the anſwer made by one choir to another, when the pſalm or anthem is ſung between two.

Among the number of eccleſiaſtical books, formerly uſed in the church, and aboliſhed by parliament at the reformation, we meet with *antiphoners*, or *antiphonaries*. 3 & 4 *Ed.* VI. *c.* 10.

ANTIPHRASIS *, a ſort of figurative expreſſion, which has a contrary meaning to what it carries in appearance.—Or, a kind of irony, wherein we ſay any thing, and mean the contrary.

* The word is derived from the Greek *αντι*, and *φρασις*, of *φραζω*, I ſpeak.

Sanctius defines *antiphraſis* to be a form of irony, whereby we ſay a thing, by denying what we ought rather to affirm it to be: *antiphraſis eſt ironiæ quædam forma, cum dicimus negando id quod debuit affirmari.*—As when we ſay, it did not diſpleaſe me; or, he is no fool; meaning, I was pleaſed with it; or he is a man of ſenſe.—On this principle the *antiphraſes* ought to be ranked among the figures of ſentences, and not among thoſe of words.

It is a common error, to make *antiphraſes* conſiſt in ſingle words; as when we ſay, that the Parcæ are thus called by *antiphraſis*, becauſe they ſpare nobody, *parcæ, quia nemini parcunt.*—St. Jerom, in his epiſtle to Riparius againſt Vigilantius, ſays, he ought rather to be called *Dormitantius per antiphraſin*, than Vigilantius, becauſe he oppoſed the Chriſtians holding wakes at the tombs of the martyrs.

Sanctius holds it improper to call theſe *antiphraſes*; by reaſon phraſis is not applicable to a ſingle word, but ſignifies *orationem, aut loquendi modum.*

ANTIPODES *, in geography, a relative term, underſtood of ſuch inhabitants of the earth as live diametrically oppoſite to one another.

* The word comes from the Greek *αντι*, *againſt*, and *πους*, *ποδος*, *a foot.*

The *Antipodes* are thoſe who live in parallels of latitude equally diſtant from the equator, the one toward the north, the other to the ſouth; and under the ſame meridian, though 180°, or juſt half of that meridian, diſtant from one another.

The *Antipodes* have the ſame degree of heat and cold; and the ſame length of night and day; but at contrary times: it being midnight with one, when it is noon with the other; and the longeſt day with one, when ſhorteſt with the other.

Again, as the horizon of any place is 90° diſtant from the zenith thereof; the *Antipodes* have the ſame horizon. See HORIZON.—And hence, when the ſun riſes to one, he ſets to the other.

Plato is ſaid to have firſt ſtarted the notion of *Antipodes*; and likewiſe to have given them the name: as he conceived the earth to be of a ſpherical figure, it was eaſy for him to infer, that there muſt be *Antipodes.*

Many of the antients, and particularly Lactantius and Auguſtine, laughed at the notion.—The latter of thoſe fathers is ſtrangely perplexed to think how men and trees ſhould hang pendulous in the air, their feet uppermoſt, as he thought they muſt do in the other hemiſphere.

And if we may believe Aventine, Boniface, archbiſhop of Mentz, and legate of pope Zachary, in the eighth century, declared a biſhop of that time, called Virgilius, heretic, for maintaining that there was ſuch a thing as *Antipodes.*

But this piece of hiſtory is controverted by the authors of the *Mem. de Trevoux*; as having been made uſe of, it ſeems, by ſome perſons, to ſhew, that the church has been miſtaken in its deciſions.—The only account extant of the matter, upon which the tradition is founded, is a letter of pope Zachary to Boniface; wherein he ſays, "If it be proved, that he main-"tain, that there is another world, and other men under the "earth; another ſun, and another moon; expel him the "church, in a council; after firſt diveſting him of the prieſt-"hood, &c." The authors above cited endeavour to prove, that this threatening was never executed; and that Boniface and Virgilius afterwards lived together in good underſtanding; and that Virgilius was even canonized by the ſame pope. *Mem. de Trev. an.* 1708.

They farther aſſert, that, were the ſtory true, the pope had done nothing contrary to truth and equity; in regard the notion of *Antipodes* was very different in thoſe days, from what it is now.—"For beſides the demonſtrations of the mathe-"maticians, ſay they, the philoſophers too added their con-"jectures; and aſſerted, that the ſea made two great circles "around the earth, which divided it into four parts; that "the vaſt extent of this ocean, and the burning heats of the "torrid zone, prevented any communication between thoſe "four parts of the earth, ſo that men could not be all of the "ſame kind, nor proceed from the ſame original: and this," ſay our authors, "was what was meant by the word *Anti-"podes* in thoſe times."

As to the ſentiments of the primitive Chriſtians with regard to *Antipodes*; ſome, rather than admit the concluſions of the philoſophers, abſolutely denied the whole, even the demonſtrations of the geometricians relating to the ſpehricity of the earth: which is Lactantius's way, *Inſtit. lib.* iii. *c.* 24. Others only called in queſtion the conjectures of the philoſophers; which is St. Auguſtine's method, *de civit. Dei, lib.* xvi. *c.* 9.—After putting the queſtion, whether there ever were nations of cyclopes, or pygmies, or of people whoſe feet ſtood outward, &c. he comes to the point of *Antipodes*, and aſks, "whether the lower part of our earth be inhabited by *Anti-"podes*?"—He made no doubt of the earth's being round, nor of there being a part diametrically oppoſite to ours; but only diſputes its being really inhabited. And the conſiderations he ſuggeſts for that purpoſe are juſt enough; as, that they who aſſerted *Antipodes*, had no hiſtory for it; that the lower part of the earth may be covered with water; and that to place *Antipodes* there, of a different origin from us (as muſt have been the opinion of the antients, ſince they thought it impoſſible to go from our world to theirs), is to contradict Scripture, which teaches, that the whole race deſcended from one man.—Such are the ſentiments of that father.

It may be added, that the Chriſtian fathers were not the only perſons who diſputed the truth of the *Antipodes.* Lucretius had done it before them at the end of his firſt book, *v.* 1063, &c. See alſo Plutarch, *lib. de facie in orbe lunæ*; and Pliny, who refutes the opinion, *lib.* ii. *c.* 65.

ANTIPREDICAMENTS, in logic. See ANTEPREDICAMENT.

ANTIPTOSIS *, a figure in grammar, whereby one caſe is put for another. See CASE.

* The word comes from the Greek *αντι*, *pro*; and *πτωσις*, *caſus.*

ANTIQUARY, ANTIQUARIUS, a perſon who ſtudies and ſearches after monuments and remains of the antients; as, old medals, books, ſtatues, ſculptures, and inſcriptions; and, in general, all curious pieces that may afford any light into antiquity.

Formerly there were ſeveral other kinds of *antiquaries.* The libarii, or copiſts, *i. e.* thoſe who tranſcribed in fair legible characters what had been before written in notes, were called by this name. See LIBRARII.—They were alſo denominated *calligraphi.*

In the chief cities of Greece and Italy, there were other perſons of diſtinction, called *antiquaries*, whoſe buſineſs it was to ſhew ſtrangers the antiquities of the place, to explain the antient inſcriptions, and to give them all the aſſiſtance they could in this way of learning.

This was, doubtleſs, a very curious and uſeful inſtitution; and might well deſerve to be re-eſtabliſhed.—Pauſanias calls theſe *antiquaries*, Εξηγηται. The Sicilians called them *myſtagogi.*

ANTIQUATED, ANTIQUATUS, ſomething obſolete, or grown out of date, or uſe.

ANTIQUE, ANTIQUUS, in a general ſenſe, ſomething that is antient.

ANTIQUE is chiefly uſed among architects, ſculptors, and painters; who apply it to ſuch pieees of buildings, ſculpture, painting, &c. as were made at the time when the arts were in their greateſt perfection, among the antient Greeks and Romans; *viz.* from the age of Alexander the Great to the time of the emperor Phocas, about the year of Chriſt 600. when Italy became over-run by the Goths and Vandals.

In this ſenſe the word ſtands oppoſed to modern.—Thus we ſay, an *antique* building, or a builing after the *antique*; an *antique* buſt, or bas-relievo; the *antique* manner, taſte, &c.

ANTIQUE is ſometimes alſo contradiſtinguiſhed from *antient*, which denotes the leſſer degree of antiquity, when the art was not in its utmoſt purity.

Thus *antique* architecture is frequently diſtinguiſhed from antient architecture.

Some writers alſo uſe the compound, ANTIQUO-MODERN, in reſpect of old Gothic churches, and other buildings: to diſtinguiſh them from thoſe of the Greeks and Romans.

ANTIQUITY, ANTIQUITAS, is uſed to denote the times or ages paſt long ago.

Thus we ſay, the heroes of *antiquity*, the marks, or footſteps, of *antiquity*, monuments of *antiquity*, &c.

ANTIQUITY is alſo uſed to denote the works or remains of antient times. See MONUMENT, REMAINS, RUINS, &c.

Thus we ſay, a fine, a curious piece of *antiquity*: Italy, France, and England, abound in *antiquities.*

ANTIQUITY is alſo uſed to denote the great age of a thing, or its duration from times of old.

In this ſenſe we ſay, the *antiquity* of a kingdom, a cuſtom, or the like: moſt nations lay claim to an *antiquity* much greater than they can truly warrant. The preſent age may be ſaid to be the *antiquity* of the world; which was but a new thing in what are commonly called the antient days.

Plato tells us of an account which an Egyptian prieſt gave to Solon, in which the Athenians were ſaid to be 9000 years old, and thoſe of Sais 8000. Pomponius Mela makes a ſtill larger account out of Herodotus, *viz.* of 330 kings before Amaſis, and upwards of 13000 years. Diodorus Siculus tells us of

23000 years from the firſt king of Egypt, to the expedition of Alexander: and Diogenes Laertius, out of other authors, more than doubles that account. When Alexander entered Egypt, the prieſts ſhewed him out of their ſacred hiſtories an account of the Perſian empire which he had lately conquered, and the Macedonian which he had received by birth, each of 8000 years. Whereas nothing can be more certain, from the beſt hiſtorical accounts, than that the Perſian empire was not then 300 years old, nor the Macedonian 500; and no wonder their catalogues ſhould be ridiculouſly incredible, when the Egyptians make their firſt kings reign 1200 years apiece; and the Aſſyrians theirs about 4000, as in the article SAROS.

The Chaldees in Alexander's time affirmed they had taken obſervations of the celeſtial motions for 470000 years; and withal had calculated the nativities of all the children born in that ſpace: but thoſe obſervations, being curiouſly ſearched into by Calliſthenes, appointed by Ariſtotle for that purpoſe, were found to go no farther than 1900 years before Alexander; as Porphyry himſelf declares, who was no friend to Moſes's account.

ANTISCII*, in geography, the people who inhabit on different ſides of the equator; and who of conſequence, at noon, have their ſhadows projected oppoſite ways.

* The word comes from the Greek αντι, againſt; and σκια, ſhadow.

Thus the people of the north are *Antiſcii* to thoſe of the ſouth; the one projecting their ſhadows at noon towards the north pole, and the others towards the ſouth pole.

Antiſcii are frequently confounded with *Antœci*, who, inhabiting oppoſite ſides of the equator, have the ſame elevation of the pole.

The *Antiſcii* ſtand contradiſtinguiſhed from *Periſcii*, &c.

ANTISCII is ſometimes alſo uſed, among aſtrologers, for two points of the heavens equally diſtant from the tropics.—Thus the ſigns Leo and Taurus are held *Antiſcii* to each other.

ANTISCORBUTICS, medicines proper for the cure of the ſcurvy.

ANTISIGMA, Αντισιγμα, among the antient grammarians, ſignifies one of the notes of ſentences affixed to thoſe verſes whoſe order was to be changed.

ANTISPASTUS, a poetical foot, conſiſting of four ſyllables, whereof the firſt is ſhort, the ſecond and third long, and the fourth ſhort.

ANTISPODIUM. See the article SPODIUM.

ANTISTITIUM is a term uſed in antient chronicles for an abbey or monaſtery.

ANTISTROPHE, a kind of dance in uſe among the antients; wherein they ſtepped ſometimes to the right, and ſometimes to the left, ſtill doubling their turns or converſions.

The motion towards the left, they called *antiſtrophe*; from αντι, againſt; and ϛροφη, of ϛρεφω, I turn. —Hence,

ANTISTROPHE is alſo uſed in lyric poetry, in ſpeaking of the ode, which is uſually divided into the *ſtrophe*, *antiſtrophe*, and *epode*. See ODE.

The *antiſtrophe* is a kind of echo, or replication to the ſtrophe; and the epode is a launching out from them both. See STROPHE, and EPODE.

ANTISTROPHE is alſo a figure in grammar, whereby two terms or things, mutually dependent one on another, are reciprocally converted.

As if one ſhould ſay, the maſter of the ſervant, and the ſervant of the maſter.

ANTITACTÆ*, or ANTITACTICI, in antiquity, a kind of Gnoſtics, who owned that God, the Creator of the univerſe, was good and juſt; but aſſerted, withal, that one of his creatures had created evil, and had engaged us to follow it, in order to ſet us in oppoſition to God the Creator; and that it becomes our duty to oppoſe this author of evil, in order to avenge God of his enemy.

* Hence the name; which is derived from the Greek αντιταττω, I oppoſe, I am contrary.

ANTITHENAR*, in anatomy, a name given to divers muſcles, otherwiſe called *adductors*, or *adducent muſcles*. See ADDUCTOR.

* The word is Greek; compounded of αντι, againſt; and θεναρ; by reaſon thoſe muſcles act as antagoniſts to the *thenars*, or abductors.

ANTITHESIS, in rhetoric, a ſetting two things together by way of oppoſition to each other, that the different qualities of each may appear the more ſtrongly.

Such is that of Cicero, in the ſecond Catilinarian: 'On the one ſide ſtands modeſty, on the other impudence; on the one fidelity, on the other deceit; here piety; there ſacrilege; here continency, there luſt, *&c.*'—Such alſo is that of Auguſtus to ſome ſeditious young men; *audite, juvenes, ſenem, quem juvenem ſenes audivere.*—Such again is that of Seneca; *Curæ leves loquuntur, ingentes ſtupent.* And that of Virgil; *Flectere ſi nequeo ſuperos, Acheronta movebo.* St. Auguſtine, Seneca, Salvian, and many other antient writers, ſeem greatly to affect *antitheſes*; but among the moderns they are generally decried. Deſmarets repreſents them as the favourites of young writers.—Perſius long ago declaimed againſt the impertinent uſe of *antithets.*

—Crimina raſis
Librat in antithetis, *doctus poſuiſſe figuras.*

ANTITHESIS is alſo a figure in grammar, whereby one letter is ſubſtituted in the room of another; as *olli* for *illi*.

ANTITHET, ANTITHETON, an oppoſite, or contrary; ſomething diſpoſed by way of antitheſis.

ANTITHETARIUS, a term occurring in the title of a chapter in the laws of Canutus, but not in the chapter itſelf.

The meaning of the word is, a man who endeavours to diſcharge himſelf of the fact of which he is accuſed, by recriminating, *i. e.* by charging the accuſer with the ſame fact.

ANTITRAGUS, in anatomy, part of the auricle oppoſite to the tragus.

ANTITRINITARIANS, heretics who deny the Holy Trinity, and teach, that there are not three perſons in the Godhead.

Thus the Samoſatenians, who do not believe the diſtinction of perſons in God; the Arians, who deny the divinity of the Word; and the Macedonians, who deny that of the Holy Spirit; are all properly *Antitrinitarians*.

Among the moderns, *Antitrinitarians* are particularly underſtood of Socinians, called alſo Unitarians.

The *bibliotheca Antitrinitariorum*, or *Antitrinitarian* library, is a poſthumous work of Chriſtopher Sandius, an eminent *Antitrinitarian*; wherein he gives a liſt, digeſted in order of time, of all the Socinian or modern *Antitrinitarian* authors, with a brief account of their lives, and a catalogue of their works.

ANTITYPE, a Greek word, properly ſignifying a type or figure correſpondent to ſome other type.

The word *antitype*, αντιτυπος, occurs twice in the New Teſtament; *viz.* in the epiſtle to the Hebrews, ix. 24. and in St. Peter, 1 ep. iii. 21. where its genuine import has been much controverted.—The former ſays, that 'Chriſt is not entered into the holy places made with hands, which are αντιτυπα, the figures or *antitypes* of the true—now to appear in the preſence of God for us.'—Now τυπος, as is elſewhere obſerved, ſignifies the pattern by which another thing is made: and as Moſes was obliged to make the tabernacle, and all things in it, according to the pattern ſhewed him in the mount; the tabernacle ſo formed was the *antitype* of what was ſhewn to Moſes: any thing, therefore, formed according to a model, or pattern, is an *antitype*.

In the latter paſſage, the apoſtle, ſpeaking of Noah's flood, and the deliverance of only eight perſons in the ark from it, ſays, Ὡ και ἡμας αντιτυπον νυν σωζει βαπτισμα, *baptiſm, being an antitype to that, now ſaves us; not putting away the filth of the fleſh, but the anſwer of a good conſcience towards God*, &c. The meaning is, that righteouſneſs, or the anſwer of a good conſcience towards God, now ſaves us by means of the reſurrection of Chriſt, as formerly righteouſneſs ſaved thoſe eight perſons by means of the ark, during the flood.—The word *antitype*, therefore, here ſignifies a general ſimilitude of circumſtances; and the particle ᾧ, *whereunto*, refers, not to the immediate antecedent, ὑδατος, water, but to all that precedes.

ANTITYPE, among the antient Greek fathers, and in the Greek liturgy, is alſo applied to the ſymbols of bread and wine in the ſacrament.

Hence it has been argued, by many Proteſtants, that the Greeks do not really believe the doctrine of tranſubſtantiation; in regard they call the bread and wine *antitypes*, αντιτυπα, *q. d.* figures, ſimilitudes; and this even after the conſecration.

Clement, in his conſtitutions, St. Cyril, and Gregory Nazianzen, and ſeveral other antient writers, make no ſcruple of uſing the term on the ſame occaſion; as is allowed by Leo Allatius, Suicer, *&c.*

M. Simon replied to Dr. Smith, who had made this obſervation of the Greeks calling the ſpecies *antitypes*, after conſecration; that the Greek church does not hold the conſecration completed till after the prayer called *invocation of the Holy Spirit*, which comes after the paſſage of the liturgy, where the bread and wine are called *antitypes*.

Add, that Marcus Epheſius, the leader of the party againſt the Latins, at the council of Florence, makes uſe of this very paſſage in the Greek liturgy to prove, that the conſecration does not conſiſt wholly in the words, *this is my body*; but alſo in the prayer or benediction which the prieſt rehearſes afterwards, invoking the Holy Spirit.

ANTLER, among hunters, the firſt of the pearls that grow about the bur of a deer's horn.

There are alſo ſur-*antlers*, brow-*antlers*, &c.

ANTŒCI*, in geography, thoſe inhabitants of the earth who live under the ſame meridian, and at the ſame diſtance from the equator; the one towards the north, and the other to the ſouth. See EARTH.

* The word is formed of the Greek αντι, *contra*, and οικεω, I dwell, inhabit.—The *Antœci* are contradiſtinguiſhed from the Periœci.

Hence, the *Antœci* have the ſame longitude, and the ſame latitude, only of a different denomination. They lie in the ſame ſemicircle of the meridian, but in oppoſite parallels.

The inhabitants of Peloponneſus are *Antœci* to the Hottentots of the Cape of Good Hope.—*Antœci* are frequently confounded with Antiſcii. See ANTISCII.

The *Antœci* have preciſely the ſame hours of the day and night, but exactly oppoſite ſeaſons: when it is 12 o'clock in the longeſt ſummer's day with one; it is 12 o'clock of the ſhorteſt winter's day with the other: and hence the night of the one is always equal to the day of the other.

Hence, alſo, thoſe ſtars which never riſe to any given place, to the *Antœci* and Antipodes thereof never ſet; and *vice verſa*.—And if the *Antœci* turn their faces toward each other, or the Antipodes look both toward the equator, the ſtars will riſe to the one on the right-hand, and to the other on the left.

ANTONINE *column*. See the article COLUMN.

ANTONOMASIA *, a figure in rhetoric, whereby a noun appellative is uſed inſtead of a proper name, or *vice verſa*.

* The word is compounded of the Greek αντι, for, and ονομα, name.

Thus we ſay, the philoſopher, inſtead of Ariſtotle; the orator, for Cicero; the apoſtle, for St. Paul; the prophet, for Moſes, &c.—Thus alſo we call a voluptuous perſon, a Sardanapalus, &c. And thus the French ſay, Henry the Great, meaning Henry IV. of France.

ANTRUM *Highmorianum* is a cavity diſcovered within the ſinus of each maxillary bone.

Surgeons ſometimes miſtake this for a caries of the bone; finding they can penetrate ſo deep into it with a probe. *Ruyſch. ap. Bibl. Anat. Med.* t. 3. p. 204.

ANTRUM *pylori*, a large cavity at the bottom of the pylorus. See PYLORUS.

ANVIL, a ſmith's utenſil, ſerving to place the work on, to be hammered or forged.

The face, or uppermoſt ſurface of the *anvil*, muſt be very flat and ſmooth, without flaws; and ſo hard, that a file will not touch it.—At one end there is ſometimes a pike, bickern, or beak-iron, for the rounding of hollow work.—The whole is uſually mounted on a firm wooden block. *Mox. Mechan. Exerc.* p. 3.

ANUS, in anatomy, the lower extremity of the inteſtine rectum; or the orifice of the fundament.—See *Tab. Anat.* *(Splanch.) Fig.* 9. *lit. u.*

The Philiſtines ſent golden *emerods* back with the ark, to be cured of a diſeaſe which afflicted them in the *anus*, 1 Sam. *c.* vi.

Muſcles of the ANUS are the ſphincter, levator, and ſcalptor, or latiſſimus dorſi.

Diſeaſes of the ANUS are fiſtula's, and the procidentia, or prolapſus *ani*; to which may be added the hæmorrhoids or piles.

Speculum ANI. See the article SPECULUM.

ANUS is alſo uſed for a ſmall hole in the third ventricle of the brain, which leads into the fourth ventricle of the cerebellum.

AONIDES, in mythology. See the article MUSE.

AORISTUS *, αοριςος, in the Greek grammar, an indefinite or indeterminate kind of tenſe, which ſometimes expreſſes the preſent, ſometimes the future, but moſt frequently the paſt time.

* The word is compounded of α privative; and ὁριζω, to bound, or limit.

The Greeks have two *aoriſtus's*; the Latins have none.

AORTA *, in anatomy, an artery, which riſes immediately out of the left ventricle of the heart, and is diſtributed thence through all the parts of the body.—V. *Tab. Anat.* (Angeiol.) *Fig.* 1. *n.* 1. and *Fig.* 3. (Splanch.) *Fig.* 12. *lit. r.* and *o.* and *Fig.* 1. *lit. n.* and Angeiol. *Fig.* 1. *n.* 28.

* The word is formed of the Greek αορτη, which ſignifies a veſſel, bag, cheſt, &c.

The *aorta* is divided into two grand trunks, called the *aſcending* and *deſcending*; *aorta aſcendens* and *deſcendens*.

The *aorta* is otherwiſe called the *great artery*; as being the trunk out of which the other arteries all ſpring; and the great conduit or canal whereby the blood is conveyed throughout the body.

Oſſifications or petrefactions of the coats of the *aorta*, as it riſes from the heart, are ſo frequent, that ſome think it a conſtant caſe.—Mr. Cowper, however, has an expreſs diſcourſe to ſhew, that whenever ſuch oſſification happens in man, it is a diſeaſe, and incommodes the part in the due execution of its office.

Of this he gives us ſeveral inſtances: one, in which an intermiſſion of pulſe was produced; in another, a coldneſs of the extremes, with a gangrene, &c. *Philoſoph. Tranſact.* Nº 299.

APAGMA, a term uſed, by ſome writers in chirurgery, for the thruſting of a bone, or other part, out of its proper place.

APAGOGE *, απαγωγη. See ABDUCTION.

* The word is compounded of απο, from; and αγω, to bring, or draw.

APAGOGICAL *demonſtration* is ſuch as does not prove the thing directly, but ſhews the impoſſibility and abſurdity which ariſes from denying it.

Hence it is alſo called *reductio ad impoſſibile*, or *ad abſurdum*.

APANAGE *, APPENAGE, APPANAGE, APANNAGE, or APENNAGE, in the French laws, the fortune of a king's younger ſon; or a ſettled portion of lands, &c. aſſigned for the ſubſiſtence of the cadets, or younger ſons of a ſovereign prince.

* Nicod and Menage derive the word from the Latin *panis*, bread; which frequently includes all other ſorts of proviſion neceſſary for ſubſiſtence. Du Cange takes it to have been formed of the baſe Latin *apanare*, *apanamentum*, and *apanagium*, which amounts to the ſame thing; thoſe words being apparently formed of *panis*.

Some will have the *apanages*, at their firſt inſtitution, to have been only penſions, or annual payments, of a certain ſum of money.—The younger ſons of England have no certain *apanages*, as in France; but only what the good pleaſure of the king beſtows upon them.

Even in France, during the firſt and ſecond races of kings, the right of primogeniture and *apanages* were unknown; but the domains were divided pretty equally among all the children.

Great inconveniencies ariſing hence, it was at length found proper to put off the younger-born with counties, duchies, or other diſtricts; on condition of their paying homage and fealty for the ſame, and of their reverting, in defect of heirs male, to the crown.

This has happened, accordingly, to the firſt and ſecond branch of the dukes of Burgundy.—The duchy of Orleans is the *apanage* of the ſecond ſon of France.

APARTMENT *, a portion of a large houſe, wherein a perſon may lodge ſeparately; having all the conveniencies requiſite to make a complete habitation.

* The word comes from the Latin *apartimentum*, of the verb *partiri*, to divide; or, as ſome imagine, *a parte manſionis*, making part of the dwelling.

A complete *apartment* muſt conſiſt of a hall, a chamber, an antechamber, a cloſet, and a cabinet or wardrobe.

APATHY *, in a moral ſenſe, denotes an inſenſibility; or a privation of all paſſion, all emotion, or perturbation of mind.

* The word is formed of the privative particle α, and παθος, paſſion.

The Stoics affected an intire *apathy*: their wiſdom was to enjoy a perfect calmneſs or tranquillity of mind, incapable of being ruffled, and above the reach of any ſenſe either of pleaſure or pain.

In the firſt ages of the church, the Chriſtians adopted the term *apathy* to expreſs a contempt of all earthly concerns; a ſtate of mortification, ſuch as the goſpel preſcribes. And hence we find the word often uſed among the devouter writers: Clemens Alexandrinus, in particular, brought it exceedingly in vogue; thinking, hereby, to draw the philoſophers to Chriſtianity, who aſpired after ſuch a ſublime pitch of virtue.

Quietiſm is only *apathy* diſguiſed under the appearance of devotion.

APATURIA *, in antiquity, a ſolemn feaſt celebrated by the Athenians in honour of Bacchus.

* The word is uſually derived from the Greek απατη, fraud.

It is ſaid to have been inſtituted in memory of a fraudulent victory obtained by Melanthus, king of Athens, over Xanthus king of Bœotia, in a ſingle combat, which they agreed upon, to put an end to a debate between them relating to the frontiers of their countries.—Hence Budæus calls it *feſtum deceptionis*, the feaſt of deceit.

Other authors give a different etymology of this feaſt, from what we have now related: they tell us, that the young Athenians were not admitted into the tribes on the third day of the *apaturia*, till their fathers had firſt ſworn, that they were their own children; and that, till that time, they were ſuppoſed, in ſome meaſure, to be without fathers, απατορες; when the feaſt, ſay they, took its name.

Xenophon, on the other hand, informs us, that the relations and friends met on this occaſion, and joined with the fathers of the young people who were to be received into the tribes; and that from this aſſembly the feaſt took its name: that in απατουρια, the α, far from being a privative, being here a conjunctive, ſignifies the ſame thing with ὁμου, together.

This feaſt laſted four days: the firſt day, thoſe of the ſame tribe made merry together; and this they called δορπια. The ſecond day, which they called αναρρυσις, they ſacrificed to Jupiter and Minerva. The third day, which they called κυρεωτις, ſuch of their young men and maids as were of age were admitted into their tribes. The fourth day they called επιβδης.

APECHEMA, Απηχημα, in medicine, the ſame with *Contrafiſſure*. See CONTRAFISSURE.

APELLITÆ, heretics, in the primitive church, who taught, that Chriſt left his body diſſolved in the air; and ſo aſcended into heaven without it.

APENNAGE. See the article APANAGE.

APEPSY *, APEPSIA, in medicine, denotes crudity, or a want of digeſtion.

* The word is formed from the privative particle α, and πεπτω, *coquo*, I concoct.

Apepſia may be defined a defect in the ſtomach, which prevents the aliment taken in from affording a proper chyle for ſupplying the blood, and nouriſhing the body.

APERIENS *, APERIENT, or APERITIVE, in medicine. See APERIENTS.

* The word is Latin; being the particle of the verb *aperire*, to open; *q. d.* opening.

Crocus martis APERIENS, opening ſaffron of iron, is a preparation of iron plates or filings, made by expoſing them to the rain or dew till they contract a ruſt; which is the medicine required. See alſo AIR, *&c.*—It is a good *Aperient*.

APERIENS *palpebram rectus*, in anatomy, is a muſcle, which, riſing in the orbit of the eye, near the entrance of the optic nerve, paſſes over the attollent muſcle of the eye, and is at laſt inſerted into the whole ſuperior part of the upper eye-lid, which it ſerves to open.

APERIENTS, or APERITIVE *Medicines*, are ſuch as open the obſtructed paſſages of the ſmall veſſels, glands, and pores; and, by that means, promote a due circulation of the contained juices.

Aperients, then, coincide with what we otherwiſe call openers, anaſtomatics, and deobſtruents. See DEOBSTRUENT, *&c.*

The five leſſer *aperient*, or opening roots, are, graſs, madder, eryngo, capers, and chammoc.

The greater *aperient*, or opening roots, are, ſmallage, fennel, aſparagus, parſly, and butchers broom.

APERTA *Toga*. See the article TOGA.

APERTIONS, in architecture, are the openings in a building; as doors, windows, ſtaircaſes, chimneys, outlets and inlets for light, ſmoke, *&c.*

The *Apertions* ſhould be as few as may be; it being a rule, that all openings are weakenings.

APERTURE *, APERTURA, the opening of any thing; or a hole, cleft, or vacant place, in ſome otherwiſe ſolid or continuous ſubject.

* The word comes from the Latin *apertura*; of *aperire*, to open.

In geometry, *Aperture* is uſed for the ſpace left between two ſines which mutually incline towards each other to form an angle.

In optics, *Aperture* is the hole next the object-glaſs of a teleſcope, or microſcope; through which the light and image of the object come into the tube, and are thence carried to the eye.

APERTURE is alſo underſtood of that part of the object-glaſs itſelf which covers the former, and which is left pervious to the rays. See TELESCOPE.

A great deal depends on having a juſt *Aperture*.—To find it experimentally; apply ſeveral circles of black ſmutted paper, each bigger than other, upon the face of the glaſs, from the breadth of a ſtraw to ſuch as leave only a ſmall hole in the glaſs; and with each of theſe, ſeparately, view ſeveral diſtinct objects; as the moon, ſtars, *&c.* that through which they appear the moſt diſtinctly, is to be pitched upon.

M. Auzout affirms, that he found, that the *Apertures* of teleſcopes ought to be nearly in the ſubduplicate ratio of their lenghts: but Huygens, who firſt introduced the uſe of *Apertures*, aſſures us, he found by experience, that the *Aperture* of an object-glaſs, *e. gr.* of 30 feet, is to be determined by this proportion: as 30 to 3, that is, as 10 to 1, ſo is the root of the diſtance of the focus of any glaſs multiplied by 30, to its *Aperture*: and the focal diſtances of the eye-glaſſes are to be proportional to the *Apertures*.—A table of *Apertures* for teleſcopes of various lengths, *&c.* ſee under the article TELESCOPE.

The greater or leſs *Aperture* of an object-glaſs, it is to be noted, does not increaſe or diminiſh the viſible area of the object; all that is effected by this is, the admittance of more or fewer rays, and, conſequently, the more bright or obſcure appearance of the object.

Hence, in viewing Venus through a teleſcope, a much leſs *Aperture* is to be uſed than for the Moon, Jupiter, or Saturn, becauſe her light is ſo vivid and glaring.—Which conſideration does a little invalidate and diſturb M. Auzout's proportion, as is ſhewn by Dr. Hook, *Philoſoph. Tranſact.* N° 4.

APERTURA *Tabularum*, in antient law-books, ſignifies the breaking open a laſt will and teſtament. See WILL, and TESTAMENT.

APERTURA *Feudi* denotes the loſs of a feudal tenure, by default of iſſue to him to whom the feud or fee was firſt granted. See FEE.

APETALOUS *, in botany, ſomething without petala or flower-leaves. See PETALA, and LEAF.

* The word comes from the privative particle α, and πεταλον, *folium*, a leaf.

APEX, the vertex or ſummit of any thing. See VERTEX, APICES, *&c.*

APHÆRESIS, Αφαιρεσις, in grammar, a figure, whereby ſomething is taken away from the beginning of a word.

Thus ciconia, by *Aphæreſis*, is written conia; contemnere, temnere; omittere, mittere, *&c.*

A like retrenchment at the end of a word is called *apocope*. See APOCOPE.

APHELION *, or APHELIUM, in aſtronomy, that point of the earth's or a planet's orbit, in which it is the fartheſt diſtant from the ſun that it can be.

* The word comes from the Greek απο, from; and ηλιος, ſun.

Thus a planet being in A (*Tab. Aſtron. fig.* 1.), its utmoſt diſtance from the ſun S, is ſaid to be in its *Aphelion*.

In the ſyſtem or ſuppoſition of the ſun's moving round the earth, the ſame point is called *apogee*. The *Aphelion* ſtands oppoſed to the *perihelion*.

The *Aphelia* of all the primary planets are at reſt; excepting that thoſe planets neareſt the ſun, *viz.* Mercury, Venus, the Earth, and Mars, being acted upon by Jupiter and Saturn, their *Aphelia* move a ſmall matter in conſequentia with reſpect to the fixed ſtars, and this in the ſeſquiplicate ratio of the diſtances of thoſe planets from the ſun.

Hence, if the *Aphelion* of Mars move 35 minutes in conſequentia in reſpect of the fixed ſtars in 100 years; the *Aphelia* of the Earth, Venus, and Mercury, will move, in 100 years, 18 min. 36 ſec. 11 min. 27 ſec. and 4 min. 29 ſec.

The method of finding the place of the *Aphelion* is, by obſerving ſeveral of the greater digreſſions of the planet from the ſun; till by two or three repeated obſervations it be found to remain at a ſtand.—In the *Philoſ. Tranſ.* N° 128. we have a geometrical method of finding the *Aphelia* of the planets, given by Dr. Halley.

Kepler places the *Aphelion* of Saturn for the year 1700. in 28°. 3′. 44″. of Sagittarius: De la Hire, in 29°. 14′. 41″.—The *Aphelion* of Jupiter in 8°. 10′. 40″. of Libra: De la Hire in 10°. 17′. 14″.—The *Aphelion* of Mars in 0°. 51′. 29″. of Virgo: De la Hire in 0°. 35′. 25″.—The *Aphelion* of the Earth in 8°. 25′. 30″. of Cancer.—The *Aphelion* of Venus in 3°. 24′. 27″. of Aquarius: De la Hire in 6°. 56′. 10″.—And the *Aphelion* of Mercury in 15°. 44′. 29″. of Sagittarius: De la Hire in 13°. 3′. 40″.

The annual motion, according to Kepler, of the *Aphelion* of Saturn, is 1′. 10″. of Jupiter, 47″. of Mars, 1′. 7″.—Of Venus, 1′. 18″. and of Mercury, 1′. 45″. According to De la Hire, that of Saturn is 1′. 22″. of Jupiter, 1′. 34″. of Mars, 1′. 7″.—Of Venus, 1′. 26″. and of Mercury, 1′. 39″.

APHONIA *, Αφωνια, in medicine, the ſtate of a perſon who is dumb, or deſtitute of ſpeech. See DUMBNESS.

* The word is compounded of the privative particle α, and φωνη, *vox*, voice; *q. d.* a loſs of ſpeech, or voice.

Menjotius has a diſſertation expreſs *de Aphonia*.

APHORISM *, a maxim, general rule, or principle, of a ſcience; or a brief ſentence, comprehending a great deal of matter in a few words.

* The word comes from the Greek αφορισμος; of αφοριζω, *ſeparo*, *ſeligo*, I ſeparate, I chooſe; *q. d.* a choice or ſelect ſentence.

The term is chiefly uſed in medicine and law.—We ſay, the *Aphoriſms* of Hippocrates, of Sanctorius, of Boerhaave, *&c.* *Aphoriſms* of the civil law, *&c.*

APHRONITRE *, APHRONITRUM, a kind of nitre, mentioned by the antients; ſuppoſed to be the ſpume, or the lighteſt and ſubtileſt part thereof, emerging to the top.

* The word is compounded of the Greek αφρος, froth; and νιτρον, nitre.

Some modern naturaliſts rather take the antient *Aphronitre* to have been a native ſalt-petre, gathering like an efflorеſcence on old walls, *&c.* now called *ſalt-petre of the rock*. See Supplement, article APHRONITRUM.

APHTHÆ *, in medicine, little ulcers or pimples riſing in the mouth, the palate, gums, and at the root of the tongue; attended with inflammation, and a difficulty of ſwallowing.

* The word ſeems derived from the Greek φθιω, I corrupt; or from ἁπτω, *accendo*, I kindle.

Sucking children are particularly ſubject to *Aphthæ*, when either the nurſe's milk is corrupted, or the child's ſtomach becomes unfit for digeſtion: for, in theſe caſes, the ſharp acrimonious parts of the milk riſing up, eaſily exulcerate thoſe tender and delicate parts.

There are ſome *Aphthæ* white, others red, others livid and blackiſh: the white and red ſorts are the leaſt dangerous, and the moſt eaſily cured; the livid and black often prove mortal.

When they happen in grown perſons, they are owing to thin, ſerous, and ſharp humours, turned from the ſeveral parts of the body to the mouth.—A liniment of mel roſatum and oil of vitriol is eſteemed a good remedy for the *Aphthæ:* plantane-water is alſo in uſe on the ſame occaſion.

APHTHARTODOCETÆ *, Αφθαρτοδοκηται, a ſect of heretics, ſworn enemies of the council of Chalcedon.

* The word is derived from the Greek αφθαρτος, incorruptible; and δοκεω, I opine, I imagine; and was given them, becauſe they imagined the body of Jeſus Chriſt was incorruptible and impaſſible, and not capable of death.

They aroſe among the Eutychians, and made their firſt appearance in the year 535.

APIARY *, *bee-houſe*; a place where bees are kept; and furniſhed with all the apparatus neceſſary for that purpoſe.

* The word comes from the Latin *apis*, a bee.

The *Apiary* ſhould be ſcreened from high winds on every ſide, either naturally or artificially; and well defended from poultry, *&c.* whoſe dung is offenſive to bees.

APICES, *ſummits*, in botany, little knobs growing on the tops of the ſtamina or chives in the middle of flowers.

* The word is Latin; being the nominative plural of *apex*, the top or ſummit of any thing.

They are commonly of a roundiſh figure.—By the microſcope they have been diſcovered to be, as it were, a ſort of capſulæ ſeminales, or ſeed veſſels, containing in them ſmall globular, and often oval particles of various colours, and exquiſitely formed; called the *farina fœcundans*. See FARINA *Fœcundans*.

Theſe particles are a kind of male ſperm, which, falling down into the flower, fecundates and ripens the ſeed. See further under the article, *Generation of* PLANTS.

APOBATERION, Αποβατηριον, among the antients, a farewel ſpeech, or poem, made by a perſon on his departure out of his own country, or ſome other place where he had been kindly received, and entertained.

Such is that of Æneas to Helenus and Andromache, Æn. Lib. III.—The *Apobaterion* ſtands oppoſed to the *epibaterion*. See EPIBATERION.

APOCALYPSE *, APOCALYPSIS, *revelation*: the name of the laſt book in the canon of Scripture.

* The word is formed of the Greek αποκαλυπτω, I reveal, I diſcover.

The *Apocalypſe* contains diſcoveries or revelations relating to many important myſteries of the Chriſtian faith, made to the apoſtle St. John, in the iſle of Patmos, during his baniſhment there under the perſecution of Domitian.

This, of all the books of the New Teſtament, is that, about which the antient fathers, and the practice of the church, were the moſt, and the longeſt, divided.—When it was firſt univerſally received as canonical, is not eaſy to decide.—St. Jerom relates, that the Greek church doubted of its authenticneſs, even in his days: St. Baſil and Gregory Nazianzen abſolutely reject it; and the council of Laodicea never mention it in their canon of the Sacred Writings.

Some attributed it to the heretic Cerinthus; and others, to another John, diſciple of St. John.—Dionyſius Alexandrinus cenſures it as written in bad Greek, and even finds ſoleciſms and barbariſms in it, in abundance: though he allows it to contain a myſtic ſenſe, which, he ſays, he admires, even where he does not underſtand it.

On the other hand, St. Juſtin, Irenæus, Theophilus Antiochenus, Melito, Apollonius, Clemens Alexandrinus, and Tertullian, make no doubt of its being canonical. The third council of Carthage, held in 397. placed it in the canon of the New Teſtament; and the churches both of the eaſt and weſt have acknowleged it ever ſince.

The Alogians are repreſented, by eccleſiaſtical writers, as great declaimers againſt the *Apocalypſe*, many of the flights whereof they turned into ridicule; particularly the viſions of the ſeven trumpets, the four angels bound on the river Euphrates, *&c.*—St. Epiphanius defends it againſt them: the book, he obſerves, is not a mere hiſtory, but a prophecy; ſo that it is no wonder the author ſhould expreſs himſelf after the manner of the prophets, whoſe ſtyle is uſually figurative.

Of all their objections againſt the authority of this book, that ſeems the beſt grounded which is drawn from thoſe words in chap. ii. ver. 18. *Write to the angel of the church of Thyatira:* there was not, ſay they, any Chriſtian church at Thyatira at that time.—St. Epiphanius, who grants them this point, is forced to have recourſe to the prophetic ſpirit; as if St. John had foreſeen there would be a church there in courſe of time.

Some late authors have made a good amendment to St. Epiphanius's anſwer: it is probable, in the time of that father, the catalogue of the biſhops, with other acts, which ſhew that there had been a church eſtabliſhed there from the time of the apoſtles, might not be known. Grotius adds, that though there was not, indeed, any church of Gentile converts at Thyatira when St. John wrote; yet there was one of Jews, as there had been another at Theſſalonica before St. Paul preached there.

Several orthodox writers have rejected the *Apocalypſe* as a book which countenanced the reveries of Cerinthus, touching the carnal reign of Chriſt on earth. See CERINTHIANS.

Though Dionyſius Alexandrinus (*ap. Euſeb. Hiſt. Eccl.* 7. 25.) allowed the *Apocalypſe* for an inſpired writing; yet he took it for the work of another John, different from St. John the Evangeliſt; which he endeavours to make appear from the diverſity of ſtyle.—But we all know how precarious the arguments are, which are drawn from the mere conſideration of ſtyle.—It is true, in moſt of the antient Greek copies, both printed and manuſcript, we find the name *John the Divine*, at the head thereof; but they who put this title meant no more thereby than to denote the apoſtle St. John, whom the Greek fathers call *the Divine*, by way of eminence, to diſtinguiſh him from the other Evangeliſts.

There have been ſeveral other works publiſhed under the title of *Apocalypſes*.—Sozomen mentions a book uſed in the churches of Paleſtine, called the *Apocalypſe*, or *Revelation of St. Peter*. He alſo mentions an *Apocalypſe* of St. Paul; which the Cophtæ retain to this day.—Euſebius alſo ſpeaks of both theſe *Apocalypſes*.—St. Epiphanius mentions an *Apocalypſe* of Adam: Nicephorus, an *Apocalypſe* of Eſdras: Gratian and Cedrenus, an *Apocalypſe* of Moſes, another of St. Thomas, and another of St. Stephen: St. Jerom, an *Apocalypſe* of Elias.

Porphyry, in his life of Plotin, makes mention of the *Apocalypſes* or revelations of Zoroaſter, Zoſtrian, Nicothæus, Allogenes, *&c.*

APOCHYLISMA, in pharmacy, denotes an inſpiſſated vegetable juice; anſwering to what the ſhops call a *Rob*. See ROB.

APOCOPE *, a figure in grammar, wherein part of the end of a word is cut off; as in *dic* for *dice*, *fac* for *face*, *nil* for *nihil*, *hyp* or *hypo* for *hypochondriacal*.

* The word is derived from the Greek αποκοπτω, to cut off; which is compounded of the prepoſition απο, and the verb κοπτω, I cut.

A like retrenchment at the beginning of a word is called *aphæreſis*.

When the *Apocopation* is marked with a ſuperior comma (called an *apoſtrophus*), the word is ſaid to be *apoſtrophated*: as *thro'* for *through*.

APOCRISIARIUS *, in antiquity, an officer appointed to carry or deliver the meſſages, orders, and anſwers, of a prince or emperor.

* The word is formed from the Greek αποκρισις, *reſponſum*, anſwer.—Hence he is uſually called in Latin, *reſponſalis*, *q. d.* anſwerer.

The *Apocriſiarius* afterwards became the emperor's chancellor, and kept the ſeal.—In the barbarous Latin we ſometimes meet with *aſecrata*, ſecretary, for *Apocriſiary*. Zoſimus defines *Apocriſiarius*, ſecretary for foreign affairs; being the ſame with what Vopiſcus in the life of Aurelian calls *notarius ſecretorum*.

The title of *Apocriſiary* became at length appropriated, as it were, to the pope's deputy, or agent, who reſided at Conſtantinople to receive the pope's orders, and the emperor's anſwer.

St. Gregory was *Apocriſiary* of pope Pelagius, at the time when he compoſed his morals on Job.—The *Apocriſiary* did the office of the modern nuntio's. See NUNTIO.—Sometimes, however, he had the rank and quality of the pope's legate.

The hereſy of the Monothelites, and afterwards that of the Iconoclaſts, broke off the cuſtom of having a papal *Apocriſiary* at Conſtantinople.

APOCRUSTICS *, Αποκρουστικα, in medicine, remedies endued with a repelling and aſtringent power, whereby they prevent the too great afflux of humours to a part diſeaſed.

* The word is derived from αποκρουω, *pulſo*, *pello*, I drive.

Apocruſtics are uſually cold and aſtringent, and conſiſt of large particles, wherein they differ from drawing medicines, which are hot, and conſiſt of more ſubtile parts.

APOCRYPHAL, ſomething dubious; or that comes from an uncertain author, whereon much credit cannot be repoſed.

We ſay, an *apocryphal* book, paſſage, hiſtory, *&c.* meaning, ſuch as are of ſuſpected authority.—In matters of doctrine, the writings of heretics, ſchiſmatics, *&c.* are all held *apocryphal*.

Voſſius obſerves, that, with regard to the Sacred Books, none are to be accounted *apocryphal*, except ſuch as have neither been admitted into the ſynagogue, nor the church, ſo as to be added to the canon, and read in public.

For this reaſon, alſo, the books of Sibyls were antiently called *apocryphal*, as being committed to the truſt of the decemviri alone: and for the like reaſon the annals of the Egyptians and Tyrians were called by the ſame name.

Before the ſeptuagint verſion, the books of the Old Teſtament were all *apocryphal* in this ſenſe.—But in proceſs of time, the ſenſe of the word was changed, and thoſe books alone were called *apocryphal*, which were of doubtful or ſuſpected authority.

In the original meaning of the word, all the writings depoſited in the temple were called *apocryphal*; by reaſon they were kept ſecret from the people.

When the Jews publiſhed their ſacred books, they only gave the appellations of *canonical* and *divine* to ſuch as they thus made public; and ſuch as were ſtill retained in their archives they called *apocryphal*, for no other reaſon, but becauſe they were not public; ſo that they might be really ſacred and divine, though not promulged as ſuch.

Thus, in reſpect of the Bible, all books were called *apocryphal*, which were not inſerted in the Jewiſh canon of Scripture; and it is in this ſenſe that St. Epiphanius is to be underſtood, when he ſays, that the *apocryphal* books are not put in the ark among the other inſpired writings.

There has been a great diſpute between the Romaniſts and the Reformed, about the authority of thoſe books, now called, by the latter, *apocryphal* *; as Judith, Tobit, Eſdras, Maccabees, *&c.* the one having the opinions of many of the primitive fathers for their vouchers, and the others, the tradition of their church.

* The word is derived from the Greek αποκρυπτειν, to hide; becauſe the origin of ſuch books was unknown, or becauſe they contain ſome myſteries not fit to be known.

M. Simon contends, that they muſt have been read in Greek, even by the apoſtles themſelves; which he infers from divers paſſages in their writings.—He adds, that the church received them with the other books of Scripture, from the Helleniſt Jews; and that if the churches of Paleſtine never admitted them, it was not for their accounting them *apocryphal* in the ſenſe the word is now uſed, but becauſe they read none but what were written in Hebrew.

To this may be oppoſed the authority of the greateſt part of writers in all ages, till the council of Trent; which makes a preciſe diſtinction between the books now called *apocryphal*, and thoſe contained in the Jewiſh canon.

APODICTICAL * *Argument*, or *ſyllogiſm*, ſignifies a clear, convincing proof, or demonſtration, of a thing.

* The word is formed of the Greek αποδεικνυμι, I demonſtrate, I ſhew clearly.

APOGEE *, APOGÆUM, in aſtronomy, that point in the orbit of the ſun, or a planet, which is fartheſt diſtant from the earth.

* The word is formed of the Greek απο, *ab*, from; and γη, or γαια, earth.—In the corrupt Latin, *apogee* ſometimes ſignifies a grotto, or ſubterraneous vault.

The *apogee* is a point in the heavens at the extreme of the line of the apſides; in which the ſun, or a planet, is at the greateſt diſtance that it can be at, from the earth, in its whole revolution.

The oppoſite point hereto is called the *perigee*. See PERIGEE.

The antient aſtronomers, regarding the earth as the centre of the ſyſtem, chiefly conſidered the *apogee* and perigee: the moderns, making the ſun the centre, change the *apogee* and perigee for aphelion and perihelion. See APHELION, and PERIHELION. See alſo SYSTEM.

The quantity of the motion of the *apogee* may be found by comparing two obſervations thereof made at a great diſtance of time; converting the difference into minutes, and dividing it by the number of years elapſed between the two obſervations: the quotient gives the annual motion of the *apogee*.—Thus, from an obſervation made by Hipparchus in the year before Chriſt 140. whereby the ſun's *apogee* was found 5°, 30′ of ♊; and another made by Ricciolus, in the year of Chriſt 1646. wherein it was found 7°, 26′, of ♋; the annual motion of the *apogee* is found to be 1′, 2″.

APOGEE *of the Moon*. See the article MOON.

APOGEE *of the Equant* is its fartheſt diſtance from the earth; or that point where the circumference of the equant is interſected by the line of the apſides, in the remoteſt part of the diameter.

So the perigee of the equant is the oppoſite point, or the neareſt part of the diameter.

The mean *apogee* of the epicycle is a point where the epicycle is cut above, by a right line drawn from its centre, to the centre of the equant, or the point of the epicycle moſt remote from the earth.

APOGRAPH*, APOGRAPHUM, a copy or tranſcript of ſome book or writing.

* The word is formed of απο, *ab*, from; and γραφω, *ſcribo*, to write.

In this ſenſe, *apograph* ſtands oppoſed to *autograph*; as a copy to an original.

APOLLINARISTS, APOLLINARIANS, antient heretics, who denied that Jeſus Chriſt aſſumed true fleſh, or a rational human ſoul.

Apollinaris of Laodicea, their leader, inveſted Chriſt with I know not what fanciful kind of fleſh, which he ſuppoſed to have exiſted with the ſun from all eternity.—He alſo diſtinguiſhed between the ſoul of Chriſt, and what the Greeks call νους, mind or underſtanding; and from this diſtinction he took occaſion to aſſert, that Chriſt aſſumed a ſoul without its underſtanding, and that this defect was ſupplied by the Word *: though ſome of his followers held, that Chriſt had no human ſoul at all.

* Apollinaris diſtinguiſhed between the ſoul and the mind, the ψυχη, and the νους; acknowleging, that the Word aſſumed the body, and the ſoul, ψυχη, of man, but not νους, the mind or ſpirit; but that the Word itſelf ſupplied the place thereof.—"This then, according to Bp. Pearſon, was the "difference between the Arian and *Apollinarian* hereſies; "that the latter aſſerted, that God aſſumed the nature both "of the fleſh and ſoul of man; but the former, that only "of the fleſh. So that there are two things obſervable in "the *Apollinarian* hereſy: their philoſophy, whereby they "make man conſiſt of three diſtinct parts, body, ſoul, and "ſpirit or mind; and their divinity, whereby they only "make the human nature of Chriſt conſiſt of two of thoſe; "*viz.* body and ſoul."—But the Biſhop, it is to be noted, ſeems to depart a little from the current of eccleſiaſtical writers, in ſuppoſing, that Apollinaris allowed Chriſt to have aſſumed a true body. *Vid.* Niceph. *Hiſt. Eccl. l.* 2. *c.* 12. Vincent. Lirin. *&c.*

Apollinaris further taught, that the ſouls of men were propagated by other ſouls, as well as their bodies.—Theodoret charges him with confounding the perſons of the Godhead; and with giving into the errors of Sabellius: and Baſil accuſes him of abandoning the literal ſenſe of Scripture, and taking up wholly with the allegorical ſenſe.

This hereſy was very ſubtle, and overſpread moſt of the churches of the eaſt: it was condemned in a ſynod of Alexandria, under St. Athanaſius, in the year 362. It was ſubdivided into ſeveral different hereſies, the chief whereof were the Dimœrites.

APOLLINARIAN *Games*, *Apollinares Ludi*, in antiquity, games at Rome, celebrated yearly in honour of Apollo, on the fifth day of July, under the direction of the prætor, in the Circus maximus.

The tradition goes, that, at the firſt celebration hereof, the people were ſuddenly invaded by the enemy, and obliged to take to their arms: upon which occaſion a cloud of darts and arrows falling upon their enemies, the Romans ſoon returned victors to their ſports.

APOLLONIAN *Hyperbola*, and *Parabola*. See HYPERBOLA, and PARABOLA.

APOLOGETIC, APOLOGETICAL, ſomething ſaid or written, by way of excuſe or *apology*, for any action or perſon.

The *Apologetic* of Tertullian is a work full of ſtrength and ſpirit; ſuch as in all reſpects became the character of that father.—He there vindicates the Chriſtians from all that had been objected to them; particularly from the abominable crimes ſaid to be perpetrated at their meetings, and their want of love and fidelity to their country. The ground of this laſt accuſation was, their refuſing to take the accuſtomed oaths, and ſwear by the tutelary gods of the empire.—Tertullian addreſſes his *Apologetic* to the magiſtrates of Rome; the emperor Severus being then abſent.

APOLOGUE *, APOLOGUS, a moral fable; or a feigned relation, intended to inform and amend the manners. See FABLE.

* Jul. Scaliger derives the name απο λογου, inaſmuch as the *apologue* means ſomething more than what at firſt ſight it expreſſes.

Such are the fables of Æſop; whence, moral fables are uſually denominated *Æſopic Fables*.

Father De Colonia makes it eſſential to the *apologue*, that it contain what paſſes among brutes; and diſtinguiſhes it from the *parable* by this, that the latter, though feigned, might poſſibly be true, which the former cannot; ſince beaſts cannot ſpeak.

APOLOGY *, APOLOGIA, *defence*; a diſcourſe or writing in vindication of a perſon.

* The word is formed of the Greek απολογειν, to refute, or repel with words.

APONEUROSIS *, Απονευρωσις, among anatomiſts, the ſpreading or expanſion of a nerve, or tendon, breadth-wiſe; in manner of a membrane.

* The word is compounded of the Greek απο, *ab*, from; and νευρον, a nerve.

APONEUROSIS ſometimes alſo ſignifies the cutting off a nerve, or tendon.—And in ſome writers we find it uſed for a tendon itſelf.

APOPHLEGMATIZANTS * denote medicines proper to purge the head and brain of ſuperfluous phlegm, or ſerous humours.

* Theſe are alſo, by many writers, denominated *apophlegmatiſms*.—The word is compounded of απο, from; and φλεγμα, phlegm.

APOPHYGE*, in architecture, that part of a column where it begins to ſpring out of its baſe, and ſhoot upwards.

* The word in its original Greek ſignifies *flight*; whence the French alſo call it *eſcape*, *conge*, *&c.* and we, ſometimes, the *ſpring* of the column.

The *apophyge*, in its original, was no more than the ring or ferril heretofore faſtened at the extremities of wooden pillars, to keep them from ſplitting; which afterwards was imitated in ſtone-work.

APOPHYSIS*, in anatomy, a protuberance of a bone; or a part eminent, and jutting out, beyond the reſt.

* The word is Greek, αποφυσις; and literally denotes a production outwards: formed απο του αποφυεσθαι, to ariſe from, or out of.

Apophyses *Mammillaris* are the beginnings of the olfactory nerves, as far as the os cribroſum, where they divide into little fibres, which paſs through thoſe bones, and ſpread themſelves throughout the upper part of the noſe.

Apophysis *Mammillaris*, or *Maſtoidea*, alſo denotes one of the external eminences of the os petroſum.

APOPLECTIC, relating to an apoplexy.—Thus we ſay, an *apoplectic* fit, an *apoplectic* water, *&c.*

APOPLEXY*, in medicine, a ſudden privation of all the ſenſes, and all the ſenſible motions of the body, excepting thoſe of the heart and lungs; attended with a great depravation, or ſuſpenſion, of the principal faculties of the ſoul.

* The word comes from the Greek αποπληττειν, to ſtrike, or aſtoniſh; this diſtemper ſtriking ſuddenly; and, as it were, like a thunder-bolt.

Apoplexy differs from *carus*, *lethargy*, and *coma*, in regard, that in thoſe three diſtempers the ſtupor is not ſo profound, nor is all ſenſation quite deſtroyed.

It differs from *ſyncope*, in that there is no ſenſible pulſe in this laſt; whereas, in an *apoplexy*, the pulſe is perceptible almoſt till death.

It differs from an *epilepſy*, in regard all motion is not aboliſhed in that, as in this; and it differs from the *palſy*, inaſmuch as the palſy is not attended with any ſtupor, nor does it deprive the patient of ſenſe and perception.

The *apoplexy* may be occaſioned by an interruption of the paſſage of the blood towards the brain; or by any thing that hinders the influx of the animal ſpirits into the organs of ſenſe, and the parts of voluntary motion: ſometimes it is owing to an abundance of phlegm, and ſometimes to a viſcid pituita, wherewith the brain is oppreſſed; as is obſervable in winter *apoplexies*, and in thoſe of old people.

It ſometimes alſo comes from a melancholic acid humour that coagulates the blood, or from too groſs a lympha, which ſtops up the nerves; or a plethora, which oppreſſes them; or excreſcences withinſide the cranium, preſſing the veſſels; or from a polypus, blocking up the carotids, *&c.* *V.* Bayle, *de Apopl.* See Brain.

In diſſecting perſons dead hereof, clotted extravaſated blood is uſually found in one or both ventricles of the brain. See *Philoſ. Tranſ.* N° 173. 313, *&c.*

Hippocrates diſtinguiſhes two kinds of *apoplexies*; the one *ſtrong*, the other *weak*; only differing in the greater or leſs difficulty of reſpiration, and pulſation: in the former the pulſe and breath ſeem almoſt intirely ſtopped; in the latter there are conſiderable remains of them.

The more modern authors diſtinguiſh *apoplexies*, from their cauſe, into *ſanguineous* and *pituitous*; to which may be added *lymphatic*, *polypous*, *ſerous*, *atrabilary*, &c.

The fit of an *apoplexy* is uſually preceded by a violent pain in the head, a dimneſs and loſs of ſight or memory: ſometimes by an univerſal indolence; and ſometimes by a flux of pituitous matter by the noſe and mouth.—It is attended with a ſnoring, and difficulty of breatheing; ſometimes with a fever, rarely with a foaming at the mouth, frequently with a ſweat, hæmorrhoids, or diarrhœa.

To prevent an *apoplexy*, wine and hard labour are to be avoided; there is to be no eating to exceſs; nor any ſleeping after dinner: exerciſe is to be kept up, and care and chagrin to be kept under. To cure an *apoplexy*, medicines muſt be uſed that occaſion large evacuations; and nothing of opiate or aſtringent kinds meddled withal.—During the fit, copious bleeding in the jugulars is to be uſed, and the patient laid on his back; applying ſtrong volatiles to the noſe; alſo blow up ſtrong ſternutatories, and rub the temples with cephalic mixtures.—A hot iron may alſo be applied near the vertex or occiput; and an epiſpaſtic to the neck; to which are to be added powerful purgatives, clyſters, *&c.*—Cupping and ſcarification on the head are commended by ſome, in lieu of veneſection.

The diſeaſe ſometimes degenerates into a paralyſis.—And ſometimes only half the head is affected; in which caſe the diſeaſe is called ſimply a hemiplegia. See Supplement, article Apoplexy.

APORON*, or Aporime, a problem difficult to reſolve, and which has never been reſolved, though it be not, in itſelf, impoſſible.

* The word is derived from the Greek απορος, which ſignifies ſomething very difficult, and impracticable; being formed from the privative α and πορος, paſſage.

Such we conceive the quadrature of the circle; the duplicature of the cube; the triſection of an angle, *&c.*

When a queſtion was propoſed to any of the Greek philoſophers, eſpecially of the ſect of academiſts; if he could not give a ſolution, his anſwer was, απορεω, *q. d.* I do not conceive it, I cannot ſee through it, I am not able to clear it up.

APORRHOEA*, Aporrhoes, in philoſophy, ſulphureous effluvia, or exhalations, emitted from the earth, and ſubterraneous bodies.

* The word is formed from the Greek αποῤῥεω, *defluo*, to flow from. See Mephites, *&c.*

APOSCEPARNISMUS, Αποσκεπαρνισμος, a ſpecies of fracture of the ſkull, or other bone, wherein a piece is taken clearly off, as if cut out with a hatchet: from the Greek σκεπαρνος, an ax, or hatchet. *V. Bibl. Anat. Med. T.* 1. *p.* 559. & 581.

APOSIOPESIS*, in rhetoric, otherwiſe called *reticency*, and *ſuppreſſion*: a figure, by which a perſon really ſpeaks of a thing, at the ſame time that he makes a ſhew as if he would ſay nothing of it. See Preterition.

* The word comes from the Greek αποσιωπαω, to hold one's peace.

APOSTASY*, a deſerting, or abandoning, of the true religion.

* The word is borrowed from the Latin *apoſtatare*, or *apoſtare*, to deſpiſe, or violate, any thing.—Hence, *apoſtatare leges* antiently ſignified to tranſgreſs the laws.—*Qui leges apoſtabit, terræ ſuæ reus ſit apud regem.* LL. Edw. Confeſſ. The Latin *apoſtatare*, again, comes from the Greek αϖο, from; and ιςημι, *ſto*, to ſtand.

Among the Romaniſts, *apoſtaſy* alſo ſignifies the forſaking of a religious order, whereof a man had made profeſſion; without a lawful diſpenſation.

The antients diſtinguiſhed three kinds of *apoſtaſy*: the firſt, *à ſupererogatione*, is committed by a prieſt, or religious, who abandons his profeſſion, and returns to his lay ſtate; the ſecond, *à mandatis Dei*, by a perſon of any condition, who abandons the commands of God, though he retains his faith; the third, *à fide*, by him who not only abandons good works, but alſo the faith.

There is this difference betwixt an *apoſtate*, and a *heretic*; that the latter only abandons a part of the faith, whereas the former renounces the whole.

A late writer charges the Engliſh clergy with an *apoſtaſy*, or falling away from the doctrines of the reformation.

APOSTATA *Capiendo*, a writ which antiently lay againſt one, who, having entered and profeſſed ſome order of religion, broke out again, and wandered the country, contrary to the rules of the order.

APOSTHUME*, or Apostem, Apostema, in medicine, a preternatural tumour; called alſo *abſceſs*, and *impoſthume*. See Abscess.

* The word is formed of the Greek αποςημα; which comes from the verb αφιςημι, *abſcedo*, I depart from one place, and fix in another: alluding to the manner wherein the tumour is uſually formed of a tranſlated humour.

A POSTERIORI.—Demonſtration *à poſteriori*. See Demonstration.

APOSTLE*, Apostolus, one of the twelve diſciples of Jeſus Chriſt, commiſſioned by him to preach his goſpel, and propagate it to all the parts of the earth.

* The word *apoſtle*, αϖοςολος, originally ſignifies a perſon *delegated*, or *ſent*; from the verb αποςελλω, *mitto*: in which ſenſe it occurs in Herodotus, and other profane authors.—Hence, in the New Teſtament, the term is applied to divers ſorts of delegates; and to the twelve diſciples by way of eminence.

Certain falſe preachers of the goſpel antiently diſputed with St. Paul his quality of *apoſtle*; by reaſon none but thoſe who had ſeen Jeſus, and been witneſſes of his actions, could be ſaid to be ſent by him,—In anſwer to theſe ſophiſtical doctors, who had ſeduced the churches of Galatia, he begins his epiſtle to them with theſe words; *Paul an apoſtle not of men, nor by man, but by Jeſus Chriſt, and God the Father*: by which he ſignified, that he had his miſſion immediately from God; and of conſequence was a true *apoſtle*.

St. Paul is frequently called the *apoſtle*, by way of eminence; and the *apoſtle of the Gentiles*, by reaſon his miniſtry was chiefly made uſe of for the converſion of the Gentile world, as that of St. Peter was for the Jews.—The ſeveral *apoſtles* are uſually repreſented with their reſpective badges or attributes: St. Peter, with the keys; St. Paul, with a ſword; St. Andrew, with a croſs or ſaltier; St. James minor, with a fuller's pole; St. John, with a cup, and winged ſerpent flying from it; St. Bartholomew, with a knife; St. Philip, with a long ſtaff, whoſe upper end is formed into a croſs; St. Thomas, with a lance; St. Matthew, with a hatchet; St. Matthias, with a battle-ax; St. James major, with a pilgrim's ſtaff, and a gourd bottle; St. Simon, with a ſaw; and St. Thaddeus, with a club.

APOSTLE was alſo an appellation given to the ordinary travelling miniſters of the church.—Thus St. Paul, in the epiſtle to the Romans, xvi. 7. ſays, *Salute Andronicus and Junia, my kinſmen and fellow-priſoners, who are of note among the apoſtles.*

APOSTLE was alſo a title given to thoſe ſent by the churches to carry their alms to the poor of other churches.—This uſage they borrowed from the ſynagogues, who called thoſe whom they ſent on this meſſage, by the ſame name; and the function or office itſelf αποϛολη, *apoſtole, q. d.* miſſion.—Thus St. Paul, writing to the Philippians, tells them, that Epaphroditus, their *apoſtle*, had miniſtred to his wants, chap. ii. 25.

APOSTLE is alſo uſed for a perſon who firſt planted the Chriſtian faith in any place.

Thus St. Dionyſius of Corinth is called the *apoſtle of France*; St. Xavier the *apoſtle of the Indies*, &c.—In the Eaſt-Indies, the Jeſuit miſſionaries are alſo called *apoſtles.*

In ſome ages of the church, the pope was peculiarly denominated the *apoſtle*. V. *Sidon. Apollin.* Lib. VI. Ep. 4.

APOSTLE, in the Greek liturgy, is particularly uſed for a book containing the epiſtles of St. Paul, printed in the order wherein they are to be read in churches, through the courſe of the year.—Another book of the like kind, containing the goſpels, is called Ευαγγελιον, Goſpel.

The *apoſtle*, of late days, has alſo contained the other canonical epiſtles, the acts of the *apoſtles*, and the revelations. Hence it is alſo called, *Acts of the Apoſtles*, Πραξαποϛολος; that being the firſt book in it.

APOSTLE, is alſo uſed among the Jews, for a kind of officer antiently ſent into the ſeveral parts and provinces in their juriſdiction, by way of viſitor, or commiſſary; to ſee that the laws were duly obſerved, and to receive the moneys collected for the reparation of the temple, and the tribute payable to the Romans.

The Theodoſian Code, Lib. XIV. *De Judæis*, calls thoſe *apoſtoli, qui ad exigendum aurum atque argentum a patriarcha certo tempore diriguntur.* The Jews call them שליחין, *Schelihhin, q. d.* envoys, or meſſengers.—Julian, the apoſtate, remitted the Jews the *Apoſtole*, Αποϛολη; that is, as he himſelf explains it, the tribute they had been accuſtomed to ſend him.

Theſe *apoſtles* were a degree below the officers of the ſynagogues, called *patriarchs*, and received their commiſſions from them.—Some authors obſerve, that St. Paul had borne this office; and that it is this he alludes to in the beginning of the epiſtle to the Galatians: as if he had ſaid, Paul, no longer an *apoſtle* of the ſynagogue, nor ſent thereby to maintain the law of Moſes, but now an *apoſtle* and envoy of Jeſus Chriſt, *&c.*—St. Jerom, though he does not believe, that St. Paul had been an *apoſtle* of this kind; yet imagines, that he alludes thereto, in the paſſage juſt cited.

In the arſenal of Bremen, there are twelve pieces of cannon called the *twelve apoſtles*, on a ſuppoſition, that the whole world muſt be convinced, and acquieſce in the preaching of ſuch *apoſtles*.

APOSTOLIC, APOSTOLICAL, ſomething that relates to the *apoſtles*, or deſcends from them. See APOSTLE.—Thus we ſay, the *apoſtolical* age, *apoſtolical* doctrine, *apoſtolical* character, conſtitutions, traditions, *&c.*—The *Romaniſts* call their church, *the catholic and apoſtolic church*; and thus appropriate a title to Rome, which antiently was held in common with it by ſeveral other churches.

APOSTOLIC, in the primitive church, was an appellation given to all ſuch churches as were founded by the *apoſtles*; and even to the biſhops of thoſe churches, as being the reputed ſucceſſors of the *apoſtles.*—Theſe were confined to four, *viz.* Rome, Alexander, Antioch, and Jeruſalem.

In after-times, other churches aſſumed the ſame quality, on account, principally, of the conformity of their doctrine with that of the churches which were *apoſtolical* by foundation, and becauſe all biſhops held themſelves ſucceſſors of the apoſtles, or acted in their dioceſes with the authority of apoſtles.

The firſt time the term *apoſtolical* is attributed to biſhops, as ſuch, is a letter of Clovis to the council of Orleans, held in 511. though that king does not there expreſly denominate them *apoſtolical*, but *(apoſtolica ſede digniſſimi)* highly worthy of the *apoſtolical* ſee. In 581. Guntram calls the biſhops, met at the council of Maſon, *apoſtolical* pontiffs, *apoſtolici pontifices.*

In progreſs of time, the biſhop of Rome growing in power above the reſt; and the three patriarchates of Alexandria, Antioch, and Jeruſalem, falling into the hands of the Saracens; the title *apoſtolical* became reſtrained to the pope, and his church alone.—Though ſome of the popes, as St. Gregory the Great, not contented to hold the title by this tenure, began, at length, to inſiſt, that it belonged to them by another and peculiar right, as being the ſucceſſors of St. Peter.

And hence a legion of *apoſtolicals*; *apoſtolical* ſee, *apoſtolical* nuncio, *apoſtolical* notary, *apoſtolical* brief, *apoſtolical* chamber, *apoſtolical* vicar, *&c.*

APOSTOLICAL *Conſtitutions.* } See { CONSTITUTION.
APOSTOLICAL *Traditions.* } See { TRADITION.

APOSTOLICI, APOSTOLI, or APOSTLES, was a name aſſumed by two different ſects of heretics, on account of their pretending to imitate the manners and practice of the apoſtles.

The firſt *Apoſtolici*, otherwiſe called *Apotactitæ* and *Apotactici*, roſe out of the Encratitæ, and Cathari, in the third century. They made profeſſion of abſtaining from marriage, and the uſe of wine, fleſh, money, *&c.*

The other branch of *apoſtolici* were of the twelfth century. Theſe alſo condemned marriage, but allowed of concubinage; they ſet aſide the uſe of baptiſm; and in many things imitated the Manichees.—St. Bernard wrote againſt this ſect of *apoſtolici.*

APOSTOLORUM *Unguentum*, the apoſtles ointment, in pharmacy, is a kind of detergent, or cleanſing ungent, compoſed of twelve drugs, the number of the apoſtles; whence its name.

It was invented by Avicenna, and is otherwiſe called *unguentum Veneris.*—The principal ingredients are turpentine, reſin, wax, gum ammoniac, birth-wort roots, olibanum, bdellium, myrrh, and galbanum, opopanax, verdegriſe, litharge, oil of olives, and vinegar.

APOSTROPHE *, in rhetoric, a figure, whereby the orator, in an extraordinary commotion, turns his diſcourſe from the audience, and directs it to ſome other perſon, or thing.

> * The word is Greek αποϛροφη, *averſio*; formed of απο, *ab*, from; and ϛρεφω, *verto*, to turn.

Thus Cicero, in his oration for Milo, addreſſes himſelf to the great patriots who had ſhed their blood for the public; and calls them to the defence of his client. So the ſame orator in his firſt *Catilinarian* directs himſelf to Jupiter the protector of the city and empire, and beſeeches him to repel the parricide, *&c.*

The *apoſtrophe* is frequently alſo addreſſed to inanimates, as tombs, monuments, defuncts, *&c.*—Cicero's *apoſtrophe* to Tubero, in his oration for Ligarius, is judged one of the fineſt paſſages in his works.

That *apoſtrophe* of Demoſthenes, wherein he addreſſes himſelf to the Greeks ſlain at the battle of Marathon, is alſo famous.

Cardinal Perron ſays, it has procured the orator as much glory, as if he had raiſed them from the dead.

APOSTROPHE, or APOSTROPHUS, in grammar, alſo denotes a note or character placed over a letter, in lieu of a vowel, to denote that the vowel is cut off, and not to be pronounced.

As *ev'n* for *even*; *th' angelic hoſt*, for *the angelic*, &c.—The affectation of frequent *apoſtrophes*, ſo uſual among ſome late Engliſh writers, is a great abuſe.

APOTACTITÆ *, or APOTACTICI, an antient ſect, who, affecting to follow the evangelical counſels of poverty, and the examples of the apoſtles, and primitive Chriſtians, renounced all their effects and poſſeſſions.

> * The word is Greek, αποτακτιται, formed from αποτασσω, or αποτατ7ω, to renounce.

It does not appear, that they gave into any errors during their firſt ſtate: ſome eccleſiaſtical writers aſſure us, they had divers holy virgins, and martyrs, under the perſecution of Diocleſian, in the fourth century: but they afterwards fell into the hereſy of the Encratitæ, and taught, that the renouncing of all riches was not only a matter of counſel and advice, but of precept and neceſſity.—And hence the ſixth law in the Theodoſian Code joins the *Apotactitæ* with the Eunomians and Arians.

APOTHECARY *, a perſon who profeſſes the practice of pharmacy, or that part of phyſic which conſiſts in the preparation and compoſition of medicines.

> * The word is derived from the Greek αποθηκη, ſhop, the place where he makes up, and expoſes his medicines to ſale.

Nic. Langius has a large volume expreſly againſt the *apothecaries*, their quid pro quo's, their ignorance in the materia medica, and ſuffering themſelves to be ſo eaſily impoſed on by foreign merchants, druggiſts, *&c.* who ſupply them with adulterated drugs, one ſort for another, old effete exhauſted ones for new ones juſt imported from the Levant, *&c.*

The *apothecaries* in England are obliged to make up their medicines according to the formula's preſcribed in the college diſpenſatory.

Their ſhops are ſubject to the viſitation of the cenſors of the college; who are impowered to deſtroy ſuch medicines as they think not good.

To his majeſty belong two *apothecaries*: the ſalary to the firſt, 320l. to the ſecond, 275l.—To the houſhold belong alſo two. Bartholin complains of the too great number of *apothecaries* in Denmark: though there are but two allowed in all Copenhagen, and one in every other conſiderable town.—What would he have ſaid of London, where there are ſaid to be upwards of 2000?

Whether the people of London be gainers in point of health by this army of *apothecaries*, is much to be doubted: but we find many complaints of the too great influence of the *apothecaries*: phyſicians ſeem generally of opinion, that it is in the power of the *apothecaries* either to introduce them into families, or to keep them out. Hence it is, that the doctor looks on the *apothecary*, either as the perſon by whom he was firſt recommended, or as the man whoſe kind word is neceſſary to continue him in the good opinion of the family he is called to: in order therefore to ſhew his gratitude for the paſt favours, or to engage the future ſervices, of this worthy gentleman, the doctor thinks himſelf obliged to preſcribe ten times more phyſic than his patient has really occaſion for. —If a conſcientious phyſician offers to leave a ſick man's chamber without putting pen to paper, the *apothecary* commonly informs the patient, by way of friendſhip, that whenever his phyſician does not preſcribe, he need not give him any fee. A patient who loves his money is apt enough to take ſuch an hint; and, if the doctor is not a man of a very dull apprehenſion, he takes care not to commit the ſame fault a ſecond time.—Happy would it be for the miſerable patients here in town, if the load of unneceſſary phyſic which they ſwallow down, though it does them no good, did them no harm; it would be no great matter if their pockets alone ſmarted for their folly; but, alas! this is not the caſe; their lives, or at leaſt their conſtitutions, often pay for it. To confeſs the truth, a phyſician who would do good muſt always follow nature, but never run before it. And whenever he gives his patient two or three unneceſſary doſes of phyſic, from that time he no longer ſees thoſe ſymptoms of nature, which in all caſes are our ſureſt guides: he ſees no other ſymptoms but ſuch as chiefly reſult from his own drugs; and then I need not tell you what muſt be the conſequence; he goes on in a ſort of circle, creating diſtempers one day, and applying remedies to them the next.

It is ſtrange, to what an height *apothecaries* have found means to carry their favourite polypharmacy, conſidering what a few ſimple eaſy medicines will anſwer all the purpoſe of their vaſt ſhops. The phyſicians of Paris, towards the beginning of the 17th century, began to oppoſe the growing evil. Patin was one of the warmeſt. They went ſo far, as at length to exclude the miniſtry of the *apothecaries* in almoſt all caſes. A valet, or a chambermaid, prepared and adminiſtred the purges, clyſters, &c. The bookſeller of the *Medecin Charitable* (which they had procured to be written for the purpoſe) made up and ſold moſt of the medicines directed in it; and even the phyſicians, when they wanted, ſent to him for them. *Patin*, lett. 17. *à Belin.*

If you would keep the *apothecaries* under, ſays Guy Patin (writing to M. Falconet, a phyſician of Lyons), you need only put them in mind of the *Medecin Charitable*, with which, when it was only worth two ſous, we ruin'd the *apothecaries* of Paris.—Give 'em to underſtand, that caſſia, rhubarb, and ſyrup of pale roſes, are to be had at the grocer's, with which remedies alone we can do without their aſſiſtance. Meſſ. Mareſcot, Pietre, Duret, &c. introduced into the families in Paris a facile, parable phyſic, which has delivered them from the tyranny of thoſe *cuiſiniers Arabeſques*, *Pat. Lett. Choiſ.* 21.

APOTHEOSIS*, in antiquity, an heathen ceremony, whereby their emperors and great men were placed among the gods.

* The word is derived from the prepoſition *απο*, and Θεος, *Deus*, God.

After the *apotheoſis*, which they alſo called *deification* and *conſecration*, temples, altars, and images*, were erected to the new deity; ſacrifices, &c. were offered, and colleges of prieſts inſtituted. *Dio* 47, 56, 59. *Suet. Aug.* 5. *Tib.* 40. *Paterc.* 1. *Ovid. Pont.* 4.

* Images were erected to them with the attributes of divinity (*Lucan* 7. *Dio* 53. *Capitolin. Antonin.*). And to demoliſh them was deemed treaſon (*Venul. L.* 6: *D. ad leg. Jul. maj.*). And even the ſenate decreed that oaths ſhould be taken in their names (*Dio* 44, 59, 60. *Tac. Ann.* 1.). Vid. Kirchm. de fun. Rom. 4. 14.

It was one of the doctrines of Pythagoras, which he had borrowed from the Chaldees, that virtuous perſons, after their death, were raiſed into the order of the gods

And hence the antients deified all the inventors of things uſeful to mankind; and thoſe who had done any important ſervice to the commonwealth.—Tiberius propoſed to the Roman ſenate the *apotheoſis* of Jeſus Chriſt, as is related by Euſebius, Tertullian, and St. Chryſoſtom. Juvenal, raillying the frequent *apotheoſes*, introduces poor Atlas, complaining that he was ready to ſink under the burden of ſo many new gods as were every day added to the heavens.

Seneca ridicules the *apotheoſis* of Claudius with admirable humour.—Herodian, l. 4. in ſpeaking of the *apotheoſis* of Severus, gives us a very curious deſcription of the ceremonies uſed in the *apotheoſis* of the Roman emperors.—After the body of the deceaſed emperor, ſays he, had been burnt, with the uſual ſolemnities, they placed an image of wax, perfectly like him, but of a ſickly aſpect, on a large bed of ivory, covered with cloth of gold, in the veſtibule of the palace. The greateſt part of the day, the ſenate ſat ranged on the left ſide of the bed, dreſſed in robes of mourning; the ladies of the firſt rank ſitting on the right ſide, in plain and white robes, without any ornaments.—This laſted for ſeven days ſucceſſively, during which, the phyſicians came from time to time to viſit the ſick, always making their report, that he grew worſe; till at length they publiſhed it, that he was dead.

This done, the young ſenators and Roman knights took the bed of ſtate upon their ſhoulders, carrying it through the Via Sacra, to the old forum, where the magiſtrates were uſed to diveſt themſelves of their offices. There, they ſet it down, between two kind of amphitheatres, in the one whereof were the youth, and in the other the maidens of the firſt families in Rome, ſinging hymns, ſet to ſolemn airs, in praiſe of the deceaſed. Theſe hymns ended, the bed was carried out of the city into the Campus Martius, in the middle of which place was erected a kind of ſquare pavilion, the inſide whereof was full of combuſtible matters, and the outſide hung with cloth of gold, and adorned with figures of ivory, and various paintings.

Over this edifice were ſeveral others, like the firſt in form and decoration, but leſs; always diminiſhing and growing ſlenderer towards the top.—On the ſecond of theſe was placed the bed of ſtate; and a great quantity of aromatic perfumes, and odoriferous fruits and herbs, were thrown all around; after which, the knights made a proceſſion or cavalcade in ſolemn meaſures around the pile; ſeveral chariots alſo ran round it, thoſe who conducted them being clad in purple robes, and bearing the images of the greateſt Roman emperors and generals.

This ceremony ended, the new emperor came to the catafalco, or pile, with a torch in his hand; and, at the ſame time, fire was ſet to it, on all ſides; the ſpices and other combuſtibles kindling all at once.

While this was doing, they let fly, from the top of the building, an eagle, which, mounting into the air with a fire-brand, carried the ſoul of the dead emperor along with it into heaven, as the Romans believed; and thenceforward he was ranked among the gods.—It is for this reaſon, that the medals, wherein *apotheoſes* are repreſented, have uſually an altar with fire upon it; or elſe an eagle taking its flight into the air, and ſometimes two eagles.

APOTOME*, in mathematics, the remainder or difference of two incommenſurable quantities.

* The word is derived from the Greek verb *αποτεμνω*, *abſcindo*, I cut off.

An *apotome*, in geometry, is an irrational reſidue, as CB, ariſing, when from a rational line AC, called *a*, you cut off a rational part AB, called *b*, only commenſurable in power to the whole line AC.—It may be expreſſed thus, $a - \sqrt{b}$.

Apotome, in muſic, is the part remaining of an intire tone, after a greater ſemitone has been taken from it.

The proportion in numbers of the *apotome* is, that of 2048 to 2187.

The Greeks thought, that the greater tone could not be divided into two equal parts; for which reaſon they called the firſt part αποτομη, and the other λημμα; in this imitating Pythagoras and Plato.

APOZEM*, Αποζημα, in medicine, a form of remedy, otherwiſe called a *decoction*. See Decoction.

* The word is derived from the Greek *αποζεω*, *fervefacio*, I make hot.

Apozems are a claſs of liquid medicines, compoſed of the juices of divers plants, roots, woods, flowers, leaves, fruits, and ſeeds, drawn out by boiling in water, and ſweetened and clarified. An *apozem* differs from a *ſyrup*, in thickneſs and conſiſtence; the ſyrup being more denſe and viſcous than the *apozem*, from the quantity of ſugar.

It differs from a *julap*, in that it is thicker, and more viſcous; and is not made with diſtilled waters, as julaps are, but only with common water.

There are purging *apozems*, cephalic *apozems*, hepatic *apozems*, antarthritic, diuretic, ſtyptic, &c. *apozems*.

APPANAGE, or Appenage. See Apanage.

APPARATOR. See the article Apparitor.

APPARATUS properly ſignifies a formal preparation for ſome public and ſolemn action.

We ſay, the *apparatus* of a feaſt, coronation, &c. The prince made his entry with great *apparatus* and magnificence.

Apparatus is alſo uſed for the utenſils and appendages, belonging to ſome more conſiderable machine.—As, the furniture or *apparatus* of an air-pump, microſcope, &c.

Apparatus is ſometimes alſo uſed in chirurgery, for the bandages, medicaments, and dreſſings of a part; or the ſeveral matters applied for the cure of a wound, ulcer, or the like.

There is no judging of the quality of a hurt, till after taking off the firſt *apparatus*, or coverings.

APPARATUS is frequently uſed for the operation of cutting for the ſtone.

For this there are three ſorts of *apparatus*; *viz.* the *ſmall* (1), *great* (2), and *high apparatus* (3): which ſee deſcribed under the article LITHOTOMY.

(1) *The ſmall* APPARATUS, thus called from the few inſtruments it requires, was invented and deſcribed by Celſus.—Here, the two forefingers are thruſt up the fundament till they come againſt the ſtone, and drive it to the neck of the bladder; from which it is extracted through an inciſion *in perinæo.*

(2) *The Great* APPARATUS, invented by John de Romanis, a phyſician of Cremona, in the year 1500. is performed alſo by making an inciſion in the perinæum.

This is denominated *great*, from the number of inſtruments uſed in it.

(3) *The High* APPARATUS, ſaid to have been invented by Peter Franco, a ſurgeon of Provence in 1560. has been little uſed among us till of late.—In this method an inciſion is made above the os pubis, along the linea alba, into the fund of the bladder; through which the ſtone is extracted.

To theſe may be added the lateral operation, invented by Frier Jaques. *Vid. Hiſt. Acad. R. Sciences, an.* 1629. p. 34.

APPARATUS is alſo uſed as a title of ſeveral books compoſed in form of catalogues, bibliothecas, dictionaries, *&c.* for the eaſe and conveniency of ſtudy.

The *Apparatus* to Cicero, is a kind of concordance, or collection of Ciceronian phraſes, *&c.*—The *apparatus ſacer* of Poſſevin, is a collection of all kinds of eccleſiaſtical authors printed in 1611. in three volumes,—Gloſſaries, comments, *&c.* are alſo frequently called *Apparatus's*.

APPARENT, that which is viſible, or evident to the eye, or the underſtanding.

APPARENT *Altitude.* See the article ALTITUDE.

APPARENT *Conjunction* of the planets is, when a right line, ſuppoſed to be drawn through the centre of two planets, does not paſs through the centre of the earth, but through the eye of the ſpectator.

Heir **APPARENT**. See HEIR *Apparent*.

APPARENT, or *ſenſible Horizon*, is that great circle which limits our ſight; or the place where the heavens and the earth ſeem to meet.

This may be conceived as a cone, whoſe vertex is the eye, and its baſe the circular plane which terminates our proſpect.—It determines the riſing and the ſetting of the ſun, moon, and ſtars.

APPARENT *Magnitude* of an object is the magnitude thereof, ſuch as it appears to the eye.

The *apparent* or ſeeming magnitude is meaſured by the optic angle.

Thus the *apparent* magnitude of an object is ſaid to be ſo many degrees as the optic or viſual angle ſubtends.

The *apparent* magnitudes of diſtant objects are uſually ſaid to be as their diſtances, reciprocally.

In ſtrictneſs, however, it may be demonſtrated, that the *apparent* magnitudes of the ſame object AC (*Tab. Optics, fig.* 69.) ſeen at different diſtances, *viz.* at the places D and B; that is, the angles ADC and ABC; are in a ratio leſs than the reciprocal ratio of the diſtances DG and BG; but when the object is very remote, *viz.* when the optic angles ADC and ABC are not above one or two degrees, they are nearly in that ratio reciprocally.

APPARENT *Magnitude* or *Diameter* of the ſun, moon, or any planet, is the quantity of the angle that their diameters appear under, to an obſerver on the ſurface of the earth.

The *apparent* diameters of the celeſtial luminaries are ſubject to ſome diverſity.—That of the ſun is obſerved to be leaſt when he is in Cancer, and greateſt when in Capricorn.

In the moon there is a twofold increaſe and decreaſe of the *apparent* diameter; the one, when ſhe is in conjunction with the ſun; and the other, when in her quadratures.

The greateſt *apparent* diameter of the ſun, according to Caſſini, is 32′, 10″; and the leaſt 31′, 38″.—According to de la Hire, the greateſt is 32′, 43″; and the leaſt 31′, 38″.—The greateſt *apparent* diameter of the moon, according to Kepler, is 32′, 44″; and the leaſt 30′, 00″.—And according to de la Hire, the one is 33′, 30″; and the other 29′, 30″. See SUN, and MOON.

The *apparent* diameter of Saturn's ring, according to Huygens, is 1′, 8″, when leaſt.

The *apparent* diameters of the other planets, ſee under the article DIAMETER.

If the diſtances of any two very remote objects, for example, two planets, be equal, their true diameters are proportional to the *apparent* ones; and if the *apparent* diameters be equal, the true diameters will be as the diſtance from the eye.—Hence, when neither the diſtances nor the *apparent* diameters are equal, the true diameter will be in a ratio compounded of the direct ratio of the diſtances, and of the direct ratio of the *apparent* diameters.

There is a farther very obſervable difference between the *apparent* magnitudes or diameters of the ſun and moon when in the horizon, from what they are in the meridian; the reaſon whereof has long perplexed the philoſophers. See MOON.

APPARENT *Motion, Time*, &c. See MOTION, TIME, *&c.*

APPARENT *Place* of any object, in optics, is that wherein it appears, when ſeen through one or more glaſſes.

The *apparent place* is different from the *real* one; for when, by refraction through glaſſes, that parcel of rays which falls on the pupil of the eye, from each point of any near object, is made to flow as cloſe together as that which comes from a diſtant one; or when, by the ſame means, the rays coming from diſtant objects are made to diverge as much as if they flowed from near ones; then the eye muſt neceſſarily ſee the place of the object changed: which change is its *apparent place.*

If an object be placed nearer to a convex glaſs than is the diſtance of its focus, its *apparent place* may be determined: but if the object be in the focus of the glaſs, the *locus apparens* of the object cannot be determined; only that it will appear vaſtly remote.

Nor can the *locus apparens* be determined, if the object be beyond the focus of a convex glaſs: but if the object be farther diſtant from a convex glaſs, than its focus, and the eye lie beyond the diſtinct baſe, its *apparent place* will be in the diſtinct baſe. See the article LENS.

APPARENT *place* of a ſtar, *&c.* is a point in the ſurface of the ſphere, determined by a line drawn from the eye through the centre of the ſtar.

The true or real place is determined by a line drawn from the centre of the earth, through the ſtar or planets.

APPARITION, in aſtronomy, denotes a ſtar's or other luminary's becoming viſible, which before was hid.

In which ſenſe the word ſtands oppoſed to *occultation.*

The heliacal riſing is rather an *apparition* than a proper riſing. See HELIACAL.

Circle of perpetual **APPARITION**. See CIRCLE *of perpetual Apparition.*

APPARITOR, or **APPARITOUR**, or **APPARATOR**, a beadle in an univerſity, who carries the mace before the maſters, and the faculties. See BEADLE, and UNIVERSITY.

APPARITORS alſo denote meſſenges, who cite men to appear in the eccleſiaſtical courts.

Among the Romans, *apparitors* were the ſame with ſerjeants or tipſtaffs among us; or rather *apparitor* was a general term, and compriſed under it all the miniſters and attendants of the judges and magiſtrates, appointed to receive and execute their orders.—And hence, they ſay, the name was derived, *viz.* from *apparere*, to be preſent, to be in waiting.

Under the name *apparitores* were comprehended the *ſcribæ, accenſi, interpretes, præcones, viatores, lictores, ſtatores*, and even the *carnifices* or hangmen.

They were uſually choſen out of the freedmen of the magiſtrates; and their condition was held in ſo much contempt, that, as a mark of ignominy, the ſenate appointed a city that had revolted from them to furniſh them with *apparitors*.

There were alſo a kind of *apparitors of cohorts*, called *cohortales*; or *conditionales*, as being attached to a cohort, and doomed to that condition.—The *apparitors* of the prætors, *prætoriani*, were thoſe who attended the prætors, or governors of provinces; and who, on their maſter's birthday, were always changed, and preferred to better poſts.—Add, that the pontifices had alſo their *apparitors*, as appears from an inſcription of an antient marble in the via Appia:

APPARITORI
PONTIFICVM
PARMVLARIO.

APPEAL, in law, ſignifies the removal of a cauſe from an inferior judge to a ſuperior; or the having recourſe to a ſuperior judge to rectify what is amiſs in a ſentence paſſed by an inferior.

Appeals lie from all the ordinary courts of juſtice to the houſe of lords, who judge *en dernier reſſort*; *i. e.* no *appeal* lies from them.

There are *appeals* from eccleſiaſtical juſtice to ſecular.—The firſt inſtance of this is that of Paulus Samoſatenus; who, being condemned and depoſed by the ſecond council of Antioch, refuſed to ſurrender the epiſcopal houſe to Domnus, who had been elected his ſucceſſor; and *appealed* to the emperor.

APPEAL is alſo uſed in common law in the ſame ſenſe with *accuſatio* among the civilians. For as, in the civil law, cognizance of criminal caſes is taken either upon inquiſition, accuſation, or denunciation; ſo, in ours, it is taken either upon indictment, or *appeal*.

Indictment comprehends both inquiſition and denunciation.—*Appeal* or accuſation is a lawful declaration of another man's crime (which, by Bracton, muſt be felony at the leaſt) before a competent judge, by one that ſetteth his name to the declaration, and undertakes to make it good on the penalty that may otherwiſe enſue.

An *appeal* is commenced two ways; either *by Writ*, or *by Bill.*

APPEAL *by Writ* is, when a writ is purchaſed out of chancery by one to another; to this end, that he *appeal* a third of ſome felony committed by him, finding pledges that he ſhall do it, and deliver this writ to the ſheriff to be recorded.

APPEAL *by Bill* is, when a man of himſelf gives up his accuſation in writing to the ſheriff or coroner; offering to undergo the burden of *appealing* the perſon therein named.

This practice is drawn from the Normans, as appears from the grand cuſtomary, wherein is a ſolemn diſcourſe both of the effects of this *appeal, viz.* the order of the combat, or the trial by inqueſt; which, by our law, was in the choice of the defendant.

APPEAL *of Mayhem* is an accuſing of one that hath maimed another.—But this being heretofore no felony, the *appeal* thereof was but in manner of an action of treſpaſs; ſo that there was nothing recovered but the damages.

Bracton calls this, *appellum de plagiis mahemio*, and has a whole chapter of it.—In king John's time, there is recorded an *appeal* againſt a Jew, *qui fecit ementulari quendam nepotem ſuum.*

APPEAL *of wrong impriſonment* is uſed by Bracton for an action of wrong or falſe impriſonment.

APPEAL is more particularly uſed for a private accuſation of a murderer, by one who had intereſt in the murdered party; or of any felon by one of his accomplices in the fact.

If an appeal of murder or felony be uſed by any common perſon againſt a peer; he ſhall be tried by commoners, and not by his peers.

The perſon who brings an *appeal* is called the *appellant*; and the perſon appealed, the *appellee.*

APPEARANCE, the exterior ſurface of a thing; or that which firſt ſtrikes the ſenſe, or the imagination.

The academics maintain, that the ſenſible qualities of bodies are only *appearances*; and the like doctrine is held by ſome later philoſophers.

Our errors ariſe chiefly from a too haſty and precipitate aſſent of the will, which acquieſces too eaſily in the *appearances* of truth.

APPEARANCES, in phyſiology. See PHASMATA.

APPEARANCE, in perſpective, is the repreſentation or projection of a figure, body, or the like object, upon the perſpective plane.

The *appearance* of an objective right line is always a right line. See PERSPECTIVE.—The *appearance* of an opake body and a luminary being given, to find the *appearance* of the ſhadow; ſee SHADOW.

APPEARANCE *of a ſtar* or *planet.* See APPARITION.

APPEARANCES, in aſtronomy, *&c.* are more uſually called *phænomena* and *phaſes.*

In optics we uſe the term *direct appearance* for the view or ſight of an object by direct rays; without either refraction or reflexion.

To ſave APPEARANCES, is to diſcharge one's duty ſeemingly, or acquit himſelf of the formalities and externals thereof; ſo as to ſave his character, and avoid giving ſcandal or offence.

APPEARANCE, in law, is the defendant's engaging to anſwer a cauſe or action entered againſt him in ſome court of judicature.

Appearance, in the king's-bench, is the defendant's filing either of common or ſpecial bail, if the action be by bill.—If it be by original, the appearance muſt be with the philazer of the country where the arreſt was.

Appearance, in the common-pleas, muſt be entered with the philazer there; but if it be by bill, with the prothonotary.

APPELLATIVE *, or *Noun* APPELLATIVE, in grammar, a common name; or a name which belongs or is applicable to things of a certain kind.

* The word is formed of the Latin, *appellare*, to call, or name a thing.

Such are the names, *man*, *angel*, *horſe*, *plant*, *tree*, &c.

Appellatives ſtand oppoſed to *proper* names, which belong only to individuals; as Peter, Gabriel, Bucephalus, *&c.* See PROPER *Name.*

APPENAGE. See the article APANAGE.

APPENDANT, in law, is underſtood of ſuch things as by time of preſcription have belonged, appertained, and been joined, to ſome other principal thing.

Thus an hoſpital may be *appendant* to a manor; a common of fiſhing, to a freehold; a ſeat in a church, to a houſe; or the like.

Advowſon APPENDANT. } See the articles { ADVOWSON.
Common APPENDANT. } { AOMMON.

APPENDIX, or APPENDAGE, a thing acceſſory to, or dependent on another.

The term is chiefly uſed in matters of literature, for an additional diſcourſe, placed at the end of any piece, or writing; to explain or proſecute ſomething there left deficient, or to draw concluſions therefrom.—In which ſenſe the word coincides with *ſupplement.*

APPENDIK, in anatomy, is a part, in ſome meaſure, detached from another part, to which however it adheres, or is contiguous.

There are membranous *appendices*, of various figures, in moſt of the inner parts of the body.

The cœcum is by ſome writers called *appendix*, or *appendicula vermiformis.*

APPENDIX is more particularly uſed in the ſame ſenſe with *epiphyſis.*

APPENSA *, or APPENDED *Remedies*, ſuch as are outwardly applied, by hanging about the neck.

* The word comes from the Latin *ad*, and *pendo*, I hang to.

Such are divers amulets, necklaces, phylacteries, *&c.*

APPERTINANCES, or APPURTENANCES. See APPURTENANCES.

APPETITE *, APPETITUS, APPETENCY, in philoſophy, a deſire of enjoying ſomething wanted; or a complacency in the fruition of a thing preſent.

* The word comes from the Latin verb *appetere*, to deſire, to covet; formed of *ad*, to; and *peto*, I draw.

Some philoſophers define *appetite*, more generally, an inclination of the ſoul towards ſome object conſidered as good; or a propenſity to an object, in reſpect of the good that is apprehended in it.

The ſchoolmen diſtinguiſh *appetite* into *voluntary* and *natural.*—The firſt is the will itſelf, acting under a competent knowlege or information of the thing in hand: ſuch is the *appetite* or deſire of being happy.—The ſecond is a kind of inſtinct, whereby we are mechanically driven to conſult our own preſervation.

Natural *appetite* is ſubdivided into *concupiſcible* and *iraſcible.*

APPETITE, in medicine, is more particularly uſed to denote a natural periodical call or deſire to eat and drink, in order to repair what had been waſted by the ſeveral excretions of the body.

A loſs or proſtration of *appetite* is called *anorexia.* See ANOREXIA.—A prepoſterous *appetency* of things not proper for food is called *pica.* See PICA.

An immoderate appetite is called *bulimia*, or *fames canina*, See BULIMIA.—Some, however, diſtinguiſh between the βυλιμια, and canine *appetite*; making it the diſtinguiſhing character of the latter, that it is attended with a lientery, or other cœliacal flux.

APPLAUSE *, properly ſignifies an approbation of ſomething, witneſſed by clapping of hands.

* The word is formed of the Latin *applauſus*, or *plauſus*, of the verb *plaudere*, to clap the hands.

The antient way of *applauding* by clapping the hands is ſcarce retained any-where but in colleges and theatres—Such a tragedy was acted with great *applauſe*; ſuch a ſtudent maintained a theſis with *applauſe*, *&c.*

APPLES, *Poma.* See the articles FRUIT, CIDER, ORCHARD, *&c.*

Dwarf APPLES. See the article DWARF.

Adam's APPLE, *Pomum Adami.* See POMUM.

APPLE *of the Eye.* See the article PUPIL.

APPLICATE, APPLICATA, *Ordinate* APPLICATE, in geometry, is a right line drawn acroſs a curve, ſo as to biſect the diameter thereof.

Applicate is the ſame with what we otherwiſe call *ordinate.*

APPLICATION, the act of *applying* one thing to another, by approaching or bringing them nearer together. See APPLY.

Motion is defined by a ſucceſſive *application* of any thing to different parts of ſpace.

The *application* of a veſicatory to the neck, or other part, produces an irritation of the bladder.

The true and great ſecret in phyſic is, how to *apply* a medicine, not how to make it.

APPLICATION is alſo uſed for the adjuſting, accommodating, or making a thing quadrate to another.

Thus we ſay, the *application* of a fable, *&c.*

APPLICATION, in theology, is particularly uſed for the act whereby our Saviour transfers, or makes over, to us, what he had earned or purchaſed by his holy life, and death.

It is by this *application* of the merits of Chriſt, that we are to be juſtified, and intitled to grace and glory.

The ſacraments are the ordinary means, or inſtruments, whereby this *application* is effected.

APPLICATION is ſometimes alſo uſed in geometry, for what in arithmetic we call *diviſion.*

APPLICATION alſo ſignifies the fitting or applying of one quantity to another, whoſe areas, but not figures, are the ſame.

Thus Euclid ſhews how, on a right line given, to *apply* a parallelogram that ſhall be equal to a right-lined figure given.

APPLY, among mathematicians, ſometimes ſignifies to transfer a line given into a circle, moſt commonly, or into any other figure; ſo as its ends ſhall be in the perimeter of the figure.

APPLY denotes alſo as much as *divide*, eſpecially among Latin writers; who, as they ſay, *duc* AB *in* CB, draw AB into CB, when they would have AB multiplied by CB; or rather when they would have a right-angled parallelogram made of thoſe lines: ſo they ſay, *applica* AB *ad* CB, apply AB to CB, when they would have CB divided by AB; which is thus expreſſed, $\frac{CB}{AB}$.

APPLY alſo ſignifies to fit quantities, whoſe areas are equal, but figures different.

APPOINTEE, a foot-ſoldier, in the French army, &c. who for his long ſervice, and bravery, receives pay above private ſentinels. See ANSPESSADE.

APPOINTMENT, a penſion or ſalary given by great lords and princes to perſons of worth and parts, in order to retain them in their ſervice.

The term is chiefly uſed among the French.—The king of France gives large *appointments* to ſeveral of the officers in his ſervice.

Appointments differ from wages, in that the latter are fixed and ordinary, being paid by the ordinary treaſurers; whereas *appointments* are annual gratifications granted by brevet for a time uncertain, and are paid out of the privy purſe.

APPORTIONMENT, or APPORCIONMENT, APPORTIONAMENTUM, in law, a dividing of a rent into two or more parts, or portions, according as the land whence it iſſues is divided among two, or more proprietors.

Thus if a man, having a rent-ſervice iſſuing out of land, purchaſe a part of the land; the rent ſhall be *apportioned*, according to the value of the land.—So if a man let lands for years, reſerving rent, and a ſtranger after recover part of the lands, the rent ſhall be *apportioned*.

But a rent-charge cannot be *apportioned*, nor things that are intire; as if one hold land by ſervice, to pay to his lord yearly at ſuch a feaſt a horſe, or a roſe; there, if the lord purchaſe a part of the land, this ſervice is totally extinct; becauſe ſuch things cannot be divided without hurt to the whole.—But if part of the land, out of which a rent-charge iſſues, deſcends to the grantee of the rent, this ſhall be *apportioned*.—A man purchaſes part of the land where he hath common appendant, the common ſhall be *apportioned*: of common appurtenant it is otherwiſe; and if by the act of the party, the common is extinct. Common appendant and appurtenant may be *apportioned* on alienation of part of the land to which it is appendant or appurtenant.—Conditions generally are intire, and cannot be *apportioned* by the act of the party; a contract may not be divided or *apportioned*, ſo as to ſubject a man to two actions.

APPOSAL of *Sheriffs* is the charging them with money received on their account in the exchequer, 22 & 23 Car. II.

APPOSITION, the act of putting or applying one thing to another.

APPOSITION is uſed in phyſics, in ſpeaking of bodies which derive their growth from the adjunction or union of neighbouring bodies.

Moſt bodies of the foſſil or mineral kingdom are formed by juxta-poſitions, or the *appoſitions* of parts, brought to join and adhere to each other.

APPOSITION, in grammar, denotes the putting two or more ſubſtantives together in the ſame caſe, and without any copular conjunction between them.

Thus, Flanders, bloody theatre, horrible ſcene of war; love, enemy of human quiet; peace, parent of riches, ſource of faction, &c.

APPRAISING *, the act of rating, valuing, or ſetting a price on goods, by a perſon who is a competent judge, and is authorized thereto.

* The word is derived from the French *apprecier*, which ſignifies the ſame thing—Hence we alſo ſay an *appraiſer*, a ſworn *appraiſer*, and *appraiſement*, &c.

APPREHENSION *, in logic, denotes the attention of the mind to an object preſented either to our ſenſe, or our imagination.

* The word literally denotes the action of the hand, whereby it takes hold of, and graſps any thing; being formed of the Latin *ad*, to; and *prehendo*, I hold, I catch.

In this ſenſe, *apprehenſion* differs from *notion*, or *idea*, as the act of the mind, whereby a notion or idea is formed, differs from an act of the mind, whereby we attend to a notion or idea already formed.

APPREHENSION, in law, ſignifies the ſeizing a criminal, in order to bring him to juſtice.

APPRENDRE, in our antient law-books, a fee or profit to be taken or received.

APPRENTICE, one who is bound by covenant to ſerve a tradeſman or artificer a certain time; uſually ſeven years; upon condition of the maſter's inſtructing him in his art or myſtery.

Sir Thomas Smith ſays, that apprentices are a kind of bond-men, or ſlaves, differing from others only in this, that they are ſervants by covenant, and for a time, *de Rep. Anglor. Lib.* 3.

Antiently, benchers in the inns of court were called *apprentices of the law*, in Latin *apprenticii juris nobiliores*; as appears by Mr. Selden's note on Forteſcue: and ſo the learned Plowden ſtiles himſelf. See BENCHER.

Sir Henry Finch, in his *Nomotechnia*, writes himſelf *apprentice de ley*: Sir Edward Coke in his *Inſt.* ſays, *apprenticii legis*, in pleading, are called *homines conſiliarii*, & *in legi periti*; and in another place, *apprentices* and other counſellors of laws.

APPROACH. See ACCESS, and APPROXIMATION.

The *curve of equable Approach*, *Acceſſus æquabilis*, firſt propoſed by M. Leibnitz, has cauſed ſome ſweat among analyſts.—The buſineſs is to find a curve, wherein a body deſcending by the ſole power of gravity ſhall approach the horizon equally in equal times.—This curve has been found by Bernoulli, Varignon, Maupertuis, and others, to be the ſecond cubical parabola, ſo placed as that its point of regreſſion is uppermoſt. *Vid. Hiſt. Acad. R. Sciences, An.* 1699. *p.* 82. *Item. An.* 1730. *p.* 129. *Mem. p.* 333.

APPROACHES, in fortification, the ſeveral works made by the beſiegers for advancing or getting nearer to a fortreſs, or place beſieged.—See *Tab. Archit. fig.* 21.

Such are trenches, mines, ſaps, lodgments, batteries, galleries, epaulments, &c.

APPROACHES, or *Lines of* APPROACH, are particularly uſed for trenches dug in the ground, and their earth thrown up on the ſide next the place beſieged; under ſhelter or defence whereof the beſiegers may approach, without loſs, to the parapet of the covered way; and plant guns, &c. wherewith to cannonade the place.

The lines of *approach* are to be connected by parallels or lines of communication.

The beſieged frequently make *counter-approaches*, to interrupt and defeat the enemies *approaches*. See COUNTER-APPROACH.

APPROPRIARE *ad honorem*, in law, ſignifies to bring a manor within the extent and liberty of ſuch an honour. See HONOUR, and MANOR.

APPROPRIARE *Communam*, in law, ſignifies to diſcommon, *i. e.* to ſeparate and incloſe any parcel of land, which before was open common.

APPROPRIATE, APPROPRIATED, in philoſophy, is underſtood of ſomething which is indeed common to ſeveral; yet, in ſome reſpects, is peculiarly attributed to one.

Thus, creation is common to the Father, Son, and Holy Ghoſt; and yet is *appropriated* to the Father.

APPROPRIATE, in law, is underſtood of a church or benefice, the patronage whereof is annexed to ſome church-dignitary, who appoints a vicar to ſerve the cure; the patron receiving the chief produce of it.

There are computed to be in England 3845 churches *appropriate*, and *impropriate*.

APPROPRIATION, the act of *appropriating*, *i. e.* of applying a church-benefice, which of its own nature is *juris divini*, and no perſon's patrimony, to the proper and perpetual uſe of ſome religious community, to enjoy for ever.

Appropriation is where the advowſon of a parſonage is given or belongs to any biſhoprick, religious houſe, college, &c. and to their ſucceſſors; ſo that the houſe or body is both patron and parſon, and ſome one of the members officiates as vicar.

It is called *appropriation*, becauſe the profits of the living are appropriated to the uſe of the patrons; ſo that parſons, though they are not ordinarily accounted *domini uſufructuarii*, having no right of fee-ſimple; yet, by reaſon of the perpetuity of their ſucceſſion, are here reputed owners of the fee-ſimple, and are therefore called *proprietarii*.

To make an *appropriation*, after licence obtained of the king in chancery, the conſent of the dioceſan, patron, and incumbent, is neceſſary, if the church be full; if it be void, the dioceſan and the patron, upon the king's licence, may conclude it.

To diſſolve an *appropriation*, it is enough to preſent a clerk to the biſhop, and he to inſtitute and induct him: for, that once done, the benefice returns to its former nature. This is called *diſappropriation*.

APPROVEMENT, APPROVEAMENTUM, or APPROVIAMENTUM, is ſometimes uſed in antient writers for an improvement, or riſe of the value and worth of a thing. See VALUE.

Thus to *approve*, *approbare*, is to make the beſt benefit of a thing by increaſing the rent, *&c. Cum omnibus* approviamentis, *& aliis pertinentiis ſuis*, &c.

Hence, in ſome antient ſtatutes, bailiffs of lords in their franchiſes are called their *approvers*.

A bailiff is not to think it below him to approve, *approvare* his maſter's goods; but of his barley to make malt, of his wool to make cloth, *&c.*

APPROVEMENT is more particularly uſed where a man hath common in the lord's waſte, and the lord incloſeth part of the waſte for himſelf; leaving ſufficient common, with egreſs and regreſs, for the commoner.

APPROVER, in our laws, one who, confeſſing felony in himſelf, appealeth or impeacheth another or more of his accomplices.

He is alſo called from the French *approuver*, *comprobare*, becauſe he muſt prove what he hath alleged in his appeal.—This proof was antiently either by battle, or by the country, at the choice of the appellee.

APPROVERS of the king are thoſe who have the letting of the king's demeſnes in ſmall manors, *&c.* See DEMESNE.

APPROXIMATION, in arithmetic, a continual approach ſtill nearer and nearer to a root or quantity ſought, without a poſſibility of ever arriving at it exactly.

We have divers methods of *approximation* delivered by Wallis, Raphſon, Halley, Howard, *&c.* all of them being no other than ſeries's infinitely converging, or approaching ſtill nearer to the quantity required, according to the nature of the ſeries.

It is evident, that if a number propoſed be not a true ſquare, it is in vain to hope for a juſt quadratic root thereof, explicable by rational numbers, integers or fracted; whence, in ſuch caſes, we muſt content ourſelves with *approximations*, ſomewhat near the truth, without pretending to accuracy: and ſo for the cubic root, of what is not a perfect cube; and the like for ſuperior powers.

This the antients were aware of, and accordingly they had their methods of *approximation*; which, though ſcarce applied by them beyond the quadratic, or perhaps the cubic root, are yet equally practicable, by due adjuſtments, to the ſuperior powers alſo: as is ſhewn in the *Philoſoph. Tranſact.* N° 215.

If there be a non-quadratic or non-cubic number; the former being expreſſed by $aa+b$, and the latter by $aaa+b$, where aa and aaa are the greateſt ſquare and cube in the propoſed numbers; then $\sqrt{aa+b}=a+\frac{ab}{2aa+\frac{1}{2}b}$; and

$$\sqrt[3]{a^3+b}=a+\frac{ab}{3aaa+b}=\tfrac{1}{2}a+\sqrt{\tfrac{1}{4}aa+\frac{b}{3a}},$$

will be eaſy and expeditious *approximations* to the ſquare and cube root.

To extract the root of an equation by APPROXIMATION.—1°. For a quadratic equation—ſuppoſe the equation $x^2-5x-31=0$—; let the root be $8+y$, ſo that y may denote the fraction, whereby the aſſumed number either exceeds or comes ſhort of the root: then

$$\begin{array}{l} x^2=64+16y+y^2 \\ -5x=-40-5y \\ -31=-31 \\ \hline -7+11y+y^2=0 \end{array}$$

Since the powers of fractions are continually decreaſing; and we only here want a root nearly true; y^2 is caſt away: upon which,

$$\begin{array}{l} -7+11y=0 \\ \hline \end{array}$$

$$y=\tfrac{7}{11}=\tfrac{6}{10}\text{ nearly}=0.6$$

Wherefore $x=8+0.6=8.6$

Suppoſe $x=8.6+y$. Then

$$\begin{array}{l} x^2=\frac{7396}{100}+\frac{172}{10}y+y^2 \\ -5x=-{}^{430}-5y \\ -31=-31 \\ \hline \frac{7396}{100}-\frac{430}{10}-31+\frac{172}{10}y-5y=0 \end{array}$$

Which, being reduced to the ſame denomination, as here follows

$$\begin{array}{l} 73.96-4300-3100+(1720-500)y=0 \\ -0.04+122\ 0y=0 \\ \hline 12.20y=0.04 \\ \hline y=004:12.20=0.0032 \end{array}$$

Therefore $x=8.6000+0.0032=8.6032$

Suppoſe $x=8.6032\pm y$; then will

$$\begin{array}{l} x^2=7401505024+17.20640000y+y^2 \\ -5x=-43.01600000-500000000 \\ -31=-31.00000000 \\ \hline -0.000094976-12.20640000y-0 \\ \hline y-0.00009\ 4976:12.20640000 \\ \quad =0.0000077808. \end{array}$$

Therefore $x=8.6032000000+0.0000077808=8.603277808$.

Suppoſe, again, the root of a cubic equation $x^3+2x^2-23x-70=0$ be required by *approximation*; here let the root be $5+y$, ſince the terms are omitted wherein y^2 and y^3 are found; there is no neceſſity for expreſſing them in the transformation of the equation. Wherefore, we find

$$\begin{array}{l} x^3=125+75y\ldots \\ +2x^2=50+20y\ldots \\ -23x=115-23y \\ -70=-70 \\ \hline -10+72y=0 \\ \hline y=-\frac{10}{72}=0.1 \end{array}$$

Therefore $x=5+0.1=5.1$

Suppoſe $x=5.1+y$: Then will

$$\begin{array}{l} x^3=132.651+78.030y\ldots \\ +2x^2=52.020+20.400y \\ -23x=-117.300-23.000y \\ -70=-70.000 \\ \hline -2.629+75.430y=0 \\ 75.430y=2.629 \\ \hline y=2.629:75.430=0.0348 \end{array}$$

Wherefore $x=5.1+0.048=5.1348$.

And after the ſame manner might one proceed to infinity.

APPUI, in the manage, *q. d.* reſt or ſtay upon the hand; is the reciprocal effort between the horſe's mouth and the bridle-hand; or the ſenſe of the action of the bridle on the hand of the horſeman.

A juſt *appui* of the hand is the nice bearing up or ſtay of the bridle; ſo that the horſe, being awed by the ſenſibility and tenderneſs of his mouth, dares not reſt too much upon the bit-mouth, nor check or beat upon the hand to withſtand it.

A dull, obtuſe *appui*, is when a horſe has a good mouth, but his tongue is ſo thick, that the bit cannot work, or bear upon the bars; the tongue not being ſo ſenſible as the bars: though the like effect is ſometimes owing to the thickneſs of his lips. — A horſe is ſaid to have no *appui*, when he dreads the bit-mouth; is too apprehenſive of the hand, and cannot bear the bit. —He is ſaid to have too much *appui*, when he reſts or throws himſelf too much, or too hardily, upon the bit.—Horſes deſigned for the army, ought to have a full *appui* upon the hand.

APPULSE, in aſtronomy, the approach of any planet to a conjunction with the ſun, or a ſtar.

APPURTENANCES *, or APPERTINENCES, in common law, ſignify things belonging to ſome other as their principal.

* The word is formed of the Latin *ad*, to, and *pertinere*, to belong.

Appurtenances may either be things corporal, as hamlets belonging to a chief manor; or incorporeal, as liberties and ſervices of tenants. See APPENDANT.

APRICOT-*Water*. See the article WATER.

APRIL *, the fourth month of the year, according to the common computation; but the ſecond, according to that of the aſtronomers.

* The word is derived from the Latin *Aprilis*, of *aperio*, I open; becauſe the earth, in this month, begins to open her boſom for the production of vegetables.

In this month the ſun travels through the ſign Taurus.

A PRIORI *Demonſtration*. See DEMONSTRATION.

APRON *, in gunnery, a piece of lead, which caps or covers the vent or touch-hole of a great gun.

APSIS *, or ABSIS, in eccleſiaſtical writers, denotes an inner part in the antient churches, wherein the clergy ſat, and where the altar was placed.

* It is ſuppoſed to have been thus called, becauſe covered with an arch or vault of its own, by the Greeks called Αψις, and by the Latins *abſis*. Iſidore with leſs probability imagines it ſo called as being the moſt luminous part; from the Greek word ἅπτειν, to give light.

Apſis, in this ſenſe, amounts to the ſame with what is otherwiſe called *choir*, *concha*, *camera*, and *preſbyterium*; and ſtands oppoſed to the *nave*, or body of the church.

The antient *apſis* was of a hemiſpherical figure, and conſiſted of two parts; the choir and the ſanctuary.—The former had ſeats or ſtalls placed around it, wherein the eccleſiaſtics were diſpoſed. In the middle or fartheſt part, was the biſhop's throne. The ſanctuary was at the oppoſite end, next the *nave*, from which it was ſeparated by a grate. See SANCTUARY.

In the middle of this was the altar erected on a pulpitum; and over the altar was the cibory, or cup, ſerving as a cover or canopy to it. *Vid. Cordemoy in Mem. de Trev. Juil. an.* 1710. *p.* 1268. *ſeq.*

Several ceremonies were only to be performed before, or in the face of the *apſis*, as, impoſing hands; hair-ſhirts, *&c.* on penitents guilty of public offences. Frequent mention is alſo made of the *ſaints in the apſis*; the bodies of holy biſhops, and others, being tranſlated with great ceremony to this part of the church. *Syn.* 32. *Carth. can.* 32. *Spelm. in voc.*

Apsis is more particularly uſed for the biſhop's ſeat, or throne, in antient churches.

It ſeems to have been thus called, becauſe ſituate in the *apſis* of the church, though ſome imagine it to have been primarily ſo named, and to have given the denomination of *apſis* to the part of the church where it ſtood. *Cordem. ubi ſupra.*

This was more peculiarly called *apſis gradata*, becauſe raiſed on ſteps above the ordinary ſtalls.—It was alſo denominated *Exedra*, and of latter times *Tribune*.

Apsis is alſo uſed for a reliquary, or caſe, wherein the relics of ſaints were antiently kept.

It took the name *apſis*, from its being round, or arched at the top; or perhaps from the place where it was kept.

The *apſis* was commonly placed on the altar: it was uſually of wood, ſometimes alſo of gold and ſilver, with ſculptures, *&c. Vid. Spelm. & du Cang. Gloſſ. in voc.*

Apsis, in aſtronomy, is applied to two points in the orbits of planets, wherein they are at the greateſt, and the leaſt, diſtance from the ſun, or earth.

The *apſis* at greateſt diſtance is called the *higher* or *ſumma apſis*; that at leaſt diſtance, the *lower*, *ima apſis*, or *infima*.

The two *apſides* are alſo called *auges*.

The higher *apſis* is more particularly denominated the *aphelion*, or *apogee*; the lower, the *perihelion*, or *perigee*.

The diameter which joins theſe two points is called the *line of the apſides*, and this paſſes through the centre of the orbit of the planet, and the centre of the earth. In the modern aſtronomy this line makes the longer axis of the elliptical orbit.—Such is the line A P (*Tab. aſtron. fig.*) drawn from the aphelion A to the perihelion P.

The eccentricity is reckoned in the line of the *apſides*; being the diſtance between the centre of the orbit of the planet, C, and the centre of the ſun or earth, S, according as the Copernican, or the Ptolemaic ſyſtem is followed. For the motion of the line of the *apſides*, ſee Apogee.

The motion of a planet from one *apſis* to another, *e. gr.* of the moon, from apogee to perigee, and back again from perigee to apogee, are conſidered by mechanical philoſophers as oſcillations, and accounted for from the laws of the pendulum: conſequently, they muſt one day ceaſe, when the equilibrium is reſtored. *Vid. Horreb. Clav. Aſtronom. c.* 20.

Others apprehend ſomething immechanical in the motion; and propoſe, as inſoluble queſtions, How the equilibrium was firſt deſtroyed; why not reſtored again; and whence the breach is continually renewed? *Vid. Mem. de Trev. Avril* 1730. *p.* 709. *ſeq.*—But theſe are perſons unacquainted with the ſecrets of the Newtonian philoſophy. *Vid. Newt. Prin. l.* 1. *ſeq.* 9. *Herman. Phoron. l.* 1. *c.* 4. See alſo Gravitation, Planet, Orbit, Distance, and Period.

AP-THANES, an antient term for the higher nobility in Scotland. See Thane.

APTITUDE, the natural diſpoſition any thing hath to ſerve for ſuch or ſuch a purpoſe.—Thus, oil hath an *aptitude* to burn, and water to extinguiſh fire.

APTOTE *, Απτωτον, in grammar, a noun indeclinable, or which is without any variation of caſe.

> * The word is derived from the Greek privative *α*, and πτωσις, *caſus*.

Such are the words, *fas*, *nefas*, &c.

APUS, in aſtronomy, the bird of paradiſe; one of the conſtellations of the ſouthern hemiſphere, not viſible in our latitude.

APYREXY *, Απυρεξια, in medicine, the intermiſſion of a fever, or ague.

> * The word is formed of the privative particle *α*, and πυρ, *ignis*, fire, or heat; or πυρεττω, *febricito*, to be feveriſh.

AQUA *, in natural hiſtory, phyſics, chemiſtry, medicine, *&c.* See Water.

> * The word is pure Latin, and ſuppoſed to be compounded of *a* and *qua*, q. d. from which; alluding to the opinion that water is the baſis, or matter, of all bodies.

Aqua *fortis* is a corroſive liquor prepared from nitre, and vitriol; and ſerving as a menſtruum wherewith to diſſolve ſilver, and all other metals, except gold.

Aqua *fortis* is made by diſtilling purified nitre with calcined vitriol, or rectified oil of vitriol, in a ſtrong heat: the liquor, which riſes in blood-red fumes, being collected, is the *aqua fortis*.

In preparing compound *aqua fortis*, ſome mix either ſand or clay, or aſhes, with the calcined vitriol and nitre, in order to hinder their melting too readily; and thus prevent the too haſty evaporation: when the fuſion is thus prevented, the parts of the ſalts receive more violent impreſſions from the fire, and are better converted into a volatile ſpirit, which is the *aqua fortis*.

If to the ſpirit of nitre, *&c.* thus diſtilled, ſea-ſalt, or ſal-armoniac, be added, it commences *aqua regia*; and will no longer diſſolve ſilver, but will now diſſolve gold.

Hence, to try whether or no *aqua fortis* be pure; put a grain of a ſolution of ſilver in *aqua fortis*, into a like quantity of the water in queſtion; and, if the ſolution remains without either the water's turning milky, or the ſilver precipitating, the *aqua fortis* is pure.

Aqua fortis is commonly held to have been invented about the year 1300. though others will have it to have been known in the time of Moſes.—It is a liquor of various and extenſive uſe.—It is very ſerviceable to refiners for parting or ſeparating ſilver from gold.—To the workers in moſaic, for ſtaining and colouring their woods. See Marquetry.—To dyers, in their colours, and particularly in ſcarlet.—To other artiſts, for the colour of bone and ivory; which is done by ſteeping the matter therein, after firſt tinging it with copper and verdegriſe, *&c.* See Dying.

Some alſo convert *aqua fortis* into *aqua regia*, by diſſolving in it a fourth of its weight of ſal-armoniac, and then ſtain therewith ivory-hafts, and bones, of a fine purple colour.—There are, alſo, bookbinders, who throw it on leather, and thereby make fine marble-covers for books.—And there are diamond-cutters, who uſe it to ſeparate diamonds from metalline powders.—It is, farther, of ſervice in etching copper, or braſs plates. See Etching.—Laſtly, Mr. Boyle aſſures us, he has cauſed canes to be ſtained like tortoiſe-ſhell, by a mixture hereof with oil of vitriol, laid on them at ſeveral times, over live coals, to cauſe it to penetrate the deeper; and, afterwards, giving them a gloſs, with a little ſoft wax, and a dry cloth. See Supplement, article Aqua Fortis.

Aqua *Marina*, **Aque** *Marine*, in natural hiſtory, a gem, or precious ſtone, of a ſea-green colour; whence its name.

It is of about the ſame hardneſs with the amethyſt.

Some of the critics contend for its being the ſixth ſtone in the rationale of the Jewiſh high-prieſt; called in the Hebrew, *tharſis*; and rendered in Latin by *beryllus*, *thalaſſius*, &c. Jonathan and Onkelos call this, in the Chaldee, כרום ימא, *cherum jamma*: though the Seventy, St. Jerom, Aquila, Pagninus, the tranſlators of Geneva, and Schindler, render it *chryſolithus*.—Others will have this ſtone a *turquoiſe*: and Leo de Juda, and Hutterus, tranſlate it *hyacinthus*.

Several of the lapidaries take it, however, to be the *beryl*; which coincides with the firſt opinion; the *beryl* being only another name for the *aqua marina*.—Pliny repreſents this as related to the *ſmaragdus*, but of a colour leſs briſk, and imitating a pure ſea-water green. See Supplement, article Beryl.

Aqua *omnium florum*, in pharmacy, ſignifies the diſtilled water of cows-dung, when they are at graſs.—Some alſo call cows-urine by this name.—And, in Engliſh, *all-flower water*.

Aqua *Regia*, or **Aqua** *regalis*, an acid, corroſive ſpirit, or water, ſerving as a menſtruum to diſſolve gold.

It is thus called, becauſe it diſſolves gold, which is vulgarly eſteemed the king of metals.—It is ſometimes alſo called *aqua chryſulca*, and *ſtygia*.—The baſis, or eſſential ingredient of *aqua regia*, is common, or ſea-ſalt; which is the only ſalt in nature that will operate on gold.

There are divers ways of preparing it; for, in effect, the ſalt will not fail of its end, in what form ſoever applied.—The common way is by mixing common ſalt, or ſal-armoniac, or the ſpirit thereof, with ſpirit of nitre; or with common aqua fortis, which is made of nitre and vitriol.

Aqua *ſecunda*. See the article Secunda.

Aqua *vitæ* is commonly underſtood of what we otherwiſe call *brandy*, or the diſtilled *ſpirit of wine*, either ſimple, or prepared with aromatics, differently, according to the different intentions.

Some, however, diſtinguiſh between them; appropriating the term *brandy* to what is procured from wine, or the grape; and *aqua vitæ* to that drawn after the ſame manner from malt, *&c.*

Aqua *& igni interdictio*. See Interdiction.

AQUÆDUCT, **Aquæductus**, *q. d. ductus aquæ, a conduit of water*, is a conſtruction of ſtone or timber, built on an uneven ground, to preſerve the level of water, and convey it, by a canal, from one place to another.—There are *aquæducts* under ground, and others raiſed above it, ſupported by arches.—The Romans were very magnificent in their *aquæducts*; they had ſome that extended an hundred miles. Frontinus, a man of conſular dignity, and who had the direction of the *aquæducts* under the emperor Nerva, tells us of nine that emptied themſelves through 13,594 pipes, of an inch diameter. Vigenere has obſerved, that, in the ſpace of twenty-four hours, Rome received from theſe *aquæducts* no leſs than five hundred thouſand hogſheads of water.—The *aquæduct*, built by Lewis XIV. near Maintenon, for carrying the river Bure to Verſailles, is perhaps the greateſt in the world. It is 7000 fathoms long; and its elevation 2560 fathom; containing 242 arcades. V. *Philoſ. Tranſ. ap. Lowth.* 1. *p.* 594.

AQUÆDUCT, AQUÆDUCTUS, in anatomy, denotes a bony kind of canal, or paſſage, in the os petroſum, ſuppoſed to contribute to the purpoſes of hearing.—It is called *aquæduct* not only on account of its form, but, as ſome alſo imagine, from its ſerving to diſcharge any foreign matters collected in the inner cavities of the ear.—It is ſometimes alſo called, *aquæductus Fallopii*, from the name of its firſt diſcoverer. — Several authors confound it with the *tuba Euſtachiana*.

The *aquæductus Fallopii* is ſometimes alſo called *meatus cæcus*, by others *meatus cochlearis*, and *meatus capreolaris*, by others *canalis particularis*, *meatus auditorius internus*, and *foramen auditorium internum*.

AQUARIANS, AQUARII, a kind of heretics in the third century, who, inſtead of wine, uſed nothing but water in the ſacrament.

It is ſaid the occaſion of the abuſe was owing to the perſecution which prevailed in thoſe times: for the Chriſtians, being then obliged to celebrate the ſacrament in the night, found it neceſſary to make uſe of water, leſt the ſmell of the wine ſhould betray them to the heathens. But they afterwards went further, and actually forbid the uſe of wine in the euchariſt, even when it might be uſed with ſafety.

Epiphanius tells us, the *Aquarians* were the followers of Tatian; and were ſo called from the word *aqua*, water, becauſe they abſtained wholly from wine, and did not uſe it even in the euchariſt.

AQUARIUS, in aſtronomy, the eleventh ſign in the zodiac, reckoning from Aries; from which alſo the eleventh part of the ecliptic takes its name. See SIGN, and CONSTELLATION. The ſun moves through *Aquarius* in the month of January; it is marked thus, ♒.

The poets feign, that *Aquarius* was Ganymede, whom Jupiter raviſhed under the ſhape of an eagle, and carried away into heaven, to ſerve as cup-bearer, in the room of Hebe and Vulcan; whence the name.—Others hold, that the ſign was thus called, becauſe, when it appears in the horizon, the weather uſually proves rainy.

The ſtars in the conſtellation *Aquarius*, in Ptolemy's catalogue, are 45; in Tycho's 40; in the Britannic catalogue 99: the longitudes, latitudes, magnitudes, &c. whereof, according to the former, are given by Hevelius: according to the laſt, they are as follows.

Names and ſituations of the ſtars.	Signs.	Longitud.	Latitude.	Magn.	
		° ′ ″	° ′ ″		
Preced. in the handkerchief againſt the hand.	♒	7 24 06	8 06 41N.	5	
		8 38 46	12 24 42N.	5	
		9 22 28	11 34 51N.	7	
		9 35 02	11 38 47N.	6	
Subſeq. in handkerchief.		8 44 13	8 16 10N.	4	5
5.					
		9 32 57	7 17 53N.	6	
		9 19 25	5 51 49N.	6	7
		9 28 11	3 19 30N.	6	
		11 37 44	11 05 06N.	6	
		11 51 38	11 49 00N.	6	
10.					
		16 00 11	23 02 35N.	6	
		12 23 51	10 30 11N.	6	
In the preced. hand.		12 04 13	4 47 48N.	5	
		14 18 30	6 21 43N.	6	
		16 12 10	10 41 41N.	6	
15.					
		16 53 23	10 25 12N.	6	
		15 50 35	5 45 41N.	7	
		15 01 16	2 17 03N.	6	
		16 14 35	5 11 33N.	6	
		18 10 20	11 14 10N.	6	
20.					
		18 13 15	11 03 19N.	6	
In the preced. ſhoulder.		19 04 23	8 38 43N.	3	
Under the ſhoulder as in the armpit.		19 47 16	5 59 14N.	5	
		22 50 57	13 12 28N.	6	
In the head.		23 38 27	15 21 47N.	6	
25.					
		23 56 30	14 13 55N.	6	
		25 39 39	15 07 14N.	6	
		28 15 21	11 58 21N.	6	
		22 24 57	4 37 29S.	6	
		26 16 22	5 04 48N.	6	
30.					
Low. in the hind ſhoulder.		27 47 19	9 10 58N.	5	
		28 35 40	10 13 14N.	6	
South in the fore hip.		24 24 01	2 03 15S.	4	
Right one in the hind ſhoulder.		29 02 16	10 40 38N.	3	
		23 19 59	6 37 49S.	6	5

Names and ſituations of the ſtars.	Signs.	Longitud.	Latitude.	Magn.	
		° ′ ″	° ′ ″		
		25 07 12	1 42 12S.	8	
		27 04 33	2 59 48N.	6	
North in the preced. hip.		26 09 58	0 15 37S.	6	
		25 38 49	2 52 39S.	6	
		23 34 18	9 27 48S.	6	
40.					
		27 07 35	1 59 02S.	7	
Preced. of two in the poſter. ſide.		28 55 44	2 43 47N.	4	
		29 51 55	4 56 30N.	6	
Subſeq. of the ſame.		29 42 07	2 23 30N.	5	6
		24 59 38	10 33 45S.	5	
45.					
That in the hind arm.	♓	2 23 11	8 14 49N.	3	
	♒	24 11 54	13 39 11S.	5	
		28 36 33	3 18 33S.	6	
	♓	1 41 48	4 49 11N.	6	
North of three in the hind. hand.		4 16 51	10 29 08N.	5	
50.					
That upon the hips.	♒	27 53 23	6 28 36S.	6	
Preced. of the reſt in the hand.	♓	4 34 31	8 51 36N.	4	
	♒	29 32 41	4 48 31S.	6	
That in the hind buttock.	♓	1 03 54	1 12 33S.	5	
		1 13 00	1 30 40S.	6	
55.					
South of two in the fore leg.	♒	28 12 22	10 51 40S.	5	
	♓	5 13 36	6 55 47N.	6	
	♒	29 43 32	7 58 37S.	6	
Subſeq. of 3 in the hand.	♓	6 04 53	8 09 42N.	4	
Preced. in the pouring out of water.		5 06 13	4 07 47N.	5	
60.					
North in the fore leg.		0 54 55	9 56 24S.	6	
		5 19 55	1 04 29N.	6	
Following that to the ſouthward.		1 29 54	11 00 40S.	6	
Lower of the northern ones in the hind leg.		3 39 28	5 54 42S.	5	
		5 10 52	2 44 36S.	7	
65.					
Upper of north in the hind. leg.		4 16 52	5 38 42S.	6	
South and ſubſeq. in the pouring out of the water.		7 14 41	0 23 00S.	4	
		5 54 23	4 11 08S.	6	
South in the hind leg.—*Scheat*.		4 33 49	8 11 17S.	3	
		4 25 11	8 36 04S.	6	
70.					
		7 50 34	0 12 44S.	6	
Laſt in the water.—*Fomalhaut*.	♒	29 28 39	21 04 54S.	1	
Firſt of the contig. in the flexure of the water.	♓	10 04 10	1 40 14S.	6	
Second.		10 04 59	1 44 15S.	7	
3d, and fourth of the contig.		10 08 41	1 57 45S.	6	
75.					
Preced. in the laſt flexure.		3 59 44	16 34 34S.	5	
North.		5 40 53	14 29 07S.	4	
Subſeq. and ſouth of three.		5 14 53	15 41 55S.	5	6
In the ſecond flexure of the water.		12 48 57	1 01 25S.	5	
North of three contig. in the water.		11 57 28	3 58 03S.	5	
80.					
Firſt behind the ſecond flexure.		12 43 56	2 49 51S.	6	
Middle of three.		12 24 17	4 15 45S.	5	
Single one more ſouth than thoſe.		10 57 45	8 18 02S.	5	
South of the contig.		12 28 16	4 45 39S.	5	
		11 08 02	10 07 57S.	6	
85.					
North of the three following in the laſt flexure.		9 08 43	14 46 26S.	5	
Middle of the three following in the laſt flexure.		9 35 12	15 34 16S.	5	
		10 30 55	16 45 48S.	6	
South of thoſe three.		11 04 19	16 30 21S.	5	
Over the laſt flexure but one.		15 20 12	11 02 03S.	5	
90.					
		14 09 42	14 40 56S.	6	
Preced. that.		14 17 06	14 31 10S.	5	
Follow. it.		15 52 17	11 36 22S.	5	
Middle, in the ſame flexure.		14 38 18	15 10 26S.	5	
Contiguous to that.		14 51 24	15 43 02S.	6	
95.					
Subſeq. in the laſt flexure but one.		15 58 18	13 26 59S.	5	
Middle of informes behind the laſt flexure.		19 26 16	16 14 06S.	5	
North of informes behind the laſt flexure.		21 57 12	15 16 03S.	5	
South of informes behind the laſt flexure.	♓	21 12 12	18 45 54S.	5	

AQUATIC, ſomething which lives, breeds, or grows, in or about the water.

Thus we have *aquatic* plants, and *aquatic* animals.

Trees which grow peculiarly on the banks of rivers, or in marſhes, &c. are alſo called *aquatics*.

The antient Romans had alſo their *aquatic*, or *aquatile* gods, *dii aquatiles*; called by Catullus, *dii littorales*: concerning whom we have an inſcription in Reineſius, NEPTVNO ET DIS AQVITILIBVS. *Cl. n.* 9. *Struv. Synt. Antiq. Rom. c.* 1. *p.* 165.

To this claſs belonged the Tritons, the miniſters of Neptune.

AQUATIC *Road*. See the article ROAD.

AQUEDUCT. See AQUÆDUCT.

AQUEOUS, AQUOSUS, ſomething that partakes of the nature of water, or abounds therein. See WATER.

Thus milk is ſaid to conſiſt of an *aqueous* or ſerous, and a butyrous part.

The chemiſts ſeparate the *aqueous* part or phlegm from all bodies by diſtillation.

Aqueous *Bath*. See the article BATH.

Aqueous *Ducts*. See the article AQUOSE.

Aqueous *Humour*, is the firſt or outermoſt of the three humours of the eye.

It lies immediately above the tunica aranea, and ciliary ligament, and under the cornea, which it cauſes to protuberate a little; and is ſuppoſed to be furniſhed by certain ducts provided for the purpoſe.—It is found ſo ſpirituous, that it will not freeze in the ſevereſt froſt.

Anatomiſts are divided about the origin and conveyance of this humour.—It is certain, the ſource muſt be pretty plentiful, inaſmuch as, if by any accident the coats it is contained in be wounded, ſo that the humour runs out, and the cornea falls, or collapſes, the wound readily heals, by only cloſing the eye, and the humour recruits: of which we have numerous inſtances among phyſicians.

Dr. Nuck thinks he has diſcovered the ducts whereby this humour is furniſhed.

Others, denying the reality of thoſe ducts, ſuppoſe it immediately derived from the arteries. Dr. Drake admits the ducts, and takes them to be only branches of the excretory ducts of the glandula innominata, and lachrymalis; which, piercing the tunics of the eye, deliver their liquor by ways hitherto unknown.

AQUILA, in natural hiſtory, *&c.* See EAGLE.

Aquila, in aſtronomy, a conſtellation of the northern hemiſphere; uſually joined with Antinous.

The ſtars in the conſtellation *Aquila* and Antinous, in Ptolemy's catalogue, are 15; in Tycho's, 17; in the Britannic catalogue, 70: the longitudes, latitudes, magnitudes, *&c.* whereof, according to the two firſt, are given by Hevelius; according to the laſt, they are as follow.

Names and ſituations of the ſtars.	Signs.	Longitud.			Latitude North.			Magn.
		°	′	″	°	′	″	
Preced. of three inform. towards Sagittary.	♑	4	40	57	14	59	07	4
South.		6	26	14	14	02	30	5
Subſeq.		6	48	32	14	46	57	5
		8	03	00	25	03	26	5
		8	14	05	22	00	29	6
5.								
Preced. of three inform. before Antinous's foot.		8	04	40	18	13	27	4
North of two inform. over the eagle's tail.		10	26	31	43	27	53	4
South		10	31	39	41	02	20	4
		9	14	07	19	37	16	6
		9	17	24	19	33	22	6
10.								
Mid. of three before Antinous's foot.		10	30	35	16	54	11	5 4
		13	30	29	36	28	51	6
		13	33	55	36	11	45	6 5
Subſeq. of the ſame.		11	44	42	16	53	33	4
Preced. in the eagle's tail.		13	56	58	37	36	43	3 4
15.								
Preced. in Antinous's heel.		12	17	25	18	52	40	6
Subſeq.		12	46	59	18	29	26	6
Bright one in Antinous's foot.		13	02	15	17	37	36	3
Subſeq. in the eagle's tail.		15	28	34	36	13	48	3
		15	27	48	33	24	32	6
20.								
		15	14	46	28	23	48	6
		14	16	37	14	22	17	5 6
		15	58	34	24	28	45	5
		17	08	30	26	54	11	6
		17	05	48	23	06	48	7
25.								
		17	03	34	22	21	55	7
Preced. of 3 in the root of the tail.		18	42	18	33	31	53	6
In Antinous's thigh.		16	36	51	16	36	09	6
South in Antinous's leading ſide.		17	20	05	21	04	44	6
Middle and North in the root of the tail.		19	23	33	34	13	27	6
30.								
North in the preceding wing.		19	17	21	24	50	54	3 4
Laſt of three in the root of the tail.		20	45	44	33	32	22	6
North in Antinous's leading ſide.		19	06	40	22	04	17	5
South in the preced. wing.		20	03	35	23	34	00	6
In Antinous's belly.		19	39	55	18	49	10	6
35.								
That below Antinous's knee.		19	29	24	10	58	21	6
North in the preced. ſhoulder.		22	27	58	28	42	30	4
Againſt Antinous's hind knee.		20	31	47	14	23	03	3 4
		21	10	48	18	25	21	6
In the hind ſide of Antinous.		21	30	47	20	02	59	3 4
40.								
		21	09	46	16	42	00	6
South in the preceding ſhoulder.		23	28	56	26	30	44	5
		22	41	20	20	31	04	6
		25	52	03	33	02	08	6
South in the beginning of the hind wing.		25	52	20	32	39	24	6
45.								
North.		26	48	33	34	00	06	6
That immediately preced. the Lucida.		25	44	15	28	22	04	6
Preced. of two in the hind ſhoulder.		26	37	01	31	16	52	3
		23	18	26	10	05	20	5
Subſeq. of the ſame.		27	36	29	32	19	49	6
50.								
Between the ſhoulders, called Lucida Aquila.		27	23	24	29	19	11	1 2
That over the Lucida.		27	53	01	30	51	20	6 5
In Antinous's hind ſhoulder.		26	06	54	21	33	23	3 4
		24	33	02	12	05	11	5
		24	44	54	12	24	10	6
55.								
		26	32	00	20	43	43	6
Subſeq. below the Lucida.		28	17	56	28	46	12	5
In the eagle's neck.		28	06	44	26	44	20	3
In the verge of the wing behind the ſhoulder.		29	36	57	31	32	17	6
		28	50	17	19	16	01	7
60.								
In the middle of the head.	♒	0	42	27	27	03	16	6
	♑	29	46	36	19	05	30	7
In Antinous's hind hand.	♒	0	35	30	18	45	35	3
		1	02	33	18	28	07	5 6
Laſt of the hind wing.		5	47	33	34	06	12	5
65.								
	♒	4	17	48	15	16	50	7
		4	43	44	15	39	39	5
		6	35	13	15	31	49	5
		7	24	03	16	48	56	4
	♒	8	06	58	18	16	36	6
70.								

AQUILINE, Aquilinus, ſomething belonging to an eagle. Hence, *aquiline* noſe denotes a hooked noſe, or ſuch as is like the beak of an eagle; called alſo a hawk's noſe.

AQUILO, is uſed by Vitruvius for the north-eaſt wind; or that which blows at 45° from the north towards the eaſt point of the horizon. See WIND, NORTH, and POINT.

The poets gave the name *aquilo* to all ſtormy winds dreaded by the mariners.

AQUOSE *Ducts*, *Ductus* Aquosi *Nuckii*, are certain ducts in the ſclerotica, diſcovered by Dr. Nuck, whereby the aqueous humour of the eye is ſuppoſed to be conveyed into the inſide of the membranes which incloſe that liquor. But the diſcovery is not univerſally allowed. See AQUEOUS *Humour*.

ARA, the altar, in aſtronomy, a ſouthern conſtellation; conſiſting of eight ſtars. See ALTAR.

ARAB, Arabian. See ARABIC.

The **Arab**, or **Arabian** *horſe*, is ſaid to be nurſed with camel's milk: there are many ſtrange reports of this beaſt. The duke of Newcaſtle aſſures us, that the ordinary price of one is 1000, 2000, or 3000 pounds; and that the *Arabs* are as diligent in keeping the genealogies of their horſes, as princes of their families. They ſtrike medals on every occaſion to keep up the pedigree. The fortune the Arabians give their ſons, when arrived at manhood, is, two ſuits of arms, with two ſcimiters, and a horſe; which always lies in the next room to them.—Yet ſuch of the breed as have been brought into England never proved very extraordinary.

Arabian *Year*. See *Arabian* YEAR.

ARABESQUE, or Arabesk, ſomething done after the manner of the Arabians.

Arabeſque, *Groteſque*, and *Moreſque*, are terms applied to ſuch paintings, ornaments of freezes, *&c.* wherein there are no human or animal figures, but which conſiſt wholly of imaginary foliages, plants, ſtalks, *&c.* See GROTESQUE.

The words take their riſe from hence, that the Moors, Arabs, and other Mahometans, uſe theſe kinds of ornaments; their religion forbidding them to make any images or figures of men, or other animals.

ARABIC, Arabicus, ſomething that relates to Arabia, or the Arabs. See ARAB.

Arabic, or **Arabic** *Tongue*, is a branch or dialect of the Hebrew.

Father Angelo de St. Joſeph ſpeaks much of the beauty and copiouſneſs of the *Arabic*. He aſſures us it has no leſs than a thouſand names for a ſword; five hundred for a lion; two hundred for a ſerpent; and eighty for honey.

Arabic *Figures*, or *Characters*, are the numeral characters commonly made uſe of in arithmetical computations.

The *Arabic* characters ſtand contradiſtinguiſhed to the Roman.

The learned are generally of opinion, that the *Arabic* figures were firſt taught us by the Saracens, who borrowed them from the Indians.—Scaliger was ſo ſatisfied of their novelty, that he immediately pronounced a ſilver medallion he was conſulted about, modern; upon his being told of the numeral figures 234, 235, being on it. The common opinion is, that Planudes, who lived towards the cloſe of the thirteenth century, was the firſt Chriſtian who made uſe of them. Father Mabillon even aſſures us, in his work *de Re Diplomatica*, that he has not found them any-where earlier than the fourteenth century.

Yet Dr. Wallis inſiſts on their being of a much older ſtanding; and concludes they muſt have been uſed in England, at leaſt as long ago as the time of Hermannus Contractus, who lived about the year 1050. if not in ordinary affairs, yet at leaſt in mathematical ones, and particularly in the aſtronomical tables. *V. Wall. Algebr. c.* 4.

The ſame author gives us an inſtance of their antiquity in England, from a mantle-tree of a chimney, in the parſonage-houſe of Helmdon in Northamptonſhire, wherein is the following inſcription in baſſo relievo, M° 133, being the date of the year 1133. Philoſ. Tranſact. N° 154.

Mr. Luffkin furniſhes a yet earlier inſtance of their uſe, in the window of a houſe, part of which is a Roman wall, near the market-place in Colcheſter; where, between two carved lions, ſtands an eſcutcheon, containing the figures 1090. Philoſ. Tranſact. N° 255.

Mr. Huet is even of opinion, that theſe characters were not borrowed from the Arabs, but from the Greeks; and that they were originally no other than the Greek letters, which we all know that people made uſe of to expreſs their numbers by. See NUMBER.

Gum ARABIC is the name of a gum which diſtils from a ſpecies of acacia, growing in Egypt and Arabia, called by botaniſts *acacia vera*.

It is very common among us, but little is to be met with which is genuine; it is frequently adulterated with our common cherry and plum-tree gums.—That is accounted beſt which is in the ſmalleſt pieces, and almoſt of a white colour.

It diſſolves eaſily in any aqueous liquor, and is good in all kinds of fluxes; particularly in catarrhs; as it thickens and ſoftens the too acrimonious humours.

ARABICI, a kind of heretics, who ſprung up in Arabia, about the year 207. whoſe diſtinguiſhing tenet was, that the ſoul died with the body, and alſo roſe again with it.

Euſebius, *lib.* vi. *c.* 38. relates that a council was called to ſtop the progreſs of this riſing ſect; and that Origen aſſiſted at it; and convinced them ſo thoroughly of their error, that they abjured it.

ARABICUS *Coſtus*. See the article COSTUS.

ARABISM, ARABISMUS, an idiom, or manner of ſpeaking peculiar to the Arabs, or the Arabic language.

R. Martin maintains, that the ו ſometimes expreſſes an oath, in the Hebrew as well as the Arabic: Abenezra, a perfect maſter of the Arabic, and who makes great uſe thereof to explain the Hebrew, does not reject the ſentiment, nor yet much approve it: he contents himſelf barely to rehearſe it, which, for ſo zealous a partizan of *Arabiſms*, is enough to ſhew, that he had no great opinion of it.—Father Souciet.

ARABLE *Land*, antiently called ARALIA, is ſuch as is fit for tillage, or plowing; or which is actually plowed up from time to time.

It is thus called from the Latin *arare*, of *aratrum*, a plough. See PLOUGHING.

ARABUM *Lepra*. } See the article { LEPRA.
ARABUM *Sandaracha*. } { SANDARACHA.

ARAC, or ARRAC, a ſpirituous liquor, imported from the Eaſt-Indies; chiefly uſed by way of dram, and in punch.

The nature and compoſition of this celebrated liquor has been much controverted.—The name *arac*, Mr. Lockyer aſſures us, is an Indian word for ſtrong waters of all kinds; for that they call our ſpirits and brandy, *Engliſh arac*.—But, what we underſtand by the name *arac*, is really no other than a ſpirit procured by diſtillation, from a vegetable juice called *toddy*, which flows by inciſion out of the cocoa-nut tree, and ſome other trees, like the birch-juice procured among us.

The *toddy*, Mr. Lockyer adds, is a pleaſant drink of itſelf, when new, but purges thoſe not uſed to it; and, when ſtale, is heady; and finally makes good vinegar. The Engliſh at Madraſs uſe it as leaven to raiſe their bread with.

Goa and Batavia are the chief places for *arac*.—At Goa there are divers kinds; ſingle, double, and treble diſtilled. The double diſtilled, which is that commonly ſent abroad, is but a weak ſpirit in compariſon with Batavia *arac*; yet on account of its peculiar and agreeable flavour, is preferred to all the other *aracs* of India. This is attributed to the earthen veſſels, which alone they uſe at Goa to draw the ſpirit; whereas at Batavia they uſe copper ſtills.

The Parier *arac*, made at Madraſs, and the Columbo, and Quilone *arac*, at other places, being fiery hot ſpirits, are little valued by the Europeans, and therefore rarely imported; tho' highly prized among the natives. See Supplement, article RACK.

ARACHNOIDES *, in anatomy, a fine, thin, tranſparent membrane, which, lying between the dura and pia mater, is ſuppoſed to inveſt the whole ſubſtance of the brain, medulla oblongata, and ſpinal marrow.

* The word is borrowed from the Greek αραχνη, a ſpider, or ſpider's web; and ειδος, form: in regard of the fineneſs of the part, which is ſuppoſed to reſemble that of a ſpider's web.

Many anatomiſts deny the exiſtence of ſuch third meninx, or membrane; and contend that it ought rather to be looked on as the external lamina of the pia mater, which ſends its internal lamella between the folds of the cortical part of the brain.

ARACHNOIDES, or ARANEA *Tunica*, is likewiſe uſed for a fine, ſlender tunic, wherewith the cryſtalline humour is encompaſſed.

This, others call *cryſtalloides*, and *tunica cryſtallina*, or *capſula cryſtallini*.—Many have even doubted of its exiſtence; which is the more extraordinary, in that Galen ſpeaks of it, and compares it to a pellicle of an onion; Veſalius reſembles it to fine tranſparent horn.—It is eaſily found in quadrupeds, eſpecially the ſheep, ox, and horſe; and though it be a little more difficult to diſcover in man, yet after a perſon has once been ſhewn it, he will readily find it.

What is ſurpriſing, Briggs ſays not a word of it; and ſo able an anatomiſt as Ruyſch, was long in ſuſpenſe about it: it was only by means of his injections that he diſcovered it in man; though ſo eaſy to diſcern in a ſheep.

The *arachnoides* adheres by its poſterior part to the vitreous tunic.—In man it is about twice as thick as a ſpider's web, at leaſt the fore-part of it; in an ox it is as thick again as in man; and in an horſe it is thicker than in an ox.

It has three uſes: Firſt, to retain the cryſtalline in the collet of the vitreous humour, and prevent its changing ſituation; ſecondly, to ſeparate the cryſtalline from the aqueous humour, and prevent its being continually moiſtened therewith: thirdly, the lymphatics furniſh a liquor which they diſcharge into its cavity, wherewith the cryſtalline is continually refreſhed, and kept in right order; inſomuch that when this liquor is wanting, the cryſtalline ſoon dries, grows hard, and opake, and may even be reduced to powder. *V.* Petit, *in Mem. Acad. R. Scienc. an.* 1730. *p.* 622. *ſeqq.*

ARÆOMETER *, ARÆOMETRUM, an inſtrument wherewith to meaſure the denſity or gravity of fluids.

* The word is formed of the Greek αραιος, *rarus*, *tenuis*, thin; and μετρον, meaſure.

The *aræometer*, or water-poiſe, is uſually made of glaſs; conſiſting of a round hollow ball, which terminates in a long ſlender neck, hermetically ſealed a-top; there being firſt as much running mercury put into it, as will ſerve to balance or keep it ſwimming in an erect poſition.

The ſtem is divided into degrees (as repreſented *Tab. Pneumatics*, fig. 18.); and by the depth of its deſcent into any liquor, the lightneſs of that liquor is concluded; for that fluid in which it ſinks leaſt, muſt be heavieſt; and that in which it ſinks loweſt, lighteſt.

M. Homberg has invented a new *aræometer*, deſcribed in *Philoſ. Tranſact.* N° 262. thus: *A* (*fig.* 19.) is a glaſs-bottle or matraſs, with ſo ſlender a neck, that a drop of water takes up in it about five or ſix lines, or ½ of an inch. Near that neck is a ſmall capillary tube *D*, about ſix inches long, and parallel to the neck.—To fill the veſſel, the liquor is poured in at the mouth *B* (which is widened to receive a tunnel), till it run out at *D*; that is, till it riſe in the neck to the mark *C*, by which means you have always the ſame bulk or quantity of liquor; and conſequently, by means of the balance, can eaſily tell, when different liquors fill it, which weighs moſt, or is moſt intenſely heavy.

Some regard, however, is to be had in theſe trials to the ſeaſon of the year, and degree of heat and cold in the weather: by reaſon ſome liquors rarefy with heat, and condenſe with cold, more than others; and accordingly take up more or leſs room.

By means of this inſtrument, the ingenious author has made a table, to ſhew the different weights of the ſame bulk of the moſt conſiderable chemical liquors, both in ſummer and winter; as follows:

The *aræometer* full of	weighed in ſummer.			in winter.		
	oz.	*dr.*	*gr.*	*oz.*	*dr.*	*gr.*
Quick-ſilver	11	00	06	11	00	32
Oil of tartar	01	03	08	01	03	31
Spirit of urine	01	00	32	01	00	43
Oil of vitriol	01	03	58	01	04	03
Spirit of nitre	01	01	40	01	01	70
——ſalt	01	00	39	01	00	47
Aqua fortis	01	01	38	01	01	55
Vinegar	00	07	55	00	07	60
Spirit of wine	00	06	47	00	06	61
River water	00	07	53	00	07	57
Diſtilled water	00	07	50	00	07	54

The inſtrument itſelf weighed, when empty, one drachm twenty-eight grains.

ARÆOPAGUS. } See the articles { AREOPAGUS.
ARÆOPAGITIC. } { AREOPAGITIC.

ARÆOSTYLE, ARÆOSTYLOS, in the antient architecture, a ſort of intercolumnation, wherein the columns were placed at the diſtance of eight, or, as ſome ſay, ten modules from one another.—See *Tab. Archit. fig.* 48. See alſo the article INTERCOLUMNATION.

In the *areoſtyle*, the columns were the wideſt and openeſt they were ever planted at; whence the name—from the Greek αραιος, *rarus*, and ςυλος, column.

The *aræoſtyle* is chiefly uſed in the Tuſcan order; at the gates of great cities, and fortreſſes.

ARÆOTICS, Αραιοτικα, in medicine, ſuch remedies as tend to open the pores of the ſkin, and render them large enough for the morbific matters being carried off by ſweat, or inſenſible perſpiration.

To the claſs of *aræotics* belong diaphoretics, ſudorifics, *&c.*

ARAIGNEE, in fortification, ſometimes denotes a branch, return, or gallery, of a mine.

ARANEA *Tunica.* See ARACHNOIDES.

ARATRUM *Terræ*, in our antient law-books, as much land as can be yearly tilled with one plough.—*Hoc manerium eſt* 30 *aratrorum.*

ARATURA *Terræ*, an antient ſervice which the tenant was to do his lord, by plowing his land.

ARBALET*, a kind of weapon, vulgarly called a *croſs-bow.*

* The word is derived from *arbaliſta*, i. e. *arcubaliſta*, a bow with a ſling.

The *arbalet* conſiſts of a ſteel-bow, ſet in a ſhaft of wood, furniſhed with a ſtring, and a trigger; and is bent with a piece of iron fitted for that purpoſe.—It ſerves to throw bullets, large arrows, darts, *&c.*

The antients had large machines to throw arrows withal, many at a time, called *arbalets*, or *balliſtæ.* See BALLISTA.

ARBITER, in the civil law, a judge nominated by the magiſtrate, or choſen voluntarily by two contending parties, on whom they confer a power, by compromiſe, of deciding their differences according to law.

The Romans ſometimes ſubmitted to a ſingle *arbiter*; but ordinarily they choſe ſeveral; and thoſe always in an uneven number.

In matters wherein the public was concerned, as crimes, marriages, affairs of ſtate, *&c.* it was not allowed to have recourſe to *arbiters.*—Nor was it permitted to appeal from an arbitral ſentence; the effect of an appeal being to ſuſpend the authority of a juriſdiction, not of a compact.

Among the moderns, there are properly divers kinds of *arbiters*; ſome obliged to go by the rigour of the law; and others are authorized by the contending parties to relax, or give way to natural equity; theſe are properly called *arbitrators.*

Juſtinian *(L. ult. c. de recept.)* abſolutely forbids a woman from being elected *arbiter*, or rather *arbitreſs*; as judging ſuch an office unbecoming the ſex. And yet pope Alexander III. confirmed an arbitral ſentence given by a queen of France.

Cardinal Wolſey was ſent by Henry VIII. to Francis I. with full power to negotiate, act, and conclude whatever he thought for his ſervice; and Francis gave him the ſame power on his behalf: ſo that he was conſtituted ſole *arbiter* of both their affairs.

ARBITRAGE, or ARBITREMENT. See ARBITRATION.

ARBITRARY*, in a general ſenſe, that which is not defined, or limited by any certain, expreſs law, or conſtitution, but is left ſolely to the judgment and diſcretion of another.—The puniſhment of ſuch a crime is *arbitrary.*—*Arbitrary* fines or mulcts are uſually called *amercements.*

* The word is formed from the Latin *arbitrium*, will; whence alſo *arbiter*, *arbitrator*, &c.

The laws or meaſures whereby the Creator acts, are *arbitrary*; at leaſt all the phyſical laws.

ARBITRARY *Power.* See DESPOTISM, MONARCHY, *&c.*

ARBITRATION, or ARBITRAGE, the referring of a cauſe or quarrel to the deciſion of one or more indifferent perſons, under the quality and denomination of *arbiters* or *arbitrators.*

An arbitrement is either general, that is, including all actions, quarrels, and demands; or ſpecial, which includes one or more matters, or facts ſpecified.

ARBITRATOR, an extraordinary judge or commiſſioner, in one or more cauſes between party and party, choſen by their mutual conſent.

Among us, two *arbitrators* are uſually choſen by the contending parties; and in caſe theſe cannot agree, a third is added, and is called an *umpire*; in whoſe deciſion both ſides are bound to acquieſce.

The civilians make a difference between *arbiter*, and *arbitrator:* though both ground their power on the compromiſe of the parties, yet their liberty is diverſe: for an *arbiter* is tied to proceed and judge according to the forms of law; whereas an *arbitrator* is permitted wholly to his own diſcretion, without ſolemnity of proceſs, or courſe of judgment, to hear and accommodate the controverſy committed to him; ſo it be *juxta arbitrium boni viri.*

ARBITREMENT. See ARBITRATION.

ARBOR in natural hiſtory, botany, *&c.* See ARBOUR, and TREE.

ARBOR, in chemiſtry.—ARBOR *philoſophica* is a name common to ſeveral metalline cryſtallizations; thus called from their ramifications reſembling a tree.

Of this kind, is the ARBOR *Dianæ*, ſometimes alſo called ARBOR *Lunæ*, a kind of efflorеſcence or cryſtallization, in which aqua fortis incorporated with ſilver and mercury, being put in water, expands and ſhoots itſelf into an appearance of a tree, with branches, leaves, and flowers.

The *arbor Dianæ* is properly a precipitation of ſilver with mercury: the operation of making it belongs to the head of amalgamation. See Supplement, Article DIANÆ ARBOR.

Albertus Magnus is ſaid to have produced a tree before the king of France, while he ſat at dinner: this paſſed at that time for a palingeneſia, or reſuſcitation; but it may more naturally be referred to the ſpecies of germinations we are ſpeaking of.

The method of preparing the *arbor Dianæ* is thus: diſſolve one drachm of pure ſilver in aqua fortis, and to the ſolution add diſtilled vinegar and water, of each one ounce; filtrate the mixture, and add an ounce and half of quick-ſilver; mix and ſhake the whole ſome time, in a round glaſs veſſel, the orifice being ſtopped with the finger: then ſet the whole to reſt, and in twenty-four hours time, it will ſhoot into branches, *&c.* of various figures.

ARBOR *Martis* is a germination of iron, reſembling a natural plant.—

The *arbor Martis* is but of late invention; we owe it to the younger Lemery.

The manner of the diſcovery was this: on a diſſolution of iron-filings in ſpirit of nitre contained in a glaſs, he poured oil of tartar per deliquium: upon this the liquor ſoon ſwelled very conſiderably, though with very little fermentation; and was no ſooner at reſt, than there aroſe a ſort of branches adhering to the ſurface of the glaſs, which, continuing to grow, at length covered it all over.

The form of the branches was ſo perfect, that one might even diſcover a kind of leaves and flowers thereon; ſo that this vegetation has as good a title to the appellation of *arbor Martis*, as the former has to that of *arbor Dianæ.* See *Hiſtoir. Acad. Royal. An.* 1706.

ARBOR *Genealogica*, *tree of conſanguinity*, ſignifies a lineage drawn out, under the figure or reſemblance of root, ſtock, branches, *&c.*

ARBOR *Porphyriana*, among the ſchoolmen, denotes a ſcale of beings; or a figure, conſiſting of three rows or columns of words; the middlemoſt whereof contains the ſeries of genera and ſpecies, and bears ſome analogy to the trunk; and the extremes, containing the differences, to the branches of a tree.

SUBSTANCE
Thinking Extended
BODY
Inanimate Animate
ANIMAL
Irrational Rational
MAN
This That
PLATO.

The *arbor Porphyriana* is otherwiſe called *ſcala prædicamentalis.*

ARBOR is alſo figuratively uſed in the mechanics, for the principal part of a machine, which ſerves to ſuſtain the reſt.—It is alſo uſed for a ſpindle, or axis, whereon a machine turns.

Arbor of a crane, a mill, windmil, *&c.* See CRANE, MILL, *&c.*

ARBOREOUS, ARBOREUS, is applied by ſome naturaliſts to ſuch excreſcencies, fungus's, moſſes, and other paraſites, as grow on trees; in contradiſtinction from ſuch as grow on the ground: ſuch are the lichenoides and agarics.

ARBORIS *Pecten.* See the article PECTEN.

ARBORIST, ARBORISTA, a perſon ſkilled in trees; their kinds, forms, natures, *&c.*

Arboriſt is an appellation of leſs extent than *botaniſt.*

ARBOUR, among gardeners, *&c.* a kind of ſhady bower, or cabinet, contrived to take the air in; yet to keep out the ſun and rain.

Arbours are now gone much into diſuſe; being apt to be damp, and unwholſome.—They are diſtinguiſhed into *natural* and *artificial.*

Natural ARBOURS are formed only of the branches of trees, interwoven artfully, and borne up by ſtrong lattice-work, poles, hoops, *&c.* which make galleries, halls, porticoes, and green viſta's, naturally covered.

The trees wherewith theſe *arbours* are formed are uſually the female elm, or lime-tree; in regard they eaſily yield, and, by their great quantity of ſmall boughs, form a thick bruſh-wood; the lower parts are uſually filled up with hornbeam, or the like.

Artificial ARBOURS, and cabinets, are made of lattice-work, borne up by ſtandards, croſs-rails, circles and arches of iron.

For theſe *arbours*, they make uſe of ſmall fillets of oak, which being planted, and made ſtrait, are wrought in chequers, and faſtened with wire.

ARC *, or ARK. See the article ARK.

* The words are formed from the Latin *arcus*, a bow.

ARCANUM literally ſignifies a *ſecret*; and is therefore very pertinently applied by quacks and impoſtors in medicine, who conceal their ignorance and fraud under a pretence of ſecrecy.—Hence legions of *arcana*.

There are alſo ſtanding officinal compoſitions, under the denomination of *arcana*.—Such are the

ARCANUM *Corallinum*, a preparation of red precipitate; made by diſtilling it with the ſpirit of nitre; and repeating the diſtillation again and again, till a fine red powder be procured.

This powder boiled in water, and the water poured off, and tartarized ſpirit of wine put to the powder; two or three cohobations are made: which leave a powder, much like the prince's powder; ſaid to be of good uſe in the gout, dropſy, ſcurvy, &c. It operates chiefly by ſtool.

ARCANUM *duplicatum* is prepared of the caput mortuum of aquafortis, by diſſolving it in hot water, filtrating, and evaporating it to a cuticle; and then leaving it to ſhoot.

The *arcanum duplicatum*, or *panacea duplicata*, is extolled as a diuretic, and ſudorific.—The recipe was purchaſed at the expence of 500 dollars, by that great virtuoſo the duke of Holſtein. Schroder, that prince's phyſician, writes wonders of its great uſes in hypochondriacal caſes, and in continued and intermitting fevers, ſtone, ſcurvy, &c.

ARCANUM *Joviale* is made of an amalgama of mercury and tin, digeſted in ſpirit of nitre; the ſpirit being drawn off, the remaining matter is wetted with ſpirit of wine, and the ſpirit burnt away; and this for ſeveral times till the pungent taſte is wholly gone: what remains is uſed much with the ſame intentions as the antihecticum Poterii, and is recommended by ſome as a ſudorific.

ARC-BOUTANT *, in building, a kind of flat arch, or part of an arch, abutting againſt the feet of an arch, or reins of a vault, to ſupport, and prevent their giving way.

* The name is French; formed of *arc* and *bouter*, to abut.

Arc-boutants are only arched buttreſſes. See BUTTRESS.

ARCH, ARK, ARCUS, a part of any curve line; *e. gr.* of a circle, an ellipſis, or the like.

ARCH *of a circle* is a part of the circumference thereof, leſs than a half, or ſemicircle.—Such is AEB (*Tab. Geometry, fig.* 6.).

The baſe or line AB, that joins the two extremes of the arch, is called the *chord*; and the perpendicular DE, raiſed in the middle of that line, the ſine of the arch. See CHORD, and SINE.

All angles are meaſured by *arches*.—To know their quantity, an *arch* is deſcribed, having its centre in the point of the angle. See ANGLE.

Every circle is ſuppoſed to be divided into 360 degrees; and an *arch* is eſtimated according to the number of thoſe degrees it takes up. Thus an arch is ſaid to be of 30, of 80, of 100 degrees. See DEGREE.

Concentric ARCHES. See the article CONCENTRIC.

Equal ARCHES are ſuch *arches* of the ſame or equal circle, as contain the ſame number of degrees. See EQUAL.—Hence

In the ſame or equal circles, equal chords ſubtend equal *arches*.—And hence, again, *arches* intercepted between parallel chords are equal.

A radius, CE, *fig.* 6. which biſects the chord in D, does alſo biſect the *arch* in E; and is perpendicular to the chord; and on the contrary. And hence the problem, to *biſect an arch*, is ſolved, by drawing a line CE perpendicular to the chord in D.

Similar ARCHES are thoſe which contain the ſame number of degrees of unequal circles. See SIMILAR, and LIKE.—Such are the *arches* AB and DE, *fig.* 87.

Two radii being drawn from the centre of two concentric circles, the two *arches* intercepted between them bear the ſame ratio to their reſpective peripheries; and alſo the two ſectors to the areas of their reſpective circles. See ANGLE.

The diſtance of the centre of gravity of an *arch* of a circles, from the centre of the circle, is a third proportional to a third part of the periphery and the radius. See CENTRE *of gravity*.

For the ſines, tangents, &c. of *arches*; ſee SINE, TANGENT, &c.

ARCH in aſtronomy.—*Diurnal* ARCH of the ſun is part of a circle parallel to the equator, deſcribed by the ſun in his courſe betwixt riſing and ſetting. See DIURNAL, DAY, &c. His *nocturnal arch* is of the ſame kind; excepting that it is deſcribed betwixt his ſetting and riſing. See NIGHT, RISING, &c. See alſo NOCTURNAL.

The latitude and elevation of the pole are meaſured by an *arch* of the meridian; and the longitude, by an *arch* of a parallel circle. See ELEVATION, LATITUDE, LONGITUDE, &c.

ARCH *of progreſſion*, or *direction*, is an *arch* of the ecliptic, which a planet ſeems to paſs over, when its motion is according to the order of the ſigns. See DIRECTION.

ARCH *of retrogradation* is an *arch* of the ecliptic, deſcribed while a planet is retrograde, and moves contrary to the order of the ſign. See RETROGRADATION.

ARCH *of ſtation*. See STATION, and STATIONARY.

ARCH *between the centres* is an *arch*, as AI (*Tab. Aſtronomy, fig.* 35.), paſſing from the centre of the moon's ſhadow, A, perpendicular to her orbit GH. See ECLIPSE.

If the aggregate of the *arch* between the centres AI, and the apparent ſemidiameter of the moon, be equal to the ſemidiameter of the ſhadow; the eclipſe will be total without any duration; if leſs, total with ſome duration; and if greater, yet leſs than the ſum of the ſemidiameters of the moon and the ſhadow, partial.

ARCH *of viſion* is the ſun's depth below the horizon, at which a ſtar, before hid in his rays, begins to appear again. See *Poetical* RISING.

ARCH, in architecture, is a concave ſtructure, raiſed with a mould bent in form of the *arch* of a curve, and ſerving as the inward ſupport of any ſuperſtructure.—See *Tab. Archit. fig.* 36. *and* 37.

An *arch*, ſays Sir Henry Wotton, is nothing but a narrow or contracted vault; and a vault, is a dilated *arch*. See VAULT.

Arches are uſed in large intercolumnations of ſpacious buildings; in porticoes, both within and without temples; in public halls, as cielings, the courts of palaces, cloiſters, theatres, and amphitheatres.

They are alſo uſed as buttreſſes and counter-forts, to ſupport large walls laid deep in the earth, for foundations of bridges and aqueducts, for triumphal arches, gates, windows, &c.

Arches are ſuſtained by piers, impoſts, &c.

Arches are either circular, elliptical, or ſtrait.

Circular ARCHES are of three kinds; *viz.*

Semicircular ARCHES, thoſe which make an exact ſemicircle, and have their centre in the middle of the chord of the *arch*; called alſo by the French builders, *perfect arches*, and *arches en plein ceintre*.

Scheme ARCHES, thoſe which are leſs than a ſemicircle, and conſequently are flatter *arches*; containing ſome, 90 degrees, others 70, and others only 60; called alſo *imperfect arches*.

ARCHES *of the third and fourth point*, as ſome of our workmen call them, though the Italians call them *di terzo* and *quarto acuto*, becauſe they always concur in an acute angle at top.—Theſe conſiſt of two *arches* of a circle meeting in an angle at the top, and are drawn from the diviſion of the chord into three or four parts, at pleaſure.—Of this kind are many of the *arches* in old Gothic buildings; but on account, both of their weakneſs and unſightlineſs, they ought, according to Sir Henry Wotton, to be for ever excluded out of all buildings.

Elliptical ARCHES conſiſt of a ſemi-ellipſis; and were formerly much uſed inſtead of mantle-trees in chimneys.—Theſe have commonly a keyſtone, and chaptrels or impoſts.

Strait ARCHES are thoſe, whoſe upper and under edges are ſtrait; as in the others they are curved; and thoſe two edges alſo parallel, and the ends and joints all pointing towards a centre.—Theſe are principally uſed over windows, doors, &c.

The doctrine and uſe of *arches* is well delivered by Sir Henry Wotton, in the following theorems.—*1ſt*, All matter, unleſs impeded, tends to the centre of the earth in a perpendicular line.

2dly, All ſolid materials, as bricks, ſtones, &c. in their ordinary rectangular form, if laid in numbers, one by the ſide of another, in a level row, and their extreme ones ſuſtained between two ſupporters; thoſe in the middle will neceſſarily ſink, even by their own gravity, much more if preſſed down by any ſuperincumbent weight.—To make them ſtand therefore, either their figure or their poſition muſt be altered.

3dly, Stones, or other materials, being figured cuneatim, *i. e.* wedge-wiſe, broader above than below, and laid in a level row, with their two extremes ſupported as in the preceding theorem, and pointing all to the ſame centre; none of them can ſink, till the ſupporters or butments give way, becauſe they want room in that ſituation to deſcend perpendicularly. But this is but a weak ſtructure; in regard the ſupporters are ſubject to too much impulſion, eſpecially where the line is long; for which reaſon the form of ſtrait *arches* is ſeldom uſed, excepting over doors and windows, where the line is ſhort.—In order to fortify the work, therefore, we muſt not only change the figure of the materials, but alſo their poſition.

4thly, If the materials be ſhaped wedge-wiſe, and be diſpoſed in form of a circular *arch*, and pointing to ſome centre; in this caſe, neither the pieces of the ſaid *arch* can ſink downwards, for want of room to deſcend perpendicularly; nor can the ſupporters or butments ſuffer much violence, as in the precedent platform: for the convexity will always make the incumbent weight rather reſt upon the ſupporters, than heave them outwards: whence this corollary may be fairly de-

deduced, that the ſecureſt of all the *arches* above-mentioned is the ſemicircular; and of all vaults, the hemiſpherical.

5thly, As ſemicircular vaults, raiſed on the whole diameter, are the ſtrongeſt; ſo thoſe are the moſt beautiful, which, keeping to the ſame height, are yet diſtended one fourteenth part longer than the ſaid diameter: which addition of width will contribute greatly to their beauty, without diminiſhing any thing conſiderable of their ſtrength.

It is, however, to be obſerved, that, according to geometrical ſtrictneſs, to have the ſtrongeſt *arches*, they muſt not be portions of circles, but of another curve, called the *catenaria*, whoſe nature is ſuch, that a number of ſpheres diſpoſed in this form will ſuſtain each other, and form an *arch*.

Dr. Gregory even ſhews, that *arches*, conſtructed in other curves, only ſtand, or ſuſtain themſelves, by virtue of the catenaria contained in their thickneſs; ſo that were they made infinitely ſlender or thin, they muſt tumble of courſe; whereas the catenaria, though infinitely ſlender, muſt ſtand, in regard no one point thereof tends downward more than any other. Philoſoph. Tranſact. N° 231.—See further of the theory of *arches* under the article VAULT.

ARCH is particularly uſed for the ſpace between the two piers of a bridge.

The chief or *maſter-arch* is that in the middle; which is wideſt, and uſually higheſt, and the water under it deepeſt: being intended for the paſſage of boats, or other veſſels.—We read of bridges in the eaſt, which conſiſt of 300 *arches*.

ARCH-*Stone*. See the articles, KEY-*Stone*, and VOUSSOIR.

Tympan of ARCH. See the article TYMPAN.

Triumphal ARCH is a gate or paſſage into a city, built of ſtone or marble, and magnificently adorned with architecture, ſculpture, inſcriptions, *&c.* ſerving not only to adorn a triumph, at the return from a victorious expedition, but alſo to preſerve the memory of the conqueror to poſterity.

The moſt celebrated triumphal *arches*, now remaining of antiquity, are that of Titus, of Septimius Severus, and of Conſtantine, at Rome, of which we have figures given us by Des Godetz.—One of the gates of Orange is a triumphal *arch* of C. Marius.—The gates, Peyro at Montpelier, and of St. Denis, St. Martin, and St. Antoine, at Paris, do alſo deſerve to have been triumphal *arches*.

Mural ARCH. See the article MURAL.

ARCH, in the ſcripture-ſenſe. See the article ARK.

ARCH, or ARCHI, is alſo a term without any meaning of itſelf, but which becomes very ſignificant in compoſition with other words; as it heightens and exaggerates them; and has the force of a ſuperlative, to ſhew the greateſt degree, or eminence of any thing.

* The word is formed of the Greek αρχη, beginning; whence αρχος, *princeps*, *ſummus*, prince, or chief.

Thus we ſay *arch*-fool, *arch*-rogue, *&c.* to expreſs folly, and knavery, in the utmoſt degree.—So alſo *arch*-treaſurer, *arch*-angel, *arch*-biſhop, *arch*-heretic, *&c.* to denote ſuch as have a pre-eminence over others.

In Engliſh, we uſually cut off the final *i*, from *archi*, though with very ill effect; as the words wherewith it is joined, ſound much harſher on that ſcore, than they would do, were it preſerved intire, as it is in moſt other languages.

ARCHÆUS, or ARCHEUS. See the article ARCHEUS.

ARCHANGEL *, an intellectual ſubſtance or angel, placed in the eighth rank among the bleſſed ſpirits which compoſe the celeſtial hierarchy.

* The word is compounded of the Greek αρχος, prince, and αγγελος, angel.

ARCHBISHOP, ARCHIEPISCOPUS, a metropolitan prelate, having ſeveral ſuffragan biſhops under him.

Archbiſhops were not known in the eaſt, till about the year 320. and though there were ſome ſoon after this, who had the title, yet that was only a perſonal honour, by which the biſhops of conſiderable cities were diſtinguiſhed.—It was not till of late that *archbiſhops* became metropolitans, and had ſuffragans under them.

Athanaſius appears to be the firſt who uſed the title *archbiſhop*, which he gave occaſionally to his predeceſſor; Gregory Nazianzen, in like manner, gave it to Athanaſius: not that either of them were intitled to any juriſdiction, or even any precedence, in virtue thereof.

Among the Latins, Iſidore Hiſpalenſis is the firſt that ſpeaks of *archbiſhops*. He diſtinguiſhes four orders or degrees in the eccleſiaſtical hierarchy, *viz.* patriarchs, *archbiſhops*, metropolitans, and biſhops.

England is divided into two archbiſhopricks, or provinces.

ARCHBISHOPRICK, ARCHIEPISCOPATUS, the dignity of archbiſhop; or the province under his juriſdiction.

There are now two *archbiſhopricks* in England; *viz.* of Canterbury, and York; the prelates whereof are called *primates*, and *metropolitans*; with this only difference, that the former is called primate of all England, and the latter ſimply, primate of England.

The archbiſhop of Canterbury had antiently juriſdiction over Ireland as well as England, and was ſtyled a patriarch, and ſometimes *alterius orbis papa*, and *orbis Britannici pontifex*. Matters were done and recorded in his name thus, *anno pontificatus noſtri primo*, &c.

He was alſo *Legatus natus*. See LEGATE.

He even enjoyed ſome ſpecial marks of royalty; as, to be patron of a biſhoprick, which he was of Rocheſter; and to make knights, coin moneys, *&c.* — He is ſtill the firſt peer of England, and the next to the royal family; having precedence of all dukes, and all great officers of the crown.

He has, by common law, the power of probate of wills and teſtaments, and granting letters of adminiſtration.

He has alſo a power to grant licences and diſpenſations in all caſes formerly ſued for in the court of Rome, and not repugnant to the law of God.

He alſo holds ſeveral courts of judicature; as court of arches, court of audience, prerogative court, and court of peculiars.

The archbiſhop of York has the like rights in his province, as the archbiſhop of Canterbury: he has precedence of all dukes not of the royal blood; and of all officers of ſtate, except the lord high chancellor. He has alſo the rights of a count Palatine over Hexamſhire.

ARCH-BUTLER, ARCHIPINCERNA, the great butler or ſkinker of the empire.

The king of Bohemia is *arch-butler*: and his buſineſs as ſuch is to preſent the firſt cup at an imperial entertainment; but he is not obliged to officiate with his crown on. He has for vicar or deputy the hereditary prince of Limbourgh.

ARCH-CHAMBERLAIN, ARCHICAMERARIUS, an officer of the empire; much the ſame with what in England we call *great chamberlain*.

The elector of Brandenbourg is *arch-chamberlain* of the empire, being ſo appointed by the golden bull; and, in that quality, he bears the ſceptre before the emperor, walking on the left-hand of the elector of Saxony. At ſome ſolemnities he alſo ſerves on horſeback like other electors, carrying a baſon with a towel in his hands: which, alighting, he ſets for the emperor to waſh.—He has his vicar, or ſub *arch-chamberlain*, who is prince of Hohenzollern, of the houſe of Brandenbourg.

ARCH-CHANCELLOR, ARCHICANCELLARIUS, a great chancellor, who antiently preſided over the notaries, that is, the ſecretaries of a court.

This office chiefly obtained in France, under the two firſt races of their kings; and afterwards under the empire: as they had three ſeveral territories, Germany, Italy, and Arles; they had three *arch-chancellors*: and hence the three *arch-chancellors* ſtill ſubſiſting in Germany; the archbiſhop of Mentz being *arch-chancellor* of Germany, the archbiſhop of Cologn of Italy, and the archbiſhop of Treves of Arles.

Bern. de Mallincrot, in an expreſs treatiſe *de Archicancellariis Imperii Romani*, ſhews, that theſe three archbiſhops were *arch-chancellors* before they were electors.—We alſo read of *arch-chancellors* of Burgundy, *&c.*

ARCH-CHANTOR, ARCHICANTOR, the chief or preſident of the chantors of a church.

ARCHDEACON, ARCHIDIACONUS, a church-officer veſted with a juriſdiction over the laity and clergy, next after the biſhop, either through the whole dioceſe, or only a part of it.

The *archdeacon*, ſometimes alſo called *arch-levite*, was originally the firſt and eldeſt of the deacons who attended on the biſhop: whence his name.

An *archdeacon* was not known before the council of Nice: his function is ſince become a dignity; and even ſet above that of prieſt: though antiently it was quite otherwiſe. The *archdeacon* was the biſhop's chief miniſter for all external concerns, and particularly the adminiſtration of the temporalties. He took care that order and decency were obſerved in divine ſervice; looked to the ornaments and utenſils of the church; had the direction of the poor, and the inſpection of the manners and behaviour of the people: for which reaſon he was called the *biſhop's heart, and eye*; *oculus epiſcopi, & cor epiſcopi*.

Theſe advantages ſoon got him the upper hand over prieſts, who had only ſpiritual functions. But he had no juriſdiction over them till the ſixth century; though by that time he was become ſuperior to the archimandrite, or rural dean.

In the tenth century, *archdeacons* were conſidered as having juriſdiction in their own right, or attached to their office; with a power of delegating it to others. But from that time meaſures were taken to leſſen their power, by increaſing their number.—He whoſe diſtrict lay in the capital city took the quality of *great archdeacon*.

We have ſixty *archdeacons* in England: their office is to viſit every two years in three, to inquire into reparations and moveables belonging to the church, reform abuſes in eccleſiaſtical matters, and bring the more weighty affairs before the biſhop; beſides which, they have alſo a power to ſuſpend, excommunicate, and in many places to prove wills, and in ſome to inſtitute to benefices.

It is one part of the *archdeacon*'s office to induct all clerks into their benefices within his juriſdiction; and, by the act of uniformity, he is now obliged to be in prieſts orders.

Many *archdeacons*, in old foundations, have, by preſcription, their courts and officials, as biſhops have.

ARCH-DRUID, **Archidruida**, the chief or pontiff of the antient *Druids* in a nation. See Druid.

ARCHDUKE, **Archidux**, a duke veſted with ſome quality, pre-eminence, and authority, above other dukes.

The *archduke* of Auſtria is a very antient title. There have alſo formerly been *archdukes* of Lorrain, and Brabant.

Auſtria was erected into a marquiſate by Otho, or Henry I. and into a duchy by Frederic I. in 1156. but we do not well know when, nor why, the title *archduchy* was given it.—It is commonly held, that duke Frederic IV. firſt aſſumed the quality: others ſay, it was firſt given by the emperor Maximilian I. in 1459. and ample privileges annexed to it.

The principal privileges of this ſtate are, that the *archduke* ſhall diſtribute juſtice in his own dominions, without appeal; that he ſhall be judged to have received the inveſtiture of his ſtates, after having demanded it three times; and that he cannot be deprived of his countries, even by the emperor, and the ſtates of the empire: that no affair of the empire can be concluded without his participation; and that he have a power of creating counts, barons, and gentlemen, throughout the whole empire: which are privileges to which the other dukes of the empire are intire ſtrangers.

ARCHE, Αρχη, is a Greek word, importing the *beginning*.

Arche, among phyſicians, is the beginning or firſt period of a diſeaſe.

ARCHED *Fountain*. See the article Fountain.

Arched *Legs* is an imperfection in a horſe, when being in his natural poſition he has his legs bent forwards; ſo as his whole leg makes a kind of arch or bow.

This uſually ariſes from exceſſive labour, whereby the back-ſinews are made to ſhrink up, ſo that the legs remain *arched*, and naturally tremble after a little riding. Though the diſorder is natural to ſome horſes.

ARCHERS *, a kind of militia or ſoldiery, armed with bows and arrows.

* The word is formed of the Latin *arcus*, a bow; whence *arcuarius*, and even *arquis*, and *arquites*, as they are alſo denominated in the corrupt ſtate of that tongue.

Archers were much in uſe in former times; but they are now laid aſide, excepting in Turky, and ſome of the eaſtern countries; where there are companies of *archers* ſtill on foot in their armies: and with which they did terrible execution at the battle of Lepanto.

The name *archer*, however, is ſtill retained even where the thing is loſt: thus in France, the officers who attend the lieutenants de police, and provoſts, to make captures, ſeizures, arreſts, &c. are called *archers*; though their arms be only halbards or carabines.—In this ſenſe they ſay, the *archers* of the *grand prevot de l'hotel*; of the *prevot des marchands*; the city *archers*; the *archers du guet*, or of the watch, &c.—Small parties of *archers*, called alſo *gens de marechauſſee*, are continually patrolling on the great roads, to ſecure them againſt robbers.—The carriages of Lyons, &c. are always eſcorted by a party of *archers*.

To the diligence of theſe *archers*, or marſhals men, it is owing, that perſons now travel in all parts of France in the utmoſt ſecurity; there being fewer robberies on the highway in that whole kingdom in a year, than about London in a week.

They have alſo their *archers des pauvres*, *archers* of the poor; whoſe office it is to ſeize ſuch beggars as they find in the ſtreets, and carry them to the hoſpitals.

ARCHERY, the art or exerciſe of ſhooting with bow and arrows.

Archery was greatly encouraged among our anceſtors, and many ſtatutes were made for the regulation thereof: whence it was that the Engliſh *archers* became the beſt in Europe. Moſt of our victories in France were the purchaſe of the long bow.—In the ſtat. 33 H. VIII. complaint is made of divers new and crafty games invented, as *logetting*, *ſhovegroat*, &c. by reaſon whereof *archery* was ſorely decayed, and divers bowers and fletchers, for lack of work, were forced to go and live in Scotland.—By this act, all men under 60 years of age are commanded to exerciſe ſhooting in long-bows; and to have a bow and arrows always ready.—Children, from 7 years old to 17, are alſo injoined to be bred up in ſhooting; and to have always a bow and two ſhafts in readineſs.—Even ſervants are not excuſed; but thoſe who want money to buy a bow are to be ſupplied by their maſters, and the price to be deducted out of their wages.—Aliens are alſo forbid by it to ſhoot with a long bow, without eſpecial licence from the king.

By the ſame law it is forbid to ſhoot at a ſtanding mark; unleſs it be for a rover, where the archer is to change his mark at every ſhot.—Any perſon above 24 years old is alſo forbid to ſhoot with any prick-ſhaft, or flight, at a mark of eleven ſcore yards or under, 33 *H.* VIII. *c.* 9.—The former was a proviſion for making good markſmen at ſight; the latter for giving ſtrength and ſinews.

Archery, in our antient cuſtoms, a ſervice of keeping a bow for the uſe of the lord, to defend his caſtle.

ARCHES, or *Court of* **Arches**, is one of the archbiſhop's courts; to which appeals lie in eccleſiaſtical matters, from all parts of the province of Canterbury.

This court is thus called, from the *arched* church and tower of St. Mary le Bow, where it was wont to be held. The officers belonging to it are the judge, actuary, regiſters, advocates, proctors, &c.

The judge of the court of *arches* is called the *dean of the arches*, or the *official of the arches* court, &c. with which officialty is commonly joined a peculiar juriſdiction over thirteen pariſhes in London, termed a *deanry*, exempt from the authority of the biſhop of London, and belonging to the archbiſhop of Canterbury; of which the pariſh of Bow is one, and the principal.

Others ſuppoſe the denomination and functions of dean of the *arches* to have ariſen hence, that the archbiſhop's official, or dean, being often employed abroad in foreign embaſſies, the dean of the *arches* was his ſubſtitute in this court.

This judge on any appeal made, forthwith, and without any farther examination of the cauſe, ſends out his citation to the appellee, and his inhibition to the judge from whom the appeal was made.

The advocates, who are allowed to plead in the *arches* court, are to be doctors of the civil law, in one of our univerſities.

ARCHETYPE *, **Archetypus**, the firſt pattern, or model, by which any work is formed, or which is copied after, to make another like it.

* The word is compounded of αρχη, beginning; and τυπος, type. See Type.

In this ſenſe the word coincides with *original*, or *prototype*; and ſtands oppoſed to *copy*.

Among minters, &c. *archetype* is peculiarly uſed for the ſtandard or original weight, by which the other weights are to be adjuſted and examined.

Philoſophers, particularly the Platoniſts, talk of an *archetypal* world; meaning, the world, ſuch as it exiſted in the divine mind, or in the idea of God, before the viſible creation.

ARCHEUNUCH, **Archieunuchus**, the chief of the eunuchs.

The *archeunuch* was one of the principal officers in Conſtantinople, under the Greek emperors.

ARCHEUS *, an obſcure term, uſed chiefly among the antient chymiſts, to expreſs I know not what principle of life and motion, the cauſe of all the effects which we obſerve in nature.

* The word is derived from αρχη, principle.

As the chymiſts differ in their ideas of a vital cauſe; the term *archeus* becomes applied to very different things: though moſt of them conceive it of the nature of fire.

Some uſe *archeus*, to denote the fire lodged in the centre of the earth; to which they aſcribe the generation of metals and minerals, and which they believe to be the principle of life in vegetables.

Others, by the word *archeus*, mean a certain univerſal ſpirit, diffuſed throughout the whole creation, the active cauſe of all the phænomena in nature.

Others, inſtead of *archeus*, chooſe to call this the *anima mundi*; and others, the *Vulcan* or *heat* of the earth.

They add, that all bodies have their ſhare of this *archeus*; and that, when this is corrupted, it produces diſeaſes, which they call *archeal diſeaſes*.

They likewiſe attribute ideas to it; which for this reaſon they call *archeal ideas*.

Helmont is a great aſſertor of the dogma of an *archeus*.—"No poiſon, ſays he, can act on a dead carcaſe: if, therefore, it have any effect, it is by means of the *archeus*. He adds, that if any heterogeneous body happen to be preſent to the *archeus*, it riſes into a fervour; endeavours to expel the hoſtile matter; and, in order to that, exerts all the force of the body.—To cure any diſeaſe, therefore, is to pacify, and compoſe this *archeus*. This *archeus*, he holds, is irritated at the leaſt appearance of any thing heterogeneous; and as its office is to watch over the health and ſafety of the whole body, it is excited at the very ſhadow of the enemy, and at once calls its forces to the charge, raiſes fevers, &c. All, therefore, required to an univerſal medicine, is, ſomething that may readily pacify, and lay this unnatural fever upon all occaſions." This doctrine of

Helmont, Boerhaave obſerves, would not be ſo abſurd, did he not aſcribe underſtanding to this *archeus :* ſetting this aſide, the principle which renders poiſons deadly, and remedies beneficial, is the circulation of the blood.

ARCHIACOLYTHUS, an antient dignity, in cathedral churches : the miniſters whereof were divided into four orders, or degrees ; *viz.* prieſts, deacons, ſubdeacons, and *acolythi* ; each of which had their chiefs. The chief of the *acolythi* was called *archiacolythus.* See ACOLYTHUS, *&c.*

ARCHIATER*, ARCHIATRUS, Αρχιατρος, properly denotes the chief phyſician of a prince who retains ſeveral.

* The word is formed of the Greek αρχη, *principium,* chief ; and ιατρος, *medicus,* a phyſician.

ARCHIDAPIFER, or chief ſewer, is a great officer of the empire.

The elector of Bavaria is *Archidapifer.*—The palatine of the Rhine at one time pretended this office was annexed to his Palatinate ; but he has ſince deſiſted.

ARCHIGALLUS, in antiquity, the high-prieſt of Cybele, or the chief of the eunuch-prieſts of that goddeſs, called Galli.

ARCHILOCHIAN, a term in poetry, applied to a ſort of verſes, whereof *Archilochus* was the inventor.

Theſe conſiſt of ſeven feet ; the four firſt whereof are ordinarily dactyls, though ſometimes ſpondees ; the three laſt trochees : for inſtance ;

Solvitur acris hyems grata vice veris & Favonî. Hor.

It is uſual to mix iambic verſes of ſix feet, abating a ſyllable, with *Archilochian* verſes ; this Horace himſelf has done in the ode now cited.

Theſe verſes are called *dactylic,* on account of the dactyls at the beginning.

ARCHI-LUTE. See the article ARCILEUTO.

ARCHIMANDRITE, Αρχιμανδριτης, the ſuperior of a monaſtery ; amounting to what we now call *abbot.*

Covarruvias obſerves, that the word literally denotes the chief or leader of a flock ; in which ſenſe it may be applied to any eccleſiaſtical ſuperior : and accordingly, we find the name ſometimes attributed to archbiſhops. But among the Greeks, where it is chiefly uſed, it is always reſtrained to the chief of an abbey.

M. Simon maintains the word originally to be derived from the Syriac ; at leaſt the part *mandrite,* which, by a circuition, he makes to ſignify a ſolitary, or monk.

ARCHIMEDES's *Screw.* See the article SCREW.

ARCHIMIME, ARCHIMIMUS, is the ſame thing, in effect, with arch-buffoon, or mimic.

The *Archimimes,* among the Romans, were perſons who imitated the manners, geſtures, and ſpeech, both of people living, and thoſe who were dead.

At firſt they were only employed on the theatre ; but were afterwards admitted to their feaſts, and at laſt to their funerals ; where they walked after the corpſe, counterfeiting the geſtures and behaviour of the perſon who was carrying to the funeral pile ; as if he were ſtill alive.

ARCHIPELAGO*, in geography ; a ſea interrupted by a great number of iſlands.

* The word is formed by corruption of *Ægeopelagus, q. d.* Ægean ſea, which, again, is formed of Αιγαιον Πελαγος, a name originally given it by the Greeks ; but for what reaſon is not agreed on.

The moſt celebrated *Archipelago,* and that to which the name is in ſome meaſure appropriated, is that between Greece, Macedonia, and Aſia ; wherein are the iſlands of the Ægean ſea : which is called the *White ſea,* in contradiſtinction to the Euxine, which they call the *Black ſea.*

The modern geographers mention other *Archipelago's* ; as, that of Lazarus, near the coaſt of Malabar and Malacca ; the *Archipelago* of Mexico ; and that of the Caribbees, wherein are above 12000 iſlands ; that of the Philippines, called, by ſome, the *great Archipelago,* containing 11000 iſlands ; and all thoſe of the Molucoo's, of Celebes, *&c.*

ARCHIPHERACITÆ, Αρχιφερακιται, miniſters in the Jewiſh ſynagogues appointed to read and interpret the Perakim, or titles and heads of the law, and the prophets.

The *Archipheracita* was not the ſame with the *archiſynagogus,* as Grotius and others have miſtakenly imagined ; but rather the chief or principal of theſe appointed to read, explain, and profeſs the law, in their ſchools.—And hence the name ; which is formed of the Greek αρχος, chief ; and the Hebrew or Chaldee, פרק, *pherak,* diviſion, or chapter.

ARCHISTRATEGUS, Αρχιστρατηγος, the generaliſſimo, or captain-general, of an army. See STRATEGUS.

ARCHITECT*, ARCHITECTUS, a perſon ſkilled in architecture, or the art of building : who makes plans and deſigns of edifices, conducts the work, and directs the maſons and other artificers employed therein.

* The word is derived from the Greek αρχος, *princeps,* and τεκτων, *faber,* workman, *q. d.* the principal workman.

The moſt celebrated *Architects* are, Vitruvius, Palladio, Scamozzi, Serlio, Vignola, Barbaro, Cataneo, Alberti, Viola, Inigo Jones, Bullant, and De Lorme.

Vitruvius enumerates twelve qualities requiſite to an *Architect* ; that he be docil and ingenious ; literate ; ſkilled in deſigning ; in geometry ; optics ; arithmetic ; hiſtory ; philoſophy ; muſic ; medicine ; law ; and aſtronomy *. See BUILDING, *&c.*

* Sure, Martial had never read Vitruvius, when he threw the crier and the architect in the ſame claſs :

Duri ſi puer ingenî videtur,
Præconem facias, vel Architectum.

ARCHITECTONIC, that which builds a thing up regularly, according to the nature, and intentions thereof.

Thus, that plaſtic power, ſpirit, or whatever elſe it be which hatches the ova of females into living creatures of the ſame ſpecies, is by ſome called the *Architectonic* ſpirit.

ARCHITECTONIC *Machine.* See the article MACHINE.

ARCHITECTURE, ARCHITECTURA, the art of building, *i. e.* of erecting edifices, proper for habitation, or defence.

Architecture is uſually divided, with reſpect to its objects, into three branches, *civil, military,* and *naval.*

Civil ARCHITECTURE, called alſo abſolutely, and by way of eminence, *Architecture,* is the art of contriving and executing commodious buildings for the uſes of civil life ; as houſes, temples, theatres, halls, bridges, colleges, portico's, *&c.*

Architecture is ſcarce inferior to any of the arts in point of antiquity.—Nature and neceſſity taught the firſt inhabitants of the earth to build themſelves huts, tents, and cottages ; from which, in courſe of time, they gradually advanced to more regular and ſtately habitations, with variety of ornaments, proportions, *&c.* See Vitruvius's account of the origin of *Architecture,* under the article ORDER.

The antient writers repreſent the Tyrians as the firſt among whom *Architecture* was carried to any tolerable pitch ; and hence it was that Solomon had recourſe thither for workmen to build his temple. Villalpandus, indeed, contends, that only under-workmen were ſent for from Tyre, artificers in gold, ſilver, braſs, *&c.* and that the rules of *Architecture* were delivered by God himſelf to Solomon. Hence, he adds, the Tyrians, properly ſpeaking, learned their *Architecture* from Solomon ; which they afterwards communicated to the Egyptians ; theſe to the Grecians, and theſe again to the Romans.—In effect, the author laſt cited undertakes to prove, that all the beauty and advantages of the Greek and Roman buildings were borrowed from the Jewiſh temple, *Tom.* ii. *Part* ii. *Lib. Iſagog.* iii. *C.* ix. x.

To confirm this, Sturmius produces ſeveral paſſages in Vitruvius, where the rules given by that architect, *Lib.* vi. *C.* 11. and *Lib.* v. *C.* 1. quadrate exactly with what Joſephus relates of the temple of Jeruſalem, *Antiq. Jud.* lib. vi. & viii. *&c.*

To what a pitch of magnificence the Tyrians and Egyptians carried *Architecture,* before it came to the Greeks, may be learned from Iſaiah. xxiii. 8. and from Vitruvius's account of the Egyptian Oeci ; their pyramids, obeliſks, *&c.*

Yet, in the common account, *Architecture* ſhould be almoſt wholly of Grecian original : three of the regular orders or manners of building are denominated from them, viz. *Corinthian, Ionic,* and *Doric :* and there is ſcarce a ſingle member, or moulding, but comes to us with a Greek name.

Be this as it will, it is certain the Romans, from whom we derive it, borrowed what they had intirely from the Greeks ; nor do they ſeem, till then, to have had any other notion of the grandeur and beauty of buildings, beſide what ariſes from their magnitude, ſtrength, *&c.*—Thus far they were unacquainted with any other beſide the *Tuſcan.*

Under Auguſtus, *Architecture* arrived at its glory : Tiberius neglected it, as well as the other polite arts. Nero, amongſt a heap of horrible vices, ſtill retained an uncommon paſſion for building ; but luxury and diſſoluteneſs had a greater ſhare in it, than true magnificence.—Apollodorus excelled in *Architecture,* under the emperor Trajan, by which he merited the favour of that prince ; and it was he who raiſed the famous Trajan column, ſubſiſting to this day.

After this, *Architecture* began to dwindle again ; and though the care and magnificence of Alexander Severus ſupported it for ſome time, yet it fell with the weſtern empire, and ſunk into a corruption, from whence it was not recovered for the ſpace of twelve centuries.

The ravages of the Viſigoths, in the fifth century, deſtroyed all the moſt beautiful monuments of antiquity ; and *Architecture* thenceforward became ſo coarſe and artleſs, that their profeſſed architects underſtood nothing at all of juſt deſigning, wherein its whole beauty conſiſts : and hence a new manner of building took its riſe, which is called the *Gothic.*

Charlemagne did his utmoſt to reſtore *Architecture* ; and the French applied themſelves to it with ſucceſs, under the encouragement of H. Capet: his ſon Robert ſucceeded him in this deſign; till by degrees the modern *Architecture* was run into as great an exceſs of delicacy, as the Gothic had before done into maſſiveneſs. To theſe may be added, the Arabeſk and Moriſk or Mooriſh *Architecture*, which were much of a piece with the Gothic, only brought in from the ſouth by the Moors and Saracens, as the former was from the north by the Goths and Vandals.

The architects of the 13th, 14th, and 15th century, who had ſome knowlege of ſculpture, ſeemed to make perfection conſiſt altogether in the delicacy and multitude of ornaments, which they beſtowed on their buildings, with a world of care and ſolicitude; though frequently without any conduct or taſte.

In the two laſt centuries, the *Architects* of Italy and France were wholly bent upon retrieving the primitive ſimplicity and beauty of antient *Architecture*; in which they did not fail of ſucceſs: inſomuch that our churches, palaces, *&c.* are now wholly built after the antique.—

Civil Architecture may be diſtinguiſhed, with regard to the ſeveral periods or ſtates thereof, into the *antique*, *antient*, *Gothic*, *modern*, *&c.*

Another diviſion of *civil Architecture* ariſes from the different proportions which the different kinds of buildings rendered neceſſary, that we might have ſome proper for every purpoſe, according to the bulk, ſtrength, delicacy, richneſs, or ſimplicity required.—

Hence aroſe five orders or manners of building, all invented by the antients at different times, and on different occaſions, viz. *Tuſcan*, *Doric*, *Ionic*, *Corinthian*, and *Compoſite*; the hiſtory, characters, *&c.* of each whereof ſee under their reſpective articles, TUSCAN, DORIC, IONIC, CORINTHIAN, and COMPOSITE.

What forms an order is, the column with its baſe and capital; ſurmounted by an entablature, conſiſting of architrave, frieze, and cornice; and ſuſtained by a pedeſtal.

For a general view of the elements of *Architecture*, with the rules which obtain with reſpect to the matter, form, proportion, ſituation, foundation, diſtribution, covering, apertures, *&c.* ſee the article BUILDING.

For particulars, ſee FOUNDATION, WALL, ROOF, WINDOW, DOOR, CEILING, *&c.*

There are ſeveral arts ſubſervient to *Architecture*; as carpentry, maſonry, paving, joynery, ſmithery, glazery, plumbery, plaſtering, gilding, painting, *&c.* See CARPENTRY, MASONRY, PAVING, JOYNERY, PAINTING, PLUMBERY, SCULPTURE, GILDING, *&c.* See alſo TIMBER, STONE, BRICK, TILE, MORTER, LEAD, GLASS, *&c.*

We have no Greek authors at this time extant on *Architecture*. —The firſt who wrote of it was Agatharchus the Athenian, who was ſeconded by Democritus and Theophraſtus.—Among the Latins, Fuſſitius, Terentius Varro, Publius Septimius, Rufus, and Epaphroditus, all wrote *de re Architectonica*.

But, of all the antients, Vitruvius is the only intire author whoſe works we have; tho' Vegetius relates, that there were 700 architects at Rome in his time.—He lived under Auguſtus, and compoſed a complete ſyſtem of *Architecture*, in ten books, which he dedicated to that prince. There are two things cenſured by the moderns in this excellent work, *viz.* want of method, and obſcurity. The mixture of Latin and Greek alſo, in Vitruvius, is ſuch, that Leon Baptiſt Alberti had obſerved, he wrote Latin to the Greeks, and Greek to the Latins: he adds, that the work contains abundance of things ſuperfluous, and foreign to the purpoſe.—For this reaſon M. Perrault has extracted all the rules out of Vitruvius's prolix work, and has methodized and publiſhed them in a little abridgment.—Several authors have alſo endeavoured to explain the text of Vitruvius, particularly Philander, Barbaro, and Salmaſius, in notes added to their ſeveral Latin editions; Rivius and Perrault, in the notes to their German and French verſions; and Baldus, in his *Lexican Vitruvianum* enlarged by de Laet.—The ſame M. Perrault has alſo compoſed an excellent treatiſe *of the five orders*, which may be eſteemed a ſupplement to Vitruvius, who left the doctrine of the orders defective.

The authors upon *Architecture*, ſince Vitruvius, are— Leon Battiſta Alberti, who, in 1512. publiſhed ten books of the art of building, in Latin, deſigned to outvie Vitruvius; in which, however, he has not ſucceeded: his work has abundance of good things; but it is deficient in the doctrine of the orders.—Seb. Serlio, who wrote ſeven books of *Architecture*, five of which, concerning the five orders, were made public in 1502. throughout all which, he religiouſly keeps to Vitruvius's rules: the ſeventh was ſince publiſhed in 1575. but the ſixth, concerning private buildings, has not yet appeared.— And. Palladio, who wrote four books of *Architecture*, containing the fundamental rules of the art, with various inſtances of all the kinds of works; publiſhed in Italian in 1575. the two firſt books are rendered into High-Dutch, and enlarged with annotations by Boeckler.—Phil de Lorme, who publiſhed nine books of *Architecture* in French in 1567. —J. Barozzi de Vignola, who, in 1631. made public his rules of the five orders, in Italian; this work has been ſince tranſlated, with large additions, by Daviler, under the title of *Cours d' architecture*, *&c.* and ſince alſo into High-Dutch, with notes.—

To theſe are to be added Vincent Scamozzi, in his *Idea of univerſal Architecture*, publiſhed in 1615. in Italian; Car. Phil. Dieuſſart, in his *Theatre of Civil Architecture*, publiſhed in High-Dutch in 1697. wherein he not only delivers the rules of *Architecture*, but explains and compares the five orders, as laid down by Palladio, Vignola, Scamozzi, and others: which ſame deſign was alſo executed in French by R. Freart de Cambray, in a *Parallel of the antient architecture with the modern*, publiſhed in French in 1650. and ſince tranſlated into Engliſh, with additions, by Mr. Evelyn. Fr. Blondel, director of the royal academy of painting, *&c.* in 1698. gave a *Courſe of Architecture*, in French; being a collection from all the celebrated writers upon the ſubject of the orders, *&c.*—Nic. Goldman, in a treatiſe *de Stylometris*, publiſhed in Latin and High-Dutch, in the year 1661. has done good ſervice, by reducing the rules and orders of *Architecture* to a further degree of perfection, and ſhewing, how they may be eaſily delineated by means of certain inſtruments invented by him.

Laſtly, the *Elements of Architecture* are very ingeniouſly laid down by Sir H. Wotton.—The ſame are alſo reduced by Sturmius, and Wolfius, to certain rules and demonſtrations; and thus is *Architecture* brought into the form of a mathematical art; by the firſt, in his *Matheſis Juvenil.* and by the ſecond, in his *Elementa Matheſeos*, tom. II. *an.* 1715.

Military ARCHITECTURE is the art of ſtrengthening and fortifying places, to ſcreen them from the inſults of enemies, and the violence of arms.

This we more uſually call *Fortification.*

The buſineſs of *military Architecture* is, to erect forts, caſtles, and other fortreſſes, with ramparts, baſtions, *&c.*

Naval ARCHITECTURE, or *Ship-building*, is that which teaches the conſtruction of ſhips, gallies, and other floating veſſels for the water; with ports, moles, docks, *&c.* on the ſhore *.

* How it ſtood in the days of Homer, may be ſeen in his Odyſſ. 5. 244.

ARCHITECTURE *in perſpective*, is a ſort of building, wherein the members are of different meaſures and modules, and diminiſh in proportion to their diſtances; to make the work appear longer and larger to the view than really it is.

Such is the celebrated pontifical ſtair-caſe of the Vatican, built under pope Alexander VII. by the cavalier Bernino.

Counterfeit ARCHITECTURE is that which has its projectures painted either in black or white, or coloured after the manner of marble; as is ſeen practiſed in the frontiſpieces and palaces in Italy, and in the pavilions of Marly.

This painting is done in freſco, upon plaſtered walls; and in oil, on walls of ſtone.

Under the name of *counterfeit Architecture*, which we otherwiſe call *ſcene-work*, is likewiſe comprehended, that painted on ſlight boards or planks of wood, whereon the columns, pilaſters, and other parts of building, ſeem to ſtand out, with a relievo; the whole being coloured in imitation of various marbles, metal, *&c.* and ſerving in the decorations of theatres, triumphal arches, public entries, funeral pomps, *&c.*

ARCHITRAVE *, in building, that part of a column, or order of column, which lies immediately upon the capital. —See *Tab. Archit. fig.* 24. 26. 28. 30. and 32. and *fig.* 49. *lit.* a.

* The Greeks call it *Epiſtyle.* See EPISTYLE.

The *Architrave* is the loweſt member of the entablature.

The *Architrave* is ſuppoſed to repreſent the principal beam in timber buildings; whence the name, which is formed of the Greek αρχος, chief; and the Latin *trabs*, beam.

The *Architrave* is different in the different orders.—In the Tuſcan it only conſiſts of a plain face, crowned with a fillet; and is half a module in height.

In the Doric and Compoſite, it has two faces, or faſciæ; and three in the Ionic and Compoſite; in which laſt order it is $\frac{1}{12}$ of a module high, though but half a module in the reſt.

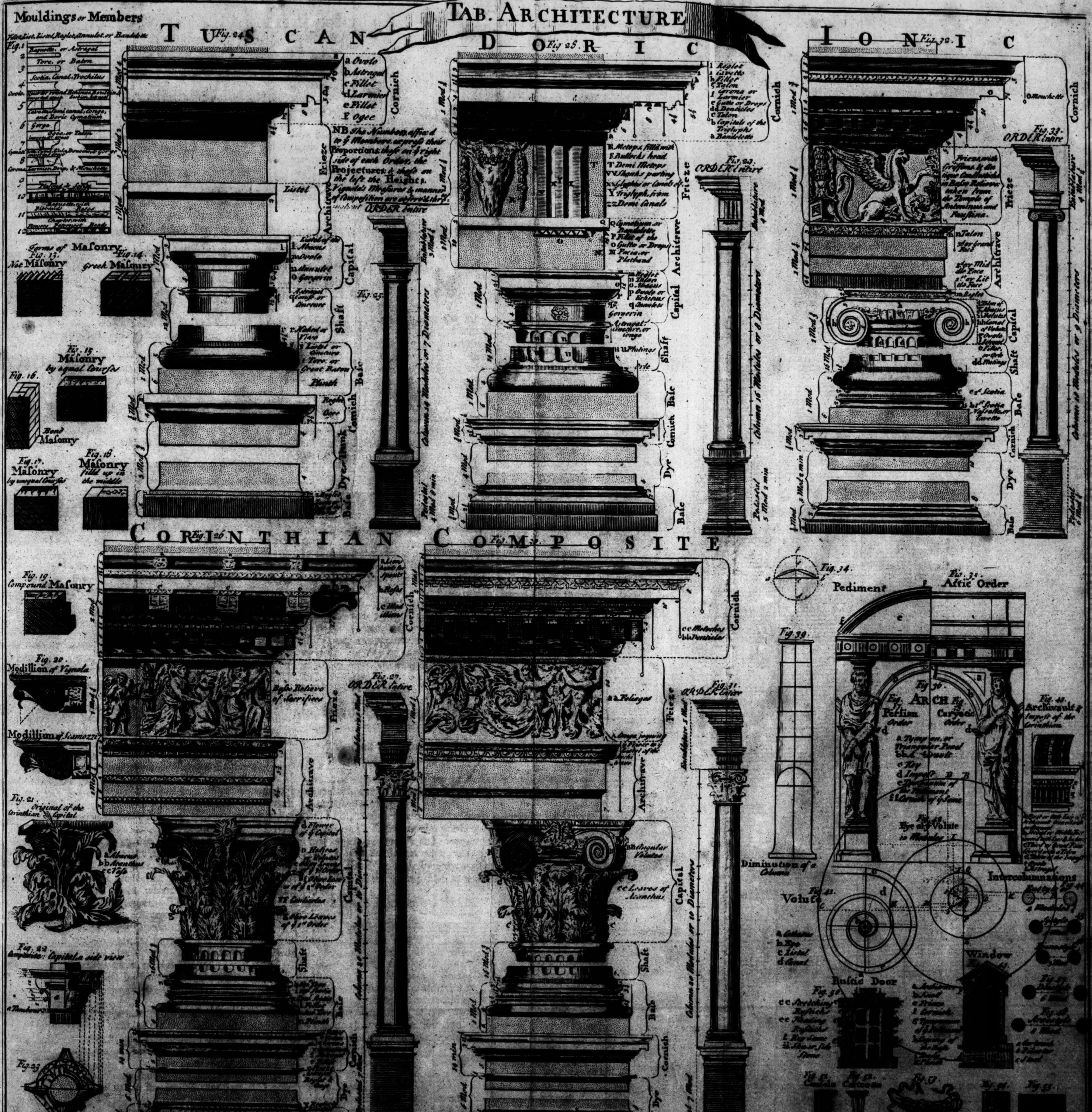
Architects, however, take a deal of latitude in this part; ſome uſing more members than others; and many of them having two or three forms of *Architraves*. What we give, is after Vignola.

Architrave is ſometimes alſo called the *reaſon-piece*, or *maſter-beam* in timber-buildings, as portico's, cloiſters, *&c.* In chimneys it is called the *mantle-piece*, and over the jaumbs of doors, or lintels of windows, the Hyperthyron.

ARCHITRAVE *Corniche.* See the article CORNICHE.

ARCHITRAVE *Doors*, as thoſe which have an *Architrave* on the jaumbs, and over the door, upon the cap-piece, if ſtrait; or on the arch, if the top be curved.

TAB. ARCHITECTURE


Mouldings or Members
Fillet, List, Listel, Reglet, Annulet, or Bandelette
Fig. 1
Baguette, or Astragal
Tore, or Baton
Scotia, Canal, Trochilus
Ovolo, Quarter round, Echinus, Boultin
Cavetto, semi canal, congé, and Doric Cymatium
Gorge
Ogee, or Talon
Cymatium
Corona, Larmier, Drip, & Mouchette
Plafond & Soffit
Baguette with Ribbands, Roses
Chaplet with Flowers, Paternost, Beads
TUSCAN
Fig. 24
a Ovolo
b Astragal
c Fillet
d Larmier
e Fillet
f Ogee
Cornich
Frieze
Architrave
Listel
Capital
Shaft
Base
Dye
Listel of the Abacus
m Ovolo
n Annulet
o Gorgerin
Astragal
Congé, or Cincture
Plinth
Cornich
NB The Numbers affix'd to the Members express their Proportions; those on the right side of each Order, the Projectures; & those on the left the Heights. Vignola's Measures & manner of Composition are observed thro'out.
ORDER Entire
Fig. 25
Forms of Masonry
Fig. 13.
Noe Masonry
Fig. 14
Greek Masonry
Fig. 15
Masonry by equal Courses
Fig. 16.
Bond Masonry
Fig. 17.
Masonry by unequal Courses
Fig. 18.
Masonry filld up in the middle
DORIC
Fig. 28.
1 Reglet
i Cavetto
h Fillet
g Talon
f Corona or Larmier
e Gutte or Drops
dd Denticles
c Talon
b Capitals of the Triglyphs
a Bandelette
R Metops, filld with
S Bullocks head
T Demi Metops
VV Shanks parting
XX Glyphs or Canals of
Y Triglyph, from
zz Demi Canals
Q Cymatium or Bandelette
P Fillet of the
O Gutte or Drops
N Facia, or Platband
Reglet
Talon
Abacus
Ovolo or Echinus
Annulets
Gorgerin
Astragal, Cincture, or Congé
uu Flutings
Fig. 29.
ORDER Entire
Entablature 4 Mod
Column 16 Modules or 8 Diameters
Pedestal 5 Mod 2 min
IONIC
Fig. 30.
Cornich
Mouchette
Frieze with Griffons & the Vase Candlesticks in Basso Relievo taken from the Temple of Antoninus and Faustina.
Architrave
Capital
Shaft
Base
Scotia
Fig. 33.
ORDER Entire
Column 18 Modules or 9 Diameters
Pedestal 6 Mod
CORINTHIAN
Fig. 26
Basso Relievo of Sacrifices
Flower of the Capital
Leaves of the Order
Caulicoles
Fig. 27.
ORDER Entire
Column 20 Modules or 10 Diameters
Fig. 19.
Compound Masonry
Fig. 20.
Modillion of Vignola
Modillion of Scamozzi
Fig. 21
Original of the Corinthian Capital
a Abacus
bb Acanthus
cc Tyle
Fig. 22
Composite Capital in side view
a Tambour
Fig. 23
Plan of the Composite Capital inverted
COMPOSITE
Fig.
cc Mutules
Foliages
Angular Volutes
cc Leaves of Acanthus
Fig. 31.
ORDER Entire
Column 20 Modules or 10 Diameters
Pedestal 7 Mod
Fig. 34.
Pediment
Fig. 35.
Attic Order
Fig. 36.
ARCH
Fig. 37
Persian Order
Fig. 38
Caryatic Order
a Tympan, or Triangular Panel
bb Archivolt
c Key
d Impost
e Tympanum of the Pediment
f f Cornich of the same
Fig. 39.
Diminution of a Column
Fig. 40.
Archivault & Impost of the Corinthian
Fig. 41.
Volute
a Cathetus
b Eye
c Listel
d Canal
Fig. 42.
Eye of the Volute
Intercolumnations
Fig. 44
Window
Fig. 49.
Rustic Door
Fig. 50.
cc Stretching Rustick
ee Heading Rustick
i. Key Stone
ii Shear side Stone
Fig. 47.
Diastyle 6 Mod
Fig. 48.
Areostyle 8 Mod
Fig. 51.
Console
Fig. 52.
Cartouche
Fig. 53.
Festoon
Fig. 54.
Rose
Fig. 55.
Fret

I. Fletcher sculp.

No. III

CHITRAVE-*Windows*, of timber, are commonly an ogee raiſed out of the ſolid timber, with a liſt over it: though ſometimes the mouldings are ſtruck, and laid on; and ſometimes they are cut in brick.

The upper faſcia is called the *header*, or *heading Architrave*; and the lower the *jack*.

RCHITYPE. See the article ARCHETYPE.

RCHIVAULT*, in architecture, the inner contour of an arch; or a band or frame adorned with mouldings, running over the faces of the arch-ſtones, and bearing upon the impoſts.—See *Tab. Archit. fig.* 36. *lit. b b.* and *fig.* 40.

* The word is French, *Archivolte*; where it ſignifies the ſame thing: formed of the Latin, *arcus volutus*.

It is different in the different orders.—In the Tuſcan, it has only a ſingle face; it has two faces crowned, in the Doric and Ionic; and the ſame mouldings with the architrave in the Corinthian and Compoſite.

RCHIVE*, or ARCHIVES, a chamber or apartment wherein the records, charters, and other papers and evidences, of a ſtate, houſe, or community, are preſerved; to be conſulted occaſionally.

* The word comes from the Latin *arca*, a cheſt, or coffer; or the Greek *αρχαιον*, which Suidas uſes in the ſame ſenſe. In ſome Latin writers we meet with *archarium*.

We ſay, the *Archives* of a college, of a monaſtery, *&c.* The *Archives* of antient Rome were in the temple of Saturn; the *Archives* of the court of chancery are in the rolls-office.—In the code we meet with *Archivum publicum, vel armarium publicum, ubi acta & libri exponebantur. Cod. de fid. inſtrum. auth. ad hæc* xxx. q. 1. Trev.

ARCH-LEVITE, ARCHILEVITA. See ARCHDEACON.

ARCH-MARSHAL, ARCHIMARISCALLUS, the grand marſhal of the empire.

The elector of Saxony is *Archmarſhal* of the empire; and in that quality he goes immediately before the emperor, bearing a naked ſword.

ARCH-MINISTER, ARCHIMINISTER, the prime miniſter of a prince, or ſtate.

Charles the Bald having declared Boſon his viceroy in Italy, under the title of duke, made him alſo his firſt miniſter under that of *Archiminiſter*. The word is derived from the Greek *αρχος*, and the Latin *miniſter*.—Chorier.

ARCHON*, in antiquity, the chief magiſtrate of the city and commonwealth of Athens.

* The word is Greek, *αρχων*; where it literally ſignifies a commander, or one that governs.

After the Athenians had aboliſhed monarchy, they created *Archons*, who were obliged to render an account of their adminiſtration to the people.

Some of theſe were annual, and others perpetual. Medon, the ſon of Codrus, was the firſt of thoſe; and Creon of theſe.—The occaſion of their inſtitution was this: Codrus, king of Athens, having devoted himſelf, for the good of his people, in the war with the Heraclidæ; his ſons, Medon and Nileus, diſputed the crown betwixt them: the Athenians took this occaſion of diſſolving their monarchy, and, in lieu of kings, created perpetual governors, under the name of *Archons*.—Medon, ſon of Codrus, was he who firſt had this charge; and his deſcendants (from him called *Medontidæ*) enjoyed it for 287 years. But a perpetual magiſtracy ſeemed to this free people too lively an image of royalty, the very ſhadow whereof they were reſolved to aboliſh. Accordingly, the adminiſtration of an *Archon*, which had before been perpetual (*viz.* in the firſt year of the ſeventh Olympiad), they now reduced to ten years; and, about 70 years after, to one year; with a view of recovering, as oft as poſſible, the authority into their own hands, which they never transferred to the magiſtrates, but with regret.—There were, in all, thirteen perpetual *Archons*, and ſeven decennial ones; the firſt whereof was eſtabliſhed in the 24th Olympiad.

Under the Roman emperors, ſeveral other Greek cities had two *Archons*, for chief magiſtrates; which were the ſame with the *duumviri* in the colonies, and municipia.

ARCHON is alſo applied, by ſome authors, to divers officers, both civil and religious, under the eaſtern or Greek empire.

Thus, biſhops are ſometimes called *Archontes*; and the ſame may be ſaid of the lords of the emperor's court. We alſo read of the *Archon of the Antimenſia*, *Archon of Archons*, *grand Archon*, *Archon of churches*, *Archon of the goſpel*, *Archon of the walls*, &c.

ARCHONTICI, in church-hiſtory, a ſect of heretics, who aroſe towards the cloſe of the ſecond century; thus called from the Greek Αρχοντες, q. d. *principalities*, or *hierarchies of angels*; by reaſon they held the world to have been created not by the Supreme God, but by certain ſubordinate powers called *Archontes*, or angels. The *Archontici* were a branch of Valentinians. See VALENTINIAN.

ARCH-PRIEST, ARCHIPRESBYTER, a prieſt, or preſbyter, eſtabliſhed in ſome dioceſes, with a pre-eminence over the reſt.

Antiently, the *Arch-prieſt* was the firſt perſon after the biſhop: he was ſeated, in the church, next after the biſhop; and even acted as his vicar, in his abſence, as to all ſpiritual concerns.

In the ſixth century, there were found ſeveral *Arch-prieſts* in the ſame dioceſe; from which time ſome will have them to have been called *deans*.

In the ninth century, they diſtinguiſhed two kinds of cures or pariſhes: the ſmaller, governed by ſimple prieſts; and the baptiſmal churches, by *Arch-prieſts*; who, beſide the immediate concern of the cure, had the inſpection of the other inferior prieſts, and gave an account of them to the biſhop, who governed the chief, or cathedral church, in perſon.

There are *Arch-presbyters* ſtill ſubſiſting in the Greek church; veſted with moſt of the functions and privileges of *chorepiſcopi*, or rural deans.

ARCH-PRINTER, ARCHITYPOGRAPHUS. See PRINTER.

ARCH-PRIOR was a name ſometimes given to the maſter of the order of Templars.

ARCH-TREASURER, *Architheſaurarius*, the great treaſurer of the German empire.

This office was created with the 8th electorate, in favour of the elector Palatine, who had loſt his former electorate, which was given to the duke of Bavaria, by the emperor Ferdinand II. who took it away from Frederic V. elector Palatine after the battle of Prague, where he was defeated in maintaining his election to the crown of Bohemia. See ELECTOR.

The dignity of *Arch-treaſurer* is conteſted between the elector of Brunſwic, now king of Great-Britain, who claims it in virtue of his deſcent from the elector Frederic; and the preſent elector Palatine.

ARCILEUTO, ARCHILUTE, a long, and large lute, having its baſs ſtrings lengthened after the manner of the theorbo, and each row doubled either with a little octave or an uniſon.—It is uſed by the Italians for playing a thorough baſs. *Broſſ.* p. 10.

ARCTIC, Αρκτικος, in aſtronomy, an epithet given to the north pole, or the pole raiſed above our horizon. See NORTH, and POLE.

It is called the *Arctic* pole, on occaſion of the conſtellation of the little bear, in Greek called Αρκτος, the laſt ſtar in the tail whereof nearly points out the north pole. See URSA *Minor*.

ARCTIC *Circle* is a leſſer circle of the ſphere, parallel to the equator, and 23° 30′ diſtant from the north pole; from whence its name.

This, and its oppoſite, the *antarctic*, are called the two *polar circles*; and may be conceived to be deſcribed by the motion of the poles of the ecliptic, round the poles of the equator, or of the world.

ARCTOPHYLAX, in aſtronomy, a conſtellation, otherwiſe called *Boötes*.

ARCTURUS*, in aſtronomy, a fixed ſtar, of the firſt magnitude, in the conſtellation Arctophylax, or Boötes.

* The word is formed of *αρκτος*, bear; and *ουρα*, tail; *q. d.* bear's tail; as being very near it.

Arcturus riſes on the firſt day of September, and ſets on the thirteenth day of May; and has been ſuppoſed rarely to appear without bringing ſome ſtorm.

ARCTUS, Αρκτος, in aſtronomy, a name given by the Greeks to two conſtellations of the northern hemiſphere; by the Latins called *Urſa major*, and *minor*, and by us the *greater*, and *leſſer bear*. See URSA *major*, and *minor*.

ARCUATION is uſed, by ſome writers in ſurgery, for an incurvation of the bones; ſuch as we ſee in the caſe of rickets, *&c.*

ARCUATION, in gardening, denotes a method of raiſing trees by layers.

This, Switzer obſerves, is now the general method of raiſing ſuch trees as can't be raiſed from ſeed; as the platanus, elm, abele, lime, alder, willow, *&c.*

The firſt thing here done is, to procure large and ſtrong mother-plants called *ſtools*. Theſe, being planted in a trench, will throw out twenty, thirty, forty, or fifty, plants apiece; which may be begun to be laid about the Michaelmas following; at which time, if the ſtools have been carefully managed, they will have ſhot five, ſix, or more, main branches out of the root; and on every one of theſe, as many ſide or collateral branches.

Theſe main branches are to be bent down to the ground, and, when thus laid quite round the ſtool, and pegged faſt down, the ſmall ones may be ſerved in the ſame manner: thus the main branches are to be covered over, all except the top; and the ſmall, or ſide branches, to be covered over two or three inches thick upon the joints. This done, they may be treaded, to make them take root the better.

About the middle of September they may be opened; when, it is probable, they will have taken root: otherwiſe they may lie till next ſpring; and then, taking them up, they are to be planted in the nurſery.

ARCUTIO, a machine made of a board covered with pieces of hoops; uſed in Italy to prevent children from being overlaid and ſmothered by nurſes, or others.

Every nurſe in Florence is obliged to lay her child in an *Arcutio*, under pain of excommunication.—See a figure and deſcription of the *Arcutio*, given by Mr. St. John, in *Philoſ. Tranſ.* N° 422. p. 256.

ARDENT*, ARDENS, ſomething hot, and, as it were, burning.

* The word is formed of the Latin *ardere*, to burn.

ARDENT *Fever* is a violent burning fever, otherwiſe called *cauſus*. See FEVER.

ARDENT *Spirits* are thoſe diſtilled from fermented vegetables; thus called, becauſe they will take fire, and burn.

Such are, brandy, ſpirit of wine, rum, arrack, &c.

ARDERS, fallowings, or ploughings of grounds. See PLOUGHING, FALLOW, &c.

ARDOR *Ventriculi*, a heat in the ſtomach, uſually expreſſed by the term *heart-burn*, or *cardialgy*.

ARE, or A-LA-MIRE, one of the eight notes in the ſcale of muſic. See NOTE.

AREA*, in general, denotes any plain ſurface, whereon we walk, &c.

* The word is Latin; importing, more properly, a threſhing-floor: and is derived from *arere*, to be dry.

AREA, in geometry, denotes the ſuperficial content of any figure.

Thus, if a figure, *e. gr.* a field, be in form of a ſquare, and its ſide be 40 feet long; its *Area* is ſaid to be 1600 ſquare feet; or it contains 1600 little ſquares, each a foot every way.

Hence, to find the *Area* of a triangle, ſquare, parallelogram, rectangle, trapezium, rhombus, polygon, circle, or other figure; is to find the magnitude or capacity thereof in ſquare meaſure.—To do which, ſee the article TRIANGLE, &c.

To find the *Area* of fields, and other incloſures; they firſt ſurvey or take the angles thereof, then plot them on paper, and thus caſt up their contents in acres, roods, &c. after the uſual manner of other plain figures.

The law by which the planets move round the ſun, is this; that a line, or radius, drawn from the centre of the ſun to the centre of the planet, always ſweeps or deſcribes elliptic *Areas* proportional to the times. Thus, the ſun being ſuppoſed in S, and a planet in A (*Tab. Aſtronomy, fig.* 61. N° 2.); and letting it proceed, in any given time, to B; in ſuch progreſs, its radius AS will have deſcribed the *Area* ASB. Suppoſe, again, the planet to be arrived to P; then the elliptic ſpace PSD being drawn equal to the other ASB, the planet will move through the arch PD in the ſame time as through the arch AB.

Sir I. Newton demonſtrates, that whatever bodies do obſerve ſuch law in their motions about any other body, do gravitate towards ſuch body.

AREA is alſo uſed, in medicine, for a diſeaſe which makes the hair fall.

The *Area* is a general kind of depilation; and is diſtinguiſhed into two ſpecies; *alopecia*, and *ophiaſis*. See ALOPECIA, &c.

ARENA*, among the Romans, ſometimes ſignified the ſame with an *amphitheatre*; *viz.* a place where the gladiators had their combats.

* The word is originally Latin and ſignifies *ſand*; in regard the place was always ſtrewed with ſand, to conceal from the view of the people the blood ſpilt in the combat.

Properly ſpeaking, *Arena* was only the pit or ſpace in the middle of thoſe places, where the athletæ and gladiators performed.

The *Arena* was the ſame thing, with regard to the gladiators, that the campus, or field, was to ſoldiers and armies; *viz.* the place where they fought.—He who fought in the *Arena*, was called *arenarius*. See GLADIATOR.—Nero is ſaid to have ſtrewed the *Arena* with gold-duſt.

ARENATION is uſed, by ſome phyſicians, for a kind of dry bath, in which the patient only ſits with his feet on hot ſand.

AREOLA, or AREOLA *Mamillaris*, in anatomy, the coloured circle which ſurrounds the nipple. See BREAST.

AREOPAGUS, or ARÆOPAGUS, Αρειοπαγος, in antiquity, a ſovereign tribunal at Athens; famous for the juſtice and impartiality of its decrees; to which the gods themſelves are ſaid to have ſubmitted their quarrels.

Authors are divided, as to the reaſon and origin of the name: ſome imagine *Areopagus* the proper name of the court of juſtice, which was ſituate on a hill, in Athens; and that in this court the ſenate of that illuſtrious city aſſembled.—Others ſay, that *Areopagus* was the name of the whole ſuburbs of Athens, wherein ſtood the hill on which the court was built: and the name *Areopagus* ſeems to countenance this laſt opinion; for it ſignifies literally, the hill or rock of Mars; from ϖαγος, hill; and αρειος, belonging to Mars. In effect, the denomination might either ariſe hence, that the *Areopagus* was built in a place where had been a temple of Mars; or, becauſe the firſt cauſe pleaded there was that of this god, who was accuſed of killing Halirrhotius, the ſon of Neptune, and tried here before twelve gods, and acquitted by a majority of voices: or, finally, becauſe the Amazons, whom the poets feign to have been the daughters of Mars, when they beſieged Athens, pitched their tents, and offered ſacrifices to the god of war, in this place.

This tribunal was in great reputation among the Greeks; and the Romans themſelves had ſo high an opinion of it, that they truſted many of their difficult cauſes to its deciſion. Authors are not agreed about the number of the judges who compoſed this auguſt court.—Some reckon thirty-one, others fifty-one, and others five hundred: in effect, their number ſeems not to have been fixed, but to have been more or leſs in different years.—By an inſcription quoted by Volaterranus it appears, they were then three hundred.

At firſt this tribunal only conſiſted of nine perſons, who had all diſcharged the office of archons, had acquitted themſelves with honour in that truſt, and had likewiſe given an account of their adminiſtration before the Logiſtæ, and undergone a very rigorous examination. Their ſalary was equal, and paid out of the treaſury of the republic: they had three oboli for each cauſe.

The *areopagites* were judges for life.—They never ſat in judgment but in the open air, and that in the night-time; to the intent that their minds might be more preſent and attentive; and that no object, either of pity or averſion, might make any impreſſion upon them.—All pleadings before them were to be in the ſimpleſt and moſt naked terms; without exordium, epilogue, paſſions, &c.

At firſt they only took cognizance of criminal cauſes; but in courſe of time their juriſdiction became of greater extent.—Mr. Spon, who examined the antiquities of that illuſtrious city, found ſome remains of the *Areopagus* ſtill exiſting in the middle of the temple of Theſeus, which was heretofore in the middle of the city, but is now without the walls.—The foundation of the *Areopagus* is a ſemicircle, with an eſplanade of 140 paces round it, which properly made the hall of the *Areopagus*. There is a tribunal cut in the middle of a rock, with ſeats on each ſide of it, where the *areopagites* ſat, expoſed to the open air.

This court is ſaid by ſome to have been inſtituted by Solon; but others carry it much higher, and aſſert it to have been eſtabliſhed by Cecrops, about the time that Aaron died; *viz.* in the year of the world 2553. maintaining, withal, that Solon only made ſome new regulations in it, increaſed its power and privileges, and made it ſuperior to the Ephetæ, another celebrated court inſtituted by Draco.—In effect, Demoſthenes himſelf, in his oration againſt Cteſiphon, owns himſelf at a loſs on the point: *The inſtitutors of this tribunal*, ſays he, *whatever they were, whether gods or heroes.*

AREOMETER. } See, { ARÆOMETER.
AREOSTYLE. } See, { ARÆOSTYLE.
AREOTICS. } See, { ARÆOTICS.

ARETOLOGY, ARETOLOGIA, that part of moral philoſophy which treats of virtue, its nature, and the means of arriving at it.

ARGAL, or ARGEL, the hard lees ſticking to the ſides of wine-veſſels; more frequently called *tartar*.

ARGEA, or ARGEI, in antiquity, human figures made of ruſhes, thrown annually by the veſtals into the river Tiber, on the day of the ides of May.

This ceremony we learn from Feſtus and Varro; the latter of whom, however, ſays, they were caſt by the prieſts; unleſs by *ſacerdotibus* we ſuppoſe he meant prieſteſſes. He adds, that the number of figures was thirty.

Plutarch, in his Roman queſtions, inquires, why they were called *Argea*? There are two reaſons aſſigned: the firſt, that the barbarous nation, who firſt inhabited theſe parts, caſt all the Greeks they could meet withal into the Tiber; for *Argians* was a common name for all Grecians: but that Hercules perſuaded them to quit ſo inhuman a practice, and to purge themſelves of the crime, by inſtituting this ſolemnity.—The ſecond, that Evander, an Arcadian, and a ſworn enemy of the Argians, to perpetuate that enmity to his poſterity, ordered the figures of Argians to be thus caſt into the river.

ARGENT, in heraldry, ſignifies the colour white, uſed in the coats of gentlemen, knights, and baronets.

Barons, and all nobles, have the white colour called *pearl*; and ſovereign princes have theirs called *luna*.—Without either *Argent* or *or*, the heralds ſay, there can be no good armory.

Argent is expreſſed, in engraving, by the parts being left plain, without any ſtrokes from the graver. The word is

French, derived from the Latin *argentum*, ſilver; this colour being ſuppoſed the repreſentation of that metal: whence the Spaniards call this field *campo de plata*, a ſilver field.

In the doubling of mantles, where the white is ſuppoſed to repreſent a fur, and not a metal, it may be blazoned white.

ARGENTUM *Album*, mentioned in domeſday, ſignifies, according to Spelman, bullion, or ſilver uncoined.

In thoſe antient days, ſuch metal paſſed as money from one to another in payment — *Sumitur pro ipſo hoc metallo penſili non ſignato.*

Argentum *Dei*, *God's peny*, antiently ſignified *earneſt-money*, or money given to bind a bargain; in ſome places called *erles*, or *arles*, and by the civilians and canoniſts, *arrhæ*. *Et cepit de prædicto Henrico tres denarios de* argento *Dei præ manibus.*

ARGILLA, or **Argil**, *Clay*; a general name for all earths uſed in pottery, brick, and tile-making, and for the like purpoſes.

ARGO, in antiquity, a ſhip or veſſel celebrated among the poets; being that wherein the Argonauts made their expedition.

The critics are divided about the origin of the name: ſome will have it thus called from the perſon who built it, *Argus*: others, by antiphraſis, from the Greek word αργος, ſlow, as being a light ſailor; others from the city *Argos*, where they ſuppoſe it built: others, from the *Argives*, who went on board it, according to the diſtich quoted from an antient Latin poet by Cicero, in his firſt Tuſculan;

> *Argo, quia Argivi in ea, delecti viri,*
> *Vecti, petebant pellem inauratam arietis.*

Ovid calls *Argo* a ſacred ſhip, *ſacram conſcendis in Argum*; by reaſon, ſay ſome, that Minerva contrived the plan, and even aſſiſted in the building thereof; or rather, on account of a piece of timber in its prow, which, they ſay, ſpoke, and rendered oracles.—Several authors make mention of this piece of timber, which is ſaid to have been hewn in the ſacred foreſt of Dodona.

Jaſon, having happily accompliſhed his enterprize, conſecrated the ſhip *Argo* to Neptune; or, as others ſay, to Minerva, in the Iſthmus of Corinth; where, they add, it did not remain long, before it was tranſlated into heaven, and made a conſtellation.

The generality of authors repreſent the ſhip *Argo* as of a long make, reſembling the modern galleys; and furniſhed with thirty benches of rowers. — The ſcholiaſt of Apollonius obſerves, that it was the firſt long veſſel ever made: and Pliny relates the ſame, after Philoſtephanus, who had affirmed, that Jaſon was the firſt that truſted out to ſea in a long veſſel: *Longa nave Jaſonem primum navigâſſe, Philoſtephanus auctor eſt. Hiſt. Nat. l. 7. c.* 56.—It could not however be of any great bulk, ſince the Argonauts were able to carry it on their backs from the Danube to the Adriatic ſea.

Argo *Navis*, or the *ſhip*, in aſtronomy, is a conſtellation of fixed ſtars, in the ſouthern hemiſphere, whoſe ſtars, in Ptolemy's catalogue, are 8; in Tycho's, 11; in the Britannic catalogue, 25; the longitudes, latitudes, magnitudes, *&c.* whereof are as follow:

Names and ſituation of the ſtars.	Signs.	Longitud. ° ′ ″	Latitude. ° ′ ″	Magn.
Preced. under the ſhield in the ſtern	♋	29 10 21	47 26 26	3 4
Between the ſail and lactea		24 57 46	30 30 11	3
	♌	0 38 10	46 46 34	6
	♋	27 26 26	35 18 03	6
Subſeq. under the ſhield of the ſtern	♌	1 34 22	49 14 58	4 5
5.				
	♋	27 32 40	35 09 13	6
South in the middle of the ſtern	♌	1 45 40	46 05 27	5 6
		29 22 16	37 32 25	5
North in the middle of the ſtern	♌	1 44 14	44 58 49	3 4
	♋	28 43 17	33 08 53	5 6
10.				
		29 02 00	34 09 45	4
Preced. in the top of the ſtern	♌	3 20 43	42 36 40	4
		4 10 24	42 53 10	6
Preced. of two in the yard		0 49 33	22 37 35	4
Subſeq. in the top of the ſtern		7 05 31	41 18 24	3
15.				
Inform. under the ſail, Tycho		5 39 06	38 20 40	5
		4 46 09	35 26 03	6
In the ſail, Tycho		4 15 53	32 06 47	4 5
		5 44 40	34 44 10	5 6
		5 13 29	22 24 32	6
20.				
Subſeq. in the yard		5 32 30	22 28 27	4 3
		5 46 09	22 30 10	6
In the maſt the loweſt of three. Tycho.		13 39 49	32 55 23	6
In the maſt, upper		11 13 00	24 28 45	5
Middle in the maſt	♌	14 02 39	30 18 40	6
25.				

ARGOL, the ſame with *Tartar*. See **Tartar**.

ARGONAUTS, in antiquity, a company of fifty-two, or according to others, fifty-four heroes, who embarked along with Jaſon, in the ſhip *Argo*, for Colchis; with a deſign to obtain the golden fleece.

Hercules, Theſeus, Caſtor, Orpheus, *&c.* were of the number of the *Argonauts*.

Argonauts *of St. Nicolas* was the name of a military order, inſtituted by Charles III. king of Naples, towards the end of the fourteenth century.

They wore a collar of ſhells, incloſed in a ſilver creſcent, whence hung a ſhip, with this device, *Non credo tempori*, I do not truſt time. Hence theſe *Argonaut* knights came to be called *knights of the ſhell*. They received the order of St. Baſil, archbiſhop of Naples; and held their aſſemblies in the church of St. Nicolas, their patron.

ARGUMENT, **Argumentum**, in rhetoric, as defined by Cicero, is ſome probable matter alleged to gain belief.

Logicians, ſomewhat more ſcientifically, define *argument*, a medium, from whoſe connexion with two extremes, the connexion of the two extremes themſelves is inferred.

Arguments are divided, with regard to their ſource, into thoſe fetched from *reaſon*, and thoſe from *authority*.

Logicians alſo divide their *arguments*, with regard to their form, into *ſyllogiſms*, *enthymemes*, *inductions*, &c.

An *Argument in form* is a ſyllogiſm framed according to the ſtrict rules of logic.—According to Ariſtotle, the enthymeme is the *argument* of rhetoric, as the ſyllogiſm is that of logic. —Rhetoric is defined by ſome, the art of finding *arguments* adapted to perſuade, or gain belief.

Rhetoricians divide *arguments*, with reſpect to the places they are drawn from, into *intrinſic* or artificial; and *extrinſic* or inartificial, or remote.

Artificial, or *intrinſic* **Arguments**, by the Greeks called εντεχνα, by Cicero *inſita*, are the proper invention of him who ſpeaks; or they are thoſe which are taken from the ſubject treated of; of which there are ſeveral kinds, *viz.* genus and ſpecies, form, cauſe, and effect, *&c.* See each in its place, **Genus**, *&c.*

To theſe ſome add two other places of *argument*, *viz.* the manners, and the paſſions.

Inartificial, or *extrinſic* **Arguments**, ατεχνα, by Cicero called *aſſumpta*, are thoſe which are borrowed from abroad, and are only applied by the orator to the point in hand; ſuch are laws, common report, books, oaths, torture, and witneſſes.

A late author divides the places, or general heads of *arguments*, with regard to their end, into, 1°, Thoſe intended to perſuade or diſſuade, which are chiefly drawn from the conſiderations of profit, honour, and equity: 2°, Thoſe intended to praiſe, or diſpraiſe: — and 3°, Thoſe intended to accuſe and defend.

Dialectical **Argument**. See the article **Dialectical**.

Argument is alſo uſed for a ſyllabus, or abridgment of the ſubject of a book, hiſtory, comedy, or the like.

We have almoſt loſt the original uſe of prologues, which was to give the *argument* of the play.

Argument, in aſtronomy, is an arch whereby we ſeek another unknown arch proportional to the firſt.

Hence

Argument *of Inclination* is an arch of a planet's orbit, intercepted between the aſcending node, and the place of the planet from the ſun, numbered according to the ſucceſſion of the ſigns. See **Inclination**.

Menſtrual **Argument** *of Latitude* is the diſtance of the moon's true place from the ſun's true place. See **Place**.

By this we find the quantity of the real obſcuration in eclipſes, or how many digits are darkened in any place. See **Eclipse**.

Argument *of the moon's menſtrual longitude*, or *Menſtrual* **Argument** *of the longitude*, is an arch of her eccentric, L. P. (*Tab. Aſtron. fig.* 32.) intercepted between her true place once equated L; and a right line PQ, drawn through the centre of the eccentric B, parallel to the menſtrual line of the apſides.

The *annual argument* of longitude is repreſented by the angle DAH.

ARGUMENTATION, the act of inventing or framing *arguments*, of making inductions, and drawing concluſions. See **Argument**, **Induction**, **Conclusion**, *&c.* See alſo **Discourse**, **Ratiocination**, *&c.*

Argumentation, according to Cicero, is the delivering or unfolding of an argument. — The matter of *argumentations* is propoſitions; the form, their due diſpoſition, with regard to one another, ſo as a concluſion may be drawn from them. See **Proposition**, **Syllogism**, **Enthymeme**, and **Sorites**.

ARGYRASPIDES, or **Argyroaspides**, in antiquity, perſons armed with ſilver bucklers, or bucklers ſilvered. See **Buckler**.

The *Argyraſpides*, according to Quintus Curtius, *Hiſt.* iv. 13. 27. made the ſecond corps of Alexander's army; the firſt was the phalanx.

According to Juſtin's account, *Lib.* xii. *c.* 7. Alexander having penetrated into India, and extended his empire as far as the ocean; for a monument of his glory, ordered the armour of his ſoldiers, and the houſing of his horſes, to be adorned with ſilver.—And hence commanded them to be called *Argyraſpides*, from the Greek αργυρος, ſilver, and ασπις, buckler.

By this author it ſhould ſeem that Alexander's whole army were called *Argyraſpides.*—After that prince's death, the *Argyraſpides* deſpiſed all other chiefs of the army, diſdaining to obey any other, having borne arms under Alexander.

ARGYROPOEIA [*], in alchymy, the art of making ſilver, out of other more imperfect metals.

[*] The word is formed of αργυρος, ſilver, and ποιεω, I make.

The ſcope and deſign of *argyropœia*, and *chryſopœia*, is to make gold and ſilver. See TRANSMUTATION, and PHILOSOPHERS *Stone.*

ARIANS, a ſect of antient heretics, retainers to Arius, a preſbyter of the church of Alexandria about the year 320.—who owned Chriſt to be God, yet maintained him inferior to the Father even as to his deity, and his eſſence to be different from that of the Father, and that he was neither co-eternal nor co-equal with him.—Alſo that the Holy Ghoſt was not God, but a creature of the Son.

The *Arians* were firſt condemned and anathematized by a council at Alexandria, under Alexander biſhop of that city; and afterwards by 380 fathers in the general council of Nice.—After this council they divided into ſeveral parties, and factions. Some held that the Son was made *ex non entibus*, εξ ουκ οντων, or of nothing; and added, that he was in all reſpects unlike the Father, κατα παντα ανομοιος τω πατρι. This was the doctrine of Acacius biſhop of Cæſarea, whoſe followers were hence denominated *Acaciani* and *Anomoei.* The ſame was afterwards eſpouſed by Urſacius biſhop of Tyre, and Eudoxius biſhop of Antioch, afterwards of Conſtantinople; whence the denominations of *Urſaciani* and *Eudoxiani.* To theſe alſo adhered Aetius, and his diſciple Eunomius, biſhop of Cyzicus; whence the *Aetiani* and *Eunomiani.* — Others held, that the Son was like the Father, and begot of his ſubſtance, though not coeternal with him: they rejected the terms conſubſtantiality or homoouſia, and ſubſtituted that of likeneſs or similitude in their ſtead; anathematizing all thoſe who held the Son unlike the Father, or a creature like other creatures, and made of nothing. Such was the faith of the council of Arimini, and the ſecond council of Nice. — Laſtly, others believed orthodoxly of the Father and Son, but denied the deity of the Holy Ghoſt, and his conſubſtantiality with Father and Son. Theſe were denominated *Semiarians.*

ARIANISM, an antient hereſy in the church, broached by Arius, in the beginning of the fourth century; who denied that the Son was God conſubſtantial, and co-equal with the father; and aſſerted him to be a creature made out of nothing, and in time.

The Arians owned, that the Son was the Word, but denied that Word to have been eternal; aſſerting that it had only been created before all other beings.—They held, that Chriſt had nothing of man in him, but the fleſh, with which the Word was joined, which ſupplied the reſt.

This hereſy was condemned in the firſt council of Nice, in 325 [*]. but, notwithſtanding that, it was not extinguiſhed: on the contrary, it became the reigning religion, eſpecially in the eaſt, where it obtained much more than in the weſt [**].

At the time of St. Gregory Nazianzen, the Arians were maſters of the capital city of the empire, and frequently upbraided the orthodox with the ſmalneſs of their numbers. Accordingly that father begins his twenty-fifth oration againſt the Arians, thus: "Where are thoſe who reproach us with our "poverty, and define the church by the multitude of people; "deſpiſing the little flock?" *&c.*

Arianiſm was carried in the ſixth century into Africa under the Vandals; and into Aſia under the Goths: Italy, the Gauls, and Spain, were alſo deeply infected with it. But, having reigned thirty years with great ſplendor, it ſunk almoſt all at once.

Eraſmus ſeems to have aimed, in ſome meaſure, to reſtore *Arianiſm*, at the beginning of the ſixteenth century, in his commentaries on the New Teſtament: accordingly, he was reproached by his adverſaries with Arian interpretations and gloſſes, Arian tenets, *&c.* To which he made little anſwer, ſave that there was no hereſy more thoroughly extinct than that of the Arians: *Nulla hæreſis magis extincta quam Arianorum.* But the face of things was ſoon changed: Servetus, a Spaniard by nation, publiſhed in 1531. a little treatiſe againſt the myſtery of the Trinity; which once more ſet the hereſy of the Arians on foot in the weſt. — Indeed he rather ſhewed himſelf a Photinian, than an Arian; only that he made uſe of the ſame paſſages of Scripture, and the ſame arguments againſt the divinity of our Saviour, with the proper Arians.

It is true, Servetus had not, properly ſpeaking, any diſciples; but he gave occaſion, after his death, to the forming of a new ſyſtem of *Arianiſm* in Geneva, much ſubtiler, and more artful, than his, and which did not a little perplex Calvin. — From Geneva, the new Arians removed to Poland, where they gained conſiderable ground; but at length they degenerated, in great meaſure, into Socinians. See SOCINIAN.

The learned Grotius himſelf ſeems to have bordered a little on *Arianiſm*, in his notes on the New Teſtament; where he mounts the Father too high above the Son; as if the Father alone was ſupreme God, and the Son inferior to him even in reſpect of his divinity. Though it is rather the dictrine of the Semiarians, than of the Arians, that he ſeems to give into.

ARIES, or the *Ram*, in aſtronomy, the firſt of the twelve ſigns of the zodiac; from which alſo a twelfth part of the ecliptic takes its denomination.

The ſtars in the conſtellation *Aries*, in Ptolemy's catalogue, are 18; in Tycho's, 21; in the Britannic catalogue, 65; the longitudes, latitudes, magnitudes, *&c.* whereof, are as follow:

Names and ſituations of the ſtars.	Signs.	Longitud.			Latitude.			Magn.
		°	′	″	°	′	″	
	♈	26	58	25	11	04	58	7 6
		26	48	15	9	01	26	7 6
		26	49	04	5	23	59	7 6
Preced. ſtar in the horn.		28	51	00	7	08	58	4
Subſ. and more north ſtar in the horn.		29	37	59	8	28	16	3
5.								
	♉	0	54	20	10	57	12	
In the neck.	♈	29	10	57	5	26	12	6
In the crown of the head.	♉	1	22	15	10	47	47	5
		3	26	14	12	31	52	6 7
		4	02	12	12	04	02	6
10.								
That under the Lucida.		2	55	08	9	13	29	6
Informis over the head.		3	19	18	9	57	12	2
		4	40	46	12	05	32	6
		2	43	49	5	56	58	6
		5	03	50	11	57	02	8
15.								
In the noſe, the more north of two.		3	46	50	7	22	45	6
		3	25	14	6	08	45	7
		1	49	58	1	46	25	6 7
		5	59	35	11	27	44	6
		5	43	38	10	46	20	7
20.								
In the noſe the more ſouth.		4	32	25	5	43	39	6
		4	41	59	5	27	23	7
In the extremity of the foremoſt foot.		3	00	19	3	33	31	5
		3	30	53	4	09	43	7
	♉	7	19	13	4	44	07	6 7
25.								
		6	41	33	2	40	42	6 7
		6	18	40	0	01	15	6 7
Informis, *alias* 16th of the triangle.		10	14	15	8	49	48	7
		6	20	07	2	44	12	5 6
The north in the lions.		9	48	35	6	07	56	6
30.								
Informis, *alias* the 17th of the triang.		11	48	01	10	51	52	5
The ſouth in the loins.		9	59	55	4	01	56	6
Informis, *alias* the 18th of the triang.		12	35	47	11	17	13	4
		9	45	08	1	44	43	7
In the preced. hind knee.		9	03	43	0	36	24	6
35.								
		8	17	35	3	21	50	7
In extrem. of the hind foot, *alias* ceti.		7	37	07	5	34	50	4
Moſt northern of the informes.		14	00	55	12	28	08	4
		10	52	39	1	56	14	6
Brighteſt of the informes,		13	51	45	10	25	37	3
40.								

Names

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[*] It is even ſaid, that there was an order of Conſtantine's, that whoſoever ſhould meet with any book compoſed by Arius, and not burn it, ſhould be immediately puniſhed with death. *V. Socrat. Hiſt. Eccleſ.* 1. 9.

[**] By the influence of the emperor Conſtantius, and the inſinuations of the two Arian biſhops Valens and Urſinus, who perſuaded the weſtern biſhops, that peace might be reſtored by only ſetting aſide thoſe ambiguous Nicene terms, ουσια, ὁμουσιος, and υποϛασις, which were not to be found in Scripture, and which afforded great perplexity and ſcandal to weak minds; they were brought to ſubſcribe an Arian formula of faith, in the council of Arimini, which was ſoon after confirmed in the ſecond council of Nice, and eſtabliſhed in the eaſt. At the ſame time the confeſſion of faith of the firſt couucil of Nice was condemned by the ſecond. And thus was the world rendered Arian, as it were, by ſtratagem. — But the pacification held not long: Many, who had ſubſcribed the Arian confeſſion, recanted, returned to the faith of the firſt Nicene council, and anathematized the ſecond; by which means the war was renewed, and the word homoouſia was recalled and ſettled in its former honour, as denoting *of one and the ſame ſubſtance.* The like was endeavoured to be done by the word υποϛασις; but this occaſioned a new diſpute between the Greeks and Latins.

Names and ſituation of the ſtars.	Signs.	Longitud. ° ′ ″	Latitude. ° ′ ″	Magn.
In the leg.	♉	10 47 52	1 06 13	6
In the hindmoſt knee.		10 35 46	1 19 37	6
		12 09 32	0 58 57	6
In the thigh or hip, the north.		12 32 11	1 28 58	6 7
The ſouth.		12 34 24	1 10 03	6
45.				
		13 42 08	3 34 37	6
In the root of the tail.		14 10 09	4 08 01	5
Alias, 20th of the triangle.		16 13 53	8 51 55	7
		13 44 34	0 46 38	7
Alias, 21ſt of the triangle.		16 22 25	8 59 42	7
50.				
Alias, 22d of the triangle.		16 39 24	7 29 04	6
		15 03 56	0 16 22	7
		15 30 48	1 05 39	6 7
Alias, 23d of the triangle.		18 37 56	10 54 26	7
Alias, 24th of the triangle,		18 41 07	8 58 26	7 6
55.				
Foremoſt of the three in the tail.		16 30 18	1 47 34	4
The middle.		17 36 34	2 51 19	5
		20 19 17	8 32 08	7
		20 03 5	6 59 28	7
Laſt of the tail.		19 03 42	2 34 05	5
60.				
		20 56 50	8 45 05	6
The middle.		19 18 49	2 04 57	6
		20 39 45	5 51 39	6
The third.		19 41 15	2 02 52	7
	♉	21 06 22	3 46 01	7
65.				

Aries, alſo denotes a *battering ram*; or a military engine with an iron head, much in uſe among the antients, to batter and beat down the walls of places beſieged.

Of this there were three kinds; the firſt rude and plain, the others artificial and compound.—

The firſt ſeems to have been no more than a great beam, which the ſoldiers bore in their arms, and with one end of it, by main force, aſſailed the walls. This required a great force to work it; yet produced but a ſmall effect.

The ſecond or compound ram is deſcribed by Joſephus (*de excid. Hieroſol.* 3.) thus: “ The ram is a vaſt long beam, “ like the maſt of a ſhip, ſtrengthened at one end with a “ head of iron, ſomething reſembling that of a ram, “ whence it took its name. This is hung by the middle, “ with ropes, to another beam, which lies acroſs a couple of “ peſts; and hanging thus equally balanced, is, by a great “ number of men, violently thruſt forward, and recoiled “ backward, and ſo ſhakes the wall with its iron head. Nor “ is there any tower or wall ſo thick or ſtrong, as to reſiſt the “ repeated aſſaults of this forcible machine.”

The third only differed from the former in that it was covered with a χελωνη or ſcreen to guard the ſoldiers, whence it is alſo called *teſtudo arietaria.*

M. Felibien deſcribes a fourth ſort of *battering ram*, which ran on wheels; and was the moſt perfect and effectual of them all. Vitruvius affirms, that the *battering ram* was firſt invented by the Carthaginians, while they laid ſiege to Cadiz: theirs was the ſimple kind firſt mentioned: Pephaſmenos, a Tyrian, afterwards contrived to ſuſpend it with ropes; and finally Polydus, the Theſſalian, to mount it on wheels, at the ſiege of Byzantium, under Philip of Macedon. Yet Pliny aſſures us, the ram was invented at the ſiege of Troy; and that it was this that gave occaſion to the fable of a wooden horſe.

The engine oppoſed to the *ram* was called *lupus*, the wolf. —Plutarch tells us, that Mark Antony, in the Parthian war, uſed a ram of 80 feet long; and Vitruvius aſſures us, they were ſometimes made 106, and ſometimes 120 feet long; to this great length, perhaps, the force of the engine was in great meaſure owing.

The *ram* was managed at once by a whole century of ſoldiers; ſo that it played continually, and without intermiſſion; being uſually covered with a vinea, to protect it from the attempts of the enemy.

ARIETATION. See the article Earthquake.

ARIETUM *Levatio*, an antient kind of ſportive exerciſe, probably the ſame with what of later times is called *running at the quintain.* See Quintain.

ARISE.—*Licence to* Arise. See Licence.

ARISH, a Perſian long meaſure, containing 3197 Engliſh feet. *Arbuth. tab.* 32.

ARISTA, in botany, a long needle-like beard, that grows out from the huſk of corn, or graſs; called alſo the *awn.*

ARISTARCHUS, in its original Greek, αρισος αρχων, ſignifies *good prince*; but in its ordinary uſe among the learned, denotes a very ſevere critic; there having been a learned grammarian of that name, who criticized on the verſes of the very beſt poes, as Homer, *&c.*

Hence we derive the titles of ſeveral books; as *Ariſtarchus ſacer*, the name of Heinſius's notes on the New Teſtament; *Ariſtarchus Bnti-Nentleianus*, &c.

ARISTOCRACY *, Aristocratia, a form of government, where the ſupreme power is lodged in the hands of the optimates, *i. e.* of a council, or ſenate compoſed of the principal perſons of a ſtate, either in reſpect of nobility, capacity, or probity.

* The word is derived from αρις☉, *optimus*; and κρατεω, *impero*, I command, govern.

The antient writers of politcs prefer the *ariſtocratical* form of government to all others. —The republic of Venice is an *ariſtocracy.*

Ariſtocracy ſeems to coincide with *oligarchy*; which, however, is more ordinarily uſed to ſignify a corruption of an ariſtocratical ſtate, where the adminiſtration is in the hands of too few; or where ſome one or two uſurp the whole power.

ARISTOLOCHIA, popularly called *Birthwort*; a medicinal plant, uſed as an ingredient in Venice treacle, and many other compoſitions.

Cicero derives its name from its inventor Ariſtolochus: others from its virtues.—Theſe laſt ſuppoſe it formed from αρισος, *optimus*, and λοχεια, *lochia*, or purgations, in regard it is found of excellent uſe in bringing down the lochia, or diſcharges of women newly delivered.

There are four kinds of *ariſtolochia*, viz. the *round*, *long*, *rampant* or creeping, called alſo *clematitis*, and the *ſlender*; but only the roots of the two former are uſed among us.

The *round*, or *ariſtolochia rotunda*, is of a ſub-acrid aromatic taſte, and is found very commonly in Languedoc, Spain, and Italy: its root is of particular uſe in facilitating delivery, provoking the menſes, and bringing down the afterbirth; and is externally applied in vulnerary tinctures, and in waters for gangrenes: it is alſo ſuppoſed to have ſome alexipharmic quality; and is reckoned detergent externally, and ſuppurative.

The *long-rooted*, *ariſtolochia longa*, likewiſe grows in Languedoc; its root is uſed in electuaries, and in tinctures for the aſthma, and to excite the menſes; and its decoction, in lotions, to facilitate the delivery of the afterbirth, *&c.*

Beſides theſe, there are ſeveral other kinds of *ariſtolochia*, in America; one particularly in Virginia, whoſe roots are uſed againſt the bites of venomous beaſts, in malignant fevers, and the ſmall-pox.—Its alexipharmic virtue has occaſioned it to be called *Viperinum Virginiæ*, and *Serpentaria Virginiana.* See Serpentaria.

ARISTOTELIAN, ſomething that relates to the philoſopher Ariſtotle.—Thus we ſay an *Ariſtotelian* dogma, the *Ariſtotelian* ſchool, *&c.*

The philoſopher from whom the denomination ariſes was the ſon of Nicomachus, phyſician of Amyntas king of Macedonia, born in the year of the world 3566. before Chriſt 348. at Stagira, a town of Macedonia; or, as others ſay, of Thrace; whence he is alſo called the *Stagirite.*

At ſeventeen years of age he entered himſelf a diſciple of Plato, and attended in the academy till the death of that philoſopher. Repairing afterwards to the court of king Philip; at his return he found, that Xenocrates, during his abſence, had put himſelf at the head of the academic ſect; upon which he choſe the Lyceum for the future ſcene of his diſputation.

It being his practice to philoſophize walking, he got the appellation *peripateticus*; whence his followers were alſo called *Peripatetics.*—Tho' others will have him to have been thus named from his conſtantly attending on Alexander at his recovery from an illneſs, and diſcourſing with him as he walked about.

Ariſtotle was a perſon of admirable genius, and of great and various learning: Averroes makes no ſcruple to call him ‘ the ‘ genius of nature, the limit of human underſtanding;’ and declares him ſent by providence to teach us all that may be ‘ known.’—He is accuſed of too immoderate a deſire of fame, which led him to deſtroy the writings of all the philoſophers before him, that he might ſtand ſingly, and without competitors. And hence, in the ſchools, Ariſtotle is called *The Philoſopher.* Laertius, in his life of Ariſtotle, enumerates his books, to the number of 4000; of which ſcarce above 20 have ſurvived to our age: they may be reduced to five heads; the firſt, relating to poetry and rhetoric; the ſecond, to logics; the third, to ethics and politics; the fourth to phyſics; and the fifth to metaphyſics. In all which, as there are many things excellent and invaluable, particularly what relats to poetry, rhetoric, and the paſſions; ſo there are others, in the other parts, which the improvements of later ages have taught us to explode and deſpiſe.

Aristotelian *Philoſophy*, the philoſophy taught by Ariſtotle, and maintained by his followers.

The *Ariſtotelian* is otherwiſe called the *peripatetic philoſophy*; the riſe and fate whereof, ſee under the article Peripatetics.

ARISTOTELIANS, a ſect of philoſophers, otherwiſe called *Peripatetics.* See Aristotelian, and Peripatetic.

The *Ariſtotelians* and their dogma's prevail to this day, in the ſchools and univerſities; in ſpite of all the efforts of the Carteſians, Newtonians, and other corpuſcularians.

The principles of Ariſtotle's philoſophy, the learned agree, are chiefly laid down in the four books *de Cœlo*; the eight books of *Phyſical Auſcultation*, φυσικης ακροασεως, belonging rather to logics, or metaphyſics, than to phyſics.—To give an idea, then, of *Ariſtotelianiſm*, the reigning ſyſtem of many ages; and ſhew Ariſtotle's method of philoſophizing; we cannot do better than produce a ſpecimen of that work.

Thoſe four books he intitules, *de Cœlo*, περι Ουρανȣ, becauſe the heavens are the chief of the ſimple bodies he treats of. He begins with proving, that the world is perfect; which he does thus.—All bodies, ſays he, have three dimenſions; they cannot have more; for the number three, according to Pythagoras, comprehends all: now the world is the aſſemblage of all bodies; therefore the world is perfect.

In the ſecond chapter, he lays down certain peripatetic axioms; as—that all natural bodies have of themſelves a power of moveing: that all local motion is either rectilinear, circular, or compoſed of the two: that all ſimple motions are reducible to three, the motion of the centre, the motion towards the centre, and the motion about the centre: that all bodies are either ſimple or compounded; ſimple are thoſe which have ſome power within themſelves, whereby they move, as fire, earth, *&c.* compound are ſuch as receive their motion from thoſe others whereof they are compounded.

From theſe principles he draws ſeveral conſequences.—A circular motion, ſays he, is a ſimple motion: but the heavens move in a circle; therefore the motion of the heavens is ſimple: but a ſimple motion can only belong to a ſimple body; *i. e.* to a body which moves by its own power. Therefore the heavens are a ſimple body, diſtinct from the four elements, which move in right lines. This propoſition he likewiſe proves by another argument, thus—There are two kinds of motions, the one natural, the other violent; the circular motion of the heavens, therefore, is either the one, or the other: if it be natural, the heaven is a ſimple body diſtinct from the four elements, ſince the elements do not move circularly in their natural motion: if the circular motion be contrary to the nature of heaven, either that heaven muſt be ſome of the elements, as fire, or ſomething elſe: but heaven cannot be any of the elements; *e. gr.* it cannot be fire; for, if it were, the motion of fire being from below upwards, the heavens would have two contrary motions, the one circular, the other from below upwards, which is impoſſible. Again; if the heaven be any other thing, which does not move circularly of its own nature, it will have ſome other natural motion, which likewiſe is impoſſible; for if it move naturally from below upwards, it will be either fire or air; if from above downwards, it will be water or earth; *ergo, &c.*—A third argument is this.—The firſt and moſt perfect of all ſimple motions muſt be that of a ſimple body; eſpecially that of the firſt and moſt perfect of all ſimple bodies: but the circular motion is the firſt and moſt perfect of all ſimple motions, becauſe every circular line is perfect, and no right line is ſo: for if it be finite, ſomething may be added to it; if infinite, it is not perfect, becauſe it wants an end, and things are only perfect when they are ended. Therefore, the circular motion is the firſt and moſt perfect of all motions; and therefore a body which moves circularly is ſimple, and the firſt and moſt divine of ſimple bodies. His fourth argument is—That all motion is either natural or not; and every motion which is not natural to ſome bodies, is natural to others: now the circular motion is not natural to the four elements; there muſt, therefore, be ſome ſimple body to which it is natural: therefore the heaven, which moves circularly, is a ſimple body, diſtinct from the four elements.—Laſtly, the circular motion is either natural or violent to any body; if it be natural, it is evident this body is one of the moſt ſimple and perfect; if it be not, it is ſtrange this motion ſhould laſt for ever.—From all theſe arguments, therefore, it follows, that there is ſome body diſtinct from the circumambient ones, and which is of a nature as much more perfect than they, as it is more remote. Such is the ſubſtance of his ſecond chapter.

In the third chapter, he aſſerts, that the heavens are incorruptible, and immutable; and the reaſons he gives for it, are—That they are the abode of the gods, that no perſon has ever obſerved any alterations in them, *&c.*

In the fourth chapter, he attempts to prove, that the circular motion has no contrary: in the fifth, that bodies are not infinite: in the ſixth, that the elements are not infinite: in the eighth, he ſhews that there are not ſeveral worlds of the ſame kind, by this very good argument; that as earth is heavy by nature, if there were any other earth beſide ours, it would fall upon our heads, our earth being the centre, to which all heavy bodies tend. In the ninth, he proves it impoſſible, that there ſhould be ſeveral worlds, becauſe if there were any body above the heavens, it muſt be either ſimple or compound, in a natural or violent ſtate; none of which is poſſible, for reaſons which he draws from the three kinds of motions above-mentioned. In the tenth, he maintains, that the world is eternal, becauſe it is impoſſible it ſhould have had any beginning, and becauſe it endures for ever. He employs the eleventh in explaining the notion of incorruptibility; and in the twelfth, endeavours to ſhew, that the world is incorruptible, becauſe it could not have any beginning, and becauſe it endures for ever: all things, ſays he, ſubſiſt either during a finite, or an infinite ſpace: but what is only infinite one way, is neither finite nor infinite; therefore nothing can ſubſiſt in this manner.

The reader, we are of opinion, will find this taſte of peripateticiſm ſufficient; otherwiſe it had been eaſy to have given him his fill. If he requires more, let him have recourſe to the articles PRINCIPLE, ELEMENT, FORM, QUALITY, ACCIDENT, SYMPATHY, FUGA VACUI, ANTIPERISTASIS, *&c.*

It were needleſs to point out the particular defects in the ſpecimen here laid down: it is eaſy to obſerve, that the principles are moſt of them falſe and impertinent, and the reaſonings abſurd and inconcluſive; but that the greateſt part has no diſtinct meaning at all.

Such is the philoſophy, and ſuch the method of philoſophizeing, of him who was called the genius of nature, the prince of philoſophers, Ariſtotle.—Yet ſuch was his authority, for many ages, in the ſchools, that when a diſputant quoted a paſtage from him, his opponent durſt not ſay *tranſeat*, but muſt either deny the paſſage, or reconcile it to his own cauſe. *Vid.* Bayl. *Dict. T.* 1. *p.* 469.

ARISTOTELICA *Rota*. See the article ROTA.

ARITHMETIC, ARITHMETICA, the art of numbering; or, that part of mathematics, which conſiders the powers and properties of numbers, and teaches how to compute or calculate truly, and with expedition and eaſe.

Some authors chooſe to define *arithmetic*, the ſcience of diſcrete quantity.

Arithmetic conſiſts chiefly in the four great rules or operations of addition, ſubtraction, multiplication, and diviſion.

It is true, for the facilitating and expediting of computations, mercantile, aſtronomical, *&c.* divers other uſeful rules have been contrived; as, the rules of proportion, of alligation, of falſe poſition, extraction of ſquare and cube roots, progreſſion, fellowſhip, intereſt, barter, rebate, reduction, tare and tret, *&c.*—But theſe are only applications of the firſt four rules. See theſe rules under their ſeveral heads, ADDITION, *&c.*

We have very little intelligence about the origin and invention of *arithmetic:* hiſtory neither fixes the author, nor the time.—In all probability, however, it muſt have taken its riſe from the introduction of commerce; and conſequently it ſhould be of Tyrian invention.

From Aſia it paſſed into Egypt (Joſephus ſays, by means of Abraham). Here it was greatly cultivated and improved; inſomuch that a large part of the Egyptian philoſophy and theology ſeems to have turned altogether upon numbers. Hence thoſe wonders related by them about unity, trinity; the numbers ſeven, ten, four, *&c.*

In effect, Kircher, in his *Oedip. Ægypt. Tom.* II. *p.* 2. ſhews, that the Egyptians explained every thing by numbers; Pythagoras himſelf affirming, that the nature of numbers goes through the whole univerſe; and that the knowlege of numbers is the knowlege of the Deity.

From Egypt *arithmetic* was tranſmitted to the Greeks, who handed it forward, with great improvements, which it had received by the computations of their aſtronomers, to the Romans; from whom it came to us.

The antient *arithmetic*, however, fell far ſhort of that of the moderns: moſt of what they did was to conſider the various diviſions of numbers; as appears from the treatiſes of Nicomachus, written in the third century of Rome, and that of Boethius, ſtill extant. A compendium of the antient *arithmetic*, written in Greek, by Pſellus, in the ninth century from our Saviour, was given us in Latin by Xylander, in 1556.—A more ample work of the ſame kind was written by Jordanus, in the year 1200. publiſhed with a comment by Faber Stapulenſis in 1480.

Arithmetic, under its preſent ſtate, is variouſly divided, into different kinds; *theoretical*, *practical*, *inſtrumental*, *logarithmical*, *numerous*, *ſpecious*, *decimal*, *dynamical*, *tetractycal*, *duodecimal*, *ſexageſimal*, &c.

Theoretical ARITHMETIC is the ſcience of the properties, relations, *&c.* of numbers, conſidered abſtractedly; with the reaſons and demonſtrations of the ſeveral rules.

Euclid furniſhes a theoretical *arithmetic*, in the ſeventh, eighth, and ninth books of his elements.—Barlaamus Monachus has alſo given a theory for demonſtrating the common operations, both, in integers, and broken numbers, in his *Logiſtica*, publiſhed in Latin by J. Chambers, an Engliſhman, in 1600.—To which may be added Lucas de Burgo, who, in an Italian treatiſe publiſhed in 1523. gives the ſeveral diviſions of numbers from Nicomachus, and their properties from Euclid; with the algorithm, both in integers, fractions, extractions of roots, *&c.*

Practical ARITHMETIC is the art of numbering or computeing; that is, from certain numbers given, for finding certain others, whoſe relation to the former is known.

As, if a number be required equal to two given numbers 6 and 8.

The firſt intire body of *practical arithmetic*, was given by Nic. Tartaglia a Venetian, in 1556. conſiſting of two books; the former, the application of *arithmetic* to civil uſes; the latter, the grounds of algebra. Something had been done before by Stifelius, in 1544. where we have ſeveral particulars concerning the application of irrationals, coſſics, *&c.* no-where elſe to be met withal.

We omit other mere practical authors, which have come ſince, the number whereof is almoſt infinite; as Gemma Friſius, Metius, Clavius, Ramus, Buckley, Diggs, Record, Wingate, Cocker, Leybourn, *&c.*

The theory of *arithmetic* is joined with the practice, and even improved in ſeveral parts, by Maurolycus in his *Opuſcula Mathematica*, 1575. Heneſchius in his *Arithmetica Perfecta*, 1609. where the demonſtrations are all reduced into the form of ſyllogiſms; and Taquet in his *Theoria & Praxis Arithmetices*, 1704.

Harmonical ARITHMETIC. See HARMONICAL.

Inſtrumental ARITHMETIC is that, where the common rules are performed by means of inſtruments contrived for eaſe and diſpatch; ſuch are ſeveral ſorts of ſcales, and ſliding-rules; ſuch, more particularly, are Napier's bones, deſcribed under their proper article: Sir Sam. Morland's inſtrument, the deſcription whereof was publiſhed by himſelf, in 1666. that of M. Leibnitz, deſcribed in the *Miſcellan. Berolin.* and that of Polenus publiſhed in the Venetian Miſcellany, 1709.—To theſe may be added,

Logarithmetical ARITHMETIC, performed by tables of logarithms.

The beſt piece on this ſubject is Hen. Brigg's *Arithmetica Logarithmica*, 1624.

To this head may alſo be added, the univerſal *arithmetical tables of Proſthaphæreſes*, publiſhed in 1610. by Herwart ab Hohenburg; whereby multiplication is eaſily and accurately performed by addition, and diviſion by ſubtraction.

The Chineſe have little regard to any rules in their calculations; inſtead of which, they uſe an inſtrument made of a little plate, a foot and half long, acroſs which are fitted ten or twelve iron wires, on which are ſtrung little round balls. By drawing theſe together, and diſperſing them again one after another, they count, ſomewhat after the manner in which we do by counters; but with ſo much eaſe and readineſs, that they will keep pace with a man reading a book of account, let him make what expedition he can; and at the end the operation is found done; and they have their way of proving it. *Le Comte.*

Logiſtical ARITHMETIC. See the article LOGISTICAL.

Numerous ARITHMETIC is that which gives the calculus of numbers, or indeterminate quantities; and is performed by the common numeral, or Arabic characters.

Specious ARITHMETIC is that which gives the calculus of quantities; uſing letters of the alphabet inſtead of figures, to denote the quantities.

Specious *arithmetic* coincides with what we uſually call *algebra*, or *literal arithmetic*.

Dr. Wallis has joined the numeral with the literal calculus; and by means hereof, demonſtrated the rules of fractions, proportions, extractions of roots, *&c.* A compendium of which is given by Dr. Wells, under the title of *Elementa Arithmeticæ*, An. 1698.

Decimal ARITHMETIC is that performed by a ſeries of ten characters, ſo that the progreſſion is from 10 to 10.

Such is the common *arithmetic* among us, which makes uſe of the ten *Arabic* figures, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9; after which we begin 10, 11, 12, *&c.*

This method of computation is not very antient, being utterly unknown to the Greeks and Romans.—It was introduced into Europe by Gerbert, who was afterwards pope, under the name of Sylveſter II. who borrowed it from the Moors of Spain.—No doubt it took its origin from the ten fingers of the hands, which were made uſe of in computations before *arithmetic* was brought into an art.

The eaſtern miſſionaries aſſure us, that to this day the Indians are very expert at computing on their fingers, without any uſe of pen and ink, *Let. Edif. & Cur.*—Add, that the natives of Peru, who do all by the different arrangement of grains of maiſe, out-do any European, both for ſureneſs and diſpatch, with all his rules.

Decimal Arithmetic is alſo uſed for the doctrine of decimal fractions.

Binary, or *Dyadic* ARITHMETIC is that, wherein only two figures, unity, or 1, and 0, are uſed. See BINARY *Arithmetic*.

M. Dangicourt, in the *Miſcell. Berol.* gives us a ſpecimen of the uſe hereof in arithmetical progreſſions; where he ſhews, that the laws of progreſſion may be eaſier diſcovered hereby, than in any other method where more characters are uſed.

Tetractic ARITHMETIC is that, wherein only the figures 1, 2, 3, and 0, are uſed.

We have a treatiſe of this *arithmetic*, by Erhard Weigel; but both binary, and this, are little better than curioſities, eſpecially with regard to practice; inaſmuch as the numbers may be much more compendiouſly expreſſed by decadal *arithmetic*, than by either of them.

Vulgar ARITHMETIC is that converſant about integers and vulgar fractions.

Sexageſimal, or *Sexagenary* ARITHMETIC, is that which proceeds by ſixties; or the doctrine of ſexageſimal fractions.

Sam. Reyher has invented a kind of ſexagenal rods, in imitation of Neper's bones, by means whereof the ſexagenary *arithmetic* is eaſily performed.

Political ARITHMETIC is the application of *arithmetic* to political ſubjects; as, the ſtrength and revenues of princes, number of inhabitants, births, burials, *&c.* See POLITICAL *Arithmetic.*—Hither alſo may be referred the doctrine of CHANCES, GAMING, *&c.*

ARITHMETIC *of Infinites* is the method of ſumming up a ſeries of numbers conſiſting of infinite terms; or of finding the ratio's thereof.

This method was firſt invented by Dr. Wallis; as appears from his *Opera mathematica*, where he ſhews its uſe in geometry, in finding the areas of ſuperficies, and the contents of ſolids, and their proportions.—But the method of fluxions, which is an univerſal *arithmetic* of infinites, performs all this much eaſier; and multitudes of other things, which the former will not reach.

ARITHMETIC *of Rationals* and *Irrationals*. See RATIONAL, *&c.*

ARITHMETICAL *Complement* of a logarithm, is what the logarithm wants of 10.0000000.

Thus the *arithmetical* complement of 7.1079054, is 2,8920946; where each figure but the laſt is ſubtracted from 9; and that from 10.

ARITHMETICAL *Medium* or *Mean*.	See	MEDIUM.
ARITHMETICAL *Progreſſion*.		PROGRESSION.
ARITHMETICAL *Proportion*.		PROPORTION.
ARITHMETICAL *Ratio*.		RATIO.

ARITHMOMANCY *, Αριθμομαντεια, a kind of divination, or method of foretelling future events, by means of numbers.

* The word is compounded of αριθμος, number, and μαντεια, divination.

The gematria, which makes the firſt ſpecies of the Jewiſh cabbala, is a ſort of *arithmomancy*. See GEMATRIA.

ARK, or ARC, *arcus*, in geometry, aſtronomy, *&c.* See ARCH.

ARK, ARCA, in the ſcripture-language, denotes a kind of floating veſſel built by Noah, for the preſervation of the ſeveral ſpecies of animals from the deluge.

The *ark* has afforded ſeveral points of curious inquiry among the critics and naturaliſts, relating to its form, capacity, materials, time of building, place of reſting after the flood, *&c.*

Noah is computed to have been an hundred years in building the *ark*; *viz.* from the year of the world 1557. to the flood, which happened in the year 1656. at leaſt, this is the common opinion of the learned. Origen, *lib.* iv. *contra Celſ.* St. Auſtin, *de Civit. Dei*, *lib.* xv. *c.* 27. and *contra Fauſtin. lib.* xii. *c.* 18. and in his *Queſt. on Gen.* v. and xxiii. Rupert *lib.* iv. *in Gen.* xx. aſſert as much; and are followed by Salian, Torniel, Spondeus, Pelletier, *&c.*

Yet Beroſus affirms, that Noah only began to build the *ark* ſeventy-eight years before the flood: Salomon Jarchi, on the other hand, will have it to have been an hundred and twenty years in building, and Tanchuma only fifty-two. See the texts, Gen. vi. *&c.*

Fa. Fournier, in his *Hydrography*, gives into the opinion of the fathers; noting, that the hands employed in it were only Noah and his three ſons. To this purpoſe he alleges the inſtance of Archias of Corinth, who, with the help of three hundred workmen, built Hiero's great ſhip in one year. Add, that Noah's eldeſt ſon was not born till about the time when the *ark* was begun, and the younger after; ſo that it was a long time ere they could do their father any ſervice.—However, for ſo large a building, a prodigious number of trees muſt have been required, which would employ a great number of workmen to fell and hew, were it poſſible for three men to have lain them?

The wood whereof the *ark* was built, is called in Scripture עצי גפר, *etſe gopher*, gopher wood: and in the LXX. ξυλα τετραγωνα, ſquare timbers. Onkelos and Jonathan render gopher by קדרוס, *kedros*, cedar: St. Jerom, in the vulgate, by *ligna lævigata*, planed wood; and elſewhere, *ligna bituminata*, *q. d.* pitched woods. Kimkhi tranſlates it, *wood moſt proper to float*; Vatable, *light wood*, which ſwims in the water without corrupting: Junius, Tremellius, and Buxtorf, a kind of cedar, by the Greeks called κεδρελατη; Avenarius and Munſter, *pine*; Fuller and Bochart, *cypreſs*; others, *fir*; Caſtalio, *turpentine*, &c.—Pelletier prefers the opinion of thoſe who hold the *ark* made of cedar: his reaſons are, the incorruptibility of that wood; the great plenty thereof in Aſia, whence Herodotus and Theophraſtus relate, that the kings of Egypt and Syria built whole fleets thereof, in in lieu of deal; and the common tradition throughout the eaſt imports, that the *ark* is preſerved intire to this day on mount Ararat.

The dimenſions of the *ark*, as delivered by Moſes, are three hundred cubits in length, fifty in breadth, and thirty in height; which, compared with the great number of things it was to contain, ſeems to many to have been too ſcanty. And hence an argument has been drawn againſt the authority of the relation. Celſus long ago laughed at it, calling it κιϐωτον αλλοκοτον; the abſurd *ark*. To ſolve this difficulty, many, both of the antient fathers, and later critics, have been put to very miſerable ſhifts. Origen, St. Auguſtine, and others, maintain, that by the cubits here ſpoken of, we are to underſtand the Egyptian geometrical cubit, equal, according to them, to ſix vulgar cubits, or nine feet. But the truth is, it does not appear there ever was any ſuch meaſure as a geometrical cubit, either among Egyptians, or Jews.—Others account for it, by aſſerting the ſtature of mankind, in the firſt ages, to have been much greater than in our days; and, conſequently, the cubit, which is taken from a part of the human body, proportionably larger. But this does not avail, ſince the ſame reaſon will infer an equal augmentation of the ſize of other animals.—Others ſuppoſe the ſacred cubit here ſpoken of, which was a hand's breadth longer than the civil one; but this only affords a ſmall ſupply; beſide, that the ſacred cubit does not appear to have been ever uſed, except in ſacred edifices, as the temple and tabernacle.

This difficulty is much better ſolved by Buteo and Kircher, wherein, ſuppoſing the common cubit of a foot and a half, they prove geometrically, that the *ark* was abundantly ſufficient for all the animals ſuppoſed to be lodged therein.—Snellius computes the *ark* to have been above half an acre in area: Cuneus, Buteo, and others, have alſo calculated the capacity of the *ark*.—Dr. Arbuthnot computes it to have been 81062 tuns.—Father Lamy ſhews, that it was an hundred and ten feet longer than the church of St. Mary, at Paris, and ſixty-four feet narrower; to which his Engliſh tranſlator adds, that it muſt have been longer than St. Paul's church, in London, from weſt to eaſt, broader than that church is high in the inſide, and about fifty-four feet in height, of our meaſure.

The things contained in it were, beſides eight perſons of Noah's family, one pair of every ſpecies of unclean animals, and ſeven pair of every ſpecies of clean animals, with proviſions for them all, during the whole year.—The former appears, at firſt view, almoſt infinite; but if we come to a calculus, the number of ſpecies of animals will be found much ſmaller than is generally imagined, not amounting to an hundred ſpecies of quadrupeds, nor two hundred of birds; out of which, in this caſe, are to be excepted ſuch animals as can live in the water.—Zoologiſts uſually reckon but an hundred and ſeventy ſpecies in all; and biſhop Wilkins ſhews, that only ſeventy-two of the quadruped kind needed a place in the *ark*.

By the deſcription Moſes gives of the *ark*, it appears to have been divided into three ſtories, each ten cubits, or fifteen feet high: and it is agreed on, as moſt probable, that the loweſt ſtory was deſtined for the beaſts, the middle for the food, and the upper for the birds, with Noah, and his family; each ſtory being ſubdivided into different apartments, ſtalls, &c.—Though Joſephus, Philo, and other commentators, add a kind of fourth ſtory, under all the reſt; being, as it were, the hold of the veſſel, to contain the ballaſt, and receive the filth and fæces of ſo many animals.

Drexelius makes three hundred apartments; father Fournier three hundred thirty-three; the anonymous author of the queſtions on Geneſis, four hundred; Buteo, Temporarius, Arias Montanus, Hoſtus, Wilkins, Lamy, and others, ſuppoſe as many partitions as there were different ſorts of animals.—Pelletier only makes ſeventy-two, *viz.* thirty-ſix for the birds, and as many for the beaſts: his reaſon is, that if we ſuppoſe a greater number, as three hundred thirty-three, or four hundred, each of the eight perſons in the *ark* muſt have had thirty-ſeven, forty-one, or fifty ſtalls to attend and cleanſe daily, which he thinks impoſſible. But there is not much in this; to diminiſh the number of ſtalls, without a diminution of the animals, is vain; it being, perhaps, more difficult to take care of three hundred animals in ſeventy-two ſtalls, than in three hundred.

Buteo computes, that all the animals contained in the *ark* could not be equal to five hundred horſes; he even reduces the whole to the dimenſions of fifty-ſix pair of oxen. Father Lamy enlarges it to ſixty-four pair, or an hundred and twenty-eight oxen; ſo that ſuppoſing one ox equal to two horſes, if the *ark* had room for two hundred fifty-ſix horſes, there muſt have been room for all the animals. But the ſame author demonſtrates, that one floor of it would ſuffice for five hundred horſes, allowing nine ſquare feet to an horſe.

As to the food in the ſecond ſtory, it is obſerved by Buteo from Columella, that thirty or forty pounds of hay ordinarily ſuffices an ox for a day; and that a ſolid cubit of hay, as uſually preſſed down in our hay-racks, weighs about forty pounds: ſo that a ſquare cubit of hay is more than enough for one ox one day.—Now it appears that the ſecond ſtory contained 150000 ſolid cubits; which, divided between two hundred and ſix oxen, will afford each more hay by two thirds, than he can eat in a year.

Biſhop Wilkins computes all the carnivorous animals equivalent, as to the bulk of their bodies, and their food, to twenty-ſeven wolves; and all the reſt to two hundred and eighty beeves. For the former he allows 1825 ſheep, and for the latter 109500 cubits of hay: all which will be eaſily contained in the two firſt ſtories, and a deal of room to ſpare.—As to the third ſtory, nobody doubts of its being ſufficient for the fowls, with Noah, his ſons and daughters.

Upon the whole, the learned biſhop remarks, that of the two, it appears much more difficult to aſſign a number and bulk of neceſſary things to anſwer the capacity of the *ark*, than to find ſufficient room for the ſeveral ſpecies of animals already known to have been there.—This he attributes to the imperfection of our liſts of animals, eſpecially thoſe of the unknown parts of the earth; adding, that the moſt expert mathematician, at this day, could not aſſign the proportions of a veſſel better accommodated to the purpoſe, than is here done; and hence finally concludes, that 'the capacity of the *ark*, which had been made an objection againſt Scripture, ought to be eſteemed a confirmation of its divine authority; ſince, in thoſe ruder ages, men, being leſs verſed in arts and philoſophy, were more obnoxious to vulgar prejudices than now; ſo that had it been an human invention, it would have been contrived according to thoſe wild apprehenſions which ariſe from a confuſed and general view of things; as much too big, as it has been repreſented too little.'

Ark *of the Covenant*, in Scripture, denotes a kind of cheſt, wherein, by God's command, Exod. xxv. 16. were kept the two tables of ſtone, whereon God had engraven the ten commandments, given to Moſes on the mount, and held in high veneration among the Hebrews.

The *ark* was repoſited in the holieſt place of the tabernacle.—It was taken by the Philiſtines, and detained twenty, ſome ſay forty, years, at Kirjath Jearim; but the people being afflicted with emrods on account of it, afterwards returned it with divers preſents.—It was afterwards placed in the temple.

Joſephus deſcribes it as five palms long, three broad, and as many high; the wood, both withinſide and without, was lined with plates of gold, and fitted with golden hinges.—The lid, or covering of the *ark*, was called the *propitiatory*, over which were two figures placed, called *Cherubim*, a kind of ſpirits, with wings of a peculiar form, never ſeen but by Moſes before the throne of God. It may be added, that ſome critics take the word *cherub*, כרוב, to be only a tranſpoſition of the Hebrew letters of the word רכוב, *rechub*, *chariot*; and, that by the cherubim being placed over the *ark*, we are only to underſtand, that the *ark* was a ſort of chariot, on which God ſat.

The Jews, to this day, have a kind of *ark* in their ſynagogues, wherein their ſacred books are repoſited, in imitation of the antient *ark* of the covenant.—This they call *aron*. Leo of Modena gives a deſcription thereof in his account of the *Cuſtoms and Ceremonies of thoſe of his Nation*: 'The Jews, ſays he, in the eaſtern ſide of all their ſynagogues, have an *ark*, or armory, called *aron*; in memory of the *ark* of the covenant. In this are preſerved the five books of Moſes, written on vellum, with ink made on purpoſe,' &c.

Tertullian calls this *ark*, *Armarium Judiacum*; whence the phraſe, *to be in the armory of the ſynagogue*, q. d. in the number of canonical writings.

ARM, *brachium*, a part of the human body, terminating at one end in the ſhoulder, and at the other in the hand.

Among phyſicians and anatomiſts, Arm only includes that part between the ſhoulder and the elbow; the reſt, from the elbow to the wriſt, being taken into the greater hand; by others called the *fore-arm*. See Hand.

The *arm*, in this latter acceptation, has only one large bone, called the *humerus*, or ſhoulder-bone. See Humerus.

It has five ſorts of motions, which are effected by five pair of muſcles; upwards, by the deltoides, ſupraſpinatus, and coracobrachialis; downwards, by the teres, rotundus major, and latiſſimus dorſi; forwards, by the pectoralis; backwards, by the infraſpinatus; and, circularly, by the tranſverſalis, ſubſcapularis, and infraſpinatus. See each muſcle deſcribed under its proper article.

The other part conſiſts of two bones, called *focils*; viz. the radius, and cubitus, or ulna.

The muſcles whereby this part is moved, are the biceps, brachiæus internus, gemellus, brachiæus externus, anconæus, pronator radii teres, and quadratus; ſupinator longus, and brevis.—See each in its place.—The uſual venæſections are in the *arm*.

Arm, in the manage, is applied to a horſe, when he endeavours to defend himſelf againſt the bit; to prevent obeying, or being checked thereby.

A horſe is ſaid to *arm* himſelf, when he preſſes down his head, and bends his neck, ſo as to reſt the branches of the bridle upon his briſket; in order to withſtand the effort of the bit, and guard his bars, and his mouth.

A horſe is ſaid to *arm himſelf with the lips*, when he covers the bars with his lips, and deadens the preſſure of the bit.—This frequently happens in thick-lipped horſes.—The remedy is by uſing a bit-mouth, forged with a canon or ſcatch-mouth, broader near the bankers than at the place of its preſſure, or reſt upon the bars.

For *arming againſt the bit*, the remedy is, to have a wooden ball covered with velvet, or other matter, put on his chaul; which will ſo preſs him between the jaw-bones, as to prevent his bringing his head ſo near his breaſt.

Arm is alſo uſed in geography for a branch of a ſea, or river.

Italy and Sicily are only parted by an *arm* of the ſea.—St. George's *arm*, in the Mediterranean, is the Thracian Boſporus.

Among gardeners, *arm* is ſometimes uſed in reſpect of cucumbers and melons, in the ſame ſenſe as branch, of other plants.

Arm is alſo uſed figuratively for *power*.—The ſecular *arm* is the lay or temporal authority of a ſecular judge; to which recourſe is had for the execution of the ſentences paſſed by eccleſiaſtical judges.

The church ſheds no blood: even the judges of inquiſition, after they have found the perſon guilty, ſurrender him to the ſecular *arm*.

The council of Antioch, held in 341. decrees, that recourſe be had to the ſecular *arm* to repreſs thoſe who refuſe obedience to the church: for ſecular *arm*, they here uſe exterior power.

Arm, in the military art, heraldry, *&c.* See **Arms** and **Armour**.

Arm, in the ſea-language.—A ſhip is ſaid to be *armed*, when fitted out, and provided, in all reſpects, for war.

Alſo, a croſs-bar-ſhot is ſaid to be *armed*, when ſome rope-yarn, or the like, is rolled round about one end of the iron bar which runs through the ſhot, both that the ſhot may be the better rammed down into the gun, and leſt the ſharp end of the bar ſhould catch into any honey-combs within the cylinder of the piece.

Yard-**Arm**. See the article **Yard**.

Arm, in reſpect of the magnet.—A load-ſtone is ſaid to be *armed*, when it is capped, caſed, or ſet in iron or ſteel; in order to make it take up the greater weight; and alſo to diſtinguiſh readily its poles.

'Tis ſurpriſing, that a little iron faſtened to the poles of a magnet ſhould ſo vaſtly improve its force, as to render it 150 times ſtronger than when naked. Mr. Butterfield told Dr. Liſter, that ſome load-ſtones would gain much more, and others vaſtly leſs, by *arming*, than one would expect.—A ſtrong load-ſtone ought to have thick irons, and a weak one but thin ones: ſo that a ſtone may be eaſily overſhod. *Liſt. Journ. to Paris.*

The uſual armour of a loadſtone, in form of a right-angled parallelepipedon, conſiſts of two thin pieces of ſteel or iron, of a ſquare figure, and a thickneſs proportionable to the goodneſs of the ſtone: if a weak ſtone have a ſtrong armour, it will produce no effect; and if the armour of a ſtrong load-ſtone be too thin, its effect will not be ſo conſiderable as when thicker.—The proper thickneſs is found by filing it thinner and thinner, till its effect is found at the greateſt poſſible ſtrength.

The armour of a ſpherical loadſtone conſiſts of two ſteel ſhells faſtened to one another by a joint, and covering a good part of the convexity of the ſtone. This alſo is to be filed away till the effect is found the greateſt.

Kircher, in his book *de Magnete*, tells us, that the beſt way to *arm* a loadſtone is, to drill a hole through the ſtone from pole to pole, and in that, to place a ſteel rod of a moderate length; which rod, adds he, will take up more weight at the end, than the ſtone itſelf *armed* the common way can do.

ARMA *dare*, to give arms, in ſome antient charters, ſignifies to dub, or make a knight.

Arma *deponere*, to lay down arms, was a puniſhment antiently injoined when a man had committed an offence. *Leg. Hen.* I.

Arma *mutare*, *q. d.* to change arms, was a ceremony uſed to confirm a league or friendſhip.

Arma *moluta* were ſharp weapons: Fleta calls them *Arma emolita*.

Arma *reverſata*, inverted arms, was a puniſhment when a man was convicted of treaſon or felony.

ARMAMENT, a large body of forces, raiſed and provided with the furniture of war, either for land or ſea ſervice.

ARMAN, among farriers, a confection of great efficacy to prevent a total loſs of appetite in horſes.

ARMARIUM *unguentum*, among hermetical philoſophers, a ſympathetic ointment, or weapon-ſalve, whereby wounds are ſaid to have been cured at a diſtance, by only dreſſing the weapon. See **Sympathetic**.

ARMED, in the ſea-language, *&c.* See **Arm**.

Armed, in heraldry, is uſed in reſpect of beaſts and birds of prey, when their teeth, horns, feet, beak, talons, or tuſks, are of a different colour from the reſt.—He bears a cock, or a falcon, *armed*, or, *&c.*

ARMENIAN * *Bole*, *Bolus* **Armena**, a fatty medicinal kind of earth, of three kinds; white, yellow, and red; the laſt is the moſt eſteemed; it is of conſiderable uſe as an abſorbent, aſtringent, and vulnerary.

* It takes the denomination, *Armenian*, ἡ εκ της Αρμενιας βωλος, becauſe brought chiefly out of Armenia, and the neighbouring countries.

The *Armenian bole* is frequently found in the ſhop-medicines preſcribed internally againſt diarrhœas, dyſenteries, hæmorrhages, catarrhs, and all defluxions: externally it is uſed in ſtrengthening plaſters, for luxations of the joints, *&c.* See Supplement, article **Armenian Bole**.

ARMENIANS, in reſpect of religion, a ſect, or diviſion among the eaſtern Chriſtians; thus called from *Armenia*, the country antiently inhabited by them.

The *Armenians*, ſince the conqueſt of their country by Scha Abas, king of Perſia, have had no fixed place of habitation, but are diſperſed in divers parts of Perſia, Turky, and Tartary, and even ſome parts of Europe, particularly Poland.—Their chief employment is merchandize, in which they excel.—The cardinal de Richelieu, we are told, had a deſign to make an eſtabliſhment of them in France, for promoting the commerce of that country.

With regard to religion, there are two kinds of *Armenians*; the one catholics, and ſubject to the pope, having a patriach in Perſia, and another in Poland.—The other make a peculiar ſect, having two patriarchs in Natolia. They have their printing-houſe at Marſeilles.

The *Armenians* are generally accuſed of being of the ſect of Monophyſites, and only allowing of one nature in Jeſus Chriſt.

As to the Euchariſt, they agree with the Greeks, except in this, that they mix no water with their wine, and uſe unleavened bread after the manner of the Latins.

They abſtain very rigorouſly from eating of blood, and meats ſtrangled, and are much addicted to faſting; inſomuch that, to hear them talk, one would conclude that almoſt their whole religion conſiſted in faſting.

The monaſtic order is in great repute among them, ſince one of their patriachs introduced that of St. Baſil; but part of them, which have united with the church of Rome, have changed their antient rule, for that of the Dominicans.

Armenian *Stone*, *Lapis* **Armenus**, Λιθος Αρμενιος, a mineral ſtone, or earth, of a blue colour, ſometimes ſpotted with green, black, and yellow; antiently brought only from *Armenia*, but now found in Germany and Tyrol.

The *Armenian ſtone* in its harder ſtate bears a near reſemblance to *lapis lazuli*, from which it ſeems only to differ in degree of maturity: they are diſtinguiſhed by this, that the *lapis Armenus* is ſofter, and inſtead of ſparks of gold, is often ſpeckled with green.

Boerhaave ranks it among ſemi-metals; and ſuppoſes it compoſed of a metal and earth. Woodward ſays, it owes its colour to an admixture of copper.

Its chief uſe is in moſaic work, though it has ſome place alſo in phyſic. Both this and the *lapis lazuli* are ores of copper.

ARMIGER, *Armour-bearer*, in modern writers, denotes a title of dignity, rendered in Engliſh, by *Eſquire*.

ARMILLA *Membranoſa* is a name given, by ſome anatomiſts, to the annular ligament.

ARMILLARY *, **Armillaris**, in aſtronomy, an epithet given to an artificial ſphere, compoſed of a number of metalline circles, repreſentative of the ſeveral circles of the mundane ſphere, put together in their natural order.

* The word is formed of the Latin *armilla*, a bracelet.

Armillary ſpheres eaſe and aſſiſt the imagination to conceive the conſtitutions of the heavens, and the motions of the heavenly bodies.

Such is that repreſented (*Tab. Aſtron. fig.* 21.)—Where P and Q repreſent the poles of the world, AD, the equator, EL the ecliptic and zodiac, PAGD the meridian, or the ſolſtitial colure, T the earth, FG, the tropic of cancer, HT the tropic of capricorn, MN the arctic circle, OV the antarctic, N and O the poles of the ecliptic, and RS the horizon.

ARMILUSTRIUM, in antiquity, a feaſt held among the Romans; wherein they ſacrificed, armed at all points, and with the ſound of trumpets.

Some define *armiluſtrium* to have been a feaſt, wherein a general review was made of all the forces in the Campus Martius.—But this does not come up to the point; for Varro does not derive the word from the Latin *arma* and *luſtrare*, to make a review: but from the cuſtom of holding this feaſt in the place where the reviews were uſed to be made, or rather from their going round the place armed with bucklers. And he prefers this laſt opinion, being perſuaded that it was from this ceremony, that the place where the ſacrifice was offered to the gods, was called *armiluſtrium*, or *armiluſtrum*, *a luendo*, or *a luſtro*, i. e. *quod circumibant ludentes, ancilibus armati.*

The ſacrifice was intended as an ὁπλοκαθαρσιον, or expiation of arms, and for the proſperity of the arms of the people of Rome; and was celebrated on the fourteenth of the calends of November.

ARMINGS, in a ſhip, are the ſame with *waſt-clothes*, being red clothes, hung about the outſides of the ſhip's upper-works, fore and aft; and before the cubbridge heads.

There are ſome alſo hung round the tops, and called *top-armings*.

ARMINIANISM, the doctrine of Arminius, a celebrated profeſſor in the univerſity of Leyden; and of the Arminians, a ſect which follow him.

The principal article wherein the Arminians differ from the other reformed conſiſts in this, that, thinking the doctrines of Calvin, with regard to free-will, predeſtination, perſeverance, and grace, too ſevere, they have returned to thoſe of the Romiſh church, and maintain, that there is an univerſal grace given to all men; that man is always free, and at liberty to reject or embrace grace, *&c.*

Gomar, Arminius's collegue, ſtood ſtrenuouſly up for a particular or ſpecial grace, given only to thoſe who are predeſtinated or elect; and for a poſitive decree both of election in ſome, and of reprobation in others. See PREDESTINATION, ELECTION, REPROBATION, *&c.*

At length, the matter came to a hearing, before the ſynod of Dort, in 1618. and 1619. where *Arminianiſm* was condemned in form.—Theſe diſputes began in the year 1609. From the ſchools they paſſed into the government, and the republic of Holland was once in a fair way to be overturned by them.

ARMINIANS, a religious ſect or party, which aroſe in Holland, by a ſeparation from the Calviniſts. See ARMINIANISM.

The *Arminians* are ſometimes alſo called *Remonſtrants*, by reaſon of a remonſtrance which they preferred to the States General in 1611. wherein the chief articles of their faith were laid down.

The later *Arminians* carried things much farther than Arminius himſelf, and even came very near to Socinianiſm.—Eſpecially under Simon Epiſcopius.—When the Calviniſts upbraided them with renewing an antient hereſy already condemned in the Pelagians, and Semi-Pelagians; they replied, that the mere authority of men could not be allowed a legitimate proof any-where but in the church of Rome; that it was not enough to ſhew any opinion had been condemned, without ſhewing it had been condemned juſtly: *Nec ſatis eſt damnatam olim ſententiam eſſe, niſi damnandam eam, aut jure aut rite damnatam eſſe, conſtet.*

On this principle, which the Calviniſts cannot well gain-ſay, the *Arminians* retrench abundance of thoſe called fundamental articles of religion. Not finding them all clearly expreſſed in Scripture, they deſpiſe all the catechiſms and formula's of faith, to which the former would reſtrain them; and accordingly were condemned at the famous ſynod of Dort, held in 1618. whereat divines from moſt of the reformed churches were preſent.

Many among them have quitted the doctrine of their maſter relating to the points of eternal election and predeſtination.—Arminius taught, that God elected the faithful out of a foreknowlege of their faith: but Epiſcopius, and others, think he elects no perſon from all eternity, and only elects the faithful, at the time when they actually believe. They ſpeak very ambiguouſly of the preſcience of God, which was the principal ſtrong-hold of Arminius. They look on the doctrine of the Trinity as a point not neceſſary to ſalvation; and many of them hold there is no precept in Scripture, by which we are injoined to adore the Holy Ghoſt; and that Jeſus Chriſt is not equal to God the Father. In which they approach very near to Arianiſm. And they generally avoid the word *ſatisfaction of Chriſt*, which ſome charge with Socinianiſm. Though Epiſcopius declares, that Jeſus Chriſt has made ſatisfaction to God, ſo far as to render him propitious to mankind.

They preſs, with a great deal of earneſtneſs, a general toleration of all thoſe who profeſs the Chriſtian religion; maintaining that all Chriſtians are agreed in the eſſential points: and that as it has never been decided by any infallible authority, which of the many ways is the true one, and the moſt agreeable to the word of God, they ought all to combine on the ſame footing, to compoſe one church, without obliging any to quit their own ſentiments, or embrace thoſe of others.

Their principal writers are Arminius, Epiſcopius, and Grotius; to which may be added Curcellæus, who has collected a ſyſtem of theology out of the large diffuſive writings of Epiſcopius, with the addition of many things of his own.—Though Curcellæus, it muſt be owned, is ranked by the Socinians among the number of their writers.

ARMIS—*Vi* & ARMIS. See the article VI.

ARMISTICE, ARMISTITIUM, a ſhort truce, or a ceſſation of arms for a ſmall time.

ARMONIAC, or rather AMMONIAC, ſalt, in natural hiſtory, a ſort of volatile ſalt; whereof there are two kinds, antient and modern.

The antient *ſal-ammoniac*, called alſo *ſal Cyrenaicum*, deſcribed by Pliny and Dioſcorides, was a native ſalt, generated in the earth, or rather in the ſands, in thoſe large inns or caravanſeras, where the crouds of pilgrims, coming from all parts to the temple of Jupiter Ammon, uſed to lodge.—The method of conveyance in thoſe parts being on camels; and thoſe creatures when in Cyrene, a province of Egypt, wherein that celebrated temple ſtood, urining in the ſtables, or, ſay ſome, in the parched ſands; of this urine, which is remarkably ſtrong, ſublimed by the heat of the ſun, they ſay there aroſe a kind of ſalt, denominated ſometimes from the temple *Ammoniac*, and ſometimes from the region *Cyrenaic*.

This ſalt being no longer found in thoſe places, ſome authors ſuſpect there was never any ſuch thing; and that the antient as well as modern *ſal-armoniac* was factitious.—What pleads for the contrary, is, that the ſalt frequently belched out in large quantities from mount Ætna, appears much of the ſame nature, and anſwers to moſt of the characters of the antient *ſal-armoniac*. The reaſon no more is produced in Egypt may be, the ceſſation of theſe pilgrimages to that antient idol.

The characters of *ſal-armoniac* are, that it cools water, turns aqua fortis into aqua regia, and conſequently diſſolves gold; that it ſublimes by a ſtrong fire, and affords a pungent urinous ſavour.

The modern *ſal-armoniac*, called alſo *aqua cœleſtis*, is by ſome held to be native, and to trickle out of the ground about mount Veſuvius, Ætna, *&c.* in form of a liquor, which, when filtred and inſpiſſated, becomes *ſal-armoniac*.—But it is certain, the common modern *ſal-armoniac* is compound and factitious; conſiſting of a mineral, a vegetable, and an animal ſalt combined together.

Indeed, though there ſcarce be any drug more common than *ſal-armoniac*, in the modern pharmacy, the public has long been intirely at a loſs, both as to the place whence it comes, and how it was made; all they knew for certain, was, that it came from the Levant, and was a volatile urinous ſalt, penetrated by an acid.—Father Sicard, the Jeſuit, has at length removed the veil, in the Miſſionary's Memoirs for November 1717.—This ſalt, ſays that father, in a letter to the count de Tholouſe, is made in Egypt, in a ſort of ovens contrived for that purpoſe, the tops whereof are perforated with ſeveral longitudinal clefts; and on theſe clefts are laid ſeveral long-necked glaſs bottles, filled with ſoot, a little ſea-ſalt, and the urine of cattle, and well ſtopped.

This done, they cover them up with a body of clay and brick, all but the necks, which lie open to the air *; and put the fire in the oven, which they keep up for three days and nights.—The phlegm of the materials contained in the bottles being thus exhaled by the heat of the fire, and the acid and alkaline ſalts abounding therein being thus brought together near the necks of the bottles, they coaleſce, harden, and form a whitiſh maſs, which is the *ſal-armoniac*.—It muſt be added, that all ſoot is not fit for the purpoſe, but only that exhaling from fuel made of dung **; whereof, that of camels is eſteemed the ſtrongeſt and beſt.

Our chymiſts have divers ways of preparing a *ſal-armoniac*, in imitation of this.—The common way is by putting one part of common ſalt, to five of urine; to which ſome add half that quantity of ſoot: the whole being put in a veſſel, they raiſe from it by ſublimation a white friable farinaceous ſubſtance, which they call *ſal-armoniac*.—M. Lemery ſuſpected, that what is imported to us from abroad, muſt be made after a different manner; he even concluded that it was made as our common ſalt is, by lotion and evaporation: in which ſuſpicion however it appears, from the foregoing account, he is far from the truth.—We ſometimes further purify the ſalt by diſſolution in hot water; which being filtred, and evaporated to a cuticle, ſhoots into a fine white ſalt, uſed in medicine both as a ſudorific and a diuretic; it proves alſo a good aperient in all obſtructions.—Its doſe is from 20 grains to half an ounce.

There are various preparations of this ſalt in the modern pharmacy; as,

Sublimate of *ſal-armoniac* is of like virtue as the purified.

Volatile ſal-armoniac is made by ſubliming the *ſal-armoniac* with ſalt of tartar; uſed againſt malignant fevers as a ſudorific; as alſo in pocket ſmelling-bottles.

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* Pere Sicard ſeems in this point to have been wrong informed: Mr. Liſle aſſures us, that the mouths of the glaſſes are luted with a piece of wet cotton. He adds, that in this ſtate they are placed over the oven or furnace, in a thick bed of aſhes, nothing but the neck appearing; and kept there two days and a night, with a continual ſtrong fire. The ſteam ſwells up the cotton, and it forms a paſte at the vent-hole, hindering thereby the ſalts from evaporating; which, being confined, ſtick to the top of the bottle, and are, upon breaking it, taken out in thoſe large cakes, which they ſend to England. *Shaw Trav. Append.* 55.

** The boys and girls run about the ſtreets of Kairo, with baſkets in their hands, picking up the dung, which they carry and ſell to the keepers of the bagnio's; or, if they keep it for their own burning, they afterwards ſell the ſoot at the place where the *ſal-armoniac* is made. Alſo all the villages round about Kairo, where they burn little elſe than dung, bring in their quota; but the beſt is gathered from the bagnios, where it cruſts upon the walls, about half a finger's breadth. *Liſle ap. Shaw, loc. cit.*

Flowers of ſal-armoniac made of *ſal-armoniac*, with ſea-ſalt, decrepitated.—The virtues are much the ſame as of the ſublimed *ſal-armoniac.*

Sometimes, inſtead of the ſea-ſalt, iron or ſteel are uſed; which makes what they call *martial-flowers of ſal-armoniac*, of a very penetrating and deobſtruent nature, and recommended in all kinds of obſtructions, cachexies, jaundice, dropſies, *&c.*

Spirit of ſal-armoniac.—Of this we have various kinds, which derive different denominations and properties from the different additional ingredients the ſalt is diſtilled withal: as—*ſpirit of ſal-armoniac with tartar*; with *quick-lime*; with *amber*; with *ſteel* or *iron*: *ſweet* ſpirit of *ſal-armoniac*; *acid* ſpirit of *ſal-armoniac*; *diuretic* ſpirit of *ſal-armoniac*, &c.

ARMOR, or ARMOUR, a defenſive habit, wherewith to cover and ſecure the body from the attacks of an enemy *.

* In antient ſtatutes this is frequently called *harneſs*. See HARNESS.

Parts of *Armor* are, the buckler, cuiraſſe, helmet, coat of mail, gantlet, *&c.*

A complete *Armor* antiently conſiſted of a caſque or helm, a gorget, cuiraſſe, gantlets, taſſes, braſſets, cuiſſes, and covers for the legs, to which the ſpurs were faſtened.—This they called *Armor cap-a-pie*; and was the wear of the cavaliers, and men at arms.

The infantry had only part of it, *viz.* a pot or head-piece, a cuiraſſe, and taſſes; but all light.—Laſtly, the horſes themſelves had their *Armor*, wherewith to cover the head and neck.

Of all this furniture of war, ſcarce any thing is now retained, except the cuiraſſe: the gorget or neck-piece, worn by officers, being at preſent only a badge of honour, and of no defence.

The gallantry of going to the battle naked, without any defenſive *Armor*, prevailed ſo far, that the French, during the reign of Louis XIV. were obliged to be continually iſſuing ordonnances to reſtrain it; in conſequence of which, the general officers, and thoſe of the cavalry, were obliged to reſume the cuiraſſe, which yet has been but ill obſerved.

Coat-ARMOR is the eſcutcheon of any perſon, or family, with its ſeveral charges, and other furniture, as mantling, creſt, ſupporters, motto, *&c.*

Thus we ſay, a gentleman of *coat-armor*; meaning one who bears arms.

ARMORY, or ARMOURY, a ſtore-houſe of arms, or a place wherein military habiliments are kept to be ready for uſe.

There are *Armories* in the tower, and in all arſenals, citadels, caſtles, *&c.*

ARMORY is alſo uſed for a branch of heraldry; being the knowlege of coat-armors, as to their blazons, and various intendments. See HERALDRY.

Maſter of the ARMORY. See the article MASTER.

Motto of an ARMORY. See the article MOTTO.

ARM-*Pit*. See the article AXILLA.

ARMS*, ARMA, in a general ſenſe, includes all kinds of weapons, whether for defence, or offence.

* The word is formed from the French *armes*, which Nicod derives from a Latin phraſe, *Quod operiant armos*, by reaſon they cover the ſhoulders or ſides: but it ought rather to be brought from *arma*, which Varro derives *ab arcendo, eo quod arceant hoſtes.*

ARMS *of offence* are, the ſword, piſtol, muſquet, bayonet, pike, *&c.*

ARMS *of defence.* See under the article ARMOR.

Fire-ARMS. See the article FIRE-*Arms.*

What contributed moſt to render the Romans maſters of the world, was, that having ſucceſſively warr'd againſt all nations, they conſtantly renounced their own methods, *arms*, *&c.* whenever they met with better.—Thus Romulus, during his war with the Sabines, a bold and warlike nation, adopted their broad buckler, in lieu of the ſmall Argian buckler, which he had uſed till that time. *Monteſc. Conſid. ſur les Cauſ. de la Grand. des Rom. c.* 1. *p.* 2. *ſeq.*

The principal *Arms* of the antient Britons were, hatchets, ſcythes, lances, ſwords, and bucklers: the Saxons, *&c.* brought in the halbard, bow, arrows, arbalets, *&c.*

The *Arms* of the Highlanders are, the broad-ſword, target, poniard, and whinyar or durk, *&c.* 1 *Geo.* I. *ſtat.* 2. *c.* 54.

It is ſuppoſed, that the firſt artificial *Arms* were of wood, and were only employed againſt beaſts.—That Nimrod, the firſt tyrant, turned them againſt men; and that his ſon Belus was the firſt that waged war; whence, according to ſome, came the appellation *bellum.*—Diodorus Siculus takes Belus to be the ſame with Mars, who firſt trained ſoldiers up to battle.

Arms of ſtone, and even of braſs, appear to have been uſed before they came to iron and ſteel.—Joſephus aſſures us, that the patriarch Joſeph firſt taught the uſe of iron *arms* in Egypt, arming the troops of Pharaoh with a caſque and buckler.

By the antient laws of England every man was obliged to bear *Arms*, except the judges and clergy. Under Henry VIII. it was expreſly injoined on all perſons to be regularly inſtructed, even from their tender years, in the uſe of the arms then in faſhion, *viz.* the long bow and arrows. 33 H. VIII.

ARMS, ARMA, in the eye of the law, are extended to any thing which a man takes in his hand in his wrath, to caſt at, or ſtrike another.—So Crompton—*Armorum appellatio non ubique ſcuta, & gladios, & galeas ſignificat, ſed & fuſtes & lapides.* See V i *& Armis.*

ARMS *of courteſy*, or *parade*, were thoſe uſed in the antient juſts, and turnaments.

Theſe uſually were lances not ſhod; ſwords without edge or point; and frequently wooden ſwords, and even canes.

Baſs of ARMS was a kind of combat in uſe among the antient cavaliers.

Place of ARMS, in fortification, *&c.* See PLACE *of Arms.*

ARMS alſo denote the natural weapons, or parts of defence of beaſts; as claws, teeth, tuſks of elephants, beaks of birds, *&c.*

Some animals are ſufficiently guarded againſt all common dangers by their natural cloathing, their armature of ſhells, as the tortoiſe, *&c.*—Others, deſtitute of this guard, are armed with horns, and others with ſharp quills, or prickles, as the porcupine and the hedghog; others with ſtings, *&c.*

ARMS are alſo uſed figuratively for the profeſſion of a ſoldier.—Thus we ſay, he was bred to *Arms.* See SOLDIER.

Fraternity of ARMS. See the article FRATERNITY.

Law of ARMS. See the article LAW.

Suſpenſion of ARMS. See the article SUSPENSION.

ARMS, or ARMORIES, are alſo uſed in heraldry, for marks of dignity and honour, regularly compoſed of certain figures and colours, given or authorized by ſovereigns, and borne in banners, ſhields, coats, *&c.* for the diſtinction of perſons, families, and ſtates, and paſſing by deſcent to poſterity.

They are called *Arms*, in regard they are borne principally on the buckler, cuiraſſe, banners, and other apparatus of war.—They are alſo called *coats of arms*, *coat-armour*, &c. becauſe antiently embroidered on ſurcoats, *&c.* See COAT *of arms*, &c.

Some will have the name to have been firſt occaſioned by the antient knights, who in their juſts and turnaments bore certain marks (which were frequently their miſtreſſes favours) in their armour, *i. e.* their helms or ſhield; to diſtinguiſh them from each other.

Three flowers *de lys*, in a field azure, are the *Arms* of France.—The *Arms* of England are three lions.—In the *Arms* of Great Britain are quartered the *Arms* of France, England, Scotland, and Ireland.

There has been a great diſpute among the learned about the origin of *Arms.*—Favyn will have them to have been from the beginning of the world; Segoin from the time of Noah; others from that of Oſiris, which is ſupported by ſome paſſages in Diodorus Siculus; others from the times of the Hebrews, in regard *Arms* were given to Moſes, Joſhua, the twelve tribes, David, *&c.*

Others will have them to have taken their riſe in the heroical age, and under the empires of the Aſſyrians, Medes, and Perſians; building upon the accounts of Philoſtratus, Xenophon, and Quintus Curtius.

Some pretend that the uſe of *Arms*, and the rules of blazon, were regulated by Alexander.—Others will have them to have had their original under the empire of Auguſtus; others, during the inundations of the Goths; and others, under the empire of Charlemaign.

Chorier obſerves, that, among the antient Gauls, each man bore a mark on his buckler, by the ſight whereof he might be known to his fellows; and hence he refers the original of the *Arms* of noble families.—Camden has obſerved ſomething like this of the antient Picts, and Britons, who, going naked to the wars, painted their bodies with blazons, and figures of divers colours, which he ſuppoſes to have been different in different families, as they fought divided by kindreds. Yet Spelman ſays, that the Saxons, Danes, and Normans, firſt brought *Arms* from the north into England; and thence into France.

Upon the whole it is certain, that from time immemorial, there have been ſymbolical marks in uſe among men, to diſtinguiſh them in armies, and to ſerve as ornaments for ſhields and enſigns; but theſe marks were uſed arbitrarily as devices, emblems, hieroglyphics, *&c.* and were not regular *armories*, like ours, which are hereditary marks of the nobility of a houſe, regulated according to the rules of heraldry, and authorized by princes.

Before Marius, even the eagle was not the conſtant enſign of the Roman army; but they bore in their ſtandards a wolf, leopard, or eagle, indifferently, according to the fancy of the generals.

The ſame diverſity has been obſerved with regard to the French and Engliſh; on which account, authors are divided when they ſpeak of the antient *Arms* of thoſe countries.—In effect, it appears from all the beſt authors, that the armories of houſes, as well as the double names of families, were not known before the year 1000. And ſeveral have even endeavoured to prove, that the uſe of *Arms* did not begin till the time of the firſt croiſades of the Chriſtians in the eaſt.

The truth is, it appears to have been the antient tournaments that occaſioned the fixing of armories.

Henry the Fowler, who regulated the tournaments in Germany, was the firſt who introduced theſe marks of honour, which appear to be of an older ſtanding in Germany, than any other part of Europe.—It was then that coats of *Arms* were firſt inſtituted; which were a kind of livery compoſed of ſeveral bars, fillets, and colours: whence came the feſs, bend, pale, chevron, and lozenge; which were ſome of the firſt elements of armories. See Cross, Fess, Bend, *&c.*—Thoſe who had never been concerned in any tournament, had no *Arms*, though they were gentlemen.

Such of the nobility and gentry as croſſed the ſea, in the expeditions to the Holy Land, alſo aſſumed theſe tokens of honour to diſtinguiſh themſelves.

Before theſe times, we find nothing upon antient tombs but croſſes, with Gothic inſcriptions, and repreſentations of the perſons deceaſed. The tomb of pope Clement IV. who died in 1268. is the firſt whereon we find any *Arms*; nor do they appear on any coins ſtruck before the year 1336. We meet with figures, it is true, much more antient, both in ſtandards, and on medals; but neither cities nor princes ever had *Arms* in form: nor does any author make mention of blazoning before that time.

Originally, none but the nobility had a right of bearing *Arms*; but king Charles V. having ennobled the Pariſians, by his charter in 1371. he permitted them to bear *Arms*: from whoſe example, the more eminent citizens of other places did the like.

Camden refers the original of hereditary *Arms* in England to the time of the firſt Norman kings. He ſays, their uſe was not eſtabliſhed till the reign of king Henry III. and inſtances in ſeveral of the moſt conſiderable families in England, wherein, till that time, the ſon always bore different *Arms* from the father.—About the ſame time it became the cuſtom, here in England, for private gentlemen to bear *Arms*; borrowing them from the lords of whom they held in fee, or to whom they were the moſt devoted.

Arms, at preſent, follow the nature of titles, which being made hereditary, theſe are alſo become ſo; being the ſeveral marks for diſtinguiſhing of families and kindreds, as names are of perſons and individuals.

Arms make the object of the art of heraldry. See Heraldry.

Arms are variouſly diſtinguiſhed by the heralds.—

Canting Arms are thoſe wherein the figures bear an alluſion to the name of the family.—Such are thoſe of the family of La Tour in Auvergne, who bear a tower; that of the family of Prado in Spain, whoſe field is a meadow.

Moſt authors hold theſe the moſt noble and regular, as is ſhewn by an infinity of inſtances produced by father Varenne and Menetrier.—They are much debaſed, when they come to partake of the rebus.

Charged Arms are ſuch as retain their antient integrity and value, with the addition of ſome new honourable charge or bearing, in conſideration of ſome noble action.

Aſſumptive Arms. See the article Assumptive.

Full or *intire* Arms are ſuch as retain their primitive purity, integrity, or value; without any alterations, diminutions, abatements, or the like.

It is a rule, that the ſimpler and leſs diverſified the *Arms*, the more noble and antient they are.—For this reaſon, Garcias Ximenes, firſt king of Navarre, and his ſucceſſors for ſeveral ages, bore only gules, without any figure at all.

The *Arms* of princes of the blood, of all younger ſons, and junior families, are not pure, and full; but diſtinguiſhed and diminiſhed by proper differences, *&c.* See Difference, *&c.*

Arms are alſo ſaid to be *parted*, *couped*, *quartered*, &c. See Parti, *&c.*

Arms are ſaid to be *falſe* and *irregular*, when there is ſomething in them contrary to the eſtabliſhed rules of heraldry.—As, when metal is put on metal, or colour on colour, *&c.*

The laws, and other affairs of *Arms*, with the cognizance of offences committed therein, belong, among us, to the earl-marſhal, and college of *Arms*. See College *of Arms*.

Arms *of Patronage*. See the article Patronage.

Arms, in falconry, denote the legs of an hawk, from the thigh to the foot. See Hawking.

King at Arms,	ſee	King *at Arms*,
Herald at Arms,		Herald.
Pourſuivant at Arms,		Poursuivant.
College of Arms,		College *of Arms*.

ARMY, a large body of ſoldiers, conſiſting of horſe and foot, under the command of a general, with ſeveral ranks of ſubordinate officers under him.

This is to be underſtood of a land *Army*.—A naval or ſea *Army* is a number of ſhips of war, equipped and manned with ſailors and marines, under the command of an admiral, with other inferior officers under him.

We ſay, an *Army* ranged in order of battle.—The march of an *Army*.—The retreat of an *Army*.—The review of an *Army*, &c.

Beſiegers are obliged to have an *Army* of obſervation, to prevent relief being brought into the place, or the ſiege being raiſed. *Vid. Savin. Nouv. Ecol. Milit. p.* 335. *ſeq.*

An *Army* conſiſts of ſquadrons and battalions, and is uſually divided into three corps; which are ranged in three lines. The firſt line is called the vanguard; the ſecond, the main body; and the third, the rear-guard, or body of reſerve.—The middle of each line is poſſeſſed by foot; the cavalry forms the wings on the right and left of each line; and ſometimes they alſo place ſquadrons of horſe in the intervals between the battalions.

When the *Army* is ranged in order of battle, there are five feet diſtance between every two horſes, and three between the foot. But in the ſhock the file contracts, and its front leſſens almoſt to one half.

In each line the battalions are diſtant from each other about 180 foot, a diſtance about equal to the extent of their front; and the ſame holds of the ſquadrons, which are about 300 foot diſtant, the extent of their own front. Theſe intervals are left for the ſquadrons and battalions of the ſecond line, to range themſelves againſt the intervals of the firſt line; and thoſe of the third line, againſt the intervals of the ſecond; that both the one and the other may march more readily through theſe ſpaces to the enemy.

There are uſually 300 foot left between the firſt line and the ſecond, and 600 between the ſecond line and the third; that there may be room to rally when the ſquadrons and battalions are broke. *Sauv. Nouv. Ecol. Milit. p.* 266.

Long experience has ſhewn, that in Europe a prince with a million of ſubjects cannot keep an *Army* of above ten thouſand men, without ruining himſelf. It was otherwiſe in the antient republics: the proportion of ſoldiers to the reſt of the people, which is now as about one to an hundred, might then be as about one to eight. The reaſon ſeems owing to that equal partition of lands, which the antient founders of commonwealths made among their ſubjects; ſo that every man had a conſiderable property to defend, and had means to defend it with. Whereas, among us, the lands and riches of a nation being ſhared among a few, the reſt have no way of ſubſiſting, but by trades, arts, and the like: and have neither any free property to defend, nor means to enable them to go to war in defence of it, without ſtarving their families. A large part of our people are either artiſans or ſervants, and ſo only miniſter to the luxury and effeminacy of the great.

While the equality of lands ſubſiſted, Rome, though only a little ſtate, being refuſed the ſuccours which the Latins were obliged to furniſh after the taking of the city in the conſulate of Camillus, preſently raiſed ten legions within their own walls: which was more, Livy aſſures us, than they were able to do in his time, though maſters of the greateſt part of the world. A full proof, adds the hiſtorian, that we are not grown ſtronger; and that what ſwells our city is only luxury, and the means and effects of it. *Vid. Liv. Dec.* 1. *l.* 7. *Conſid. ſur les Cauſ. de la grand. des Rom. c.* 3. *p.* 24.

Our *Armies* antiently were a ſort of militia, compoſed chiefly of the vaſſals and tenants of the lords.

When each company had ſerved the number of days or months injoined by their tenure, or the cuſtoms of the fees they held; they returned home. See Tenure, Fee, *&c.*

The *Armies* of the empire conſiſt of divers bodies of troops, furniſhed by the ſeveral circles. See Empire, and Circle.

The groſs of the French *Armies*, under the Merovingian race, conſiſted of infantry. Under Pepin and Charlemaign, the *Armies* conſiſted almoſt equally of cavalry and foot: but ſince the declenſion of the Carlovingian line, the fees being become hereditary, the national *Armies*, ſays Le Gendre are chiefly cavalry.

The *Armies* of the grand ſignior conſiſt chiefly of janizaries, ſpahi's, and timariots. See Janizary, Spahi, and Timariot.

Royal Army. See the article Royal.

ARNODI*, in antiquity, the ſame with Rhapſodi. See Rhapsodi.

* The word is compounded of the Greek ἀρνὸς, a lamb, which was their uſual reward; and ᾠδὴ, ſong, or ſinging.

ARNOLDISTS, Arnaldists, a kind of ſectaries in the XIIth century; thus called from their chief, Arnold of Breſſe, who was a great declaimer againſt the wealth and vices of the clergy: and who is alſo charged with preaching againſt baptiſm, and the euchariſt.

After raiſing great diſturbances at Breſſe and Rome, he was burnt at this latter place in 1155. and his aſhes caſt into the Tiber.—His diſciples were alſo called *Publicans*, or *Poplecani*.

AROMATIC*, Aromaticus, is underſtood of a drug, plant, or the like, which yields a briſk fragrant ſmell, and a warm ſpicy taſte.

* The word is formed of the Greek αρωμα, which is compounded of αρι, very; and οδμη, or οσμη, ſmell: or rather derived from αρω, to make fit, accommodate: in regard ſpices, which are all *aromatic*, are uſed for the ſeaſoning and preparing of meats.

AROMATICS, or AROMATIC *Medicines*, are either ſimple or compound.—To this claſs belong moſt cardiac, cephalic, and carminative remedies, with many ſtomachic ones.

Of this kind are, frankincenſe, ſtorax, benjoin, cinnamon, mace, cloves, nutmeg, pepper, &c.—Such alſo are, lavender, marjoram, ſage, thyme, roſemary, &c.

Aromatics are of particular ſervice in cold cacheɛtic habits, where the load of humours has been forced away by ſtrong detergents and cathartics; as they tend to ſtrengthen the fibres, and prevent a relapſe.—Hence alſo they become of neceſſary uſe after purging, and carrying off the waters of a dropſy; or in the intervals thereof, to fortify the ſprings, and prevent a filling again.

The *Aromaticum Roſatum* is a compound officinal powder, made of red roſes, liquorice, aloes-wood, yellow ſanders, cinnamon, cloves, mace, gum tragacanth, nutmegs, cardamoms, galangals, ſpikenard, ambergriſe, and muſk, all mixed together.—It is chiefly preſcribed in cordial and cephalic bolus's and electuaries, to ſtrengthen the ſtomach and head, which all *Aromatics* have a tendency to.

Some writers give the title *Aroma Germanicum* to juniper-berries, on account of the great eſteem they are in among that people, for their ſpicy, warm qualities; in which reſpect they are by many preferred to ginger itſelf.

AROMATICUM *Vinum*, } ſee the articles { VINUM.
AROMATICUS *Calamus*, } { CALAMUS.

ARONDE, in fortification. See DOVETAIL, and QUEUE *d'Aronde*.

AROURA, Αρουρα, a Grecian meaſure, of 50 feet. Suid.

AROURA was more frequently uſed for a ſquare meaſure, the half of the plethron.

The Egyptian *Aroura* was the ſquare of 100 cubits. Arbuth. tab. 9.

ARPAGIUS*, or rather HARPAGIUS, in ſome antient inſcriptions, ſignifies a perſon who died in the cradle, at leaſt in early youth.—

* The word is formed from the Greek ἁρπαζω, *rapio*, I ſnatch. —It occurs but rarely in Latin writings; yet we meet with it in Gruter, *p.* 682. *Inſcrip.* 9. in the epitaph of Marcus Aurelius, who died at the age of 9 years, 2 months, and 13 days. —But even this inſcription was found in Gaul, where they often made uſe of a baſtard Greek.

The Romans made no funerals for their *Arpagii.*—They neither burnt their bodies, nor made tombs, monuments, or epitaphs, for them; which occaſioned Juvenal to ſay,

——*Terra clauditur infans,*
Et minor igne rogi.——

In after-times it became the cuſtom to burn ſuch as had lived to the age of forty days, and had cut any teeth; though theſe they alſo called Ἁρπακτοι, or Ἁρπαγμενοι, *q. d. rapti*, raviſhed. The uſage ſeems to have been borrowed from the Greeks; among whom, Euſtathius aſſures us, it was the cuſtom never to bury their children either by night or full day, but at the firſt appearance of the morning; and that they did not call their departure by the name of death, but by a ſofter appellation, Ἡμερας αρπαγη; importing, that they were raviſhed by Aurora, or taken away to her embraces.

ARPENT. See the article ACRE.

ARQUEBUSS*, or HARQUEBUSS, a large hand-gun, ſomething bigger than our muſquet; and called, by ſome, a caliever. See HARQUEBUSS.

* The word is derived from the Italian *arcobuſio*, or *arcoabuſo*; formed of *arco*, a bow; and *buſio*, a hole; becauſe of the touch-hole of an *arquebuſs*, which ſucceeds to the uſe of the bow among the antients.

ARQUEBUSS *a Croc* is a ſort of ſmall fort-arm, which carries a ball of about three half ounces; now only uſed in Old Caſtile, and ſome garriſons of the French.

ARRACK. See the article ARACK.

ARRAIATIO *Peditum*, the ranging or arraying of foot-ſoldiers. See MARTIAL LAW.

ARRAIGN*, or ARAIGN, in law, ſignifies to ſet a thing in order, or in its place.

* Spelman is of opinion, that the word ſhould be written *arrame*; from *arramare*, derived from the old French *arramir*, i. e. *jurare, promittere, ſolemniter profiteri*. Yet in the regiſter we find no ſuch word as *arramare*; but in all the writs of aſſize, the year-books, &c. it is *arrainavit*: the more natural derivation is from the French *arraiſoner*, i. e. *ad rationem ponere*, to call a man to anſwer in form of law; which comes from the barbarous Latin *adrationare*, i. e. *placitare*.—In which ſenſe, to *arraign* a criminal, is *ponere eum ad rationem*.

Thus, he is ſaid to *arraign* a writ of novel diſſeiſin, who prepares and fits it for trial before the juſtices of the circuit.

To *arraign* the aſſize is to cauſe the demandant to be called to make the plaint, and to ſet the cauſe in ſuch order, as the tenant may be forced to anſwer thereto.

A priſoner is alſo ſaid to be *arraigned*, when he is indicted and brought forth to trial.

ARRAIGNMENT, in law, the act of *arraigning*; that is, of arranging, or ſetting a thing in order.

ARRANGEMENT, or RANGEMENT, the diſpoſition of the parts of a whole, in a certain order.

The modern philoſophy ſhews us, that the diverſity of the colours of bodies depends intirely on the ſituation and *Arrangement* of the parts, which reflect the light differently; the diverſity of taſtes and ſmells on the different *Arrangements* of the pores, which render them differently ſenſible; and the general diverſity of bodies, on the different *Arrangement* of their parts.

The happy *Arrangement* of words makes one of the greateſt beauties of diſcourſe.

ARRAS-HANGINGS, a ſort of rich tapeſtry, made at Arras in the county of Artois in Flanders. See TAPESTRY.

ARRAY*, in law, the ranking or ordering a jury or inqueſt of men impanelled on any cauſe.

* The word may be derived either from the obſolete French *array*, order; or from *raye*, a line, ſtroke, &c.

Hence to *array* a panel, ann. 3 Hen. V. &c. is to ſet forth the men impanelled one by another.—The *Array* ſhall be quaſhed, *ib.*—By the ſtatute, every *Array* in aſſize ought to be made four days before.—Hence, alſo, to challenge the *Array*. See CHALLENGE.

Battle-ARRAY. See TACTICS.

ARRAYERS, or ARRAJERS, ARRAITORES, is uſed, in ſome antient ſtatutes, for ſuch officers as had care of the ſoldiers armour, and ſaw them duly accoutred in their kinds.

In ſome reigns, commiſſioners have been appointed for this purpoſe. Such were the commiſſioners of *array*, appointed by king Charles I. in the year 1642.

ARREARS*, ARREARAGES, ARRERAGIUM, or ARRIERAGIUM, the remains of an account; or a ſum of money remaining in the hands of an accomptant.

* The word is derived from the French *arrerages*, which is formed from *arriere*, and that again from *retro*, behind.

ARREARS is alſo uſed more generally for a remainder of rents or moneys unpaid at the due time; whether they be rents of manor, or any other thing reſerved: called alſo, in ſome writers, *arrieragium firmarum*.

Reins ARREAR *in law.* See RIENS.

ARRENTATION, in the foreſt-law, the licenſing an owner of lands in the foreſt, to incloſe them with a low hedge, and ſmall ditch, in conſideration of a yearly rent.

Saving the arrentations, denotes a power reſerved to give ſuch licences for yearly rent.

ARREST*, in common law, the apprehending or reſtraining of one's perſon, in execution of the command of ſome court, or officer of juſtice.

* The word *arreſt* is originally French, and is uſed in that language for a decree or determination of a cauſe debated to and fro: in which ſenſe it ſeems derived from the Greek αρεστον, *placitum*, the pleaſure of the court.

Hence, when a perſon is legally ſtopped, apprehended, and reſtrained of his liberty, for debt, &c. he is ſaid to be *arreſted*, or put under an *Arreſt*; which is the beginning of impriſonment.

To *move* or *plead in arreſt of judgment* is, to ſhew cauſe why judgment ſhould be ſtayed, though there be a verdict in the cauſe.

To *plead in arreſt of taking the inqueſt* is, to ſhew cauſe why an inqueſt ſhould not be taken.

ARRESTANDIS *bonis, ne diſſipentur*, a writ which lies for him whoſe cattle or goods are taken by another, who, during the controverſy, makes, or is like to make, them away, and will hardly be able to give ſatisfaction for them afterwards.

ARRESTANDO *ipſum, qui pecuniam recepit ad proficiſcendum in obſequium regis*, &c. is a writ which lies for the apprehenſion of him that hath taken preſt-money to ſerve in the king's wars, and hides himſelf when he ſhould go.

ARRESTO *facto ſuper bonis mercatorum alienigenorum*, &c. is a writ which lies for a denizen againſt the goods of ſtrangers, or perſons of another country, found within this kingdom, in recompence of goods taken from him in that country, after he hath been denied reſtitution there.

This anſwers to what among the antient civilians was called *clarigatio*, now barbarouſly *repriſalia*. See REPRISAL.

ARRETED, ARRECTATUS, is ſometimes uſed in our antient law-books for imputed, or laid to.—As, no folly may be *arreted* to one under age.

ARRHABONARII*, a ſect in religion who held that the eucharist is neither the real fleſh and blood of Chriſt, nor yet the ſign of them, but only the pledge or earneſt thereof.

* The word is derived from the Greek ἀῤῥαβων, *arrba*, earneſt.

ARRHÆ, or *Argentum Dei*. See EARNEST, &c.

ARRHEPHORIA*, a feaſt among the Athenians, inſtituted in honour of Minerva, and Herſe daughter of Cecrops.

* The word is Greek, Ἀῤῥηφορια; which is compoſed of ἀῤῥητον, myſtery; and φερω, I carry: on account of certain myſterious things which were carried in proceſſion at this ſolemnity.

Boys, or, as ſome ſay, girls, between ſeven and twelve years of age, were the miniſters that aſſiſted at this feaſt; and were denominated Ἀῤῥηφοροι.

This feaſt was ſo called *Erſiphoria*, Ἑρσηφορια, from Herſe, the daughter of Cecrops, on whoſe account it is ſaid to have been firſt eſtabliſhed.

ARRIERE, a French term, literally ſignifying the *hind*, or *poſterior* part of any thing; uſually written in Engliſh, abridgedly, *rear*.

ARRIERE-BAN *, or **ARIERE-*Ban***, in the French cuſtoms, is a general proclamation, whereby the king ſummons to the war all that hold of him; both his vaſſals, *i. e.* the nobleſſe, and the vaſſals of his vaſſals.

* M. Caſeneuve takes the word to be compoſed of *arriere* and *ban*: the *ban*, according to him, denotes the convening of the nobleſſe or vaſſals, who hold fees immediately of the king; and *arriere*, thoſe who only hold of the king mediately.—

To the provoſt of Paris belong the convoking and commanding of the *arriere-ban*.

ARRIERE-FEE, or **FIEF**, is a fee dependent on ſome other ſuperior one.

Arriere-fees commenced at the time when the counts and dukes, rendering their governments hereditary in their families, diſtributed to their officers certain parts of the royal domains which they found in their provinces; and even permitted thoſe officers to gratify the ſoldiers under them, with parts thereof.

ARRIERE-GUARD. See the article REAR-*Guard*.

ARRIERE *Vaſſal*, or ***Tenant***, the vaſſal or tenant of another vaſſal or tenant. See VASSAL.

ARROGATION. See ADROGATION.

ARRONDIE, in heraldry. CROSS-*Arrondie*, or *rounded*, is that whoſe arms are compoſed of ſections of a circle, not oppoſite to each other, ſo as to make the arm bulge out thicker in one part than another; but both the ſections of each arm lie the ſame way, ſo that the arm is every-where of an equal thickneſs; and all of them terminating at the edges of the eſcutcheon, like the plain croſs.

ARROW, a miſſive weapon of offence, ſlender, pointed and barbed, made to be caſt or ſhot with a bow. See BOW, and ARCHERY.

We ſay, a flight of *Arrows*: *Arrows* are alſo called *ſhafts*.

ARROW-*makers* are called *fletchers*, who were formerly, as well as bowyers, perſons of great conſequence in the commonwealth.—*Arrow*-heads and quarels were to be well boched or braſed, and hardened at the points with ſteel; the doing of which ſeems to have been the buſineſs of the *Arrow*-ſmith. *Vid. Stat.* 7. *H.* IV. *c.* 7.

ARROW, in aſtronomy, trigonometry, *&c.* See SAGITTA.

***Wildfire*-ARROWS.** See WILDFIRE.

ARS *Notoria*. See the article NOTORIUS.

ARSENAL *, a royal or public magazine, or place appointed for the making, and keeping of arms neceſſary either for defence, or aſſault.

* The word, according to ſome, is derived from *arx*, *arcis*, fortreſs; by others from *ars*. an engine; this being the place where the engines of war are preſerved.—Some will have it compounded of *arx* and *ſenatus*, as being the defence of the ſenate; others fetch it from the Italian *arſenale*, or from the modern Greek *arſenalis*; but the moſt probable opinion is, that it is derived from *darſenaa*, which, in the Arabic, ſignifies an *arſenal*.

The *Arſenal* of Venice is the place where the gallies are built, and laid up.—The *Arſenal* of Paris is that where the cannon or great guns are caſt. It has this inſcription over the gate—

——*Vulcania tela miniſtrat,*
Tela Gigantæos debellatura furores.

There are *Arſenal*, or ſtore-houſes, appropriated to naval furniture and equipments.—At Marſeilles is the *Arſenal* for the gallies; and at Toulon, Rocheſort, and Breſt, are thoſe for the men of war.

ARSENIC *, ARSENICUM, in natural hiſtory, a ponderous mineral ſubſtance, volatile and uninflammable, which gives a whiteneſs to ſeveral metals in fuſion, and proves extremely cauſtic, or corroſive, to animals, ſo as to become a violent poiſon.

* The word is compounded of the Greek *ανηρ*, man, or *αρσην*, male, and *νικαω*, I overcome, or kill; alluding to its poiſonous quality.

In an antient manuſcript aſcribed to the ſibyls, is a verſe which plainly intimates *Arſenic*.—*Tetraſyllabus ſum; prima pars mei virum, ſecunda victoriam ſignificat.*

Arſenic is by ſome ranked in the claſs of ſulphurs.

There are divers kinds of *Arſenic*; *viz.* yellow, red, and cryſtalline, or white.

Orpiment is called *Native* or *Yellow* ARSENIC: it is of a yellow, or orange-colour; whence it is alſo denominated *auripigmentum*. It is chiefly found in copper-mines, in a ſort of glebes or ſtones, of different figures and ſizes. Its colour, though always yellow, yet admits of divers ſhades and mixtures, as a golden yellow, reddiſh yellow, greeniſh yellow, *&c.* It is found to contain a portion of gold, but ſo little, as not to quit the coſt of ſeparating it; but there is beſide this a yellow factitious arſenic made of the white arſenic and ſulphur.

***Red* ARSENIC**, is a preparation of the white or cryſtalline *Arſenic*, made by adding to it ſulphur and copper.

***White* or *Cryſtalline* ARSENIC** is the kind chiefly uſed among us.

Arſenic is made by ſublimation from cobalt: the method of which, as practiſed in Hungary, is given us by Dr. Krieg, in the *Philoſophical Tranſactions*, N° 293.—The cobalt being beat to powder, and the light ſandy part waſhed off, by a current of water, they put what remains into the furnace; the flame of which, paſſing over the powder, takes along with it the arſenical part, in form of a ſmoke; which being received by a chimney, and carried thence into a cloſe wooden chanel, ſticks by the way to the ſides; and is ſcraped off, in form of a whitiſh or yellowiſh powder.—From what remains of the cobalt, they proceed to make ſmalt. See SMALT.

The ſmalleſt quantity of *cryſtalline Arſenic*, being mixed with any metal, renders it friable, and abſolutely deſtroys its malleability.

Hence, the refiners dread nothing ſo much as *Arſenic* in their metals; nor could any thing be ſo advantageous to them, were ſuch a thing to be had, as a menſtruum that would abſorb, or act on *Arſenic* alone; for then their metals would be readily purified, without flying off, or evaporating.

A ſingle grain of *Arſenic* will turn a pound of copper into a beautiful white metal looking like ſilver. This hint many perſons have endeavoured to improve on, for the making of ſilver; but in vain, as the mixture could never be brought to ſuſtain the hammer: ſome have been hanged for coining ſpecies of this ſpurious ſilver.

The chemiſts furniſh ſeveral preparations of *Arſenic*, which all turn on repeated ablutions and ſublimations, to blunt the corroſive ſalts thereof, and change it into a ſafe medicine, after the manner of ſublimate.—Such are ruby of *Arſenic*, &c. But it ſcarce appears worth the pains: and whatever ſome may urge, *Arſenic* ought never to be uſed inwardly in any form, as gnawing and tearing the veſſels, and occaſioning mortal convulſions.—Its fume taken into the lungs, kills inſtantly: and the oftener it is ſublimed, ſays Boerhaave, the ranker it grows.—Butter and cow's milk taken in large quantities, prove good antidotes againſt *Arſenic*. See Supplement, article ARSENIC.

***Regulus of* ARSENIC** is the moſt fixed and compact part thereof, prepared by mixing it with pot-aſhes and ſoap; then fuſing the whole, and caſting it into a mortar; upon which the heavieſt part falls to the bottom.

***Cauſtic oil of* ARSENIC**, is a butyrous liquor, like butter of antimony, prepared of *Arſenic*, and corroſive ſublimate.—It ſerves to eat off fungous fleſh, and to cleanſe carious bones, *&c.*

ARSENICAL *Magnet*, *magnes arſenicalis*, is a preparation of antimony, with ſulphur and white *Arſenic*.

ARSENOTHELYS *, among the antient naturaliſts, the ſame with hermaphrodite.

* The Greeks uſed the word both in ſpeaking of men and beaſts.—It is formed from *αρσην* and *θηλυς*, male and female.

ARSIS *and Theſis*, in proſody, are names given to the two proportionable parts into which every foot or rhythm is divided. See FOOT, *&c.*

By *Arſis* and *theſis* are uſually meant no more than a proportional diviſion of the metrical feet, made by the hand or foot of him that beats the time.

As in meaſuring the quantities of words, the hand is lifted up, as well as let fall; part of the time taken up in meaſuring the foot, by lifting the hand up, is termed *arſis*, or *elevatio*; and the part where the hand is let fall, *theſis*, or *poſitio*. *Vid.* Auguſtin. *de Muſica*, *l.* 2. *c.* 10. *In plaudendo enim quia elevatur & ponitur manus, partem pedis ſibi elevatio vendicat, partem poſitio.*

***Fugha per* ARSIN *& Theſin*.** See FUGUE.

ART, ARS, is defined by the ſchoolmen, a habit of the mind operative or effective according to right reaſon; or, ſomewhat more intelligibly, a habit of the mind preſcribing rules for the due production of certain effects; or the introducing of changes in bodies from ſome foreknowlege and deſign in a perſon endued with a principle or faculty of acting.

* The word *Art* is derived from the Greek *αρετη*, virtue, ſtrength.—This is the opinion of Donatus, on the firſt ſcene of Terence's Andria: *Ars απο της αρετης, dicta eſt per* ſyncopen; and is followed by Scaliger. Others derive *Art* from *αρος*, utility, profit; which is found in that ſenſe in Æſchylus.

On this footing, *Arts* are divided into *active* and *factive*.—Such as leave no external effect after their operation, as dancing, fiddling, *&c.* are called *active* or *practical Arts*: thoſe which do leave an effect behind them, as painting, *&c.* are called *factive*, or *effective Arts*. *Magn. Moral.* lib. 1. cap. 35.

ART is better defined, after my lord Bacon, a proper diſpoſal of the things of nature by human thought and experience, ſo as to make them anſwer the deſigns and uſes of mankind.

Nature, according to that philoſopher, is ſometimes free, and at her own diſpoſal; and then ſhe manifeſts herſelf in a regular order: as we ſee in the heavens, plants, animals, *&c.*—Sometimes ſhe is irregular, and diſorderly, either through ſome uncommon accident, or depravation in matter, when the reſiſtance of ſome impediment perverts her from her courſe; as in the production of monſters.—At other times ſhe is ſubdued and faſhioned by human induſtry, and made to ſerve the ſeveral purpoſes of mankind.—This laſt is what we call *art.*—In which ſenſe, *art* ſtands oppoſed to nature.

Hence, the knowlege of nature may be divided into the hiſtory of generation, of pretergeneration, and of *arts.*—The firſt conſiders nature at liberty; the ſecond, her errors; and the third, her reſtraints.

Art is alſo uſed for ſcience or knowlege reduced into practice.

Several of the ſchoolmen hold logic and ethics to be *arts*; inaſmuch as they do not terminate in mere theory, but tend to practice.

In this ſenſe ſome branches of the mathematics alſo are *arts*; others, matters of doctrine, or ſcience.—Statics is wholly ſcientifical, as it takes up with the mere contemplation of motion: mechanics, on the contrary, is an *art*, as it reduces the doctrine of ſtatics into practice.

Art is principally uſed for a certain ſyſtem or collection of rules, precepts, and inventions or experiments, which, being duly obſerved, make the things a man undertakes ſucceed, and render them advantageous and agreeable.

In this ſenſe, *art* is oppoſed to ſcience, which is a collection of ſpeculative principles, and concluſions.

The nature, and origin of *art* and its diſtinction from ſcience, are farther conſidered in the preface to this work.

Arts, in this ſenſe, may be divided, with reſpect to their ſcope and object, into *human*, as medicine; and *divine*, as theology.

Human, again, may be ſubdivided into *civil*; as law, politics, *&c. military*, as fortification, *&c. phyſical*, as agriculture, chymiſtry, anatomy, *&c. metaphyſical*, as logic, pure mathematics, *&c. philological*, as grammar, criticiſm, *&c. mercantile*, to which belong the mechanical *arts* and manufactures. See each in its place.

Arts are more popularly divided into *liberal* and *mechanical.*

Liberal Arts are thoſe that are noble, and ingenuous; or which are worthy of being cultivated without any regard to lucre ariſing therefrom.—Such are *poetry*, *muſic*, *painting*, *grammar*, *rhetoric*, the *military art*, *architecture*, and *navigation.*

Mechanical Arts are thoſe, wherein the hand and body are more concerned than the mind; and which are chiefly cultivated for the ſake of the profit they bring with them.—Of which kind are moſt of thoſe which furniſh us with the neceſſaries of life, and are popularly known by the name of *trades.*—Such are *weaving*, *turnery*, *brewing*, *maſonry*, *clock-making*, *carpentry*, *joinery*, *foundery*, *printing*, &c.

The *mechanical arts* take their denomination from μηχανη, machine; as being all practiſed by means of ſome machine or inſtrument.

With the *liberal arts* it is otherwiſe; there being ſeveral of them which may be learnt and practiſed without any inſtrument at all: as logic, eloquence, medicine properly ſo called, *&c.*

The arts which relate to the ſight and hearing, my lord Bacon obſerves, are reputed liberal, beyond thoſe which regard the other ſenſes, which are chiefly employed in matters of luxury.

It has been well noted by philoſophers, that, during the riſe and growth of ſtates, the military *arts* chiefly flouriſh; when arrived at their height, the liberal *arts*; and when on the declining hand, the voluptuary *arts.*

There are alſo divers particular *arts*; as the art of memory, the *art* of deciphering, the *art* of flying, of ſwimming, *art* of diving, *&c.*

Democritus maintained, that men learnt all their *arts* from brutes; that the ſpider taught them weaving, the ſwallow building, the nightingale muſic; and ſeveral kinds of medicine.

Trm of Art. See the article Term.

Bachelor of Arts. See the article Bachelor.

Maſter of Arts. See Master, Degree, Faculty.

Art is alſo applied to divers imaginary, and even ſuperſtitious doctrines and inventions.—Such are,

Lully's Art, or the *tranſcendental* Art. This is an art by means whereof a man may diſpute whole days on any topic in nature without underſtanding the leaſt tittle of the thing in diſpute; thus called from its inventor Raymond Lully.

It conſiſts chiefly in diſpoſing the ſeveral ſorts of beings into divers ſcales or climaxes, to be run down in a deſcending progreſſion.—Thus, whatever were propoſed to be talked on, they would ſay, firſt, it is a being, and conſequently, one, true, good, perfect: then, it is either created, or increated. Again, every created being is either body or ſpirit, *&c.*

Angelical Art, or the Art *of ſpirits*, is a method of attaining to the knowlege of any thing deſired, by means of angels, or rather of dæmons.

Uuder this come the *arts* of *magic*, *ſorcery*, *witchcraft*, &c.

Ars *Notoria* is a pretended manner of acquiring ſciences by infuſion, without any other application than a little faſting, and performing a few ceremonies.

They who make profeſſion of this art, affirm that it was by means hereof that Solomon, in one night's time, acquired all his knowlege.—Delrio ſhews it to be a criminal curioſity, and founded on a ſecret compact with the devil. *Diſquiſ. Mag. p.* 11. It was ſolemnly condemned by the Sorbonne in 1320.

St. Anſelm's Art is a ſuperſtitious manner of curing wounds, by barely touching the linen wherewith thoſe wounds had been covered.

Delrio, in his *Diſquiſitiones Magicæ*, obſerves, that ſome Italian ſoldiers, who practtiſed this *art*, attributed the invention thereof to St. Anſelm; but he aſſures us withal, that it was really invented by Anſelm of Parma, a celebrated magician.

St. Paul's Art is a branch of the *ars notoria*, ſo called as being ſuppoſed to have been taught by St. Paul, after his being taken up into the third heaven.

Art *and Part*, is a phraſe uſed in the north end of England, and in Scotland.—When any one is charged with a crime, they ſay he is *art and part* in committing the ſame; that is, he was both the contriver, and acted a part in it.

Hermetical Art. See the article Hermetical.

Hyſſopic Art. See the article Hyssopic.

ARTERIA *Aſpera.* } See the articles { Aspera.
ARTERIA *Sacra.* } See the articles { Sacra.

ARTERIAL, or Arterious, in anatomy, ſomething that relates to the arteries. See Artery.

The *arterial* blood is ſuppoſed more warm, florid, and ſpirituous, than the venal.

ARTERIOSA *Vena*, Φλεβς αρτηριωδης, or *arterial vein*, a denomination given to the pulmonary artery, or that veſſel whereby the blood is conveyed from the right ventricle of the heart to the lungs.

Canalis ARTERIOSUS is a tube in the heart of a fœtus: which, with the foramen ovale, ſerves to maintain the circulation of the blood, and to divert it from the lungs.

ARTERIOTOMY*, Αρτηριοτομια, in chirurgery, *&c.* the operation of opening an artery; or of letting blood with a lancet by the arteries; practiſed in ſome extraordinary caſes.

* The word is formed of αρτηριο, and τεμνω, *ſeco*, I cut.

Arteriotomy is a very dangerous operation, and is ſeldom uſed with deſign, except in the forehead, the temples, and behind the ears, where the arteries are eaſily cloſed again by reaſon of the cranium underneath, which would be very diſficult to effect in any other part.—In the other parts it uſually proves fatal; and we have numerous inſtances of perſons killed in bleeding, by the opening an artery inſtead of a vein.

Fernelius (2. 18.), Severinus (*Effic. Med. part.*), Tulpius (*Obſ.* 1. 48.), and Catherwood, labour hard to introduce *arteriotomy* in apoplectic caſes, as much preferable to veneſection; but they are not much followed.

ARTERY*, Αρτηρια, in anatomy, a hollow fiſtulous canal, appointed to receive the blood from the ventricles of the heart, and diſtribute it to all parts of the body, for the maintenance of heat and life, and the conveyance of the neceſſary nutriment.—See *Tab. Anat.* (Angeiol.) *fig.* 1.

* The word is Greek, αρτηρια: which ſome imagine derived from αηρ, *aer*, the air, and τηρεω, *ſervo*, to keep: but others, who underſtand the uſe of the part better, derive it from αιρω, I lift, becauſe of its continual throbbing or beating.

The *arteries* are ordinarily compoſed of three coats or membranes. The firſt or outermoſt, nervous or tendinous; being a thread of fine blood-veſſels with nerves, for nouriſhing the other coats. The ſecond muſcular, and made up of circular, or rather ſpiral fibres; of which there are more or fewer ſtrata according to the bigneſs of the *artery:* theſe fibres have a ſtrong elaſticity, by which they contract themſelves with force, when the power by which they have been ſtretched out ceaſes. The third and inmoſt coat is a fine, denſe, tranſparent membrane, which keeps the blood within its chanels, which otherwiſe, upon the dilatation of an *artery*, would eaſily ſeparate the ſpiral fibres from one another. As the *arteries* grow ſmaller, theſe coats grow thinner.

All the *arteries* are conical, *i. e.* they begin with the trunk, and, growing leſs and narrower, end in branches ſo minute, that they eſcape the ſight, unleſs aſſiſted with microſcopes;

by which, in the tails of tadpoles, and very ſmall eels, the extremities of the *arteries* ſeem, by the ſwift uninterrupted courſe of the blood, to be inoſculated, or continued to the originations of the veins: though by the tranſparency of thoſe veſſels, the actual continuation be not viſible.

The coats of the *arteries* are of a very denſe, cloſe contexture; by which means the blood not being viſible through them, they generally appear white. Add, that the blood, proceeding from a greater capacity to a leſs, is thereby ſomewhat obſtructed in its paſſage; but being forced on by the motion of the heart, it diſtends the coats, and thereby occaſions a ſalient motion, called the *pulſe*.—By this thickneſs and whiteneſs of the *arteries*, with the pulſation obſerved therein, *arteries* are diſtinguiſhed from veins.

The pulſe of the *arteries*, like that of the heart, conſiſts of two reciprocal motions, a ſyſtole or contraction, and a diaſtole or dilatation: but they keep oppoſite times; the ſyſtole of the one anſwering to the diaſtole of the other.

All the *arteries* of the body, we have obſerved, ariſe in two large trunks, from the two ventricles of the heart. That from the right ventricle is called the *pulmonary artery*, ſerving to carry the blood into the lungs: that from the left, the *aorta*, or *great artery*; which, by its numerous ramifications, furniſhes all the reſt of the body, as far as the remoteſt ſtages of circulation.

The great *artery*, after it leaves the heart, divides into two large trunks, called the *aſcending*, or upper; and *deſcending*, or lower *trunks*.

The aſcending trunk, or *aorta aſcendens*, conveys the blood to the head, and other upper parts of the body, and is ſubdivided into three branches.—The firſt, the right *ſubclavian*, whence ariſe the *carotid*, *vertebral*, *cervical*, right *axillary*, &c.—The ſecond, is the left *carotid*.—The third, the left *ſubclavian*; whence ariſe the left *cervical*, *vertebral*, and *axillary*.—See each deſcribed in its proper article, SUBCLAVIAN, CAROTID, VERTEBRAL, CERVICAL, AXILLARY, &c.

The deſcending trunk, or *aorta deſcendens*, carries the blood to the trunk, and the lower parts of the body.

Out of this ariſe the *bronchial*, *intercoſtals*, *cœliac*, *phrenic*, *meſenteric*, *emulgent*, *ſpermatic*, *iliac*, *umbilical*, *epigaſtric*, *hypogaſtric*, *crural*, &c. with their ſeveral ramifications.—See each in its place.

A draught of the ſeveral *arteries*, with their diviſions and ſubdiviſions, in their natural order and poſition, as taken from the life; ſee in plate *anatomy* (Angeiol. fig. 6).

ARTERY is alſo applied to that fiſtulous tube, compoſed of cartilages and membranes, which deſcends from the mouth to the lungs, for the conveyance and reconveyance of the air, in reſpiration.

This is particularly called the *aſpera arteria*, or *trachæa*, and popularly the *wind-pipe*.

ARTHEL, ſomething caſt into a court, in Wales; or the marches thereof; whereby the court is letted or diſcontinued for the time.—The caſting of *arthel* is prohibited, 26 *H.* VIII. *c.* 6.

ARTHRITIS *, Αρθριτις, in medicine, a diſeaſe better known under the name of the *gout*.

* The word is formed from the Greek αρθρον, *articulus*, joint; in regard the chief ſeat of that diſtemper is in the joints.

ARTHRITIC *Waters*. See the article WATER.

ARTHRODIA *, Αρθρωδια, in anatomy, a ſpecies of articulation, wherein a flat head of one bone is received into a ſhallow ſocket of another.

* The word is formed from the Greek αρθρον, *articulus*, and δεχομαι, *recipio*, I receive.

Such is the articulation of the humerus with the ſcapula.

ARTHRODIUM in mineralogy, a genus of cryſtal. See Supplement.

ARTHROSIS *, in anatomy, a juncture of two bones, deſigned for motion; called alſo *articulation*.

* The word is formed from the Greek αρθρον, *articulus*.

ARTICLE, ARTICULUS, a little part or diviſion of a book, writing, or the like.—Aquinas divides his ſum of theology into ſeveral queſtions; and each queſtion into divers *articles*.—Such an account conſiſts of ſo many *articles*.

ARTICLE is alſo applied to the ſeveral clauſes or conditions of a contract, treaty of peace, or the like.

In this ſenſe we ſay, *articles* of marriage, *articles* of capitulation, preliminary *articles*, &c.—The eſtabliſhment of an Eaſt-India company at Oſtend is a direct breach of the eighth and ninth *articles* of the treaty of Munſter.

ARTICLES *of the clergy*, ARTICULI *cleri*, are certain ſtatutes touching perſons and cauſes eccleſiaſtical, made under Edward II. and III.

ARTICLE *of faith* is by ſome defined a point of Chriſtian doctrine, which we are obliged to believe, as having been revealed by God himſelf, and allowed and eſtabliſhed as ſuch by the church.

ARTICLE, *Articulus*, in anatomy, denotes a joint, or juncture, of two or more bones of the body. See ARTICULATION.

ARTICLE *of death*, *Articulus mortis*, the laſt pangs, or agony of a dying perſon.

The pope uſually ſends his benediction to the cardinals, &c. *in articulo mortis*.

ARTICLE, in arithmetic, ſignifies the number 10, or any number juſtly diviſible into ten parts; as 20, 30, 40, &c.—Theſe are ſometimes called *decads*, and ſometimes *round numbers*. Harris.

ARTICLE, in grammar, denotes a particle uſed in moſt languages for the declining of nouns, and denoting the ſeveral caſes and genders thereof.

The uſe of *articles* ariſes chiefly hence, that in languages which have not different terminations, to expreſs the different ſtates and circumſtances of nouns, there is ſomething required to ſupply that office.

The Latins have no *articles*; but the Greeks, and moſt of the modern languages, have had recourſe hereto, for fixing and aſcertaining the vague ſignification of common and appellative names.

The Greeks have their ὁ, the eaſtern tongues their *he emphaticum*; the Italians their *il*, *lo*, and *la*.—The French their *le*, *la*, and *les*.—The Germans their *der*, *das*, *dat*.

The Engliſh alſo have two *articles*, *a*, and *the*: which, being prefixed to ſubſtantives, apply their general ſignification to ſome particular thing.—Thus we ſay, *a man*; that is, ſome man or other: *the man*, that is, that certain man.

Hence it appears, that *a* is uſed in a larger, and more general ſenſe; being applied indifferently to any particular perſon or thing.—Whereas *the* diſtinguiſhes individually, and ſhews what particular thing is ſpoken of.—If the ſubſtantive to which the particle *a* is affixed, begin with a vowel, or with an *h*; we write and ſpeak it, *an*: ſo we ſay, *an eye*, *an hour*, &c.

Some grammarians make the *article* a diſtinct part of ſpeech: others will have it a pronoun; and others, with Mr. Greenwood, a noun adjective. See SPEECH, PRONOUN, ADJECTIVE, &c.

Articles are things of great ſervice in a language, as they contribute to the more neat and preciſe expreſſing of ſeveral properties and relations, which muſt otherwiſe be loſt. And hence one great diſadvantage of the Latin, above other languages which have *articles*; in that the *article* being either expreſſed, or left out, makes an alteration in the ſenſe, which the Latins cannot diſtinguiſh.—Thus when the devil ſaid to our Saviour, *ſi tu es Filius Dei*, it may either be underſtood, *if thou art a Son of God*, or, *if thou art the Son of God*.—Scaliger, from the want of *articles* in the Latin, has concluded them uſeleſs.

The Italians even prefix *articles* to proper names, which do not naturally need any, in regard they do of themſelves ſignify things individually.—Thus they ſay, *il Arioſto*, *il Taſſo*, *il Petrarcha*.—Even the French join the *article* to the proper names of kingdoms, provinces, &c. as *la Suede*, *la Normandie*.—And we ourſelves do it to the names of certain mountains and rivers; as the *Rhine*, the *Danube*, the *Alps*, &c.

Indefinite **ARTICLE**. The *article a* is ſaid to be *indefinite*, becauſe applied to names taken in their more general and confuſed ſignification; as, he travelled with the port and equipage of a prince; where the words *a prince* may be underſtood of any prince in the general.

Definite **ARTICLE**. The *article the* is ſaid to be *definite*, or *demonſtrative*, as fixing the ſenſe of the word it is put before, to one individual thing. See DEFINITIVE.

Fa. Buffier diſtinguiſhes a third kind of *articles* in the French, which he calls *intermediate*, or *partitive*; ſerving to denote part of the thing expreſſed by the ſubſtantives they are added to: as, *des ſcavans ont cru*, ſome learned men have ſuppoſed, &c. I want *de la lumiere*, ſome light, &c.

The uſe and diſtinction of the definite and indefinite *articles le* or *la*, and *de* or *du*, make one of the greateſt difficulties in the French tongue, as being utterly arbitrary, and only to be acquired by practice.—We may add, that in the Engliſh, though the articles be ſo few, yet they are of ſuch frequent uſe, that they eaſily diſcover any ſtranger, from a natural Engliſhman.

ARTICULARIS, ARTICULAR, in medicine, an epithet applied to a diſeaſe which more immediately infeſts the articuli, or joints.

The *morbus articularis* is the ſame with the Greek αρθριτις, and our *gout*. See GOUT.

ARTICULATE *ſounds* are thoſe which expreſs the letters, ſyllables, &c. of any alphabet, or language. See INARTICULATE.

Brutes cannot form *articulate* ſounds, or they cannot *articulate* the ſounds of their voice, excepting ſome few birds, as the parrot, pye, raven, ſtarling, &c.

ARTICULATION, ARTICULATIO, in grammar, a diſtinct pronunciation of words and ſyllables.

Articulation is that part of grammar, which treats firſt of ſounds, and letters; then of their combinations, for the compoſing of ſyllables and words. Hence he who pronounces his words clearly, and diſtinctly, is ſaid to pronounce them *articulately*.

ARTICULATION, in anatomy, a juncture or connexion of two bones, deſigned for motion.

There are various forms and kinds of this *articulation*, ſuited to the ſeveral ſorts of motion and action.—That which has a notable and manifeſt motion is called *diarthroſis*.—This is ſubdivided into *enarthroſis*, *arthrodia*, and *ginglymus*. See each in its place, ENARTHROSIS, ARTHRODIA, and GINGLYMUS.

That which only admits of an obſcure motion is called *ſynarthroſis*. It is ſubdivided into *ſymphyſis*, *ſutura*, *harmonia*, *ſyſſarcoſis*, *ſynchondroſis*, *ſynneuroſis*, *ſyntenoſis*, and *ſynymenſis*. See SYMPHYSIS, SUTURA, HARMONIA, &c.

ARTICULORUM *anima*. See the article ANIMA.

ARTIFICIAL, ARTIFICIALIS, ſomething made by art; not produced naturally, or in the common courſe of things.

‘ Art is uſually conſidered as a thing very different from
‘ nature; and *artificial* things from natural ones: whence
‘ ariſes another more grievous error, *viz.* that art is ſup-
‘ poſed a different principle built upon nature, and of ſuch
‘ power, as to be able, either to perfect what nature had
‘ begun, to rectify and amend her when diſordered, or to
‘ free her when confined; though not utterly to divert
‘ or tranſmute her.—But the truth is, *artificial* things do
‘ not differ from natural ones in nature or form, but only
‘ in the efficient: man has no power over nature, be-
‘ ſide what he has by motion; in virtue whereof, he can
‘ apply natural bodies to, or remove them from, one
‘ another. Where ſuch application, or joining of active
‘ things to paſſive ones, is practicable, there may men do
‘ any thing; where it is not, nothing. Gold we ſometimes
‘ ſee purified by the chymiſt's fire; and ſometimes find
‘ it perfectly pure in the ſands, nature herſelf having done
‘ the buſineſs: ſo the rainbow is ſometimes formed on
‘ high in the water of a cloud; and ſometimes here be-
‘ low by a ſprinkling of water. Nature, therefore, go-
‘ verns all things; under this ſubordination, of the courſe of
‘ nature, the latitude or evagation of nature, and art, or
‘ man, ſuperadded to her other works.’ Bacon *de Augmen. Scient. lib.* II.

ARTIFICIAL is alſo frequently uſed for *factitious*.

Thus we have *artificial* ſal-armoniac, *artificial* borax, &c.

ARTIFICIAL *Arbours*. See the article ARBOUR.

ARTIFICIAL *Arguments*, in rhetoric, are all ſuch proofs or conſiderations as ariſe from the genius, induſtry, or invention, of the orator.

Such are definitions, cauſes, effects, &c. which are thus called, to diſtinguiſh them from laws, authorities, citations, and other arguments of that nature, which are ſaid to be *inartificial* arguments.

ARTIFICIAL *Baths*.	See the article	BATH.
ARTIFICIAL *Camphor*.		CAMPHOR.
ARTIFICIAL *Cinnabar*.		CINNABAR.
ARTIFICIAL *Colcothar*.		COLCOTHAR.
ARTIFICIAL *Conduits*.		CONDUIT.
ARTIFICIAL *Day*.		DAY.
ARTIFICIAL *Divination*.		DIVINATION.
ARTIFICIAL *Earthquakes*.		EARTHQUAKE.
ARTIFICIAL *Eye*.		EYE.
ARTIFICIAL *Fire*.		FIRE.

ARTIFICIAL *Fire-works* are compoſitions of inflammable materials; chiefly uſed on ſolemn occaſions, by way of rejoicing.

ARTIFICIAL *Flying*.	See the article	FLYING.
ARTIFICIAL *Forms*.		FORM.
ARTIFICIAL *Foundation*.		FOUNDATION.
ARTIFICIAL *Fountain*.		FOUNTAIN.

ARTIFICIAL *Globe*, *Sphere*, &c. See GLOBE, SPHERE, &c.

ARTIFICIAL *Horizon*. See HORIZON.

ARTIFICIAL *Lacca*. See the article LACCA.

ARTIFICIAL *Lines*, on a ſector or ſcale, are certain lines ſo contrived, as to repreſent the logarithmic ſines, and tangents; which, by the help of the line of numbers, will ſolve all queſtions in trigonometry, navigation, &c. pretty exactly.

ARTIFICIAL *Litharge*. See the article LITHARGE.

ARTIFICIAL *Numbers* are *ſecants*, *ſines*, and *tangents*.—See SECANT, SINE, and TANGENT.

ARTIFICIAL *Phoſphori*.	See the article	PHOSPHORI.
ARTIFICIAL *Ports*.		PORT.
ARTIFICIAL *Poſtures*.		POSTURE.
ARTIFICIAL *Precipitation*.		PRECIPITATION.
ARTIFICIAL *Rainbow*.		RAINBOW.
ARTIFICIAL *Road*.		ROAD.

ARTIFICIAL *Saltpetre*.	See the article.	SALTPETRE.
ARTIFICIAL *Star*.		STAR.
ARTIFICIAL *Vermilion*.		VERMILION.
ARTIFICIAL *Vortex*.		VORTEX.

ARTILLERY, the heavy equipage of war; comprehending all ſorts of great fire-arms, with their appurtenances; as cannons, mortars, bombs, petards, muſquets, carbines, &c.

In this ſenſe, the word *artillery* coincides with what we otherwiſe call *ordnance*.

There was no attacking ſuch a place for want of heavy *artillery*.—The Perſians, we are told in the embaſſy of Figueroa, would never, in 1518. have either *artillery* or infantry in their armies, by reaſon they hindered their charging and retiring with ſo much nimbleneſs; wherein their chief military addreſs and glory lay.

The term *artillery* is ſometimes alſo applied to the antient inſtruments of war, as the catapultæ, battering rams, &c. See ARIES, &c.

Park of ARTILLERY is that place in a camp ſet apart for the *artillery*, or large fire-arms.

Traile or *Train of* ARTILLERY is a ſet or certain number of pieces of ordnance, mounted on carriages, with all their furniture fit for marching. To this frequently belong mortar-pieces, with bombs, carcaſes, &c. It is under the direction of the maſter of the *artillery*.

There are trains of *artillery* in moſt of the king's magazines; as in the Tower, at Portſmouth, Plymouth, Windſor, &c.

ARTILLERY *Company* is a band of infantry, conſiſting of 600 men, making part of the militia or city-guard of London.

Their officers are a leader, two lieutenants, two enſigns, three gentlemen of arms, two ſerjeants, and a provoſt-marſhal. *Chamberl.*

ARTILLERY is alſo uſed for what we otherwiſe call *pyrotechnia*, or the art of fire-works, with the inſtruments and apparatus belonging thereto.

The writers upon *artillery* are, Caſimir Semionowitz, a Pole, Buchnerus, Braunius, Mieth, and S. Remy in his *Memoires d'Artillerie*, which contain an accurate deſcription of all the machines and inſtruments of war now in uſe, with every thing that relates thereto.

ARTILLERY *foot-level*. See the article LEVEL.

ARTOTYRITES, or ARTOTYRITÆ, a ſect in religion; being a branch of the antient Montaniſts, who firſt appeared in the ſecond century, and infected all Galatia.

They uſed bread and cheeſe in the Euchariſt, or perhaps bread baked with cheeſe *.—Their reaſon was, that the firſt men offered to God not only the fruits of the earth, but of their flocks too.

* Hence, according to St. Auguſtine, came their name, which is Greek; being compoſed of αρτος, bread, and τυρος, cheeſe.

ARVALES * *Fratres* were prieſts in antient Rome, who aſſiſted in the ſacrifices of the Ambarvalia offered every year to Ceres and Bacchus for the proſperity of the principal fruits of the earth, *viz.* the corn and wine.

* The word is originally Latin, and is formed from *arvum*, a field; becauſe in their ceremonies they went in proceſſion around the fields; or, according to Gellius, becauſe they offered ſacrifice for the fertility of the fields. Others ſay, becauſe they were appointed arbitrators of all differences relating to the limits of fields and land-marks.

They were inſtituted by Romulus, and were twelve in number; all of them perſons of the firſt diſtinction; the founder himſelf having been of the body.—They made a college, called *collegium fratrum arvalium*.

The mark of their dignity was a garland, compoſed of ears of corn, tied with a white ribband: this, Pliny ſays, was the firſt crown in uſe at Rome.

According to Fulgentius, Acca Laurentia, Romulus's nurſe, was the firſt founder of this order of prieſts: ſhe, it ſeems, had twelve ſons, who uſed to walk before her in proceſſion to the ſacrifice; one of whom dying, Romulus, in favour of his nurſe, promiſed to take his place; and hence, ſays he, came this ſacrifice, the number twelve, and the name of brother.—Pliny (*l.* 17. *c.* 2.) ſeems to indicate the ſame thing, when he mentions, that Romulus inſtituted prieſts of the fields, after the example of Acca Laurentia his nurſe.

ARUNDELIAN *Marbles*. See the article MARBLE.

ARUSPICES *, an order of prieſts among the antient Romans, who foretold things to come, chiefly by inſpecting the entrails of beaſts which were killed in ſacrifice.

* The word ſeems more properly written *haruſpices*; as being derived from *haruga*, which ſignifies the entrails of victims; and *aſpicere*, to view or conſider.

Or, as others think, from *hara*, *hoſtia*, a victim: though ſome defend the orthography of *aruſpices*, deriving the word from *aras*, and *inſpicere*, to inſpect the altars.—Fa. Pezron is poſitive it was originally formed of the Celtic *au*, liver; and *ſpicio*, I look; whence *auſpex*: which being a word ſomewhat rude of pronunciation, they thence formed *aruſpex*.

ſpex. In Feſtus we meet with *barviga*, or *hardiga*, which he defines to be a victim whoſe viſcera are conſidered while yet remaining together. Upon which Mr. Dacier obſerves, that *barviga* is formed from αριξ, *aries*, by inſerting the Æolic digamma, before the ι. It was properly, therefore, at firſt a ram they ſacrificed; but afterwards the name became common to all victims. See Victim.

The doctrine or diſcipline of the *aruſpices* was formed into a preciſe art, called *aruſpicina*.

Cato, who was an augur, uſed to ſay, he wondered how one *aruſpex* could look at another without laughing in his face. By which you ſee what opinion he had of the ſolidity of the *aruſpicina*.

ARYTÆNOIDES *, in anatomy, the third and fourth cartilages of the larynx, ſituate under the thyroides: called alſo *guttales*.

* The *arytænoides* are thus called on account of the figure of an αρυταινα, ewer; which, together, they ſomewhat reſemble: and the name is compounded of that word, and ειδος, ſhape, or figure.

ARYTÆNOIDEUS, in anatomy, one of the muſcles ſerving to cloſe the larynx; otherwiſe called little *arytænoideus*, and *aryartænoideus*, as deriving its origin from the poſterior and inferior part of the arytænoides.

The *arytænoideus* has its head in one arytænoid cartilage, and its tail in the other; and ſerves to bring them together, and ſhut the rima or glottis.

ARYTHMUS *, or Arhythmus, in medicine, is uſed by ſome for a ſinking, or failure of the pulſe, ſo as it can no longer be felt; but it more properly denotes an irregularity, or want of due order and proportion of the pulſe.

* The word is formed from the privative particle α, and ρυθμος, *modulus*, or meaſure.

AS *, among antiquaries, ſometimes ſignifies a particular weight; in which ſenſe the Roman *as* is the ſame with the Roman *libra*, or pound.

* The word is by ſome derived from the Greek αις, which, in the Doric dialect, is uſed for εις, one, *q. d.* an intire thing; though others will have this money named *as*, quaſi *æs*, becauſe made of braſs.—Budæus has written nine books *de aſſe, & ejus partibus*, of the *as*, and its parts.

The *as* had ſeveral diviſions.—The principal were, the *uncia*, or ounce; which was the twelfth part of the *as*: *ſextans*, the ſixth part of the *as*, or two ounces: *quadrans*, the fourth part of the *as*, or three ounces: *triens*, the third part of the *as*, which was four ounces: *quincunx*, was five ounces: *ſemis*, half the *as*, that is ſix ounces: *ſeptunx*, ſeven ounces: *bes*, two thirds of the *as*, or eight ounces: *dodrans*, three fourths of the *as*, or nine ounces: *dextans*, ten ounces: and *deunx*, eleven ounces.

As was alſo the name of a Roman coin, which was made of different matters, and different weights, in different ages of the commonwealth.

Under Numa Pompilius, according to Euſebius, the Roman money was either of wood, leather, or ſhells.—In the time of Tullus Hoſtilius, it was braſs, and was called *as*, *libra*, *libella*, or *pondo*, becauſe actually weighing a pound, or twelve ounces.

Four hundred and twenty years after, the firſt Punic war having exhauſted the treaſury, they reduced the *as* to two ounces. In the ſecond Punic war, Hannibal preſſing hard on them, the *aſſes* were farther reduced to an ounce apiece.—Laſtly, by the Papirian law, they took away half an ounce more, and reduced the *as* to a bare half-ounce: and it is generally thought, that it reſted here all the time of the commonwealth, and even till Veſpaſian's reign.

This laſt was called the *Papirian as*, in regard the law juſt mentioned was paſſed in the year of Rome 563. by C. Papirius Carbo, then tribune of the people. Thus, there were four different *as's* in the time of the commonwealth.

The figure ſtamped on the *as*, was at firſt a ſheep, ox, or ſow (*Plutarch. Poplic. Plin.* 18. 3.): and from the time of the kings, a Janus with two faces on the one ſide, and the roſtrum or prow of a ſhip on the reverſe *.

* The triens and quadrans of copper had the figure of a ſmall veſſel called *ratis*, on the reverſe. Thus Pliny: *Nota æris*, [*i. e.* aſſis] *fuit ex altera parte Janus geminus, ex altera roſtrum navis: in triente vero & quadrante rates.* Hiſt Nat. l. 33. c. 3.—Hence theſe pieces were ſometimes called *Ratiti.*

As was alſo uſed to denote any integer, or whole.—Whence the Engliſh word *ace*.

Thus, *as* ſignified the whole inheritance; whence *hæres ex aſſe*, the heir to the whole eſtate.

So the *jugerum*, or Roman acre of land, being reckoned the integer, was called *as*, and divided like it into 12 *unciæ*. See Jugerum.

The *as*, and its parts, or diviſions, ſtand thus:

1	As	12 *Unciæ*	$\frac{1}{2}$	*Semis*	6 *Unciæ*
$\frac{11}{12}$	*Deunx*	11	$\frac{5}{12}$	*Quincunx*	5
$\frac{5}{6}$	*Dextans.*	10	$\frac{1}{3}$	*Triens*	4
$\frac{3}{4}$	*Dodrans.*	9	$\frac{1}{4}$	*Quadrans*	3
$\frac{2}{3}$	*Bes*	8	$\frac{1}{6}$	*Sextans*	2
$\frac{7}{12}$	*Septunx*	7	$\frac{1}{12}$	*Uncia*	1

ASAPPES *, or Azapes, an order of ſoldiers in the Turkiſh army, whom they always expoſe to the firſt ſhock of the enemy; to the end that being thus fatigued, and their ſwords blunted, the Spahi's and Janizaries may fall on, and find an eaſy conqueſt.

* The word is derived from the Turkiſh *ſoph*, which ſignifies rank, file, order; from whence they have formed *aſphaph*, to range in battle.

The *Aſappes* are ſaid to be held of ſo little value, that they frequently ſerve as bridges for the cavalry to paſs over, in bad roads, and as faſcines to fill up the ditches of places beſieged.—The greateſt part of them are natural Turks; they travel on foot, and have no pay, but the plunder they can get from the enemy.

ASARABACCA, or Assara-Bacara, a plant ſuppoſed to be mentioned by Pliny and Dioſcorides, under the name of *baccharis*, or *nardus ruſtica*; by us called *aſarum*.

Avicenna relates, that it uſed to be brought from China; that its roots reſemble thoſe of gramen, or dog's-graſs; but that it has a pretty briſk ſmell, and bites the tongue when taſted.—Its leaves were antiently much in uſe, as an emetic, and cathartic; and in ſome authors we find a ſuperſtitious obſervance in regard to the gathering of them: they allege, that if the plant be pulled up forward, it becomes vomitive; but if backward, purgative. Rulandus and Fernelius frequently preſcribe it as a diuretic.

But it is chiefly uſed among us as a ſternutatory, in order to which, it is dried and reduced to a powder, to be taken as a ſnuff; in which quality it drains the head of mucous humours. See Supplement, article Asarum.

ASBESTINE, ſomething incombuſtible, or that partakes of the nature and qualities of the lapis aſbeſtos. See Asbestos.—Hence we read of

Asbestine *Paper* and *Cloth*, which will burn in the fire, be purified by it, and yet not conſume.

The antients are ſaid to have made napkins and towels of it, which, when foul, inſtead of waſhing, they threw into the fire to cleanſe.

ASBESTOS, a mineral ſubſtance, of a whitiſh, or ſilver colour, and a woolly texture; conſiſting of ſmall threads, or delicate fibres, endued with the wonderful property of reſiſting fire, and remaining unconſumed in the intenſeſt heat.

* The word ασβεςος, *asbeſtos*, properly ſignifies an incombuſtible body; it is formed of the privative particle α, and σβεννυμι, *extinguo*.

This lanuginous mineral is ſometimes alſo called *amianthus*, and ſometimes *ſalamandra*, or *ſalamander's wool*, from the candle-wicks ſaid to be made antiently of it. From a pungent quality, which Agricola ſays it has on the tongue, tho' without aſtringency, it has been by ſome called *alumen*, having the epithet of *plumeum* added to it, taken from its downy filaments, to diſtinguiſh it from the other alums; though it is to be obſerved, the true plume-alum is another ſort of body, being a real effloreſcence of alum.

From its light grey colour, it is called *polia* and *corſoides*; and from its likeneſs to the hoary fibres of ſome ſorts of mat-weed, *ſpartapolia*. From the capacity it has of being ſpun into thread, it is called *linum*, with ſome diſtinguiſhing epithet, taken either from its quality, as *linum aſbeſtinum vivum*, or *incombuſtibile*; or from the place where it is found, as *linum foſſile*, *linum Indicum*, *Creticum*, *Cypricum*, and *Carpaſium*, or *Caryſtium*. Beſides the places whence it borrows names, it is alſo found in Tartary, at Namur in the Low Countries, in Thuringia, among the mines in the Old Noricum, in Egypt, in the mountains of Arcadia, at Puteoli, in the iſland of Corſica, in the iſland of Angleſey in Wales, and in Aberdeenſhire in Scotland, at Montauban in France, and in the kingdom of Siberia.

Naturaliſts generally reckon it among the ſtones, whence its appellation of *lapis Aſbeſtos*, &c. but Dr. Plot rather judges it a *terra lapidoſa*, or middle ſuſtance, between ſtone and earth. As to its generation, the ſame author takes it to be a mixture of ſome ſalt, and a pure earth without ſulphur, coagulated in the winter, and hardened by the heats in ſummer. The ſalt, Ja. Heſſus pretends, is a liquid alum of a milky ſubſtance, inclining to yellow, that ſweats out of the earth, and ſmells like rotten cheeſe.

The *Aſbeſtos*, or *lapis aſbeſtos*, is really a ſort of native, fiſſile ſtone, which one may ſplit into threads or filaments, very fine, brittle, yet ſomewhat tractable, ſilky, and of a greyiſh ſilvery colour, not unlike talc of Venice.

It is almoſt inſipid to the taſte, indiſſoluble in water; and, expoſed to the fire, it neither conſumes nor calcines.—A large burning-glaſs, indeed, reduces it into little glaſs globules, in proportion as the filaments ſeparate; but common fire only whitens it.

Theſe filaments are of different lengths, from one inch to ten.—The ſtone is uſually found incloſed within other very hard ſtones; though ſometimes growing to the ſurfaces of them, and ſometimes detached or ſeparate from any.

The *Aſbeſtos*, applied to any part of the body, excites an itching; and yet we read of it as antiently preſcribed for diſeaſes of the ſkin; and particularly for the itch: unleſs it were rather the *alumen plumoſum* that was meant hereby; for even at this day, they are frequently confounded.

The induſtry of mankind has found a method of working this untoward mineral, and employing it in divers manufactures, chiefly cloth, and paper.

The manufacture is, undoubtedly, difficult enough. Pliny calls the *Aſbeſtos, inventu rarum, textu difficillimum*: Wormius aſſures us, that the method of making cloth of *Aſbeſtos* is now intirely unknown: in reality, one would ſcarce imagine the thing practicable, without the mixture of ſome other pliant matter, as wool, hemp, or flax, along with the *Aſbeſtos*, the filaments of this latter appearing too coarſe, and brittle, to make any tolerable fine work. However this be, Bapt. Porta aſſures us, that, in his time, the ſpinning of *Aſbeſtos* was a thing known to every body at Venice.

Sig. Caſtagnatta, ſuperintendant of ſome mines in Italy, is ſaid to have carried the manufacture to ſuch perfection, that his *Aſbeſtos* was ſoft, and tractable, much reſembling lambſkin, dreſſed white: he could thicken and thin it at pleaſure, and thus either make it into a very white ſkin, or a very white paper.

This kind of linen cloth was chiefly eſteemed by the antients; though then better known, and more common, than among us; being held equally precious with the richeſt pearls: nor is it now of mean value, even in the country where it is moſt generally made, a China cover (*i. e.* a piece of twenty three inches and three quarters long) being worth eighty tale, *i. e.* 36*l.* 13*s.* 4*d.* Pliny ſays, he himſelf had ſeen napkins thereof, which, being taken foul from the table, after a feaſt, were thrown into the fire, and by that means were better ſcoured than if they had been waſhed in water, &c. But its principal uſe, according to Pliny was, for the making of ſhrouds for royal funerals, to wrap up the corps, ſo that the aſhes might be preſerved diſtinct from that of the wood, &c. whereof the funeral pile was compoſed: and the princes of Tartary, according to the accounts in the Philoſophical Tranſactions, ſtill uſe it at this day in burning their dead. Some of the antients are ſaid to have made themſelves cloaths of it, particularly the Bracmans, among the Indians. The wicks for their perpetual lamps, according to Dr. Liſter, were alſo made of it; and ſome to this day uſe it for the wicks of ſuch lamps as they would not have any trouble with; becauſe the *Aſbeſtos* never waſting, there is no occaſion for ſhifting the wick. Septalla, canon of Milan, had thread, ropes, nets, and paper, made of the *Abeſtos*. A handkerchief or pattern of this linen was long ſince preſented to the Royal Society, a foot long, and half a foot broad. This gave two proofs of its reſiſting fire; though, in both experiments, it loſt above three drachms in its weight. When taken out red-hot, it did not burn a piece of white paper, on which it was laid. Mr. Villette pretends, that his large burning concave uſually vitrifies the *Aſbeſtos*. See Supplement, article Asbestus.

ASCARIDES*, ασκαριδες, in medicine, a ſlender ſort of worms, found in the inteſtinum rectum, chiefly of children, and frequently voided with their fæces; ſometimes alſo adhering to the fundament, or even pendent from it.

Aſcarides are ſaid to be often the occaſion of a prolapſus ani. See Procidentia.

ASCENDANT, **Ascendent**, or **Ascending** *Line*, in genealogy, is underſtood of anceſtors, or ſuch relations as have gone before us; or are nearer the root of the family.

Such are father, grandfather, great uncle, &c.—They are thus called in contradiſtinction to deſcendants, or the deſcending line.

Marriage is always forbid between the *aſcendants* and deſcendants, in a direct line.

Ascendant, in aſtrology, denotes the horoſcope; or the degree of the ecliptic which riſes upon the horizon, at the time of the birth of any one.

This is ſuppoſed to have an influence on the perſon's life and fortune, by giving him a bent and propenſity to one thing more than another.

In the celeſtial theme, this is alſo called the *firſt houſe*, the *angle of the Eaſt*, or *Oriental angle*, and the *ſignificator of life*.—Such a planet ruled in his *aſcendant*.—Jupiter was in his *aſcendant*, &c.

Hence the word is alſo uſed in a moral ſenſe, for a certain ſuperiority which one man has over another, from ſome unknown cauſe.

ASCENDENS *Obliquus*. See the article Obliquus.

ASCENDING, in aſtronomy, is underſtood of thoſe ſtars, or degrees of the heavens, &c. which are riſing above the horizon, in any parallel of the equator.

Ascending *Latitude* is the latitude of a planet when going towards the north pole.

Ascending *Node* is that point of a planet's orbit, wherein it paſſes the ecliptic, to proceed northward.

This is otherwiſe called the *northern node*, and is repreſented by this character ☊. See Node, &c.

Ascending, *Aſcendens*, in matters of genealogy, &c. See Ascendant.

Ascending *Signs*, among aſtrologers, are thoſe which are upon their aſcent, or riſe, from the nadir, or loweſt part of the heavens, to the zenith, or higheſt.

Ascending, in anatomy, is applied to ſuch veſſels as carry the blood upwards, or from lower to higher parts of the body.

The *aſcending aorta*, *aorta aſcendens*, is the ſuperior trunk of the artery, which furniſhes the head.

The *aſcending cava*, *vena cava aſcendens*, is a large vein, formed by a meeting or union of the iliacs of one ſide, with thoſe of the other. See *Tab. Anat.* (Splanch.) *fig.* 1. *lit.* o. (Angeioil. *fig.* 6. *lit.* cc.)

Many of the antient anatomiſts called this the *deſcending cave*; as imagining that the blood deſcended from the liver by this vein, to ſupply the parts below the diaphragm. But the moderns have ſhewn, that it has a quite contrary uſe, and ſerves for the conveyance of the blood from the lower parts to the heart; whence its appellation *aſcendant*.

ASCENSION, **Ascensio**, a riſing, or moving upward.

Ascension is particularly uſed for that miraculous elevation of our Saviour, when he mounted to heaven, body and ſoul, in the ſight of his apoſtles.

Several errors and hereſies relating to the *aſcenſion* of Chriſt's human body, are briefly touched by Tertullian: *Ut & illi erubeſcant qui adſirmant carnem in cœlis vacuam ſenſu, ut vaginam, exempto Chriſto ſedere; aut qui carnem & animam tantundem, aut tantummodo animam, carnem vero non jam.*—The Apellitæ taught, that Chriſt left his body diſſolved in the air (St. Auſtin ſays in the earth), and ſo aſcended into heaven without it: as he did not, ſay they, bring his body from heaven, but received it from the elements of the world; ſo he returned it again to the world.—The Seleuciani and Hermiani taught, that the body of Chriſt aſcended no farther than the ſun, in which it was depoſited: from that paſſage of the Pſalms, 'in the ſun has he placed his 'tabernacle.' Which opinion Greg. Nazianzen alſo attributes to the Manichees.

Ascension-*Day*, popularly called *Holy-Thurſday*, a feſtival of the church, held ten days before Whitſuntide, in memory of our Saviour's *aſcenſion*.

Ascension, in aſtronomy, is either *right* or *oblique*.

Right **Ascension** of the ſun, or of a ſtar, is that degree of the equinoctial, accounted from the beginning of Aries, which riſes with the ſun, or ſtar, in a right ſphere.

Or, right *aſcenſion* is that degree and minute of the equinoctial, counted as before, which comes to the meridian with the ſun, or ſtar, or other point of the heavens.

The reaſon of thus referring it to the meridian, is, becauſe that is always at right angles to the equinoctial, whereas the horizon is only ſo in a right, or direct ſphere.

The right *aſcenſion* ſtands oppoſed to the right *deſcenſion*.

Two fixed ſtars, which have the ſame right *aſcenſion*, i. e. are at the ſame diſtance from the firſt point of Aries in a right ſphere; or, which amounts to the ſame, are in the ſame meridian; riſe at the ſame time.—If they be not in the ſame meridian, the difference between the time when they riſe is the preciſe difference of their right *aſcenſion*.—In an oblique ſphere, where the horizon cuts all the meridians obliquely, different points of the meridian never riſe or ſet together; ſo that two ſtars, on the ſame meridian, never riſe or ſet at the ſame time; and the more oblique this ſphere, the greater is the interval of time between them.

To find the right *aſcenſions* of the ſun, ſtars, &c. trigonometrically, ſay, As radius is to the coſine of the ſun's greateſt declination, ſo is the tangent of the diſtance from Aries or Libra, to the tangent of right *aſcenſion*.—To find the right *aſcenſions* mechanically by the globe; ſee Globe.

The *arch of right aſcenſion* is that portion of the equator intercepted between the beginning of Aries, and the point of the equator which is in the meridian: or, it is the number of degrees contained therein.—This coincides with the right *aſcenſion* itſelf.—The right *aſcenſion* is the ſame in all parts of the globe.

We ſometimes alſo ſay, the right *aſcenſion* of a point of the ecliptic, or any other point of the heavens.

The difference between the right and oblique *aſcenſions* is called the *aſcenſional difference*. See Ascensional.

Angle of Right **Ascension**. See the article Angle.

Oblique **Ascension** is an arch of the equator intercepted between the firſt point of Aries, and that point of the equator which riſes together with a ſtar, &c. in an oblique ſphere.

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* They are thus called from the Greek ασκαριζω, I leap, on account of their continual troubleſome motion, cauſing a moſt intolerable itching.

The oblique *aſcenſion* is numbered from weſt to eaſt; and is more or leſs according to the different obliquity of the ſphere.

To find the oblique *aſcenſions* of the ſun, either trigonometrically, or by the globe. See Ascensional *Difference*, and Globe.

The *arch of oblique aſcenſion*, is an arch of the horizon intercepted between the beginning of Aries, and the point of the equator, which riſes with a ſtar, or planet, in an oblique ſphere.—This coincides with the oblique *aſcenſion* itſelf.—The oblique *aſcenſions* change according to the latitude of the places.

Refraction of Ascension *and Deſcenſion*. See Refraction.

ASCENSIONAL *Difference* is the difference between the right and oblique *aſcenſion* of the ſame point on the ſurface of the ſphere.

To find the *aſcenſional* difference trigonometrically; having the latitude of the place, and the ſun's declination given, ſay, As radius is to the tangent of the latitude, ſo is the tangent of the ſun's declination to the ſine of the *aſcenſional* difference.

If the ſun be in any of the northern ſigns, and the *aſcenſional* difference, as D O, be ſubtracted from the right *aſcenſion* D (*Tab. Aſtronomy, fig.* 63.) the remainder will be the oblique *aſcenſion* O.—If he be in a ſouthern ſign, the *aſcenſional* difference being added to the right *aſcenſion*, the ſum is the oblique *aſcenſion*: and thus may tables of oblique *aſcenſions* be conſtructed for the ſeveral degrees of the ecliptic, under the ſeveral elevations of the pole.

ASCENSORIUM ſometimes occurs in our antient writers for a ſtair, or ſtep. See Stairs.

ASCENT, Ascensus, the motion of a body tending from below upwards; or the continual receſs of a body from the earth.

In this ſenſe the word ſtands oppoſed to *deſcent*.

The Peripatetics attribute the ſpontaneous *aſcent* of bodies, to a principle of levity, inherent in them.

The moderns deny any ſuch thing as ſpontaneous levity, and ſhew, that whatever *aſcends*, does it in virtue of ſome external impulſe, or extruſion. Thus it is that ſmoke, and other rare bodies, *aſcend* in the atmoſphere; and oil, light woods, &c. in water: not by any external principle of levity, but by the ſuperior gravity, or tendency downwards of the parts of the medium wherein they are.

The *aſcent* of light bodies in heavy mediums is produced after the ſame manner as the *aſcent* of the lighter ſcale of a balance. —It is not that ſuch ſcale has an internal principle, whereby it immediately tends upwards; but it is impelled upwards by the preponderancy of the other ſcale; the exceſs of the weight of the one having the ſame effect by augmenting its impetus downwards, as ſo much real levity in the other: by reaſon the tendencies mutually oppoſe each other, and that action and reaction are always equal. See this further illuſtrated under the articles Specific *Gravity*, and Fluid.

Ascent *of Bodies on inclined Planes*. See the doctrine and laws thereof, under the article *Inclined* Plane.

Ascent *of Fluids* is particularly underſtood of their riſing above their own level, between the ſurfaces of nearly contiguous bodies, or in ſlender capillary glaſs tubes, or in veſſels filled with ſand, aſhes, or the like porous ſubſtances.

This effect happens as well in vacuo, as in the open air, and in crooked, as well as ſtrait tubes. Some liquors, as ſpirit of wine, and oil of turpentine, *aſcend* ſwifter than others; and ſome riſe after a different manner from others. Mercury does not aſcend at all, but rather ſubſides.

The phænomenon, with its cauſes, &c. in the inſtance of capillary tubes, will be ſpoken of more at large under the article Capillary *Tube*.

As to planes. Two ſmooth poliſhed plates of glaſs, metal, ſtone, or other matter, being ſo diſpoſed as to be almoſt contiguous, have the effect of ſeveral parallel capillary tubes; and the fluid riſes in them accordingly: the like may be ſaid of a veſſel filled with ſand, &c. the divers little interſtices whereof form, as it were, a kind of capillary tubes. So that the ſame principle accounts for the appearance in them all. And to the ſame may probably be aſcribed the *aſcent* of the ſap in vegetables.

Thus Sir I. Newton. ‘ If a large pipe of glaſs be filled with ‘ ſifted aſhes, well preſſed together, and one end dipped into ‘ ſtagnant water, the fluid will *aſcend* ſlowly in the aſhes, ſo ‘ as in the ſpace of a week or fortnight, to reach the height ‘ of thirty or forty inches above the ſtagnant water. This ‘ *aſcent* is wholly owing to the action of thoſe particles of ‘ the aſhes which are upon the ſurface of the elevated water; ‘ thoſe within the water attracting as much downwards as ‘ upwards: it follows, that the action of ſuch particles is very ‘ ſtrong; though, being leſs denſe and cloſe than thoſe of glaſs, ‘ their action is not equal to that of glaſs, which keeps quick‘ ſilver ſuſpended to the height of ſixty or ſeventy inches, and ‘ therefore acts with a force which would keep water ſuſ‘ pended to the height of about ſixty feet.—By the ſame ‘ principle, a ſponge ſucks in water, and the glands in the ‘ bodies of animals, according to their ſeveral natures and ‘ diſpoſitions, imbibe various juices from the blood.’ *Optics*, p. 367.

If a drop of oil, water, or other fluid, be laid on a glaſs plane, perpendicular to the horizon, ſo as to ſtand without breaking, or running off; and another plane, inclined to the former ſo as to meet a-top, be brought to touch the drop; then will the drop break, and *aſcend* towards the touching end of the planes: and it will *aſcend* the faſter in proportion as it is higher, by reaſon the diſtance between the planes is conſtantly diminiſhing.—After the ſame manner, the drop may be brought to any part of the planes, either upward or downward, or ſideways, by altering the angle of inclination.

Laſtly, if the ſame perpendicular planes be ſo placed, as that two of their ſides meet, and form a ſmall angle, the other two being only kept apart by the interpoſition of ſome thin body; and thus immerged in a fluid tinged with ſome colour; the fluid will aſcend between the planes, and this the higheſt where the planes are neareſt; ſo as to form a curve line, which is found to be a juſt hyperbola, one of the aſymptotes whereof is the line of the fluid, the other being a line drawn along the touching ſides.—The phyſical cauſe, in all theſe phænomena, is the ſame power of attraction.

Ascent *of Vapour*. See the article Cloud.

The *aſcent of the vapours of gunpowder*, in an exhauſted receiver, is a phænomenon, the ſolution of which nobody, I think, has yet attempted. *V. Philoſ. Tranſact.* N° 347. *p.* 420.

Ascent, in aſtronomy, &c. See Ascension.

Ascent, in logic, denotes a kind of argumentation, wherein we riſe from particulars to univerſals.

As, when we ſay, this man is an animal, and that man is an animal, and the other man, &c. therefore, every man is an animal.—Or fire, water, air, and earth, are four; therefore, the number of elements is four.

ASCETIC *, Ασκητα, an antient appellation given to ſuch perſons as, in the primitive times, devoted themſelves more immediately to the exerciſes of piety and virtue, in a retired life; and, particularly, to prayer, abſtinence, and mortification.

* The word is derived from the Greek *ασκεω*, *exerceo*, I exerciſe.

Afterwards, when the monks came in faſhion, this title was beſtowed upon them; eſpecially upon ſuch of them as lived in ſolitude.

Ascetic is alſo a title of ſeveral books of ſpiritual exerciſes. —As, the *aſcetics*, or devout treatiſes of St. Baſil, archbiſhop of Cæſarea in Cappadocia.

We alſo ſay the *aſcetic life*, meaning the exerciſe of prayer, meditation, and mortification.

A SECRETIS. See the article Secretary.

ASCETERIUM, Assisterium, Archisterium, &c. are words frequently uſed among our antient writers for a monaſtery.

ASCII *, in geography, are thoſe inhabitants of the globe, who, at certain times of the year, have no ſhadow.

* The word is formed of the privative particle *α*, and *σκια*, *umbra*, ſhadow.

Such are the inhabitants of the torrid zone; by reaſon the ſun is ſometimes vertical to them.—To find on what days the people of any parallel are *aſcii*, ſee Globe.

ASCITÆ *, in antiquity, a ſect, or branch, of Montaniſts, who appeared in the ſecond century.

* The word is derived from the Greek *ασκος*, a bag, or bottle.

The *Aſcitæ* were ſo called, becauſe they introduced a kind of Bacchanals into their aſſemblies, who danced round a bag or ſkin blowed up; ſaying, they were thoſe new bottles filled with new wine, whereof Jeſus Chriſt makes mention, Matth. ix. 17.—They are ſometimes alſo called *Aſcodrogitæ*.

ASCITES *, Ασκιτης, in medicine, a ſpecies of dropſy, affecting chiefly the abdomen, or lower belly.

* The word is borrowed from the Greek *ασκος*, *uter*, bag, or bladder.

The *Aſcites* is the ordinary water-dropſy. See Dropsy.

ASCLEPIAD, Asclepiadeus, a Greek or Latin verſe of four feet, containing a ſpondee, a choriambus, and two dactyls; or, which amounts to the ſame, a ſpondee, two choriambus's, and a pyrrhichius.

Such is the verſe, *Mæcenas atavis edite regibus*. Or, *Sublimi feriam ſidera vertice*.

ASCODRUTÆ, in antiquity, a ſect of heretics, in the ſecond century, who rejected all uſe of ſymbols and ſacraments, on this principle, that incorporeal things cannot be communicated by things corporeal, nor divine myſteries by any thing viſible.

ASCOLIA, in antiquity, a feaſt, which the peaſants of Attica celebrated in honour of Bacchus.

They ſacrificed a he-goat to him (as being the deſtroyer of vines); and of the victim's ſkin made a foot-ball, which they blew up, and anointed with ſome unctuous matter: or, as Potter thinks, they made a bottle of it, which they filled with oil and wine. The young people playing at this, and keeping themſelves always on one foot, whilſt the other was ſuſpended in air, by their frequent falls, gave occaſion of diverſion to the ſpectators.—Hence this feaſt took its name; ἀσκὸς ſignifying a *bag* or *budget*.

ASELLII *Pancreas*. See the article PANCREAS.

ASELLUS, in natural hiſtory. See MILLEPEDES.

ASHLAR, a term uſed among builders; by which they mean common or free ſtones, as they come out of the quarry, of different lengths and thickneſſes.

ASHLERING, among builders, ſignifies quartering, to tack to, in garrets, about 2½, or 3 feet high, perpendicular to the floor, up to the underſide of the rafters.

ASH, in building. See the article TIMBER.

ASH-WEDNESDAY, the firſt day of Lent; ſuppoſed to have been ſo called from a cuſtom in the church, of ſprinkling aſhes that day on the heads of penitents then admitted to penance.

ASHES, *Cineres*, the terrene or earthy part of wood, and other combuſtible bodies, remaining after they are burnt or conſumed with fire.

Aſhes are properly the earth, and fixed ſalts of the fuel, which the fire cannot raiſe; all the other principles being gone off in the ſmoke.

The chymiſts frequently call the *aſhes* of a body its *calx*.—*Aſhes*, if well burnt, are uſually pure white, by reaſon the oil to which they owe their blackneſs when in a coal, is ſuppoſed quite evaporated. The *aſhes* of kali, fern, or the like, are a principal matter in the compoſition of glaſs.

The *aſhes* of all vegetables are found to contain iron, inſomuch that M. Geofroy makes it a chymical problem, which he propoſes to the public, *to find aſhes without any particles of iron therein*.—Whether the metal exiſted in the plants themſelves, or is produced in them by the operation of calcination, is a point very ingeniouſly controverted between Meſſ. Geofroy and Lemery the younger, in the memoirs of the royal academy. See the ſubſtance of the diſpute under the article METAL.

Aſhes are of conſiderable uſe in making lixiviums, or lyes, for the purpoſes of medicine, for bleaching, and for ſugar-works *, &c.

In the bills of entry we find divers ſorts of *aſhes* imported from abroad: as pot-*aſhes*, pearl-*aſhes*, from Germany; wood or ſoap-*aſhes*, and weed-*aſhes*. See POT-ASHES, &c.

The antients preſerved the *aſhes* of their dead anceſtors with great care and piety, in urns made for the purpoſe. See FUNERAL, URN, BURNING, &c.

Aſhes of all kinds, in virtue of their ſalt, make an excellent manure for cold and wet grounds.—Hence that of Virgil,

> ———*Ne pudeat,*———
> *Effœtos cinerem immundum jactare per agros.*

Pot-ASHES. See the article POT-*aſhes*.

In the Philoſoph. Tranſact. N° 21. we have an account of a *ſhower of aſhes* in the Archipelago, which held ſeveral hours, and extended to places diſtant above an hundred leagues. See SHOWER, and RAIN.

ASIATIC *Style*. See the article STYLE.

ASIDE, in the drama.—An ASIDE, *ſeorſim*, is ſomething which an actor ſpeaks apart, or, as it were, to himſelf, for the inſtruction of the audience, by diſcovering ſome ſentiment which otherwiſe did not appear, and which is to be concealed from the reſt of the actors then preſent.

The ſevere critics condemn all *aſides*, and with ſome reaſon, as they are a manifeſt breach of probability.—Accordingly, they are never to be uſed but at a pinch, which a good author will ſcarce ſuffer himſelf to be brought to.

ASKING *in the Church*, 5. 6 Ed. VI. c. 12. See BANNS.

ASPALATH, ASPALATHUM, in pharmacy, the wood of a foreign tree, heavy, oleaginous, ſomewhat ſharp and bitter to the taſte, and of a ſtrong ſmell, and purple colour.

The *aſpalath* is otherwiſe called *lignum Rhodium*, or *roſe-wood*; and by ſome *Cypreſs-wood*; the former on account of its ſweet ſmell, or growth in the iſland of Rhodes; the latter from its being alſo found in the iſland of Cyprus. Tho' ſome will have *aſpalathum* a different wood from the *lignum Rhodium*.

Aſpalath was antiently in much repute, as an aſtringent, ſtrengthener, and drier; but is now much diſuſed in internal practice.

In virtue, taſte, ſmell, and weight, it reſembles the *lignum aloes*; and in phyſic they are frequently ſubſtituted the one for the other.

There are four kinds of *aſpalath*.—The firſt is of the colour of box; hard, ſolid, heavy, and of a ſmell like roſes, whence its appellation *roſe-wood*.—The ſecond is red, like yew, and of a very agreeable ſmell.—The third, hard, twiſted, and knotty: it has a rank ſmell, like that of a goat, and a diſagreeable taſte.—The fourth has an aſh-coloured bark, and is a wood of a purple dye.

Aſpalathum affords an oil of an admirable ſcent; reputed one of the beſt of perfumes; it is chiefly uſed in ſcenting pomatums, and liniments.

ASPECT, ASPECTUS, in gardening, is uſed for what we otherwiſe call *expoſure*.

ASPECT, in aſtronomy, is uſed for the ſituation of the ſtars, or planets, in reſpect of each other; or a certain configuration, and mutual relation between the planets, ariſing from their ſituations in the zodiac, whereby their powers are ſuppoſed to be mutually either increaſed or diminiſhed, as they happen to agree or diſagree in their active or paſſive qualities.

Though ſuch configurations may be varied, and combined a thouſand ways, yet only a few of them are conſidered.—Hence, Wolfius more accurately defines *aſpect* the meeting of luminous rays emitted from two planets, to the earth, either ſituate in the ſame right line, or including an angle which is one or more quota parts of four right angles.

The doctrine of *aſpects* was introduced by the aſtrologers, as the foundation of their predictions.—Hence, Kepler defines *aſpect* an angle formed by the rays of two planets meeting on the earth, able to excite ſome natural power or influence.

The antients reckoned five *aſpects*, *viz. conjunction*, denoted by the character ☌, *oppoſition* by ☍, *trine* by △, *quadrate* by □, and *ſextile* ✱.

Conjunction, and *oppoſition*, are the two extremes of the *aſpects*; the firſt being the beginning, and the ſecond the higheſt or ultimate term. See CONJUNCTION, and OPPOSITION.

Trigon, or *trine*, is the third part of a circle, or the angle meaſured by AB (*Tab. Aſtron. fig.* 3.).

Tetragon, or *quadrate*, is the fourth part of a circle, or the angle meaſured by the quadrant AD: *ſextile*, which is the ſixth part of a circle, or angle, is meaſured by the ſextant AG. See TRIGON, &c.

The *aſpects* are divided, with regard to their ſuppoſed influences, into *benign*, *malign*, and *indifferent*.

The quadrate *aſpect* and oppoſition are reputed *malign*, or *malific*; trine and ſextile, *benign*, or *friendly*; and conjunction, an *indifferent aſpect*.

To the five antient *aſpects*, the modern writers have added ſeveral more; as *decile*, containing the tenth part of a circle; *tridecile*, three tenths; and *biquintile*, four tenths, or two fifths.—Kepler adds others, as he tells us, from meteorological obſervations; as the *ſemi-ſextile*, containing the twelfth part of a circle; and *quincunx*, containing five-twelfths.—Laſtly, to the aſtrological phyſicians we owe, *octile*, containing one-eighth; and *trioctile*, containing three-eighths. Some have alſo added *quintile*, containing a fifth part of the circle; and *biquintile*, or two-fifths.

The angle intercepted between two planets in the *aſpect* of conjunction is 0; in the ſemi-ſextile *aſpect*, 30°; in decile, 36°; in octile, 45°; in ſextile, 60°; in quintile, 72°; in quartile, 90°; in tridecile, 108°; in trine, 120°; in trioctile, 135°; in biquintile, 144°; in quincunx, 150°; in oppoſition, 180°.

Theſe angles, or intervals, are reckoned on the ſecondary circles; or according to the longitudes of the planets; ſo that the *aſpects* are the ſame, whether a planet be in the ecliptic, or out of it.

The *aſpects* are uſually divided into *partile* and *platic*.

Partile ASPECTS are when the planets are juſt ſo many degrees diſtant, as is above expreſſed.—Theſe alone are the *proper aſpects*.

Platic ASPECTS are when the planets do not regard each other from theſe very degrees; but the one exceeds as much as the other comes ſhort.—So that the one does not caſt its rays immediately on the body of the other, but only on its orb or ſphere of light.

Double ASPECT is uſed in painting, where a ſingle figure is ſo contrived, as to repreſent two or more different objects, either by changing the poſition of the eye, or by means of angular glaſſes.—Inſtances hereof, ſee under the articles MIRROUR, CATOPTRIC, CISTULA, and ANAMORPHOSIS.

ASPER, in grammar.—*Spiritus* ASPER, a character, or accent in form of a *c*; placed over certain letters, in the Greek tongue, to ſhew they are to be ſtrongly aſpirated, and that the breath is here to ſupply the place of an *h*.

ASPER, or ASPRE, alſo ſignifies a little Turkiſh ſilver coin, wherein moſt of the grand ſignior's revenues are paid.

The *aſper* is worth ſomething more than an Engliſh halfpeny.—The only impreſſion it bears, is that of the prince's name under whom it was ſtruck.—The pay of the Janizaries is from two to twelve *aſpers per diem*.

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* White *aſhes* were forbid to be exported, 2 & 3 *Ed.* VI. *c.* 26. on account of their neceſſary uſe in the making of ſoap, and ſaltpetre; as well as for the whitening of linen, and the dying and ſcouring of woollen cloth.

ASPERA *Arteria*, in anatomy, the *wind-pipe*; otherwiſe called the *trachea*.

The *aſpera arteria* is a canal ſituate in the middle and fore-part of the neck, before the œſophagus: its upper-end is called the *larynx*; from whence it deſcends to the fourth vertebra of the back, where it divides, and enters the lungs. —See *Tab. Anat. Angeiol. fig.* 2. & *lit.* c. *Splanch. fig.* 12. *lit.* tt. & *ſ*.

It is formed of annular cartilages ranged at ſmall and equal diſtances from one another, and growing ſmaller and ſmaller, as they approach the lungs; thoſe of the bronchia being ſo cloſe to one another, that, in expiration, the ſecond enters within the firſt, and the third within the ſecond, and the following always enters the preceding.

Betwixt the larynx and the lungs, theſe cartilages make not complete rings; being flat on one ſide, and not finiſhing the whole circle, but repreſenting the figure of the antient Greek ſigma: whence they are alſo denominated *ſigmoides*.—Their hind part, which is contiguous to the œſophagus, is membranous, that they may better contract and dilate, and give way to the food as it paſſes down the gullet.

The cartilages of the bronchia are completely annular: yet their capillary branches have no cartilages, but inſtead of them ſmall circular ligaments, which are at pretty large diſtances from one another.—The uſe of the cartilages is to keep the paſſage for the air open; but in the capillary bronchia, they would hinder the ſubſiding of the veſſels.

Theſe cartilages are tied together by two membranes, external and internal: the external is compoſed of circular fibres, and covers the whole trachea externally; the internal is of an exquiſite ſenſe, and covers the cartilages internally: it is compoſed of three diſtinct membranes; the firſt woven of two orders of fibres; thoſe of the firſt order being longitudinal, for the ſhortening the trachea; theſe make the cartilages approach and enter one another: the other order is of circular fibres, for contracting the cartilages.

When theſe two orders of fibres act, they aſſiſt, together with the external membrane, in expiration, in coughing, and in altering the tone of the voice.

The ſecond membrane is altogether glandulous; and the excretory veſſels of its glands, opening into the cavity of the trachea, ſeparate a liquor for moiſtening the ſame, and defending it from the acrimony of the air.—The laſt is a net of veins, nerves, and arteries; the veins are branches of the vena cava, the nerves of the recurrent; and the arteries are ſprigs of the carotides.

Tranſverſe ſections of the *aſpera arteria* have been commonly reputed mortal. Yet in the modern practice we find many inſtances to the contrary *. In ſome dangerous caſes of quinzies, &*c.* they are even obliged to cut open this part. This operation is called *bronchotomy*, or *laryngotomy*.

* In the *Philoſoph. Tranſact.* is a letter by Mr. John Keen, recommending the more frequent uſe of bronchotomy, or opening the wind-pipe, upon preſſing occaſions; which he urges from a remarkable caſe of a perſon who had the trachea, or wind-pipe, cut quite through beneath the *pomum Adami*, cured by ſtitching the wound, and uſing proper medicines.

ASPERIFOLIOUS, in botany, one of the diviſions or claſſes of plants; ſo denominated, becauſe uſually rough-leaved.

The characters of the *aſperifolious* kind are, that the leaves ſtand alternately, or without any certain order on the ſtalks: the flowers are monopetalous, but they have the margin cut into five diviſions, ſometimes deep, ſometimes ſhallow; and the upper ſpike or top of the plant is often curv'd back, ſomething like a ſcorpion's tail.

In the place of each flower, there uſually ſucceed four ſeeds; Mr. Ray ſuppoſes the cerinthe the only plant of this genus, that hath leſs than four ſeeds at the baſe of each flower: this indeed hath but two.

To the claſs of *herbæ aſperifoliæ* belong the pulmonaria maculoſa, cynogloſſa, borago, bugloſſa, anchuſa, echium, linum umbilicatum, heliotropium majus, aparine major, conſolida major, lithoſpermum, echium ſcorpioides, and cerinthe.

ASPERITY, Asperitas, implies the inequality or roughneſs of the ſurface of any body; whereby ſome parts of it do ſo ſtick out beyond the reſt, as to hinder the hand, &*c.* from paſſing over it eaſily and freely.

Aſperity, or roughneſs, ſtands oppoſed to ſmoothneſs, evenneſs, politure, &*c.*—From the *aſperity* of the ſurfaces of contiguous bodies, ariſes friction.

According to the relations of Vermauſen, the blind man ſo famous for diſtinguiſhing colours by the touch, it ſhould appear, that every colour has its particular degree and kind of *aſperity*. He makes black the roughеſt, as it is the darkeſt of colours; but the others are not ſmoother in proportion as they are lighter; *i. e.* the rougheſt do not always reflect the leaſt light: for, according to him, yellow is two degrees rougher than blue, and as much ſmoother than green. Boyle *of colours*.

ASPERSION *, the act of ſprinkling with water, or ſome other fluid.

* The word is formed of the Latin *aſpergere*, to ſprinkle; of *ad*, to, and *ſpargo*, I ſcatter.

Some contend for baptiſm by *aſperſion*, others by immerſion.

ASPHALITES *, in anatomy, the fifth vertebra of the loins.

* It is thus called becauſe conceived as the ſupport of the whole ſpine of the loins; from the privative α, and σφαλλω, I ſupplant.

ASPHALTOS, or Asphaltum, a ſolid, brittle, black, inflammable, bituminous ſubſtance, reſembling pitch, brought from the eaſt, and particularly from Judea; whence it is alſo called *Jews-pitch*.

The *aſphaltos* of the Greeks is the *bitumen* of the Latins. Modern naturaliſts, who make a claſs of bitumens, generally place *aſphaltos* at the head of it, as being the moſt maturated and concocted of the whole tribe; but conſiſting of the ſame ſimple principles as the reſt.

It is chiefly found ſwimming on the ſurface of the *lacus Aſphaltites*, or dead ſea, where antiently ſtood the cities of Sodom and Gomorrah.—It is caſt up from time to time, in the nature of a liquid pitch, from the earth which lies under this ſea; and being thrown upon the water, it there ſwims like other fat bodies, and condenſes by little and little, through the heat of the ſun, and the ſalt that is in it: it burns with great vehemence; in which it reſembles *naphtha*; but is firmer as to conſiſtence.

The Arabs uſe it to pitch their ſhips withal, as we do common pitch.—Beſides this uſe, there was a deal of it employed in the embalming of the antients.

It is ſuppoſed to fortify and reſiſt putrefaction; and to reſolve, attenuate, cleanſe, and cicatrize wounds: but it is little uſed among us, either externally or internally.

It is uſual to ſophiſticate the *aſphaltos*, by mixing common pitch along with it; the reſult whereof makes the factitious *piſſaſphaltum*, which the coarſeneſs of the black colour, and the fetid ſmell, eaſily diſcover. There is, however, beſides this, a native *piſſaſphaltum*.

Asphaltum alſo denotes a kind of bituminous ſtone, found near the antient Babylon, and lately in the province of Neufchâtel; which, mixed with other matters, makes an excellent cement, incorruptible by air, and impenetrable by water; this was ſuppoſed to be the mortar ſo much celebrated among the antients, wherewith the walls of Babylon were laid.

It yields an oil which defends ſhips from water, worms, &*c.* much better than the ordinary compoſition; and which is alſo of good ſervice for the cleanſing and healing of ulcers, &*c.* See Supplement, article Asphaltum.

ASPIC.—*Oil of* Aspic. See the article Oil.

ASPIRATE, Aspiratio, in grammar, a character uſed to denote an aſpiration.

The *aſpirate*, by the Greeks called *ſpiritus aſper*, and marked over their vowels, ſeems as if of a very different nature from the letters; but is nevertheleſs a true letter, as well as the reſt, and a real conſonant.—By letters we do not mean the characters of the alphabet, which are changeable according to the languages and the people, and among the ſame people, according to time and cuſtom; and even according to the fancy of particular perſons.—Thus, ſome, for inſtance, write the *aſpirates*, or letters *aſpirated*; which, by others are omitted; though both the one and the other pronounce alike; as in *huomo*, *huomini*, an Italian word frequently written *uomo*, *uomini*.

But, by letters, we mean articulate ſounds, formed by the organs of ſpeech; *viz.* the throat, mouth, tongue, palate, teeth, &*c.*

Theſe ſounds are of two kinds, the one *ſimple*, and the other *compound*, or modified.—*Simple* are thoſe pronounced by a ſingle motion of the organ; ſuch are the vowels.

Compound ſounds are thoſe ſame ſimple ſounds modified by a motion of the organ ſuperadded to the motion neceſſary to pronounce the ſimple ſound; of which kind are the conſonants.

Now an *aſpirate* is an effect or conſequence of a motion made by ſome of the organs of ſpeech; and therefore it muſt either be a vowel, or a conſonant.--The former it cannot be, as not being a ſimple ſound, or a ſound that may be pronounced by itſelf. It muſt therefore be a modificative, or conſonant; and in effect it has all the properties of one.

For, 1*ſt*, It reſults from a motion of the organ, which, of itſelf, produces no ſound. Thus the *ſpiritus* of the Greeks, our *h aſpirate*, as well as that of the French, and other people, has no more ſound of itſelf, than *b*, *c*, *d*, &c. and the ſame thing may be obſerved of the *aleph*, *hheth*, and *caph*, of the eaſtern languages.

2*dly*, On the contrary, our *h*, the *ſpiritus* of the Greeks, and the other *aſpirates* juſt mentioned, are pronounced with all the vowels, in the ſame manner as conſonants are.—They modify thoſe vowels, and are effects of a motion of the organ ſuperadded to the motion neceſſary to form the vowel. Thus, to pronounce *ha*, two motions of the organ are required as well as for *ba*, or *ca*, &c. one for *a*, which itſelf is a ſound; the other for *h*, which yields no ſound, no more than *b*; but adds ſomething to *a* which modifies it, and makes that *ha* is not mere *a*, nor *ba*, nor *ca*, &c. And this muſt hold ſtill more ſenſibly in the ſtronger *Aſpirates*, as thoſe of the oriental tongues חָ, חֵ, חִי, חוֹ, חוּ, כָ, כֵ, *&c.* in all which, there are evidently two motions, the one to expreſs the vowel, and the other to modify it: now this being the nature and eſſence of a conſonant, it follows, that let them be denoted in what manner they will, whether as our *h*, as the orientals do, *i. e.* by proper characters in the courſe of the words themſelves; or, as the Greeks do ſome of theirs, by a ſign of aſpiration placed over the vowel; it matters not. The *Aſpirate* is no leſs a conſonant in ἁιρω, than in χαιρω; in ἑω, than in χεω; in ὁλη, than in χολη; and ſo of others.

The third and laſt reaſon is, that the eaſtern languages, which do not expreſs the vowels, do yet expreſs the *Aſpirates*.

Add, that the *Aſpirate* is frequently changed into a conſonant, and expreſſed by a conſonant. Thus, of ἑξ is made *ſex*; of ἑπτα, *ſeptem*; of ἑσπερος, *veſperus*, *&c.* of the Hebrew יין, ὀινος, and thence *vinum*, *&c.* Nay, even in the ſame language, Heſiod, ſpeaking of Hercules's buckler, uſes Ἡρσυν for Θηρσυν; making no difference between a Θ and an *Aſpirate*. See Consonant.

Hence it evidently follows, that *Aſpirates* are real conſonants; and that it muſt be an error to rank א, ה, ח, ע, of the eaſtern languages, among the vowels; and to exclude the *h* in ours, out of the number of letters. See H.

ASPIRATION, the act of aſpirating, *i. e.* of pronouncing any ſyllable, or word, ſtrongly; with a good deal of breath, and vehemence.

This we do, for inſtance, in thoſe words which have the letter *h* before them; as harangue, hook, holland, hero, *&c.* whereas the like ſyllables are ſounded much ſofter and eaſier without the *h*; as in the ear, eat, *&c.* See H.

ASPRE. See the article Asper.

ASSA-Dulcis, a name ſometimes given to *benzoin*. See Benzoin.

Assa-Foetida, or Asa-Foetida, a gum, or reſin, brought from the Eaſt-Indies, of a browniſh colour, a ſharp taſte, and a very ſtrong offenſive ſmell; whence it is alſo called *ſtercus diaboli*, or devil's dung.

It is the product of an umbelliferous plant, and flows either naturally, or by inciſion, from its root, in very conſiderable plenty.—They who, after the antients, ſuppoſe it drawn from the *laſer*, or *laſerpitium*, would be hard put to it to get clear of thoſe many diſputes which have ſo often divided the botaniſts on the ſubject of the true *laſer*, and the *ſuccus Cyrenaicus*, ſo infinitely prized among them. Indeed there ſeems but little reſemblance between the gum deſcribed by M. Furetiere, out of Pliny, *lib.* xix. *c.* 3. and our *Aſſa-fœtida*: if they be the ſame, it is certain we are not acquainted with half its virtues.

The modern *Aſſa-fœtida*, which is a very offenſive drug in its ſmell, is a gum ſaid to diſtil, during the ſummer's heat, from a plant frequent in Media, Perſia, Aſſyria, and Arabia.—It is at firſt white, bordering on yellow, then on red, and laſtly on violet; and melts under the fingers like wax. It is of known efficacy in ſome uterine diſorders; but the rankneſs of its ſmell occaſions it to be ſeldom uſed: yet in the Eaſt-Indies it makes an ingredient in their ragouts.

ASSACH, or Assath, a kind of purgation, antiently uſed in Wales, by the oaths of 300 men.

ASSAILANT, one that aſſaults, or ſets upon another. See Assault, Attack, *&c.*

ASSARABACCA. See Asarabacca.

ASSART, Assartum, in law, an offence committed in the foreſt, by pulling up, by the roots, woods which ſerve as thickets and covert for the deer, and making them plain as arable land.

This is the greateſt treſpaſs that can be committed in the foreſt, being more than a waſte. For whereas waſte of the foreſt is but the felling and cutting down the coverts, which may grow again; *Aſſart* is a total extirpation thereof. See Waste.—What we call *Aſſartum*, is elſewhere termed *diſboſcatio*.

Assart was alſo uſed for a parcel of land aſſarted. See Essart.

Assart-*Rents* were thoſe formerly paid to the crown for the foreſt-lands *aſſarted*. See Rent.

ASSASIN*, or Assassin, a perſon who kills another with the advantage either of an inequality in the weapons, or by means of the ſituation of the place, or by attacking him at unawares.

* The word *Aſſaſſin* is ſaid, by ſome, to have been brought from the Levant, where it took its riſe from a certain prince of the family of the *Arſacidæ*, popularly called *Aſſaſins*, living in a caſtle between Antioch and Damaſco, and bringing up a number of young men, ready to pay a blind obedience to his commands; whom he employed in murdering the princes with whom he was at enmity.—The Jew Benjamin, in his itinerary, places theſe *Aſſaſins* near mount Libanus; and calls them in Hebrew, from the Arabic אל אשישין, *el aſiſin*; which ſhews that the name did not come from *arſacide*, but from the Arabic אציש, *aſis*, *inſidiator*, a perſon who lies in ambuſh.—The *Aſſaſins*, or *Aſſaſinians*, *Aſſaſinii*, above-mentioned, poſſeſſed eight or twelve cities about Tyre: they choſe themſelves a king, whom they called the *old man of the mountain*. In 1213. they aſſaſſinated Louis of Bavaria. They were Mahometans, but paid ſome tribute to the knights-templars.—The favourers of the *Aſſaſins* were condemned by the council of Lyons, and under Innocent IV. in 1231.—The Tartars overcame them, and killed their ſenior of the mountain in 1257. upon which, the faction became extinct.

There was a certain law of nations, an opinion received in all the republics of Greece and Italy, whereby he that *aſſaſſinated* an uſurper of the ſupreme power was declared a virtuous man. At Rome, eſpecially, after the expulſion of the kings, the law was formal and ſolemn, and inſtances of it admitted. The commonwealth armed the hand of any citizen, and created him magiſtrate for that moment. *Conſid. ſur les Cauſ. de la Grand. des Rom. c.* 11. *p.* 121.

ASSATION, the preparing or dreſſing of medicaments, or foods, in their own juices, by an external heat without addition of any foreign moiſture.

*Aſſation**, in reſpect of culinary matters, is more frequently called *roaſting*; and, in pharmacy, *uſtion*, or *torrefaction*.

* The word is formed of the Latin *aſſare*, to roaſt.

ASSAULT, in the art of war, an attack made upon a camp, fortreſs, or poſt, in order to carry or become maſter thereof.

An *Aſſault* is properly a general furious attack, wherein the aſſailants do not ſcreen themſelves by any works.—We ſay, to give an *Aſſault*, to be commanded to the *Aſſault*, to ſtand an *Aſſault*, to repulſe an *Aſſault*, to carry by *Aſſault*, &c.

While an *Aſſault* laſts, and both parties are mixed, the fire of the batteries ceaſes; and there is no uſe of cannon on either ſide; for they are afraid of deſtroying their own men thereby.

A governor was formerly obliged to ſuſtain three *Aſſaults* before he gave up the place.—It is very difficult ſaving a town from pillage that is carried by *Aſſault*.—The *enfans perdus* always march firſt to the *Aſſault*.

Few places, of late years, ſtand *Aſſaults*: M. De Feuquiere finds but three in his time. The firſt was Neuhaſel, in 1683. commanded by the Turkiſh baſhaw: it was taken, as moſt others muſt be, becauſe the column of infantry that marched to the breach conſiſted of more ranks than that of the infantry which defended it.—The ſecond was Buda, the baſhaw of which was killed in the attack. He had ſome flanking works remaining, whoſe fires had not been intirely ruined by the artillery of the beſiegers.—The third was the caſtle of Namur, defended by M. De Boufflers; which was not carried, by reaſon the column of infantry which attacked the breach marched from too far off unſheltered. Add, that it is almoſt impoſſible to carry a place by *Aſſault* or ſtorm, when the breach may be defended by the fires of works not yet deſtroyed. In reality, it ſhould be defended by no other fires, but thoſe which are oppoſed to it in front, or from the breach itſelf. *Feuq. Mem. c.* 99.

Such obſtinacy in defending places to the laſt extremity is no longer found, except among the Turks; among whom it is a point of religion not to ſurrender to the Chriſtians, by capitulation, any place where they have once had a moſque.—Though of late they have ſometimes departed from this maxim. *Id. ibid.*

Assault, Assultus, or *Inſultus*, in law, an offer, or attempt, to hurt the perſon of another.

Or, it is a violent injury offered to a man's perſon, of a larger extent than battery, for that it may be committed by only offering to give a blow; or even, according to ſome, by a threatening ſpeech, by preſenting a piſtol, or the like.—Though ſome, it is to be obſerved, deny that words can amount to an *Aſſault*.

To rebuke a collector with foul words, ſo that he depart for fear, without doing his office, has been adjudged an *Aſſault*; and to ſtrike a man, though he be not hurt, or ſometimes even not hit, with the blow, is reputed the ſame. For, in treſpaſs for *Aſſault* and battery, a man may be found guilty of the *Aſſault*, and excuſed of the battery. 25 *Ed.* III. *c.* 4.

The *aſſaulting* a perſon with offenſive weapons, with a deſign to rob (though no robbery enſue), is puniſhed with tranſportation for 7 years. 7 *G.* II. *c.* 21.

ASSAY, Essay, or Say, in metallurgy, the proof or trial of the goodneſs, purity, value, *&c.* of metals, and metalline ſubſtances.

In antient ſtatutes this is called *touch*; and thoſe who had the care of it, *keepers of the touch*.—Under Henry VI. divers cities were appointed to have *touch* for wrought ſilver-plate. 2 *H.* VI. *c.* 14.—By this, one might imagine they had no better method of *aſſaying* than the ſimple one, by the touchſtone; but the caſe is far otherwiſe. In the time of king Henry II. the biſhop of Saliſbury, then treaſurer, conſidering that though the money paid into the king's exchequer for his crown-rents did anſwer *numero & pondere*; it might nevertheleſs be mixed with copper or braſs: wherefore a conſtitution was made, called, the *trial by combuſtion*; which differs little or nothing from the preſent method of *aſſaying* ſilver. See a deſcription of it in the Black-book in the exchequer, written by *Gervaſe of Tilbury*, *c.* 21.—This trial is alſo there called *eſſaium*, and the officer who made it is named *fuſor*. Vid. *Lownd. Eſſ. Amend. Silv. Coin*, *p.* 5. & 155.

Assaying, *ars docimaſtica*, in its extent, comprehends particular manners of examining every ore, or mixed metal, according to its nature, with the beſt-adapted fluxes; ſo as to diſcover, not only what metals, and what proportions of metal, are contained in ores; but likewiſe how much ſulphur, vitriol, alum, arſenic, ſmalt, *&c.* may be obtained from every ore reſpectively.

Aſſaying is more particularly uſed by moneyers and goldſmiths for the making a proof or trial by the cuppel, or teſt, of the fineneſs or purity of the gold and ſilver to be uſed in the coining of money, and manufacture of plate, *&c.* or that have been already uſed therein.

There are two kinds of *Aſſaying*; the one before metals are melted, in order to bring them to their proper fineneſs; the other after they are ſtruck, to ſee that the ſpecies be ſtandard.

For the firſt *aſſay*; the *aſſayers* uſe to take fourteen or fifteen grains of gold, and half a drachm of ſilver, if it be for money; and eighteen grains of the one, and a drachm of the other, if for other occaſions.

As to the ſecond *aſſay*, 'tis made of one of the pieces of money already coined, which they cut in four parts.

Method of **Assaying** *Gold*.—The *aſſayer* having weighed the gold he intends to make the trial in, very exactly, with ſcales that will turn with the hundredth part of a grain, and noted down the weight, he adds twice as much fine ſilver thereto; though this ſhould be in proportion to the fineneſs the gold ſeems to be of, the baſeſt gold requiring the leaſt ſilver. The gold and ſilver, thus weighed and mixed, are wrapped up in a piece of paper, to prevent their loſing any thing of their weight, which would diſturb the accuracy of the *aſſay*.

While the *aſſayer* is weighing his matters, a reverberatory fire is lighted in a furnace, furniſhed with a muffler, and a cuppel, or teſt, ſet therein to heat: this done, a little bullet of lead is put in the cuppel, of a weight proportionable to the quantity and quality of the gold to be *aſſayed*. When the lead is well melted, and appears very clean and bright, they put in the mixture of gold and ſilver, and let it fuſe till it appear of an opal colour, and have fixed itſelf, in a little lump, to the bottom of the cuppel.

This done, the cuppel is left to cool in the furnace itſelf; after which, the lump is ſeparated very exactly from the place where it ſtuck to the veſſel, and beaten or hammered on the anvil; heating it, again and again, on the coals, to promote the ſtretching.

When ſufficiently hammered, they roll it up in form of a cornet, or coffin; and thus put it in a glaſs matraſs, capable of containing four ſpoonfuls of water; and, having added to it a quantity of *aqua fortis*, well corrected, that is, mixed with near one third of the quantity of river-water, they boil it over a wood-fire, till ſuch time as the *aqua fortis* yields no more red fumes.

This firſt water being poured off, and the cornet left alone at the bottom of the matraſs, they fill the matraſs again, but with pure *aqua fortis*; which, after boiling, is poured off in its turn, at ſuch time as the fumes are become white.—This done, they fill up the matraſs with river-water, to waſh the cornet.

When waſhed, they put it dry in a crucible, with a cover over it, and heat it till it become of a cherry-colour.

This done, the *aſſay* is finiſhed; and there remains nothing but to weigh it againſt the ſame weight of fine gold, as was uſed at firſt, before the *aſſay*: for by comparing the firſt weight of the gold, ere it was put in the fire, and the *aqua fortis*, with what it retained after it had thus undergone the teſt; they judge, from the greater or leſs loſs it has ſuſtained, of the quantity of alloy mixed with it.

Method of **Assaying** *Silver*.—The proceſs is much the ſame, as in gold; only leſs difficult, and ſhorter. The ſilver is weighed, as before; and the ſame furnace, and muffler, the ſame fire, the ſame cuppel, uſed. Add, that lead is likewiſe put in the cuppel, proportioned to the quantity and quality of the ſilver to be *aſſayed*.

The lead being well melted, and clear, the ſilver is put in; and after it is brought to an opal colour, and fixed in a lump at the bottom of the cuppel, which happens in about half an hour; they let it cool, and cleanſe it: and, laſtly, weigh it again, as in gold. And, from its diminution, they eſtimate the quantity of alloy.

Assaying *of Lead*.—The *aſſay* of gold and ſilver being performed by means of lead; 'tis of the utmoſt importance the lead be free of any mixture of either of the two metals; otherwiſe the *aſſay* will be falſe; by reaſon the gold and ſilver mixed with the lead will not evaporate like other kinds of alloy, but unite with the metal under *aſſay*.

To prevent this diſorder, and aſſure the operation, there is no way but firſt to *aſſay* the lead itſelf.

This *aſſay* is performed in the ſame furnace, and with the ſame cuppels, as thoſe of gold and ſilver; but the proceſs is incomparably more ſimple: all here required, when the cuppel is heated, being to put in the piece of lead to be *aſſayed*. If this lead evaporate intirely, it is fit for the purpoſe: on the contrary, if there remain any little grain of ſilver, *&c.* at the bottom, it muſt be ſet aſide. See Supplement, article Docimastic Art.

Assaying *of Tin*. See the article Tin.

Assay-Master, an officer, under certain corporations, intruſted with the care of making true *touch*, or *aſſay*, of the gold and ſilver brought to him; and giving a juſt report of the goodneſs or badneſs thereof.

Such is the *Aſſay-maſter* of the mint in the Tower, called alſo *aſſayer of the king*.

The *Aſſay-maſter* of the goldſmiths company is a ſort of aſſiſtant-warden, called alſo a *touch-warden*, appointed to ſurvey, *aſſay*, and mark all the ſilver work, *&c.* committed to him.—There are alſo *Aſſay-maſters* appointed by ſtatute, at York, Exeter, Briſtol, Cheſter, Norwich, and Newcaſtle, for aſſaying wrought plate.—The *Aſſay-maſter* is to retain 8 grains of every pound Troy of ſilver brought to him; 4 whereof are to be put in the *pix*, or box of deal, to be reaſſayed the next year; and the other 4 to be allowed him for his waſte and ſpillings. 12 & 13 *W.* III. *c.* 4. 1 *An.* *c.* 9. See Pix.

Note, The number of peny-weights ſet down in the *Aſſay-maſter*'s report is to be accounted as *per pound*, or ſo much in every pound of 12 ounces Troy.—For every twenty peny-weight, or ounce Troy, the ſilver is found by the *aſſay* to be *worſe* than ſtandard, or ſterling, ſix-pence is to be deducted; for that every ounce will coſt ſo much to reduce it to ſtandard goodneſs, or to change it for ſterling. *Touchſt. of gold and ſilver ware*, *p.* 41.

In gold, for every carat it is ſet down to be *worſe* than ſtandard, you muſt account that in the ounce Troy it is worſe by ſo many times 3*s.* 8*d.*—And for every grain it is ſet down worſe, you muſt account it worſe by ſo many times 11 *d.* in the ounce Troy.—And for every half-grain 5 *d.* ½; for ſo much it will coſt to make it of ſtandard goodneſs, *&c.* *Id. ibid.*

Assay *of weights and meaſures* ſignifies the trial or examination of common weights and meaſures, by the clerk of the market. See Clerk *of the market*.

ASSEMBLAGE, the joining, or uniting, of ſeveral things together; or, the things themſelves ſo joined, or united.

The *Aſſemblage* of two bones for motion, is called *articulation*. See Articulation.

Carpenters and joiners have various kinds and forms of *Aſſemblage*; as, with mortiſes and tenons, with dove-tails, *&c.* See Mortise, Dove-tail, *&c.*

The Europeans admire the carpentry of ſome Indians, where the *Aſſemblage* is made without either nails or pins. *Herrera.* See Carpentry.

Assemblage is alſo uſed, in a more general ſenſe, for a collection of ſeveral things, ſo diſpoſed together, as that the whole has an agreeable effect.—It is with diſcourſe as with bodies, which owe their chief excellency to the juſt *Aſſemblage* and proportion of their members.

ASSEMBLY *, a meeting of ſeveral perſons in the ſame place, and with the ſame common deſign.

* The word is formed of the Latin *adſimulare*; compounded of *ad*, to; and *ſimul*, together.

Aſſemblies of the clergy are called convocations, ſynods, councils; though that annual one of the kirk of Scotland retains the name *general Aſſembly*, &c.—The *Aſſemblies* of judges, *&c.* are called *courts*, &c.—The *Aſſemblies* of the Roman people were called *comitia*.—The *Aſſembly* of a preacher, *&c.* is his audience.—The academies have their *Aſſemblies*, or days of *Aſſembly*.—The *Aſſemblies* of diſſenters, *&c.* are frequently, by way of reproach, called *conventicles*.

Under the Gothic governments, the ſupreme legiſlative power was lodged in an *Aſſembly* of the ſtates of the kingdom, held annually for the like purpoſes as our parliament.

Some feeble remains of this uſage ſtill ſubſiſt in the annual *Aſſemblies* of the ſtates of Languedoc, Bretagne, and a few other provinces of France; but theſe are no more than ſhadows of the antient *Aſſemblies*. It is only in Great Britain, Sweden, and Poland, that ſuch *Aſſemblies* retain their antient powers and privileges.

ASSEMBLIES of the *campus Martii*, or *Maii*, of the field of *Mars*, or *May*. See FIELD *of* MARS, &c.

Rebellious ASSEMBLY. } See { REBELLIOUS.
Unlawful ASSEMBLY. } { UNLAWFUL.

ASSEMBLY is particularly uſed in the beau-monde, for a ſtated and general meeeting of the polite perſons of both ſexes; for the ſake of converſation, gallantry, news, and play.

Quarter or *Place of* ASSEMBLY, in a camp, *&c.* See QUARTER *of Aſſembly*.

ASSEMBLY is alſo uſed in the military art, for the ſecond beat of the drum, being that before the march.

On hearing this, the ſoldiers ſtrike their tents, roll them up, and then ſtand to their arms.—The third beating is called the *march*, as the firſt is called the *general*.

ASSENSU *Regio*. } See the articles { REGIO.
Dower ex ASSENSU *Patris*. } { DOWER.

ASSENT, ASSENSUS, an agreement or acquieſcence of the mind to ſomething propoſed, or affirmed.—Thus, to *aſſent* to any propoſition, is to allow it true, or to perceive its truth.

The ſchoolmen obſerve, that to every propoſition, how compound or complex ſoever it be, there only goes one *Aſſent* of the mind.—Thus, in the conditional propoſition, if the ſun ſhines, it is day; there is only one *Aſſent* of the mind, which regards the connexion of the effect with the condition. So in the disjunctive propoſition, Peter either ſtudies, or does not ſtudy; the mind does not give a twofold *Aſſent* to the two parts thereof, it being enough that Peter do either the one, or the other, for the propoſition to be true.

Aſſent is diſtinguiſhed, like faith, into *implicit*, or *blind*; and *explicit*, or *ſeeing*, &c.—Others diſtinguiſh it into *actual* and *habitual*.

Actual ASSENT is a judgment whereby the mind perceives a thing to be true.—

Habitual ASSENT conſiſts in certain habits of believing or acquieſcing, induced in the mind by repeated acts.

To this belongs faith, which is an *Aſſent* ariſing from the authority of the perſon who ſpeaks.—Such alſo is opinion, which is defined an *Aſſent* of the mind *cum formidine oppoſiti*, &c.

For the meaſures and degrees of ASSENT, ſee PROBABILITY, EVIDENCE, DEMONSTRATION, *&c.*

Father Malebranche lays it down as an axiom, or principle of method, never to allow any thing for truth, from which we can forbear our *Aſſent* without ſome ſecret reproach of our own reaſon.

Royal ASSENT. See the article ROYAL.

ASSERTION, ASSERTIO, in the language of the ſchools, a propoſition which a perſon advances; and which he avows to be true, and is ready to maintain in public.

ASSESSOR*, ASSESSOUR, an inferior or ſubordinate officer of juſtice, chiefly appointed to aſſiſt the ordinary judge with his opinion and advice.

* The word is Latin, formed of *ad*, to; and *ſedeo*, I ſit.

In this ſenſe, the maſters in chancery are *Aſſeſſors* of the lord chancellor.

There are two kinds of *Aſſeſſors* in the imperial chamber, ordinary and extraordinary.——The ordinary are now in number forty-one, whereof five are elected by the emperor, *viz.* three counts or barons, and two juriſconſulti, or civil lawyers. The electors appoint ten, the ſix circles eighteen, *&c.* They act in quality of counſellors of the chamber, and have ſalaries accordingly.

ASSESSOR is alſo uſed for a perſon who *aſſeſſes*, or lays *aſſeſſments* of taxes, and other public dues.

In this ſenſe, *Aſſeſſors*, among us, are inhabitants of a town, or village, elected by the community, to *aſſeſs*, or ſettle the taxes, and other impoſitions of the year, to fix the proportion which each perſon is to bear, according to his eſtate, and to ſee the collection made.—Theſe are alſo called in our law *aſſiſors*.—By the ſtat. 16 *&* 17 *Car*. II. two inhabitants in every pariſh were made *Aſſeſſors* for the royal aid.

ASSEVERATION, an earneſt affirmation, or avouching.

ASSIDEANS, or rather HASIDEANS, in antiquity, a ſect among the Jews; thus called from the Hebrew חסידים *hhaſidim*, merciful, righteous.

The *Aſſideans* are recorded as holding works of ſupererogation neceſſary.—They were the fathers and predeceſſors of the Phariſees; and from them likewiſe aroſe the Eſſeni. See PHARISEE, and ESSENI.

The Jeſuits Serrarius and Druſus have written againſt each other upon the ſubject of the *Aſſideans*, on occaſion of a paſſage in Joſeph Ben Gorion; the firſt maintaining, that by the name *Aſſideans* he means Eſſeni, and the latter Phariſees.

ASSIENTO, or ASSIENTA, in matters of commerce, a contract or convention between the king of Spain, and other powers, for furniſhing the Spaniſh dominions in America with negro ſlaves.

The term is originally Spaniſh, and ſignifies a bargain: accordingly the firſt *Aſſiento* was a treaty or contract made with the French Guiney company, whereby they were put in poſſeſſion of this privilege, in conſideration of a certain duty which they were to pay to the king of Spain's farms, for every negro thus furniſhed.—

This contract was ſigned in the year 1702. It was to laſt ten years, with a further liberty allowed the *Aſſientiſts* of two years more, in caſe they had not furniſhed the whole number ſtipulated before.—The two principal articles regarded, firſt, the number of negroes to be provided, which was 3800 while the war ſhould laſt, and 4800 in caſe of peace. Secondly, the duty to be paid the king of Spain, during the farm, or *Aſſiento*; which was fixed at 33 eſcudos, pieces of eight, *per* head, or *pieza de India*.

By the treaty of Utrecht, Philip V. being acknowleged king of Spain by the allies; it was one of the articles of the peace between England and France, that the *Aſſiento* contract ſhould be transferred to the Engliſh.—Accordingly a new inſtrument was ſigned in May 1713. to laſt 30 years; and the furniſhing of negroes to the Spaniſh America was committed to the South-Sea company, juſt then erected.

In virtue hereof, they were yearly to furniſh 4800 negroes; for which they were to pay at the ſame rate as the French, with this condition, that during the firſt 25 years, only half the duty ſhall be paid for ſuch as they ſhall import beyond the ſtated number.

The laſt article gives them a further privilege not enjoyed by the French; which is, that the Engliſh *Aſſientiſts* ſhall be allowed, every year, to ſend to the Spaniſh America a ſhip of 500 tons, loaden with the ſame commodities as the Spaniards uſually carry thither; with a licence to ſell the ſame, concurrently with them, at the fairs of Porto Bello, Carthagena, and Vera Cruz.—This additional article is ſuppoſed as advantageous to the company, as the whole contract beſides; being granted contrary to the uſual Spaniſh policy, which has ever ſolicitouſly preſerved the commerce of their America to themſelves.

Some new articles have been ſince added to the antient *Aſſiento*; as, that the Engliſh ſhall ſend their regiſter-ſhip yearly, even though the Spaniſh flota and galleons do not go; and that, for the firſt ten years, the ſaid ſhip may be of 650 ton.

The manner of valuing the negroes, in order to ſettle the king of Spain's duty, is the ſame as delivered under the article NEGRO.

ASSIGN, in common law, a perſon to whom a thing is *aſſigned*, or made over.

The word *Aſſign* is ſaid to have been introduced in favour of baſtards; who, becauſe they cannot paſs by the name of *heirs*, are compriſed under that of *Aſſigns*.

ASSIGNEE, in law, a perſon to whom a thing is appointed, or *aſſigned*, to be occupied, paid, or done.

An *Aſſignee* differs from a *deputy* in this, that the *Aſſignee* poſſeſſes or enjoys the things in his own right; and a deputy in the right of another.

Aſſignee may be ſo either by *deed*, or by *law*.

ASSIGNEE *by deed* is, when a leſſee of a term ſells and aſſigns the ſame to another: that other is his *Aſſignee by deed*.—

ASSIGNEE *by law* is he whom the law ſo makes, without any appointment of the perſon.—

Thus, an executor is *Aſſignee by law* to the teſtator, who dies poſſeſſed of a leaſe made to him and his *Aſſigns*.

ASSIGNING is uſed for the act of appointing a deputy; or the making over a right to another.

In this ſenſe we ſay, ſuch lands or eſtates were *aſſigned* or made over to ſuch perſons for ſuch uſes, *&c.*—In the ſtat. 20 Edw. I. we read of juſtices *aſſigned* to take aſſiſes, *&c.*

ASSIGNING alſo ſignifies pointing out, or ſetting forth.—

Thus we ſay, to *aſſign* the real cauſe of ſuch an event, *&c.*

To aſſign error, is to ſhew in what part of a proceſs at law an error is committed.

To aſſign falſe judgment, verdict, &c. is to declare how and where judgment, verdict, or the like, is unjuſt.

To aſſign waſte, is to ſhew eſpecially wherein the waſte is committed.

ASSIGNMENT, the act of *aſſigning*, or transferring the intereſt or property a man has in any thing; or of appointing and ſetting over a right to another.

The *Aſſignment of a dower* is the ſetting out of a woman's marriage-portion by the heir.

Novel ASSIGNMENT. See the article NOVEL.

ASSIMILATION*, the act of *aſſimilating*; an act whereby a thing is rendered ſimilar, or like to another.

* The word is compounded of *ad*, to; and *ſimilis*, like.

Assimilation, **Assimilatio**, in phyſics, is properly a motion whereby bodies convert other duly diſpoſed bodies into a nature like, or homogeneous to their own.

Some philoſophers call it, *the motion of multiplication*, meaning, that bodies are hereby multiplied not in number, but in bulk; but this might be more properly expreſſed by *motion of augmentation*, or *accretion*.

Inſtances of this *Aſſimilation* we ſee in flame, which converts the oily or other particles of fuel into its own firy and luminous nature. The like alſo appears in air, ſmoke, and ſpirits of all kinds.

The like we ſee in vegetables, where the watery juices imbibed from the earth, being further prepared and digeſted in the veſſels of the plant, become of a vegetable nature, and augment the wood, leaves, fruit, *&c.* thereof.

So alſo, in animal bodies, we ſee the food *aſſimilated*, or changed into an animal ſubſtance, by digeſtion, chylification, and the other operations neceſſary to nutrition.

ASSISA, or **Assisia**; ſee the articles **Assise**, and **Tallage**.

Assisa *cadere*, to *fall from the aſſiſe*, in law, is to be nonſuited.

Assisa *cadit in Juratum* is where the thing in controverſy is ſo doubtful, that it muſt neceſſarily be tried by a jury. See **Jury**.

Assisa *capi in modum aſſiſæ*, is when the defendant pleads directly to the aſſiſe, without taking any exception to the count, declaration, or writ.

Assisa *continuanda* is a writ directed to the juſtices, to take an aſſiſe for the continuance of a cauſe, where certain records alleged cannot in time be procured by the party. See **Writ**.

Assisa *nocumenti* is an aſſiſe of nuiſance.

Assisa *panis & cereviſiæ* denotes the power or privilege of aſſigning, or adjuſting the weight and meaſure of bread and beer.

Assisæ *judicium*, in law, ſignifies a judgment of the court, given either againſt the plaintiff or defendant, for default.

Assisa *proroganda* is a writ directed to the juſtices of aſſiſe, for the ſtay of proceedings, by reaſon of the king's buſineſs, wherein the party is employed.

ASSISE, or **Assize***, *aſſiſa*, in law, a ſitting of judges, or juſtices; for the hearing and determining of cauſes.

* The word is French, *aſſiſe*, of *aſſis*, ſeated; formed of the Latin *aſſideo*, I ſit by; which is compounded of *ad*, to, and *ſedeo*, I ſit.

Clerk of **Assise**. See the article **Clerk**.

Assise, or **Assises**, was antiently uſed for certain extraordinary ſittings of ſuperior judges, in the inferior courts depending on their juriſdiction; to inquire whether the ſubaltern judges and officers did their duty; to receive the complaints preferred againſt them; and take cognizance of appeals from them. Theſe are alſo called *mercurial aſſiſes*.

Assise was alſo a court or aſſembly, compoſed of ſeveral great perſons of the realm; held occaſionally in the king's palace, for the final deciſion of all affairs of importance. See **Court**.

This is more uſually called, among our writers, *placita*, *malla publica*, or *curiæ generales*. Yet there is ſome difference between *aſſiſes*, and *placita*.—The viſcounts, or ſheriffs, who originally were only lieutenants of the comites, or counts, and rendered juſtice in their place, held two kinds of courts, the one ordinary, held every day, and called *placitum*; the other extraordinary, called *aſſiſe*, or *placitum generale*; at which the count himſelf aſſiſted for the diſpatch of the more weighty affairs.

Hence the term *aſſiſe* came to be extended to all grand days of judgment, at which the tryals and pleadings were to be ſolemn and extraordinary.

The modern conſtitution of *Aſſiſes* is pretty different from that hitherto ſpoken of.—Our *Aſſiſe* may be defined a court, place, or time, where and when writs and proceſſes, either civil or criminal, or both, are conſidered, diſpatched, decided, *&c.* by judges and jury.

In this ſenſe we have two kinds of *Aſſiſes*; *general* and *ſpecial*.

General **Assises**, or **Assizes**, are thoſe held by the judges twice a year, in their ſeveral circuits.

The nature of theſe *Aſſiſes* is explained by my lord Bacon, who obſerves, that all the counties of the kingdom are divided into ſix circuits; through each of which two learned men, aſſigned by the king's commiſſion, ride twice a year, called *juſtices* or *judges of Aſſiſe*, who have ſeveral commiſſions, by which they ſit; *viz.*

1°, *A commiſſion of oyer and terminer*, directed to them, and many others of the beſt account in their reſpective circuits. In this commiſſion, the judges of *Aſſiſe* are of the quorum; ſo that without them there can be no proceeding. This commiſſion gives them power to deal with treaſons, murders, felonies, and other miſdemeanours.

The ſecond is of *gaol-delivery*, which is only to the judges themſelves, and the clerk of the *Aſſiſe* aſſociate.—By this commiſſion they have to do with every priſoner in gaol, for what offence ſoever.

The third is directed to themſelves, and the clerk of the *Aſſiſe*, to take writs of poſſeſſion, called alſo *Aſſiſes*; and to do right and juſtice thereupon.

The fourth is to take the niſi prius, directed to the *juſtices*, and the clerks of *Aſſiſes*; whence they are alſo called *juſtices of niſi prius*.

The fifth is a *commiſſion of peace*, in every county of their circuit; and all the juſtices of the peace, having no lawful impediment, are bound to be preſent at the *Aſſiſes*, to attend the judges.

The ſheriff of every ſhire is alſo to attend in perſon, or by a ſufficient deputy allowed by the judges, who may fine him, if he fail.

This excellent conſtitution of judges, circuits, and *Aſſiſes*, was begun in the time of Henry II. though ſomewhat different from what it is now.

Special **Assise** is a particular commiſſion granted to certain perſons, to take cognizance of ſome one or two cauſes, as a diſſeiſin, or the like.—This was very frequently practiſed among our anceſtors. Bracton, *lib.* 3. *c.* 12.

Assise is alſo uſed for a writ directed to the ſheriff, for the recovery of poſſeſſion of things immoveable, whereof a man's ſelf, or anceſtors, have been diſſeiſed.

Littleton, and others, ſuppoſe theſe writs of *Aſſiſe* to have given the denomination to the *Aſſiſes*, or courts ſo called; and they aſſign ſeveral reaſons of the name of the writ: as,

Firſt, Becauſe ſuch writs ſettle the poſſeſſion, and right, in him that obtains by them. *Secondly*, Becauſe originally they were executed at a certain time and place appointed; for, by the Norman law, the time and place muſt be known forty days before the judges ſit; and by our law there muſt be fifteen days preparation, except they be tried in the ſtanding courts at Weſtminſter.—But, it is more natural to ſuppoſe the writs denominated from the courts; and that they were called *Aſſiſes*, becauſe antiently tried at ſpecial courts of *Aſſiſes*, ſet and appointed for that purpoſe.—Though of latter days, theſe are diſpatched at the general *Aſſiſes*, along with the commiſſion of oyer and terminer, *&c.*

This writ is as well of things corporeal, as incorporeal rights, being of four ſorts, *viz.*

Assise *of novel diſſeiſin*, *Aſſiſa novæ diſſeiſinæ*, which lies where a tenant in fee-ſimple, fee-tail, or for life, is lately diſſeiſed of his lands and tenements, rent-ſervice, rent-ſec, or rent-charge, common of paſture, common way, *&c.*

To this may be added, the bill of freſh force, directed to the officers or magiſtrates of cities or towns corporate; being a kind of *Aſſiſe* for recovery of poſſeſſion in ſuch places, within forty days after the force, as the ordinary *Aſſiſe* is in the county.

Assise of *mort d'aunceſtor*, *Aſſiſa mortis anteceſſoris*, lies where my father, mother, brother, uncle, *&c.* dies ſeiſed of lands, tenements, rents, *&c.* held in fee-ſimple; and, after their death, a ſtranger abates. It is good as well againſt the abator, as any other in poſſeſſion.

Assise of *darrein præſentment*, *Aſſiſa ultimæ preſentationis*, lies where I, or my anceſtor, have preſented a clerk to a church; and after the church becomes vacant by the death, or otherwiſe, a ſtranger preſents his clerk to the ſame church, in my diſturbance.

Theſe three *Aſſiſes* were inſtituted by Henry II. in the place of duels*; which till then, had obtained on theſe occaſions. See **Duel**.

* *Magna Aſſiſa eſt regale beneficium, clementia principis de conſilio procerum populis indultum; a quo vitæ hominum & ſtatus integritati tam ſalubriter conſulitur, ut in jure quod quis in libero ſoli tenemento poſſidet, retinendo, duello caſum homines declinare poſſunt*, &c. Glanvil. lib. 2. cap. 7. See **Combat**, *&c.*

Assise of *Utrum* lies for a parſon againſt a layman, or for a layman againſt a parſon, for a land or tenement, doubtful whether it be in lay-fee, or free-alms. See **Tithe**.

Assise is alſo uſed, according to Littleton, for a jury.—This, that author ſuppoſes to be by a metonymia effecti, the jury being ſo called, becauſe ſummoned by virtue of the writ of *Aſſiſe*.

Yet it muſt be obſerved, that the jury, ſummoned upon a writ of right, is likewiſe called the *Aſſiſe*; but this may be ſaid to be καταχρηστικως, or abuſively ſo termed.—*Aſſiſe*, in this ſignification, is divided into *magna & parva*. See **Jury**.

Assise is further uſed, according to Littleton, for an ordinance, or ſtatute, regulating the weight, ſize, or dimenſions of certain commodities.—Thus the antient ſtatute of bread and ale, *Anno* 51 *Hen.* III. is termed the *aſſiſe of bread and ale, aſſiſa panis & cereviſiæ.*

Assise is further uſed for the ſcantling, or quantity itſelf, preſcribed by the ſtatute.—When wheat is of ſuch or ſuch price, bread ſhall be of ſuch *aſſiſe.* See Bread.

We have divers ſtatutes for fixing the *aſſiſe* of fiſh, cloths *, wood, billets, faggots, and the like. *Vid.* 34 & 35 *H.* VIII. *c.* 3. 9 *A. c.* 15. 10 *A. c.* 6. 19 *Car.* II. *c.* 3. 4 *Jac.* I. *c.* 2. 1 *Geo.* I. *ſtat.* 2. *c.* 18.

* Fixing any *aſſiſe* of cloth, or preſcribing what length, breadth, weight, *&c.* it ſhall have, Sir Joſiah Child thinks, does more hurt than good. As the faſhions and humours of mankind are variable, to ſupply all markets at all times, we muſt have of all ſorts, cheap and light, as well as heavier and better.—Stretching with tenters is eſſential to our drapery, and the preciſe degree or quantity of it cannot without injury be preſcribed by any law; but muſt be left to the vender's or exporter's diſcretion. *Child, Diſc. of Trade,* p. 148.

Assise *of the foreſt* is a ſtatute or condition containing orders to be obſerved in the king's foreſt. — It is called an *aſſiſe,* becauſe it ſets down and appoints a certain meaſure, rate, or order in the things it concerns.

Assise, again, is uſed for the whole proceſs in court, founded on a writ of *aſſiſe*; and ſometimes for a part of it, *viz.* the iſſue, or verdict of the jury.

Thus we read, that '*aſſiſes* of novel diſſeiſin ſhall not be taken but in their ſhires; and after this manner, *&c.*' *Mag. Chart. cap.* 12.—So in *Merton, cap.* 4. *Hen.* III. we meet with, 'certified by *aſſiſe,* quitted by *aſſiſe,*' &c.

Continuance of Assise. } See the articles { Continuance.
Juſtices of Assise. } See the articles { Justice.
Limitation of Assise. } See the articles { Limitation.
Rents of Assise. } See the articles { Rent.

ASSISER, or Assizer *of weights and meaſures,* is an officer who has the care and overſight of thoſe matters. See Clerk *of the market.*

ASSISIS.—*Non ponendo in aſſiſis.* See Non-ponendo.

ASSISOR, the ſame with *aſſeſſor.* See Assessor.

In Scotland, *aſſiſors* are the ſame with our *jurors.* See Juror.

ASSISTANCE. See the article Aid.

ASSISTANT is uſed for a perſon or officer appointed to attend another principal officer, for the more eaſy and regular diſcharge of his function.—Such a biſhop or prieſt had ſeven or eight *aſſiſtants.*

Assistant, in Roman Catholic countries, is particularly applied to a kind of counſellors, or controllers, added to the generals or ſuperiors of monaſteries, *&c.* to take care of the affairs of the community.

The general of the Jeſuits has five *aſſiſtants,* of conſummate experience, choſen by him out of all the provinces of the order, and denominated from the kingdoms or countries to which they belong, *i. e.* Italy, Spain, Germany, France, and Portugal.

In a like ſenſe, moſt of our trading companies have their courts of *aſſiſtants.*

Assistants are alſo thoſe condemned to *aſſiſt* in the execution of a criminal. See Absolution.

ASSIZE, or Assise. See the article Assise.

ASSOCIATE *, an adjunct, partner, or member. See Adjunct.

* The word is compounded of the Latin *ad,* and *ſocius,* fellow, companion.—The *aſſociates* of Dr. Bray for converſion of the Negroes, *&c.*

ASSOCIATION, Associatio, the act of aſſociating or forming a ſociety, or company.

Aſſociation is properly a contract or treaty of partnerſhip, whereby two or more perſons unite together, either for their mutual aſſiſtance, or for the joint carrying on of an affair; or even for a more commodious manner of life.—The cloſeſt of all *aſſociations* is that made by the band of matrimony.

Association *of Ideas* is where two or more ideas conſtantly and immediately follow or ſucceed one another in the mind, ſo that one ſhall almoſt infallibly produce the other; whether there be any natural relation between them, or not.

Where there is a real affinity or connexion in ideas, it is the excellency of the mind, to be able to collect, compare, and range them in order, in its inquiries: but where there is none, nor any cauſe to be aſſigned for their accompanying each other, but what is owing to mere accident or habit; this unnatural *aſſociation* becomes a great imperfection, and is, generally ſpeaking, a main cauſe of error, or wrong deductions in reaſoning.

Thus, the idea of goblins and ſprights has really no more affinity with darkneſs than with light; and yet let a fooliſh maid inculcate theſe ideas often on the mind of a child, and raiſe them there together, it is poſſible he ſhall never be able to ſeparate them again ſo long as he lives, but darkneſs ſhall ever bring with it thoſe frightful ideas. — Let cuſtom, from the very childhood, have joined the idea of figure and ſhape to the idea of God, and what abſurdities will that mind be liable to, about the Deity?

Such wrong combinations of ideas, Mr. Locke ſhews, are a great cauſe of the irreconcileable oppoſition between the different ſects of philoſophy and religion: for we cannot imagine, that all who hold tenets different from, and ſometimes even contradictory to one another, ſhould wilfully and knowingly impoſe upon themſelves, and refuſe truth offered by plain reaſon: but ſome looſe and independent ideas are by education, cuſtom, and the conſtant din of their party, ſo coupled in their minds, that they always appear there together: theſe they can no more ſeparate in their thoughts, that if they were but one idea, and they operate as if they were ſo. This gives ſenſe to jargon, demonſtration to abſurdities, conſiſtency to nonſenſe, and is the foundation of the greateſt, and almoſt of all, the errors in the world.

Association, in law, is a patent by the king, either of his own motion, or at the ſuit of a party plaintiff, to the juſtices of aſſiſe; to have other perſons *aſſociated* to them, in order to take the aſſiſe. See Justice, and Assise.

Upon this patent of *aſſociation,* the king ſends his writ to the juſtices of the aſſiſe, by it commanding them to admit them that are ſo ſent.

Commiſſion of Association. See Commission.

ASSOILE, in our antient law-books, ſignifies to abſolve, deliver, or ſet free from an excommunication. See Absolution.

ASSONANCE, in rhetoric and poetry, a term uſed where the words of a phraſe, or a verſe, have the ſame ſound or termination, and yet make no proper rhyme.

Theſe are uſually vicious in Engliſh; though the Romans ſometimes uſed them with elegancy: as, *Militem comparavit, exercitum ordinavit, aciem luſtravit.*

The Latins call it *ſimiliter deſinens*: and the Greeks ὁμοιοτέλευτον.

ASSONANT *Rhymes* is a term particularly applied to a kind of verſes common among the Spaniards, where a reſemblance of ſound ſerves inſtead of a natural rhyme.

Thus, *ligera, cubierta, tierra, meſa,* may anſwer each other in a kind of *aſſonant* rhyme, in regard they have each an *e* in the penultimate ſyllable, and an *a* in the laſt.

ASSUMPSIT, in law, a naked contract; or a voluntary promiſe, by word of mouth, by which a man *aſſumes* and takes upon him to perform, and pay any thing to another. See Contract.

This term comprehends any verbal promiſe; and is variouſly expreſſed by the civilians, according to the nature of the promiſe: ſometimes by *pactum*; ſometimes by *promiſſio, pollicitatio,* or *conſtitutum.*

Where a man ſells goods to another, the law makes the *aſſumpſit*; and promiſes that he ſhall pay for them.

ASSUMPTION *, Assumptio, a feaſt celebrated in the Romiſh church, in honour of the miraculous aſcent of the Holy Virgin, as they deſcribe it, body and ſoul, into heaven.

* The word is compounded of the Latin *ad,* to; and *ſumo,* I take.

This feaſt is held with great ſolemnity both in the eaſtern and weſtern churches.—Yet is not the *aſſumption* of our lady any point of faith. The antient martyrologies all ſpeak of it with a great deal of reſerve, as a thing not yet fully aſcertained: though a divine who ſhould now deny it among them, would be obliged to retract.

The Sorbonne, in the year 1696. in the condemnation of Mary of Agreda, proteſted, among other things, that they believed, that the Holy Virgin was *aſſumed,* or taken into heaven, body and ſoul.

Assumption was alſo, among our anceſtors, uſed for the day of the death of any ſaint: *Quia ejus anima in cœlum* aſſumitur. See Anniversary.

Assumption, in logic, is the minor, or ſecond propoſition, in a categorical ſyllogiſm.

Assumption is ſometimes alſo uſed for a conſequence drawn from the propoſitions whereof an argument is compoſed. See Consequence.

Thus we ſay, the premiſes are true; but the *aſſumption* is captious.

ASSUMPTIVE *Arms,* in heraldry, are ſuch as a man has a right to aſſume of himſelf, in virtue of ſome gallant action.

As, if a man who is no gentleman of blood, nor has coat-armour, takes a gentleman, lord, or prince, priſoner in any lawful war; he becomes intitled to bear the ſhield of ſuch priſoner, and enjoy it to him, and his heirs.—The foundation hereof is that principle in military law, that the dominion of things taken in lawful war paſſes to the conqueror.

ASSURANCE, in logic. See CERTAINTY, EVIDENCE, and DEMONSTRATION.

ASSURANCE, or INSURANCE, in commerce. See INSURANCE.

Policy of ASSURANCE is a kind of contract, whereby one or more perſons oblige themſelves to make good any damages which a ſhip, a houſe, or the like, may undergo, by ſea, fire, or the like dangers.—The nature and laws hereof, ſee under the article of POLICY *of aſſurance.*

We have ſeveral offices of *aſſurance* from fire. — As the Royal Exchange *aſſurance*; the Sun-fire-office; the Hand-in-hand fire-office; the London *aſſurance*; the Phœnix-office, *&c.* ſome for houſes, others for goods, and ſome for both.

We have alſo *aſſurances for life*, in virtue whereof, when the perſon aſſured dies, a ſum of money becomes payable to the perſon in whoſe behalf the policy of *aſſurance* was granted.

Collateral ASSURANCE. See the article COLLATERAL.

ASSUROR, a merchant, or other perſon, who aſſures, or makes out a policy of inſurance for a ſhip, houſe, life, or the like.

Aſſurors are not anſwerable for what damages ariſe through the negligence, or other fault of the maſter or ſeamen; or even thoſe which ariſe from any vice or defect in the thing aſſured.

ASTATI *, Αςατοι, a ſect of heretics in the ninth century, the followers of one Sergius, who renewed the errors of the Manichees.

* The word is derived from the Greek privative α, and ἱςημι, *ſto*, to ſtand firm, and ſignifies any thing unſtable and inconſtant.

They prevailed much under the emperor Nicephorus; but his ſucceſſor, Michael Curopalates, curbed them with very ſevere laws.

ASTERISK *, a character in form of a ſmall ſtar *, ſet over any word, or ſentence, to make it the more conſpicuous, or to refer to the margin, or elſewhere, for a quotation, explanation, or the like.

* The word is derived from a diminutive of the Greek αςηρ, a ſtar.

ASTERISM *, ASTERISMUS, in aſtronomy, the ſame with *conſtellation.*

*The word comes from the Greek αςηρ, *ſtella*, ſtar. See STAR.

ASTHMA *, Ασθμα, in medicine, a diſeaſe of the lungs, accompanied with a ſhortneſs and difficulty of reſpiration.

* The word is Greek, formed of the verb αω, *ſpiro*, I breathe.

An *aſthma* is a difficulty of breathing, ariſing from a diſorder of the lungs; and uſually attended with violent motions of the diaphragm, abdominal and intercoſtal muſcles, to the very ſcapula, and the pinnæ of the noſtrils; as alſo with a rattling in the throat.

If reſpiration be only thick and quick, without the other ſymptoms, it is called a *dyſpnœa.*—And if it be ſo intenſe as to occaſion a violent motion of the muſcles of the thorax, ſo that the patient cannot be tolerably eaſy, except in an erect poſture; it is called an *orthopnœa.*

The *aſthma* is uſually divided into *moiſt* and *dry*, or *maniſeſt* and *occult*, or *pneumonic* and *convulſive*: the firſt is attended with an expectoration of purulent matter; the latter is without.

The true or *pneumonic aſthma* is occaſioned by an abundance of ſeroſities, or of groſs, viſcous, or purulent humours, collected in the cavities of the lungs, which ſtop up or ſtreighten the paſſages of the air, and compreſs the bronchia.

Aſthma's may alſo be owing to empyema's, phthiſis's, polypus's, crudities in the ſtomach, cachexies, *&c.*

That kind called the convulſive *aſthma* is ſuppoſed to be occaſioned by an irregular motion of the animal ſpirits; and happens when the ſpirits do not flow faſt enough, or in ſufficient quantity, into the muſcles of the breaſt, either by reaſon of an obſtruction, or of ſome other obſtacle: the neceſſary conſequence whereof is a violent and painful reſpiration.—The *aſthma*, again, is either continual, or periodical, and intermitting; which laſt returns chiefly when a ſober regimen is not obſerved.

The *aſthma* is found to be the moſt violent when the patient is in bed, and in a prone poſture; the contents of the lower belly, in that caſe, bearing againſt the diaphragm, ſo as to leſſen the capacity of the breaſt, and to leave the lungs leſs room to move.

The cure of the true or pneumonic *aſthma* is by bleeding; after which emetics may be uſed; and, if the paroxyſm returns, epiſpaſtics, with glyſters inſtead of purges.—Infuſions of ſim. equin. or the juice thereof, being deterſive and attenuating, are reputed excellent. Linctus's alſo give ſome relief, millepedes, ſpirit of gum armoniac, with ſal armoniac, coffee, tincture of ſulphur, *&c.* are alſo greatly commended in *aſthmatic* caſes.

For the convulſive kind, the cure is attempted by antiepileptics, antihyſterics, antiſpaſmodics, opiates, *&c.*—The *aſthma* is called by Seneca, *meditatio mortis.* See Supplement, article ASTHMA.

ASTRAGAL, Αςραγαλος, in anatomy, a bone of the heel, having a convex head, articulated with the tibia, by ginglymus. See *Tab. Anat.* (Oſteol.) *fig.* 7. *a. a. fig.* 3. *n.* 25. 25.

The *aſtragalus*, called alſo *talus*, and popularly *os baliſtæ*, is the firſt bone of the tarſus, and the higheſt of all thoſe that belong to the foot.

Some alſo apply the name *aſtragalus* to the vertebræ of the neck.—Homer, in his Odyſſee, uſes the term in this ſenſe.

ASTRAGAL, in architecture, is a little round member, in form of a ring, or bracelet; ſerving as an ornament at the tops and bottoms of columns.— See *Tab. Architect. fig.* 40. *lit. f.* & *fig.* 2.—26. *lit. y. S. fig.* 28. & 32. *lit. f. fig.* 24. *lit. b. q.*

The *aſtragal* is ſometimes alſo uſed to ſeparate the faſciæ of the architrave; in which caſe it is carved chaplet-wiſe, with beads and berries.

It is alſo uſed both above and below the liſtel, adjoining immediately to the ſquare, or dye of the pedeſtal.

ASTRAGAL, in gunnery, is a kind of ring or moulding on a piece of ordnance, at about half a foot's diſtance from the mouth; ſerving as an ornament to the piece, as the former does to a column.

ASTRAGAL *Tyles.* See the article TYLE.

ASTRAL *, ſomething belonging to the ſtars, or depending on the ſtars.

* The word comes from the Latin *aſtrum*, of the Greek αςηρ, ſtar.

ASTRAL, or ſiderial year. See SIDERIAL, and YEAR.

ASTRICTIOR *Toga.* See the article TOGA.

ASTRINGENS *Crocus Martis.* See the article CROCUS.

ASTRINGENTS, ADSTRINGENTIA, in medicine, binding remedies; or ſuch as have the power of contracting the parts, and diminiſhing the pores thereof.

Aſtringents chiefly act either by the aſperity of their particles, whereby they corrugate the membranes, and make them draw up cloſer; or by thickening the fluids, whereby they cannot run off ſo faſt as before.

Hence, *aſtringents* are of the claſs of ſtrengtheners, or corroborants; the nature and operation whereof, ſee under the article STRENGTHENER.

Aſtringents naturally ſtand oppoſed to *laxatives.* They only differ from what are called *ſtyptics*, in degree of efficacy.

Among ſimples, mint, red roſes, nettles, ſanicle, berberries, quinces, pomgranates, ſloes, cinnamon, blood-ſtone, alum, chalk, boles, coral, *&c.* are the principal *aſtringents.*

ASTROITES, *Lapis* ASTROITES, or ASTERIA, in natural hiſtory, a kind of figured ſtone, found in divers places *, and bearing the reſemblance of a ſtar.

* Particularly at Shugburg in Warwickſhire, near Belvoir-caſtle in Lincoldſhire, and in ſeveral parts of the north of England.

The form thereof is very uniform and regular; conſiſting of ſeveral thin pentagonal joints ſet one over another, ſo as to form a kind of five-angled column. — The uſual figures, as given by Dr. Liſter, are repreſented in *Tab. Nat. Hiſt. fig.* 14. But the name is alſo given to ſtones which have foſſile corals in them. The Aſteriæ, as now found, are all fragments, conſiſting of from one to twenty-five joints.—The matter or ſubſtance thereof, when broken, is ſparry, of a dark ſhining politure, very ſoft, and eaſily corroded by an acid menſtruum.—They creep, like the cornu Ammonis, in vinegar; but a ſtronger ſpirit, as that of nitre, agitates them with conſiderable violence.

The protuberant parts repreſented under the top joint of the firſt figure are not found in all; but only in thoſe which are deep-jointed.—They are always five in number. Dr. Liſter calls them *wyers*; and compares them to the antennæ of lobſters.

It is controverted among naturaliſts, to what ſpecies of bodies the *aſtroites*, trochites, entrochi, *&c.* are to be referred? Some will have them native ſtones, others rock-plants, and others peterfactions of plants. They are properly, however, parts of a marine animal of the ſtarfiſh kind, petrefied. See Supplement, article ASTERIA.

ASTROLABE, ASTROLABIUM, was originally uſed for a ſyſtem or aſſemblage of the ſeveral circles of the ſphere, in their proper order and ſituation with reſpect to each other.

The antient *aſtrolabes* appear to have been much the ſame with our armillary ſpheres.

The firſt and moſt celebrated of this kind was that of Hipparchus, which he made at Alexandria, the capital of Egypt, and lodged in a ſecure place, where it ſerved for divers aſtronomical operations.—Ptolemy made the ſame uſe of it; but as the inſtrument had ſeveral inconveniencies, he bethought himſelf to change its figure, though perfectly natural, and agreeable to the doctrine of the ſphere; and to reduce the whole *aſtrolabe* upon a plane ſurface, to which he gave the denomination of *planiſphere*. See PLANISPHERE.—Hence,

ASTROLABE is uſed among the moderns for a planiſphere; or a ſtereographic projection of the circles of the ſphere upon the plane of ſome great circle thereof.

The uſual planes of projection are that of the equinoctial, the eye being ſuppoſed in the pole of the world; that of the meridian, the eye being ſuppoſed in the point of interſection of the equinoctial and horizon; and that of the horizon.

Stoffler, Gemma Friſius, and Clavius, have treated at large of the *aſtrolabe*.—For a further account of the nature and kinds hereof, ſee the article PLANISPHERE.

ASTROLABE *, or *Sea* ASTROLABE, more particularly denotes an inſtrument chiefly uſed for taking the altitude of the pole, the ſun, or ſtars, at ſea.

> * The word is formed from the Greek αϛηρ, ſtar, and λαμϐανω, *capio*, I take.—The Arabs call it in their tongue, *aſtharlab*; a word formed by corruption from the common Greek name: though ſome of them have endeavoured to give it an Arabic original. But the learned are generally ſatisfied, that the Arabs borrowed both the name and the uſe of the inſtrument from the Greeks. Naſſireddin Thouſi has a treatiſe in the Perſian language, intituled, *Bait Babhſil Aſtarlab*, wherein he teaches the ſtructure, and the application of the *aſtrolabe*.

The common *aſtrolabe* repreſented *Tab. Navigation*, *fig.* 22. conſiſts of a large braſs ring, about fifteen inches in diameter, whoſe limb, or a convenient part thereof, is divided into degrees and minutes; fitted with a moveable index, or label, which turns upon the centre, and carries two ſights.—At the zenith is a ring A, to hang it by in time of obſervation.

To uſe the *aſtrolabe*, turn it ſo to the ſun, as that the rays may paſs freely through both the ſights F and G; in which caſe the edge of the label cuts the altitude in the divided limb.

The *aſtrolabe*, though now grown into diſuſe, is at leaſt equal to any of the other inſtruments uſed for taking the altitude at ſea; eſpecially between the tropics, when the ſun comes near the zenith.—There are a great many other uſes of the *aſtrolabe*; whereof Clavius, Henrion, *&c.* have written entire volumes.

ASTROLOGICAL *fate*. See the article FATE.

ASTROLOGY *, ASTROLOGIA, the art of foretelling future events, from the aſpects, poſitions, and influences of the heavenly bodies.

> * The word is compounded of the Greek αϛηρ, ſtar, and λογος, diſcourſe; whence, in the literal ſenſe of the name, *aſtrology* ſhould ſignify no more than the *doctrine or ſcience of the ſtars*; which we read was its original acceptation, and made the antient *aſtrology*; though, in courſe of time, an alteration has ariſen; that which the antients called *aſtrology*, being afterwards termed *aſtronomy*. See ASTRONOMY.

Aſtrology may be divided into two branches, *natural* and *judiciary*.

To the former belong the predicting of natural effects; as, the changes of weather, winds, ſtorms, hurricanes, thunder, floods, earthquakes, *&c.*

To this part our countryman Goad chiefly keeps, in his two volumes of *aſtrology*; wherein he pretends, that inundations may be foretold, and an infinity of phænomena explained, from the contemplation of the ſtars.—Accordingly, he endeavours to account for the diverſity of ſeaſons, from the different ſituations and habitudes of the planets; from their retrograde motions; the number of fixed ſtars in the conſtellations, *&c.*

This art properly belongs to phyſiology, or natural philoſophy; and is only to be deduced, a poſteriori, from phænomena and obſervations.

Its foundation and merits the reader may gather from what we have ſaid under the articles AIR, ATMOSPHERE, and WEATHER.

For this *aſtrology*, Mr. Boyle has a juſt apology in his *Hiſtory of the Air*.—Generation and corruption being the extremes of motion, and rarefaction and condenſation the mean; he ſhews, that the effluvia of the heavenly bodies, as we find them immediately contribute to the latter, muſt alſo have a mediate influence on the former; and conſequently, all phyſical bodies muſt neceſſarily be affected thereby.

It is evident, that the properties of moiſture, heat, cold, *&c.* employed by nature to produce the two great effects of rarefaction and condenſation, almoſt wholly depend on the courſe, motion, poſition, *&c.* of the heavenly bodies.—And it is alſo clear, that every planet muſt have its own proper light, diſtinct from that of any other; light not being a bare viſible quality, but endued with this ſpecific power. The ſun, we know, not only ſhines on all the planets, but by his genial warmth calls forth, excites, and raiſes the motions, properties, *&c.* peculiar to them; and his rays muſt ſhare or receive ſomewhat of the tincture thereof; and thus tinged be again reflected into the other parts of the world, and particularly the adjacent bodies of the planetary ſyſtem. Whence, according to the angle the planets make with that grand luminary, and the degree wherein they are enlightened, either by his direct or his oblique rays; together with their diſtance and ſituation in reſpect of our earth; the powers, effects, or tinctures, proper to each, muſt be tranſmitted hitherto, and have a greater or leſs effect on ſublunary things. See *Mead de imperio ſolis & lunæ*, &c.

Judiciary, or *Judicial* ASTROLOGY, which is what we commonly call ſimply *aſtrology*, is that which pretends to foretel moral events; *i. e.* ſuch as have a dependonce on the free will and agency of man; as if that were directed by the ſtars.

The profeſſors hereof maintain, “That the heavens are one great volume or book, wherein God has written the hiſtory of the world; and in which every man may read his own fortune, and the tranſactions of his time.—The art, ſay they, had its riſe from the ſame hands as *aſtronomy* itſelf: while the antient Aſſyrians, whoſe ſerene unclouded ſky favoured their celeſtial obſervations, were intent on tracing the paths and periods of the heavenly bodies, they diſcovered a conſtant, ſettled relation, of analogy, between them and things below; and hence were led to conclude theſe to be the *Parcæ*, the deſtinies, ſo much talked of, which preſide at our births, and diſpoſe or our future fate.

“The laws therefore of this relation being aſcertained, by a ſeries of obſervations, and the ſhare each planet has therein; by knowing the preciſe time of any perſon's nativity, they were enabled, from their knowlege in aſtronomy, to erect a theme or horoſcope of the ſituation of the planets, at that point of time: and hence, by conſidering their degrees of power and influence, and how each was either ſtrengthened or tempered by ſome other; to compute what muſt be the reſult thereof.”

Thus the *aſtrologers*.—But the chief province now remaining to the modern profeſſors, is the making of calendars or almanacks.

Judicial *aſtrology* is commonly ſaid to have been invented in Chaldæa, and thence tranſmitted to the Egyptians, Greeks, and Romans.—Though ſome will have it of Egyptian origin, and aſcribe the invention to Cham. But it is to the Arabs that we owe it. At Rome the people were ſo infatuated with it, that the *aſtrologers*, or, as they were then called, the *mathematicians*, maintained their ground in ſpite of all the edicts of the emperors to expel them out of the city. See GENETHLIACI.

Add, that the Bramins, who introduced and practiſed this art among the Indians, have hereby made themſelves the arbiters of good and evil hours; which gives them a vaſt authority: they are conſulted as oracles; and they have taken care never to ſell their anſwers but at good rates.

The ſame ſuperſtition has prevailed in more modern ages and nations. The French hiſtorians remark, that, in the time of queen Catharine de Medicis, *aſtrology* was in ſo much vogue, that the moſt inconſiderable thing was not to be done without conſulting the ſtars. And in the reigns of king Henry III. and IV. of France, the predictions of *aſtrologers* were the common theme of the court converſation.

This predominant humour in that court was well raillied by Barclay, in his *Argenis*, *lib.* II. on occaſion of an *aſtrologer*, who had undertaken to inſtruct king Henry in the event of a war then threatened by the faction of the Guiſes.

“You maintain, ſays Barclay, that the circumſtances of life and death depend on the place and influence of the celeſtial bodies, at the time when the child firſt comes to light; and yet you own, that the heavens revolve with ſuch vaſt rapidity, that the ſituation of the ſtars is conſiderably changed in the leaſt moment of time.—What certainty then, can there be in your art; unleſs you ſuppoſe the midwives conſtantly careful to obſerve the clock; that the minute of time may be conveyed to the infant as we do his patrimony? How often does the mother's danger prevent this care? and how many are there, who are not touched with this ſuperſtition? But ſuppoſe them watchful to your wiſh: if the child be long in delivery; if, as is often the caſe, a hand or the head come firſt, and be not immediately followed by the reſt of the body; which ſtate of the ſtars is to determine for him? that, when the head made its appearance; or when the whole body was diſengaged? I ſay nothing of the common errors of clocks, and other timekeepers, ſufficient to elude all your cares!

“Again, why are we to regard only the ſtars at his nativity, and not thoſe rather which ſhone when the fœtus was

“ animated in the womb? and why muſt thoſe others be excluded, which preſided while the body remained tender, and ſuſceptible of the weakeſt impreſſion, during geſtation?

“ But ſetting this aſide; and ſuppoſing, withal, the face of the heavens accurately known; whence ariſes this dominion of the ſtars over our bodies and minds, that they muſt be the arbiters of our happineſs, our manner of life, and death? Were all thoſe who went to battle, and died together, born under the ſame poſition of the heavens? and when a ſhip is to be caſt away, ſhall it admit no paſſengers but thoſe doomed by the ſtars to ſuffer ſhipwreck? Or rather, do not perſons born under every planet go into the combat, or aboard the veſſel; and thus, notwithſtanding the diſparity of their birth, periſh alike? Again, all who were born under the ſame configuration of the ſtars do not live or die in the ſame manner. Are all who were born at the ſame time with the king, monarchs? or are they all even alive at this day? View M. Villeroy, here; nay, view yourſelf: were all that came into the world with him as wiſe and virtuous as he; or all born under your own ſtars, aſtrologers like you? If a man meet a robber, you will ſay he was doomed to periſh by a robber's hand; but did the ſame ſtars, which, when the traveller was born, ſubjected him to the robber's ſword, did they likewiſe give the robber, who perhaps was born long before, a power and inclination to kill him? for you will allow it as much owing to the ſtars that the one kills, as that the other is killed. And when a man is overwhelmed by the fall of a houſe, did the walls become faulty becauſe the ſtars had doomed him to die thereby; or rather, was not his death owing to this, that the walls were faulty? The ſame may be ſaid with regard to honours and employs: becauſe the ſtars that ſhone at a man's nativity promiſed him preferment, could thoſe have an influence over other perſons not born under them, by whoſe ſuffrages he was to riſe? or how do the ſtars at one man's birth annul, or ſet aſide, the contrary influences of other ſtars, which ſhone at the birth of another?

“ The truth is, ſuppoſing the reality of all the planetary powers; as the ſun, which viſits an infinity of bodies with the ſame rays, has not the ſame effect on all, but ſome things are hardened thereby, as clay; others ſoftened, as wax; ſome ſeeds cheriſhed, others deſtroyed; the tender herbs ſcorched up, others ſecured by their coarſer juice: ſo, where ſo many children are born together, like a field tilled ſo many different ways, according to the various health, habitude, and temperament of the parents, the ſame celeſtial influx muſt operate differently. If the genius be ſuitable and towardly, it muſt predominate therein: if contrary, it will only correct it. So that, to foretel the life and manners of a child, you are not only to look into the heavens, but into the parents, into the fortune which attended the pregnant mother, and a thouſand other circumſtances utterly inacceſſible.

“ Further, does the power that portends the new-born infant a life, for inſtance, of forty years; or perhaps a violent death at thirty; does that power, I ſay, endure and reſide ſtill in the heavens, waiting the deſtined time, when, deſcending upon earth, it may produce ſuch an effect? or is it infuſed into the infant himſelf; ſo that being cheriſhed, and gradually growing up together with him, it burſts forth at the appointed time, and fulfils what the ſtars had given it in charge? Perſiſt in the heavens it cannot; in that depending immediately on a certain configuration of the ſtars; when that is changed, the effect connected with it muſt ceaſe, and a new, perhaps a contrary one, take place. What repoſitory then have you for the former power to remain in, till the time come for its delivery? If you ſay it inheres or reſides in the infant, not to operate on him till he be grown to manhood; the anſwer is more prepoſterous than the former: for this, in the inſtance of a ſhipwreck, you muſt ſuppoſe the cauſe why the winds riſe, and the ſhip is leaky, or the pilot, through ignorance of the place, runs on a ſhoal, or a rock. So the farmer is the cauſe of the war, that impoveriſhes him; or of the favourable ſeaſon, which brings him a plenteous harveſt.

“ You boaſt much of the event of a few predictions, which, conſidering the multitude of thoſe your art has produced, plainly confeſs its impertinency.—A million of deceptions are induſtriouſly hidden and forgot in favour of ſome eight or ten things which have ſucceeded. Out of ſo many conjectures it muſt be preternatural, if ſome did not hit; and it is certain, that, conſidering you only as gueſſers, there is no room to boaſt you have been ſucceſsful therein. Do you know what fate awaits France in this war; and yet are not apprehenſive what ſhall befal yourſelf? Did not you foreſee the oppoſition I was this day to make you? If you can ſay whether the king ſhall vanquiſh his enemies; find out firſt, whether he will believe you.”

ASTRONOMICAL, ſomething that relates to *aſtronomy*.

ASTRONOMICAL *Calendar.*		CALENDAR.
ASTRONOMICAL *Characters.*		CHARACTERS.
ASTRONOMICAL *Column.*	See the	COLUMN.
ASTRONOMICAL *Horizon.*	articles	HORIZON.
ASTRONOMICAL *Hours.*		HOURS.
ASTRONOMICAL *Month.*		MONTH.

ASTRONOMICAL *Obſervations.* See COELESTIAL *Obſervations.*

The *aſtronomical* obſervations of the antients, among which thoſe of Hipparchus make a principal figure, are carefully preſerved by Ptolemy in his almageſt.

In the year 880. Albategni, a Saracen, applied himſelf to the making of obſervations: in 1457. Regiomontanus undertook the province at Norimberg; and his diſciples J. Wernerus, and Ber. Waltherus, continued the ſame from 1475. to 1504. Their obſervations were publiſhed together in 1544.—In 1509. Copernicus, and after him the landgrave of Heſſe, with his aſſiſtants Rothmannus and Byrgius, obſerved; and after them Tycho, at Uranibourgh, from 1582. to 1601.—All the obſervations hitherto rehearſed, together with Tycho's apparatus of inſtruments, are contained in the *Hiſtoria Cœleſtis*, publiſhed in 1672, by order of the emperor Ferdinand.—Soon after, Hevelius, with a ſtill more magnificent and better contrived apparatus of inſtruments, deſcribed in his *Machina Cœleſtis*, began a courſe of obſervations. It is objected to him, that he only uſed plain ſights, and could never be brought to take the advantage of teleſcopic ones; which occaſioned Dr. Hook to write animadverſions on Hevelius's inſtruments, printed in 1674. wherein he too raſhly deſpiſes them on account of their inaccuracy: but Dr. Halley, who at the inſtance of the Royal Society went over to Dantzick in the year 1679. to inſpect his inſtruments, approved of their juſtneſs, as well as of the obſervations made with them. See SIGHTS.

Jer. Horrox, and Will. Crabtree, two of our own countrymen, are famous for their obſervations from the years 1635 to 1645.—They were followed by Flamſteed, Caſſini the father and ſon, Halley, de la Hire, Roemer, and Kirchius.—See further under the articles OBSERVATORY, CATALOGUE, &c.

ASTRONOMICAL *Place*, of a ſtar or planet, is its longitude, or place in the ecliptic, reckoned from the beginning of Aries, in conſequentia, or according to the natural order of the ſigns.

ASTRONOMICAL *Quadrant.* See the article QUADRANT.

ASTRONOMICAL *Ring-dial.* See RING-DIAL.

ASTRONOMICALS, a name uſed by ſome writers for ſexageſimal fractions; on account of their uſe in *aſtronomical* calculations.

ASTRONOMICAL *Tables.* See the article TABLE.

ASTRONOMICAL *Teleſcope.* See the article TELESCOPE.

ASTRONOMICAL *Time.* See the article TIME.

ASTRONOMICAL *Year.* See the article YEAR.

ASTRONOMICUS *Radius.* See the article RADIUS.

ASTRONOMY *, ASTRONOMIA, the doctrine of the heavens, and the phænomena thereof.

Aſtronomy is properly a mixed mathematical ſcience, whereby we become acquainted with the celeſtial bodies, their magnitudes, motions, diſtances, periods, eclipſes, &c.

Some underſtand the word *aſtronomy* in a more extenſive ſenſe; including under it the theory of the univerſe, and the primary laws of nature: in which ſenſe it rather ſeems a branch of phyſics than of mathematics.

The heavens may be conſidered two ways; either as they appear to the naked ſenſe, or as they are diſcovered by the underſtanding: and hence *aſtronomy* is divided into two branches, *ſpherical* and *theorical*.

Spherical ASTRONOMY.	See the article	SPHERICAL.
Theorical ASTRONOMY.		THEORICAL.

The invention of *aſtronomy* has been variouſly aſſigned, and ſeveral perſons, ſeveral nations, and ſeveral ages have laid claim to it.—From the accounts given us by the antient hiſtorians, it appears that kings were the firſt inventors and cultivators of it: thus, Belus, king of Aſſyria; Atlas, king of Mauritania; and Uranus, king of the country ſituate on the ſhore of the Atlantic ocean; are ſeverally recorded, as the perſons to whom the world owes this noble ſcience.

This, at leaſt, is pretty evident, that it was known to thoſe nations long before it came into Greece: agreeably to which Plato tells us, it was a Barbarian who firſt obſerved the heavenly motions; to which he was led by the clearneſs of the weather in the ſummer ſeaſon; as in Egypt and Syria, where the ſtars are conſtantly ſeen, there being no rains or clouds to interrupt the proſpect. And the want of this clearneſs of atmoſphere the ſame author lays down as the reaſon why the Greeks came ſo late to the knowledge of *aſtronomy*.

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* The word is compounded of the Greek αςηρ; ſtar, and νομος, law, rule.

TAB. ASTRONOMY.

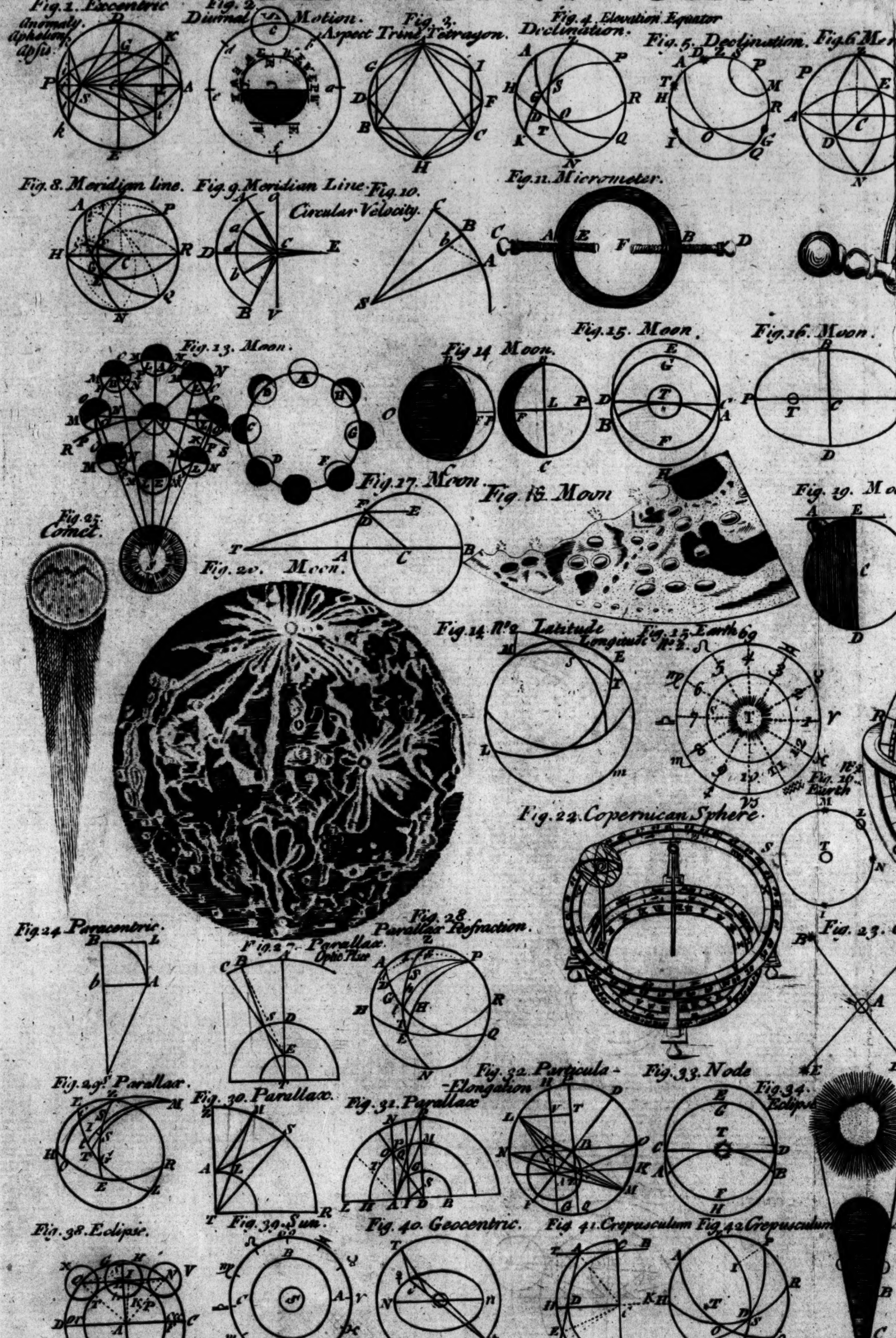
Fig. 1. Excentric Anomaly. Aphelium. Apsis.
Fig. 2. Diurnal Motion.
Fig. 3. Aspect Trine Tetragon.
Fig. 4. Elevation Equator Declination.
Fig. 5. Declination.
Fig. 8. Meridian line.
Fig. 9. Meridian Line.
Fig. 10. Circular Velocity.
Fig. 11. Micrometer.
Fig. 13. Moon.
Fig. 14. Moon.
Fig. 15. Moon.
Fig. 16. Moon.
Fig. 17. Moon.
Fig. 18. Moon.
Fig. 19. Mo
Fig. 20. Moon.
Fig. 25. Comet.
Fig. 14. No. 2. Latitude
Fig. 15. No. 2. Longitude
Fig. 25. Earth
Fig. 22. Copernican Sphere.
Fig. 26. Earth
Fig. 23.
Fig. 24. Peracentric.
Fig. 27. Parallax. Optic Plan
Fig. 28. Parallax Refraction.
Fig. 29. Parallax.
Fig. 30. Parallax.
Fig. 31. Parallax.
Fig. 32. Particular Elongation.
Fig. 33. Node.
Fig. 34. Eclipse.
Fig. 38. Eclipse.
Fig. 39. Sun.
Fig. 40. Geocentric.
Fig. 41. Crepusculum
Fig. 42. Crepusculum
Fig. 43. Ptolemaic System.
Fig. 45. Tychonic System.
Fig. 44. Copernican System.
Fig. 45. No. 2. Parallax
Fig. 46. E
Fig. 36. Eclipse.

The best Globes of 3. 9. 12. 17. & 27 Inches Diameter, from the latest observa-tions & discoveries. Made and Sold by Mary Senex over against St. Dunstans Church in Fleetstreet London. NB. her Globes may be known from all others, by having Bayers letters of refference inserted on the Cœlestial, & the Rhumb lines on the Terrestrial, besides other improvements.

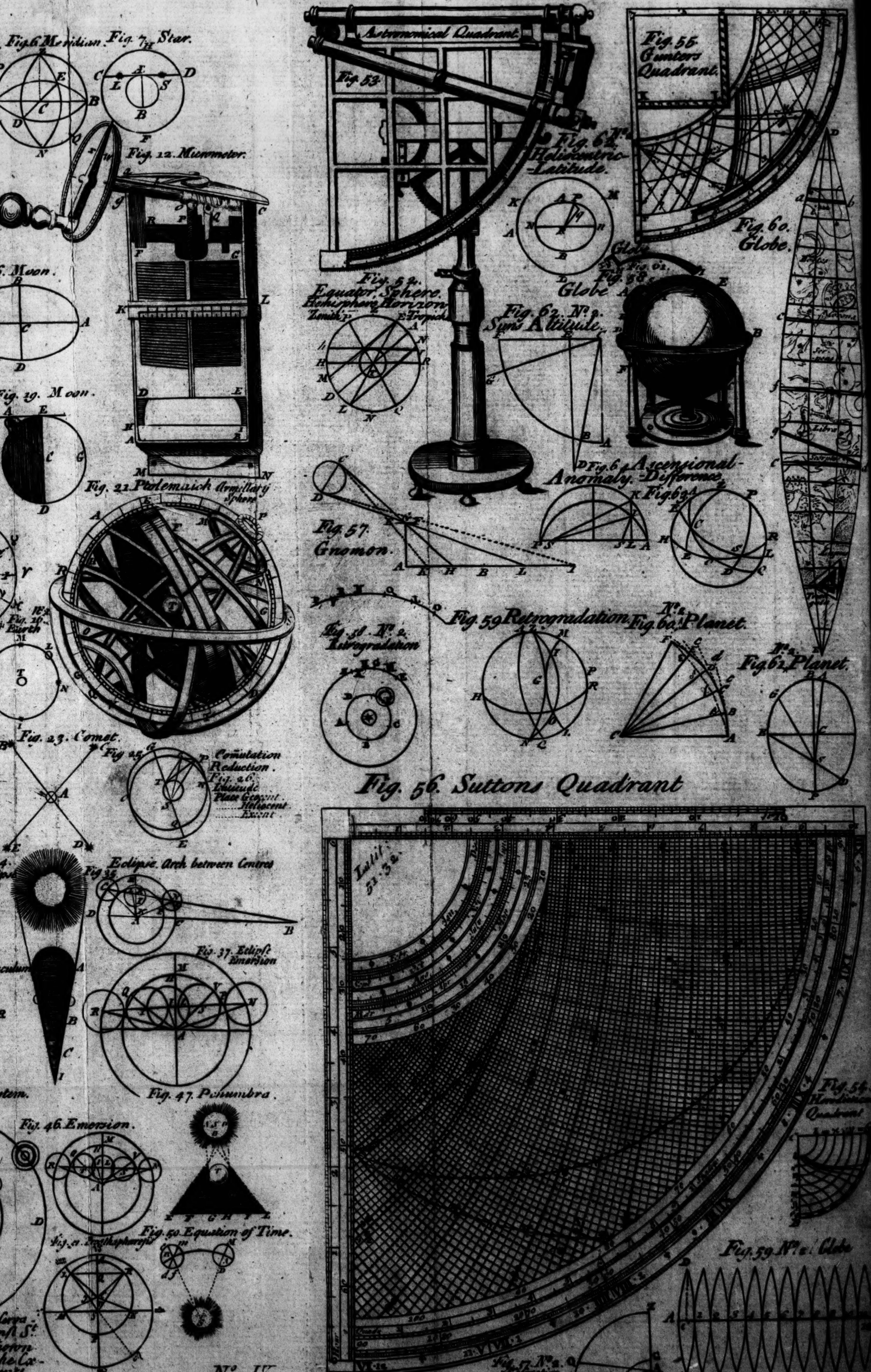
Fig. 6. Meridian.
Fig. 7. Star.
Fig. 12. Micrometer.
Moon.
Fig. 19. Moon.
Fig. 21. Ptolemaick Armillary Sphere
Earth
Fig. 23. Comet.
Fig. 25.
Comutation
Reduction.
Fig. 26.
Latitude
Place Geocent.
Heliocent.
Excent.
Eclipse. Arch between Centres
Fig. 36.
Fig. 37. Eclipse Emersion
Fig. 47. Penumbra.
Fig. 46. Emersion.
Fig. 50. Equation of Time.
Fig. 51. Prosthapheresis
No. IV
Astronomical Quadrant
Fig. 53.
Fig. 52.
Equator. Sphere.
Horizon
Zenith
Tropick
Fig. 62. No. 1 Heliocentric Latitude.
Fig. 55. Gunters Quadrant.
Fig. 60. Globe.
Globe
Fig. 61.
Fig. 58.
Globe
Fig. 62. No. 3 Suns Altitude.
Fig. 64. Ascensional Difference
Anomaly.
Fig. 63.
Fig. 57. Gnomon.
Fig. 58. No. 2. Retrogradation
Fig. 59. Retrogradation.
No. 2 Fig. 60. Planet.
No. 2 Fig. 62. Planet.
Fig. 56. Suttons Quadrant
Latit. 51. 32.
Fig. 54. Hadley's Quadrant
Fig. 57. No. 2. Refraction
Fig. 59. No. 2. Globe
No. IV

The generality of writers fix the origin of *aſtronomy* and aſtrology in Chaldæa; and accordingly among the antients we find the word *Chaldæan* frequently uſed for *aſtronomer.*—Some chooſe, however, to attribute the invention to the antient Hebrews; and ſome, even to the firſt men; building on the authority of Joſephus, and what he mentions about Seth's pillars.—The Muſſulmans, with ſome Jews, as well as Chriſtians, aſcribe it to Enoch, and other of the Orientals to Cain.—But theſe opinions appear ſcarcely probable to others, in regard they find no terms of *aſtronomy* in the language of thoſe firſt people, that is, in the Hebrew language; which, on the contrary, are very frequent in the Chaldee: though it muſt be owned we have ſomething of this kind in Job, and the books of Solomon.

We do not know whether it is worth noting, that Rudbeck, in his *Atlantica*, maintains *aſtronomy* to have been invented by the Swedes: his reaſons are, the great diverſity in the length of the days in that country, which muſt naturally lead the people to conclude the earth round, and that they lived near one of its extremes: a concluſion which the Chaldæans, and other inhabitants of the middle parts of the globe, had no ſuch eaſy way of coming at. The Swedes, adds our author, prompted hereby to inquire further into the great oppoſition of ſeaſons, ſoon diſcovered that the ſun bounds his progreſs by a certain ſpace in the heavens, *&c.*—But we have no hiſtorical facts to ſupport this reaſoning, which at beſt only proves, that the thing might be ſ

By Porphyry's account, *aſtronomy* muſt have been of a very antient ſtanding in the eaſt; for he tells us, that when Babylon was taken by Alexander, there were brought thence celeſtial obſervations for the ſpace of 1903 years, which therefore muſt have commenced within 115 years of the flood, or within fifteen years of the building of Babel.—Epigenes, according to Pliny, affirmed that the Babylonians had obſervations of 720 years, engraven on bricks.—Achilles Tatius aſcribes the invention of *aſtronomy* to the Egyptians; and adds, that their knowlege therein was engraven on columns, and by that means tranſmitted to poſterity.

From the Egyptians, *aſtronomy* is commonly ſuppoſed to have paſſed to the Greeks: Laertius tells us, that Thales, firſt, about the ninetieth olympiad, and after him Eudoxus and Pythagoras, travelled into Egypt, to be inſtructed herein; and that this laſt, in particular, living in a cloſe community with the Egyptian prieſts for ſeven years, and being initiated into their religion, was here let into the true ſyſtem of the univerſe; which he afterwards taught in Greece and Italy.—He was the firſt, among the Europeans, who taught that the earth and planets turn round the ſun, which ſtands immoveable in the centre; that the diurnal motion of the ſun and fixed ſtars is not real, but apparent, ariſing from the earth's motion round its own axis, *&c.*

Yet Vitruvius repreſents the introduction of *aſtronomy* into Greece, ſomewhat differently; maintaining, that Beroſus, a Babylonian, brought it thither immediately from Babylon itſelf; and opened an *aſtronomical* ſchool in the iſland of Cos. Plin. *lib.* 7. *c.* 37. adds, that, in conſideration of his wonderful predictions, the Athenians erected him a ſtatue in the gymnaſium, with a gilded tongue.—If this Beroſus be the ſame with the author of the Chaldee hiſtories, he muſt have been before Alexander.

After Pythagoras, *aſtronomy* ſunk greatly into neglect; moſt of the celeſtial obſervations brought from Babylon were loſt; and it was but a very ſmall number that Ptolemy, in his time, was able to retrieve.—However, ſome few of his followers continued to cultivate *aſtronomy*; among whom were Philolaus and Ariſtarchus Samius.

At length, thoſe patrons of learning, the Ptolemies, kings of Egypt, founding an academy of *aſtronomy* at Alexandria, there aroſe ſeveral eminent *aſtronomers* from the ſame; particularly Hipparchus, who, according to Pliny, undertook what would have been a great work even for a god to atchieve, *viz.* to number the ſtars, and leave the heavens as an inheritance to poſterity: he foretold the eclipſes both of the ſun and moon for 600 years; and on his obſervations is founded that noble work of Ptolemy, intitled μεγαλη συνταξις.

The Saracens, on their conqueſt of Egypt, got a tincture of *aſtronomy*, which they carried with them out of Africa into Spain; and by this means *aſtronomy*, after a long exile, was at length introduced afreſh into Europe.

From this time, *aſtronomy* began to improve very conſiderably; being cultivated by the greateſt genius's, and patronized by the greateſt princes.—Alphonſus, king of Caſtile, enriched it with thoſe tables which ſtill bear his name. See Table.

Copernicus re-eſtabliſhed the antient Pythagorean ſyſtem; and Tycho Brahe publiſhed a catalogue of 770 fixed ſtars, from his own obſervations.

Kepler, from Tycho's labours, ſoon after diſcovered the true theory of the world; and the phyſical laws by which the heavenly bodies move.

Galileo firſt introduced teleſcopes into *aſtronomy*, and by their means diſcovered the ſatellites of Jupiter; the various phaſes of Saturn, the mountains of the moon, the ſpots in the ſun, and its revolution about its axis. See Teleſcope, and Satellite.

Add, that Hevelius, from his own curious obſervations, furniſhed a catalogue of fixed ſtars, much more complete than Tycho's.—Huygens and Caſſini diſcovered the ſatellites of Saturn, and his ring.—And Gaſſendus, Horrox, Bullialdus, Ward, Ricciolus, Gaſcoign, *&c.* each contributed very conſiderably to the improvement of *aſtronomy*.

The immortal Newton firſt demonſtrated, from phyſical conſiderations, the great law that regulates all the heavenly motions, ſets bounds to the planets orbs, and determines their greateſt excurſions from the ſun, and their neareſt approaches to it.—It was he firſt taught the world whence aroſe that conſtant and regular proportion obſerved by both primary and ſecondary planets in their circulation round their central bodies; and their diſtances compared with their periods.—He has alſo given us a new theory of the moon, which accurately anſwers all her inequalities, and accounts for them from the laws of gravity and mechaniſm. See Newtonian. See alſo Attraction.

Dr. Halley obliged the world with the *aſtronomy* of comets, and with a catalogue of the ſtars in the ſouthern hemiſphere; and was a very great benefactor to *aſtronomy*, by his obſervations: to which it may be added, that he put in the preſs a new ſet of aſtronomical tables, more accurate than any before publiſhed.

Mr. Flamſteed upwards of forty years watched the motions of the ſtars; and has given us a great number of curious obſervations of the ſun, moon, and planets; beſides a noble catalogue of 3000 fixed ſtars; which is more than double the number in that of Hevelius.—Nothing now ſeemed wanting to *aſtronomy*, but an univerſal and complete theory of the celeſtial phænomena, explained according to their true motions, and phyſical cauſes, which has been performed by Dr. Gregory.

Astronomy is ſometimes divided, with reſpect to its different ſtates, into *new* and *old*.

Antient aſtronomy is ſuch as the art ſtood under Ptolemy, and his followers; with all the apparatus of ſolid orbs, epicycles, excentrics, deferents, trepidations, *&c.*

The antient *aſtronomy* is delivered by Claud. Ptolemy, who died A. D. 147. in his μεγαλη συνταξις; tranſlated in 827. into Arabic; and by G. Trapezuntius into Latin. An epitome of it, for the uſe of learners, was made by Purbachius, and his ſcholar Regiomontanus, in 1550. containing the whole doctrine of the heavenly motions, their magnitudes, eclipſes, *&c.*—On the model hereof, Albategni, the Arab, compiled another work, on the knowlege of the ſtars, publiſhed in Latin in 1537.

New aſtronomy is ſuch as the art has been ſince Copernicus; by whom thoſe fictitious machines were thrown out; and the conſtitution of the heavens reduced to more ſimple, natural, and certain principles.

The modern *aſtronomy* is delivered by Copernicus in his ſix books of *Celeſtial Revolutions*, publiſhed about the year 1566. wherein, by retrieving Pythagoras's and Philolaus's dogma of the motion of the earth, he laid the foundation of a juſter ſyſtem.—Kepler's *Commentaries of the motions of Mars*, publiſhed in 1609. wherein, in lieu of the circular orbits admitted by all former aſtronomers, he propoſed the elliptic theory; which, in his epitome of the Copernican *aſtronomy*, publiſhed in 1635. he applied to all the planets.—Iſh. Bullialdus's *Aſtronomia Philolaica*, publiſhed in 1645. wherein he endeavoured to amend Kepler's theory, and render the calculus more exact and geometrical: ſome errors committed by Bullialdus were pointed out by Dr. Seth Ward, in his *Inquiry into the Philolaic aſtronomy*, *Inquiſitio in aſtronomiæ Philolaicæ fundamenta*, publiſhed in 1653. and corrected by himſelf in his *Foundations of the Philolaic aſtronomy more clearly explained*, in 1657.—Ward's *Aſtronomia geometrica*, publiſhed in 1656. wherein a geometrical method is propoſed of computing the planets motions; though not conſiſtent with the true laws of their motions eſtabliſhed by Kepler. The ſame was propoſed the year following by the count de Pagan. The truth is, Kepler himſelf does not ſeem to have been ignorant thereof; but he rather choſe to ſet it aſide, as finding it contrary to nature.—Vin. Wing's *Aſtronomia Britannica*, publiſhed in 1669. wherein, going on Bullialdus's principles, he gives juſt examples of all the precepts in practical *aſtronomy*, well accommodated to the capacity of learners.—Newton's *Aſtronomia Britannica*, publiſhed in 1657. and Street's *Aſtronomia Carolina*, in 1661. both upon Ward's hypotheſis.

In Ricciolus's *Almageſtum novum*, publiſhed in 1651. we have the ſeveral hypotheſes of all the aſtronomers, antient as well as modern.—And in Dr. Gregory's *Elementa aſtronomiæ phyſicæ & geometricæ*, in 1702. the whole modern aſtronomy, as founded on the diſcoveries of Copernicus, Kepler, and Sir Iſaac Newton.—The marrow of the old *aſtronomy* is given by Tacquet; and of the new *aſtronomy* by Whiſton in his *Præ-*

lectiones aſtronomicæ, in 1707.—For novices in the art, Mercator's *Inſtitutiones aſtronomicæ*, publiſhed in 1676. which contains the whole doctrine, both according to the antients, and moderns; and Dr. Keill's *Introductio ad veram aſtronomiam*, in 1718. which only takes in the modern; are the beſt calculated.

ASTYNOMI. See Agoranomus.

ASYLUM *, Ασυλον, a ſanctuary, or place of refuge, where a criminal who ſhelters himſelf is deemed inviolable, and not to be touched by any officer of juſtice.

* The word is Greek, ασυλον, compounded of the privative particle α, and συλαω, I take out, or I hurt; becauſe no perſon could be taken out of an *aſylum* without ſacrilege. See Sacrilege.

The firſt *aſylum* was eſtabliſhed at Athens, by the deſcendants of Hercules, to ſhelter themſelves from the fury of his enemies.

The temples, altars, ſtatues, and tombs of heroes, were, antiently, the ordinary retreat of thoſe who found themſelves aggrieved by the rigour of the laws, or oppreſſed by the violence of tyrants: but, of all others, temples were held the moſt ſacred and inviolable refuge. It was ſuppoſed, that the gods took upon them to puniſh the criminal who thus threw himſelf upon them; and that it would be a great impiety in man to take vengeance out of the hands of the immortals.

The Iſraelites had their cities of refuge, which were of God's own appointment; where the guilty, who had not committed any deliberate crime, found ſafety and protection.—As to the heathens, they allowed refuge and impunity, even to the vileſt and moſt flagrant offenders, ſome out of ſuperſtition, and others for the ſake of peopling their cities; and it was by this means, and with ſuch inhabitants, that Thebes, Athens, and Rome, were firſt ſtocked.—We even read of *aſylums* at Lyons and Vienne among the antient Gauls; and there are ſome cities in Germany which ſtill preſerve the antient right of *aſylum*.

Hence, on the medals of ſeveral antient cities, particularly in Syria, we meet the inſcription, ΑΣΥΛΟΙ, to which is added, ΙΕΡΑΙ. For inſtance, ΤΥΡΟΥ ΙΕΡΑΣ ΚΑΙ ΑΣΥΛΟΣ ΣΙΔΩΝΟΣ ΙΕΡΑΣ ΚΑΙ ΑΣΥΛΟΥ.—This quality of *aſylum* was given to them, according to M. Spanheim, in regard to their temples, and of the gods revered by them.

The ſame qualities have alſo been given to deities: thus Diana of Epheſus is called ασυλος.—Add, that the camp formed by Romulus and Remus was called *aſylum*, and afterwards became a city, in which was a temple erected to the god Aſylæus, Θεος ασυλαιος.

The emperors Honorius and Theodoſius granting the like immunities to churches, the biſhops and monks laid hold of a certain tract or territory, without which they fixed the bounds of the ſecular juriſdiction: and ſo well did they manage their privileges, that convents, in a little time, became next akin to fortreſſes; where the moſt glaring villains were in ſafety, and braved the power of the magiſtrate.

Theſe privileges, at length, were extended not only to the churches and church-yards, but alſo to the biſhops houſes, whence the criminal could not be removed without a legal aſſurance of life, and an intire remiſſion of the crime.—The reaſon of the extenſion was, that they might not be obliged to live altogether in the churches, *&c.* where ſeveral of the occaſions of life could not be decently performed.

But, at length, theſe *aſyla*, or ſanctuaries, were alſo ſtripped of moſt of their immunities, in regard they ſerved to make guilt and libertinage more daring and bold-faced. In England, particularly, they were intirely aboliſhed. See the article Sanctuary.

ASYMMETRY *, Asymmetria, a want of proportion, or correſpondence between the parts of a thing. See Symmetry.

* The word is derived from the privative particle α, συν, with, and μετρον, meaſure, *q. d.* without meaſure.

In mathematics, the term is particularly uſed for what we more uſually call *incommenſurability*; which is when between two quantities there is no common meaſure: as between the ſide, and diagonal of a ſquare.—In numbers, ſurd roots, as $\sqrt{2}$, *&c.* are incommenſurable to rational numbers.

ASYMPTOTE *, in geometry, a line which continually approaches nearer and nearer to another; yet will never meet therewith, tho' indefinitely prolonged. See Line.

* The word is compounded of the privative particle α, συν, with, and πτοω, I fall; *q. d.* incoincident, or which never meet.—Some Latin authors call theſe lines *intactæ*.

Bertinus rehearſes divers ſorts of *aſymptotes*; ſome ſtrait, others curve; ſome concave, others convex, *&c.* and further, propoſes an inſtrument to deſcribe them withal.—Tho', in ſtrictneſs, the term *aſymptotes* ſeems appropriated to right lines.

Asymptotes, then, are properly right lines, which approach nearer and nearer to ſome curve, of which they are ſaid to be the *aſymptotes*; but which, though they and their curve were indefinitely continued, would never meet.

Aſymptotes may be conceived as tangents to their curves at an infinite diſtance.

Two curves are alſo ſaid to be *aſymptotical*, when they thus continually approach, without a poſſibility of meeting.—Thus two parabola's, whoſe axes are in the ſame right line, are *aſymptotical* to one another.

Of curves of the ſecond kind, that is, the conic ſections, only the hyperbola has *aſymptotes*, which are two in number, long ago demonſtrated by Apollonius Pergæus.

All curves of the third kind have at leaſt one *aſymptote*; but they may have three; and all curves of the fourth kind may have four *aſymptotes*.

The conchoid, ciſſoid, and logarithmic curve, though not reputed geometrical curves, have each alſo one *aſymptote*.

The nature of *aſymptotes* will be eaſily conceived in the inſtance of the *aſymptote* of a conchoid.—Suppoſe M M A M, *&c.* (*Tab. Analyſis, fig.* 1.) be a part of a conchoid, C its pole, and the right line B D, ſo drawn that the parts Q M, E A, O M, *&c.* of right lines drawn from the pole C, are equal to each other: then will the line B D be an *aſymptote* of the curve: becauſe the perpendicular M I, *&c.* is ſhorter than M O, and M R than M Q, *&c.* ſo that the two lines continually approach; yet the points M, *&c.* and R, *&c.* can never coincide, in regard there is ſtill a portion of a line to keep them aſunder; which portion of a line is infinitely diviſible, and conſequently muſt be diminiſhed infinitely ere it become nothing.

Asymptotes *of the hyperbola* are thus deſcribed:—Suppoſe a right line D E (*Tab. Conics, fig.* 20.) drawn through the vertex A of the hyperbola, parallel to the ordinates M *m*, and equal to the conjugate axes, *viz.* the part D A, and that A E to the ſemi-axis: then, two right lines drawn from the centre C of the hyperbola, through the points D and E, *viz.* the right lines C F and C G, are *aſymptotes* of the curve.

If the hyperbola G M R (*fig.* 12. *n°* 2.) be of any kind whoſe nature with regard to the curve, and its *aſymptote*, is expreſſed by this general equation, $x^m y^n = a^m + n$; and the right line P M be drawn any-where parallel to the *aſymptotes* C S, and the parallelogram P C O M, be completed: this parallelogram is to the hyperbolic ſpace P M G B, contained under the determinate line P M, the curve of the hyperbola G M indefinitely continued towards G, and the part P B of the *aſymptote* indefinitely continued the ſame way, as $m-n$ is to n: and ſo if m be greater than n, the ſaid ſpace is ſquareable; but when $m=n$, as it will be in the common hyperbola, the ratio of the foregoing parallelogram to that ſpace is as 0 to 1; that is, the ſpace is infinitely greater than the parallelogram, and ſo cannot be had: and when m is leſs than n, the parallelogram will be to the ſpace, as a negative number to a poſitive one, and the ſaid ſpace is ſquareable, and the ſolid generated by the revolving of the indeterminate ſpace G M O L about the *aſymptote* C E, is double of the cylinder generated by the motion of the parallelogram P C O M about the axis C O.

Asymptote *of a logarithmic curve.*—If M S (*fig.* 33.) be the logarithmic curve, P R an *aſymptote*, P T the ſubtangent, and M P an ordinate; then will the indeterminate ſpace $RPMS = PM \times PT$; and the ſolid, generated by the rotation of this curve about the *aſymptote* V P, will be $\frac{1}{2}$ of a cylinder whoſe altitude is equal to the length of the ſubtangent, and the ſemidiameter of the baſe equal to the ordinate Q V.

ASYMPTOTIC *Spaces.* See Hyperbola.

ASYNDETON *, Ασυνδετον, a figure in grammar, implying a defect, or want of conjunctions in a ſentence.

* The word is derived from the privative α, and συνδεω, *colligo*, I bind together.

As, in the inſtance, *veni, vidi, vici*, I came, I ſaw, I conquered; where the copulative *et*, *and*, is omitted: or in that of Cicero concerning Catiline, *abiit, exceſſit, evaſit, erupit*: or in that verſe of Virgil,

Ferte citi flammas, date vela, impellite remos.

Aſyndeton ſtands oppoſed to *polyſyndeton*, where the copulatives are multiplied.

ATARAXY *, Αταραξια, a term much uſed by the Sceptics, and Stoics, to denote that calmneſs, and tranquillity of mind, and that firmneſs of judgment, which ſets us free from any agitations or emotions ariſing from ſelf-opinion, and the knowlege we imagine ourſelves poſſeſſed of.

* The word is purely Greek, compounded of αταρ, but; and ταξις, order.

In this *ataraxy*, they ſuppoſed the ſovereign good, or higheſt bliſs in this life to conſiſt.

ATAXY *, Αταξια, a want of order or regularity.

* The word is compounded of the privative α, and ταξις, order.

Ataxia is chiefly uſed in medicine, where the order of the critical days, or other phænomena of a diſeaſe, is inverted.

The phyſicians have frequent recourſe to an *ataxy*, or irregularity of the ſpirits, when at a loſs to account for any diſorder in the body. The ſpirits, Dr. Drake obſerves, being always at hand, are forced to bear the blame of a thouſand things they are innocent of.

ATCHIEVEMENT*, in heraldry, the coat of arms of any perſon, or family, duly marſhalled, with its external ornaments, or ſupporters, helmet, wreath, creſt, and motto.

* The word is formed of the French, *achevément*, finiſhing, conſummation, perfection.

Such are thoſe uſually hung out on the fronts of houſes after the death of ſome conſiderable perſon; now corruptedly called *hatchments*.

ATELLANÆ, in antiquity, a kind of comic and ſatiric pieces, preſented on the Roman theatre; ſomewhat leſs ludicrous than the farces on the Engliſh ſtage, and yet leſs grave and ſerious than the Greek and Latin comedies and tragedies.

The *Atellanæ*, or *fabulæ Atellanæ* of the Romans, anſwered to the *ſatyræ* among the Greeks.

They were thus called from *Atella*, a city of Tuſcany, where they were firſt repreſented; and from whence, on account of their mirth and humour, they were introduced into Rome.

But they became at length ſo licentious, and impudent, that the ſenate was obliged to ſuppreſs them.

ATHAMADULET*, or ATHEMADAULET, the prime, or chief miniſter in the Perſian empire.

* The word, according to Kempſer, is properly written in the Perſian *athemaad dauleth*: according to Tavernier, *athematdoulet*: according to Sanſon, *etmadoulet*.—Authors ſuppoſe it originally Arabic, and compounded of *itimade* and *daulet*, that is, the truſt of majeſty; or, according to Tavernier, the ſupport of riches; according to Kempfer, the prop and refuge of the court.

The *athamadulet* is much the ſame with the grand viſier in Turky: excepting that he has not the command of the army, which the viſier has.

The *arthamadulet* is great chancellor of the kingdom, preſident of the council, ſuperintendant of the finances; and has the charge of all foreign affairs.—He is in effect vice-roy, or adminiſtrator of the kingdom: he iſſues the king's mandates, or orders, in this ſtile, *Bende derga ali il alia etmadaulet*, that is, I, who am the ſupport of the power, the creature of this port, the higheſt of all ports, &c.

ATHANASIAN *Creed*. See CREED, and TRINITY.

ATHANATI, an order of ſoldiers among the antient Perſians.

* The word is originally Greek, and ſignifies *immortal*; being compounded of the privative α, and θανατος, death.

The *Athanati* were a body of cavalry, conſiſting of ten thouſand men, always complete, becauſe, when any one of them died, another was immediately put into his place.—It was for this reaſon that they were called *athanati* by the Greeks, by the Latins *immortales*.

ATHANOR*, in chymiſtry, a large immoveable furnace, built of brick and earth, and covered with a tower at the top; proper to maintain a temperate and equal degree of heat, for a conſiderable time.

* The word *athanor* is borrowed from the Arabs, who call an oven, *tanneron*, from the Hebrew תנור, *tannour*, an oven, or furnace; whence, with the additional particle *al*, אלתנור, *altannour*, &c.—Others chooſe to derive the name from the Greek αθανατος, immortal, becauſe of its durable fire.

The heat of the *athanor* is intended or remitted by opening or ſhutting a regiſter. It is made to communicate its heat by tubes, or apertures, at the ſide of the hearth, or fire-place, to ſeveral adjacent veſſels; by which means different operations are carried on at the ſame time.

The *athanor* is alſo called *piger Henricus*, ſlow Harry; becauſe chiefly uſed in the ſlower operations; and becauſe, when once filled with coals, it keeps burning a long time; whence the Greeks call it ακηδης, *q. d.* giving no trouble, as it does not need to be continually attended.—It is alſo called the *philoſophical furnace*, or *furnace of arcana*; ſometimes *uterus chymicus*, or *ſpagiricus*, and, popularly, the *tower furnace*, *furnus turritus*.

ATHEIST*, Αθεος, a perſon who denies the Deity; who does not believe the exiſtence of a God, nor a providence; and who has no religion, true, nor falſe.

* The word is derived from the privative α, and Θεος, God.

In general, a man is ſaid to be an *atheiſt*, who owns no being ſuperior to nature, that is, to men, and the other ſenſible beings in the world.

In this ſenſe, Spinoſa may be ſaid to be an *atheiſt*; and it is an impropriety to rank him, as the learned commonly do, among *deiſts*; ſince he allows of no other God beſide nature, or the univerſe, of which mankind makes a part; and there is no *atheiſt* but allows of the exiſtence of the world, and of his own exiſtence in particular.

Plato diſtinguiſhes three kinds of *atheiſts*.—Some, who deny, abſolutely, that there are any gods; others who allow the exiſtence of gods, but maintain that they do not concern themſelves with human affairs, and ſo deny a providence; and others, who believe there are gods, but think they are eaſily appeaſed with a little prayer, or the like; and that they may remit the greateſt crimes for the ſmalleſt ſupplication.

Some diſtinguiſh *ſpeculative atheiſts*, or thoſe who are ſo from principle, and theory—from *practical atheiſts*, whoſe wicked lives leads them to believe, or rather to wiſh, that there were no God.

Cicero repreſents it as a probable opinion, that they who apply themſelves to the ſtudy of philoſophy believe there are no gods.—This muſt, doubtleſs, be meant of the academic philoſophy, to which Cicero himſelf was attached, and which doubted of every thing: on the contrary, the Newtonian philoſophers are continually recurring to a Deity, whom they always find at the end of their chain of natural cauſes*. Some foreigners have even charged them with making too much uſe of the notion of a God in philoſophy, contrary to the rule of Horace: *Nec Deus interſit, niſi dignus vindice nodus.*

* Among us, the philoſophers have been the principal advocates for the exiſtence of a Deity.—Witneſs the writings of Boyle, Ray, Cheyne, Nieuentiit, &c. To which may be added divers others, who, though of the clergy (as was alſo Ray), yet have diſtinguiſhed themſelves by their philoſophical pieces, in behalf of the exiſtence of a God; *e. gr.* Derham, Bentley, Whiſton, Sam. and John Clark, Fenelon, &c.—So true is that ſaying of Lord Bacon, that though a ſmattering of philoſophy may lead a man into atheiſm, a deep draught will certainly bring him back again to the belief of a God and Providence.

ATHELING*, among our Saxon anceſtors, was a title of honour properly belonging to the heir apparent, or preſumptive, to the crown.

* The word is formed from the Saxon Æðelinᵹ, of Æðel, noble.—It is ſometimes alſo written *Adeling*, *Edling*, *Ethling*, and *Etheling*.

King Edward the Confeſſor, being without iſſue, and intending to make Edgar, to whom he was great uncle by the mother's ſide, his heir, firſt gave him the honourable appellation of *Atheling*.

Antiquaries obſerve, that it was frequent among the Saxons to annex the word *ling* or *ing* to a chriſtian name, to denote the ſon, or younger; as Edmundling, for the ſon of Edmund, Edgaring, for the ſon of Edgar: on which footing ſome have thought *Atheling* might primarily import the ſon of a nobleman, or prince.—But, in reality, *Atheling*, when applied to the heir of the crown, ſeems rather to denote a perſon endowed with noble qualities, than the ſon of a nobleman, and correſponds to the *nobilis Cæſar* among the Romans.

ATHENÆA, Αθηναια, a feaſt of the antient Greeks, held in honour of Minerva, who was called Αθηνη. See FEAST.

Theſe were afterwards called *Panathenæa*. See PANATHENÆA.

ATHENÆUM*, in antiquity, a public place wherein the profeſſors of the liberal arts held their aſſemblies, the rhetoricians declaimed, and the poets rehearſed their verſes.

* The word is Greek, and is derived from *Athens*, a learned city, where many of theſe aſſemblies were held; or from the Greek name of Pallas, Αθηνη, goddeſs of ſcience; intimating that *Athenæum* was a place conſecrated to Pallas, or ſet apart for the exerciſes over which ſhe preſides.

The *Athenæa* were built in form of amphitheatres; and were all encompaſſed with ſeats, which Sidonius calls *cunei*.

The three moſt celebrated *Athenæa* were thoſe at Athens, at Rome, and at Lions; the ſecond of which, according to Aurelius Victor, was built by the emperor Adrian.

ATHEROMA, Αθερωμα, in medicine, a kind of tumour, of a pappy conſiſtence, without pain, or diſcolouring the ſkin.

The *atheroma* is contained in a cyſtis, or membranous bag; and does not give way when touched with the finger, nor retain any dent after preſſure.

The *atheroma* is thus called from the Greek αθηρα, a kind of pap, or pulp, which the matter of this tumour reſembles.—It is near akin to the meliceres and ſteatoma; and is cured like them, by ſection.

ATHLETÆ*, in antiquity, perſons of ſtrength and agility, diſciplined to perform in the public games.

* The word is originally Greek, αθλιϛης, formed from αθλος, *certamen*, combat; whence alſo αθλον, the prize, or reward adjudged the victor.

Under *athletæ* were comprehended wreſtlers, boxers, runners, leapers, throwers of the diſk, and thoſe practiſed in other exerciſes, exhibited in the Olympic, Pythian, and other ſolemn ſports; for the conquerors wherein, there were eſtabliſhed prizes.

From the five uſual exerciſes, the *athletæ* were alſo denominated πενταθλοι, and by the Latins *quinquertiones*; at leaſt ſuch as profeſſed them all.

ATHLETIC *Crown*. See the article CROWN.

ATIA. See the article ODIO *et Atia*.

ATLANTIC *Ocean*. See the article OCEAN.

ATLANTIS *, in antiquity, an iſland ſpoken of by Plato, and many other writers, under ſome extraordinary circumſtances; and rendered famous by a controverſy among the moderns, concerning its place and exiſtence.

* The *Atlantis* took its name from *Atlas*, Neptune's eldeſt ſon, who, they tell us ſucceeded his father in the government thereof.

The moſt diſtinct account of this celebrated country is given us in Plato's *Timæus*, and *Critias*; which amounts, in a few words, to what follows. "The *Atlantis* was a large iſland in the weſtern ocean, ſituate before, or oppoſite to, the ſtreights of Gades. Out of this iſland there was an eaſy paſſage into ſome others, which lay near a large continent exceeding all Europe and Aſia. Neptune ſettled in this iſland, which he diſtributed among his ten ſons; to the youngeſt fell the extremity of the iſland called *Gadir*, which in the language of the country ſignifies *fertile*, or *abundant in ſheep*. The deſcendants of Neptune reigned here from father to ſon, for a great number of generations, in the order of primogeniture, during the ſpace of 9000 years. They alſo poſſeſſed ſeveral other iſlands; and paſſing into Europe and Africa, ſubdued all Libya as far as Egypt, and all Europe to Aſia Minor. At length the iſland ſunk under water; and, for a long time afterwards, the ſea thereabouts was full of flats and ſhelves."

The learned Rudbeck, profeſſor in the univerſity of Upſal, in an expreſs treatiſe intitled, *Atlantica ſive Manheim*, maintains, very ſtrenuouſly, that Plato's *Atlantis* is Sweden and Norway; and attributes to his country, whatever the antients have ſaid of their *Atlantis*, or *Atlantic* iſland.—But after the little abridgment we have given of Plato's account, the reader will be ſurpriſed to find Sweden taken for the *Atlantis*; and accordingly, though Rudbeck's work be full of uncommon erudition, the author paſſes for a viſionary in this point. Others will have America to be the *Atlantis*; and hence infer, that the new world was not unknown to the antients: but what Plato ſays, does by no means quadrate thereto.—America ſhould rather ſeem to be the vaſt continent beyond the *Atlantis*, and the other iſlands mentioned by Plato.

Kircher, in his *Mundus ſubterraneus*, and Beckman in his *Hiſtory of iſlands*, chap. 5. advance a much more probable opinion than that of Rudbeck.—The *Atlantis*, according to them, was a large iſland which extended from the Canaries to the Azores; and theſe iſlands are the remains thereof not ſwallowed up by the ſea.

ATLAS, in architecture, is a name given to thoſe figures, or half-figures of men, ſometimes uſed inſtead of columns, or pilaſters; to ſupport any member of architecture, as a balcony, or the like.

Theſe are otherwiſe called *Telamones*. See TELAMON,

ATLAS, in anatomy, the name of the firſt vertebra of the neck, which ſupports the head.—See *Tab. Anat.* (Oſteol.) *fig.* 6.

It is ſo called in alluſion to the celebrated mountain *Atlas*, in Africa, which is ſo high, that it ſeems to bear the heavens; and to the fable, in which, *Atlas*, the king of this country, is ſaid to bear the heavens on his ſhoulders.

The *atlas* has no ſpiny apophyſes; becauſe the motions of the head do not turn on this vertebra, but on the ſecond. As it is obliged to turn about as often as the head moves round, had there been any ſpiny apophyſes, it would have incommoded the motion of the muſcles in the extenſion of the head.—It is alſo of a finer and firmer texture than the other vertebræ; and differs further from them, in that thoſe receive at one end, and are received at the other, whereas this receives at both extremes; for two eminences of the occiput are inſerted within its two upper cavities, which makes its articulation with the head: and, at the ſame time, two other eminences of the ſecond vertebra are received within its two lower cavities, by means of which they are articulated together.

ATLAS is alſo a title given to books of univerſal geography, containing maps of the known parts of the world; as if they were viewed from the top of that celebrated mountain, which the antients eſteemed the higheſt in the world; or rather on account of their holding the whole world like *Atlas*.

We have alſo *atlas*'s of particular parts, *ſea-atlas's*, &c.—The firſt work under this denomination was the *Great Atlas* of Blaew.

ATMOSPHERE, ATMOSPHÆRA, an appendage of our earth; conſiſting of a thin, fluid, elaſtic ſubſtance, called *air*, which ſurrounds the terraqueous globe to a conſiderable height, gravitates towards its centre, and on its ſurface is carried along with it, and partakes of all its motions both annual and diurnal.

By *atmoſphere* is uſually underſtood the whole maſs, or aſſemblage of ambient air: though, among ſome of the more accurate writers, the *atmoſphere* is reſtrained to that part of the air next the earth, which receives vapours and exhalations; and is terminated by the refraction of the ſun's light.

The further or higher ſpaces, though perhaps not wholly deſtitute of air, are ſuppoſed to be poſſeſſed by a finer ſubſtance called *æther*; and are hence denominated the *æthereal region*, or ſpace.

A late eminent author conſiders the *atmoſphere* as a large chymical veſſel, wherein the matter of all the kinds of ſublunary bodies is copiouſly floating; and thus expoſed to the continual action of that immenſe furnace the ſun; whence innumerable operations, ſublimations, ſeparations, compoſitions, digeſtions, fermentations, putrefactions, &c.

For the nature, conſtitution, properties, uſes, diverſities, &c. of the *atmoſphere*, ſee the article AIR.

We have a large apparatus of inſtruments, contrived for indicating and meaſuring the ſtate and alterations of the *atmoſphere*; as barometers, thermometers, hygrometers, manometers, anemometers, &c. See each under its proper article, BAROMETER, THERMOMETER, HYGROMETER, &c.

The *atmoſphere* inſinuates itſelf into all the vacuities of bodies; and thus becomes the great ſpring of moſt of the mutations here below; as generation, corruption, diſſolution, &c. See GENERATION, CORRUPTION, DISSOLUTION, &c.

It is one of the great diſcoveries of the modern philoſophers, that the ſeveral motions attributed by the antients to a *fuga vacui*, are really owing to the preſſure of the *atmoſphere*. To the ſame is alſo in a great meaſure owing the coheſion of bodies.

Weight of the ATMOSPHERE.—Organical bodies are peculiarly affected by this preſſure: to this, plants owe their vegetation; and animals their reſpiration, circulation, nutrition, &c.

To this alſo we owe ſeveral conſiderable alterations in the animal œconomy, with regard to health, life, diſeaſe, &c.

And hence, a calculus of the preciſe quantity of this preſſure becomes a point worthy of attention.—Our bodies, then, are equally preſſed on by the incumbent *atmoſphere*; and the weight they ſuſtain is equal to a cylinder of air, whoſe baſe is equal to the ſuperficies of our bodies.—Now, a cylinder of air, of the height of the *atmoſphere*, is known to be equal to a cylinder of water of the ſame baſe, and thirty-five feet high; or a cylinder of mercury, twenty-nine inches high; as appears from the Torricellian experiment; as alſo from the height to which water aſcends in pumps, ſiphons, &c.

Hence it follows, that every foot ſquare of the ſuperficies of our bodies, is preſſed upon by a weight of air equal to thirty-five cubical feet of water; and a cubical foot of water being found by experiment to weigh ſeventy-ſix pounds Troy weight, therefore the compaſs of a foot ſquare upon the ſuperficies of our bodies ſuſtains a quantity of air equal to 2260 pounds: for $76+35=2660$: and ſo many feet ſquare as the ſuperficies of our body contains, ſo many times 2660 pounds does that body bear.

Hence, if the ſuperficies of a man's body contain fifteen ſquare feet, which is pretty near the truth, he will ſuſtain a weight equal to 39900 pounds; for $2660+15=39900$, which is above thirteen ton for the ordinary load.

—The difference of the weight of the air which our bodies ſuſtain at one time more than at another, is alſo very great.

—The whole weight of air which preſſes upon our bodies, when the mercury is higheſt in the barometer, is equal to 39900 pounds. Whence, the difference between the greateſt and the leaſt preſſure of air upon our bodies, may be proved to be equal to 3982 pounds.

The difference of the air's weight, at different times, is readily meaſured by the different height to which the mercury is raiſed in the barometer; and the greateſt variation of the height of the mercury being three inches, a column of air of any aſſignable baſe equal to the weight of a cylinder of mercury of the ſame baſe, and of the altitude of three inches, will be taken off from the preſſure upon a body of an equal baſe, at ſuch times as the mercury is three inches lower in the barometer; ſo that every inch ſquare of the ſurface of our bodies, is preſſed upon at one time more than another, by a weight of air equal to the weight of three cubical inches of mercury.—Now a cubical foot of water being ſeventy-ſix pounds, a cubical foot of mercury is 1064 pounds$=$102144 drachms: and as 102144 drachms is to a cubical foot, or, which is all one, 1728 cubical inches, ſo are $59\frac{192}{1728}$ drachms to one cubical inch: ſo that a cubical inch of mercury being very near$=59$ drachms; and there being 144 ſquare inches in a foot ſquare, therefore a maſs of mercury of a foot ſquare$=144$ ſquare inches; and if three inches high, muſt contain 432 cubical inches of mercury, which$\times 59$ (the number of drachms in a cubical inch of mercury) makes 25488 drams.—And this weight does a foot ſquare of the ſurface of our bodies ſuſtain at one time more than at another.

Suppoſe, again, the ſuperficies of an human body$=15$ feet ſquare; then would the body ſuſtain at one time more than at another, a weight$=15\times 25488=382230$ drachms ($=47790$ ounces) $=3890\frac{1}{2}$ pound Troy.

Hence, it is ſo far from being a wonder, that we ſometimes ſuffer in our health by a change of weather, that it is the greateſt wonder we do not always ſuffer.—For when we conſider, that our bodies are ſometimes preſſed upon by near a ton and a half weight more than at another, and that this variation is often very ſudden; it is ſurpriſing that every ſuch change does not intirely break the frame of our bodies to pieces.

In effect, the veſſels of our bodies being ſo much ſtreightened, by an increaſed preſſure, would ſtagnate the blood up to the very heart, and the circulation would quite ceaſe, if nature had not wiſely contrived, that, when the reſiſtance to the circulating blood is greateſt, the impetus by which the heart contracts ſhould be ſo too.—For, upon an increaſe of the weight of the air, the lungs will be more forcibly expanded, and thereby the blood will be more intimately broken and divided, ſo that it becomes fitter for the more fluid ſecretions, ſuch as that of the nervous fluid; by which the heart will be more ſtrongly contracted. And the blood's motion towards the ſurface of the body being obſtructed, it will paſs in greater quantity to the brain, where the preſſure of the air is taken off by the cranium; upon which ſcore, alſo, more ſpirits will be ſeparated, and the heart on that account too be more enabled to carry on the circulation, through all paſſable canals; whilſt ſome others, towards the ſurface, are obſtructed.

The moſt conſiderable alteration made in the blood, upon the air's greater or leſſer preſſure on the ſurface of our bodies, is its rendering the blood more or leſs compact, and making it croud into a leſs, or expand into a greater ſpace, in the veſſels which it enters.—For the air contained in the blood always keeps itſelf in æquilibrio with the external air that preſſes upon our bodies; and this it does by a conſtant niſus to unbend itſelf, which is always proportionable to the compreſſing weight by which it was bent: ſo that if the compreſſion or weight of the circumambient air be ever ſo little abated, the air contained within the blood unfolds its ſpring, and forces the blood to take up a larger ſpace than it did before.

The reaſon we are not ſenſible of this preſſure is well explained by Borellus, *De mort. nat. a grav. fac. prop.* 29, &c. —After ſhewing that ſand, perfectly rammed in a hard veſſel, is not capable, by any means, of being penetrated or parted, not even by a wedge; and likewiſe that water, contained in a bladder compreſſed equally on all ſides, cannot yield or give way in any part; he proceeds, 'In like manner, within the ſkin of an animal are contained a diverſity of parts, ſome hard, as bones; others ſoft, as muſcles, nerves, membranes, &c. others fluid, as blood, fat, &c. Now it is not poſſible the bones ſhould be broke or diſplaced in the body, unleſs the weight lay heavier on one part than on another, as we ſometimes ſee in porters. If the preſſure be ſubdivided, ſo that it lie equally all around, upwards, downwards, and ſideways, and no part of the ſkin be exempt therefrom; it is evidently impoſſible any fracture or luxation ſhould follow. The ſame may be obſerved of the muſcles and nerves; which, though ſoft, yet being compoſed of ſolid fibres, do mutually ſuſtain each other, and reſiſt the common weight. The ſame holds of blood, and the other humours; and as water does not admit any manifeſt condenſation, ſo the animal humours contained in their veſſels may ſuffer an attrition from an impulſe made in one or more particular places, but can never be forced out of their veſſels by an univerſal compreſſion.—It follows, that as none of the parts undergo either ſeparation, luxation, contuſion, or any other change of ſitu tion; it is impoſſible any ſenſe of pain ſhould enſue, which can only be the effect of a ſolution of continuity.' This is confirmed by what we ſee in divers, &c.

The ſame is farther confirmed by Mr. Boyle; who including a young frog in a veſſel half full of water, and intruding ſo much air as that the water may ſuſtain eight times the weight it otherwiſe would; yet the animalcule, notwithſtanding the great tenderneſs of its ſkin, did not ſeem to be at all affected thereby.

For the effects of the removal of the preſſure of the *Atmoſphere*, ſee AIR-*pump*.—For the cauſe of the variations in the weight and preſſure of the *Atmoſphere*, ſee BAROMETER.

Height of the ATMOSPHERE.—The height of the *Atmoſphere* is a point about which the modern naturaliſts have been very ſolicitous.—Had not the air an elaſtic power, but were it every-where of the ſame denſity, from the ſurface of the earth to the extreme limit of the *Atmoſphere*, like water, which is equally denſe at all depths; it being above obſerved, that the weight of the column of air, reaching to the top of the *Atmoſphere*, is equal to the weight of the mercury contained in the barometer; and the proportion of weight likewiſe being known between equal bulks of air and mercury; it were eaſy to find the height of ſuch column, and conſequently that of the *Atmoſphere* itſelf.—For a column of air, one inch high, being to an equal column of mercury as 1 to 10800; it is evident, that 10800 ſuch columns of air, that is, a column 900 foot high, is equal in weight to one inch of mercury: and conſequently the 30 inches of mercury, ſuſtained in the barometer, require a column of air 27000 foot high; on which footing, the height of the *Atmoſphere* would only be 27000 foot, or little more than five Engliſh miles high.

But the air, by its elaſtic property, being liable to expand and contract; and it being found by repeated experiments in England, France, and Italy, that the ſpaces it takes up, when compreſſed by different weights, are reciprocally proportional to thoſe weights themſelves; or, that the air takes up the leſs ſpace, the more it is preſſed: it follows, that the air in the upper regions of the *Atmoſphere*, where the weight is ſo much leſs, muſt be much rarer than nearer the ſurface of the earth; and, conſequently, that the height of the *Atmoſphere* muſt be much greater than is above aſſigned.

If we ſuppoſe the height of the whole *Atmoſphere* divided into innumerable equal parts; the denſity of the air in each of the ſaid parts being as its quantity, and the weight of the *Atmoſphere* being alſo as the quantity of the whole incumbent air; it is evident, the weight of the incumbent air is every-where as the quantity of air contained in the ſubjacent part, which makes a difference between every two contiguous parts of incumbent air.—Now, we have a theorem in geometry, that where the differences of magnitudes are geometrically proportionable to the magnitudes themſelves, thoſe magnitudes are in continual arithmetical proportion: wherefore if, according to the ſuppoſition, the altitude of the air, by the continual addition of the new parts into which it is divided, do increaſe in a continual arithmetical proportion; its denſity will be diminiſhed, or, which amounts to the ſame, its gravity increaſed, in continual geometrical proportion.

From ſuch a ſeries it is eaſy, by making two or three barometrical obſervations of the rarity of the air at two or three different heights, to find its rarity at any other height, or the height correſponding to any rarity; and conſequently the altitude of the whole *Atmoſphere*, ſuppoſing the utmoſt degree of rarity known, beyond which the air cannot go. See the articles BAROMETER, SERIES, PROGRESSION, &c. See alſo Greg. *aſtron. phyſ. geom. leg.* 5. *prop.* 3. and Halley in *Philoſ. Tranſ.* No 181.

It muſt not be here omitted, that ſome obſervations made by Caſſini, and his aſſociates, ſeem to render this method precarious.—In continuing the meridian line of the obſervatory at Paris, they meaſured the altitudes of ſeveral mountains with great accuracy; noting the height of the barometer at the top of each; and found, that the rarefactions of the air, as you aſcend from the level of the earth, are much greater than they ought to be, according to this proportion.

Suſpecting, therefore, the juſtneſs of the experiments, the Royal Academy made divers others, under great dilatations of air, far exceeding the rarities found on the tops of the mountains; the reſult whereof was, that they all exactly anſwered the proportion of the incumbent weights. Whence it ſhould follow, that the higher air about the tops of mountains is of a different nature, and obſerves a different law, from that near the earth.

The reaſon hereof may be owing to the great quantity of groſs vapours and exhalations here, more than there; which vapours being leſs elaſtic, and not capable of ſo much rarefaction as the pure air above; the rarefactions of the pure air increaſe in a greater ratio than the weights diminiſh.—M. Fontenelle, however, from ſome experiments made by M. De la Hire, accounts for the phænomenon in a different manner; alleging, that the elaſtic power of air is increaſed by the admixture of humidity therewith; and conſequently, that the air near the tops of mountains, being moiſter than that below, becomes thereby more elaſtic, and rarefies in a greater ratio than naturally and in a drier ſtate it would.—But Dr. Jurin ſhews, that the experiments produced to ſupport this ſyſtem are by no means concluſive. *Append. ad Varenii geograph.*

Be this as it will, the rarities of the air at different heights proving not to bear any conſtant proportion to the weights wherewith they are preſſed; experiments made with barometers at the feet and tops of mountains cannot give the height of the *Atmoſphere*: ſince our obſervations are all made near the earth; whereas the greater part of the *Atmoſphere* is far beyond; and the farther from us, the farther does it ſeem to recede from the nature and laws of ours.—M. De la Hire, therefore, after Kepler, has recourſe to the more antient, ſimple, and ſecure way, of aſcertaining the height of the *Atmoſphere*; viz. from the conſideration of the crepuſcula.

It is allowed, by aſtronomers, that when the ſun is 18° below the horizon, we begin or ceaſe to ſee the twilight: now the ray whereby we ſee it can be no other than a horizontal line, or a tangent to the earth in the place where the obſerver is; but this ray cannot come directly from the ſun, which is under the horizon; and muſt therefore be a ray reflected to us by the laſt inner and concave ſurface of the *Atmoſphere*. We are to ſuppoſe that the ſun, when 18° below the horizon, emits a ray which is a tangent to the earth, and ſtrikes upon this laſt ſurface of the *Atmoſphere*, and is thence reflected to our eye, being ſtill a tangent, and horizontal.—If there were no *Atmoſphere*, there would be no crepuſculum; and conſequently, if the *Atmoſphere* were not ſo high as it is, the crepuſculum would begin and end when the ſun is at a leſs diſtance from the horizon than 18°, and contrarily.—Hence we gather, that the largeneſs of the arch, by which the ſun is depreſſed when the crepuſculum begins or ends, determines the height of the *Atmoſphere*. We are to note, however, that

32 muſt be ſubtracted from the arch of 18°, for the refraction which raiſes the ſun ſo much higher than he would be; and 16′ more for the height of the upper limb of the ſun, which is ſuppoſed to ſend the ray, above his centre, which is ſuppoſed to be 18° low. The remaining arch, therefore, which determinates the height of the *Atmoſphere*, is only 17° 12′.

Two rays, one direct, and the other reflected, but both tangents to the earth, muſt neceſſarily meet in the *Atmoſphere* at the point of reflexion, and comprehend an arch between them of 17° 12′, whereof they are tangents.—Hence it follows, from the nature of the circle, that a line drawn from the centre of the earth, and cutting the arch in two, will go to the point of concurrence of thoſe two rays; and as it is eaſy finding the exceſs of this line above the ſemidiameter of the earth, which is known, it is eaſy to find the height of the *Atmoſphere*, which is only that exceſs.—On this principle M. De la Hire diſcovers the height of the *Atmoſphere* to be 37223 fathoms, or near 17 French leagues. The ſame method was alſo made uſe of by Kepler, who only rejected it, becauſe it gave the height of the *Atmoſphere* 20 times greater than he otherwiſe allowed it.

It muſt be added, that in this calculus the direct and reflected rays are ſuppoſed to be right lines; whereas, in fact, they are curves, formed by the perpetual refraction the rays undergo in preſſing through a ſeries of different denſities of air.—Computing then upon them, as two ſimilar curves; or rather as a ſingle curve, one extreme whereof is a tangent to the earth; its vertex, equally diſtant from both the extremes, determines the height of the *Atmoſphere*; which, therefore, will be found ſomewhat lower than in the former caſe; the point of concurrence of two right lines, which are here only tangents to the curve, the one at one end, and the other at the other, being higher than the vertex of the curve. On this footing, M. De la Hire finds the *Atmoſphere* 35362 fathoms, or 16 leagues. *Hiſt. de l' Acad. Roy. des Scienc. an.* 1713. *p.* 71. See the articles REFRACTION, CREPUSCULUM, *&c.*

Lunar **ATMOSPHERE.**—That the moon is ſurrounded, like the earth, with a changeable *Atmoſphere*, ſee evinced under the article MOON.

The reality of the *Atmoſpheres* of the other planets, ſee alſo under the article PLANET.

For the *Atmoſpheres* of comets, and the ſun, ſee COMET, and SUN.—See alſo MACULÆ.

ATMOSPHERE *of the Sun.* See SUN, and ZODIACAL *Light.*

ATMOSPHERE *of ſolid* or *conſiſtent bodies* is a kind of ſphere formed by the effluvia, or minute corpuſcles, emitted from them.

Mr. Boyle endeavours to ſhew that all bodies, even the hardeſt and moſt coherent, as gems, *&c.* have their *Atmoſpheres.* See GEM.

ATOM*, Ατομος, in philoſophy, a part, or particle of matter, ſo minute as to be indiviſible.

* The word is Greek, *ατομος*; formed of the privative *α*, and τεμνω, I cut, I divide.

Atoms are properly the *minima naturæ*, the laſt or ultimate particles into which bodies are diviſible; and are conceived as the firſt rudiments, or component parts of all phyſical magnitude; or the pre-exiſtent and incorruptible matter whereof bodies were formed.

The notion of *Atoms* ariſes hence, that matter is not diviſible *in infinitum.*

And hence the Peripatetics are led to deny the reality of *Atoms*, together with that of mathematical points: an *Atom*, ſay they, either has parts, or it has none: if it have none, it is a mere mathematical point; if it have, then do theſe parts alſo conſiſt of others, and ſo on to infinity.

But this is to recede from the genuine character of *Atoms*, which are not eſteemed indiviſible, becauſe of their want of bigneſs, or parts (for all phyſical magnitude muſt have three dimenſions, length, breadth, and thickneſs; and all extenſion is diviſible); but they are indiviſible on account of their ſolidity, hardneſs, and impenetrability, which preclude all diviſion, and leave no vacancy for the admiſſion of any foreign force to ſeparate or diſunite them.

As *Atoms* are the firſt matter, it is neceſſary they ſhould be indiſſolvible, in order to their being incorruptible.—Sir Iſaac Newton adds, that it is alſo required they be immutable, in order to the world's continuing in the ſame ſtate, and bodies being of the ſame nature now as formerly.

Hence the antients were alſo led to maintain *Atoms* eternal; for that what is immutable, muſt be eternal.

They alſo added gravity, and, in conſequence thereof, motion, to their *Atoms*: and further, obſerving that *Atoms* thus falling perpendicularly could not join or unite together; they ſuperadded a fortuitous or ſide motion, and furniſhed them with certain hooked parts, in order to enable them to catch and hang the better together.—And from a caſual or fortuitous jumble of theſe hamous *Atoms*, they ſuppoſed the whole univerſe to be formed.

ATOMICAL *Philoſophy* denotes the doctrine of atoms; or a method of accounting for the origin and formation of all things, from the ſuppoſition of atoms, endued with gravity and motion.

The *atomical* philoſophy was firſt broached and taught by Moſchus, a Sidonian, ſome time before the Trojan war.—Leucippus and Democritus probably learnt it from him.—But it was moſt cultivated and improved by Epicurus; whence it became alſo denominated the *Epicurean* philoſophy. See EPICUREAN.

It has been ſince retrieved by Gaſſendus, and others; and is now eſpouſed and adhered to by a great part of the philoſophical world, under the denomination of the *corpuſcular philoſophy.* See CORPUSCULAR *Philoſophy.*

ATONEMENT. See, EXPIATION, LUSTRATION, PROPITIATION, and SACRIFICE.

ATONY*, Ατονια, in medicine, *&c.* a want of tone or tenſion; or a relaxation of the ſolids of a human body; occaſioning a loſs of ſtrength, faintings, *&c.* See TENSION, SOLID, FIBRE, RELAXATION, *&c.*

* The word is compounded of the privative *α*, and τονος, tone; of τεινω, *tendo*, I ſtretch.

ATRABILARIÆ *Capſulæ.* See CAPSULÆ.

ATRA BILIS, in the antient medicine, black or aduſt bile.

Atra bilis was one of the great humours of the antient phyſicians; whence aroſe the *atrabilary*, one of their temperaments; anſwering to what we call *melancholy.* See HUMOUR, and TEMPERAMENT.

ATROPHY*, Ατροφια, a diſeaſe wherein the body, or ſome of its parts, do not receive the neceſſary nutriment, but dwindle or waſte inceſſantly.

* The word is compounded of the privative particle *α*, and τρεφω, I feed, nouriſh; *q. d.* privation of nouriſhment.

Under *Atrophy* may be reduced what we commonly call *conſumptions*, *phthiſes*, &c. An *Atrophy* is natural in old age, and this is called *Atrophia ſenilis.*

ATTACHING*, or ATTACHMENT, in law, the taking or apprehending a perſon or thing either by commandment, or writ.

* The word is formed of the French *attacher*, to faſten, tye; and that from the corrupt Latin *attachiare*, of *attexere*, to weave to; or rather, as others think, from the Celtic *tach*, a nail; and *tacha*, to nail.

Lambard makes this difference between an *arreſt* and an *attachment*; that an arreſt proceeds out of an inferior court by precept only, and an *attachment* out of a higher court, either by precept, or writ; and that a precept to arreſt hath theſe formal words, *duci facias*, &c. and a writ of *attachment* theſe, *præcipimus tibi quod attachies talem, & habeas eum coram nobis.*

By this it appears, that he who arreſts carries the party arreſted to another higher perſon, to be diſpoſed of forthwith; whereas he that attaches keeps the party attached, and preſents him in court at the day aſſigned in the *attachment.*

There is this further difference, that an arreſt lies only upon the body of a man; and an *attachment* ſometimes on his goods too: for a man may be attached by an hundred ſheep.

ATTACHMENT *by writ* differs from *diſtreſs* in this, that an *attachment* does not reach lands, as a diſtreſs does; and that a diſtreſs does not touch the body, which an *attachment* does.—Yet the two are frequently confounded together.

In the moſt common uſe, an *attachment* is an apprehenſion of a man by his body, to bring him to anſwer the action of the plaintiff.—A diſtreſs, with a writ, is the taking of a man; a diſtreſs, without a writ, is the taking of a man's goods for ſome real cauſe; as rent, ſervice, *&c.*

ATTACHMENT *out of the Chancery* is had of courſe, upon an affidavit made that the defendant was ſerved with a ſubpœna, and appears not; or it iſſueth upon not performing ſome order or decree.

After the return of this *attachment* by the ſheriff, *quod non eſt inventus in balliva ſua*; another *attachment*, with proclamation, iſſues: and if he appear not thereupon, a commiſſion of rebellion.

ATTACHMENT *of the Foreſt* is one of the three courts held in the foreſt.

The loweſt court is called the court of *attachment*, or wood-mote-court, the mean ſwane-mote, the higheſt, the juſtice in eyre's ſeat.

The court of *attachments* ſeems ſo called, becauſe the verderors of the foreſt have therein no other authority, but to receive the *attachments* of offenders againſt vert and veniſon taken by the foreſters, and to inrol them, that they may be preſented or puniſhed at the next juſtice-ſeat.

This *attachment* is by three means: by goods and chattels; by body, pledges, and mainprize; or by body only.—This court is held every forty days throughout the year; whence it is alſo denominated *forty days court.*

ATTACHMENT *of Privilege* is, by virtue of a man's privilege, to call another to that court whereto he himſelf belongs, and in reſpect whereof he is privileged to anſwer ſome action.

Foreign **ATTACHMENT** is an *attachment* of goods or money found within a liberty or city, to ſatisfy ſome creditor within ſuch city or liberty.

By the cuſtom of ſome places, particularly of London, a man may attach money or goods in the hands of a ſtranger: as, if A. owes B. 10 *l.* and C. owes A. 10 *l.* B. may attach the 10 *l.* in the hands of C. to ſatisfy himſelf.

ATTACHIAMENTA *Bonorum*, in our antient law-books, denotes a diſtreſs taken upon the goods or chattels of any perſon ſued for a perſonal eſtate, or debt, by the legal attachiators or bailiffs, as a ſecurity to anſwer the action.

ATTACHIAMENTA *de ſpinis & boſco* ſignifies an antient privilege granted to the other officers of foreſts, to take to their own uſe, thorns, bruſh, and windfalls, within their own precincts or liberties.

ATTACK, an attempt upon any perſon or thing; or the act of beginning a combat or diſpute.

ATTACK, in the military art, is an attempt or engagement to force a poſt, a body of troops, or the like.

We ſay to begin, to make, ſuſtain an *Attack*, &c. Several authors have written of the art of attacking and defending. See DEFENCE.

ATTACK *of a ſiege* is an effort made by the beſiegers with trenches, mines, galleries, *&c.* to make themſelves maſters of a fortreſs, in *attacking* one of its ſides. See SIEGE, and FORTIFICATION.

'Tis a rule always to attack on the weakeſt ſide; unleſs there be ſuperior reaſons for the contrary—as was the caſe at the ſiege of Liſle: where the part where prince Eugene made his *Attack* was the ſtrongeſt in the whole place. *Savin, Nouv. Ecol. Milit. p.* 338, *ſeq.*

In ſieges there are ſometimes one, ſometimes two, or at moſt three *Attacks.*—The *Attacks*, where they are ſeveral, ought to have a communication.

Falſe **ATTACK** is that which is not ſo vigorouſly proſecuted; ſerving only to make a diverſion among the beſieged, and to oblige them to divide their forces, that the true *Attack* may be carried on with greater ſucceſs.

To **ATTACK** *in flank* is to *attack* both ſides of the baſtion.

Line of **ATTACK**. See the article LINE.

ATTAINDER, in law, is when a man has committed felony, treaſon, or other crime, and judgment is paſſed upon him for the ſame.

The children of a perſon attainted of treaſon cannot be heirs to him, or any other anceſtor; and, if he were noble before, his poſterity are hereby degraded, and made baſe: nor can this corruption of blood be ſalved but by an act of parliament, unleſs the judgment be reverſed by a writ of error.

Our antient laws make this difference between *Attainder* and *conviction*, that a man was ſaid to be convicted preſently upon the verdict; but not attainted till it appeared he was no clerk, or being a clerk, and demanded by his ordinary, could not purge himſelf.—Add, that attainder is more extenſive than conviction; conviction being only by the jury, whereas *Attainder* may alſo be by outlawry, confeſſion of the party, or the like.

A man is attainted two ways; by appearance, or by proceſs.

Attainder by appearance is either by confeſſion, by battle, or by verdict.—Confeſſion, whereof attaint grows, is twofold; one at the bar before the judges, when the priſoner, upon his indictment read, owns himſelf guilty, never putting himſelf on his jury. The other is before the coroner, in ſanctuary; where he, upon his confeſſion, was in former times conſtrained to abjure the realm; which is alſo called *Attainder by abjuration.*

Attainder by battle is when the party appealed by another, chooſing rather to try the truth by combat than by jury, is vanquiſhed.

Attainder by proceſs, otherwiſe called *attainder by default*, or *attainder by outlawry*, is where a party flies, or does not appear after being five times publicly called in the county-court; and at laſt, upon his default, is pronounced or returned outlawed.

Attainder by verdict is when the priſoner at the bar, anſwering not guilty to the indictment, hath an inqueſt of life and death paſſed on him, and is by the verdict of the jury pronounced guilty.

Bill of **ATTAINDER** is a bill brought into parliament for attainting, condemning, and executing a perſon for high-treaſon.

ATTAINT, ATTINCTA, in law, a writ which lies after judgment, againſt a jury that hath given a falſe verdict, contrary to the evidence, in any court of record; be the action real or perſonal, if the debt or damages exceed 40 *s.*

If the verdict be found falſe, the judgment antiently was, that the jurors meadows ſhould be plowed up, their houſes broken down, their woods grubbed up, and their lands and tenements forfeited to the king.

If it paſſed againſt him that brought the *Attaint*, he ſhall be impriſoned, and grievouſly ranſomed at the king's will.

ATTAINT, among farriers, ſignifies a knock or hurt in a horſe's leg; proceeding either from a blow with another horſe's foot, or from an over-reach in froſty weather, when a horſe, being rough-ſhod, or having ſhoes with long calkers, ſtrikes his hinder feet againſt his fore-leg. The farriers diſtinguiſh *upper Attaints*, given by the toe of the hind-foot upon the ſinew of the fore-leg.—And *nether Attaints*, or over-reachers on the paſtern-joint, which are little bladders like wind-galls, coming either by a wrench, a ſtrain, an over-reach, or the like. The uſual place is in the heel or fruſh.

ATTAINTED, ATTAINTUS, or ATTINCTUS, in law, is uſed for a perſon found guilty of ſome crime or offence, particularly of felony or treaſon, by due courſe of law.

Yet a man is ſaid to be *Attainted* of perjury, *Attainted* of diſſeiſin; and ſo it is uſed in French: as, *eſtre atteint, & vaincu en aucun cas*, is to be caſt in any cauſe.

ATTELLANÆ. See ATELLANÆ.

ATTENDANT, or ATTENDENT, in a general ſenſe. See ASSISTANT, RETINUE, and SATELLITES.

ATTENDANT, ATTENDENS, in law, ſignifies one that owes duty or ſervice to another, or depends in ſome manner upon him.

Thus if there be lord meſne and tenant; and the tenant hold of the meſne by a peny; and the meſne hold over by two-pence: if the meſne releaſe to the tenant all his right in the land, and the tenant die, his wife ſhall be endowed of the land, and ſhall be *Attendant* to the heir, of the third part of the peny, not of the third part of the two-pence; ſhe being to be endowed of the beſt poſſeſſion of her huſband.

Where the wife is endowed by the guardian, ſhe ſhall be *Attendant* to the guardian, and to the heir at his full age.

ATTENTION *, ATTENTIO, a due application of the ear, or the mind, to any thing ſaid, or done, in order to acquire a knowlege thereof.

* The word is compounded of *ad*, to; and *tenſo*, of *tendo*, I ſtretch.

Attention of mind is not properly an act of the underſtanding, but rather of the will, by which it calls the underſtanding from the conſideration of other objects, and directs it to the thing in hand.

Attention, in reſpect of hearing, is the ſtretching or ſtraining the membrana tympani, ſo as to make it more ſuſceptible of ſounds, and better prepared to catch even a feeble agitation of the air. Or it is the adjuſting the tenſion of that membrane to the degree of loudneſs or lowneſs of the ſound we are attentive to.

ATTENUANTS, or ATTENUATING *medicines*, are ſuch as ſubtilize and break the humours into finer parts; and thus diſpoſe them for motion, circulation, excretion, *&c.*

Attenuants ſtand oppoſed to *incraſſants*, or thickeners, medicines which condenſe, inſpiſſate, *&c.*

ATTENUATION *, ATTENUATIO, the act of attenuating; that is, of making any fluid thinner, and leſs conſiſtent, than it was before.

* The word is compounded of the Latin *ad*, and *tenuis*, thin, ſlender, weak.

Attenuation is defined more generally by Chauvin, the dividing or ſeparating of the minute parts of any body, which before, by their mutual nexus or implication, formed a more continuous maſs.—Accordingly, among alchymiſts, we ſometimes find the word uſed for pulverization, or the act of reducing a body into an impalpable powder, by grinding, pounding, or the like.

ATTESTATION *, the giving teſtimony, or evidence, of the truth of any thing; eſpecially in writing.

* The word is compounded of the Latin *ad*, to; and *teſtis*, witneſs.

Miracles need be well atteſted, to gain credit.

ATTIC, ATTICUS, ſomething relating to Attica, or the city of Athens.—In matters of philology we uſe, *Attic* ſalt, *ſales Attici*, meaning a delicate, poignant kind of wit and humour, peculiar to the Athenian writers.—*Attic* witneſs, *Atticus teſtis*, was a witneſs incapable of corruption: ſo an *Attic* muſe was an excellent one, *&c.*

ATTIC is alſo uſed in architecture for a kind of building, wherein there is no roof or covering to be ſeen; thus called becauſe uſual at Athens.

ATTIC, or ATTIC *Order*, is alſo a kind of little order, after the manner of a pedeſtal, raiſed upon another larger order; by way of crowning, or to finiſh the building.—See *Tab. Archit. fig.* 35.

An *Attic* is ſometimes alſo uſed for the conveniency of having a wardrobe, or the like; and inſtead of regular columns, has only pilaſters of a particular form; and ſometimes no pilaſters at all.

There are alſo *Attics* uſed for high altars.—The order takes its name from Athens, where it was firſt practiſed.

ATTIC *of a roof* is a little ſtory or pedeſtal, either of ſtone or wood covered with lead, ſerving as a kind of parapet to a terrace, platform, or the like.

ATTIC *Baſe* is a peculiar kind of baſe uſed by the antient architects, in the Ionic order; and by Palladio, and others of the moderns, in the Doric.

The *Attic* is the moſt beautiful of all the baſes. See BASE.

ATTIC *continued* is that which encompaſſes the whole circumference of a building, without any interruption; following all the jets, the returns of the pavilions, *&c.*

ATTIC *interpoſed* is that ſituate between two tall ſtories, ſometimes adorned with columns, or pilaſters.

ATTIRE, in botany, is uſed by ſome to denote the third part or diviſion of the flower of a plant; the other two being the empalement, and the foliation.

The *Attire* is of two kinds; ſeminiform, and florid.—The ſeminiform *Attire* conſiſts of two parts; chives or ſtamina; and ſummits, or apices; one upon each ſtamen. See STAMINA, and APICES.

The florid *Attire* is uſually called the *thrums*, as in the flowers of marigold, tanſy, *&c.*—Thoſe thrums are called *ſuits*, which conſiſt of two, but moſt times of three pieces.—And the outer part of the ſuit is the floret, whoſe body is divided at the top, like a cowſlip-flower, into five parts, or diſtinct leaves.

ATTIRE, in hunting, denotes the head or horns of a deer. See HEAD.

The *Attire* of a ſtag, if perfect, conſiſts of bur, pearls, beam, gutters, antler, ſur-antler, royal, ſur-royal, and croches.—Of a buck, of the bur, beam, brow-antler; advancer, palm, and ſpellers.

ATTITUDE *, in painting and ſculpture, the poſture, or geſture, of a figure, or ſtatue; or the diſpoſition of its parts, by which we diſcover the action it is engaged in, and the very ſentiment ſuppoſed to be in the mind of the perſon repreſented.

* The word comes from the Italian *attitudine*, which ſignifies the ſame; and that from the Latin *aptitudo*, fitneſs.

The repreſenting of this action and ſentiment in a ſtrong and lively manner makes what they call a *good expreſſion*.

ATTOLLENS *, in anatomy, a name common to ſeveral muſcles, whoſe office or action is to raiſe the parts they belong to.

* The word is compounded of the Latin *ad*, to; and *tollo*, I raiſe, I lift.

The *Attollents*, or *attollent* muſcles, are otherwiſe called *levators* and *elevators*.

ATTORNEY *, ATTURNATUS, or ATTORNATUS, in law, a perſon appointed by another to do ſomething in his ſtead; particularly to ſolicit and carry on a law-ſuit.

* The word is compounded of the Latin *ad*, to; and the French *tourner*, to turn; *q. d.* to turn a buſineſs over to another.—The antient Latin name, according to Bracton, is *reſponſalis*.

Attorneys, in common law, are much the ſame with procurators, proctors, or ſynodics, in the civil law.

Attorneys are properly thoſe who ſue out writs or proceſs, or commence, carry on, and defend actions, or other proceedings, in the names of other perſons, in any of the courts of common law.—They are diſtinquiſhed from *ſolicitors*, who do the like buſineſs in courts of equity; as the chancery, equity-court in the exchequer, chamber-court of the duchy, or the like.

None are to be admitted to act either as the one or the other, without having ſerved a clerkſhip of five years, taken the oath provided in that caſe, and been enrolled.—Judges of the ſaid courts of law are to examine into the capacity of the *Attorneys*; and thoſe of the courts of equity, into the capacity of the ſolicitors. 2 *G.* II. *c.* 23.

Antiently, thoſe of authority in courts had it in their power whether or no to ſuffer men to appear or ſue by another than themſelves; as appears from Fitz. *de Nat. Brev.* in the writ, *Dedimus poſtatem de atturnato faciendo*; where it appears, that men were driven to procure the king's writs, or letters patent, to appoint *Attorneys* for them: but it is ſince provided by parliament, that it ſhall be lawful to appoint an *Attorney* without any circuition; as appears by ſeveral ſtatutes, 20 *Hen.* III. *cap.* 10.—6 *Edw.* I. *cap.* 8. *&c.*

There is a great diverſity of writs in the table of the regiſter, wherein the king commands the judges to admit of *Attorneys*; whereby there aroſe ſo many unſkilful *Attorneys*, and ſo many miſchiefs thereby, that for reſtraining them it was enacted, 4 *Hen.* IV. *cap.* 18. that the judges ſhould examine them, and diſplace the unſkilful; and again, 33 *Hen.* VI. *cap.* 7. that there ſhould be but a certain number of *Attorneys* in Norfolk and Suffolk.

Attorney is either *general* or *ſpecial*.

ATTORNEY *General* is he who is appointed to manage the affairs, or ſuits of a community; or rather he who is appointed to conduct all the ſuits in general, whether of a community, or a particular perſon.

Such is the *Attorney General* of the king, who is the ſame as the *procurator Cæſaris* in the Roman empire. See PROCURATOR.

To him come warrants for making out patents, pardons, *&c.*

He is at the head of managing all law-affairs of the crown, either in criminal proſecutions, or otherwiſe; eſpecially in matters of treaſon, ſedition, *&c.* In all courts he pleads within the bar; but, when a privy counſellor, he cannot plead in any court, but on the king's affairs, without obtaining a privy-ſeal for ſo doing.

ATTORNEY *Special* is he who is employed in one or more cauſes particularly ſpecified.

Attorneys are alſo diſtinguiſhed, with reſpect to the courts, into *Attorneys at large*, and *Attorneys ſpecial*, belonging to this or that court only.

ATTORNEY *of the duchy court of Lancaſter*, *Atturnatus curiæ ducatus Lancaſtriæ*, is the ſecond officer in that court; being there, for his ſkill in law, placed as aſſeſſor to the chancellor of the court.

Letter of ATTORNEY. } See the articles { LETTER.
Warrant of ATTORNEY. } See the articles { WARRANT.

ATTOURNMENT, or ATTORNMENT, in law, a tranſferring of duty and ſervice to another lord; or an acknowlegement which a tenant makes of homage and ſervice to a new lord.

Thus, when one is tenant for life, and he in reverſion grants his right to another, it is neceſſary the tenant for life agree thereto, which is called *Attournment*; and without which nothing paſſes by the grant.—If the grant be by fine, in court of record, the tenant ſhall be compelled to *attourn*. Stat. 27 *H.* VIII.

The words uſed in *Attournment* are theſe: *I agree to the grant made to you*; or, more commonly, *I attourn to you by force of the ſame grant*; or, *I become your tenant*; *or deliver to the grantee a peny by way of Attournment.* Littl. *lib.* 3.

Attournment is either by word, or by act; voluntary, or compulſory; by the writ *Per quæ ſervitia*, or by diſtreſs.—It may be made to the lord himſelf, or to his ſteward, in court.

There is alſo *Attournment* in deed, and *Attournment* in law.

Attournment in law is an act, which though it be not an expreſs *Attournment*; yet, in intendment of law, is of equal force. *Coke on Littl.*

ATTRACTION *, ATTRACTIO, or TRACTIO, in mechanics, the act of a moving power, whereby a moveable is *drawn*, or brought nearer to the mover.

* The word is compounded of *ad*, to; and *traho*, I draw.

As action and re-action are always equal, and contrary; it follows, that, in all *Attraction*, the mover is drawn towards the moveable, as much as the moveable towards the mover.

ATTRACTION, or ATTRACTIVE *force*, in the antient phyſics, denotes a natural power ſuppoſed to be inherent in certain bodies, whereby they act on other diſtant bodies, and draw them toward themſelves.

This, the Peripatetics call the *motion of Attraction*; and on many occaſions, *ſuction*; and produce various inſtances where they ſuppoſe it to obtain.—Thus the air, in reſpiration, is taken in, according to them, by *Attraction* of ſuction; ſo is the ſmoak through a pipe of tobacco; and the milk out of the mother's breaſts: thus alſo it is, that the blood and humours riſe in a cupping-glaſs, water in a pump, and ſmoak in chimneys; ſo vapours and exhalations are attracted by the ſun, iron by the magnet, ſtraws by amber, and electrical bodies, *&c.*

But the later philoſophers generally explode the notion of *Attraction*; aſſerting, that a body cannot act where it is not; and that all motion is performed by mere impulſion.—Accordingly, moſt of the effects which the antients attributed to this unknown power of *Attraction*, the moderns have diſcovered to be owing to more ſenſible and obvious cauſes; particularly the preſſure of the air.

To this are owing the phænomena of inſpiration, ſmoaking, ſucking, cupping-glaſſes, pumps, vapours, exhalations, *&c.*

For the phænomena of magnetical and electrical *Attraction*, ſee MAGNETISM, and ELECTRICITY.

The power oppoſite to *Attraction* is called *repulſion*; which is alſo argued to have ſome place in natural things. See REPULSION.

ATTRACTION, or ATTRACTIVE *power*, is more particularly uſed, in the Newtonian philoſophy, for a power, or principle, whereby all bodies, and the particles of all bodies, mutually tend towards each other.—Or, more juſtly, *Attraction* is the effect of ſuch power, whereby every particle of matter tends towards every other particle.

Attraction, its laws, phænomena, *&c.* make the great hinge of Sir Iſaac Newton's philoſophy. See NEWTONIAN *Philoſophy*.

It muſt be obſerved, that though the great author makes uſe of the word *Attraction*, in common with the ſchool philoſophers; yet he very ſtudiouſly diſtinguiſhes between the ideas.—The antient *Attraction* was ſuppoſed a kind of quality, inherent in certain bodies themſelves; and ariſing from their particular or ſpecific forms.

The Newtonian *attraction* is a more indefinite principle; denoting, not any particular kind or manner of action, nor the phyſical cauſe of ſuch action; but only a tendency in the general, a *conatus accedendi*; to whatever cauſe, phyſical or metaphyſical, ſuch effect be owing: whether to a power inherent in the bodies themſelves, or to the impulſe of an external agent.

Accordingly, that author, in his *Philoſoph. Nat. Prin. Math.* notes, " that he uſes the words *attraction*, *impulſe*, and *propenſion* to the centre, indifferently; and cautions the reader " not to imagine, that by *attraction* he expreſſes the modus " of the action, or the efficient cauſe thereof; as if there " were any proper powers in the centres, which in reality " are only mathematical points; or, as if centres could attract." *Lib.* I. *p.* 5.—So he " conſiders centripetal powers " as *attractions*; though, phyſically ſpeaking, it were perhaps more juſt to call them impulſes." *Ib. p.* 147. He adds, " that what he calls *attraction* may poſſibly be effected by impulſe, though not a common or corporeal impulſe; or after ſome other manner unknown to us." *Optic. p.* 322.

Attraction, if conſidered as a quality ariſing from the ſpecific forms of bodies, ought, together with ſympathy, antipathy, and the whole tribe of occult qualities, to be exploded. But when we have ſet theſe aſide, there will remain innumerable phænomena of nature, and particularly the gravity or weight of bodies, or their tendency to a centre, which argue a principle of action ſeemingly diſtinct from impulſe; where, at leaſt, there is no ſenſible impulſion concerned. Nay, what is more, this action, in ſome reſpects, differs from all impulſion we know of; impulſe being always found to act in proportion to the ſurfaces of bodies; whereas gravity acts according to their ſolid content, and conſequently muſt ariſe from ſome cauſe that penetrates or pervades the whole ſubſtance thereof.—This unknown principle (unknown, we mean, in reſpect of its cauſe; for its phænomena and effects are moſt obvious), with all the ſpecies and modifications thereof, we call *attraction*; which is a general name, under which all mutual tendencies, where no phyſical impulſe appears, and which cannot, therefore, be accounted for from any known laws of nature, may be ranged.

And hence ariſe divers particular kinds of *attraction*; as, gravity, magnetiſm, electricity, *&c.* which are ſo many different principles, acting by different laws; and only agreeing in this, that we do not ſee any phyſical cauſes thereof: but that, as to our ſenſes, they may really ariſe from ſome power or efficacy in ſuch bodies, whereby they are enabled to act, even upon diſtant bodies; though our reaſon abſolutely diſallows of any ſuch action.

Attraction may be divided, with reſpect to the law it obſerves, into two kinds.—1°, That which extends to a ſenſible diſtance.—Such are the *attraction* of gravity, found in all bodies; and the *attraction* of magnetiſm; and electricity, found in particular bodies.—The ſeveral laws and phænomena of each, ſee under their reſpective articles, GRAVITY, MAGNETISM, and ELECTRICITY.

The *attraction* of gravity, called alſo among mathematicians the *centripetal force*, is one of the greateſt and moſt univerſal principles in all nature.—We ſee and feel it operate on bodies near the earth, and find, by obſervation, that the ſame power (*i. e.* a power which acts in the ſame manner, and by the ſame rules; *viz.* always proportionably to the quantities of matter, and as the ſquares of the diſtances reciprocally) does alſo obtain in the moon, and the other planets primary and ſecondary, as well as in the comets: and even that this is the very power whereby they are all retained in their orbits, *&c.* And hence, as gravity is found in all the bodies which come under our obſervation, it is eaſily inferred, by one of the ſettled rules of philoſophizing, that it obtains in all others; and as it is found to be as the quantity of matter in each body, it muſt be in every particle thereof; and hence, every particle in nature is proved to *attract* every other particle, *&c.* See the demonſtration hereof laid down at large, with the application of the principle to the celeſtial motions, under the articles NEWTONIAN *Philoſophy*, SUN, MOON, PLANET, COMET, SATELLITE, CENTRIPETAL, CENTRIFUGAL, *&c.*

From this *attraction* ariſes all the motion, and conſequently all the mutation, in the great world.—By this, heavy bodies deſcend, and light ones aſcend; by this projectiles are directed, vapours and exhalations riſe, and rains, *&c.* fall. By this rivers glide, the air preſſes, the ocean ſwells, *&c.* In effect, the motions ariſing from this principle make the ſubject of that extenſive branch of mathematics, called *mechanics*, or *ſtatics*; with the parts or appendages thereof, *hydroſtatics*, *pneumatics*, *&c.* See MECHANICS, STATICS, HYDROSTATICS, PNEUMATICS. See alſo MATHEMATICS, PHILOSOPHY, *&c.*

2°, That which does not extend to ſenſible diſtances.—Such is found to obtain in the minute particles whereof bodies are compoſed, which attract each other at, or extremely near, the point of contact, with a force much ſuperior to that of gravity; but which at any diſtance therefrom decreaſes much faſter than the power of gravity.—This power, a late ingenious author chooſes to call the *attraction of coheſion*; as being that whereby the atoms or inſenſible particles of bodies are united into ſenſible maſſes.

This latter kind of *attraction* owns Sir Iſaac Newton for its diſcoverer; as the former does, for its improver.—The laws of motion, percuſſion, *&c.* in ſenſible bodies under various circumſtances, as falling, projected, *&c.* as aſcertained by the later philoſophers, do not reach to thoſe more remote, inteſtine motions of the component particles of the ſame bodies, whereon the changes of the texture, colour, properties, *&c.* of bodies depend: ſo that our philoſophy, if it were only founded on the principle of gravitation, and carried ſo far as that would lead us, would neceſſarily be very deficient.

But, beſide the common laws of ſenſible maſſes, the minute parts they are compoſed of are found ſubject to ſome others, which have been but lately taken notice of, and are even yet very imperfectly known. Sir Iſaac Newton, to whoſe happy penetration we owe the hint, contents himſelf to eſtabliſh, that there are ſuch motions in the minima naturæ, and that they flow from certain powers or forces, not reducible to any of thoſe in the great world.—In virtue of theſe powers, he ſhews, " That the ſmall particles act on one another, even at a diſtance; and that many of the phænomena of nature are the reſult thereof. Senſible bodies, we " have already obſerved, act on one another divers ways; " and as we thus perceive the tenour and courſe of nature, it " appears highly probable, that there may be other powers " of the like kind; nature being very uniform and conſiſtent with herſelf.—Thoſe juſt mentioned reach to ſenſible " diſtances, and ſo have been obſerved by vulgar eyes: but " there may be others, which reach to ſuch ſmall diſtances " as have hitherto eſcaped obſervation; and it is probable " electricity may reach to ſuch diſtances, even without " being excited by friction."

The great author juſt mentioned proceeds to confirm the reality of theſe ſuſpicions from a great number of phænomena and experiments, which plainly argue ſuch powers and actions between the particles, *e. gr.* of ſalts and water, oil of vitriol and water, aqua-fortis and iron, ſpirit of vitriol and ſalt-petre.—He alſo ſhews, that theſe powers, *&c.* are unequally ſtrong between different bodies; ſtronger, *e. gr.* between the particles of ſalt of tartar, and thoſe of aqua-fortis, than thoſe of ſilver; between aqua-fortis and lapis-caliminaris, than iron; between iron than copper, copper than ſilver, or mercury. So ſpirit of vitriol acts on water, but more on iron or copper, *&c.*

The other experiments, which countenance the exiſtence of ſuch principle of *attraction* in the particles of matter, are innumerable; many of them the reader will find enumerated under the articles MATTER, ACID, SALT, MENSTRUUM, *&c.*

Theſe actions, in virtue whereof the particles of the bodies above-mentioned tend towards each other, the author calls by a general, indefinite name, *attraction*, which is equally applicable to all actions, whereby diſtant bodies tend towards one another, whether by impulſe, or by any other more latent power: and from hence he accounts for an infinity of phænomena, otherwiſe inexplicable, to which the principle of gravity is inadequate.—Such are coheſion, diſſolution, coagulation, cryſtallization, the aſcent of fluids in capillary tubes, animal ſecretion, fluidity, fixity, fermentation, *&c.* See the reſpective articles, COHESION, DISSOLUTION, CRYSTALLIZATION, ASCENT, SECRETION, SPHERICITY, FIXITY, and FERMENTATION.

" Thus (adds our immortal author) will nature be found " very conformable to herſelf, and very ſimple; performing all the great motions of the heavenly bodies, " by the *attraction* of gravity, which intercedes thoſe bodies, and almoſt all the ſmall ones of their parts, by " ſome other attractive power diffuſed through the particles thereof.—Without ſuch principles, there never " would have been any motion in the world; and without " the continuance thereof, motion would ſoon periſh, " there being otherwiſe a great decreaſe or diminution " thereof, which is only ſupplied by theſe active principles." *Optics*, p. 373.

We need not ſay how unjuſt it is in the generality of foreign philoſophers, to declare againſt a principle which furniſhes ſo beautiful a view; for no other reaſon, but becauſe they cannot conceive how a body ſhould act on another at a diſtance.—It is certain, philoſophy allows of no action but what is by immediate contact and impulſion (for how can a body exert any active power there, where it does not exiſt? to ſuppoſe this of any thing, even the Supreme Being himſelf, would perhaps imply a contradiction): yet we ſee effects without ſeeing any ſuch impulſe; and where there are effects, we can eaſily infer there are cauſes, whether we ſee them or no. But a man may conſider ſuch effects, without entering into the conſideration of the cauſes; as, indeed, it ſeems the buſineſs of a philoſopher to do: for to exclude a number of phænomena which we do ſee, will be to leave a great chaſm in the hiſtory of nature; and to argue about actions which we do not ſee, will be to build caſtles in the air.—It follows, therefore, that the phænomena of *attraction* are matter of phyſical conſideration, and as ſuch intitled to a ſhare in a ſyſtem of phyſics; but that the cauſe thereof will only become ſo, when they become ſenſible; *i. e.* when they appear to be the effect of ſome other higher cauſes (for a cauſe is no otherwiſe ſeen than as itſelf is an effect, ſo that the firſt cauſe muſt from the nature of things be inviſible): we are therefore at liberty to ſuppoſe the cauſes of *attractions* what we pleaſe, without any injury to the effects.—The illuſtrious author himſelf ſeems a little irreſolute as to the cauſe; inclining, ſometimes, to attribute gravity to the action of an immaterial cauſe, *Optics*, p. 343, *&c.* And ſometimes to that of a material one. *Ib.* p. 325.

In his philoſophy, the reſearch into cauſes is the laſt thing; and never comes in turn till the laws and phænomena of the effect be ſettled; it being to theſe phænomena that the cauſe is to be accommodated.—The cauſe even of any, the groſſeſt, and moſt ſenſible action, is not adequately known: how impulſe or percuſſion itſelf works its effect, *i. e.* how motion is communicated by body to body, confounds the deepeſt philoſophers; yet is impulſe received not only into philoſophy, but into mathematics; and accordingly the laws and phænomena of its effects make the greateſt part of common mechanics.

The other ſpecies of *attraction*, therefore, when their phænomena are ſufficiently aſcertained, have the ſame title to be promoted from phyſical to mathematical conſideration; and this, without any previous inquiry into their cauſes, which our conceptions may not be proportionate to: let their cauſes be occult, as all cauſes ever will be; ſo as their effects, which alone immediately concern us, be but apparent. See CAUSE.

Our noble countryman, then, far from adulterating philoſophy with any thing foreign, or metaphyſical; as many have reproached him with doing; has the glory of opening a new ſource of ſublimer mechanics, which, duly cultivated, might be of infinitely more extent than all the mechanics yet known: it is hence alone we muſt expect to learn the manner of the changes, productions, generations, corruptions, *&c.* of natural things; with all that ſcene of wonders opened to us by the operations of chymiſtry.

Some of our own countrymen have proſecuted the diſcovery with laudable zeal: Dr. Keil, particularly, has endeavoured to deduce ſome of the laws of this new action, and applied them to ſolve divers of the more general phænomena of bodies, as coheſion, fluidity, elaſticity, ſoftneſs, fermentation, coagulation, *&c.* And Dr. Freind, ſeconding him, has made a further application of the ſame principles, to account at once for almoſt all the phænomena that chymiſtry preſents. —So that the new mechanics ſhould ſeem already raiſed to a complete ſcience; and nothing can now turn up, but we have an immediate ſolution of, from the *attractive force.*

But this ſeems a little too precipitate; a principle ſo fertile ſhould have been further explored; its particular laws, limits, *&c.* more induſtriouſly detected, and laid down, ere we had gone to the application.—*Attraction*, in the groſs, is ſo complex a thing, that it may ſolve a thouſand different phænomena alike: the notion is but one degree more ſimple and preciſe than action itſelf; and till more of its properties are aſcertained, it were better to apply it leſs, and ſtudy it more.—It may be added, that ſome of Sir Iſaac Newton's followers have been charged with falling into that error, which he induſtriouſly avoided; *viz.* of conſidering *attraction* as a cauſe or active property in bodies, not merely as a phænomenon or effect.

As a ſpecimen of the extent of the principle, and the manner of applying it, we ſhall here ſubjoin the principal laws and conditions thereof; as deduced by Sir Iſaac Newton, Dr. Keil, Dr. Freind, *&c.*

Theor. I. Beſides that *attractive* power whereby the planets and comets are retained in their orbits; there is another, by which the ſeveral particles whereof bodies conſiſt, attract, and are mutually attracted by, each other; which power decreaſes in more than a duplicate ratio of the increaſe of the diſtance.

This theorem, we have already obſerved, is demonſtrable from a great number of phænomena.—We ſhall here only mention a few eaſy and obvious ones; as, the ſpherical figure aſſumed by the drops of fluids, which can only ariſe from ſuch principle: the uniting and incorporating of two ſpherules of quickſilver into one, upon the firſt touch, or extremely near approach, of their ſurfaces: the riſing of water up the ſides of a glaſs bubble immerged therein, higher than the level of the other water, or of mercury up a ſphere of iron, or the like.

As to the juſt law of this *attraction*, it is not yet determined: only this we know in the general, that the force, in receding from the point of contact, is diminiſhed in a greater proportion than that of the duplicate ratio of the diſtances, which is the law of gravity. For that, if the diminution were only in ſuch duplicate ratio, the *attraction* at any ſmall aſſignable diſtance would be nearly the ſame as at the point of contact: whereas experience teaches, that this *attraction* almoſt vaniſhes, and ceaſes to have any effect, at the ſmalleſt aſſignable diſtance.—But whether to fix on a triplicate, quadruplicate, or ſome other proportion to the increaſing diſtance, is not aſcertained by experiment.

II. The quantity of *attraction*, in all bodies, is exactly proportional to the quantity of matter in the *attracting* body; as being in reality the reſult or ſum of the united forces of the *attractions* of all thoſe ſingle particles, of which it is compoſed; or, in other words, *attraction* in all bodies is, *cæteris paribus*, as their ſolidities.

Hence, 1°, At equal diſtances the *attractions* of homogeneal ſpheres will be as their magnitudes.—And,

2°, At any diſtance whatever, the *attraction* is as the ſphere divided by the ſquare of the diſtance.

This law, it muſt be noted, only holds in reſpect of atoms, or the ſmalleſt conſtituent particles, ſometimes called *particles of the laſt compoſition*; and not of corpuſcles or compoſitions made up of theſe; for they may be ſo put together, as that the moſt ſolid corpuſcles may form the lighteſt particles, *i. e.* the unfitneſs of their ſurfaces for intimate contact may occaſion ſuch great interſtices, as will make their bulks large in proportion to their matter.

III. If a body conſiſt of particles, every one whereof has an attractive power decreaſing in a triplicate, or more than a triplicate ratio of their diſtances; the force wherewith a particle is attracted by that body in the point of contact, or at an infinitely little diſtance from the contact, will be infinitely greater, than if that particle were placed as a given diſtance from the body.

IV. Upon the ſame ſuppoſition, if the *attractive* force, at any aſſignable diſtance, have a finite ratio to its gravity, this force in the point of contact, or at an infinitely ſmall diſtance, will be infinitely greater than its power of gravity.

V. But if in the point of contact the *attractive* force of bodies have a finite ratio to their gravity; this force in any aſſignable diſtance is infinitely leſs than the power of gravity; and therefore it becomes nothing.

VI. The *attractive* force of every particle of matter, in the point of contact, almoſt infinitely exceeds the power of gravity, but is not infinitely greater than that power; and therefore, in a given diſtance, the *attractive* force will vaniſh to nothing.

This *attractive* power, therefore, thus ſuperadded to matter, only extends to ſpaces extremely minute, and vaniſhes at greater diſtances; whence, the motion of the heavenly bodies, which are at a prodigious diſtance from each other, cannot at all be diſturbed by it, but will continually go on as if there were no ſuch power in bodies.

Where this *attracting* power ceaſes, there, according to Sir Iſaac Newton, does a repelling power commence; or rather, the *attracting* does thenceforward become a repelling power.

VII. Suppoſing a corpuſcle to touch any body, the force whereby that corpuſcle is impelled, that is, the force with which it coheres to that body, will be proportionable to the quantity of contact; for the parts, farther removed from the point of contact, contribute nothing towards its coheſion.

Hence, according to the difference in the contact of particles, there will be different degrees of coheſion: but the powers of coheſion are greateſt when the touching ſurfaces are planes; in which caſe, *cæteris paribus*, the force by which one corpuſcle adheres to others will be as the parts of the touching ſurfaces.

Hence it appears why two perfectly poliſhed marbles, joined together by their plain ſurfaces, cannot be forced aſunder, but by a weight which much exceeds that of the incumbent air.

Hence alſo may be drawn a ſolution of that famous problem concerning the coheſion of the parts of matter.

VIII. The power of *attraction* in the ſmall particles increaſes, as the bulk and weight of the particles diminiſhes.

For, the force only acting at or near the point of contact, the momentum muſt be as the quantity of contact, that is, as the denſity of the particles, and the largeneſs of their ſurfaces: but the ſurfaces of bodies increaſe or decreaſe as th ſquares, and the ſolidities as the cubes, of the diameters. Conſequently the ſmalleſt particles, having the largeſt ſurfaces i proportion to their ſolidities, are capable of more contact *&c*. Thoſe corpuſcles are moſt eaſily ſeparated from on another, whoſe contacts are the feweſt and the leaſt, as i ſpheres infinitely ſmall.

Hence we have the cauſe of fluidity.

IX. The force whereby any corpuſcle is drawn to anoth nearly adjacent body ſuffers no change in its quantity, let th matter of the *attracting* body be increaſed or diminiſhed ſuppoſing the ſame denſity to remain in the body, and th diſtance of the corpuſcle to continue the ſame.

For ſince the *attractive* powers of particles are diffuſed only through the ſmalleſt ſpaces; it is manifeſt, that the remoter parts at C, D, and E (*Tab. Nat. Hiſt. fig.* 22.), contribute nothing towards *attracting* the corpuſcle A: and therefore the corpuſcle will be attracted with the ſame force towards B, whether theſe parts remain, or be taken away; or, laſtly, whether others be added to them.

Hence, particles will have different *attractive* forces, according to their different ſtructure and compoſition; thus a particle perforated will not attract ſo ſtrongly as if intire. So, again, the different figures into which a particle is formed, will occaſion a diverſity of power: thus a ſphere will attract more than a cone, cylinder, *&c.*

X. Suppoſe a body of ſuch a texture as that the particles of the laſt compoſition, by an external force, ſuch as a weight compreſſing them, or an impulſe given by another body, may be a little removed from their original contact, but ſo as not to acquire new ones; the particles by their *attractive* force tending to one another, will ſoon return to their original contacts.—But when the ſame contacts and poſitions of the particles which compoſe any body, return; the ſame figure of the body will alſo be reſtored: and therefore bodies which have loſt their original figures, may recover them by *attraction.*

Hence appears the cauſe of elaſticity.—For, where the contiguous particles of a body have by any external violence been forced from their former points of contact, to extremely ſmall diſtances; as ſoon as that force is taken off, the ſeparated particles muſt return to their former contact: by which means the body will reſume its figure, *&c.*

XI. But if the texture of a body be ſuch, that the particles, by an impreſſed force being removed from their contacts, come immediately into others of the ſame degree, that body cannot reſtore itſelf to its original figure.

Hence we underſtand what texture that is, wherein the ſoftneſs of bodies conſiſts.

XII. The bulk of a body heavier than water may be ſo far diminiſhed, that it ſhall remain ſuſpended in water, without deſcending by its own gravity.

Hence it appears why ſaline, metallic, and other ſuch-like particles, when reduced to ſmall dimenſions, are ſuſpended in their menſtruums.

XIII. Greater bodies approach one another with a leſs velocity than ſmaller.—For the force with which two bodies A and B (*Tab. Nat. Hiſt. fig.* 23. N° 2.) approach, reſides only in the neareſt particles; the more remote having nothing to do therein. No greater force, therefore, will be applied to move the bodies A and B, than to move the particles *c* and *d*; but the velocities of bodies moved by the ſame force are in a reciprocal ratio of the bodies: wherefore the velocity with which the body A tends towards B is to the velocity with with the particle *c* detached from the body would tend towards the ſame B, as the particle *c* is to the body A; conſequently the velocity of the body A is much leſs than would be the velocity of the particle *c* detached from the body.

Hence it is, that the motion of large bodies is naturally ſo ſlow and languid, that an ambient fluid, and other circumjacent bodies, generally retard them; whilſt the leſſer go on more briſkly, and produce a greater number of effects: ſo much greater is the *attractive* energy in ſmaller bodies than in the larger.—Hence again appears the reaſon of that chymical axiom; *Salts do not act till they are diſſolved.*

XIV. If a corpuſcle placed in a fluid be equally attracted every way by the circumambient particles, no motion of the corpuſcle will enſue.—But if it be attracted by ſome particles more than others, it will tend to that part where the attraction is greateſt; and the motion produced will correſpond to the inequality of the *attraction*; *viz.* the greater the inequality, the greater the motion, and *vice verſa.*

XV. Corpuſcles floating in a fluid, and attracting each other more than the particles of the fluid that lie between them, will force away the particles of the fluid, and ruſh to one another with a force equal to that by which their mutual *attraction* exceeds that of the particles of the fluid.

XVI. If a body be immerged in a fluid whoſe parts more ſtrongly attract the particles of the body than they do one another; and if there be a number of pores or interſtices in the body pervious to the particles of the fluid; the fluid will immediately diffuſe itſelf through thoſe pores. And if the connexion of the parts of the body be not ſo ſtrong, but that it may be overcome by the force of the particles ruſhing within it; there will be a diſſolution of the body.

Hence, for a menſtruum to be able to diſſolve any given body, there are three things required.—1°, That the parts of the body attract the particles of the menſtruum more ſtrongly than theſe attract each other. 2°, That the body have pores or interſtices open and pervious to the particles of the menſtruum. 3°, That the coheſion of the particles, which conſtitute the body, be not ſtrong enough to reſiſt the irruption of the particles of the menſtruum. See MENSTRUUM.

XVII. Salts are bodies endued with a great attractive force, though among them be interſperſed many interſtices, which lie open to the particles of water; theſe are therefore ſtrongly attracted by thoſe ſaline particles, ſo that they forcibly ruſh into them, ſeparate their contacts, and diſſolve the contexture of the ſalts. See SALT.

XVIII. If the corpuſcles be more attracted by the particles of the fluid than by each other; they will recede from each other, and be diffuſed thro' the whole fluid.

Thus, if a little ſalt be diſſolved in a deal of water, the particles of the ſalt, tho' ſpecifically heavier than water, will evenly diffuſe themſelves through the whole water; ſo as to make it as ſaline at top as bottom.—Does not this imply, that the parts of the ſalt have a centrifugal, or repulſive force, by which they fly from one another; or rather, that they attract the water more ſtrongly than they do one another? for as all things aſcend in water, which are leſs attracted than water by the gravity of the earth, ſo all the particles of ſalt floating in water, which are leſs attracted by any particle of ſalt than water is, muſt recede from the particle, and give way to the more attracted water. *Newt. Opt. p.* 363.

XIX. Corpuſcles, or little bodies, ſwimming in a fluid, and tending towards each other; if they be ſuppoſed elaſtic, will fly back again after their congreſs, till, ſtriking on other corpuſcles, they be again reflected towards the firſt; whence will ariſe innumerable other conflicts with other corpuſcles, and a continued ſeries of percuſſions and reboundings.—But, by the attractive power, the velocity of ſuch corpuſcles will be continually increaſed; ſo that the inteſtine motion of the parts will at length become evident to ſenſe. See INTESTINE *Motion.*

Add, that in proportion, as the corpuſcles attract each other with a greater or leſs force, and as their elaſticity is in a greater or leſs degree, their motions will be different, and become ſenſible at various times, and in various degrees.

XX. If corpuſcles that attract each other happen mutually to touch, there will not ariſe any motion, becauſe they cannot come nearer. If they be placed at a very little diſtance from each other, a motion will ariſe; but if further removed, the force wherewith they attract each other will not exceed that wherewith they attract the particles of the intermediate fluid; and therefore no motion will be produced.

On theſe principles depend all the phænomena of fermentation and ebullition.

Hence appears the reaſon why oil of vitriol, when a little water is poured on it, works, and grows hot: for the ſaline corpuſcles are a little disjointed from their mutual contact, by the infuſed water; whence, as they attract each other more ſtrongly than they do the particles of water, and as they are not equally attracted on every ſide, there muſt of neceſſity ariſe a motion.

Hence alſo appears the reaſon of that uncommon ebullition occaſioned by adding ſteel-filings to the aforeſaid mixture. For the particles of ſteel are extremely elaſtic; whence there muſt ariſe a very ſtrong reflexion.

Hence alſo we ſee the reaſon why ſome menſtruums act more ſtrongly, and diſſolve bodies ſooner, when diluted with water.

XXI. If corpuſcles mutually attracting each another have no elaſtic power, they will not be reflected back from each other; but will form congeries, or little maſſes; whence a coagulum will ariſe. See COAGULATION.

If the gravity of the particles thus amaſſed exceed the gravity of the fluid, a precipitation will ſucceed.—Precipitation may alſo ariſe from an increaſe or dimunition of the gravity of the menſtruum wherein the corpuſcles are immerged.

XXII. If corpuſcles ſwimming in a fluid, and mutually attracting each other, have ſuch a figure, as that in ſome given parts they have a greater attractive power than in others, and their contact greater in thoſe parts than in others; thoſe corpuſcles will unite into bodies with given figures; and thence will ariſe cryſtallization.

XXIII. Particles immerged in a fluid moved with a ſwift or ſlow progreſſive motion will attract each other in the ſame manner as if the fluid were at reſt; but if all the parts of the fluid do not move equally, the *attractions* will be diſturbed.

Hence it is, that many ſalts will not cryſtallize, till the water wherein they are diſſolved is cold.

XXIV. If between two particles of a fluid there happen to be a corpuſcle whoſe two oppoſite ſides have a ſtrong attractive power, that intermediate corpuſcle will agglutinate or faſten the particles of the fluid to itſelf.—And ſeveral ſuch corpuſcles diffuſed through the fluid will fix all its particles into a firm body; and the fluid will be frozen, or reduced into ice.

XXV. If a body emit a great quantity of effluvia, whoſe attractive powers are very ſtrong; as thoſe effluvia approach any other very light body, their attractive powers will overcome the gravity of that body, and the effluvia will draw it towards themſelves: and as the effluvia are cloſer, and more copious, at little diſtances from the emitting body, than at greater; the light body will be continually drawn towards the denſer effluvia, till ſuch time as it comes to adhere to the emitting body itſelf.

And hence moſt of the phænomena of electricity may be accounted for.

Centre of ATTRACTION. See the article CENTRE.

ATTRACTIVE, ATTRACTIVUS, ATTRACTRIX, ſomething that has the power or faculty to attract. See ATTRACTION.

ATTRACTIVE *Power*, or *Force*, *Vis attractiva*. See POWER, and ATTRACTION.

The attractive virtue in loadſtone is communicable, by touching, to iron or ſteel. See TOUCHING.

ATTRACTIVES, or ATTRACTIVE *Remedies*, denote medicines which are to be externally applied, and which by their activity and warmth penetrate the pores, and mix with and rarefy any obſtructed matter, ſo as to render it fit for diſcharge, upon laying open the part by a cauſtic or inciſion.

Attrahents are the ſame with what we otherwiſe call *drawers*, *ripeners*, *maturants*, and *digeſtives*.

The principal ſimples belonging to this claſs are, the ſeveral kinds of fats or adipes, the dungs of pigeons and cows, bran, yeſt, herring, melilot, tobacco, oil, pitch, reſin, frankincenſe, *&c.* See each under its proper article.

In many inſtances, as the matter rarefies and grows more fluid by means of ſuch medicines, the refluent blood is apt to waſh it back into the common maſs; which ſometimes does a deal of miſchief; or by making it take up more room upon its rarefaction, it occaſions it to diſtend more the parts in which it is contained: upon which a ſenſe of pain is excited, and thereby a greater concourſe of fluid, and conſequently an increaſe of the tumour.—So that medicines under this denomination require the moſt careful management.

ATTRIBUTE, ATTRIBUTUM, in a general ſenſe, that which agrees to ſome perſon, or thing; or a quality, which determines ſomething to be after a certain manner.

Thus, underſtanding is an *attribute* of mind; figure, an *attribute* of body, *&c.*—Spinoza makes the ſoul and the body to be of the ſame ſubſtance; with this only difference, that the ſoul is to be conceived under the *attribute* of thought, and the body under that of extenſion.

Of the ſeveral *attributes* belonging to any ſubſtance, that which preſents itſelf firſt, and which the mind conceives as the foundation of all the reſt, is called its *eſſential attribute*.

Thus, extenſion is by ſome, and ſolidity by others, made the eſſential *attribute* of body or matter.

The other *attributes* are called *accidental* ones: *e. gr.* roundneſs in wood, or learning in a man.—Mr. Locke endeavours to prove, that thinking, which the Carteſians make the eſſential *attribute* of the mind, is only an accidental one.

ATTRIBUTE, in logic, is an epithet given to any ſubject; or it is any predicate thereof; or whatever may be affirmed or denied of any thing.

Every propoſition conſiſts of a ſubject, an *attribute*, and a copula, or conjunctive particle. See PROPOSITION.

Attributes are uſually divided into *poſitive*, which give a thing ſomewhat; as when we ſay of a man, that he is *animate*: and negative; as when we ſay of a ſtone, that it is *inanimate*.

Others, again, divide them into *common*, which agree to ſeveral different things; as *animal*, which agrees both to man and brute: and proper, as *thought*, &c. which agrees only to ſpirit, *rationality* to man, *&c.*

ATTRIBUTES, in theology, denote the ſeveral qualities, and perfections, which we conceive in God; and which conſtitute his proper eſſence; as juſtice, goodneſs, wiſdom, *&c.* See GOD.

The heathen mythologiſts divided the deity into as many diſtinct beings as he has *attributes*: thus the power of God was called *Jupiter*; the wrath and vengeance of God, *Juno*; the abſolute will of God, *Fate*, or *Deſtiny*, to which even his very power is ſubject.

ATTRIBUTES, in painting, and ſculpture, are ſymbols added to figures and ſtatues, to denote their particular office and character.

Thus the club is an *attribute* of Hercules; the palm is an *attribute* of victory; the peacock of Juno; the eagle of Jupiter, *&c.*

ATTRITION*, ATTRITIO, *triture*, or *friction*, expreſſes ſuch a motion of bodies againſt one another, as ſtrikes off ſome ſuperficial particles; whereby they gradually become leſs and leſs.

* The word is formed of *atterere*, to rub, wear; compounded of *ad*, to; and *tero*, I wear.

The grinding and poliſhing of bodies is performed by *attrition*.

The effects of *attrition* in exciting heat, light, electricity, *&c.* ſee under the articles HEAT, LIGHT, FIRE, and ELECTRICITY.

A feather, by being only drawn through the fingers, has been found by Mr. S. Grey to acquire a degree of electricity, and would be attracted by the finger when held near it; a human hair, after having paſſed three or four times between the finger and thumb, would fly to his finger at the diſtance of half an inch; and the hair of a dog's ear, and the threads of ſilk, would do the like. The like was found in pieces of ribband of ſeveral colours, half a yard long; the hand, held at the lower-end of any of which, would attract them at the diſtance of five or ſix inches. But if they had imbibed the moiſture of the air, the electricity would be much weakened thereby; in which caſe, the fire never failed to give them a ſtrong one. In effect, the ſame author found woollen, paper, leather, wood-ſhavings, parchment, and gold-beater's ſkin, to be electrical; and that they not only came to the hand, or any other ſolid body, but attracted ſmall bodies to them, ſometimes at the diſtance of eight or ten inches: ſome of theſe, alſo, appeared luminous upon friction. See *Philoſoph. Tranſact.* N° 366.

ATTRITION is alſo frequently uſed for the friction or rubbing of ſuch ſimple bodies one againſt another, as will not wear out, but will occaſion ſome particular determinations of the fluids they contain.

Thus, the various ſenſations of hunger, pain, or pleaſure, are ſaid to be occaſioned by the *attritions* of the organs formed for ſuch impreſſions.

ATTRITION, among divines, denotes a ſorrow or regret for having offended God; ariſing from a ſenſe of the odiouſneſs of ſin, and the apprehenſions of puniſhment; *i. e.* of the loſs of heaven, and the pains of hell.

Attrition is eſteemed the loweſt degree of repentance, being a ſtep ſhort of contrition, which ſuppoſes the love of God an ingredient or motive of our ſorrow and repentance. See CONTRITION.

ATTURNATO *faciendo vel recipiendo*, a writ which a man owing ſuit to a county, hundred, or other court, deſiring to make an attorney appear for him there, whom he doubts the ſheriff or ſteward will not otherwiſe admit; purchaſeth, to command him to receive ſuch attorney, and admit his appearance by him.

Admittenda Clamea in itinere per ATTURNATUM. See CLAMEA.

AVANT, a French prepoſition, ſignifying *before*, or any priority either in reſpect of time, or place; ſometimes uſed, in compoſition, in our language, but more uſually contracted, and wrote *vaunt*, or *vant*, or even *van*. See VAN.

AVANT *Foſſe*, &c. } See { VAN *Foſſe*.
AVANT *Guard*, &c. }   { VAN *Guard*, &c.

AVARIA, in the Turkiſh and Perſian dominions, a ſum of money exacted from the Chriſtians or Europeans, to be quit of ſome falſe accuſation framed on purpoſe. *Rauwolf. Trav. p.* 182.

AVAST*, a term frequently uſed on board a ſhip, ſignifying to ſtop, hold, or ſtay.

* The word is formed of the Italian *vaſta*, or *baſta*, it is enough, it ſuffices.

AVAUNCHERS, among hunters, the ſecond branches of a hart's horn. See HEAD.

AUBAINE*, in the French cuſtoms, a right veſted in the king, of being heir to a foreigner, who dies within his dominions.

* The word is formed of *aubain*, a foreigner; which Menage derives further from the Latin, *alibi natus*; Cujas, from *advena*; which is the name foreigners bear in the capitularies of Charlemaign; du Cange from *Albanus*, a Scot, or Iriſhman; by reaſon theſe were antiently much given to travelling and living abroad.

The king of France, by the right of *aubaine*, claims the inheritance of all foreigners in his dominions; excluſive of all other lords, and even of any teſtament the deceaſed could make. An embaſſador, though not naturalized, is not ſubject to the right of *aubaine*. The Swiſs, Savoyards, Scots, and Portugueſe, are alſo exempted from the *aubaine*, as being reputed natives and regnicoles.

AUCTIO, AUCTION, this was originally a kind of ſale among the antient Romans, performed by the public crier *ſub haſta*, that is, under a ſpear ſtuck up on that occaſion, and by ſome magiſtrate, who made good the ſale by delivery of the goods.

This was termed *auctio*, *q. d.* increaſe; becauſe, according to Sigonius, the goods were ſold to him, *qui plurimum rem augeret*, who would bid moſt for them.

AUCTION *by inch of candle*. See the article CANDLE.

AUDIENCE*, in a general ſenſe. See HEARING.

* The word is formed from the corrupt Latin, *audientia*, of *audire*, to hear.

AUDIENCE is alſo uſed for the ceremonies practiſed in courts, at the admiſſion of embaſſadors, and public miniſters, to a hearing.

Such an embaſſador ſent to demand *audience*; took his *audience* of leave to depart, *&c.*

In England, *audience* is given to embaſſadors in the preſence-chamber; to envoys and reſidents, in a gallery, cloſet, or any place, where the king chances to be.

At their admiſſion, the way, in all courts, is to make three bows; after which they cover, and ſit down, the king firſt covering, and ſitting down, and giving them the ſign to put on their hats.—When the king cares not to have them be covered and ſit, he continues uncovered himſelf, and ſtanding all the while: which is taken as a ſlight and affront.—After the firſt *audience*, it does not look well to be too haſty in demanding another.

At Conſtantinople, miniſters uſually have *audience* of the prime vizir: in his abſence, the caimacan admits them to *audience*.

Audience is alſo the name of a court of juſtice, eſtabliſhed by the Spaniards in the Weſt-Indies; anſwering in effect to the parliaments of France.

They judge without appeal, and have each a certain diſtrict, which ordinarily takes in ſeveral provinces, called alſo *audiences*, from the names of the tribunal to which they belong.

Hence Sanſon divides Spain into as many of theſe *audiences* as there are of thoſe tribunals.—New Spain comprehends three *audiences*, thoſe of Gaudalajara, Mexico, and Guatimala.

Audience is alſo the name of one of the eccleſiaſtical courts in England, which is held where-ever the archbiſhop calls a cauſe to his own hearing.

The court of *audience* is chiefly concerned in differences ariſing upon elections, conſecrations, inſtitutions, marriages, &c.

Chamber of Audiences. See the article Chamber.

AUDIENDO & *terminando*, a writ, or rather commiſſion, directed to certain perſons, when an inſurrection or great miſdemeanour is committed in any place, for the appeaſing and puniſhment thereof.

AUDIENTES, or Auditores, in church-hiſtory, an order of catechumens; conſiſting of thoſe who were newly inſtructed in the myſteries of the Chriſtian religion, and not yet admitted to baptiſm.

AUDIT, a regular hearing and examining of an account, by officers appointed for that purpoſe. See Auditor.

AUDITA *querela*, a writ which lies againſt him, who having taken a ſtatute-merchant, or a recognizance in the nature of a ſtatute-ſtaple, or a judgment, or a recognizance of another; and craving, or having obtained, execution of the ſame from the mayor and bailiffs, before whom it was entered; at the complaint of the party, who entered the ſame, upon ſuggeſtion of ſome juſt cauſe why execution ſhould not be granted; as a releaſe, or other exception;

This writ is granted by the lord chancellor, upon view of the exception ſuggeſted, to the judges of either bench, willing them to grant ſummons to the ſheriff of the county where the creditor is, for his appearance at a certain day before them.

AUDITOR, a hearer, or one who liſtens or attends to any thing.

Auditor is alſo uſed for ſeveral officers, appointed to *audit*, to hear accounts, pleadings, &c.

Antiently the word *auditor* was alſo uſed for *judge*, and even for an *inquiſitor*, appointed by judges to examine, and find out the truth of ſome matter in conteſt. *Notaries* are alſo frequently called *auditores*.

Auditor, in our law, is an officer of the king, or ſome other great perſon, who yearly, by examining the accounts of under-officers accountable, makes up a general book, with the difference between the receipts and charge, and their allowances or *allocations*.

Auditors *of ths Revenue*, or *of the Exchequer*, are officers who take the accounts of thoſe who collect the revenues, taxes, &c. raiſed by parliament; as alſo of the ſheriffs, eſcheators, collectors, tenants, and cuſtomers; and ſet them down, and perfect them.

Auditors *of the Preſt*, or *Impreſt*, are officers in the exchequer, who take and make up the great accounts of Ireland, Berwick, the mint, cuſtoms, wardrobe, firſt-fruits, naval and military expences, and of all moneys impreſſed to any man for the king's ſervice.

Auditor *of the Receipts* is an officer of the exchequer, who files the tellers bills, and makes an entry of them, and gives the lord treaſurer a certificate of the money received the week before; who preſents the eſtimate or balance to the king.

He makes debentures to every teller, before they receive any money, and takes their accounts. He keeps the black book of receipts, and the treaſurer's key of the treaſury (where the antient leagues of the realm, and many records of the king's bench, and common-pleas are repoſited); and ſees every teller's money lock'd up in the new treaſury.

There are alſo *auditors* of the firſt-fruits; of the principality of Wales; of the duchy of Cornwall, &c. See First-*Fruits*, &c.

Auditor *of the Rota*, the apoſtolic chamber, the chatelet, &c. See Rota, Chamber, &c.

Auditors, *Conventual*, *Collegiate*, &c. were officers formerly appointed among the religious, to examine and paſs the accounts of the houſe.

AUDITORY, in an adjective ſenſe, ſomething belonging to the ſenſe of hearing. See Hearing.

Auditory, Audience, is alſo a collective name, denoting an aſſembly of perſons, hearing or attending to a perſon who ſpeaks in public.

Auditory is alſo uſed for the ſeat or bench where a magiſtrate, or judge, hears cauſes.

At Rome, the ſeveral magiſtrates had *auditories*, or ſeats of juſtice; according to their dignity.—Thoſe of the ſuperior officers were called *tribunals*; thoſe of the inferior, *ſubſellia*.

The *pedanei* had their benches or *auditories* in the portico of the imperial palace.—Thoſe of the Hebrews, at the gates of cities.—The judges appointed by the antient lords diſtributed juſtice under an elm, which was uſually planted before the manor-houſe, and ſerved them for an *auditory*.

Auditory, Auditorium, in the antient churches, was that part of the church where the *audientes* ſtood to hear, and be inſtructed.

The *auditorium* was that part now called *navis eccleſiæ*. See Nave.

In the primitive times, the church was ſo ſtrict in keeping the people together in that place, that the perſon who went from thence in ſermon-time was ordered by the council of Carthage to be excommunicated.

Meatus Auditorius, or Auditory paſſage, in anatomy, called alſo *aurium alveare*, on account of the cerumen collected in it. See Meatus *Auditorius*.

Auditory *Nerves*, in anatomy, a pair of nerves ariſing from the medulla oblongata, and diſtributed, the one to the ear, the other to the tongue, eye, &c.—See *Tab. Anat.* (*oſteol.*) *fig.* 5. *lit. pp.*

The ſoft and ſpongy branch of the *auditory nerve*, being diffuſed through the labyrinth and tympanum of the ear, is the immediate organ of the ſenſe of hearing.

The *auditory nerves* make the ſeventh conjugation, according to the way of reckoning of the moderns; and the fifth, according to the antients.

Anatomiſts obſerve a ſingular mark of the wiſdom and contrivance of the Creator in the *auditory nerves*, being thus diſpatched to different parts; an admirable and uſeful conſent being hereby eſtabliſhed between them.—Hence it is, that moſt animals, upon hearing any uncouth ſound, are found to erect their ears, and prepare them to catch it; to open their eyes; to ſtand upon the watch; and to be ready with the mouth to call out, or teſtify their danger: accordingly moſt animals, when ſurpriſed or terrified, ſhriek or cry out, &c.

Dr. Willis (*anat. cerebr.* c. 17.) obſerves a further uſe of this nervous communication between the ear and the mouth; which is, that the voice may correſpond with the hearing, and be a kind of echo thereof; that what is heard with one of the two nerves, may be readily expreſſed with the voice, by the help of the other.

AVELLANE, or *Croſs* Avellane, in heraldry, a form of croſs, which reſembles four filberds in their huſks or caſes, joined together at the great end. See Cross.

Hence its name; a filberd in Latin being *nux avellana*.—Syl. Morgan ſays, it is this croſs which enſigns the mound of authority, or the ſovereign's globe.

AVE-MARIA, or Ave-Mary, the angel Gabriel's ſalutations of the virgin, at his bringing her the tidings of the incarnation; thus called, as beginning with thoſe words, *Ave, Maria*, q. d. Hail, Mary.

The *ave-mary* is a prayer or formula of devotion very uſual in the Romiſh church.—Their chaplets and roſaries are divided into ſo many *ave-marys*, and ſo many pater-noſters: and hence the beads themſelves, which indicate them, are alſo calle *ave's*, or *ave-marys*.

AVENAGE *, in law, a certain quantity of oats, paid to a landlord, in lieu of ſome other duties; or, as a rent, from the tenant.

* The word is French, formed of the Latin, *avena*, oats.

AVENOR, an officer under the maſter of the horſe; who, by order or warrant from him, ſwears in all the officers belonging to the royal ſtables. See Master *of the horſe*.

The *avenor* alſo makes up the accounts of the ſtables, and iſſues debentures for paying the officers and ſervants.

In a ſtat. Car. II. we find the *avenor* mentioned, as an officer who provides oats for the ſtables.—In the Rot. Parl. Edw. III. we alſo read of *avenor* of the queen, of the prince, &c.

AVENTURÆ, in our antient writers, ſignify turnaments, or military exerciſes on horſeback. See Turnament.

AVENTURE, or rather Adventure, in our law-books, a miſchance, cauſing the death of a man, without felony; as, when he is ſuddenly drowned, or burnt by an accident or miſchance, falling into the water or fire. See Misaventure, and Chance-Medly.

AVENUE *, in fortification, an opening or inlet into a fort, baſtion, or the like place, or the paſſes and ways to and from it. See Fort, and Bastion.

* The word is formed of the French *avenir*, or *advenir*, to come to, to arrive at.

AVENUE, in gardening, is a walk planted on each ſide with trees, and leading to ſome place.

All *avenues*, Mortimer ſays, ſhould lead to the front of an houſe, garden-gate, highway-gate, or wood, and terminate in a proſpect.—In an *avenue* to an houſe, whatever the length of the walk is, it ought to be as wide as the whole breadth of the front; and if wider, it is ſo much better.

AVERAGE *, AVERAGIUM, in law, that duty or ſervice which the tenant is to pay the king, or other lord, by his beaſts and carriages.

* The word is derived from the baſe Latin *averia*, cattle; or the French, *œuvre*, work.

AVERAGE, or AVERIDGE, is alſo uſed in navigation and commerce, for the damage which a veſſel, or the goods and loading thereof, ſuſtain, from the time of its departure to its return: as alſo, for the charge or contributions raiſed on the proprietors, towards defraying ſuch damages.

A late author, who has written a treatiſe expreſs upon *average*, diſtinguiſhes two kinds thereof; *ſimple* or private, and *groſs* or common.

To the firſt, the particular things which ſuffer, alone contribute; to the ſecond, all both the ſhip and the merchandizes contribute in common.

Of the firſt kind, are all extraordinary and unforeſeen expences and accidents, befalling either the ſhip, or the goods, or both: the loſs in which caſes is to be wholly defrayed by the thing or things which occaſioned it.—Such as the loſs of cables, anchors, maſts, and ſails, by reaſon of ſtorms, &c. As alſo damages accruing to goods through their own defects, by waſting, rotting, wetting, ſtorms, pirates, &c. The ſailors wages while the ſhip is extraordinarily detained by embargo's; provided ſhe be hired for the whole voyage, and not *per* month. All theſe are ſimple or private *averages*, and not to be charged to the common account.

For groſs or common *average* to have place, the author juſt mentioned ſhews, 1°, That ſomething muſt have been caſt into the ſea, and this out of abſolute neceſſity. 2°, That the commander have had the conſent of the owners for ſo doing. 3°, That it have only been done for the ſafety of the whole ſhip, and that the ſhip have been ſaved in conſequence thereof.—In ſuch caſe, all thoſe for whoſe intereſt the thing was caſt into the ſea, are to contribute to indemnify the perſon whoſe property it was: and every thing is to be taxed hereto, ſo much as jewels, gold, &c. notwithſtanding they do not any way burden the ſhip; and even the veſſel itſelf; but not paſſengers, nor proviſions. *Rainold. Chriſt. a Derſchau in Nov. Lit. Mar. Bal.* 1700.

To the occaſions of common *average* may be added, compoſitions with pirates for the ranſom of the ſhip; as alſo cables, maſts, anchors, &c. loſt or abandoned for the common good; the food and phyſic of the ſailors wounded in defence of the ſhip; and the pay and proviſions of the crew when the ſhip is arreſted, or put under embargo, by order of a prince, provided it were hired for the month, and not for the whole voyage.

AVERAGE is more particularly uſed for the quota or proportion which each merchant or proprietor in the ſhip or loading is adjudged, upon a reaſonable eſtimation, to contribute to a common *average*.

Such ſum ſhall be divided among the ſeveral claimers, by way of *average*, in proportion to their reſpective intereſts and demands. 10 *A. c.* 17.

AVERAGE is alſo a ſmall duty, which thoſe merchants who ſend goods in another man's ſhip pay to the maſter thereof, for his care of them, over and above the freight.

Hence, in bills of lading it is expreſſed—Paying ſo much freight for the ſaid goods, with primage and *average* accuſtomed.

AVER-CORN, in antient writings, ſuch corn as by cuſtom is brought by the tenant's carts or carriages, to the lord's granary, or barn.

AVERDUPOIS *Pound.* } See the article { POUND.
AVERDUPOIS *Weight.* } See the article { WEIGHT.

AVERIA, in our law-books, properly ſignify oxen or horſes uſed for the plough; but, in a general ſenſe, any cattle.

When mention is made of one beaſt, they ſay, *quidam equus, vel quidam bos:* when of two, or more, they do not ſay *equi* or *boves*, but *averia*.

Replegiare de AVERIIS. See the article REPLEGIARE.

AVERMENT, in law, uſually ſignifies an offer of the defendant to make good or juſtify an exemption, pleaded in abatement or bar of the plaintiff's action.

The word alſo ſometimes ſignifies the act, as well as the offer, of juſtifying the exception.

Averment is two fold, *general* and *particular*.

General AVERMENT is the concluſion of every plea to the writ, or in bar of replications, or other pleadings (for counts, or avowries in nature of counts, need not to be *averred*) containing matter affirmative; and ought to be with theſe words, *hoc paratus eſt verificare*.

Particular AVERMENT is, when the life of tenant a for life, or tenant in tail, is *averred*, &c.—An *averment* contains as well the matter as the form thereof.

AVERNI *, among the antient naturaliſts, certain lakes, grottoes, and other places, which infect the air with poiſonous ſteams or vapours; called alſo *mephites*.

* The word is Latin; formed of the Greek privative α, and ορνις, bird; as intimating that birds could not fly over them, but dropped down dead. *Avernus*, q. d. *aornus, locus ſine avibus.*

Averni are ſaid to be frequent in Hungary, on account of the abundance of mines therein.

The grotta del Cani, in Italy, is a famous one. See GROTTA, and EXHALATION.

But the moſt celebrated *Avernus* was, a lake near Baiæ, in Campania, by the modern Italians called *Lago di Tripergola*.—The fumes it emitted are repreſented by the antients as being of ſo malignant a nature, that birds could not fly over it, but ſunk down dead; which ſome later writers have choſen to attribute to this, that the ſulphurous effluvia hereof not being of conſiſtence to ſuſtain the birds, they dropped by their own weight. This circumſtance, joined with the great depth of the lake, occaſioned the antients to take it for the gate or entrance of hell; and accordingly Virgil makes Æneas deſcend this way to the Inferi *.—Vibius Sequeſter ſays, there is no bottom to be found of it; *Immenſæ altitudinis, cujus ima pars apprehendi non poteſt.* See HELL.

* Next to the Baiæ, ſays Strabo, lies the Lucrine bay; and within it the lake *Avernus*. It was here the antients believed that Homer had deſcribed Ulyſſes as converſing with the dead, and conſulting Tireſias's ghoſt: for here they ſaid was the oracle ſacred to the ſhades, which Ulyſſes came and conſulted concerning his return. The *Avernus* is a deep darkſome lake, with a narrow entry from the outer bay: it is ſurrounded with ſteep banks, that hang threatening over it, and is only acceſſible by the narrow paſſage, through which you ſail in. Theſe banks were antiently quite overgrown with a wild wood, impenetrable by a human foot. Its gloomy ſhade impreſſed an awful ſuperſtition upon the minds of the beholders; whence it was reputed the ſeat of the Cimmerians, who dwelt in perpetual night.

Whoever ſailed hither, firſt did ſacrifice; and endeavoured to propitiate the infernal powers, with the aſſiſtance of ſome prieſts; who attended upon the place, and directed the myſtic performance. Within, a fountain of pure water broke out juſt over the ſea; but no creature ever taſted of it, believing it to be a vein of the river Styx: ſomewhere near this fountain was the oracle; and the hot waters, frequent in theſe parts, made them think they were branches of the burning Phlegethon. *Inquiry into the Life*, &c. *of Homer*, *ſect.* 11.

AVERPENY, *q. d. Average-peny*, money contributed towards the king's averages; or money given to be freed thereof. See AVERAGE.

AVERRUNCATION, in agriculture, the act of cutting or lopping off the ſuperfluous branches of trees. See PRUNING.

AVERRUNCI *, in antiquity, an order of deities among the Romans, whoſe peculiar office was to avert dangers and evils.

* The Greeks called this ſpecies of gods, αλεξικακοι, or αποπομπαιοι; and their feaſt αποπομπαι: ſometimes, αποτροπαιοι.

The Egyptians had alſo their *dii averrunci*, or *apotropæi*, who were pictured in a menacing poſture, and ſometimes with whips in their hands.—Iſis was a divinity of this kind; as is ſhewn by Kircher. See *Oedip. Ægypt*, T. III. p. 487.

AVERSION *, abhorrence, diſlike. See ANTIPATHY.

* The word is compounded of *a*, from; and *vertere*, to turn.

AVERY, a place where oats, or provender, are kept for the king's horſes. See AVERIA.

AUGES, in aſtronomy, two points in a planet's orbit, otherwiſe called *apſides*. See APSIS.

One of the *auges* is particularly denominated the *apogee*, the other *perigee*.

AUGMENT, AUGMENTUM, in the Greek grammar, an accident of certain tenſes; being either the prefixing of a ſyllable, or an increaſe of the quantity of the initial vowels.

There are two kinds of *augments*.—*Temporale*, or *of a letter*; when a ſhort vowel is changed into a long one; or a diphthong into another longer one: thus called, by reaſon the time of its pronunciation is now lengthened.

Augmentum ſyllabicum, or *of a ſyllable*, is when a letter, *viz.* ε, is added at the beginning of the word; ſo that the number of ſyllables is increaſed.

AUGMENTS, in mathematics. See FLUXIONS, and MOMENTS.

AUGMENTATION, Αυξησις, in a general ſenſe, the act of *augmenting*; that is, of adding or joining ſomething to another, to render it larger, or more conſiderable.

The governors of the bounty of queen Anne, for the *augmentation of the maintenance of the poor clergy*, by virtue of the ſeveral acts of parliament, made for that purpoſe, are impowered to augment all livings not exceeding 50 *l.* per annum: and the number of livings following have been certified to be capable of *augmentation*.

1071

1671	Livings not exceeding 10*l.* per annum, which may be augmented (with the bounty alone) ſix times each, purſuant to the preſent rules of the governors, which will make 6426 *augmentations.*	6426
1467	Livings above 10*l.* and not exceeding 20*l.* per annum, may be augmented four times each, which will make 5868 *augmentations.*	5868
1126	Livings above 20*l.* and not exceeding 30*l.* per annum, may be augmented three times each, which will make 3378 *augmentations.*	3378
1049	Livings above 30*l.* and not exceeding 40*l.* per annum, may be augmented twice each, which will make 2098 *augmentations.*	2098
884	Livings above 40*l.* and not exceeding 50*l.* per annum, may be each once augmented, which will make 884 *augmentations.*	884
5597	Total number of *augmentations*, which muſt be made (by the bounty alone) before the livings already certified will exceed 50*l.* per annum.	18654

Computing the clear amount of the bounty to make 55 *augmentations* yearly, it will be 339 years, from the year 1714. (which was the firſt year in which any livings were augmented) before all the ſmall livings already certified can exceed 50*l.* per annum: and if it be computed, that one half of ſuch *augmentations* may be made in conjunction with other benefactors (which is very improbable) it will require 226 years before all the livings already certified will exceed 50*l.* per annum.

AUGMENTATION is alſo uſed for the *augment*, i. e. for the additament, or the thing added. Such a miniſter petitioned the king for an *augmentation* of ſalary, wages, *&c.*

Court of **AUGMENTATION** *of the king's revenue*, is the name of a court erected under Henry VIII. in 1536. to the end the king might be juſtly dealt with, touching the profit of ſuch religious houſes, and their lands, as were given him by act of parliament the ſame year.—This court was diſſolved under queen Mary, by the parliament held the firſt year of her reign; but the office of *augmentation* remains to this day, in which are many valuable records.

The court took its name hence, that the revenues of the crown were thought to be much *augmented* by the ſuppreſſion of the ſaid houſes; many of which the king reſerved to the crown.

AUGMENTATIONS, in heraldry, are additional charges to a coat-armour frequently given as particular marks of honour, and generally borne, either on an eſcutcheon, or a canton.—Such are the arms of Ulſter, borne by all the baronets of England.

AUGRE, or **AWGRE**, a carpenter's and joiner's inſtrument, ſerving to bore large, round holes.

The *augre* conſiſts of a wooden *handle*, and an iron *blade*, terminated at bottom with a ſteel *bit*. *Vid. Mox. Mech. Exerc.* p. 94.

AUGSBURG *Confeſſion*. See AUGUSTAN.

AUGUR *, in antiquity, a miniſter of religion among the Romans, appointed to take *auguries* or preſages concerning futurity from birds, beaſts, and the appearances of the heavens.

* The word is by ſome derived from *avis*, bird, and *garritus*, chattering; on which footing, the original office of the *augurs* is ſuppoſed to have been to obſerve, and take indications from, the noiſe, calling, ſinging, chirping, and chattering, of birds. Agreeably to which, *augur* is commonly diſtinguiſhed from *auſpex*, as the latter was ſuppoſed employed in obſerving the flight of birds. See AUSPEX.—Pezron derives it from the Celtic *au*, liver, and *gur*, man; ſo that according to him an *augur* was properly a perſon who inſpected the entrails, and divined by means of the liver. On which principle, *augur* would have been the ſame with *aruſpex*.

The *augurs* made a college or community, which at firſt conſiſted of three perſons (one for each tribe;) then of four (when Servius Tullius increaſed the tribes to that number;) then of nine (four of them patricians, and five plebeians): laſtly, Sylla made the number fifteen.—Cato was of the college of *augurs*.

They bore an *augural* ſtaff, or wand, called *lituus*, as the enſign of their office and authority. No affair of moment could be reſolved on, without firſt conſulting them; and their advice, be it what it would, was, by a decree of the ſenate, appointed to be exactly and religiouſly obſerved.

Some will have *augurs* to have differed from *auſpices*, and *augury* from *auſpicy*, in that the former was in ſtrictneſs confined to the chirping of birds, and the latter to their flying, feeding, *&c.*—But this is a diſtinction often diſpenſed withal.

AUGURY, **AUGURIUM**, the diſcipline of the *augurs*, or the practice of conſulting the gods, and learning their will, by divers kinds of omens.

The obſervation of *auguries* is very antient, as having been prohibited by Moſes in Leviticus.—The cup put in Benjamin's ſack, in Egypt, was that uſed by Joſeph to take *auguries* by.

AUGURY, in its more general ſignification, compriſes all the different kinds of divination; which Varro diſtinguiſhes into four ſpecies of *augury*, according to the four elements.—Pyromancy, or *augury* by the fire; aëromancy, or *augury* by the air; hydromancy, or *augury* by the water; and geomancy, or *augury* by the earth.

The particular branches are, *alectoromancy*, *anthropomancy*, *belomancy*, *catoptromancy*, *capnomancy*, *gaſtromancy*, *geomancy*, *aruſpicina*, *libanomancy*, *lecanomancy*, *necromancy*, &c. See each deſcribed under its proper article.

AUGUST, **AUGUSTUS**, in a general ſenſe, ſomething majeſtic, venerable, or ſacred.

The title *Auguſtus* was firſt given by the Roman ſenate to Octavius, after his being confirmed by them in the ſovereign power.—It was conceived as expreſſing ſomething divine, or elevated above the pitch of mankind, being derived from the verb, *augeo*, I grow, increaſe, *tanquam ſupra humanam ſortem auctus*.

The ſucceſſors of Octavius aſſumed the ſame quality; ſo that thenceforward emperor and *Auguſtus* were the ſame thing; they became ſynonymous terms. See EMPEROR.

The preſumptive heir of the empire, or he who was deſtined to ſucceed to the dignity, was firſt created Cæſar; which was a ſtep neceſſary to arrive at that of *Auguſtus* or emperor.—Yet F. Pagi maintains the reverſe; *viz.* that it was neceſſary to be *Auguſtus*, previouſly to the being Cæſar. See CÆSAR.

M. Flechier obſerves, that the emperor Valentinian proclaimed his brother Valens *Auguſtus*; without firſt declareing him Cæſar: which had never been practiſed before.—It is added, that Marcus Aurelius, upon his ſucceeding to Antoninus, immediately created L. Verus both Cæſar and *Auguſtus*. This was the firſt time the Romans had known two *Auguſti* at once; for which reaſon the year, when it was done, *viz.* 161. was marked in the Faſti with the conſulate of the two *Auguſti*. It was a ſurpriſing ſpectacle to the people of Rome, to ſee themſelves governed by two ſovereigns, after ſo much blood ſpilt for the choice of a ſingle maſter.

The empreſſes alſo took the quality of *Auguſtæ*; and even ſome ladies of the imperial family, who had never been wives of emperors, but mothers or daughters.

On medals and coins, ſome of the antient kings of France are alſo found with the appellation *Auguſti*; particularly Childebert, Clothaire, and Clovis: add, that the wife of this laſt, Chrotechilda, is alſo called by Herric, in his book of the miracles of St. Germain, indifferently, either *Auguſta*, or *queen*.

The Hiſtoria **AUGUSTA** is the hiſtory of the Roman emperors from the time of Adrian to Carinus, that is, from the year of our Lord 157. to 284. compoſed by ſix Latin writers, Æl. Spartianus, Julius Capitolinus, Æl. Lampridius, Vulcatius Gallicanus, Trebellius Pollio, and Flavius Vopiſcus. *Vid. Fabric. Bibl. Lat. c.* 6.

AUGUSTALES, or *Sodales* **AUGUSTALES**, or *Flamines* **AUGUSTALES**, were the prieſts of Auguſtus, appointed after the deification of that emperor by Tiberius, to perform the ſervice of the new god.

AUGUSTALIA, in antiquity, a feaſt inſtituted in honour of the emperor Auguſtus.

This feſtival was firſt eſtabliſhed in the year of Rome 835. being the fourth after he had ended all his wars, and ſettled the affairs of Sicily, Greece, Aſia, Syria, and the Parthians.—The day whereon he made his entry into Rome, being the 4th of the ides of October, was appointed to be kept a feaſt; and was called *Auguſtalis*.

AUGUSTALIA was alſo a name given to the games celebrated in honour of the ſame prince, on the 4th of the ides of October.

AUGUSTALIS, or *Præfectus* **AUGUSTALIS**, a Roman magiſtrate, who was appointed to govern Egypt, with a power much like that of a proconſul in other provinces.

AUGUSTAN, relating to Auguſtus, or Auguſta.

AUGUSTAN *Æra*. See ACTIAN.

AUGUSTAN *Confeſſion* denotes a celebrated confeſſion of faith, drawn up by Luther, and other antient reformers, and preſented in 1530. to the emperor Charles V. at the diet of Auguſta or Augſburg, in the name of the evangelic body.

AUGUSTINS, or **AUGUSTINIANS**, an order of religious; thus called from St. Auguſtine, whoſe rule they obſerve.

The *Auguſtins*, popularly alſo called *Auſtin friers*, were originally hermits, whom pope Alexander IV. firſt congregated into one body, under their general Lanfranc, in 1256.

The *Auguſtins* are clothed in black, and make one of the four orders of mendicants.

From theſe aroſe a reform, under the denomination of *barefoot Auguſtins*, or *Minorites*, or *friers minor*.

There are alſo canons regular of St. *Auguſtine*, who are cloathed in white, excepting their cope, which is black.

At Paris they are known under the denomination of, *religious of Genevieve*; that abbey being the chief of the order. See Genevieve.

There are alſo *Auguſtines*, or nuns and canoneſſes, who obſerve the rules of St. Auguſtine.

The Augustine, Augustinus, of Janſenius, is a celebrated treatiſe of that author, biſhop of Ypres, intituled, *Cornelii Janſenii, Epiſcopi Iprenſis, Auguſtinus*, in three volumes, folio, printed at Louvain in 1640; the firſt tome whereof contains a diſcourſe againſt Pelagianiſm; and the ſecond, divers treatiſes of reaſon; the uſe of authority in theological matters; the ſtate of innocence; fall of nature by ſin; grace, *&c.* — From theſe ſeveral treatiſes were collected the five famous propoſitions, enumerated under the article Jansenism.

AU-GUY-L'AN-NEUF, or Aguillanneuf. See Misleto.

AVIARY *, a houſe or apartment kept for the keeping, feeding, and propagating, of birds.

* The word is formed of the Latin *avis*, bird.

AVIGNON-*Berry*, called alſo *French Berry*, is the fruit of a ſhrub by ſome authors called *lycium*; growing plentifully near *Avignon*, and in other parts of France.

The berry is ſomewhat leſs than a pea; its colour is green, approaching towards a yellow; and it is of an aſtringent and bitter taſte.—It is much uſed by the dyers, who ſtain a yellow colour with it; and by the painters, who alſo make a fine golden yellow of it.

AVISO *, an advice, piece of intelligence, or advertiſement, to notify ſome event, or matter worthy of knowlege.

* The word is Italian, *auviſo*; and is chiefly uſed in matters of commerce.

AUL. See the article Awl.

AULA, in our antient law-books, ſignifies a court baron. —*Aula ibidem tenta quarto die Auguſt.* &c.

Aula eccleſiæ is ſometimes uſed for what we now call *navis eccleſiæ*. See Nave.

AULIC, Aulica, an act which a young divine maintains in ſome foreign univerſities, upon the admiſſion of a new doctor of divinity.

It is ſo called from the Latin, *aula*, a hall; it being in the hall of the univerſity, that this act is uſually held.

The perſon who preſides at the diſputation, is the ſame that is to take the doctor's cap.

Aulic, Aulicus, is alſo an appellation, given to certain officers of the emperor, who compoſe a ſuperior court or council, which has an univerſal juriſdiction, and without appeal, over all the ſubjects of the empire, in all proceſſes entered therein.

We ſay, *aulic* council, the *aulic* court or chamber, *aulic* counſellor, *&c.*

The *aulic* council is eſtabliſhed by the emperor, who nominates the officers; but the elector of Mentz has a right of viſiting it.—It is compoſed of a preſident, who is a catholic; a vice-chancellor, preſented by the elector of Mentz, and of eighteen aſſeſſors, or counſellors, nine whereof are Proteſtants, and nine Romaniſts.

They are divided into two benches, one whereof is taken up by nobles, and the other by lawyers.—They hold their aſſembly in the preſence of the emperor; and for that reaſon, are called *juſtitium imperatoris*, the *emperor's juſtice*: and *aulic council*, becauſe theirs follows the emperor's court, *aula*, and has its reſidence in the place where he is.—This court claſhes a little with the imperial chamber of Spires; in that they are preventive of each other; it not being allowed to remove any cauſe from the one to the other.

Nor can the emperor himſelf hinder or ſuſpend the deciſions of either court; much leſs call any cauſe before himſelf, which has once been before them; without the conſent of the ſtates of the empire. Yet, in ſome caſes, the ſame council forbears making any peremptory concluſion, without the emperor's participation; and only decrees thus, *Fiat votum ad Cæſarem*; that is, Make a report hereof to the emperor in his privy-council.

AULNEGER, or Alnager. See Alnager.

AULO, Αυλος, a Grecian long meaſure. See Measure.

AUMONE, or Alms. See the article Alms.

Tenure in Aumone is where lands are given to a religious houſe or church, that ſome ſervice may be ſaid for the good of the donor's ſoul.

AUMONIER, or Almoner. See Almoner.

AUNCEL-*Weight, quaſi Handſal-Weight*, an antient kind of balance, conſiſting of ſcales hanging on hooks faſtened at each end of a beam or ſtaff, which a man lifts up on his hand or fore-finger, and ſo diſcovers the equality or difference between the weight and the thing weighed.

There being great deceits practiſed in theſe weights, they were prohibited by ſeveral ſtatutes; and the even ballance alone commanded.

The word is ſtill uſed in ſome parts of England, to ſignify meat ſold by poiſing in the hand, without putting it into the ſcales.

AUNCESTOR — *Aſſiſe of Mort d'*Auncestor. See Assise.

AUNCESTREL *Homage*. See the article Homage.

AUNCIENT *Demain*. See Antient *Demain*.

AVOCATORIA, a mandate of the emperor of Germany, directed to ſome prince or ſubject of the empire, to ſtop his unlawful proceedings in any cauſe brought by way of appeal before him.

AVOIDANCE, in law, has two ſignifications: the one when a benefice becomes void of an incumbent; the other, when we ſay in pleadings in chancery, confeſſed or *avoided*, traverſed or denied, *&c.* See Voidance.

AVOIRDUPOIS, or Averdupois *Weight*, a kind of weight uſed in England; the pound whereof contains ſixteen ounces. See Weight.

The proportion of a pound *avoirdupois* to a pound *troy*, is as 17 to 14.

All the larger and coarſer commodities are weighed by *avoirdupois* weight; as groceries, cheeſe, wool, lead, hops, *&c.*

Bakers who live not in corporation-towns, are to make their bread by *avoirdupois* weight; thoſe in corporations by *troy* weight.—The apothecaries buy their drugs by *avoirdupois*, but ſell their medicines by *troy*.

AVOWEE, Advocatus: See Advowee, and Advocate.

The *avowee* is he to whom the right of advowſon of any church belongs, ſo that he may preſent thereto in his own name: he is thus called by way of diſtinction from thoſe who ſometimes preſent in another man's name, as a guardian, who preſents in the name of his ward; as alſo from thoſe who only have the lands whereto an advowſon belongs for term of life or years, by intruſion, or diſſeiſin.

AVOWRY, in law, is where one takes a diſtreſs for rent, or other thing; and the other ſues replevin. In which caſe the taker ſhall juſtify, in his plea, for what cauſe he took it; and if he took it in his own right, he is to ſhew it, and ſo *avow* the taking; which is called his *avowry*. If he took it in the right of another, when he has ſhewed the cauſe, he is to make conuſance of the taking, as being a bailiff or ſervant to him in whoſe right he did it.

AU-PIS-ALLER, a French phraſe, ſometimes uſed among Engliſh writers, ſignifying, *at the worſt*.

AURA *, among phyſiologiſts, an airy exhalation or vapour. See Vapour, and Exhalation.

* The word is Latin, derived from the Greek *αυρα*, gentle wind.

AURATUS *Eques*. See Eques.

AUREA *Alexandrina*, in pharmacy, a kind of opiate, or antidote, which was in great fame among the antient writers, compoſed of a great number of ingredients.

It is called *aurea*, from the gold *(aurum)* which enters its compoſition; and *Alexandrina*, as having been firſt invented by a phyſician named Alexander.—It is reputed a good preſervative againſt the colic and apoplexy.

AURELIA, a term uſed by natural hiſtorians for the firſt apparent change of the *eruca*, or maggot, of any ſpecies of inſects.

Aurelia is the ſame with what other writers call *chryſalis*; ſome *nympha*. See Supplement, article Chrysalis.

AUREOLA, the crown of glory, given by painters and ſtatuaries, to ſaints, martyrs, and confeſſors; as a mark of the victory which they have obtained.

F. Sirmond ſays, the cuſtom hereof was borrowed from the heathens, who uſed to encompaſs the heads of their deities with ſuch rays.

The word *aureola*, in its original, ſignified a jewel which was propoſed as the prize of a diſpute; and was given as the reward of victory.

Among the Romiſh ſchool-divines, *aureola* is ſuppoſed to be a ſpecial reward beſtowed on martyrs, for the victory they have obtained over the powers of the world; virgins over the temptations of the fleſh; and doctors over the artifices and ſeductions of the devil.

AUREUS *, the Roman gold coin, equivalent to 25 denarii, or 100 ſeſterces. *Suet. in Oth.* c. 4. *Tacit. Hiſt.* l. 1. *Beverin. de Ponder*. p. 33, *ſeq.*

* In modern and middle-age writers, it is alſo called *ſolidus*, or *ſolidus aureus*. Vid. *Scalig. de Re Num.* p. 52. *Beverin.* p. 252. *ſeq.*

The *aureus*, according to Arbuthnot, generally weighed double the *denarius*: on which footing, it muſt have been worth, according to the firſt proportion of coinage mentioned by Pliny, 1 *l.* 4 *s.* 3 *d.* ¾ ſterl. — According to the proportion that now obtains among us, 1 *l.* 0 *s.* 9 *d.* Plin. *l.* 33. *c.* 3.—*Arbuth. Tab.* 25.—Aynſworth, however, makes the *aurei (denarii)* of the higher empire weigh only five penny-weight; and under the lower empire, little more than half ſo much.

AURICHALCUM, among modern writers, denotes a factitious metal, popularly called *braſs*. See Brass.

The *aurichalcum* is a mixture of copper and calamine-ſtone melted together by a very vehement fire, in furnaces made on purpoſe. See Copper, and Calaminaris.

AURICLE*, Auricula, in anatomy, the external ear; or that part of the ear which is prominent from the head.

* The word is a diminutive of *auris*, ear; *q. d.* little ear.

For the ſtructure and variety of the *Auricle*, with the ſeveral parts thereof, their names, *&c.* ſee Ear.

Auricle is alſo applied to two appendages of the heart; being two muſcular caps, covering the two ventricles thereof; thus called from the reſemblance they bear to the external ear.

They move regularly, like the heart, only in an inverted order; their ſyſtole correſponding to the diaſtole of the heart, and *vice verſa*. See *Tab. Anat.* (Splanch.) *fig.* 12. *lit. d.* See alſo further of their ſtructure and office under the article Heart.

AURICULA *Judæ*, or *Jew's ear*, a kind of fungus, or muſhroom, ſomewhat reſembling, in figure, a human ear.

It grows on old elder-trees, which is the tree whereon, it is pretended by ſome, Judas hanged himſelf; which has, as they think, given occaſion to the name.

This fungus, ſteeped in water, and applied to the eyes, is ſaid to free them of inflammations: but its chief uſe is garglewiſe in decoctions, againſt inflammations of the throat, or ſwelling of the tonſils.

AURICULÆ *Alvearium*. } See the article { Alvearium.
AURICULAM *Retrahens*. } See the article { Retrahens.

AURICULAR, ſomething that relates to the ears. See Ear, Auricularis.

Thus we ſay, an *auricular* witneſs, *auritus teſtis*, a witneſs by hearſay. So,

Auricular *Confeſſion* is that made in the ear, privately. See Confession.

Auricular *Medicines* are ſuch as are ſuited to the cure of the diſtempers of the ear.

AURICULARIS *Abductor*. See the article Abductor.

The finger next the little finger is alſo called *Auricularis*, by the Greeks ωτιτης, becauſe uſed in picking the ear.

AURIGA, in aſtronomy, the *waggoner*; a conſtellation of ſtars in the northern hemiſphere: whoſe ſtars, in Ptolemy's catalogue, are 14; in Tycho's, 23; in Hevelius's, 40; in the Britannic catalogue, 68: the longitudes, latitudes, magnitudes, *&c.* whereof are as follow:

Names and ſituations of the ſtars.	Signs.	Longitud.			Latitude North.			Magn.
		°	′	″	°	′	″	
Preced. over the north. foot	♊	11	22	20	14	52	35	6
Mid. and ſouth. over the foot		11	49	45	14	01	48	6
In the heel of the north. foot.		12	19	33	10	24	53	4 3
Laſt of three over the foot		13	18	44	15	04	00	5
		13	41	48	16	32	24	6
5.								
		13	44	35	16	48	05	6
In the preced. cubit		14	31	09	20	54	23	4
Againſt the hand, preced. Hœdus		14	18	57	18	10	10	4
		16	20	03	28	33	29	6
Subſeq. Hœdus		15	06	52	18	15	15	4
10.								
South of three in the loins		16	15	17	15	23	18	5
		17	32	33	23	15	07	6
Bright one of the fore-ſhoulder, Capella		17	31	41	22	51	47	1
		16	11	20	9	34	13	6
Middle one in the loins		17	28	54	16	58	39	5
15.								
Nebuloſæ againſt the hips { South		16	49	17	10	13	20	6
Nebuloſæ againſt the hips { Middle		16	53	03	10	35	44	7
Northern ones in the ſame { Preced.		17	07	13	10	48	09	7
Northern ones in the ſame { Subſeq.		17	15	18	10	46	03	6
North. of three in the loins		18	10	58	18	34	24	6
20.								
Subſeq. in the hip		18	26	49	14	07	31	5
		17	36	57	5	43	03	7
Bright one in the ſouth. foot		18	13	56	5	21	34	2
In the fore-thigh		18	53	40	11	10	50	5
In the fore-knee		19	50	21	8	50	44	5
25.								
		21	02	46	7	05	27	6
Inform. *al.* Tauri 116th		21	06	07	2	29	23	4 5
In the neck		23	09	56	26	22	40	6
		23	26	40	16	04	34	7
Preced. in the hind-arm		23	30	15	15	43	40	6
30.								
North in the head		24	50	04	32	13	30	5 6
In the hind-thigh		23	50	36	13	50	33	6
Subſeq. in the hind-arm		23	57	35	15	41	06	5
South of two in the head		25	36	22	30	49	00	4
Brighter one in the hind-ſhoulder		25	35	32	21	28	20	2
35.								
A leſſer one contiguous to that		25	40	12	22	27	52	6
		25	52	25	24	25	20	6
In the wriſt of the hinder-hand		25	36	42	13	44	19	3 4
		26	19	09	19	31	48	6 7
		26	40	07	19	11	14	6 7
40.								
Inform. following the eaſtern arm	♊	27	00	04	15	00	59	6
		27	48	43	25	15	32	6
		28	59	02	22	59	32	6
		29	06	51	22	56	34	6
Inform. under the hind-knee		29	02	42	6	04	47	4 5
45.								
		29	27	23	30	03	05	6
	♋	0	12	40	25	54	20	5
		1	17	52	23	20	54	6
		1	52	18	7	09	30	6
Al. of Gemini 22d.		3	27	46	4	46	30	5 6
50.								
		3	20	23	19	16	34	5 6
		3	26	45	16	10	35	5 6
		3	26	27	16	40	44	5
Al. of Gemini 25th		4	06	16	5	47	05	6
of Gemini 27th		4	24	39	5	04	50	6
55.								
		3	55	02	21	21	22	5
		4	22	35	25	40	10	6
		4	40	47	20	27	01	5
		5	38	35	18	40	08	4 5
		6	21	56	15	52	47	6
60.								
Inform. behind Auriga towards Gemini, and the hither feet of Urſa major }		6	26	15	15	28	07	6
		6	35	28	15	31	22	7
		6	37	03	22	09	30	4 5
		7	40	23	15	11	33	6 7
		10	03	39	16	43	40	4 5
65.								
		11	06	34	18	26	35	5
		12	30	02	14	28	11	3
		12	20	53	18	24	21	5

AURIPIGMENTUM, called alſo *orpiment*. See Orpiment.

AURIS, an ear. See the article Ear.

Abſciſſio Aurium, cutting off the ears, was a puniſhment inflicted, by the Saxon laws, on thoſe who robbed churches; and, afterwards, on every thief; and, at length, on divers other criminals.

Auris *Elevator*. } See the article { Elevator.
Auris *Externus*. } See the article { Externus.
Auris *Obliquus*. } See the article { Obliquus.
Auris *Tinnitus*. } See the article { Tinnitus.

AURISCALPIUM*, an inſtrument wherewith to pick and cleanſe the ear from wax; and ſerving alſo for ſome other operations relating to diſorders of that part.

* The word is compounded of the Latin *auris*, ear; and *ſcalpo*, I ſcratch, or pick.

AURORA*, the morning twilight; or that faint light which begins to appear in a morning, when the ſun is within eighteen degrees of the horizon.

* Nicod. derives the word from *aureſco*; of *aurum, quia ab oriente ſole aer aureſcit.*

The poets have perſonified, and even made it a goddeſs; repreſenting her with a chariot, roſy fingers, *&c.*

Aurora *Borealis*, or Aurora *Septentrionalis*, the northern dawn, or light, is an extraordinary meteor, or luminous appearance, ſhewing itſelf in the night-time, in the northern part of the heavens. See Meteor.

It is uſually of a rediſh colour, inclining to yellow, and ſends out frequent coruſcations of pale light, which ſeem to riſe from the horizon in a pyramidal undulating form, and ſhoot, with great velocity, up to the zenith.

The *Aurora borealis* appears almoſt always in form of an arch; chiefly in the ſpring and autumn; after a dry year.—The arch is partly bright, partly dark; but generally tranſparent. Sometimes it produces an iris.—M. Godin judges, that moſt of the extraordinary meteors and appearances in the ſkies, related as prodigies by hiſtorians, *e. gr.* battles, and the like, may be probably enough reduced to the claſs of *Auroræ boreales*. Vid. *Hiſt. Acad. R. Scienc.* an. 1726. p. 405.

This kind of meteor never appears near the equator, and was ſo rare in England, that none are recorded in our annals ſince that remarkable one, November 14. 1574. till the ſurpriſing *Aurora borealis*, March 6. 1716. which appeared for three nights ſucceſſively, but by far more ſtrongly on the firſt.—Indeed, in the years 1707. and 1708. five ſmall ones were obſerved in little more than eighteen months.

Hence it ſhould ſeem, that the air, or earth, or both, are not at all times diſpoſed to produce this phænomenon: for though it is poſſible it may happen in the day-time, in bright moonſhine, or in cloudy weather, and ſo paſs unobſerved; yet that it ſhould appear ſo frequent at ſome times, and ſo ſeldom at others, cannot well this way be accounted for.—That in March 1716. was viſible to the weſt of Ireland, and the confines of Ruſſia, and to the eaſt of Poland; extending at leaſt near 30° of longitude, and 50° in latitude; that is, over almoſt all the north of Europe; and in all places at the ſame time, it exhibited the like wondrous appearances.

A ſufficient number of obſervations have not yet been made, by the curious, to enable them to aſſign the cauſe of this phænomenon, with any certainty.—Dr. Halley, however, imagines the watery vapours, or effluvia, rarified exceedingly by ſubterraneous fire, and tinged with ſulphurous ſteams, which naturaliſts ſuppoſe to be the cauſe of earthquakes, may alſo be the cauſe of this appearance: or, that it is produced by a kind of ſubtile matter, freely pervading the pores of the earth, and which, entering into it nearer the ſouthern pole, paſſes out again, with ſome force, into the æther at the ſame diſtance from the northern; the obliquity of its direction being proportioned to its diſtance from the pole. This ſubtile matter, by becoming ſome way or other more denſe, or having its velocity increaſed, may be capable of producing a ſmall degree of light, after the manner of effluvia from electric bodies, which, by a ſtrong and quick friction, emit light in the dark: to which ſort of light this ſeems to have a great affinity. *Phil. Tranſ.* N° 347.

M. De Macran, in an expreſs treatiſe on the *aurora borealis*, publiſhed in 1731. aſſigns its cauſe to be the zodiacal light; which, according to him, is no other than the ſun's atmoſphere: which happening, on ſome occaſions, to meet the upper parts of our air, on this ſide the limits where univerſal gravity begins to act more forcibly towards the earth than towards the ſun; falls into our atmoſphere, to a greater or leſs depth, as its ſpecific gravity is greater or leſs, compared to the air it paſſes through. Vid. *Tract. Phyſ. & Hiſt. del. Aurore Boreal. Suite des Mem. del Acad. R. des Scienc. ann.* 1731. p. 3. *ſeq.*—See alſo ZODIACAL LIGHT.

AURUM, in natural hiſtory, denotes *gold*. See GOLD.

The word is chiefly uſed among us as applied to certain chymical preparations, whereof gold is the baſis, or principal ingredient.—Such are the *Aurum potabile*, *Aurum fulminans*, &c.

AURUM *fulminans* is a preparation of gold; thus called, becauſe when caſt in the fire, it produces a violent noiſe, like thunder. It conſiſts of gold diſſolved in aqua regia, and precipitated by oil of tartar per deliquium, or volatile ſpirit of ſal armoniac. The powder being waſhed in warm water, and dried to the conſiſtence of a paſte, is afterwards formed into little grains of the bigneſs of hemp-ſeed.

It is inflammable, not only by fire, but alſo by a gentle warmth; and gives a report much louder than that of gunpowder.

Its effect is commonly ſaid to be principally downwards; in oppoſition to gunpowder, which is chiefly upwards: but this rather ſeems a vulgar error.

A ſcruple of this powder acts more forcibly than half a pound of gunpowder: a ſingle grain laid on the point of a knife, and lighted at a candle, goes off with a greater noiſe than a muſquet.—It is ſaid to conſume even to the very laſt atom.

AURUM *moſaicum*, or *muſicum*, a preparation in pharmacy; thus called from its golden colour and appearance. It is made of mercury, tin, ſal armoniac, and flowers of ſulphur; by grinding, mixing, and then ſetting them three hours in a ſand-heat.—The dirty ſublimate being taken off, the *Aurum moſaicum* is found at the bottom of the matraſs.

It is recommended in moſt chronical and nervous caſes; and particularly convulſions of children.—Its doſe is from 4 gr. to a ſcruple.

AURUM *potabile*, potable gold, is a compoſition made of gold, by reducing it, without any corroſive, into a kind of gluten, or ſubſtance like honey, of the colour of blood; which being ſteeped in ſpirit of wine, gives it a ruby colour, and makes what is called *tincture of gold*.

An ounce of this tincture, mixed with ſixteen ounces of another liquor, is called *Aurum potabile*; and is ſaid to be a ſovereign remedy againſt ſeveral diſeaſes.

A modern phyſician has aſſerted, that gold is a reſin drawn from the earth; and that the grand ſecret of rendering gold potable, does not conſiſt in diſſolving this reſin by means of corroſives, but by a water, wherein it melts like ice or ſnow in hot water; and this water, he ſays, muſt be nothing but a liquor extracted from gold, agreeable to an axiom that he lays down, which is, that matters of different natures have no ingreſs into one another; but that every menſtruum or diſſolvent ought to be taken from bodies of the ſame kind with thoſe it is to act upon.

The ſame author obſerves, that blood and urine furniſh a ſal armoniac, which, mingled with aqua fortis, acts upon gold: whence he conjectures, that there may be a conformity of nature between gold and blood; and that by conſequence gold, well opened and ſubtilized, might produce a reſin, and a fire that would augment the blood: but this is a wild ſort of arguing.

AURUM *Reginæ*. See the article QUEEN *Gold*.

AUSCULTARE, in antient cuſtoms.—In regard the reading of prayers with a graceful tone, or accent, make ſome impreſſion on the hearers; there was antiently a perſon appointed, in monaſteries, to hear the monks read and ſing, who inſtructed them how to perform, before they were admitted to read or chant publickly in the church, or before the people*.—This was called *Auſcultare*, *q. d.* to hear, or liſten.

* *Quicunque lecturus vel cantaturus eſt aliquid in monaſterio; ſi neceſſe habeat, ab eo, viz. cantore, priuſquam incipiat, debet Auſcultare.* Lanfranc in Decret. pro Ord. Bened.

AUSPEX*, a name originally given to thoſe who were afterwards denominated *augurs*. See AUGUR.

* In which ſenſe the word is ſuppoſed to be formed from *avis*, bird; and *inſpicere*, to inſpect; *auſpices*, q. d. *aviſpices*.

Some will therefore have *auſpices* properly to denote thoſe who foretold future events from the ſight of birds.

AUSPICIUM, AUSPICY, the ſame with *augury*. See AUGURY.

Servius, indeed, diſtinguiſhes between *Auſpicy* and *augury*; making *Auſpicy* comprehend the conſideration of all things; *augury* only of certain things: he adds, that the former was allowed a man any-where abroad, whereas the latter might only be performed in his native place. *Auſpicari cuivis etiam peregrè licet: augurium agere niſi in patriis ſedibus non licet.* And it is certain, that conſuls, generals, and others, who took omens out of Rome, were properly ſaid *auſpicari*: nevertheleſs, cuſtom appears to have over-ruled this diſtinction.

AUSTERE*, implies a rough aſtringent taſte; ſuch as that of vitriol, alum, &c.

* The word comes from the Greek αυςηρος, which ſignifies the ſame.

Auſtere things differ from *acerb*, or ſour ones, in that they conſtringe the mouth and tongue ſomewhat leſs, and are devoid of acidity.

AUSTERITY, AUSTERENESS *of taſte*, that which denominates a ſapid body *auſtere*. See AUSTERE.

AUSTERITY, among moral writers, ſometimes denotes *rigour* in the inflicting of puniſhments.

We ſay, *Auſterity* of manners; the *Auſterities* of the monaſtic life. The *Auſterity* of the Roman cenſors kept the people in their duty. The greateſt *Auſterity* of the Carthuſians is perpetual ſolitude.

AUSTRAL*, AUSTRALIS, the ſame with *ſouthern*. See SOUTH.

* The word is derived from *auſter*, ſouth wind. See WIND.

Thus, *auſtral ſigns* are the ſix laſt ſigns of the zodiac; ſo called, becauſe they are on the ſouth ſide of the equinoctial. See SIGN.

AUSTRALIS *Piſcis*, is a conſtellation of the ſouthern hemiſphere, not viſible in our latitude.

AUTHENTIC, Αυθεντικος, ſomething of received authority. It alſo ſignifies ſomething ſolemn, and celebrated; clothed in all its formalities; and atteſted by proper perſons to whom credit has been regularly given.

In this ſenſe we ſay, the truths of Chriſtianity are founded on *authentic* teſtimonies, &c.—*Authentic* papers, inſtruments, &c. —The nobility and perſons of rank were particularly called *authentic* perſons, as being ſuppoſed more deſerving of credit than others.

AUTHENTICATING*, the puniſhing an adultereſs, by public whipping, and ſhutting her up in a convent for two years; after which, if the huſband be not willing to take her back, ſhe is ſhaven, veiled, and ſhut up for life.

* It is thus called, as being the puniſhment preſcribed in the authentics.

If the huſband die within the two years, ſhe ſeems to have a right to petition the court for her liberty: at leaſt, another man, willing to marry her, may petition, and probably obtain it.

AUTHENTICS, AUTHENTICÆ, in the civil law, is a name given to the novels of Juſtinian. See NOVEL.

The reaſon of the denomination is not well known.—Alciat will have it to have been firſt given them by Accurſius. The novels were originally compoſed in Greek, and afterwards tranſlated into Latin by the patrician Julian, who alſo reduced them into fewer words, and leſs compaſs. And in the time of Bulgarus, there was a ſecond verſion made, more exact and literal, tho' not quite ſo elegant as the former.

This tranſlation, ſays the author juſt cited, being preferred by Accurſius, he called it *authentica*, by way of preference over that of Julian, as being more conformable to the original.

AUTHOR*, AUCTOR, properly denotes one who created or produced any thing; and is applied, by way of eminence, to the firſt cauſe; *viz.* God.

* The word is Latin; formed of the Greek αυτος, *ipſe*; or, rather, from the Latin participle *auctus*, of *augeo*, I increaſe.

We ſay, the *Author* of nature; *Author* of the univerſe, &c. The term *Author* is ſometimes alſo uſed in the ſame ſenſe with *inſtitutor*, or *inventor*.—Polydore Virgil has wrote eight books of the *Authors* or inventors of things, &c. See INVENTION. —Pythagoras is held the *Author* of the dogma of metempſychoſis.

AUTHOR, in matters of literature, denotes a perſon who has wrote or compoſed ſome book or writing.

We ſay the ſacred *Authors*; anonymous *Authors*; antient and modern *Authors*; the Latin *Authors* pillaged the Greeks, &c.—An original *Author* is he who firſt treated of any point or ſubject; who did not follow any other perſon, imitate any model either in the matter or the manner of what he has wrote. See ORIGINAL.

AUTHORITATE *Parliamenti.* See CUSTODES.

AUTHORITY, AUCTORITAS, in a general ſenſe, denotes a right or power to command, and make one's ſelf obeyed.

In this ſenſe we ſay, the ſupreme or ſovereign *Authority*; abſolute or deſpotic *Authority*; the royal *Authority*; the epiſcopal *Authority*; the *Authority* of the church; of a father, *&c.* The *Authority* of Scripture, of a creed, confeſſion, or the like.

AUTHORITY is alſo uſed for the teſtimony of an author, or writing.

The word is alſo particularly underſtood of an apophthegm, or ſentence of ſome great or eminent perſon, quoted in a diſcourſe, either by way of proof, or imbelliſhment.

Authority alſo includes rules, laws, canons, decrees, deciſions, *&c.* alleged in confirmation of a matter in diſpute.

Paſſages quoted from Ariſtotle were of great *Authority* in the ſchools: texts of Scripture are of deciſive *Authority*.

Authorities make a ſpecies of arguments called by rhetoricians *inartificial*, or *extrinſic arguments*.

For the uſe and effect of *Authorities*, ſee PREJUDICE, EVIDENCE, REASON, PROBABILITY, FAITH, REVELATION, *&c.*

AUTO *da fé.* See ACT OF FAITH.

AUTOCEPHALUS*, a perſon who is his own ruler or maſter, and who has no other over him.

* The word is compounded of the Greek *αυτος*, *ipſe*; and *κεφαλη*, *caput*, head.

This denomination was given, by the Greeks, to certain archbiſhops, who were exempted from the juriſdiction of patriarchs.—Such was the archbiſhop of Cyprus, by a general decree of the council of Epheſus, which freed him from the juriſdiction of the patriarch of Antioch.

There were ſeveral other biſhops in the eaſt, who were *Autocephali*; and, in the weſt, thoſe of Ravenna pretended to the ſame right.—The ſixth council, canon 39. ſays, that the *Autocephali* have the ſame authority with patriarchs; but this is not to be underſtood in the full latitude of the words; but only as intimating, that the *Autocephali* have the ſame authority over their biſhops, that patriarchs had over their archbiſhops: in which ſenſe, only, they are equal to patriarchs.

AUTOGRAPHUM*, *Αυτογραφον*, the very hand-writing of any perſon; or the original of a treatiſe, or diſcourſe.—The word is uſed in oppoſition to a *copy*.

* The word is formed of the two Greek words; *αυτος*, and *γραφω*, *ſcribo*.

AUTOMATON*, or AUTOMATUM, a ſelf-moving engine; or a machine which has the principle of motion within itſelf.

* The word is Greek, *αυτοματον*; compounded of *αυτος*, *ipſe*; and *μαομαι*, I am excited, or ready: whence *αυτοματος*, ſpontaneous.

Such were Archytas's flying dove, mentioned by Aulus Gellius, *Noct. At. l.* 10. *c.* 12. and Regiomontanus's wooden eagle, which, as hiſtorians relate, flew forth of the city, met the emperor, ſaluted him, and returned: as alſo his iron fly, which, at a feaſt, flew out of his hands, and, taking a round, returned thither again. Hakew. *Apol. c.* 10. § 1.

Among *Automata* are alſo reckoned all mechanical engines which go by ſprings, weights, *&c.* included within them: ſuch are, clocks, watches, *&c.* Vid. *Bapt. Port. Mag. Nat. c.* 19. *Scalig. Subtil.* 326.

AUTOPSY*, *Αυτοψια*, ocular inſpection; or the ſeeing a thing with one's own eyes.

* The word is compounded of *αυτος*, one's ſelf; and *οψις*, ſight.

AUTUMN*, AUTUMNUS, the third ſeaſon of the year; being that wherein the harveſt, and the fruits of the ſummer, are gathered.

* Some derive the word from *augeo*, I increaſe; *quod annum frugibus augeat*.

Autumn begins on the day when the ſun's meridian diſtance from the zenith, being on the decreaſe, is a mean between the greateſt and the leaſt; which in theſe countries is ſuppoſed to happen when the ſun enters Libra. Its end coincides with the beginning of winter.

Divers nations have computed the years by *Autumns*; the Engliſh Saxons, by winters.—Tacitus tells us, the antient Germans were acquainted with all the other ſeaſons of the year, but had no notion of *Autumn*. Lidyat obſerves, of the beginning of the ſeveral ſeaſons of the year, that

Dat Clemens hyemem, dat Petrus ver cathedratus,
Æſtuat Urbanus, Autumnat *Bartholomæus*.

Autumn has always been reputed an unhealthy ſeaſon. Tertullian calls it *tentator valetudinum*; and the ſatiriſt ſpeaks of it in the ſame light.—*Autumnus Libitinæ quæſtus acerbæ.*

AUTUMN, in alchymy, the time or ſeaſon when the operation of the philoſophers ſtone is brought to maturity and perfection.

AUTUMNAL, ſomething peculiar to *autumn*.

AUTUMNAL *Point* is one of the equinoctial points; being that from which the ſun begins to deſcend towards the ſouth pole.

AUTUMNAL *Equinox* is the time when the ſun enters the *autumnal* point. See EQUINOX.

AUTUMNAL *flowers*. See the article FLOWER.

AUTUMNAL *ſigns* are thoſe through which the ſun paſſes during the ſeaſon of *autumn*.

The *autumnal* ſigns are, Libra, Scorpio, and Sagittary. See LIBRA, SCORPIO, and SAGITTARIUS.

AUXESIS, in rhetoric, a figure whereby any thing is magnified too much. See AMPLIFICATION.

AUXILIARY, AUXILIARIS, any thing that is helping or aſſiſting to another. See AUXILIUM.

We ſay, *Auxiliary* books; a prince is to truſt more to his own ſoldiers, than to *Auxiliary* troops, *&c.*

AUXILIARY *Verbs*, in grammar, are ſuch as help to form or conjugate others; that is, are prefixed to them to form or denote the moods or tenſes thereof.

Such, in Engliſh, are *have*, *am*, or *be*; in French, *eſtre*, and *avoir*; in Italian, *ho*, and *ſono*, &c.—The *Auxiliary am* ſupplies the want of paſſives in our language. See PASSIVE.

All the modern languages, we know of, make uſe of *auxiliary* verbs.—The reaſon is, that the verbs thereof do not change their terminations or endings, as thoſe of the Latin and Greek, to denote the different tenſes or times of being, doing, or ſuffering; nor the different moods or manners of their ſignifying: ſo that, to ſupply this defect, recourſe is had to different *auxiliary* verbs.

Beſides the perfect *auxiliary* verbs, we have ſeveral defective ones; as *do*, *will*, *ſhall*, *may*, *can*, and *have*; which, by changing their own terminations, ſave the neceſſity of changing thoſe of the verbs they are added to.—Thus, inſtead of *ego uro*, *tu uris*, *ille urit*, *&c.* we ſay, I *do* burn, thou *doſt* burn, he *doth* burn, *&c.*

AUXILIUM, in law. See the article AID.

AUXILIUM *Curiæ* ſignifies an order of court, for the ſummoning of one party at the ſuit of another.

AUXILIUM *ad filium militem faciendum, vel filiam maritandam*, was a writ directed to the ſheriff of every county, where the king or other lord had any tenants, to levy of them reaſonable aid, towards the knighting his eldeſt ſon, or the marriage of his eldeſt daughter.

AWARD, in law, the judgment of ſome perſon who is neither aſſigned by law, nor appointed by the judge, for ending a matter in controverſy; but is choſen by the parties themſelves that are at variance.

AWL, or AUL, a ſhoemaker's impliment, wherewith holes are bored in leather, to facilitate the ſtitching or ſewing the ſame.—The *blade* of the *Awl* is uſually a little flat, and crooked; and the point ground to an acute angle.

AWME, or AUME, a Dutch meaſure of capacity for liquids; containing 8 ſteckans, or 20 verges, or verteels; anſwering to what in England is called a *tierce*, or $\frac{1}{6}$ of a ton of France, or $\frac{1}{7}$ of an Engliſh ton. Arbuth. *Tab.* 33. See alſo MEASURE, *&c.*

AWN, in botany, *ariſta*; the beard growing out of the huſk of corn or graſs. See ARISTA.

AWNING, on board a ſhip, is when a ſail, a tarpaulin, or the like, is hung over any part of the ſhip, above the decks, to keep off the ſun, rain, or wind.

In the long-boat they make an *Awning*, by bringing the ſail over the yard and ſtay, and booming it out with the boat-hook.

AX, a carpenter's inſtrument, ſerving to hew wood.—The *Ax* differs from the joiner's hatchet, in that it is made bigger, deeper, and heavier, as ſerving to hew large ſtuff; and its edge tapering into the middle of its blade.—It is furniſhed with a long handle or helve, as being to be uſed with both hands. *Mox. Mech. Exerc.* p. 119.

AXILLA*, or ALA, in anatomy, the cavity under the upper-part of the arm; commonly called the *arm-pit*.

* The word is a diminutive of *axis*; *q. d.* little axis. See AXIS.

Abſceſſes in the *Axillæ* are uſually dangerous, on account of the many blood-veſſels, lymphatics, nerves, *&c.* thereabout, which form ſeveral large plexus's.—By the antient laws, criminals were to be hanged by the *Axillæ*, if they were under the age of puberty.

AXILLA, in botany, is the ſpace comprehended between the ſtems of plants and their leaves.

Hence we ſay, thoſe flowers grow in the *Axillæ* of the leaves; *i. e.* at the baſe of the leaves, or juſt within the angle of their pedicles.

AXILLARY, AXILLARIS, in anatomy, ſomething that belongs to the *axillæ*, or lies near them. See AXILLA.

AXILLARY *Artery*, is a ramification of the trunk of the ſubclavian artery; which, paſſing under the arm-pits, changes its name, and is called *Axillary*.

AXILLARY *Vein* is one of the ſubclavian veins; which, paſſing under the arm-pits, divides itſelf into ſeveral branches; ſuperior, inferior, external, internal, *&c.* which are ſpread over the arm.—See *Tab. Anat.* (Angeiol) *fig.* 6. *lit. m.*

The ſecond *vertebra* of the back is ſometimes alſo called the *axillary vertebra*; in regard it is neareſt to the arm-pits.

Axillary *Glands*. See **Hircus**.

AXINOMANCY *, **Axinomantia**, an antient ſpecies of divination, or a method of foretelling future events by means of an ax or hatchet.

* The word is formed from the Greek *αξινη*, *ſecuris*; and *μαντεια*, *divinatio*.

This art was in conſiderable repute among the antients; and was performed, according to ſome, by laying an agate-ſtone on a red-hot hatchet.

AXIOM, **Axioma**, a ſelf-evident truth; or a propoſition whoſe truth every perſon perceives at firſt ſight.

Thus, that the whole is greater than a part; that a thing cannot give what itſelf has not; that a thing cannot be and not be at the ſame time; that from nothing, nothing can ariſe, are *Axioms*.

By *Axioms*, called alſo *maxims*, are underſtood all common notions of the mind, whoſe evidence is ſo clear and forcible, that a man cannot deny them without renouncing common ſenſe, and natural reaſon.

The rule of *Axioms* is this, that whatever propoſition expreſſes the immediate clear compariſon of two ideas without the help of a third, is an *Axiom*.—On the other hand, a truth which does not ariſe from an immediate compariſon of two ideas, is no *Axiom*.

Wolfius aſſigns the eſſence of an *Axiom* thus: whatever propoſition ariſes immediately from the conſideration of a ſingle definition, is an *Axiom*.—Thus it neceſſarily following from the geneſis of a circle, that all right lines draw from the centre to the circumference thereof, are equal; inaſmuch as they all repreſent the ſame line in different ſituations: this is an *Axiom*.

Hence, the truth of *Axioms* being perceived by the mere intuition of a definition; they need no demonſtration: ſince they are neceſſarily as true, as the definition is juſt.

Several authors abuſe this property of *Axioms*, and obtrude for *Axioms* the premiſes of ſyllogiſms, which they are not able to prove.—Euclid himſelf lies liable to exception on this account, having aſſumed the equality of figures which mutually agree, or are congruous to each other, as an *Axiom*.

Axioms, in effect, ſtrictly ſpeaking, are no other than identic propoſitions.—Thus, to ſay that all right angles are equal to each other, is as much as to ſay, all right angles are right angles: ſuch equality being implied in the very definition, or the very name.

My lord Bacon propoſes a new ſcience, to conſiſt of general *Axioms*, under the denomination of *philoſophia prima*.

For the reaſon of the evidence of *Axioms*; it may be obſerved, that knowlege being only the perception of the agreement or diſagreement of ideas; where that agreement or diſagreement is perceived immediately by itſelf, without the intervention or help of any other ideas, there our knowlege is ſelf-evident: which being ſo, not only thoſe uſually allowed for *Axioms* or *maxims*, but an infinite number of other propoſitions, partake equally with them in this ſelf-evidence. Thus, that a circle is a circle, or that blue is not red, are as ſelf-evident propoſitions, as thoſe general ones, what is, is; and it is impoſſible for the ſame thing to be, and not to be. Nor can the conſideration of theſe propoſitions add any thing to the evidence or certainty of our knowlege of them. As to the agreement or diſagreement of co-exiſtence, the mind has an immediate perception of this but in very few. And therefore in this ſort we have very little intuitive knowlege; though in ſome few propoſitions we have. Two bodies cannot be in the ſame place, is a ſelf-evident propoſition: the idea of fitting a place equal to the contents of its ſuperficies, being annexed to our idea of body.

As to the relations of modes, mathematicians have framed many *Axioms* concerning that one relation of equality: as, that equals being taken from equals, the remainders will be equal, *&c.* which, however received for *Axioms*, yet have not a clearer ſelf-evidence than theſe, that one and one are equal to two; that if from the five fingers of one hand you take two, and from the five fingers of the other hand two, the remaining numbers will be equal. As to real exiſtence, ſince that has no connexion with any other of our ideas, but that of ourſelves, and of a firſt being; we have not ſo much as a demonſtrative, much leſs a ſelf-evident, knowlege, concerning the real exiſtence of other beings. See **Existence**.

For the influence of *Axioms* or general maxims on the other parts of our knowlege; the rules eſtabliſhed in the ſchools, that all reaſonings are *ex præcognitis & præconceſſis*, ſeem to lay the foundation of all other knowlege in theſe maxims, and to ſuppoſe them to be præcognita; which implies two things, *viz.* that theſe *Axioms* are thoſe truths firſt known to the mind; and that on them the other parts of our knowlege depend.—But, firſt, that theſe *Axioms* are not the truths firſt known to the mind, is evident from experience: for who knows not, that a child perceives, that a ſtranger is not its mother, long before he knows it impoſſible for the ſame thing to be and not to be? and how many truths are there about numbers, which the mind is perfectly acquainted with, and fully convinced of, before it ever thought on thoſe general maxims?

Hence it follows, that theſe magnified *Axioms* are not the principles and foundations of all our other knowlege; for if there be a great many other truths as ſelf-evident as they, and a great many that we know before them, it is impoſſible, that they ſhould be the principles from which we deduce all other truths.—Thus, that one and two are equal to three, is as evident, and eaſier known, than that the whole is equal to all its parts.—Nor, after the knowlege of this *Axiom*, do we know that one and two are equal to three, better or more certainly, than we did before. For if there be any odds in theſe ideas, the ideas of whole and parts are more obſcure, or at leaſt more difficult to be ſettled in the mind, than thoſe of one, two, or three. Either, therefore, all knowlege does not depend on præcognita, or general maxims, called *principles*; or elſe ſuch as theſe that one and one are two, that two and two are four, *&c.* and a great part of numeration, are *Axioms*. To theſe if we add all the ſelf-evident propoſitions that may be made about all our diſtinct ideas, principles will be almoſt infinite; and a great many innate principles many men never come to know all their lives.

General maxims, or *Axioms*, then, may be of uſe in diſputes, to ſtop the mouths of wranglers; but they are of little in the diſcovery of unknown truths. Several general maxims are no more than bare verbal propoſitions, and teach us nothing but the reſpect and import of names one to another; as, the whole is equal to all its parts: what real truth does this teach us more, than what the ſignification of the word *totum*, or *whole*, does of itſelf import? If rightly conſidered, we may ſay, that where our ideas are clear and diſtinct, there is little or no uſe at all of maxims, to prove the agreement or diſagreement of any of them. He that needs any proof to make him certain, and give his aſſent to this propoſition, that two are equal to two, or that white is not black; will alſo have need of a proof to make him admit, that what is, is; or, that it is impoſſible for the ſame thing to be, and not to be. But as maxims are of little uſe, where we have clear and diſtinct ideas; ſo they are of dangerous uſe, where our ideas are confuſed, and where we uſe words that are not annexed to clear and diſtinct ideas. *Locke.*

Axiom is alſo an eſtabliſhed principle in ſome art or ſcience.

Thus, it is an *Axiom* in phyſics, that nature diſcovers herſelf moſt in the ſmalleſt ſubjects; alſo that nature does nothing in vain; that effects are proportional to their cauſes, *&c.* So it is an *Axiom* in geometry, that things equal to the ſame third are alſo equal to one another; that if to equal things you add equals, the ſums will be equal, *&c.* It is an *Axiom* in optics, that the angle of incidence is equal to the angle of reflexion, *&c.* It is an *Axiom* in medicine, *&c.* that there is no ſincere acid in the human body, *&c.*

In this ſenſe the general laws of motion are called *Axioms*; as, that all motion is rectilinear, that action and reaction are equal, *&c.*

Theſe particular *Axioms*, it may be obſerved, do not immediately ariſe from any firſt notions or ideas, but are deduced from certain hypotheſes: this is particularly obſervable in phyſical matters, wherein, as ſeveral experiments contribute to make one hypotheſis, ſo ſeveral hypotheſes contribute to one *Axiom*.

AXIS properly ſignifies a line, or a long piece of iron or wood paſſing through the centre of a ſphere, which is moveable upon the ſame.

In this ſenſe we ſay, the *Axis* of a ſphere, or globe; the *Axis*, or *axle*-tree of a wheel *, *&c.*

* There are now a ſort of improved iron axle-trees made for coaches and chaiſes, which will go in all roads, wider or narrower. Some ſcrew to the end, after the French manner.

Axis *of the world*, in aſtronomy.—The *Axis* of the world is an imaginary right line, which is conceived to paſs through the centre of the earth, and terminating at each end in the ſurface of the mundane ſphere.

About this line as an *Axis*, the ſphere, in the Ptolemaic ſyſtem, is ſuppoſed daily to revolve.

This *Axis* is repreſented by the line PQ, *Tab. Aſtron. fig.* 52.—The two extreme points hereof, in the ſurface of the ſphere, *viz.* P and Q, are called its *poles*.

Axis *of the earth*, is a right line, upon which the earth performs its diurnal rotation, from weſt to eaſt.

Such is the line PQ, *Tab. Geog. fig.* 7.—The two extreme points hereof are alſo called *poles*.

The *Axis* of the earth is a part of the *Axis* of the world.—It always remains parallel to itſelf, and at right angles with the equator. See PARALLELISM, INCLINATION, and ANGLE.

Axis *of a Planet* is a line drawn through the centre thereof, about which the planet revolves.

The ſun, moon, and all the planets, except Mercury and Saturn, are known, by obſervation, to move about their ſeveral *axes*; and the like motion is eaſily inferred of thoſe two.

Axis *of the Horizon*, the *equator*, *ecliptic*, *zodiac*, &c. are right lines drawn through the centres of thoſe circles perpendicularly to the planes thereof. See CIRCLE; ſee alſo HORIZON, and ECLIPTIC.

Axis, in mechanics.—The *axis* of a balance is the line upon which it moves or turns.

Axis *of Oſcillation* is a right line parallel to the horizon, paſſing through the centre, about which a pendulum vibrates. See PENDULUM.

Axis, in geometry.—*Axis* of rotation, or circumvolution, is an imaginary right line, about which any plane figure is conceived to revolve, in order to generate a ſolid.

Thus, a ſphere is conceived to be formed by the rotation of a ſemicircle about its diameter or *axis*, and a right cone by that of a right-angled triangle about its perpendicular leg, which is here its *axis*.

Axis *of a Circle or Sphere* is a line paſſing through the centre of the circle or ſphere, and terminating at each end, in the circumference thereof.

The *axis* of a circle, &c. is otherwiſe called the *diameter* thereof.—Such is the line A E, *Tab. Geom. fig.* 27. See DIAMETER.

Axis is yet more generally uſed for a right line proceeding from the vertex of a figure to the baſe thereof.

Axis *of a Cylinder* is properly that quieſcent right line, about which the parallelogram turns, by whoſe revolution the cylinder is formed.

Though, both in right and oblique cylinders, the right line joining the centres of the oppoſite baſes is alſo called the *axis of the cylinder*.

Axis *of a Cone* is the right line, or ſide, upon which the right-angled triangle forming the cone makes its motion.

Hence it follows, that only a right cone can properly have an *axis*; in regard an oblique one cannot be generated by any motion of a plane figure about a right line at reſt.

But in regard the *axis* of a right cone is a right line drawn from the centre of its baſe to the vertex; in analogy hereto, the writers of conics do likewiſe call the like line, drawn from the centre of the baſe of an oblique cone to the vertex, the *axis* thereof.

Axis *of a Veſſel* is that quieſcent right line paſſing through the middle thereof, perpendicularly to its baſe, and equally diſtant from its ſides.

Axis *of a Conic Section* is a right line paſſing through the middle of the figure, and cutting all the ordinates at right angles, and into two equal parts.

Thus if A P, *Tab. Conics, fig.* 31. be drawn perpendicularly to F F, ſo as to divide the ſection into two equal parts; it is called the *axis of the ſection*.

Tranſverſe **Axis**, called alſo the *firſt* or *principal* **Axis** of an ellipſis, is the *axis* A P, laſt defined; being thus called in contradiſtinction to the conjugate or ſecondary *axis*.

The tranſverſe *axis* in the ellipſis is the longeſt; and in the hyperbola it cuts the curve in the points A and P, *fig.* 32.

Conjugate **Axis**, or *ſecond* **Axis** *of the Ellipſis*, is the line F F, *fig.* 31. drawn through the centre of the figure C, parallel to the ordinate M N, and perpendicularly to the tranſverſe *axis* A P; being terminated at each extreme by the curve. See ELLIPSIS, and CONJUGATE.

The conjugate is the ſhorter of the two *axes* of an ellipſis; and is not only found in the ellipſis, but in the hyperbola.

Conjugate, or *ſecond* **Axis** *of an Hyperbola*, is the right line F F, *fig.* 32. drawn through the centre parallel to the ordinates M N, M N, perpendicularly to the tranſverſe *axis* A P. The length of this *axis*, though more than infinite, may be found by this proportion, $\sqrt{AM \times PM} : AP :: {}^{2}MN : FF$.

The *axis* of a parabola is of an indeterminate length; that is, is infinite.—The *axis* of the ellipſis is determinate.—The parabola has only one *axis*; the ellipſis and hyperbola have two.

Axis, in *Optics*.—*Optic axis*, or *viſual axis*, is a ray paſſing through the centre of the eye; or it is that ray, which, proceeding through the middle of the luminous cone, falls perpendicularly on the cryſtalline humour, and conſequently paſſes through the centre of the eye.

Common, or *mean* **Axis** is a right line drawn from the point of concourſe of the two optic nerves, through the middle of the right line, which joins the extremity of the ſame optic nerves.

Axis *of a Lens*, or *Glaſs*, is a right line paſſing along the *axis* of that ſolid, whereof the lens is a ſegment. See LENS, and GLASS.

Thus, a ſpherical convex lens being a ſegment of ſome ſphere, the *axis* of the lens is the ſame with the *axis* of the ſphere; or it is a right line paſſing through the centre thereof.

Or, the *axis* of a glaſs is a right line joining the middle points of the two oppoſite ſurfaces of the glaſs.

Axis *of Incidents*, in dioptrics, is a right line drawn through the point of incidence, perpendicularly to the refracting ſurface. See INCIDENCE.—Such is the line D B, *Tab. Optics, fig.* 56.

Axis *of Refraction* is a right line continued from the point of incidence or refraction, perpendicularly to the refracting ſurface, along the further medium. Such is the line B E.

Or, it is that made by the incident ray, perpendicularly prolonged on the ſide of the ſecond medium.

Axis *of a Magnet*, or *magnetical* **Axis**, is a line paſſing thro' the middle of a magnet, length-wiſe; in ſuch manner, as that however the magnet be divided, provided the diviſion be made according to a plane, wherein ſuch line is found, the load-ſtone will be made into two load-ſtones.

The extremes of ſuch lines are called the poles of the ſtone.

Axis, in anatomy, is the ſecond vertebra of the neck; reckoning from the ſkull.—See *Tab. Anat.* (*Oſteol.*) *fig.* 9.

It is thus called by reaſon the firſt vertebra, with the head, move thereon, as on an *axis*. See CARDO.

Spiral **Axis**, in architecture, is the *axis* of a twiſted column, drawn ſpirally, in order to trace the circumvolutions without. See *Twiſted* COLUMN.

Axis *of the Ionic Capital* is a line paſſing perpendicularly thro the middle of the eye of the volute.

The *axis* is otherwiſe called *cathetus*. See CATHETUS.

Axis *in peritrochio* is one of the five mechanical powers, or ſimple machines; contrived chiefly for the raiſing of weights to a conſiderable height.

It conſiſts of a circle, repreſented A B (*Tab. Mechanics, fig.* 44.), concentric with the baſe of a cylinder, and moveable together with it, about its *axis* E F.—This cylinder is called the *axis*; and the circle, the *peritrochium*; and the radii, or ſpokes, which are ſometimes fitted immediately into the cylinder, without any circle, the *ſcytalæ*. See PERITROCHIUM.—Round the *axis* winds a rope, whereby the weight, &c. are to be raiſed.

The *axis in peritrochio* takes place in the motion of every machine, where a circle may be conceived deſcribed about a fixed *axis*, concentric to the plane of a cylinder, about which it is placed; as in crane-wheels, in mill-wheels, capſtans, &c.

Doctrine of the **Axis** *in peritrochio*.—1. If the power, applied to an *axis in peritrochio*, in the direction A L, *fig.* 7. perpendicular to the periphery of the wheel, or to the ſcytala or ſpoke, be to a weight G, as the radius of the *axis* C E is to the radius of the wheel C A, or the length of the ſpoke; the power will juſt ſuſtain the weight, *i. e.* the weight and the power will be in æquilibrio.

2. If a power, applied in F, pull down the wheel, according to the line of direction F D, which is oblique to the radius of the wheel, though parallel to the perpendicular direction; it will have the ſame proportion to a power which acts according to the perpendicular direction A L, which the whole ſine has to the ſine of the angle of direction D F C.

Hence, ſince the diſtance of the power in A is the radius C A; the angle of direction D F C being given, the diſtance D C is eaſily found.

3. Powers applied to the wheel in ſeveral points, F and K, according to the directions, F D and K I, parallel to the perpendicular one A L, are to each other as the diſtances from the centre of motion C D and C I, reciprocally.

Hence, as the diſtance from the centre of motion increaſes, the power decreaſes; & *vice verſa*.—Hence alſo, ſince the radius A C is the greateſt diſtance, and agrees to the power acting according to the line of direction; the perpendicular power will be the ſmalleſt of all thoſe able to ſuſtain the weight G, according to the ſeveral lines of direction.

4. If a power, acting according to the perpendicular A L, raiſe the weight G, the ſpace paſſed through by the power will be to the ſpace paſſed through by the weight, as the weight to the power.

For, in each revolution of the wheel, the power paſſes thro' its whole periphery; and in the ſame time the weight is raiſed a ſpace equal to the periphery of the *axis*: the ſpace of the power, therefore, is to the ſpace of the weight, as the periphery of the wheel to that of the *axis*: but the power is to the weight, as the radius of the *axis* to that of the wheel. Therefore, &c.

5. A power, and a weight, being given, to conſtruct an *axis in peritrochio*, whereby it ſhall be ſuſtained and raiſed.

Let the radius of the *axis* be big enough to ſupport the weight without breaking. Then, as the power is to the weight, ſo make the radius of the wheel, or the length of the ſpoke, to the radius of the *axis*.

Hence, if the power be but a ſmall part of the weight, the radius of the wheel muſt be vaſtly great.—*E. gr.* ſuppoſe the weight 3000, and the power 50, the radius of the wheel will be to that of the *axis* as 60 to 1.

This inconvenience is provided againſt by increaſing the number of wheels and *axes*; and making one turn round another, by means of teeth or pinions.

AXLE-*Tree*. See the article AXIS.

AXUNGIA *, a kind of fat, the hardeſt and drieſt of any in the bodies of animals.

* The word is ſuppoſed to be formed *ab axe rotarum quæ unguntur*, from its being uſed as the greaſe of wheels.

The Latins diſtinguiſh fat into *pinguedo*, and *adeps* or *ſevum*; which laſt, when old, is particularly called *axungia*: but many of our modern writers confound them.

Phyſicians make uſe of the *axungia* of the gooſe, the dog, the viper, and ſome others, eſpecially that of man, which is held by ſome to be of extraordinary ſervice in the drawing and ripening of tumours, *&c.*

Axungia *of Glaſs*, called alſo the *gall*, and *ſalt of glaſs*, is a ſcum taken from the top of the matter of glaſs before it be thoroughly vitrified.

AYEL, in law, a writ which lies where the grandfather being ſeiſed in his demeſne the day he died, a ſtranger enters the ſame day, and diſpoſſeſſes the heir.

AYRY, or **Aery** of hawks, a neſt or company of hawks: ſo called from the old French word *aire*, which ſignifies the ſame. See Hawk.

AYSIAMENTA, or **Ayziamenta**. See Easements.

AZAMOGLANS. See the article Agemoglans.

AZIMUTH *, in aſtronomy.—The *azimuth* of the ſun, or a ſtar, is an arch of the horizon, comprehended between the meridian of the place, and any given vertical.

* The word is pure Arabic, which ſignifies the ſame thing.

The *azimuth* is the complement of the eaſtern and weſtern amplitude to a quadrant.

The *azimuth* is found trigonometrically, by this proportion; As radius is to the tangent of the latitude, ſo is the tangent of the ſun's altitude to the coſine of the *azimuth* from the ſouth, at the time of the equinox.—To find the *azimuth* by the globe, ſee Globe.

Magnetical **Azimuth** is an arch of the horizon contained between the ſun's *azimuth* circle, and the magnetical meridian; or it is the apparent diſtance of the ſun from the north or ſouth point of the compaſs.

It is found, by obſerving the ſun with an *azimuth* compaſs, when he is about 10 or 15 degrees high, either in the forenoon or afternoon.

Azimuth *Compaſs* is an inſtrument uſed at ſea for finding the ſun's magnetical *azimuth*. See *Magnetical* Azimuth.

The deſcription and uſe of the *azimuth* compaſs, ſee under the article *Azimuth* Compass.

Azimuth *Dial* is a dial whoſe ſtyle or gnomon is at right angles to the plane of the horizon.

Azimuths, called alſo *vertical circles*, are great circles interſecting each other in the zenith and nadir, and cutting the horizon at right angles, in all the points thereof.

The horizon being divided into 360°; for this reaſon they uſually conceive 360 *azimuths*.—Theſe *azimuths* are repreſented by the rhumbs on common ſea-charts.

On the globe theſe circles are repreſented by the quadrant of altitude, when ſcrewed in the zenith.

On theſe *azimuths* is reckoned the height of the ſtars, and the ſun, when he is not in the meridian; that is, the *azimuths* ſhew what diſtance theſe are at from the horizon.

AZONI *, Αζωνοι, in mythology, a term antiently applied to ſuch of the gods as were not the private divinities of any particular country or people; but were acknowleged as gods in every country, and worſhiped by every nation. See God.

* The word is derived from the Greek privative α, and ζωνη, zone, country.

Theſe *azoni* were a degree above the viſible and ſenſible gods, which were called *zonæi*; who inhabited ſome particular part of the world, and never ſtirred out of the diſtrict or zone that was aſſigned them.

AZOTH, among the antient chymiſts, ſignified the firſt matter of metals; or the mercury of a metal, more particularly that which they call the mercury of the philoſophers, which they pretend to draw from all ſorts of metallic bodies *.

* Paracelſus's *azoth*, which he boaſted of as an univerſal remedy, is pretended to have been a preparation of gold, ſilver, and mercury: a quantity of this he is ſaid to have always carried with him in the pommel of his ſword.

AZURE, the blue colour of the ſkies. See Blue Colour, and Sky.

Azure, in heraldry, ſignifies the blue colour in the coats of arms of all perſons under the degree of a baron.

In the eſcutcheons of noblemen, blue is called *ſapphire*; and in thoſe of ſovereign princes, *Jupiter*.—In engraving it is repreſented by ſtrokes or hatches drawn horizontally, as repreſented in *Tab. Heraldry*, *fig.* 3.

The French prefer this colour to all others, by reaſon the field of the arms of their kings is *azure*.

Azure is alſo uſed for a mineral colour, better known by the name of *ultramarine*: this is prepared from the lapis lazuli. See Lazuli, and Ultramarine.

In propriety, however, *azure* ſhould rather denote a bright blue colour, made from the lapis Armenus; by our painters more uſually called *Lambert's blue*.

AZYGOS, Αζυγος, in anatomy, a vein ariſing out of the cava, otherwiſe called *vena ſine pari*, becauſe ſingle. See *Tab. Anat.* (Splanch.) *fig.* 12. *lit. hh.* and alſo ſee Vein.

The *vena azygos* is the third branch of the aſcending trunk of the cava.—It deſcends through the right ſide of the cavity of the thorax, and at its arrival at the eighth or ninth vertebra begins to keep the middle, and ſends forth on each ſide intercoſtal branches to the interſtices of the eight lower ribs; and there is divided into two branches, the larger of which is inſerted ſometimes into the cava, but oftener into the emulgent; the other enters the cava, commonly a little below the emulgent; but is ſeldom joined to the emulgent itſelf.

AZYMITES, they who communicate in bread not leavened, or fermented. See Azymus.

This appellation is given by Cerularius, to thoſe of the Latin church, upon his excommunicating them in the eleventh century.

The Armenians and Maronites do alſo make uſe of azymus, or unleavened bread, in their office; on which account ſome Greeks call them *azymites*.

AZYMUS *, Αζυμος, ſomething not fermented, or that is made without leaven.

* The word is Greek, compoſed of the privative α, and ζυμη, ferment.

The term *azymus* is much uſed in the diſputes betwixt thoſe of the Greek, and Romiſh Church; the latter of whom contend, that the bread in the maſs ought to be *azymus*, unleavened, in imitation of the paſchal bread of the Jews, and of our Saviour, who inſtituted the ſacrament on the day of the paſſover; and the former ſtrenuouſly maintaining the contrary, from tradition, and the conſtant uſage of the church.

This diſpute was not the occaſion of the rupture between the Greek and Latin churches; Photius having broken with the popes 200 years before.—The patriarch Cerularius, in the eleventh century, excommunicated the Latins for adhering to the uſe of *azymus* bread, or conſecrating in *azymis*.

St. Thomas, in 4 *Sent. diſt.* 11. *q.* 2. *art.* 2. *quæſtiunc.* 3. relates, that during the firſt ages of the church, none but unleavened bread was uſed in the euchariſt, till ſuch time as the Ebionites aroſe, who held, that all the obſervances, preſcribed by Moſes, were ſtill in force: upon which, both the eaſtern and weſtern churches took to the uſe of leavened bread; and, after the extinction of that hereſy, the weſtern church returned to the *azymus*; the eaſtern pertinaciouſly adhering to the former uſage.

This account is controverted by Fa. Sirmond, in a diſſertation expreſs; wherein he ſhews, that the Latins had conſtantly communicated in leavened bread, till the tenth century. And cardinal Bona, *Rerum Liturgic. c.* 23. *p.* 185. owns a deal of diſtruſt of what St. Thomas alleges.—In the council of Florence it was decreed, that the point lay at the diſcretion of the church; and that either leavened or unleavened bread might be uſed: the weſtern church has preferred the latter.

B.

B, The ſecond letter of our, and of moſt other alphabets*.

B is the firſt conſonant, and firſt mute, and in its pronunciation is ſuppoſed to reſemble the bleating of a ſheep; upon which account Pierius tells us, in his hieroglyphics, that the Egyptians repreſented the ſound of this letter by the figure of that animal.

* This obſervation fails in the antient Iriſh alphabet; where *B* is the firſt, and *A* the ſeventeenth: and in the Abyſſinian, where *A* is the thirteenth. *V. Nichols, hiſt. pref. p.* 12. *O-Flahert, ogyg.* 3. 30. *Ludolph. gram. Æth. p.* 2.

B is alſo one of thoſe letters which the Eaſtern grammarians call *labial*, becauſe the principal organs employed in its pronunciation are the lips. It has a near affinity with the other labials P and V, and is often uſed for P, both by the Armenians, and other Orientals; as in *Betrus* from *Petrus*, *apſens* for *abſens*, &c. and by the Romans for V, as in *amabit* for *amavit*, *berna* for *verna*, &c. whence aroſe that jeſt of Aurelian on the emperor Bonoſus, *Non ut vivat natus eſt, ſed ut bibat.* See V.

B requires an intire cloſure and preſſure of the lips to pronounce it; and, therefore, can ſcarce ever end the ſound of a word: but when you endeavour to pronounce it there, you are obliged to add an E to open the lips again; as in Job, which is ſounded Jobe.

This letter alſo, if it paſs through the noſe, becomes an M; as appears in thoſe who have the noſtrils ſtopt by a cold, or otherwiſe, when they endeavour to pronounce the letter M; for inſtance, *many men*, is by ſuch a one ſounded, *bany ben.* See M.

With the antients, *B* ſtood for 300, as appears by this verſe;

Et B *trecentum per ſe retinere videtur.*

When a line was drawn above it, $\overline{B}$, it ſtood for 3000: and with a kind of accent below it, for 200; but among the Greeks, as well as Hebrews, this letter ſignified only 2.

BF, in the preface to the Decrees, or Senatus-conſulta, of the old Romans, ſignified *bonum factum.* It is often found on medals, to mark the epocha, or year.

Plutarch obſerves, that the Macedonians changed Φ into B, and pronounced *Bilip*, *Beronice*, &c. for *Philip*, *Pheronice*, &c. and that thoſe of Delphos uſed B, inſtead of Π; as βαθειν for ϖαθειν, βικρον for ϖικρον, *&c.* See P.

The Latins ſaid *ſuppono*, *oppono*, for *ſubpono*, *obpono*, and pronounced *optinuit*, though they wrote *obtinuit*, as Quintilian has obſerved.—They alſo uſed B for F or PH: thus, in an antient inſcription, mentioned by Gruter, OBRENDARIO is uſed for OFRENDARIO. See F, *&c.*

BABYLONISH *Hours*. See the article HOURS.

BACCHANALIA, a religious feaſt, in honour of Bacchus, celebrated with much ſolemnity among the antients, particularly the Athenians, who even computed their years thereby, till the commencement of the Olympiads.

The *bacchanalia* are ſometimes alſo called *orgia*, from the Greek οργη, fury, tranſport; by reaſon of the madneſs and enthuſiaſm wherewith the people appeared to be poſſeſſed at the time of their celebration.

They were held in autumn, and took their riſe from Egypt; whence, according to Diodorus, they were brought into Greece by Melampus.

The form and diſpoſition of the ſolemnity depended, at Athens, on the archon, and was, at firſt, exceeding ſimple; but, by degrees, they became incumbered with a number of ridiculous ceremonies, and attended with a world of diſſoluteneſs and debauchery; inſomuch that the Romans, who grew aſhamed of them, ſuppreſſed them by a Senatus-conſultum throughout all Italy.

The women had a great ſhare in the ſolemnity, which is ſaid to have been inſtituted on their account: for a great number of them attending Bacchus to the conqueſt of the Indies, and carrying in their hands the thyrſus, *i. e.* a little lance, covered with ivy and vine-leaves, ſinging his victories and triumphs where-ever they went; the ceremony was kept up after Bacchus's deification under the title of *bacchanalia*, and the women were inſtalled prieſteſſes thereof, under that of *bacchæ*, or *bacchantes*.

Theſe prieſteſſes, at the time of the feaſt, ran through the ſtreets, and over the mountains, covered with tygers ſkins, their hair diſhevelled, their thyrſus in one hand, and torches in the other, howling, and ſhrieking, Ευοι Σαβοι, ευοι Βακχε, or Ιω Ιακχε, or Ιω Βακχε.

Men and women met promiſcuouſly at the feaſt, all perfectly naked, except only for the vine-leaves, and cluſters of grapes, which bound their heads and hips; here they danced and jumped tumultuouſly, and, with ſtrange geſtulations, ſung hymns to Bacchus, till, weary and giddy, they tumbled down diſtracted.

BACCHIUS, in the Latin poetry, a kind of foot, conſiſting of three ſyllables; whereof the firſt is ſhort, and the two latter long; as, ĕgēſtās.

The *bacchius* is the reverſe of a dactyl, and takes its name from that of Bacchus, becauſe frequently uſed in the hymns, compoſed in his honour. It was alſo called among the antients, *œnotrius*, *tripodius*, *ſaltans*; and by the Greeks ϖαριαμβος. *Diom.* iii. *p.* 475.

BACCIFEROUS *Plants*, are ſuch as bear berries, *i. e.* fruit, covered with a thin membrane, wherein is contained a pulp, which grows ſoft and moiſt when ripe, and incloſes the ſeed within its ſubſtance.

The *bacciferous* trees Mr. Ray divides into four kinds, 1. Such as bear a caliculate, or naked berry; the flower and calix both falling off together, and leaving the berry bare; as the ſaſſafras-tree, *&c.*

2. Such as have a naked monopyreneous fruit, that is, containing in it only one ſeed; as the arbutus, the terebinthus, lentiſcus, *&c.*

3. Such as have a naked, but a polypyreneous fruit, that is, containing two or more kernels or ſeeds within it; as the jaſminum, liguſtrum, *&c.*

4. Such as have their fruit compoſed of many alcini, or round ſoft balls, ſet cloſe together, like a bunch of grapes; as the uva marina, the rubus vulgaris, rubus Idæus, and the rubus minor fructu cœruleo.

BACHELOR, or BATCHELOR, BACCALARIUS, in middle-age writers, was a denomination given to thoſe who had attained to knighthood, but were not rich enough, or had not a ſufficient number of vaſſals to have their banner carried before them in battle; or, if they were of the order of bannerets, were not yet of age to diſplay their own banner; but obliged to march to war under the banner of another.

Camden and others define *bachelor*, a perſon of a middle degree, between a knight and an eſquire; of leſs age and ſtanding than the former, but ſuperior to the latter.

Others will have *bachelor* to have been a common name for all degrees between a mere gentleman and a baron.—Thus we find the lord admiral, when he was neither an earl, nor baron, denominated a *bachelor*.—'Ant it is to weet, that 'when the admiral rideth to aſſemble a ſhippe of war, or 'other, for the buſineſs and affairs of the realm, if he be a '*bachelor*, he ſhall take for his day-wages four ſhillings ſter'ling; if he be an earl, or baron, he ſhall take wages after 'his eſtate and degree.'

BACHELOR was more peculiarly a title given to a young cavalier, who made his firſt campaign, and received the military girdle accordingly.

BACHELOR was alſo a denomination given to him who had overcome another in a tournament, the firſt time he ever engaged.

Knights BACHELORS were antiently ſo called, *quaſi bas chevaliers*, as being the loweſt order of knights, and inferior bannerets, *&c.*

At preſent theſe are called *equites aurati*, from the gilt ſpurs that are put on them at the time of their creation.—The dignity was at firſt confined to the military men, but afterwards was conferred on men of the long robe.

The ceremony is exceedingly ſimple; the candidate kneeling down, the king touches him lightly with a naked ſword, and ſays, *Sois chevalier, au nom de Dieu*; and afterwards, *Avance, chevalier*.

BACHELOR is alſo uſed, in a college-ſenſe, to denote a perſon poſſeſſed of the *baccalaureate*, which is the firſt degree in the liberal arts, or ſciences.

The degree of *bachelor* was firſt introduced in the thirteenth century, by Pope Gregory IX, but it remains ſtill unknown in Italy.

At Oxford, ere a perſon be intitled to the degree of *bachelor of arts*, he muſt have ſtudied there four years; three years more to become *maſter of arts*; and ſeven more to commence *bachelor of divinity*.

At Cambridge, to commence *bachelor of arts*, he muſt have been admitted near four years; and above three years more before he commence *maſter*; and ſeven more ſtill to become *bachelor of divinity*. He may commence *bachelor of law* after having ſtudied it ſix years.

At Paris, to paſs *bachelor in theology*, a perſon muſt have ſtudied five years in philoſophy and theology, and held an act of examination in the Sorbonne.—*Bachelors in the canon law* are admitted after three years ſtudy in the ſame, and ſuſtaining an act according to the forms.

A *bachelor of phyſic* muſt have ſtudied two years in medicine, have been four years maſter of arts in the univerſity, and have ſtood an examination; after which he is inveſted with the fur, in order to be licenſed.

In the univerſity of Paris, before the foundation of divinity-profeſſorſhips, thoſe who had ſtudied divinity ſix years were admitted to go through their courſe, whence they were called *baccalarii curſores*; and as there were two courſes, the firſt employed in explaining the bible, during three ſucceſſive years; the ſecond, in explaining the maſter of the ſentences for one year: thoſe who were in their bible-courſe, were called *baccalarii biblici*; and thoſe arrived at the ſentences, *baccalarii ſententiarii*. And, laſtly, thoſe who had gone through both, were denominated *baccalarii formati*, or formed *bachelors*.

At preſent, *formed bachelor* denotes a perſon who has taken the degree regularly, after the due courſe of ſtudy, and exerciſes, required by the ſtatutes; by way of oppoſition to a *current bachelor*, who is admitted in the way of grace, or by diploma.

We alſo find mention of *bachelors* of the church, *baccalarii eccleſiæ*.—The biſhop with his canons and *baccalarii*, *cum conſilio & conſenſu omnium canonicorum ſuorum & baccalariorum*.

There is ſcarce any word whoſe origin is more controverted among the critics, than that of *bachelor*, *baccalarius*, or *baccalaureus*: the two different acceptations of the word, literary and military, above recited, have each of them their advocates, who aſſert each to be the primitive ſenſe, and derive the word accordingly. The former is eſpouſed by Martinius, who derives it from the Latin *baccalaurea*, *quaſi bacca laurea donatus*; in alluſion to the cuſtom that antiently obtained of crowning the poets with laurel, *baccis lauri*, as Petrarch was at Rome in 1341. and Alciatas and Vives are of the ſame opinion. Rhenanus rather adviſes to derive it from *baculus*, or *bacillus*, a ſtaff; becauſe at their commencement, ſays he, a ſtaff was put into their hands, as a ſymbol of their authority, of their ſtudies being finiſhed, and of the liberty they were reſtored to. Thus it was that the antient gladiators had a ſtaff given them, as a diſcharge, which Horace calls, *rude donatus*. But Spelman rejects this opinion, in regard there is no proof, that the ceremony of putting a ſtaff in the hand was ever uſed in the creating of *bachelors*.

Among thoſe who hold the military *bachelor*, the primitive ones, are Cujas, who derives the word from *buccellarius*, a kind of cavalry, antiently in great eſteem. Du Cange deduces it from *baccalaria*, a kind of fees, or farms, conſiſting of ſeveral pieces of ground, each whereof contained 12 acres, or as much as two oxen would plow; the poſſeſſors of which *baccalaria* were called *bachelors*.

Laſtly, Caſeneuve, and Altaſerra, derive *bachelor* from *baculus*, or *bacillus*, a ſtaff, in regard the young cavaliers exerciſed themſelves in fighting with ſtaves.

BACILLI, or BACULI, in medicine, ſuch compoſitions as are made up of a cylindrical figure, like a ſtick; thus called from the Latin *baculus*, a ſtaff. See LOZENGE.

BACK. See the article DORSUM.

BACK-*Bone*. See the article SPINE.

BACKED *Column*. See the article COLUMN.

BACK-*Nails*. See the article NAIL.

BACKS *of a Hip*. See the article HIP.

BACK-STAFF, in navigation, an inſtrument, by the French called the *Engliſh quadrant*: it was invented by Capt. Davis; and is of good uſe in taking the ſun's altitude at ſea.—It conſiſts of three vanes, A, B, and C, and of two arches (*Tab. Navigation, fig.* 6.). The vane at A, called the *horizon-vane*; that at B the *ſhade-vane*; and that at C the *ſight-vane*. The leſſer arch B is of 60 degrees, and that of C (or FG) of 30 degrees.

To uſe the BACK-STAFF; the ſhadow-vane B is ſet upon the 60 arch, to an even degree of ſome latitude, leſs by 10 or 15 degrees than you judge the complement of the ſun's altitude will be; the horizon-vane is put on at A, and the ſight-vane on the 30 arch F G: the obſerver's back being then turned to the ſun (whence the name of *back-ſtaff*, or *back-quadrant*), he lifts up the inſtrument, and looks through the ſight-vane, raiſing or falling the quadrant, till the ſhadow of the upper edge of the ſhade-vane fall on the upper edge of the ſlit in the horizon-vane; and then if you can ſee the horizon through the ſaid ſlit, the obſervation is well made: but if the ſea appear inſtead of the horizon, move the ſight-vane lower towards F: if the ſky appear, move it upward towards G, and ſo try if it comes right: then obſerve how many degrees and minutes are cut by that edge of the ſight-vane which anſwers to the ſight-hole, and to them add the degrees cut by the upper edge of the ſhade-vane: the ſum is the ſun's diſtance from the zenith, or the complement of his altitude. To find the ſun's meridian, or greateſt altitude on any day, continue the obſervation as long as the altitude, is found to increaſe, which you will perceive by the appearance of the ſea, inſtead of the horizon, removing the ſight-vane lower: but when you perceive the ſky appear inſtead of the horizon, the altitude is diminiſhed; therefore, deſiſt from farther obſervation at that time, and add the degrees upon the 60 arch to the degrees and minutes upon the 30 arch, and the ſum is the zenith diſtance, or co-altitude of the ſun's upper limb.

And becauſe it is the zenith diſtance, or co-altitude of the upper limb of the ſun, not the centre that is given by the quadrant, in obſerving by the upper end of the ſhade-vane; add 16 minutes, the ſun's ſemidiameter, to that which is produced by your obſervation; and the ſum is the true zenith diſtance of the ſun's centre. If you obſerve by the lower part of the ſhadow of the ſhade-vane; then the lower limb of the ſun gives the ſhadow; and, therefore, you muſt ſubtract 16 minutes from what the inſtrument gives: but conſidering the height of the obſerver above the ſurface of the ſea, which is commonly between 16 and 20 feet, you may take 5 or 6 minutes from the 16 minutes, and make the allowance but of 10 minutes, or 12 minutes, to be added inſtead of 16 minutes.

Mr. Flamſteed contrived a glaſs lens, or double convex, to be placed in the middle of the ſhade-vane, which makes a ſmall bright ſpot on the ſlit of the horizon-vane, inſtead of the ſhade; which is a great improvement, if the glaſs be truly made; for, by this means, the inſtrument may be uſed in hazy weather, and a much more accurate obſervation made in clear weather than could be by the ſhadow.

BACK-STAYS *of a ſhip* are ropes belonging to the main-maſt and fore-maſt, and the maſts belonging to them; ſerving to keep them from pitching forwards, or over-board.—See *Tab. Ship. fig.* 1. *n.* 105. 63. 25.

BACULE, in fortification, a kind of portcullis, or gate, made like a pit-fall with a counterpoiſe, and ſupported by two great ſtakes.—It is uſually made before the corps-de-guard, advancing near the gate.

BACULI. See the article BACILLI.

BACULOMETRY, the art of meaſuring acceſſible and inacceſſible lines, by the help of baculi, ſtaves, or rods.

BACULUS *Divinatorius*, or *virgula divina*, a branch of hazle-tree, of a forked figure, uſed for the diſcovery of mines, ſprings, &c. See VIRGULA *Divina*.

BADGER *, a licenſed huckſter, or perſon privileged to buy corn, or other proviſions, and to carry them from one place to another to make profit of, without being reputed an ingroſſer.

* In the ſtatutes he is alſo called a *kidder*, or *lader of corn*, 5 & 6 Ed. VI. c. 14. 5 El. c. 12.—We alſo read of *badgers*, or retailers of ſalt, 9 W. III. c. 6.

BADGER-*Hunting*. See the article HUNTING.

BAG, in commerce, a term uſed to ſignify different quantities of certain commodities.

A *bag* of almonds, for inſtance, is about 3 hundred weight; of aniſeeds, from 3 to 4 hundred; of pepper, from $1\frac{1}{4}$ to 3 hundred; of goats-hair, from 2 to 4 hundred; of cotton-yarn, from $2\frac{1}{2}$ to $4\frac{1}{4}$, &c.

***Oil*-BAG.**	See the articles	OIL.
***Petty* BAG.**		PETTY, and CLERK.
***Sand*-BAGS.**	See the articles	SAND.
BAGGING *of Hops*.		HOPS.

BAGNIO, an Italian term, ſignifying a bath: it is uſed by us for a houſe, with conveniences for bathing, ſweating, and otherwiſe cleanſing the body; and often for worſe purpoſes.

BAGNIO is alſo become a general name in Turky for the priſons where their ſlaves are incloſed; it being uſual in thoſe priſons to have baths.

BAGNOLENSES *, or BAGNOLIANS, a ſect of heretics in the eighth century, who, in reality, were Manichees, though they ſomewhat diſguiſed their errors.—They rejected the Old Teſtament, and part of the New; held the world to be eternal; and affirmed, that God did not create the ſoul when he infuſed it into the body.

* They derive their name from *Bagnols*, a city in Languedoc, where they were chiefly found.

BAGPIPE, a muſical inſtrument of the wind-kind, chiefly uſed in country places, eſpecially in the North.—It conſiſts of two principal parts; the firſt a leathern bag, which blows up like a foot-ball, by means of a port-vent, or little tube, fitted to it, and ſtopped by a valve.

The other part conſiſts of three pipes, or flutes; the firſt called the great pipe, or drone, and the ſecond the little one; which paſs the wind out only at the bottom: the third has a reed, and is played on by compreſſing the bag under the arm, when full, and opening or ſtopping the holes, which are eight, with the fingers. The little pipe is ordinarily a foot long, that played on 13 inches, and the port-vent 6. The *bagpipe* takes in the compaſs of three octaves.

BAGUETTE, in architecture, a little round moulding, leſs than an aſtragal; ſometimes carved and enriched with foliages, pearls, ribbands, laurles, &c.—See *Tab. Archit. fig.* 2. and 11.

According, to M. le Clerc, when the *baguette* is enriched with ornaments, it changes its name, and is called chaplet. See Chaplet.

BAIL, in law, the ſetting at liberty one arreſted, or impriſoned upon an action either civil or criminal, under ſureties taken for his appearance at a day and place aſſigned.

It is called *bail*, becauſe hereby the party confined is *baillé*, delivered into the hands of thoſe who bind themſelves for his forthcoming: or from *bail*, uſed in the ſenſe of a guardian, into whoſe hands the party is put for ſecurity-ſake.

Manwood diſtinguiſhes between *bail* and *mainpriſe* thus: he that is mainpriſed, is ſaid to be at large, and to go about at his liberty, without ward, till the time of appearance; whereas he who is let to *bail* to two or more men, is always accounted by law, to be in their ward and cuſtody for the time; and they may, if they pleaſe, actually keep him in priſon.

Bail is either *common*, or *ſpecial*.

Common **Bail** is that given in actions of ſmall prejudice, or ſlight proof; in which caſes any nominal ſureties are taken; as John Doe, and Richard Roe: this being no other than a form of appearance.

Special **Bail** is given in caſes of greater moment, where it is required that the ſureties be ſubſidy-men at the leaſt, and according to the value of the matter in queſtion.

It was enacted a few years ago, in compaſſion to the poor, that no perſons ſhould be held to ſpecial bail in any action brought for leſs than ten pounds.—This is obſerved as to writs iſſued out of the courts of Weſtminſter-hall.—But the marſhals court continues to arreſt and hold to bail in actions for ſums exceeding forty ſhillings.—What better are the poor of this metropolis for this proviſion, which has indeed taken them out of bad hands, but left them to be graſped to death by worſe!—If there be any exception in the act in favour of that court, it was doubtleſs more owing to the degree of favour in which the ſuperior officers of ſuch court ſtood with certain great perſons in parliament, than to any real reaſon there could be for it. *Seaſon. Obſerv. on Declenſ. of Trade, p.* 76.

Clerk of the **Bails** is an officer belonging to the court of king's-bench. He files the bail-pieces taken in that court, and attends for that purpoſe.

BAILE, or **Bale**, in the ſea-language.—The ſeamen call lading or caſting the water by hand out of a boat or ſhip's hold with buckets, cans, or the like, *bailing*.

When the water is thus *bailed* out, they ſay, *the boat is freed*. They alſo call thoſe hoops that bear up the tilt of the boat, its *bailes*.

BAILEMENT, a term in law, ſignifying the delivery of things, whether writings or goods, to another; ſometimes to be delivered back to the bailor, that is, to him who delivered them; ſometimes to the uſe of him to whom they are delivered; and ſometimes to a third perſon.

BAILIFF *, in a general ſenſe, denotes an officer appointed for the adminiſtration of juſtice within a certain diſtrict, called *bailiwick*.

> * The word is alſo written *baile*, *baily*, *bayly*, *baylie*, and *baillif*, in Latin *ballivus*.—It is formed from the French *baillif*, of *bail*, an old word, denoting a guardian, or governor of a youth, originally derived from the Latin *bajulus*, which ſignified the ſame. See Bajulus.

Paſquier maintains, that *bailiffs* were originally a kind of commiſſioners, or judges delegate, ſent into the provinces to examine whether or no juſtice were well diſtributed by the counts, who were then the ordinary judges. Loyſeau, with more probability, refers the origin of *bailiffs* to the uſurpation and idleneſs of the great lords, who, having got the adminiſtration of juſtice into their own hands, and being weary of the burden, turned it over to their deputies, whom they called *bailiffs*.

Theſe *bailiffs* had at firſt the ſuperintendence of arms, of juſtice, and of the finances; but abuſing their power, they were by degrees ſtripped of it, and the greateſt part of their authority transferred to their lieutenants, who were to be men of the long robe. It is true, in France they have ſtill ſome prerogatives, as being reputed the heads of their reſpective diſtricts: in their name juſtice is adminiſtred, contracts and other deeds paſſed, and to them is committed the command of the militia.

From theſe it was that the Engliſh *bailiffs* originally took both their name, and their office: for as the French have eight parliaments, which are ſupreme courts, whence no appeal lies, within the precincts of the ſeveral parliaments, or provinces, and in which juſtice is adminiſtred by *bailiffs*, at leaſt by their lieutenants; ſo in England are ſeveral counties wherein juſtice was adminiſtred by a viſcount or ſheriff, who appears likewiſe to have been called *bailiff*, and his diſtrict or county *baliwick*. Further, the counties were again ſubdivided into hundreds; within which it is manifeſt juſtice was antiently rendered by officers called *bailiffs*. But thoſe hundred-courts are now ſwallowed up by the county-courts, certain franchiſes alone excepted (ſee County, and Hundred); and the *bailiffs* name and office is grown into ſuch contempt, at leaſt theſe *bailiffs* of hundreds, that they are now no more than bare meſſengers, and mandatories within their liberties, to ſerve writs, and ſuch mean offices.

Bailiffs are of two kinds, *viz. bailiffs errant* or *itinerant*, and *bailiffs of franchiſes*.

Bailiffs *errant* are thoſe whom the ſheriff appoints to go up and down the county to ſerve writs and warrants, ſummon county-courts, ſeſſions, aſſizes, &c.

Bailiffs *of franchiſes* are thoſe who are appointed by every lord within his liberty, to do ſuch offices therein, as the *bailiff* errant does at large in the county.

There are alſo *bailiffs of the foreſts*, and *bailiffs of manors*, who direct the huſbandry, fell trees, gather rents, pay quit-rents, &c.

The word *bailiff* ſtill retains ſome of its antient ſignificancy; being applied alſo to the chief magiſtrates of ſeveral corporate towns, as Ludlow, Leominſter, &c.—And again, the government of ſome of the king's caſtles is committed to perſons called *bailiffs*; as, the *bailiff* of Dover caſtle.

Water-**Bailiff**. See the article Water.

BAILIWICK, **Bailywick**, or **Bayliwick**, the territory of a bailiff; or the place within which his juriſdiction is terminated. See Bailiff.

BAIRAM *, a name given to the great annual feaſt of the Mahometans.

> * The word is alſo written, by ſome authors, more conformably to the oriental orthography, *beiram*. It is originally Turkiſh, and ſignifies literally, a feaſt-day, or holiday.

The Mahometans have two *bairams*, the *great*, and the *little*, which Scaliger, Erpenius, Rycaut, Hyde, Chardin, Bobovius, and other European writers, commonly interchange, giving the appellation *great*, to that which the Turks call *little*; and *vice verſa*.

The little *bairam* holds for three days, during which no work is done; but preſents paſs from one to another, with many other manifeſtations of joy. If the day after Ramazan ſhould prove ſo cloudy, as to prevent the ſight of the new moon, the *bairam* is put off to the next day, when it begins, though the moon be ſtill obſcured. When they celebrate this feaſt, after numerous ceremonies, or rather ſtrange mimicries, in their moſque, they end it with a ſolemn prayer againſt the infidels, to root out Chriſtian princes, or to arm them one againſt another, that they may have an opportunity to extend the borders of their law.

BAIT. See Fishing.

BAJULUS, an antient officer in the court of the Greek emperors; whereof there were ſeveral degrees: as the grand *bajulus*, who was preceptor of the emperor, and the ſimple *bajuli*, who were ſub-preceptors.

Hence the Italians uſe the word *bajulus* of a kingdom, in the ſame ſenſe with *protector* of a kingdom among the Engliſh.

BAKING, the art of preparing bread, or of reducing meals of any kind, whether ſimple or compound, into bread.

The forms of baking among us are very various, but may be reduced to two; the one for unleavened, the other for leavened bread.—For the firſt, the chief is *manchet-baking*, the proceſs whereof is as follows.

The meal ground and bolted is put into a trough, and being opened in the middle, to a buſhel are poured in about three pints of warm ale, with barm and ſalt to ſeaſon it. This is kneaded together with the hands through the brake; or, for want thereof, with the feet through a cloth: after having lain an hour to ſwell, it is molded into manchets; which ſcotched in the middle, and pricked a-top to give room to riſe, are baked in the oven by a gentle fire.

For the ſecond, ſometimes called *cheat-bread-baking*, it is thus: The meal being in the trough, ſome leaven (ſaved from a former batch, filled with ſalt, laid up to ſour, and at length diſſolved in warm water) is ſtrained through a cloth into a hole made in the middle of the heap, and worked with ſome of the flour to a moderate conſiſtence: this is covered up with meal, where it lies all night, and in the morning the whole heap is ſtirred up and mixt together with a little warm water, barm, and ſalt, by which it is ſeaſoned, ſtiffened, and brought to an even leaven; it is then kneaded or trodden, and molded and *baked* as before.

The learned are in great doubt about the time when *baking* firſt became a particular profeſſion, and *bakers* were introduced. It is generally agreed, they had their riſe in the eaſt, and paſſed from Greece to Italy after the war with Pyrrhus, about the year of Rome 583. Till which time every houſewife was her own *baker*: for the word *piſtor*, which we find in Roman authors before that time, ſignified a perſon who ground or pounded the grain in a mill or mortar to prepare it for *baking*, as Varro obſerves. According to Athenæus, the Cappadocians were the moſt applauded *bakers*, after them the Lydians, then the Phœnicians.

To the foreign *bakers* brought into Rome, were added a number of freed-men, who were incorporated into a body, or, as they called it, a *college*; from which neither they nor their children were allowed to withdraw. See College.—They held their effects in common, and could not diſpoſe of any part of them. Each bake-houſe had a patronus, who had the ſuperintendency thereof: and theſe patroni elected one out of their number each year, who had the ſuperintendence over all the reſt, and the care of the college. Out of the body of the *bakers* every now-and-then one was admitted among the ſenators.

To preſerve honour and honeſty in the college of *bakers*, they were expreſly prohibited all alliance with comedians and gladiators; each had his ſhop or bake-houſe, and they were diſtributed into fourteen regions of the city. They were excuſed from guardianſhips, and other offices, which might divert them from their employment. See COLLEGE.

By our own ſtatutes, *bakers* are declared not to be handicrafts. —No man for uſing the myſteries or ſciences of *baking*, brewing, ſurgery, or writing, ſhall be interpreted a handicraft. 22 *H.* VIII. *c.* 13.

BAKING *of Porcelain*. See the article PORCELAIN.

BALANCE. See the article BALLANCE.

BALANI, in natural hiſtory, certain multivalve ſhells uſually growing to the ſhells of the larger ſort of ſea-ſhell-fiſh: they are commonly called in Engliſh, centre-ſhells. See Supplement, article BALANUS.

BALANUS, or GLANS, is ſometimes uſed by anatomiſts for the nut of the yard. See GLANS.

Sometimes alſo the clitoris is ſo called. See CLITORIS.

BALANUS is alſo ſometimes uſed for a ſuppoſitory. See SUPPOSITORY.

BALAUSTINES, BALAUSTIA, in pharmacy, the flowers of the wild pomgranate, or *malus punica ſylveſtris*, which are very rough to the tongue and palate, and very aſtringent; and on that account are frequently uſed in diarrhœas, and other fluxes, hernias, *&c.*

BALCONY *, in architecture, a jutty, or projecture in the front of a houſe, or other building, ſupported by pillars, or conſoles, and encompaſſed with a balluſtrade.

* The word comes from the Italian *balcone*, and that from the Latin, *palcus*; or the German *palk*, a beam. Covarruvias derives it from βαλλειν, *jacere*; aſſerting, that *balconies* were originally little turrets over the gates of citadels, whence darts, *&c.* were thrown on the enemy.

BALDACHIN *, or BALDAQUIN, a piece of architecture in form of a canopy, ſupported with columns, and ſerving as a crown or covering to an altar.

* The word comes from the Italian *baldacchino*, which ſignifies the ſame.

BALDNESS. See the article CALVITIES.

BALE, in commerce, denotes a pack or certain quantity of merchandize: as a bale of ſpicery, of books, of thread, *&c.*— A *bale* of cotton-yarn is from three to four hundred weight: of raw ſilk, it is from one to four hundred; of lockram or dowlas, either three, three and a half, or four pieces, *&c.*

BALISTA. See the article BALLISTA.

BALKERS, or BALCORS. See the article CONDERS.

BALKS, in agriculture, are ridges or banks between two furrows or pieces of arable land: the word is ſometimes alſo uſed for the poles or rafters over out-houſes or barns: and among bricklayers for great beams, ſuch as are uſed in making ſcaffolds.

BALL *and ſocket*, a machine contrived to give an inſtrument full play, and motion every way.

It conſiſts of a *ball* or ſphere of braſs, fitted within a concave ſemi-globe, ſo as to be moveable every way, both horizontally, vertically, and obliquely. It is carried by an endleſs ſcrew, and is principally uſed for the managing of ſurveying inſtruments; to which it is a very neceſſary appendage.

The antient *balls and ſockets* had two concaves, or chanels, the one for the horizontal, the other for the vertical direction.

BALLANCE, or BALANCE, *libra*, one of the ſix ſimple powers in mechanics, uſed principally for determining the equality, or difference of weights in heavy bodies, and conſequently their maſſes or quantities of matter.

The *ballance* is of two kinds, *viz.* the *antient* and *modern*.

The *antient* or *Roman*, called alſo *ſtatera Romana*, or *ſteelyard*, conſiſts of a lever or beam, moveable on a centre, and ſuſpended near one of its extremes: on one ſide the centre are applied the bodies to be weighed, and their weight is meaſured by the diviſion marked on the beam; on the other ſide is the place where a weight moveable along it keeps the *ballance* in equilibrio.

The *modern ballance*, now ordinarily in uſe, conſiſts of a lever or beam ſuſpended, exactly by the middle; to the extremes whereof are hung ſcales, or baſons.

In each caſe, the beam is called the *jugum*, and the two moieties thereof on each ſide the axis, the *brachia*, or *arms*: and the handle whereby it is held, *trutina*; the line on which the beam turns, or which divides its brachia, is called the *axis*; and, when conſidered with regard to the length of the brachia, is eſteemed but a point, and called the centre of the *ballance*; and the places where the weights are applied, the *points of ſuſpenſion* or *application*.—That ſlender part perpendicular to the *jugum*, whereby either the equilibrium, or preponderancy of bodies is indicated, is called the *tongue of the ballance*.

In the Roman *ballance*, therefore, the weight uſed for a counterballance is the ſame, but the points of application are various; in the common *ballance*, the counterpoiſe is various, and the point of application the ſame.

The principle on which each is founded is the ſame, and may be conceived from what follows.

Doctrine of the BALLANCE.—The beam AB (*Tab. Mechanics, fig.* 9.), the principal part of the *ballance*, is a lever of the firſt kind, which (inſtead of reſting on a fulcrum at C, its centre of motion) is ſuſpended by ſomewhat faſtened to C, its centre of motion. So that the mechaniſm of the *ballance* depends on the ſame theorem as that of the lever.

Hence, as the known weight is to the unknown, ſo is the diſtance of the unknown weight from the centre of motion, to the diſtance of the known weight, where the two weights will counterpoiſe each other; conſequently, the known weights ſhew the quantity of the unknown.

Or thus; the action of a weight to move a *ballance* is by ſo much greater, as the point preſſed by the weight is more diſtant from the centre of the *ballance*; and that action follows the proportion of the diſtance of the ſaid point from that centre. When the *ballance* moves about its centre, the point B deſcribes the arch B *b* (*Fig.* 10.); whilſt the point A deſcribes the arch A *a*, which is the biggeſt of the two: therefore in the motion of the *ballance*, the action of the ſame weight is different, according to the point to which it is applied: hence it follows, that the proportion of the ſpace gone through by the point at A is as A *a*, and at B as B *b*; but thoſe arches are to one another as CB, CA.

Varieties in the application of the BALLANCE.—If the brachia of a *ballance* be divided into equal parts, one ounce applied to the ninth diviſion from the centre will equiponderate with three ounces at the third; and two ounces at the ſixth diviſion act as ſtrongly as three at the fourth, *&c.*

Hence it follows, that the action of a power to move a *ballance* is in a ratio compounded of the power itſelf, and its diſtance from the centre: for that diſtance is as the ſpace gone through in the motion of the *ballance*.

It may be here obſerved, that the weight equally preſſes the point of ſuſpenſion at whatever height it hangs from it, and in the ſame manner as if it was fixed at that very point; for the weight at all heights equally ſtretches the cord by which it hangs.

A *ballance* is ſaid to be in *equilibrio*, when the actions of the weights upon the brachia to move the *ballance*, are equal, ſo as mutually to deſtroy each other. When a *ballance* is in equilibrio, the weights on each ſide are ſaid to equiponderate: unequal weights may alſo *equiponderate*; but then the diſtances from the centre muſt be reciprocally as the weights. In which caſe, if each weight be multiplied by its diſtance, the products will be equal; which is the foundation of the ſteel-yard.

Thus in a *ballance* whoſe brachia are very unequal; a ſcale hanging at the ſhorteſt, and the longeſt divided into equal parts: if ſuch a weight be applied to it, as at the firſt diviſion ſhall equiponderate with one ounce in the ſcale; and the body to be weighed be put into the ſcale, and the above-mentioned weight be moved along the longeſt brachium, till the equilibrium be found; the number of diviſions between the body and the centre ſhews the number of ounces that the body weighs, and the ſubdiviſions the parts of an ounce.

On the ſame principle alſo is founded the *deceitful ballance*, which cheats by the inequality of the brachia: for inſtance; take two ſcales of unequal weights, in the proportion of 9 to 10, and hang one of them at the tenth diviſion of the *ballance* above-deſcribed, and another at the ninth diviſion, ſo that there may be an equilibrium; if then you take any weights, which are to one another as 9 to 10, and put the firſt in the firſt ſcale, and the ſecond in the other ſcale, they will equiponderate.

Several weights hanging at ſeveral diſtances on one ſide may equiponderate with a ſingle weight on the other ſide: to do this it is required, that the product of that weight, by its diſtance from the centre, be equal to the ſum of the products of all the other weights, each being multiplied by its diſtance from the centre.

To demonſtrate which, hang three weights, of an ounce each at the ſecond, third, and fifth diviſions from the centre, and they will equiponderate with the weight of one ſingle ounc applied to the tenth diviſion of the other brachium; and th weight of one ounce at the ſixth diviſion, and another o three ounces at the fourth diviſion, will equiponderate wi a weight of two ounces on the other ſide at the ninth diviſion.

Several weights unequal in number, on either ſide, may equiponderate: in this caſe, if each of them be multiplied by i diſtance from the centre, the ſums of the product on eithe ſide will be equal; and if thoſe ſums be equal, there will b an equilibrium.

To prove which, hang on a weight of two ounces at the fift diviſion, and two others, each of one ounce, at the ſecond an ſeventh; and on the other ſide hang two weights, each alſo o one ounce, at the ninth and tenth diviſions: and theſe tw will equiponderate with thoſe three.

To the juſtneſs of a *ballance* it is required, that the points ſuſpenſion be exactly in the ſame line as the centre of th *ballance*; that they be preciſely equidiſtant from that point on either ſide; that the brachia be as long as conveniently they may; that there be as little friction as poſſible in the motion of the beam and ſcales; and laſtly, that the centre of gravity of the beam be placed a little below the centre of motion.

BALLANCE *of the air* is uſed to denote the weight of that fluid, whereby, according to its known property, it preſſes where it is leaſt reſiſted, till it be equally adjuſted in all parts.

Hydroſtatical BALLANCE is a machine for determining the ſpecific gravities of bodies. See HYDROSTATICAL.

BALLANCE *of Trade* denotes an equality between the value of commodities bought of foreigners, and the value of the native productions tranſported into other nations.

It is neceſſary that this *ballance* be kept in trading nations; and if it cannot be made in commodities, it muſt in ſpecie. Hereby it is, that we know whether a nation gains or loſes by foreign trade, or any branch thereof; and conſequently, whether that nation grows richer or poorer.

There are divers *methods of arriving at this knowlege.*

1°, That moſt received is, by taking a ſtrict ſurvey of what proportion the value of the commodities exported bears to thoſe imported. If the exports exceed the imports, it is concluded that nation is in a gaining way, it being ſuppoſed that the overplus is imported in bullion, and ſo increaſes the treaſure of the nation.—But this method is very uncertain: by reaſon of the difficulty of obtaining a true account either of the exports or imports. (1.) Cuſtom-houſe books are no rule in this caſe; by reaſon of the running of goods, eſpecially many fine commodities of ſmall bulk, but great value: as point, lace, ribbands, ſilks, jewels, fine linens, &c. alſo wines, brandies, teas, and the like. (2.) To which add various accidents which affect the value of the ſtock either ſent out, or brought in; as loſſes at ſea, markets, bankrupts, ſeizures, &c. (3.) Then, as to particular trades, there are divers countries to which the manufactures we ſend out are inconſiderable, yet the goods we import are neceſſary to the carrying on our trade in general; as the trade to Norway, &c. for timber and naval ſtores. Alſo the Eaſt-India company, whoſe imports much exceed their exports; yet is their trade highly advantageous to the nation: as we ſell much of theſe imports to foreigners, and wear others, *e. gr.* callico's and ſilks, in lieu of linens and ſilks from other countries, which would coſt us dearer.

2°, The ſecond method is, by obſerving the courſe of exchange, which if generally above the intrinſic value or par of the coins of foreign countries; we not only loſe by ſuch exchanges, but the ſame is a proof, that we loſe by the general courſe of our trade.—But this method is imperfect; ſince we trade to many countries with which there is no ſettled courſe of exchange.

3°, The third method (which is Sir Joſ. Child's) is made from the increaſe, or the diminution, of our trade and ſhipping in general: for if theſe diminiſh, whatever profit particular men may make, the nation loſes: and vice verſa. He lays it down as an infallible rule, that in all parts of the world where-ever trade is great, and continues ſo, and grows daily greater, and the ſhipping increaſes for a ſucceſſion of ages; that trade muſt be nationally profitable. Even in the caſe of a merchant, who, by driving a great trade, ruins himſelf; though he loſe, what a multitude are gainers by him? as the king, and cuſtomhouſe officers; beſides ſhipwrights, butchers, brewers, bakers, ropemakers, porters, carmen, manufacturers, mariners, &c.

4°, A fourth way is, by obſerving the increaſe and diminution of our coin and bullion.—But this is the leaſt obvious and palpable of any; for the money ſeems to vulgar eyes moſt plentiful when there is leaſt occaſion for it; and more ſcarce as the occaſions for employing it are more numerous and advantageous: by which means we ſeem to have moſt money when we have leaſt trade. Thus, *e. gr.* when the Eaſt-India company have a great ſale to make, money is generally found to be ſcarce in London; becauſe the occaſion engages people to employ quantities which they had provided for that purpoſe. So a high rate of intereſt will make money ſeem ſcarce, becauſe every man, as ſoon as he can make up a ſmall ſum, ſends it to the goldſmith to be employed. *Child Diſc. on Trade*, c. 9.

BALLANCE *of a clock or watch* is that part of either, which by its motion regulates and determines the beats.—The circular part of it is called the *rim*, and its ſpindle the *verge*: there belong to it alſo two *pallets* or nuts, which play in the fangs of the crown-wheel: in pocket watches, that ſtrong ſtud in which the lower pivot of the verge plays, and in the middle of which one pivot of the crown-wheel runs, is called the *potence*: the wrought piece which covers the *ballance*, and in which the upper pivot of the *ballance* plays, is the *cock*: the ſmall ſpring in the new pocket-watches is called the *regulator*.

BALLAST *, in navigation, any heavy matter uſed to ſink a veſſel to its proper depth in water, or to give it a juſt weight and counterpoiſe, and enable it to bear ſail without overturning.

* The word comes from the Flemiſh *belaſt*, formed of *be*, and *laſt* or *leſt*. The French call it ſimply *leſt*. In the Mediterranean, *quartelage*. In Latin writers of the lower age it is denominated *laſtagium*.

The ordinary *ballaſt* is ſand or ſtones, ſtowed in the bottom, or hold, next the falſe keel of a veſſel: ſometimes, lead, corn, or other heavy goods, ſerve for *ballaſt*.—The *ballaſt* is ſometimes one half, ſometimes a third, and ſometimes a fourth part of the burden of the veſſel. Flat veſſels require the moſt ballaſt.—Ships are ſaid to be in *ballaſt*, when they have no other loading.

Maſters of veſſels are obliged to declare the quantity of *ballaſt* they bear, and to unload it at certain places. They are prohibited unloading their *ballaſt* in havens, roads, &c. the neglect of which has ruined many excellent ports.

Trench the BALLAST. See the article TRENCH.

BALLASTAGE. See the article LASTAGE.

BALLIAGE, a ſmall duty paid to the city of London, by aliens, and even denizens, for certain commodities exported by them.

BALLISTA *, a military engine in uſe among the antients, ſomewhat like our croſs-bow, though much bigger, and more forcible; it was uſed in the beſieging of cities, to throw in ſtones, or ſometimes darts and javelins.

* The word is alſo frequently written, leſs conſiſtently with its etymon, *baliſta*, ſometimes *baliſtra*. It is formed from the Greek βαλλειν, *jacere*, being chiefly uſed in caſting of darts and arrows, in which it differed from the *catapulta*, which was uſed only for caſting ſtones, in other reſpects they were alike, and were each bent in the ſame manner. See the article CATAPULTA.

Marcellinus deſcribes the *balliſta* thus; a round iron cylinder is faſtened between two planks, from which reaches a hollow ſquare beam placed croſs-wiſe, faſtened with cords, to which are added ſcrews; at one end of this ſtands the engineer, who puts a wooden ſhaft with a big head, into the cavity of the beam; this done, two men bend the engine, by drawing ſome wheels: when the top of the head is drawn to the utmoſt end of the cords, the ſhaft is driven out of the *balliſta*, &c.

BALLOON, or BALLON, denotes a large round ſhort-necked matraſs, or veſſel uſed in chymiſtry, to receive what is diſtilled or drawn off by means of fire.

BALLOON is alſo uſed in architecture, for a round ball, or globe placed a-top of a pillar, or the like, by way of acroter, or crowning.

BALLOTING, a method of voting at elections, &c. by means of little balls which are uſually of different colours, by the French called *ballotes*; which are put into a box privately.

BALLS, or BALLETS, in heraldry, make a frequent bearing in coats of arms, though never ſo called; but having according to their ſeveral colours ſeveral names, as *beſants* when the colour is or; *plates* when argent; *hurts* when azure; *torteaux* when gules: *pomeis* when vert; *pellets* or *agreſſes* when ſable; *golpes* when purple; *orenges* when tanne; and *guzes* when ſanguine.

BALLS *of ſilk*. See the article SILK.

BALL-SOAP. See the article SOAP.

BALLUSTRADE, in architecture, an aſſemblage of one or more rows of balluſters, high enough to reſt the elbow on, fixed upon a terrace, or the top of a building, by way of ſecurity; ſometimes alſo to make a ſeparation between one part and another, as thoſe around altars, fonts, &c.

BALM, or BALSAM. See the article BALSAM.

BALM *of Sulphur.* } See the article { SULPHUR.
BALMING. } { EMBALMING.

BALNEUM, is a word much uſed by chymiſts, generally ſignifying a veſſel filled with ſome matter, as ſand, water, or the like, in which another is placed that requires a more gentle heat than the naked fire.

BALNEUM *Mariæ* is by ſome ſo called, as being ſuppoſed to have been firſt invented by the bleſſed virgin; but by others, with more propriety, it is called *balneum maris*, or ſea-bath, in regard the veſſel here floats as it were in a ſea.

Here the cucurbit is placed in hot water, which warms the matter contained, and diſpoſes it for riſing, or exhalation.

A ſand-heat is ſometimes alſo called *balneum ſiccum*, or *arenoſum*.

BALNEUM *vaporarium*. See the article VAPORARIUM.

BALOTADE, a leap in which a managed horſe offers to ſtrike out with his hind legs, but does it not, only making an offer, and ſhewing the ſhoes of his hind feet.

BALSAM, BALSAMUM, properly denotes an oily, reſinous, and odorous ſubſtance, ouſing from inciſions in certain plants; of ſovereign virtue in the cure of wounds, and divers other diſorders.

This amounts to the ſame with what we otherwiſe call *balm*; ſometimes, by way of diſtinction, a *native balſam*.

We ſay the *balſam* of Mecca, *balſam* of Peru, of Tolu, of Capaiba, of liquid amber, and a multitude of others.

BALSAM, or *balm of Gilead*, is in the greateſt eſteem, though there are ſome who hold that of Peru equal to it in virtue. It is drawn by inciſion from a tree of the ſame name, growing in Egypt and Judea, but chiefly in Arabia Felix, and which is held ſo precious, that it makes part of the ſpecial revenue of the grand ſignior, without whoſe permiſſion none are allowed to be planted or cultivated.—The inciſion through which this admirable juice flows is made in the dog-days: Theophraſtus ſays, it muſt be made with iron nails; Pliny ſays, with glaſs; becauſe, ſays he, iron makes the plant die: Tacitus tells us, that when the branches of this tree are full of ſap, their veins ſeem to apprehend the iron, and ſtop when an inciſion is made with that metal; but that they flow freely when opened with a ſtone, or a piece of broken glaſs, or of an earthen veſſel: laſtly, Marmol ſays, the veins muſt neceſſarily be opened with ivory or glaſs.—The juice is white at firſt, afterwards it becomes green, by degrees of a gold colour, and, when old, of the colour of honey. It is at firſt muddy; but by degrees grows clear, and of the conſiſtence of turpentine.—Its ſmell is agreeable, and very briſk: its taſte bitter, ſharp, and aſtringent; it eaſily diſſolves in the mouth, and leaves no ſtain on woollen cloth.

It is ſuggeſted, that the juice brought to us for *balſam* is not properly the gum, or tears of the tree, flowing by inciſion, for that it yields but little that way; but that it is prepared from the wood and green branches of the tree diſtilled: and yet even this is frequently adulterated with Cyprus turpentine, and other reſins and oils; alſo with honey, wax, *&c.*—Beſides which, there is likewiſe a liquor extracted from the ſeed of the plant, which is frequently paſſed off for the true *balſam*, though its ſmell is much weaker, and its taſte much bitterer. The *balſam*-tree is about the height of a pomgranate-tree; its leaves are like thoſe of rue, always green; its flowers white, and in form of ſtars, whence ſpring out little pointed pods, incloſing a fruit like an almond, called *carpo-balſamum*, as the wood is called *xylo-balſamum*, and the juice, *opo-balſamum*.

The fruit or carpo-balſamum enters the compoſition of Venice-treacle, having little other uſe in medicine: it muſt be choſen of an aromatic taſte, and agreeable ſmell. The xylobalſamum, which, like the other products of the *balſam*-tree, is brought from Cairo, is uſed in the troches of Hedychrous. It is brought in little fagots: the bark is red, the wood white, reſinous, and aromatic. See Xylobalsamum.

There is likewiſe a *balſam of Mecca*, which is a dry, white gum, reſembling white copperas, eſpecially when old. It is brought from Mecca by the returns of the caravans of pilgrims and Mahometan merchants, who travel thither out of devotion to the birth-place of their prophet. It has all the virtues of the *balm* of Gilead, or Judea; and is probably the ſame, only hardened, and its colour altered.

Balsam *of Peru* is of three kinds; or rather, it is one and the ſame *balſam*, having three ſeveral names, *viz. balſam of inciſion*, which is a white glutinous reſin, ouſing at an inciſion in the tree, and afterwards thickened and hardened. This is excellent for green wounds, and much reſembles the opobalſamum, excepting in ſmell, which diſtinguiſhes it.—*Dry balſam*, which is diſtilled from the tips of branches cut off, to which are faſtened little veſſels to receive the liquor, which at firſt is like milk, but reddens by being expoſed to the ſun. Its chief uſe is in the compoſition of the lac virginale, which is made much better with this, than with ſtyrax or benzoin.—Laſtly, the *balſam of lotion*, which is blackiſh, and is drawn from the bark, roots, and leaves of the tree, minced and boiled together. This is uſed in wounds like the white *balſam*; and, on account of its excellent ſmell, by the perfumers.

Balsam of *Copaiba*, or *Copivi*, comes from Braſil, in earthen bottles. There are two ſorts, the one bright and thin; the other thick; the firſt white of a reſinous ſmell; the other a little more on the yellow: both are admirable for wounds: the Jews uſe this *balſam* after circumciſion to ſtop the blood.

Balsam *of Tolu* is at firſt a liquid reſin, which, as it grows old, becomes of the colour and conſiſtence of Flanders glue. It comes by inciſion from ſome trees growing in New Spain; where the inhabitants receive it in little veſſels of black wax; in taſte and ſmell it reſembles balm of Gilead; as it grows old, it takes the conſiſtence of a dry *balſam*.

Balsam *of liquid amber* is a clear rediſh reſin, produced by a tree in New Spain, called by the natives *oſoſol*; in ſome degree reſembling ambergriſe in ſmell, whence its name. The new *balſam* is liquid; in which ſtate it is called *oil of liquid amber*, and when old, *balſam of liquid amber*; it comes from both the Spains, in barrels; but the genuine is very rare among us.

It is found ſovereign for wounds and ulcers; eſpecially for fiſtulas in ano: it reſembles *balſam* of Tolu in ſmell and colour, and is procured in the manner of oil of bays, from a red fruit in the iſland of St. Domingo.

Balsam is alſo applied to certain factitious ſubſtances, made by chymiſts and apothecaries, chiefly of balſamic and healing ingredients, in imitation of the native *balſams*.

Theſe are called, by way of diſtinction, *factitious*, or *artificial balſams*.

We have two different compoſitions of *balſams*, in imitation of the true, or Egyptian *balſam*; one by Matthiolus, the other by Euricus Cordus. Pomet has alſo given a method of imitating many of the native *balſams*.

Balsam *of Sulphur* is a ſolution of the flowers of ſulphur in ſome oil: it is made by boiling the two together over a ſoft fire the ſpace of an hour, or till the ſulphur be totally incorporated with the oil into a red balſam.

It is recommended both for external and internal uſes, as being warm and mollifying in caſe of wounds, ſanious ulcers, fiſtulas, *&c.* and curative even of ulcers of the lungs. Helmont, its inventor, extols it for all diſeaſes of the breaſt: yet Boerhaave rejects all internal uſe of it, as too hot, and acrimonious. Bartholin alſo obſerves, that it ſometimes cauſes a cardialgy.

Balsam *of Saturn* is a ſalt, or ſugar of lead, diſſolved in oil or ſpirit of turpentine, juniper, or the like, digeſted, till the matter have acquired a red tincture. This is found to reſiſt the putrefaction of humours, and is good to cleanſe and cicatrize ulcers.

Balsam, or **Balm**, among alchymiſts, ſometimes denotes the ſpirit of common ſalt extracted in a particular manner.

The preparation is thus: they diſſolve the ſalt, and place its diſſolution, well clarified, in horſe-dung to putrefy, for the ſpace of two or three months, and then diſtil it ſtrongly with a ſand-heat; upon which there ariſes a precious unctuoſity, wherein things the moſt corruptible being ſteeped, are ſaid to remain intire, eternally.

It is ſaid, that it was by this means ſome of the antients preſerved dead bodies intire without reducing them to mummy; and particularly that of the woman mentioned by Volaterranus to be found in a mauſoleum near Albano, in the time of pope Alexander VI. which was by his order thrown ſecretly into the Tiber, to prevent idolatry; ſhe being found as freſh as when alive, though ſhe had been dead 1300 years.

BALSAMIC, a term in phyſic, ſignifying that property in a medicine, whereby it is rendered ſoft, gently attenuateing, and ſomewhat agglutinant.

BAN, and **Bans**. See the articles Bann, and Banns.

Arriere **Bann**. See the article Arriere.

BANC, **Bancus**, or **Bank**, in law, denotes a ſeat, or bench of judgment.

Jus **Banci**, or the privilege of having a bench, was antiently only allowed to the king's judges, *qui ſummam adminiſtrant juſtitiam*. Inferior courts, as courts-baron, hundred-courts, *&c.* were not allowed that prerogative; and even at this day the hundred-court at Freibridge, in Norfolk, is held under an oak at Gey-wood; and that of Woolfry, in Herefordſhire, under an oak, near Aſhton in that county, called Hundred-oak.

King's **Banc**, or **Bench**, is a ſovereign tribunal, where the king himſelf formerly preſided, the judges being placed in a lower *bench* at his feet.—The juriſdiction of this court is very extenſive, and reaches throughout all England, the law ſuppoſing the king himſelf to be preſent.

Common **Banc**, or *common-pleas*, the ſecond court of juſtice in England, where common and ordinary cauſes are pleaded between ſubject and ſubject.—Here moſt civil cauſes are tried, whether real or perſonal, according to the rigour of the law. Here are uſually four judges; the chief whereof is called the *lord chief juſtice of the common-pleas*. Formerly there were ſeven judges, then ſix, then five, *&c.*

BAND, in a general ſenſe, ſome ſmall, narrow ligament, wherewith a thing is tied, or faſtened.

We ſay, a *ſtay-band*, a *brow-band*, a *hat-band*, &c.

Band, in architecture, denotes any flat, low member, or moulding.

This amounts to the ſame with what is otherwiſe called *face*, from the Latin *faſcia*, which Vitruvius uſes for the ſame thing, and ſometimes *fillet*, *plinth*, &c.

Band, in ſurgery, denotes a fillet, ſwath, or piece of linen cloth, wherewith either to cover or ſurround certain parts, that ſtand in need of aſſiſtance.

Bands are the ſame with what are otherwiſe called *rollers*.

A *band*, or *roller*, when applied, becomes a *bandage*. See Bandage, and Roller.

Band alſo gives the denomination to a military order in Spain, inſtituted by Alphonſus XI. king of Caſtile, anno 1332.

It takes its name from the *banda*, band, or red ribband, which comes acroſs over the right ſhoulder, and under the left arm, of the knight.

This order is for none but the younger ſons of nobles; the eldeſt ſons of grandees are excluded; and, before admittance it is requiſite to have ſerved at leaſt ten years, either in the army, or at court. They are bound to take up arms for the catholic faith againſt the infidels.

The king himſelf is grand maſter of the order.

Band *of Soldiers*, ſo many as fight under the ſame flag, enſign.

Thus Romulus called thoſe who fought under the ſame manipule (a handful of hay being then uſed for a flag) *manipulus militum*.

Trained BANDS. See the article TRAIN-BANDS.

BANDAGE, in ſurgery, the application of a band, ſwath, roller, or fillet, to a part of the body; or the act of rolling, or tying a ſwath or band, round a part affected, and the parts adjacent, with compreſſes, plaiſters, and the like.

Of *bandages* there are two ſorts; whereof one ſort are remedies of themſelves.—The other, being intended only to keep the medicaments on the part, are called more particularly *Contentive Bandages.*

Incarnative BANDAGE. See the article INCARNATIVE.

BANDALEER *, or BANDELEER, a large leathern belt, thrown over the right ſhoulder, and hanging down under the left arm; worn by the antient muſqueteers, both for the ſuſtaining of their fire-arms, and for the carriage of their muſquet-charges; which being put up in little wooden caſes, coated with leather, were hung, to the number of twelve, to each *bandaleer*.

* The word is originally French, *bandouillre*, formed apparently from *bandoalier*, a kind of banditti particularly infeſting the Pyreneans; who were formerly diſtinguiſhed by this piece of furniture; and were themſelves ſo denominated, *quaſi ban de voliers*, a knot of robbers.

The French ſoldiery ſtill retain the *bandaleer*; their horſe, their muſqueteers, and common guards, wearing it indifferently; excepting for ſome difference in its garniture.

BANDELET, or BANDLET, in architecture, any little band, or flat moulding, as that which crowns the Doric architrave. See *Tab. Archit. fig.* 1. & 28. *lit. a.*

It is alſo called *tænia*, which Vitruvius uſes for the ſame thing: ſometimes, *fillet*, *diadema*, *&c.*

BANDEROLL, a little flag in form of a guidon, extended more in length than breadth, uſed to be hung out on the maſts of veſſels, *&c.*

BANDLET. See the article BANDELET.

BANIANS, a religious ſect in the country of the Moguls, who believe a metempſychoſis; and will therefore eat no living creature, nor even kill noxious animals, but endeavour to releaſe them if they ſee them, in the hands of others.

The *Banians* are ſaid to be ſo fearful of having communication with other nations, that they break their cups, if one of a different religion have drank out of them, or even touched them; and empty the water out of a pond where he has waſhed himſelf. It is added, that if they happen to touch one another, they muſt waſh and purify themſelves before they eat, or enter their own houſes. They carry, hanging at their necks, a ſtone called *tamberan*, as big as an egg, and perforated in the middle, through which run three ſtrings: this ſtone, they ſay, repreſents their great god, and upon that account they have great reſpect ſhewn them by all the Indians.

BANISHMENT, *Exile*, among us, is of two kinds: the one voluntary, and upon oath; the other by compulſion, for ſome offence or crime.

The former, properly called *abjuration*, is now ceaſed; the latter is chiefly injoined by judgment of parliament. Yet outlawing and tranſportation may alſo be conſidered as ſpecies of exile.

BANK *, in commerce, is a denomination given to certain ſocieties, or communities, who take on them the charge of the money of private perſons, to improve it, or to keep it ſecure.

* The word *bank*, in this ſenſe, comes from the Italian *banca*, formed of the Spaniſh *banco*, a bench whereon the antient money-changers ſat in the public markets; or, as others think, a table whereon they told their money: for the Spaniſh *banco* ſignifies a table, as well as a bench; as among the Greeks the word τραπεζα ſignified a bench, as well as a table; whence the word τραπεζιτης for a bencher. Guichard chooſes to derive *bank* from the Latin *abacus*, a table, or cupboard.

There are ſeveral of theſe *banks* eſtabliſhed in the ſeveral principal trading cities in Europe; as in Venice, London, Amſterdam, Hamburg, Paris, *&c.* But of all others, that of Venice is the moſt conſiderable, as being the moſt antient, and that whereon the others are modelled.

The *banco*, or *bank* of Venice, commonly called, *banco del guiro*, is properly a board of public credit and intereſt; or a general and perpetual purſe for all merchants and traders; eſtabliſhed by a ſolemn edict of the commonwealth, which enacts, That all payments of wholeſale merchandize, and letters of exchange, ſhall be in *banco*, or *bank* notes; and that all debtors and creditors ſhall be obliged, the one to carry their money to the *bank*, the other to receive their payments in *banco*; ſo that payments are performed by a ſimple transfer from the one to the other: he who was before creditor on the *bank* books, becoming debtor as ſoon as he has reſigned his right to another, who is entered down as creditor in his place; ſo that the parties only change name, without any effective payment being made. Indeed there are ſometimes actual payments made, eſpecially in matters of retail, and when foreigners are diſpoſed to have ready money to carry off in ſpecie; or when particular traders chooſe to have a ſtock by them to negotiate in bills of exchange, *&c.* The neceſſity of theſe effective payments, has given occaſion to the opening a fund of ready money; which is found ſo far from diminiſhing the ſtock, that this liberty of withdrawing money at pleaſure rather augments it. By means of this *bank*, the republic, without incroaching on the freedom of commerce, or without paying any intereſt, is miſtreſs of 5000000 ducates, to which the capital of the *bank* is limited, to be in readineſs on any preſſing occaſion; the republic being ſecurity for the capital.

Agents of BANK. } See the articles { AGENT.
BANK *bills*. } { BILL.

BANK, or BENCH, in law. See BANK.

Days in BANK. See the article DAY.

Foot-BANK. See BANQUETTE, and FOOTBANK.

BANKER, a perſon who *banks*, that is, negotiates and trafficks in money; or receives, and remits money from place to place, by means of bills or letters of exchange.

In Italy the employment of a *banker*, eſpecially in republics, does not derogate from nobility; and hence it is, that moſt of the cadets, or younger ſons of perſons of condition, undertake it for the ſupport of their family.

The Romans had two kinds of *bankers*, though their office was much more extenſive than that of the *bankers* among us; theirs being public officers, in whom were united the functions of a broker, agent, *banker*, and notary; managing the exchange, taking in money, aſſiſting in buying and ſelling, and drawing the writing, neceſſary on all theſe occaſions.

BANKRUPT *, a dealer, who having gotten other mens goods, or money, in his hands, abſconds to defraud his creditors.

* The word is formed of the antient Latin *bancus*, a bench, or table; and *ruptus*, broken.

Bank, we have elſewhere obſerved, originally ſignified a *bench*, which the firſt bankers had in the public places, in markets, fairs, *&c.* on which they told their money, wrote their bills of exchange, *&c.* Hence, when a banker failed, they broke his bank, to advertiſe the public, that the perſon to whom the bank belonged, was no longer in a condition to continue his buſineſs. As this practice was very frequent in Italy, it is ſaid, the term *bankrupt* is derived from the Italian *banco rotto*, broken bench.

Cowel rather chooſes to deduce the word from the French *banque*, table, and *route*, *veſtigium*, trace, by a metaphor from the ſign left in the ground of a table once faſtened to it, and now gone. On this principle he traces the origin of *bankrupts*, from the antient Roman *menſarii*, or *argentarii*, who had their *tabernæ* or *menſæ* in certain public places; and who, when they fled, or made off with the money, that had been truſted to them, left only the ſign or ſhadow of their former ſtation behind them.

BANKRUPTCY, the failure, abſconding, and relinquiſhment of traffick in a merchant, a banker, or any other trader.

The French make this difference betwen a *bankruptcy* and a *failure*; that the firſt is ſuppoſed voluntary and fraudulent, and the latter conſtrained and neceſſary, by means of accidents, *&c.*

A failing, breaking, or ſtopping of payment, diminiſhes the merchant's credit; but does not note him with infamy, as *bankruptcy* does.

When a merchant, *&c.* fails to appear at the exchange, *&c.* without apparent reaſon, it is called *a failing of preſence*; the *bankruptcy* becomes open from the day he abſconds, or the ſeal is affixed to his effects.

Commiſſion of BANKRUPTCY. See COMMISSION.

BANN *, or BAN, BANNUM, or BANNUS, in the feudal law, a ſolemn proclamation, or publication of any thing.

* The origin of the word is uncertain; ſome deduce it from the Britiſh *ban*, clamour, noiſe; others from the Saxon *pan*, a thing ſpread; whence *ban*, and *band*, uſed for a flag.

Bracton mentions *bannus regis*, for a proclamation of ſilence antiently made by the court, before the encounter of the champions in a combat.

BANNS *of marriage*, are certain ſolemn notices of matrimonial contracts made in the pariſh-church, before the marriage; that if there be any exceptions to either party as to prior engagements, *&c.* there may be an opportunity of making them.

The publication of *banns* (popularly call *aſking in the church)* was intended as an expedient, to prevent clandeſtine marriages; but a licence or diſpenſation is now ſo eaſily procured, that their uſe is defeated.—By the laws of the church, *banns* are to be publiſhed thrice, on three diſtant days, in the places where the parties live, on pain of nullity of marriage: and excommunications are threatened againſt thoſe, who, knowing impediments conceal them.

BANNERETS *, an antient order of knights, or feudal lords, who, poſſeſſing ſeveral large fees, led their vaſſals to battle, under their own flag, or banner, when ſummoned thereto by the king.

* The word ſeems formed from *banner*, a ſquare flag, or from *band*, which antiently alſo denoted a flag.—*Bannereti* are alſo called in antient writers, *milites vexilliferi*, and *vexillarii*, *bannerarii*, *bannarii*, *banderiſii*, *baneriſii*, &c.

Antiently there were two kinds of knights, *great* and *little*; the firſt whereof were called *bannerets*, the ſecond *bachelors*; the firſt compoſed the upper; the ſecond, the middle nobility. See BACHELOR.

The *banneret* was a dignitary allowed to march under his own flag, whereas the *bachelarius eques* followed that of another.

To be qualified for a *banneret*, one muſt be a gentleman of family, and muſt have a power to raiſe a certain number of armed men; with eſtate enough to ſubſiſt at leaſt twenty-eight, or thirty men. This muſt have been very conſiderable in thoſe days, in regard each man, beſides his ſervant, had two horſemen to wait on him, armed, the one with a croſs-bow, the other with a bow and hatchet.

As he was not allowed to be a baron who had not above thirteen knights-fees, ſo he was not admitted to be a *banneret*, if he had leſs than ten.

Banneret, according to Spelman, was a middle order between a baron, and a ſimple knight; called ſometimes alſo *vexillarius minor*, to diſtinguiſh him from the greater, that is, from the baron, to whom alone properly belonged the *jus vexilli*, or privilege of the ſquare flag.

Hence the *banneret* was alſo called *bannerettus*, *quaſi baro minor*, a word frequently uſed by Engliſh writers in the ſame ſenſe, as *baneret* was by the French; though neither of them occur before the time of Edward II.

Some will have *bannerets* to have originally been perſons who had ſome portion of a barony aſſigned them; and enjoyed it under the title of *baro proximus*, and that with the ſame prerogatives as the baron himſelf.

Some again find the origin of *bannerets* in France; others in Britany; others in England. Theſe laſt attribute the inſtitution of *bannerets* to Conan, lieutenant of Maximus, who commanded the Roman legions in England under the empire of Gratian, in 383. This general, ſay they, revolting, divided England into forty cantons, and in theſe cantons diſtributed forty knights, to whom he gave a power of aſſembling on occaſion, under their ſeveral banners, as many of the effective men as were found in their reſpective diſtricts; whence they are called *bannerets*.

However this be, it appears from Froiſſart, &c. that antiently ſuch of the military men as were rich enough to raiſe and ſubſiſt a company of armed men, and had a right to do ſo, were called *bannerets*. Not, however, that theſe qualifications rendered them knights, but only *bannerets*; the appellation of knight being only added thereto, becauſe they were ſimple knights before.

Bannerets were ſecond to none, but knights of the garter; they were reputed the next degree below the nobility; and were allowed to bear arms with ſupporters, which none elſe may, under the degree of a baron. In France, it is ſaid, the dignity was hereditary; but in England, it died with the perſon that gained it. The other dwindled on the inſtitution of *baronets* by king James I, and at length became extinct. The laſt perſon created *banneret* was Sir John Smith, made ſo after Edghill-fight, for reſcuing the ſtandard of king Charles I.

The form of the *banneret*'s creation was this: on a day of battle, the candidate preſented his flag to the king or general, who, cutting off the train, or ſkirt thereof, and making it a ſquare, returned it again, the proper banner of *bannerets*; who are hence ſometimes called *knights of the ſquare flag*.

BANNIMUS, the form of expulſion of any member from the univerſity of Oxford, by affixing the ſentence up in ſome public place, as a denunciation or promulgation of it.

BANQUETTE, in fortification, is a little foot-bank, or an elevation of earth forming a path which runs along the inſide of a parapet; by which the muſqueteers get up, to diſcover the counterſcarp, or to fire on the enemies in the moat, or in the covert-way.

The *banquette* is generally a foot and half high, and almoſt three feet broad; having two or three ſteps to mount it by. —Where the parapet is very high, they make a double *banquette* one over the other.

BAPTISM *, in theology, the ceremony of *waſhing*; or a ſacrament whereby a perſon is initiated into the Chriſtian church, and original ſin is waſhed away in infants, and actual ſins in adults who receive it.

The Jews practiſed this ceremony, after circumciſion, on their proſelytes, long before the coming of Jeſus Chriſt.— For the matter of *baptiſm*, any natural water is held ſufficient; but nothing elſe is allowed: for this reaſon pope Stephen II. excommunicated a prieſt for *baptizing* a child with wine.—In the primitive times this ceremony was performed by immerſion, as it is to this day in the oriental churches, according to the original ſignification of the word. The practice of the weſtern churches is, to ſprinkle the water on the head or face of the perſon to be baptized, except in the church of Milan, in whoſe ritual it is ordered, that the head of the infant be plunged three times into the water.—A trine immerſion was firſt uſed, and continued for a long time: this was to ſignify either the three days that our Saviour lay in the grave, or the three Perſons in the Trinity. But it was afterwards laid aſide; becauſe the Arians uſed it: it was then thought proper to plunge but once, leſt the heretics ſhould think that the catholics, like them, divided the Trinity.—Some are of opinion, that ſprinkling in *baptiſm* was begun in cold countries. It was introduced into England about the beginning of the ninth century. At the council of Celchyth, in 816, it was ordered, that the prieſt ſhould not only ſprinkle the holy water upon the head of the infant, but likewiſe plunge it in the baſon.—There are abundance of ceremonies delivered by eccleſiaſtical writers, as uſed in *baptiſm*, which are now diſuſed; though there are not wanting thoſe who contend for their readmiſſion; as the giving milk and honey to the baptized, in the eaſt; wine and milk in the weſt, &c.—It appears, that in the primitive times none were baptized but adults.—Formerly there were great diſputes, whether the baptiſm of heretics was valid. The general opinion ran for the affirmative, provided it was conferred in the name of the Trinity; and therefore they allowed even that given by laymen, or even by women in caſe of neceſſity. The council of Roan in 1072. ordered, that the prieſt ſhould baptize faſting.

Theological authors diſtinguiſh three kinds of *baptiſm*. 1°, *Water-baptiſm*, which is that above-mentioned. 2°, *Baptiſm of fire*, which is the perfect love of God, joined with an earneſt deſire to be baptized; called alſo the *baptiſm of the Holy Ghoſt*: on occaſion this may ſupply the place of *water-baptiſm*. 3°, *Baptiſm of blood*; which is the martyrdom of a catechumen.

Baptiſm, in the primitive times, was only adminiſtred at Eaſter and Whitſuntide, except in caſes of neceſſity. The catechumens were not forward in coming to *baptiſm*: St. Ambroſe was not baptized before he was elected biſhop of Milan; and ſome of the fathers not till the time of their death. Some deferred it out of a tender conſcience; and others out of too much attachment to the world; it being the prevailing opinion of the primitive times, that *baptiſm*, whenever conferred, waſhed away all antecedent ſtains and ſins. Divers of the fathers raillied this ſuperſtitious delicacy to ſuch a degree, that they introduced a different extreme; the ridiculous zeal of ſome people carrying them to baptize even the dead, by proxy.

Baptism, or *Chriſtening*, in the ſea-language, is a ceremony in long voyages aboard merchant-ſhips; practiſed both on perſons and veſſels which paſs the tropic, or line, for the firſt time.

The *chriſtening* of veſſels is ſimple, and conſiſts only in the waſhing them throughout with ſea-water: that of paſſengers is more myſterious; but neither the one nor the other is done without making the crew drunk; the ſeamen, on chriſtening the ſhip, pretending to a right of cutting off the beak-head, unleſs redeemed by the maſter or captain.

The *chriſtening* of a ſeaman, or paſſenger, is as follows: the oldeſt of the crew who has paſſed the line, or tropic, comes, whimſically dreſt, his face blacked, a groteſque cap on his head, and a waggoner or other ſea-book in his hand, followed by the reſt of the ſeamen maſqued like himſelf, each having ſome kitchen utenſil in his hand, with drums beating: he places himſelf gravely on a ſeat prepared on the deck, at the foot of the main-maſt. At the tribunal of this mock-magiſtrate, each paſſenger, nor yet initiated, ſwears, he will take care the ſame ceremony be obſerved, whenever he is in the ſame circumſtance: by giving a little money, by way of gratification, he is diſcharged with a little ſprinkling of water; otherwiſe, as is uſually the caſe with the common ſeamen, he is heartily drenched with ſtreams of water poured on him: the ſhip-boys are incloſed in a cage, and ducked at diſcretion; and beſides, in memory of the ceremony, they are obliged to whip each other, which they never ſpare.

BAPTISMAL *Font*. See Font, and Baptistery.

BAPTIST. See Anabaptist, Catabaptist, and Hemerobaptist.

Hermits of St. John Baptist. See Hermit.

BASTISTERY, in eccleſiaſtical writers, a place or edifice where water is preſerved for perſons to be baptized in.

Antiently, in the churches which baptized by immerſion, the *baptiſtery* was a kind of pond where the catechumens were plunged; though in many places the next river ſerved for a *baptiſtery*.

In after-times, the *baptiſtery* was a little building adjoining to the church, purpoſely appinted for the adminiſtration of this ceremony.

There were ſeveral fonts and altars in each *baptiſtery*, becauſe then they baptized a number at once, all of whom received the euchariſt immediately after.

At firſt, theſe *baptiſteries* were only in the great cities, where biſhops reſided, who alone had the right of baptizing; but they afterwards allowed pariſhes to have fonts, for the more commodious adminiſtration of baptiſm. This right was confined to pariſhes alone; and if any monaſteries were found with baptiſmal fonts, it was becauſe they had baptiſmal churches in another place: though the biſhops ſometimes granted them to monks, upon condition that they would have a ſecular prieſt along with them to take care of the people; but they afterwards found means to throw off the prieſt, and make themſelves maſters of the church, and attach it, with its baptiſmal fonts, to their own monaſtery.

BAR, in a court of juſtice, denotes an incloſure made with a ſtrong partition of timber, three or four feet high, where the counſel are placed to plead cauſes.

This the French call *barre d'audience*, and in ſome places *auditoire*. It anſwers to what, among the Romans, was denominated *cauſidica*.

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* The word is formed from the Greek βαπτιζω, of βαπτω, I dip or plunge.

It is called *bar*, becauſe incloſed with a barrier, called alſo in Latin writers *cancelli* and *caulæ*, by a metaphor taken from ſheep-folds.

The denomination BAR is alſo given to the benches, where the lawyers or advocates are ſeated.—The appellation aroſe hence, that antiently there was a *bar*, or barrier, to ſeparate the counſellors and pleaders from the attorneys and others.

Hence our lawyers who are called to the *bar*, or licenſed to plead, in other countries called licentiati, are termed *barriſters*.

BAR, or BARRE, BARRA, in common law, denotes a peremptory exception againſt a demand or plaint.

The author of the terms of the law defines *bar*, a plea brought by the defendant in an action, whereby the action of the plaintiff is deſtroyed for ever. — But the modern writers extend the uſe of the word farther, dividing *bars* into *perpetual* and *temporary*.

Perpetual BAR is that, which overthrows the action for ever.

Temporary BAR, or *bar pro tempore*, is that which is allowed good for the preſent, but may fail, or be ſet aſide hereafter.

BARS, in the manage, denote the ridges or upper part of the gums, between the tuſhes and grinders of a horſe; the under and outward ſides retaining the name *gums*.

The *bars* ſhould be ſharp-ridged and lean; for ſince all the ſubjection a horſe ſuffers, proceeds from thoſe parts, if they have not thoſe qualities, they will be very little, or not at all ſenſible; ſo that the horſe can never have a good mouth; for if the *bars* be flat, round, and inſenſible, the bit will not have its effect; and conſequently, ſuch a horſe can be no more governed by his bridle, than if one took hold of his tail.

BARS, in muſic, denote ſtrokes drawn perpendicularly acroſs the lines of a piece of muſic, including between each two, a certain quantity or meaſure of time, which is various as the time is triple or common.

In common time, between each two *bars*, is included the meaſure of four crotchets; in triple time, three crotchets. Their principal uſe is, to regulate the beating, or meaſure of the muſical time in a concert.

BAR, BARR, or BARRE, in heraldry, denotes an ordinary nearly reſembling the *feſs*; from which it only differs by its narrowneſs, and by this, that the *bar* may be placed in any part of the field, whereas the feſs is confined to a ſingle place. See FESS.

BAR-SHOT. See the article SHOT.

BARACK *, or BARRACK, BARAQUE, a hut, or little lodge for ſoldiers in a camp.

* The word comes from the Spaniſh *barracas*, little cabins which fiſhermen make on the ſea-ſhore.

Thoſe for the horſe were formerly called *baracks*, and thoſe for the foot *huts*; but *barack* is now uſed indifferently for both.

Baracks are generally made by fixing four forked poles in the ground; and laying four others acroſs them; afterwards they build up the walls with ſods, wattles, or what the place affords: and the top is planked, thatched, or covered with turf, as they have convenience.

When the army is in winter quarters, the ſoldiers uſually build *baracks*; in the ſummer they are content with their tents.

BARALIPTON, a term in logic, denoting the firſt indirect mode of the firſt figure of ſyllogiſms.

A ſyllogiſm in *baralipton* is, when the two firſt propoſitions thereof are general, and the third particular; the middle term being the ſubject of the firſt, and the attribute of the ſecond.—For example.

BA *Every evil ought to be feared:*
RA *Every violent paſſion is an evil:*
LIP *Therefore ſomething that ought to be feared is a violent paſſion.*

BARALLOTS, BARALOTTI, the name of a ſect of heretics at Bologna in Italy, who had all things in common, even their wives and children. — They gave very readily into all manner of debauchery, and were alſo termed *compliers*.

BARANGI, officers among the Greeks of the lower empire, whoſe buſineſs it was to keep the keys of the city-gates where the emperor reſided.

Codinus ſays, *barangi* were thoſe who ſtood guard at the door of the emperor's bed-chamber and dining-room.

BARBACAN, or BARBICAN, properly denotes an outer defence, or fortification to a city, or caſtle; uſed eſpecially as a fence to the gates, or walls.

In which ſenſe, *barbacan* amounts to the ſame with what is otherwiſe called, *antemurale*, *premurale*, *murus exterior*, or *outer wall*.

BARBACAN is alſo uſed for a fort at the entrance of a bridge, or in the outlet of a city, having a double wall with towers. Such is that at one end of the wooden bridge at Rouen, which is ſtill called by ſome *Barbacana*.

BARBACAN is alſo uſed for an aperture in the walls of a city, through which to fire with muſquets on the enemy. See EMBRASURE.

ARBACAN, in architecture, denotes a long narrow canal, or opening, left in the walls for water to come in and go out at, when edifices are raiſed in places liable to be overflowed; or to drain off the water from a terrace, or the like.

BARBARA, in logic, the firſt mode of the firſt figure of ſyllogiſms.

A ſyllogiſm in *barbara*, is that whereof all the propoſitions are univerſal and affirmative; the middle term being the ſubject in the firſt propoſition, and attribute in the ſecond.— For example;

BAR *Whoever ſuffers a man to ſtarve, whom he ought to ſuſtain, is a murderer:*
BA *Whoever is rich, and refuſes to give alms, ſuffers thoſe to ſtarve, whom he ought to ſuſtain:*
RA *Therefore, whoever is rich, and refuſes to give alms, is a murderer.*

BARBARIAN *, a name given by the antient Greeks, to all thoſe who were not of their own country, or who did not ſpeak the Greek language.—In which ſenſe the word ſignified with them, no more than *foreigner*, and did not carry that odium with it, as it does now.

* Strabo derives the word βαρβαρος from βαρβαριζειν, *balbutire*, by reaſon foreigners coming to Athens uſed to ſtammer, or ſpeak coarſely: others derive it from βαρβαρ, a word that foreigners frequently ſtumbled on, which yet had no meaning; others from the Arabic *bar*, a deſart; Voſſius from the Chaldee adverb ברא, *extra*, *foris*.

BARBARISM, in grammar, denotes an offence againſt the purity of ſtyle or language.

A *barbariſm* differs, according to Iſidore, from a barbarous term, as the former, for inſtance, is Latin, though corrupt or miſuſed; whereas the latter, which this writer calls *barbarologia*, is a word merely foreign, intruded into Latin ſpeech.

BARBE, or BARB, in commerce, a kind of horſe brought from Barbary, much eſteemed for its beauty, vigour, and ſwiftneſs.

Barbs are uſually of a ſlender make, and their legs far apart.

It is a maxim, That *barbs* grow ripe, but never old; becauſe they retain their vigour to the laſt, which makes them prized for ſtallions: their mettle, according to the duke of Newcaſtle, never ceaſes but with their lives.

It is ſaid, they were antiently wild, and ran at large in the deſarts of Arabia; and that it was in the time of the Cheq Iſhmael, that they firſt began to tame them. It is ſaid, there are *barbs* in Africa, that will outrun oſtriches: ſuch are ordinarily ſold, according to Dapper, for 1000 ducats, or 100 camels. They are fed very ſparingly, Dapper ſays with camel's milk. It is added, that in Barbary they preſerve the genealogy of their *barbs*, with as much care as the Europeans do thoſe of their noble families; and that to ſell them, they always produce their titles of nobility.

The race of horſes is much degenerated in Numidia; the Arabs having been diſcouraged from keeping it up, by the Turkiſh officers, who were ſure to be maſters of them. At preſent the Tingitanians, and Egyptians, have the reputation of preſerving the beſt breed, both for ſize and beauty.

The ſmalleſt of theſe laſt are uſually ſixteen hands high, and all of them ſhaped, according to their phraſe, like the antilope.

The *good conditions* of a Barbary horſe (beſides the ſuppoſed quality of never lying down, and of ſtanding ſtill when the rider drops his bridle) are to have a long walk, and to ſtop ſhort, if required, in a full career.

BARBE, in the military art.—*To fire en* BARBE, is to fire the cannon over the parapet, inſtead of through the embraſures; in which caſe the parapet muſt not be more than three feet and a half high.

BARBE, or BARDE, is alſo an old term for the armour of the horſes of the antient knights, and ſoldiers, who were accoutred at all points.

Della Cruſca ſays, the *barde*, is an armour of iron or leather, wherewith the neck, breaſt, and ſhoulders of the horſe are covered.

BARBER. See CHIRURGERY.

BARBICAN. See the article BARBACAN.

BARBING is ſometimes uſed in antient ſtatutes for ſheering. Cloth is not to be exported till it be *barbed*, rowed, and ſhorn. 3 *H.* VII. *c.* 11.

BARBOTINE, a ſeed, otherwiſe called *ſemen ſantonicum*, and *ſemen contra vermes*, in Engliſh, *wormſeed*. See WORMSEED.

BARDE. See the article BARBE.

BARDESANISTS, a ſect of antient heretics, thus denominated from their leader, Bardeſanes, a Syrian of Edeſſa, in Meſopotamia.

Bardeſanes, born in the middle of the ſecond century, became eminent after his converſion to Chriſtianity, for his piety and learning; but eſpecially for his zeal againſt heretics, againſt whom, we are informed by St. Jerom and Euſebius, he wrote a multitude of books: yet had he the misfortune to fall, himſelf, into the errors of Valentinus, to which he added ſome others of his own. He taught, that the actions of men depend altogether on fate, and that God himſelf is ſubject to neceſſity. His followers went farther, and denied the reſurrection of the body, and the incarnation, and death of our Saviour; holding, that theſe were only apparent or phantaſtical.

Strunzius has given the hiſtory of the *Bardeſaniſts*.

BARDS, **Bardi**, antient poets among the Gauls and Britons, who deſcribed and ſung in verſe, the brave actions of the great men of their nation; with deſign to inculcate and recommend virtue, and even ſometimes to put an end to the difference between armies at the point of engagement.

* Bochart derives the word from *parat*, to ſing. Camden agrees with Feſtus, that *bardus* originally ſignifies a ſinger: and adds, that the word is pure Britiſh. Others derive the word from Bardus, a druid, the ſon of Dryis, and the fifth king of the Celtæ.

The *bards* differed from the *druids*, in that the latter were prieſts and teachers of the nation, but the former only poets and writers.

Larrey, Bodin, and Paſquier, indeed will have the *bards* to have been prieſts, as well as philoſophers: and Cluverius, orators too: but without much foundation in antiquity. —Strabo divides the ſects of philoſophers among the Gauls and Britons into three, *viz.* the druids, *bards*, and evates. The *bards*, adds he, are the ſingers and poets; the evates, the prieſts and natural philoſophers; and the druids, to natural philoſophy add alſo the moral. Hornius however reduces them to two ſects, *viz. bards*, and druids; others to one, and make druid a general name, comprehending all the others. Cluverius will have it, that there were *bards* alſo among the antient Germans; becauſe Tacitus makes mention of their ſongs and poems, which contained their hiſtory.

BARE-*footed Trinitarians*. }
Bare-*footed Carmelites*. } See the articles { Trinitarian. Carmelite. Pump.
Bare-*pump*. }

BAR-FEE, a fee of 20 pence, which every perſon acquitted of felony pays the gaoler.

BARGE, a kind of ſtate, or pleaſure-boat, uſed chiefly in the navigation of rivers, which lead to great cities.

Barges are of various kinds, and acquire various names, according to the variety of their uſes and ſtructures: as,

A company's barge, *A Severn-trow*,
A row-barge, *A Ware-barge*,
A royal-barge, *A light horſeman*,
A ſand-barge, *A Weſt-country-barge*.

BARK *, the exterior part of trees, ſerving them for a ſkin, or covering.

* In writers of the laſt age, this is ſometimes alſo called *baſt*. *Vid.* 15 *Car.* II. *c.* 2.

The *bark* of trees in general is of a ſpongy texture; and, by many little fibres which, paſs through the capillary tubes, whereof the wood conſiſts, it communicates with the pith; ſo that the proper nutriment of the tree, being imbibed by the roots, and carried up through the fine arterial veſſels of the tree by the warmth of the ſoil, *&c.* to the top of the plant, is uſually ſuppoſed to be there condenſed by the cold air, and in that form returns by its own gravity down the veſſels, which do the office of veins, lying between the wood and inner *bark*; leaving as it paſſes by, ſuch parts of its juice as the texture of the *bark* will receive, and requires for its ſupport. See Wood.

That ſoft whitiſh rind or ſubſtance between the inner *bark* and the wood, which Mr. Bradley thinks to do the office of veins, ſome account a third *bark*, only differing from the others in that its fibres are cloſer; 'tis this contains the liquid ſap, gums, *&c.* found in plants in the ſpring and ſummer months. It hardens by little and little, by means of the ſap it tranſmits, and is converted imperceptibly into the woody part of the tree. There are few trees but what have it; yet it is ſtill found in leſs quantity, as the tree is more expoſed to the ſun: that of the oak is ordinarily about an inch thick. It is here, that the corruption of trees generally begins: whence thoſe who fell and cut out trees, ought always to take care, to leave as little of it on, as poſſible.

There are a great many kinds of *barks* in uſe in the ſeveral arts: ſome in medicine, as the *quinquina*, or *jeſuit's bark*, *macer*, *chacarilla*, &c. others in dying, as the *bark* of the alder; others in ſpicery, as *cinnamon*, *caſſia lignea*, &c. the *bark* of oak in tanning; others on other occaſions, as *cork*; that of the linden-tree for cordage for wells; that of a kind of birch is uſed by the Indians for canoes, capable of holding twenty-four perſons.

The antients wrote their books on *barks*, eſpecially thoſe of the aſh and tilia or lime-tree; not on the exterior or outer *bark*, but on the inner and finer, called *philyra*; which is of ſo durable a texture, that there are manuſcripts on it, ſtill extant, a thouſand years old.

In the Eaſt-Indies they manufacture the *bark* of a certain tree into a kind of ſtuff or cloth. It is ſpun and dreſſed much after the manner of hemp. The long filaments ſeparated from it, upon beating and ſteeping it in water, compoſe a thread, of a middle kind between ſilk and common thread; neither ſo ſoft nor bright as ſilk, nor ſo hard or flat as hemp.

Some of theſe ſtuffs are pure *bark*, and are called pinaſſes, biambonnies, *&c.* In others they mix ſilk with the *bark*, and call them Ginghams and Nillas: the Fountalungees too are part ſilk, part *bark*, and are only diſtinguiſhed by being ſtriped.

Bark-*Mills*. }
Grafting in **Bark**. } See the articles { Mill. Engrafting.

Bark *, in navigation, denotes a little veſſel for the ſea, uſually with pointed or triangular ſails, in number two, or three at the moſt.

* The word is derived by ſome from the Latin *barca*; Fournier from *Barce*, a city in Africa; and Toletanus from *Barcelona*; others, among whom is Salmaſius, from the Greek, βαρις, a round building; Scaliger from βαρος, burden.

Some authors uſe the word *bark* for any veſſel that has no maſts.—Of *barks*, there are various kinds: as,

A binlander, *A ſkuit*,
A ſaik, *A ſnaul*,
A ſettee, *A ſnouke*.

Bark-binding, a diſtemper incident to trees, cured by ſlitting the *bark*, or cutting it along the grain, *viz.* in apple-trees by cutting ſtrait down.

Bark-galling is when trees are galled by thorns, or by being bound to ſtakes, *&c.* It is cured by clay laid on the galled place, and bound on with hay.

BARKING *of trees* is the peeling off or ſtripping the bark from the wood.

The month of May is the ſeaſon for *barking of trees*, becauſe then the ſap looſens the bark from the wood; which it is very hard to effect in any other time, unleſs the ſeaſon be very wet; heat and drineſs being always oppoſite thereto.

Maliciouſly *barking* of apple-trees, or other fruit-trees, is made felony, by 37 *H.* VIII. *c.* 6.

BARLEY-*Sugar*. See the article Sugar.

BARM, otherwiſe called *yeaſt*, the head or workings out of ale or beer. See Leaven.

BARNABITES, an order of religious, thus called from the church of St. Barnabas at Milan, where they were firſt eſtabliſhed; and not, as ſome have imagined, becauſe St. Barnabas was their patron: in reality St. Paul is the patron of the *Barnabites*.

The *Barnabites* are regular prieſts of the congregation of St. Paul. Their habit is black, and the ſame with that they wore when firſt eſtabliſhed, in 1533. by the expreſs bulls of Pope Clement VII. Their office is to inſtruct, catechize, and ſerve in miſſions.

BARNACLE *, in natural hiſtory, a bird of the gooſe kind, frequent in the weſtern iſles of Scotland; concerning whoſe origin and ſpecies many fables have been advanced.

* The word is alſo written *bernacle*, agreeably to its ſuppoſed etymon, from the Saxon *bearn*, a child.

Several authors have repreſented the *barnacle* as the produce of a marine animal, or ſhell-fiſh: but the later naturaliſts, on better grounds, refer it to the natural manner of generation of the feathered kind; making it a real gooſe, produced like others *ab ovo*. See a deſcription and draught of it in Sir Rob. Sibbald's Nat. Hiſt. Scot.

The *barnacle* is the ſame with what is otherwiſe called the *Soland gooſe*, in Latin *anſer Scoticus*; ſome will have it the ſame with the French *macreuſe*, er *macrout*; and others with the *diable de mer*, but erroneouſly: Dr. Robinſon aſſigns the difference; making the *barnacle* to be of the gooſe, the *macreuſe* of the duck, and the *diable de mer* of the moorhen kind.—The ſame author ſhews, that the *macreuſe* is no other than the *ſcoter*, or *anas niger minor*, deſcribed by Mr. Ray and Willughby; contrary to the opinion of M. Cattier, who took it for the greater *coot* of Bellonius; and alſo of others, who miſtook it for the puffin of the Sillies, and iſle of Man; and of others, with whom it paſſed for a ſort of *columbus* or *doucker*. See *Ray Syn. Meth. Avium*, p. 141.

Barnacles alſo denote an inſtrument which farriers apply to horſes noſes, when they will not ſtand quietly to be ſhod, blooded, dreſſed, or the like.

BAROCO, in logic, denotes the fourth mode of the ſecond figure of ſyllogiſms.

A ſyllogiſm in *baroco* has the firſt propoſition, univerſal and affirmative, but the ſecond and third particular and negative; and the middle term, the attribute in the two firſt.

For example,

BA *Every virtue is attended with diſcretion:*
RO *Some kinds of zeal are not attended with diſcretion:*
CO *Therefore ſome kinds of zeal are not virtues.*
BAR *Nullus homo non eſt bipes:*
OC *Non omne animal eſt bipes:*
O *Non omne animal eſt homo.*

BAROMETER *, a machine for meaſuring the weight of the atmoſphere, and the variations therein, in order chiefly to determine the changes of weather.

* The word is compounded of βαρος, weight; and μετρο measure.

The *barometer* is frequently confounded with the *baroſcop* though ſomewhat improperly; the latter, in ſtrictneſs, being a machine that barely ſhews an alteration in the weight of the atmoſphere: but it is one thing to know, that the air is heavier at one time than another, and another to meaſure how much that difference is; which is the buſineſs of the *barometer*.

The *barometer* is founded on the Torricellian experiment, a it is called from its inventor Torricelli: which is no mor than a glaſs tube filled with mercury, hermetically ſealed a one end; the other open, and immerged in a baſon of ſtagnan nant mercury. Now, as the weight of the atmoſphere diminiſhes, the mercury in the tube will here deſcend ; on the contrary, as it increaſes, the mercury will again aſcend : the column of mercury ſuſpended in the tube being always equal to the weight of the incumbent atmoſphere ; as is ſhewn under the word TORRICELLIAN.

Common BAROMETER.—The conſtruction thereof is thus : a glaſs tube AB (*Tab. Pneumatics, fig.* 1.) hermetically ſealed in A, having its diameter about $\frac{1}{10}$ of an inch, and its length, at leaſt, thirty one inches, is filled with mercury ſo juſtly, as not to have any air over it, nor any bubbles adhering to the ſides of the tube ; which is beſt done by means of a glaſs funnel, with a capillary tube. The orifice of the tube, filled after this manner, ſo as to overflow, is then cloſely preſſed by the finger, ſo as to exclude any air between it and the mercury, and thus immerged in a wooden veſſel, of a convenient diameter, ſo, however, as not to touch the bottom : at the diſtance of twenty-eight inches from the ſurface of the mercury, are fixed two plates, C E, and D F, divided into three inches, and theſe again ſubdivided into any number of ſmaller parts.—Laſtly, the tube is incloſed in a wooden frame, to prevent its being broken ; and the baſon, though open to the air, ſecured from duſt : and the *Barometer* is complete.

Many attempts have been made to render the changes in the *Barometer* more ſenſible, and ſo to meaſure the atmoſphere more accurately ; which has given riſe to a great number of *Barometers* of different ſtructures.—Hence the *wheel Barometer*, *diagonal Barometer*, *horizontal Barometer*, *pendant Barometer*, &c.

Des Cartes, and after him Huygens, uſed a tube A B (*fig.* 2.), having a cylindric veſſel CD ; one half of which veſſel, together with the upper part of the tube, was filled with water ; the other part of the veſſel, and the lower part of the tube, with mercury.—But here, though the column ſuſpended was larger, and conſequently the variation greater, yet the air, impriſoned in the water, getting looſe by degrees, filled the void ſpace in the top, and ſo ruined the machine.

Huygens then bethought himſelf of placing the mercury at top, and the water at bottom, in the manner following : A D G (*fig.* 3.) is a bent tube hermetically ſealed in A, and open in G ; the cylindric veſſels B C and F E are equal, and about twenty-nine inches apart ; the diameter of the tube is about a line, that of each veſſel fifteen lines, and the depth of the veſſels is about ten ; the tube is filled with mercury (the common *Barometer* ſtanding about twenty-nine inches) which will be ſuſpended between the middle of the veſſel F E, and that of the veſſel B C ; the remaining ſpace to A, being void both of mercury and air ; laſtly, common water, tinged with a ſixth part of aqua regis to prevent its freezing, is poured into the tube F G, till it riſes a foot above the mercury in D F.

When, then, the mercury riſing above the level of that contained in F E, through the tube A D, becomes a balance to the weight of the atmoſphere ; as the atmoſphere increaſes, the column of mercury will increaſe, conſequently the water will deſcend ; as the atmoſphere again grows lighter, the column of mercury will deſcend, and the water aſcend. This barometer, therefore, which is the ſame with that of Dr. Hook, will diſcover much minuter alterations in the air than the common one : for, inſtead of two inches, the fluid will here vary two feet ; and by inlarging the diameters of the cylinders, that variation may be ſtill increaſed : but it has this inconvenience, that the water will evaporate, and ſo render the alterations precarious ; though the evaporation be, in ſome meaſure, prevented by a drop of oil of ſweet almonds ſwimming at top.—On account of this defect, others have had recourſe to a

Horizontal or *rectangular* BAROMETER, ABCD (*fig.* 4.), the tube whereof is bent, in form of a ſquare BCD ; at top of its perpendicular leg it is joined to a veſſel or ciſtern A B ; and its variation accounted on the horizontal leg C D.

Now here the interval, or ſpace of variation, may be made of any extent at pleaſure, and ſo the minuteſt change in the air become ſenſible. For the diameter of the tube C D being given, it is eaſy to find the diameter of the veſſel A B, ſo as that the ſcale of deſcent in the tube D C ſhall have any given proportion to the ſcale of aſcent in the veſſel A B ; the rule being, that the diameter of the veſſel is to that of the tube in a ſubduplicate reciprocal ratio of their ſcales.

The diameters then of C D and A B being given, together with the ſcale of aſcent of the Mercury in the veſſel, the ſcale of mercury in the tube is found thus : as the ſquare of the diameter of the tube is to the ſquare of the diameter of the veſſel, ſo, reciprocally, is the ſcale of mercury in the veſſel, to the ſcale of mercury in the tube.

This and the preceding contrivance of Huygens are founded on a theorem in hydroſtatics ; *viz.* that fluids, having the ſame baſe, gravitate according to their perpendicular altitude, not according to the quantity of their matter ; whence the ſame weight of the atmoſphere ſupports the quickſilver that fills the tube A D, and the ciſtern B, as would ſupport the mercury in the tube alone.

This laſt, however, with its virtues, has great defects : for, by reaſon of the attraction between the parts of the glaſs and of the mercury (which Dr. Jurin has ſhewn to be conſiderable), with the length of the ſcale (conſequently the quantity of motion), and the attrition againſt its ſides, eſpecially in ſudden riſes and deſcents, the mercury breaks, ſome parts of it are left behind, and the equability of its riſe and fall ruined.—Some therefore prefer the

Diagonal BAROMETER, where the ſpace of variation is conſiderably larger than in the common one, and yet the riſe and fall more regular than in the others.—Its foundation is this ; that in a Torricellian tube B D (*fig.* 5.) inclined at any angle to the horizon, the cylinder of mercury equivalent to the weight of the atmoſphere is, to a cylinder of mercury equivalent to the ſame place in a vertical tube, as the length of the tube B C to the perpendicular height D C.

Hence, if the height D C be ſubtriple, ſubquadruple, *&c.* of the length of the tube, the changes in the diagonal *Barometer* will be double, or triple, *&c.* of the changes in the common *Barometer*. This *Barometer* will ſcarce allow its tube to be inclined to the horizon at a leſs angle than 45°, without undergoing the inconveniency of the horizontal one.

Wheel-BAROMETER. This was a contrivance of Dr. Hook, to make the alterations in the air more ſenſible ; the foundation of this is the *common vertical Barometer*, with the addition of a couple of weights A and B (*fig.* 5.) hanging in a pulley, the one of them playing at liberty in the air, the other reſting on the ſurface of the mercury in the tube, and riſing and falling with it.

Thus is the motion of the mercury communicated, by means of the pulley, to an index which turns round a graduated circle ; and thus the three inches of vertical aſcent are here improved to five, or ſix, or more, at pleaſure.

But the friction of the parts, in the pulley, and index, is ſo conſiderable, that unleſs the machine be made with a great deal of accuracy, it does not anſwer.

Pendant BAROMETER is a machine rather pretty and curious, than uſeful. It conſiſts of a conical tube, placed vertically, its upper and ſmaller extreme hermetically ſealed ; it has no veſſel or ciſtern, its conical figure ſupplying that defect : for when filled, like the reſt, there will be as much mercury ſuſtained as is equivalent to the weight of the atmoſphere ; and as that varies, the ſame mercury takes up a different part of the tube, and ſo becomes of a different weight.

Thus, when the weight of the atmoſphere is increaſed, the mercury is driven up into a narrower part of the tube ; by which means its column is lengthened, and, for the reaſon juſt given, its weight increaſed. Again, the atmoſphere decreaſing, the mercury ſinks into a wider part of the tube ; by which means its column is again ſhortened, and its preſſure accordingly weakened. Thus, the ſame mercury is ſtill a balance to the atmoſphere under all its variations.

The inconvenience in this barometer is, that, to prevent the mercury and air from changing places, the bore of the tube muſt be very ſmall ; which ſmalneſs of the bore renders the friction ſo ſenſible as to impede its playing.

Marine BAROMETER is likewiſe a contrivance of Dr. Hook, to be uſed at ſea, where the motion of the waves renders the others impracticable. It is nothing more than a double thermometer, or a couple of tubes half filled with ſpirit of wine ; the one hermetically ſealed at both ends, with a quantity of common air incloſed ; the other ſealed at one end, and open at the other.

Now, the air, we know, is able to act on the ſpirit of wine, and raiſe it, two ways ; the one by its gravity, as in the Torricellian tube ; the other by its heat, as in the thermometer. If then the two tubes be graduated, ſo as to agree with each other at the time when the air is incloſed, it will eaſily follow, that, where-ever the two agree afterwards, the preſſure of the atmoſphere is the ſame, as at the time when the air was incloſed. If in the thermometer open to the air the liquor ſtand higher, conſidering withal how much the other is riſen or fallen from the other cauſe of heat or cold, the air is heavier ; on the contrary, when it is lower, compared with the other, the air is lighter than at the time when the inſtrument was graduated.

Here the ſpaces anſwering to an inch of mercury will be more or leſs, according to the quantity of the air incloſed, and the ſmalneſs of the tubes ; and they may be increaſed, almoſt, in any proportion.

But it muſt be remembred, that the denſity and rarity of the air, on which this machine is founded, do not only depend on the weight of the atmoſphere, but alſo on the action of heat and cold.—This, therefore, can never be a juſt *Barometer* ; but may properly enough be called a *manoſcope*, or inſtrument to ſhew the denſity of the air. See MANOMETER. Nevertheleſs, the inſtrument is ſaid to be of good uſe in giving notice of all bad weather at ſea, as alſo of veerable winds, and of the neighbourhood of ice. *Phil. Tranſ.* N° 429. *p.* 133.

Statical BAROMETER, or BAROSCOPE, uſed by Mr. Boyle, Otto de Gueric, *&c.* is fallacious, and liable to be acted on by a double cauſe : it conſiſts of a large glaſs bubble, balanced by a braſs weight, in a nice pair of ſcales : for theſe two bodies being of equal gravity, but unequal bulk, if the medium in which they equiponderate be changed, there will follow a change of their weight; ſo that if the air grows heavier, the greater body, being lighter in ſpecie, will loſe more of its weight than the leſſer and more compact; but if the medium grow lighter, then the bigger body will outweigh the leſs.

The moſt accurate *Barometer*, yet invented, ſeems to be that of Mr. Caſwell; the ſtructure whereof he deſcribes as follows: Suppoſe ABCD (*fig.* 6.) a bucket of water, wherein is the *Barometer* *x r e z y o s m*, conſiſting of a body *x r s m*, and a tube *e z y o*. The body and tube are both concave cylinders, communicating with each other, made of tin, or rather glaſs. The bottom of the tube, *z y*, has a lead weight to ſink it, ſo as the top of the body may juſt ſwim even with the ſurface of the water, by the addition of ſome grain weights a-top. The water, when the inſtrument is forced with its mouth downwards, gets up into the tube to the height *y o*. There is added on the top a ſmall concave cylinder, which we call the *pipe*, to diſtinguiſh it from the other at bottom, which we call the *tube*: this pipe is to ſuſtain the inſtrument from ſinking to the bottom. *m d* is a wire, *m* S and *d e* two threads oblique to the ſurface of the water, performing the office of diagonals. Now, while the inſtrument ſinks more or leſs, by the alteration of the gravity of the air; there, where the ſurface of the water cuts the thread, is formed a ſmall bubble, which aſcends up the thread, as the mercury of the common *Barometer* aſcends, and *vice verſa*.

This inſtrument, as appears from a calculation which the author gives, ſhews the alterations in the air more accurately than the common *Barometer*, by no leſs than 1200 times. He obſerves, that the bubble is ſeldom known to ſtand ſtill a minute; that a ſmall blaſt of wind, that cannot be heard in a chamber, will make it ſink ſenſibly; and that a cloud always makes it deſcend, &c.

Portable BAROMETER. See the article PORTABLE.

Phænomena of the BAROMETER.—The phænomena of the *Barometer* are various; the cauſes aſſigned for them, by ſeveral authors, are widely different; nor is its uſe, in predicting the weather, yet perfectly aſcertained.

On the top of Snowdon-hill, 1240 yards high, Dr. Halley found the mercury to be lower, by three inches eight tenths, than at the foot thereof; whence it appears, that at every 30 yards the mercury ſinks one tenth of an inch. Mr. Derham, from ſome experiments he made at the top and bottom of the Monument, allows 32 yards perpendicular aſcent to a fall of the mercury of one tenth of an inch: whence we have not only a foundation for determining the height of the atmoſphere; which, on this foundation (were it equally denſe every-where), would not be found more than 5 miles and one tenth; but alſo a very accurate method of meaſuring the height of mountains. Thus, if on the ſurface of the earth the mercury be at 30 inches, at 1000 foot high it will be at 28,91 inches; at 2000 foot, 27,86; at 3000, 26,85; at 4000, 25,87; at 5000, 24,93; at 1 mile, 24,67; at 2 miles, 20,29; at 5 miles, 11,28; at 10 miles, 4,24; at 15 miles, 1,60; at 20 miles, 0,95; at 30 miles, 0,08; at 40 miles, 0,012: though, it muſt be obſerved, this is on a ſuppoſition that the atmoſphere is equally denſe every-where.

The greateſt height the mercury has been known to ſtand at in the *Barometer*, at London, is 30 inches three eighths, its leaſt 28 inches; its greateſt height, at the obſervatory of Paris, has been found 28 inches four tenths, and its leaſt 26 four tenths of the Paris foot; which exceeds the London foot by $\frac{9}{144}$: and with theſe obſervations agree others, made at Hall, in Saxony, by Wolfius. At Algiers it riſes to 30 inches two tenths or three tenths, with a northerly wind, though attended with the greateſt rains and tempeſts. *Shaw Trav. p.* 218.

It is true, there is an experiment wherein the height of the mercury is found ſurpriſingly to exceed theſe numbers; mercury perfectly purged being ſuſpended in a tube, in the Torricellian way, at the height of 75 feet; though by the leaſt ſhake it falls down to the ordinary height. See an account of this phænomenon under the word TORRICELLIAN.

The phænomena of the *Barometer*, Mr. Boyle obſerves, are ſo very precarious, that it is exceedingly difficult to form any general, certain rules about the riſe or fall thereof. Even that which ſeems to hold moſt univerſally; *viz.* that, when high winds blow, the mercury is the lower; ſometimes fails.

Dr. Halley gives us the following obſervations: that in calm weather, when the air is inclined to rain, the mercury is commonly low; in ſerene good ſettled weather, high.

That on great winds, though unaccompanied with rain, the mercury is the loweſt of all, with regard to the point of the compaſs the wind blows on. That, *cæteris paribus*, the greateſt heights of the mercury are on eaſterly and north-eaſterly winds. That after great ſtorms of wind, when the mercury has been low, it riſes again very faſt.

That in calm froſty weather it ſtands high.

That the more northerly places find greater alterations than the more ſouthern*: and that within the tropics, and near them, there is little or no variation of the height of the mercury at all.

Dr. Beal obſerves, that, *cæteris paribus*, the mercury is higher in cold weather than in warm; and, uſually, in the morning and evening higher than at mid-day.

That, in ſettled and fair weather, the mercury is higher than either a little before or after, or in the rain; and that it generally deſcends lower after rain than it was before it. If it chance to riſe higher after rain, it is generally followed by a ſettled ſerenity.

That there are frequently great changes in the air, without any perceptible alteration in the *Barometer*.

For the uſe of BAROMETERS, an ingenious author obſerves, that, by their means, we may regain the knowlege which ſtill reſides in brutes, and which we forfeited by not continuing in the open air, as they generally do; and, by our intemperance, corrupting the craſis of our organs of ſenſe.

As to the predictions from *Barometers*, Dr. Halley has found, that the riſing of the mercury forebodes fair weather after foul, and an eaſterly or north-eaſterly wind.

That the falling thereof portends ſoutherly or weſterly winds, with rain, or ſtormy winds, or both.

That, during the time of a ſtorm, the mercury beginning to riſe is a pretty ſure ſign, that it begins to abate.

Mr. Patrick obſerves, that, in hot weather, the falling of the mercury preſages thunder; that when foul weather happens ſoon after the fall of mercury, it ſeldom holds long: and the ſame is obſerved, if fair weather ſucceed preſently after its riſe.

Laſtly, Mr. Derham, from a long ſeries of *barometrical obſervations* made by Dr. Scheucher, at Zurich, compared with others made at the ſame times by himſelf at Upminſter, obſerves, that, throughout the whole year, the mercury was lower at the former place than at the latter, by ſometimes one, and ſometimes two inches; though the difference, at a medium, he computes to be about half an inch: and thence concludes the ſituation of Zurich to be near a quarter of an Engliſh mile higher than that of Upminſter. He found, however, a conſiderable harmony between the two; the one uſually riſing and falling, and that much or little, as the other did; though this harmony is not ſo exact, as has been obſerved in *Barometers* nearer home; as at London, Paris, in Lancaſhire, &c.

Cauſe of the phænomena of the BAROMETER.—Theſe are the chief phænomena of the *Barometer*; to account for which, the hypotheſes that have been framed are almoſt infinite. Indeed, as the weight of the atmoſphere is generally allowed to be the foundation of the *Barometer*, ſo it is generally granted, that the alterations in the weight of the air are the occaſions of thoſe in the *Barometer*; and yet even this does not obtain univerſally. Dr. Liſter, for inſtance, accounts for the changes of the *Barometer* from the alterations of heat and cold. This, he ſays, he has often obſerved, that in ſtorms, &c. when the mercury is at the loweſt, it breaks, and emits ſmall particles, which he calls a kind of *fretting*; and argues, that in all times of its deſcent, it is more or leſs on the fret. In this diſorder, he thinks, its parts are contracted, and brought cloſer together; and, for that reaſon, deſcend: beſides, in the fretting they let go little particles of air, before incloſed in them; and theſe riſing into the top of the tube, the mercury muſt ſink, both from the column's being ſhortened by their eſcape, and by their lying upon it. Mercury, therefore, he adds, riſes either in very hot or very cold weather, between the tropics, &c. as being then in its natural ſtate; and, again, in the intermediate degrees of heat and cold it falls, as being contracted, and, as it were, convulſed, and drawn together.—But this account, however ingenious, yet comes far ſhort of accounting for the phænomena; nay, in ſome reſpects, it contradicts them.

The changes in the weight of the atmoſphere, therefore, muſt be laid down as the cauſe of thoſe in the *Barometer*; but then, for the cauſe of that cauſe, or whence thoſe alterations ariſe in the atmoſphere, will be no eaſy matter to determine; there being, perhaps, no one principle in nature that will account for ſuch a variety of appearances, and thoſe too ſo irregular. It is probable, the winds, as driven this or that way, have a great ſhare in them; ſome ſhare, too, vapours and exhalations, riſing from the earth, may have; ſome, the changes in the air of the neighbouring regions; and ſome, the flux and reflux occaſioned in the air by the moon.

Dr. Halley thinks the winds and exhalations ſufficient; and, on their footing, gives us a very probable *rationale* of the *Barometer*: the ſubſtance of what may be ſaid on that head, is as follows.

1*ſt*, then, The winds muſt neceſſarily alter the weight of the air in any particular country; and that, either by bringing together and accumulating a greater quantity of air, and ſo loading the atmoſphere of any place; which will be the caſe, as often as two winds blow at the ſame time, from oppoſite points towards the ſame point: or, by ſweeping away a part of the air, and removing ſome of the load, and thus giving room for the atmoſphere to expand itſelf; which will be the caſe, when two winds blow at the ſame time, and from the ſame point, oppoſite ways: or, laſtly, by cutting off the perpendicular preſſure of the atmoſphere; which happens, as often as any ſingle wind blows briſkly any way; it being found, by experiment,

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* For inſtance,—at Naples it hardly ever exceeds an inch; whereas,—at Upminſter it is 2,5 inches,—at Peterſburgh 3,31. *Phil. Tranſ. n.* 434. *p.* 407.

riment, that a ſtrong blaſt of wind, even made by art, will render the atmoſphere lighter; and, accordingly, the mercury, in a tube under which it paſſes, as well as in another at a diſtance from it, will ſubſide conſiderably. See *Phil. Tranſ.* Nº 292.

2dly, The cold nitrous particles, and even air itſelf condenſed in the northern parts, and driven elſewhere, muſt load the atmoſphere, and increaſe its preſſure.

3dly, Heavy dry exhalations, from the earth, muſt increaſe the weight of the atmoſphere, and heighten its elaſtic force, as we find the ſpecific gravity of menſtruums increaſed by diſſolved ſalts, and metals.

4thly, The air being rendered heavier, from theſe and the like cauſes, is thereby the more able to ſupport the vapours; which being likewiſe intimately mixed with it, and ſwimming every-where equably through it, make the weather ſerene and fair: again, the air being made lighter, from the contrary cauſes, it becomes unable to ſupport the vapours wherewith it is replete; theſe, therefore, precipitating, are gathered into clouds; and thoſe, in their progreſs, coaleſce into drops of rain.

Theſe things obſerved, it appears pretty evident, that the ſame cauſes which increaſe the weight of the air, and make it more able to ſupport the mercury in the *Barometer*, do likewiſe occaſion a ſerene ſky, and a dry ſeaſon; and the ſame cauſes which render the air lighter, and leſs able to ſupport the mercury, do likewiſe generate clouds and rain.

Hence, *1ſt*, When the air is lighteſt, and the mercury in the *Barometer* is loweſt, the clouds are very low, and move ſwiftly: and when, after rain, the clouds break, and a calm ſky again ſhines forth, being purged of the vapours; it appears exceedingly bright and tranſparent, and affords an eaſy proſpect of remote objects.

2dly, When the air is heavier, and the mercury ſtands higher in the tube, the weather is calm, though ſomewhat leſs clear, by reaſon the vapours are diſperſed every-where equally; if any clouds now appear, they are very high, and move ſlowly; and when the air is heavieſt of all, the earth is frequently found enveloped in pretty thick clouds, which appear to be formed out of the groſſer exhalations, and which the air is then able to ſuſtain, though a lighter atmoſphere could not.

3dly, Hence it is, that with us the mercury ſtands higheſt in the coldeſt ſeaſons, and when the wind blows from the north or north-eaſt corner: for, in that caſe, there are two winds blowing towards us at the ſame time, and from oppoſite corners; there being a conſtant weſt wind found in the Atlantic ocean, at the latitude correſponding to ours. To which we may add, that, in a north wind, the cold condenſed air of the northern parts is brought hither.

4thly, Hence, in the northern regions, the variation of the mercury is more ſenſible than in the ſouthern ones; the winds being found both more ſtrong, more frequent, more various, and more oppoſite to each other, in the former, than the latter.

Laſtly, Hence it is, that, between the tropics, the variation of the mercury is ſcarce ſenſible; the winds there being extremely gentle, and uſually blowing the ſame way.

Now, this account, however well adapted to many of the particular caſes of the *Barometer*, ſeems to come ſhort of ſome of the principal and moſt obvious ones; and is, beſides, liable to ſeveral objections.

For, *1ſt*, If the wind were the ſole agent in effecting theſe alterations, we ſhould have no alterations without a ſenſible wind, nor any wind without ſome alteration of the mercury; both which are contrary to experience.

2dly, If two winds be ſuppoſed blowing from the ſame place, *viz.* London, oppoſite ways, *viz.* N. E. and S. W. there will be two others, blowing from oppoſite points, *viz.* N. W. and S. E. to the ſame place; which two laſt will balance the firſt, and bring as much air towards the point, as the others ſwept from it. Or thus, in proportion as the air is carried off N. E. and S. W. the adjacent air will croud in from the other points, and form a couple of new currents in the direction N. W. and S. E. to fill up the vacancy, and reſtore the equilibrium. This is a neceſſary conſequence from the laws of fluids.

3dly, If the wind were the ſole agent, the alterations in the height of the mercury would only be relative, or topical; there would be ſtill the ſame quantity ſupported at ſeveral places taken collectively: thus, what a tube at London loſt, another at Paris, or at Piſa, or at Zurich, *&c.* would at the ſame time gain. But we find the very contrary true in fact; for, from all the obſervations hitherto made, the *Barometers* in ſeveral parts of the globe riſe and fall together; ſo that it muſt be ſome alteration in the abſolute weight of the atmoſphere, that accounts for the riſe and fall of the mercury.

Laſtly, Setting aſide all objections, theſe popular phænomena, the mercury's fall before, and riſe after, rain, ſeem to be inexplicable on the foot of this hypotheſis: for, ſuppoſe two contrary winds ſweeping the air from over London: we know that few, if any, of the winds reach above a mile high; all, therefore, they can do, will be, to cut off a certain part of the column of air over London: if the conſequence of this be the fall of the mercury, yet there is no apparent reaſon for the rain's following it. The vapours, indeed, may be let lower, but it will only be till they come into an air of the ſame ſpecific gravity with themſelves; and there they will ſtick as before.

M. Leibnitz endeavours to ſupply the defects of this hypotheſis with a new one of his own. He aſſerts, that a body immerſed in a fluid only weighs with that fluid while it is ſuſtained thereby; ſo that when it ceaſes to be ſuſtained, *i. e.* when let fall, its weight ceaſes to make a part of that of the fluid; which by this means becomes lighter. Thus, adds he, the watery vapours, while ſuſtained in the air, increaſe its weight; but, when let fall, they ceaſe to weigh along with it. Thus the weight of the air is diminiſhed; and thus the mercury falls, and rain enſues.

But M. Leibnitz's principle, notwithſtanding the experiment he brings to confirm it, is falſe, as has been evidently made appear by a counter-experiment of Dr. Deſaguliers. For, a body, whether ſpecifically equal, or lighter, or heavier, than a fluid, while it is immerged in it, whether it be at reſt, or in motion, adds to the fluid a weight equivalent to that of an equal bulk of the fluid; as follows from that law in hydroſtatics, That fluids gravitate according to their perpendicular altitudes.—However, were M. Leibnitz's principle true, yet it is defective; and that in the ſame reſpect with Dr. Halley's: nor would it account for the phænomena more than the other. For, ſuppoſing the vapours, by being condenſed, to be put in a motion downwards, and ſo ceaſing to gravitate with the atmoſphere; they will therefore fall, till they reach a part of the atmoſphere of the ſame ſpecific gravity with themſelves; and there they will hang as before. If the mercury fall, it will only be during the time of that deſcent; for theſe once fixed, the former gravity is retrieved; or, were it not retrieved, yet no rain would enſue the fall of the mercury.

If it might be allowed us to add any thing after ſuch great men, it ſhould be as follows.—Suppoſe any number of watery veſicles floating in any part of the atmoſphere, over any determinate portion of the globe; for inſtance, over A B, *fig.* 21. if the upper veſicles be condenſed by the cold of the ſuperior regions, their ſpecific gravity will be increaſed, and they will deſcend; the horizontal claſs 1, *v. gr.* to 2, 2 to 3, *&c.* where meeting with other veſicles not yet precipitated, they will coaleſce, or run into larger veſicles, by the known laws of attraction. Or, if we rather chooſe to have the wind act; let it drive either horizontally, or obliquely: in the former caſe, the veſicles, claſs 8, will be driven againſt 9; thoſe againſt 10, *&c.* or the oblique claſs A 7, driven againſt 5, 8 againſt 4, *&c.* by which means, likewiſe, will the particles coaleſce, and form new and larger veſicles, as before; ſo that their number, which before was, ſuppoſe a million, will now be reduced, *v. gr.* to an hundred thouſand.

But by the ſame coalition whereby their number is diminiſhed, their ſpecific gravity, if we may ſo call it, is increaſed, *i. e.* they come to have more matter in the ſame ſpace, or under an equal ſurface; as may be eaſily proved from principles of geometry: for in augmenting the maſs of any homogeneous body, the increaſe of ſurface does not keep pace with that of the ſolidity; but that of the former is as the ſquare of the diameter, and that of the latter as the cube of the ſame.

But ſince the ſame quantity of matter is now in a leſs ſpace, or under leſs dimenſions, it will loſe leſs of its weight by the reſiſtance of the medium. This is evident: for a body immerged in a fluid loſes nothing of its weight but by the friction of its parts againſt thoſe of the fluid; but the friction is evidently as the ſurface; therefore, where the ſurface is leſſened, the reſiſtance muſt be ſo too. Conſequently, the veſicles, whoſe gravity before the coalition was equal to the reſiſtance of the medium, now that reſiſtance is diminiſhed, will deſcend; and that with a velocity in the ratio of the increaſe of the maſs to the increaſe of the ſurface.

In their deſcent, as they arrive at denſer parts of the atmoſphere, *v. gr.* at 4, 5, *&c.* their maſs and ſurface again will be increaſed by new coalitions; and thus, by conſtant freſh acceſſions, more than equal to the conſtant reſiſtances, they will be enabled to purſue their journey through all the ſtages of the air, till they reach the earth; their maſſes exceedingly magnified; and in the form of rain.

Now that the vapours are got down, let us conſider how the *Barometer* muſt have been affected during their paſſage. Before any of the veſicles began to ſubſide, either from the action of the cold, or of the wind, they all floated in the portion of the atmoſphere ABCD, and all gravitated towards the centre E. Here now, each reſpectively reſiding in a part of the medium of the ſame ſpecific gravity with itſelf, will loſe as much of its weight, as is equal to that of a part of the medium of the ſame bulk with itſelf, *i. e.* each will loſe all its weight. But, then, whatever weight each loſes, it communicates to the medium, which now preſſes on the ſurface of the earth A B, with its own weight, and that of the veſicles, conjointly. Suppoſe, then, this united preſſure keeps up the mercury in the *Barometer* at thirty inches: by the coalition of the veſicles from the cauſes aforeſaid, their ſurfaces, and conſequently their friction, are leſſened; therefore they will communicate leſs of their weight to the air, *i. e.* leſs than the whole; and conſequently they will deſcend with the exceſs; *i. e.* with a velocity equal to the remainder, as before obſerved. Now, as the veſicles can act no otherwiſe on the ſurface of the earth A B, but by the mediation of the interjacent air; in proportion as their action on the medium is leſs, their action on the earth will be leſs. It is alſo evident, that the ſurface of the earth A B muſt be now leſs preſſed than before; and that in proportion as the veſicles reſerve more of their weight uncommunicated to the medium, to promote their own deſcent, *i. e.* in proportion to the velocity of the falling veſicles; which is, again, in proportion to their bulks. Thus, as the veſicles deſcend, the bulks continually increaſing, the friction, and therefore the preſſure on the earth, and, laſtly, the height of the mercury, will continually decreaſe, during the whole time of the fall.—Hence we ſee, both why the veſicles, when once beginning to fall, perſevere; why the mercury begins to fall at the ſame time; and why it continues and ceaſes to fall together with them: which were the great *deſiderata* in the philoſophy of the *Barometer*.

I ſee but one objection that lies againſt this theory, and it is this; that the veſicles, being put in motion, and ſtriking againſt the particles of the medium and one another with ſome moment, will meet with a conſiderable reſiſtance from the *vis inertiæ* thereof; by which means their deſcent will be retarded, and the preſſure of the atmoſphere retrieved; the impetus of the moving veſicles being ſuppoſed to compenſate for their loſs of ſurface. Thus a heavy body ſuſtained in a fluid by a hair, and moved up and down therein, preſſes more on the bottom, than when held at reſt; which additional preſſure will be the greater, as the velocity of the falling veſicles is greater; a greater impulſe being required to break through the *vis inertiæ* of the contiguous particles, in a leſs time than in a larger.

But we have both reaſon and experiment againſt this objection: for, beſides that the velocity of the veſicles, in theſe circumſtances, muſt neceſſarily be very ſmall, and their impulſe inconſiderable; beſides, that the *vis inertiæ* of the air muſt be exceedingly weak, by reaſon of its extreme ſubtilty; and that it muſt be a very improper vehicle to convey an impulſe to a diſtance, by reaſon of its elaſticity: we find, that even in water (a groſs unelaſtic medium), and a piece of lead (a ponderous body, which falls with a great moment), that even here the body, in its deſcent through the fluid, gravitates conſiderably leſs than when ſuſtained at reſt therein: in which the ſeveral experiments of Reaumur, Ramazzini, and Deſaguliers, all agree.

BAROMETRICAL *Phoſphorus.* See PHOSPHORUS.

BARON[*], a dignitary who holds a barony.

[*] *Baron* is a term whoſe origin and primary import is much conteſted. Some will have it originally denote a *man*, ανηρ; ſome a *hero*, or *valiant man*; ſome a *libertinus*, or *freeman*; ſome a *great* or *rich man*; ſome a *vaſſal* or *liegeman*.—Menage derives it from the Latin *baro*, which we find uſed in the pure age of that language for *vir*, a ſtout or valiant man: whence, according to this author, it was, that thoſe placed next the king in battles were called *barones*, as being the braveſt men in the army: and as princes frequently rewarded the bravery and fidelity of thoſe about them with fees, the word came to be uſed for any noble perſon who holds a fee immediately of the king.—Iſidore, and after him Camden, take the word, in its original ſenſe, to ſignify, a *mercenary ſoldier*. Meſſieurs of the Port Royal derive it from βαρος, *weight*, or *authority*. Cicero uſes the word *baro* for a ſtupid, brutal man; and the old Germans make mention of *buffeting a baron*, i. e. *a villain*; as the Italians ſtill uſe the word *barone*, to ſignify *a beggar*.—M. De Marca derives *baron* from the German *bar*, man, or freeman; others derive it from the old Gauliſh, Celtic, and Hebrew languages: but the moſt probable opinion is, that it comes from the Spaniſh *varo*, a ſtout, noble perſon; whence wives come to call their huſbands, and princes their tenants, *barons*. In the Salic laws, as well as the laws of the Lombards, the word *baron* ſignifies a *man* in the general; and the old Gloſſary of Philomenes tranſlates *baron* by ανηρ, man.

BARON is more particularly uſed, among us, for a lord, or peer of the loweſt claſs; or a degree of nobility next below that of a viſcount, and above that of a knight, or a baronet.

Barons are lords of parliament, and peers of the realm, and enjoy all the privileges thereof.—They are not girt with a ſword at their creation, nor had they any coronets till the reign of king Charles II. who gave them a circle of gold with ſix pearls ſet cloſe to the rim.

In antient records, the word *Barons* included all the nobility of England, becauſe regularly all noblemen were *Barons*, though they had alſo a higher dignity.—And therefore the charter of king Edward I. which is an expoſition of what relates to *Barons* in *Magna Charta*, concludes, *teſtibus archiepiſcopis, epiſcopis, baronibus, &c.* And the great council of the nobility, when they conſiſted of, beſides earls and *Barons*, dukes, marquiſes, *&c.* were comprehended under the name *de la councel de baronage.*

BARONS *by antient tenure* were thoſe who held certain territories of the king, who ſtill reſerved the tenure in chief to himſelf. We alſo read of *Barons by temporal tenure*; who are ſuch as hold honours, caſtles, manors, as heads of their *barony*, that is, by grand ſergeanty; by which tenure they were antiently ſummoned to parliament. But at preſent a *Baron* by tenure is no lord of parliament, till he be called thither by writ.

The *Barons* by tenure, after the conqueſt, were divided into *majores*, and *minores*, and were ſummoned, accordingly, to parliament; the *majores*, or greater *Barons*, by immediate writ from the king; the *minores*, or leſſer *Barons*, by general writ from the high ſheriff, at the king's command.

The antients diſtinguiſhed the greater *Barons* from the leſs, by attributing high, and even ſovereign juriſdiction, to the former, and only inferior juriſdiction over ſmaller matters to the latter.

BARONS *of the exchequer* are judges, four in number, to whom the adminiſtration of juſtice is committed in cauſes between the king and his ſubjects, touching matters belonging to the exchequer, and the king's revenue.

They are called *Barons*, becauſe *Barons* of the realm were uſed to be employed in that office.

Their office is alſo to look to the accompts of the king; to which end they have auditors under them; as well as to decide cauſes relating to the revenue, brought by any means into the exchequer: ſo that, of late, they have been conſtantly perſons learned in the law; whereas formerly they were *majores & diſcretiores in regno, ſive de clero eſſent, ſive de curia.*

BARONS *of the cinque-ports*, are members of the houſe of commons elected by the five ports, two for each port.

Thoſe who have been mayors of Corſe-caſtle in Dorſetſhire, are alſo denominated *Barons.*—As were formerly, likewiſe, the chief citizens of London.

BARON is alſo uſed for the huſband, in relation to the wife; which two, in law, are called *Baron and feme.* See HUSBAND, and WIFE.

BARON *and feme*, in heraldry, is when the coats of arms of a man and his wife are borne per pale in the ſame eſcutcheon; the man's being always on the dexter ſide, and the woman's on the ſiniſter.—But here the wife is ſuppoſed not an heireſs; for then her coat muſt be borne by the huſband on an ineſcutcheon, or eſcutcheon of pretence.

Court-BARON.	See the articles	COURT.
Prender de BARON.		PRENDER.

BARONET, among modern writers, denotes a dignity, or degree of honour, next beneath a baron, and above a knight; having precedency of all knights, excepting thoſe of the *garter*.

The dignity of *Baronet* is given by patent, and is the loweſt degree of honour that is hereditary. The order was founded by king James I. in 1611. when 200 *Baronets* were created at once; to which number, by the patent, they were always to be reſtrained. Though, it is ſaid, there are now four times that number.

They had ſeveral conſiderable privileges given them, with an *habendum* to them and their heirs male. They were allowed to charge their coat with the arms of Ulſter, which are, in a field argent, a hand gules; and that upon condition of their defending the province of Ulſter, in Ireland, againſt the rebels, who then haraſſed it extremely: to which end, they were each to raiſe and keep up thirty ſoldiers, at their own expence, for three years together; or to pay into the exchequer a ſum ſufficient to do it; which, at 8 *d. per* day *per* head, was 1095 *l.* now always remitted them.

Baronets take place according to the dates of their patents; by the terms of which, no honour is to be erected between *barons* and *Baronets*.

The title *Sir* is granted them by a peculiar clauſe in their patents, though they be not dubbed knights.—But both a *Baronet*, and his eldeſt ſon, being of full age, may claim knighthood.

BARONIÆ *Caput.* See the article CAPUT.

BARONY, BARONIA, or BARONAGIUM, the lordſhip, fee of a baron, either temporal or ſpiritual. See BARON.

In which ſenſe *Barony* amounts to the ſame with what is othe wiſe called *honour*.

A *Barony* may be conſidered as a lordſhip held by ſome ſervi in chief of the king[*], coinciding with what is otherwiſe call *grand ſergeanty.*

[*] *Baronies*, in their firſt creation, moved from the king himſ the chief lord of the whole realm; and could be holden i mediately of no other lord. For example; The king e offed a man of a great ſeigneurie in land; to hold to perſon enfeoffed and his heirs, of the king and his h by baronial ſervice, to wit, by the ſervice of twenty, fo ſixty knights, or of ſuch other number of knights, either m or fewer, as the king by his enfeoffment limited or appoin —In the ages next after the conqueſt, when a great was enfeoffed by the king of a large ſeigneurie, ſuch ſeigne was called a *barony*; but, more commonly, an *honour*: as, *honour* of Glouceſter, the *honour* of Walingford, the *h* of Lancaſter, the *honour* of Richemond, and the like. T were in England certain *honours* which were often calle Norman or other foreign names; that is to ſay, ſomet by the Engliſh, and ſometimes by the foreign name. happened when the ſame perſon was lord of an *honour* in mandy, or ſome other foreign country, and alſo of an *h* in England. For example; William De Forz, De F or De Fortibus, was lord of the *honour* of Albema

Norm

Normandy. He was alſo lord of two *honours* in England, to wit, the *honour* of Holderneſs, and the *honour* of Skipton in Cravene. Theſe *honours* in England were ſometimes called by the Norman name, the *honour* of Albemarle, or the *honour* of the earl of Albemarle. In like manner, the earl of Britannie was lord of the *honour* of Britannie in France, and alſo of the *honour* of Richmond in England. The *honour* of Richmond was ſometimes called by the foreign name, the *honour* of Britannie, or the *honour* of the earl of Britannie. This ſerveth to explain the terms, *honour* of Albemarle in England, *honor Albemarliæ*, or *Comitis Albemarliæ in Anglia*; *honor Britanniæ*, or *Comitis Britanniæ in Anglia*, the *honour* of Britannie, or of the Earl of Britannie in England. Not that Albemarle or Britannie were in England; but that the ſame perſon reſpectively was lord of each of the ſaid *honours* abroad, and of each the of ſaid *honours* in England. See *Madox. Hiſt. of Land hon. and baronies.*

The *baronies* belonging to biſhops are by ſome called *regalia*, as being held ſolely on the king's liberality. Theſe do not conſiſt in one *barony* alone, but in many; for, *tot erant baroniæ, quot majora prædia.*

A *barony*, according to Bracton, is a right indiviſible: wherefore, if an inheritance be to be divided among coparceners, though ſome capital meſſuages may be divided, yet, if the capital meſſuage be the head of a county, or *barony*, it may not be parcelled; and the reaſon is, leſt by this diviſion, many of the rights of counties and *baronies*, by degrees, come to nothing, to the prejudice of the realm; which is ſaid to be compoſed of counties and *baronies*.

BAROSCOPE*, a machine contrived to ſhew the alterations in the weight of the atmoſphere. See BAROMETER.

* The word is derived from βαρος, *onus*, and σκοπεω, *video*.

BARR. See the article BAR.

BARRATOR*, in law, a common mover, or maintainer of ſuits, quarrels, or parties, either in courts, or elſewhere.

* The word is alſo written, *barator*, *barretor*, and *barretour*. Lambert derives it from the Latin *barathro*, or *balatro*, a vile knave, or unthrift. Skene from the Italian *barrataria*, corruption or bribery in a judge. Menage from the French *barratar*, of the old word *barat*, a trick.

BARRATRY, in a marine ſenſe, is the maſter of a ſhip's cheating the owners, or inſurers, whether it be done by running away with the ſhip, ſinking her, deſerting her, or embezilling the cargo.

BARRE. See the article BAR.

Ports de BARRE. See the article PORT.

BARREL, an oblong veſſel, of a ſpheroidal, or rather a cylindroidal figure, uſed for the holding divers ſorts of goods, both liquid and dry.

The Engliſh *barrel*, wine-meaſure, contains the eighth part of a tun, the fourth part of a pipe, and the moiety of a hogſhead, that is, thirty-one gallons and an half; of beer it contains thirty-ſix gallons; and of ale thirty-two gallons.

The *barrel* of beer, vinegar, or liquor preparing for vinegar, is to contain 34 gallons, according to the ſtandard of the ale quart. 10 & 11 *W*. III. *c*. 21.

The *barrel*, or *barrille* of Florence is a liquid meaſure, containing twenty fiaſques, flaſks, or one third of a ſtar, or ſtaio.—The *barrel*, *barique* of Paris, contains two hundred and ten pints, or twenty-ſix ſeptiers and an half; four bariques make three muids, or one tun.—The *barrel* is half a pipe.

ARREL is alſo uſed for a certain quantity, or weight, of ſeveral merchandizes; which is various as the commodities vary.

The *barrel* of herrings is to contain 32 gallons, wine-meaſure; being about 28 gallons, old ſtandard: uſually amounting to about 1000 full herrings, 13 *Eliz. c.* 11.

The *barrel* of ſalmon is to contain 42 gallons, 5 *G. c.* 18.—And the *barrel* of eels, the ſame, 22 *Ed*. IV. *c*. 2.

The *barrel* of ſoap is to contain 256 pounds, 10 *A. c.* 19.

RREL, in anatomy, denotes a pretty large cavity, ſituated behind the drum of the ear, lined with a membrane, in which there are ſeveral veins and arteries. It is ſaid to be full of a purulent matter in children; and, in its cavity, there are four ſmall bones; *viz.* the malleolus, the incus, the ſtapes, and the os orbiculare. See EAR.

RRENNESS. See the article STERILITY.

RRICADE, or BARRICADO, a military term for a fence, or retrenchment, haſtily made with veſſels, or baſkets of earth, arts, trees, paliſades, or the like, to preſerve an army from he enemy's ſhot, or aſſault. See DEFENCE.

he moſt uſual matter of *barricades* is pales, or ſtakes, which re croſſed with battoons, and ſhod with iron at the feet: ually ſet up in paſſages, or breaches, to keep back as well e horſe as foot.

RRIER, a kind of fence made at a paſſage, retrenchment, te, &c. to ſtop up the entry thereof. See DEFENCE.

is uſually made of great ſtakes, about four or five feet gh, placed at the diſtance of eight or ten feet from one other, with overthwart rafters; ſerving to ſtop either horſe foot that would ruſh in.—In the middle is a moveable bar wood, which opens and ſhuts at pleaſure.

IERS, has been likewiſe uſed to ſignify a martial exerciſe men, armed, and fighting together with ſhort ſwords, within certain rails, or bars, whereby they were incloſed from the ſpectators.

BARRISTER*, a perſon qualified and impowered to plead, and defend the cauſes of clients, in the courts of juſtice.

* The word is formed from *bar*, *barra*, a name given the place where they ſtand to plead.

Barriſters, in the Engliſh law, amount to the ſame with *licentiates*, and *advocates*, in other countries and courts, where the civil, &c. laws obtain.

Antiently they were denominated among us, *apprentices of the law*, *apprenticii juris*; now uſually *counſellors at law*.

To paſs *barriſters* they were formerly obliged to ſtudy eight years, now only ſeven, and ſometimes fewer. The exerciſe required was 12 grand moots, performed in the inns of chancery in time of the grand readings, and 24 petty moots at the inns of chancery in term-time, before the readers of the reſpective inns of chancery.

Utter barriſters, according to ſome, are pleaders without the bar; they are thus called to diſtinguiſh them from benchers, or thoſe who have been readers, who are admitted to plead within the bar; hence called *inner barriſters*, 5 *El. c.* 1.

BARRULET, in heraldry, is the half of the cloſet, or the quarter of the bar.

BARRY, in heraldry.—When an eſcutcheon is divided barways into an even number of partitions, and conſiſts of two or more tinctures, interchangeably diſpoſed, it is expreſſed in blazon, by the word *barry*, and the number of pieces is to be ſpecified.—*e. gr. Barry* of ſo many pieces.

If the diviſions be odd, the field muſt be firſt named, and the number of bars expreſſed.

BARRY-BENDY is when an eſcutcheon is divided evenly both bar and bend-ways, by lines drawn tranſverſe and diagonal, interchangeably varying the tinctures of which it conſiſts.—Thus, he bears *barry-bendy*, *or* and *ſable*.—See *Tab. Herald. fig.* 4.

BARRY-PILY is when a coat is divided, as repreſented in *Tab. Herald. fig.* 5. which is blazoned, *barry-pily* of eight pieces.

Counter-BARRY. See the article COUNTER.

BARTERING*, the act of trucking or exchanging one commodity for another of like value. See EXCHANGE.

* The word comes from the Spaniſh *baratar*, to deceive, or circumvent in bargaining; perhaps becauſe thoſe who deal this way uſually endeavour to over-reach one another.

This is alſo called *bartry*, 13 *Eliz. c.* 7.

BARTHOLOMEW'*s Hoſpital*. See HOSPITAL.

BARTON, in Devonſhire, and the Weſt of England, is uſed for the demeſne-lands of a manor.—Alſo for the manor-houſe.—And, in ſome places, for out-houſes, fold-yards, &c.

BAS-*Relief*. See the article BASSO-*Relievo*.

BASALTES*, Βασαλτης, a kind of ſtone, deſcribed by the antient naturaliſts, as of the hardneſs and colour of iron.

* Pliny, and others after him, write the word *baſaltes*; Salmaſius corrects it, *baſalites*, Βασαλιτης λιθος.

The largeſt block of this ſtone that ever was ſeen, Pliny ſays, was placed by Veſpaſian in the temple of peace: in it was repreſented the figure of Nilus, with 16 children playing about it, denoting ſo many cubits of its riſe: he adds, that the ſtatue of Memnon, in the temple of Serapis, at Thebes, which reſounded at the riſing of the ſun, was alſo made of this ſtone. How this miraculous kind of reſonance was cauſed ſeems indicated by Juvenal, *Sat*. 15. *v*. 5.

—Dimidio magicæ reſonant ubi Memnone chordæ—

Moſt of the antique Egyptian figures remaining, are alſo apparently of the ſame ſtone.

Some of the antients call it *lapis Lydius*, from Lydia, the place where it was found in moſt abundance; and among the moderns it is denominated the *touch-ſtone*, as being uſed for the trial of gold and ſilver.

It is hard, heavy, cloſe, black, and reſiſts the file; and had its name from *baſal*, iron; or βασαλιζω, *diligenter examino*.—Dalechampius ſays, there are ſtones of the ſame kind near Gaillon in Normandy; others are brought from Ethiopia and Germany.—The giants cauſeway in Ireland is compoſed of the *baſaltes*. See Supplement, article BASALTES.

BASE, BASIS, in architecture, denotes the lower part of a column, or pedeſtal.

The *baſe* is alſo ſometimes called *ſpira*, from *ſpiræ*, the folds of a ſerpent, laid at reſt, which makes a figure not unlike it.—See *Tab. Archit. fig.* 24. *lit.* z. *fig.* 26. 28. 30. 32.

BASE *of a Column* is that part between the ſhaft and the pedeſtal, if there be any pedeſtal; or, if there be none, between the ſhaft and the plinth, or zocle.

The *baſe* is ſuppoſed to be the foot of the column; or, as ſome will have it, it is that to a column which a ſhoe is to a man.—The members, or ornaments whereof it is compoſed, are ſuppoſed, by ſome, to have been originally intended to repreſent the iron circles wherewith the feet of trees and poſts, which ſupported the antient houſes, were girt, in order to ſtrengthen them.

The *baſe* is different in the different orders.—The

Tuſcan BASE is the moſt ſimple of all others; conſiſting only of a ſingle tore beſides the plinth.—See *Tab. Archit. fig.* 24. *lit. t.*

Doric BASE has an aſtragal more than the Tuſcan; though that was introduced by the moderns. See *fig*. 28.

Ionic BASE has a large tore over two ſlender ſcotias, ſeparated by two aſtragals; though in the moſt antient monuments of this order there are no *baſes* at all; which the architects are at a loſs to account for. See *fig*. 32.

Corinthian BASE has two tores, two ſcotias, and a fillet.—See *fig*. 26.

Compoſite BASE has an aſtragal leſs than the Corinthian. See *fig*. 30.

Attic, or *Atticurgic* BASE, ſo called, becauſe firſt uſed by the Athenians, has two tores, and a ſcotia.

BASE, in fortification, denotes the external ſide of the polygon; or, that imaginary line which is drawn from the flanked angle of a baſtion to that which is oppoſite thereto.

Line of the Baſe. See the article LINE.

BASE *of a figure*, in geometry, denotes the loweſt part of its perimeter.

In which ſenſe, the *baſe* ſtands oppoſed to the *vertex*, which denotes the higheſt part.

BASE *of a triangle:* any ſide thereof is occaſionally ſo called; though properly it is the loweſt ſide, or that which lies parallel to the horizon.

Thus, the line A B is the *baſe* of the triangle A B C, *Tab. Geom. fig*. 68. Not, but on other occaſions, the lines A C, or B C in the triangle, may be made the *baſe*.

In a rectangled triangle, the *baſe* is properly that ſide oppoſite to the right angle, *i. e.* the hypoteneuſe.

BASE *of a ſolid figure* is its loweſt ſide, or that whereon it ſtands.

Thus the plane D F E, is the *baſe* of the cylinder ABDE.—*Tab. Geom. fig*. 56.

BASE *of a conic ſection* is a right line in the hyperbola and parabola, formed by the common interſection of the ſecant plane, and the *baſe* of the cone.

Altern BASE. See the article ALTERN.

Diſtinct BASE, in optics. See DISTINCT.

BASE *of the heart*, in anatomy, denotes the broader or upper part of that viſcus, to the ſides of which the two auricles are affixed.—See *Tab. Anat. (Splanch.) fig*. 12. *litt. aa, and cc.*

This is ſometimes alſo called the vertex or head, κεφαλη; in oppoſition to which, is the leſſer or narrower part, called *apex*, or *mucro*, the point or tip of the heart.

Some alſo give the denomination *baſe*, to the root of the os hyoides.

BASE, in muſic. See the article BASS.

BASE, in a law ſenſe.—*Baſe eſtate* is that eſtate which baſe tenants have in their lands.

BASE *Fee* denotes a tenure in fee at the will of the lord. By which it ſtands diſtinguiſhed from ſocage, or free tenure. See FEE.

BASE *Court* is any court not of record.—Such, *e. gr.* is the court-baron. See COURT.

BASE *Tenure*, *Baſſa Tenura*, denotes holding by villenage, or other cuſtomary ſervice; as diſtinguiſhed from the higher tenures in capite, or by military ſervice.

BASE *Point*, in heraldry. See POINT, and ESCUTCHEON.

BASE *Ring of a cannon* is the great ring next behind the touch-hole.

BASHAW, PASCHA, or PACHA, a Turkiſh governor of a province, city, or other diſtrict.

We ſay, the *baſhaw* of Babylon, the *baſhaw* of Anatolia, the *baſhaw* of Bender, *&c.*

BASHAWS include Beglerbegs, and ſometimes Sangiacbegs: though a diſtinction is ſometimes made, and the name *baſhaw* is appropriated to the middle ſort, or ſuch as have two enſigns or horſe-tails carried before them.—Thoſe who have the honour of three tails, are called *Beglerbegs*; and thoſe who have only one, *Sangiacbegs*.

The appellation *Paſcha* is alſo given by way of courteſy at Conſtantinople, to the lords about the Grand Signor's court, the officers in the army, and almoſt every perſon of any figure.

Captain BASHAW is the title of the Turkiſh high admiral.

BASIA *Ultima*. See the article ULTIMA.

BASIL, among joiners, denotes the angle to which the edge of an iron tool is ground.

To work on ſoft wood they uſually make their *baſil* 12 degrees, for hard wood 18; it being obſerved, that the more acute or thin the *baſil* is, the better and ſmoother it cuts; and the more obtuſe, the ſtronger and fitter it is for ſervice.

Order of St. BASIL is the moſt antient of all the religious orders; it takes its name from St. Baſil, biſhop of Cæſarea, in Cappadocia, about the middle of the fourth century; who is ſuppoſed to have been the author of the rule obſerved by this order, though ſome diſpute it.—The order of St. *Baſil* was antiently very famous in the eaſt.

BASILARE *Os*. See the article SPHENOIDES.

BASILIC*, or BASILICA, in the antient architecture, denotes a kind of public hall, or court of judicature, where the princes or magiſtrates ſat to adminiſter juſtice.

* The word is originally Greek, βασιλικη, *q. d.* royal houſe, or palace.

In after-times the denomination *baſilica* was alſo given to other buildings of public uſe, as town-houſes, exchanges, burſes, and the like.

BASILIC, BASILICA, is alſo uſed in eccleſiaſtical writers, for a church.

In which ſenſe, this name frequently occurs in St. Ambroſe, St. Auſtin, St. Jerom, Sidonius Apollinaris, and other writers of the fourth and fifth centuries.

M. Perrault ſays, that *baſilics* differed from *temples*, in that the columns of temples were without-ſide, and thoſe of *baſilics* within.

BASILICA, or BASILICUS, in anatomy, the name of a vein, ariſing from the axillary branch, and running the whole length of the arm. See *Tab. Anat. (Angeiol.) fig*. 6. *lit. o.*

The *baſilica* is one of the veins uſed in bleeding in the arm.

BASILICS, BASILICA, a collection of the Roman laws, tranſlated into Greek by order of the emperors Baſil and Leo, and which were of force in the Eaſtern empire till its diſſolution.

The *baſilics* comprehend the inſtitutes, digeſts, code, and novels, and ſome edicts of Juſtinian, and other emperors. The collection conſiſted of 60 books, for which reaſon it was called ἑξηκονταβιβλος. It is ſuppoſed to be chiefly the work of the emperor Leo the Philoſopher, who denominated it from his father Baſilius Macedo, who firſt began it.—Of the 60 books there are now remaining only 41; the other 19 are, in ſome meaſure, ſupplied by Fabrottus, from the *ſynopſis baſilicon*, &c.

BASILICI, Βασιλικοι, in the Greek empire, was a denomination given to the prince's mandataries, or thoſe who carried his orders and commands.

BASILICON, or BASILICUM, in pharmacy, is the denomination of an officinal unguent or plaiſter; called alſo *tetrapharmacum*, as being compoſed of four ſimples, *viz.* reſin, wax, pitch, and oil-olives.

BASILICUS, or BASILICA, in aſtronomy, is the name of a fixed ſtar of the firſt magnitude, in the conſtellation Leo; called alſo *regulus*, and *cor leonis*.

BASILIDIANS, antient heretics, the followers of Baſilides, an Egyptian, who lived near the beginning of the ſecond century.

He was educated in the Gnoſtic ſchool, over which Simon Magus preſided; with whom he agreed, that Chriſt was only a man in appearance; that his body was a phantom; and that he gave his form to Simon the Cyrenian, who was crufied in his ſtead.

We learn from Euſebius, that this hereſiarch wrote 24 books upon the goſpels, and that he forged ſeveral prophets; to two of which he gave the names Barcaba, and Barcoph. We have ſtill the fragment of a Baſilidian goſpel.

His diſciples ſuppoſed there were particular virtues in names, and taught, with Pythagoras and Piato, that names were not formed by chance, but naturally ſignified ſomething.—Baſilides, to imitate Pythagoras, made his diſciples keep ſilence for five years.

BASIOGLOSSUM*, or rather BASIGLOSSUM, in anatomy, a pair of muſcles, which ariſe fleſhy from the baſis of the os hyoides, and are inſerted into the root of the tongue: ſerving to draw the tongue towards the bottom of the mouth.

*The word comes from the Greek, βασις, foundation; and γλωσσα, a tongue.

BASIS, or BASE. See the article BASE.

BASON, *pelvis*, in anatomy, a round cavity in form of a tunnel, ſituate between the anterior ventricles of the brain, deſcending from its baſe, and ending in a point at the glandula pituitaria.

It is formed of the pia mater, and receives the pituita which comes from the brain, and paſſes through the pituitary gland, and from thence into the veins.

That capacity is alſo called *pelvis*, or *baſon*, which is formed by the oſſa ilia and ſacrum, and contains the bladder of urine, the matrix, and the inteſtines.

BASONS *of a Balance*, two pieces of braſs, or other matter, faſtened to the extremities of the ſtrings; the one to hold the weight, the other the thing to be weighed.

BASON, or *Diſh*, among glaſs-grinders.—Theſe artificers uſe various kinds of *baſons*, of copper, iron, *&c.* and of various forms, ſome deeper, others ſhallower, according to the focus of the glaſſes that are to be ground. In theſe *baſons* it is, that convex glaſſes are formed, as concave ones are formed on ſpheres or bowls.

Glaſſes are worked in *baſons* two ways.—In the firſt, the *baſon* is fitted to the arbor, or tree of a lath, and the glaſs (fixed with cement to a handle of wood) preſented and held faſt i the right hand within the *baſon*, while the proper motion is given by the foot to the *baſon*. In the other, the *baſon* is fixed to a ſtand or block, and the glaſs with its wooden handle moved.

The moveable *baſons* are very ſmall, ſeldom exceeding five or ſix inches in diameter; the others are larger, ſometimes above ten feet diameter.

After the glaſs has been ground in the *baſon*, it is brought ſmoother with greaſe and emery; and poliſhed firſt with tripoli, and finiſhed with paper cemented to the bottom of the *baſon*.

BASON, among hatters, is a large, round ſhell, or caſe, ordinarily of iron, placed over a furnace; wherein the matter of the hat is moulded into form.

The hatters have alſo *baſons* for the brims of hats, uſually of lead, having an aperture in the middle, of a diameter ſufficient for the largeſt block to go through. See HAT.

BASON is alſo uſed on various occaſions for a ſmall reſervatory of water: as the *baſon* of a jet d'eau, or fountain; the *baſon* of a port, of a bath, &c. which laſt Vitruvius calls *labrum*. See FOUNTAIN.

BASON is likewiſe uſed for a dock. See DOCK.

BASS *, in muſic, that part of a concert which is the moſt heard, which conſiſts of the graveſt, deepeſt, and longeſt ſounds; or which is played on the largeſt pipes or ſtrings of a common inſtrument, or on inſtruments larger than ordinary, for the purpoſe.

* It is called *baſs*, from the Italian *baſſo*, of the Latin *baſis*, as being the foundation of the harmony.

Muſicians hold the *baſs* the principal part of a concert, and the foundation of the compoſition: though ſome will have the *treble* the chief part; which others only make a circumſtance, or ornament.

Counter-BASS, is a ſecond baſs, where there are ſeveral in the ſame concert.

Thorough-BASS, is that which proceeds, without interruption, from the beginning of a muſical compoſition to the end.—By which it ſtands contradiſtinguiſhed from the *ſinging baſs*, and the *baſſes of violins*, which make pauſes from time to time. The *thorough-baſs* is the harmony made by *baſs* viols, theorbo's, or the like, continuing to play, both while the voices ſing, and the other inſtruments perform their part; and alſo filling the intervals when any of thoſe ſtop.

M. Broſſard obſerves the *thorough-baſs* to be a part of the modern muſic; firſt invented in 1600. by an Italian, called Ludovico Viadana.

It is commonly diſtinguiſhed from the other *baſſes* by figures over the notes; which figures are proper only for the organ, harpſichord, ſpinet, and theorbo lute.—But it is to be obſerved a *thorough-baſs* is not always figured, though it ought to be ſo.

BASSON, or BASSOON, a muſical inſtrument of the wind kind, blown with a reed, and furniſhed with eleven holes; ſerving for the *baſs* in concerts of hautboys, &c.

To make it more portable, it divides into two parts, whence it alſo bears the denomination *fagot*. Its diameter at bottom is nine inches, and its holes are ſtopped, like thoſe of large flutes.—A good *baſſoon* is ſaid to be worth four or five hundred piſtoles.

BASSO *relievo*, or BAS *relief*, a piece of ſculpture, the figures whereof do not project far, or ſtand out from the ground, with their full proportion.

M. Felibien diſtinguiſhes three kinds of *relievo's*; in the firſt, the front figures appear almoſt with their *full relievo*, called *alto relievo*; in the ſecond, they do but ſtand out one half, called *mezzo relievo*; and in the third, much leſs, which is the proper *baſſo relievo*, as in coins, vaſes, &c. See RELIEVO.

BASSO & *alto*, in law. See the article ALTO.

BASS-VIOL, a muſical inſtrument of the ſame form with that of the violin, except that it is much larger.—It is ſtruck like that, with a bow; and has ſtrings, and eight ſtops, divided by half-ſtops, or ſemi-tones.

The ſound it yields is much more grave, ſweet, and agreeable, than that of the violin, and of a much nobler effect in a concert. See VIOLIN.

ASTARD, a natural child, or one born out of lawful wedlock.

A *baſtard* differs from one born in adultery, or inceſt, in that the parents of the former are free, or allowed to marry, which thoſe of the latter are not.

The *baſtards*, or natural ſons of a king in France, are princes when owned; thoſe of a prince, or nobleman, are gentlemen; but thoſe of a gentleman are only plebeians, and pay taxes accordingly.

By the French laws, *baſtards* cannot inherit before they are legitimated; nor have heirs, except their own children begot in wedlock: for want of theſe, their inheritance devolves on the king.

By the Roman law, the mother inherited from her *baſtard* child, and *vice verſa*: but there was a great difference between *baſtards*, *nothi*, and thoſe they called *ſpurious*. The law did not own the latter, nor allow them ſuſtenance, becauſe they were born in common and uncertain proſtitution. *Is non habet patrem, cui pater eſt populus.* The former ſort, born in concubinage, which reſembles marriage, inherited from their mothers, and had a right to demand ſuſtenance of their natural fathers. They were looked upon as domeſtic creditors, that ought to be treated the more favourably, for being the innocent product of their parents crimes. Solon would have it, that the parents ſhould be deprived of their paternal authority over their *baſtards*, becauſe, as they were only parents for pleaſure, that ought to be their only reward.

Antiently, in Rome, natural children were quite excluded from inheriting after their fathers *ab inteſtato*: but they might be appointed heirs in general. The emperor Arcadius and Honorius made a reſtriction, that when there were legitimate children, the *baſtards* ſhould only come in for a twelfth, to be ſhared with their mother. Juſtinian afterwards ordered, that they might come in for half; and ſucceed *ab inteſtat.* for a ſixth, when there were legitimates.

Baſtards might be legitimated by ſubſequent marriage, or by the emperor's letters. Only the king in France, and the king and parliament in England, can give *baſtards* a right of legitimacy, and a power to inherit. The emperor Anaſtaſius allowed fathers to legitimate their *baſtards* by adoption alone: but this was aboliſhed by Juſtin and Juſtinian, leſt by this indulgence they ſhould authorize concubinage. The pope has ſometimes legitimated *baſtards*. Nay, the holy ſee has on ſome occaſions diſpenſed not only with illegitimates, but with the offspring of adultery, as to ſpiritual conſiderations, in allowing of their promotion to epiſcopacy.

Baſtards not legitimated may diſpoſe of their goods by donation when alive, or by will afterwards. Thoſe legitimated by ſubſequent marriage are in the ſame ſtate, and enjoy the ſame right, with thoſe born in wedlock: but thoſe who are legitimated by the king's letters, are not eſteemed legitimate, or capable of inheriting, but with regard to ſuch of their parents as have conſented to their legitimation. Pope Clement VII. by his bull, forbad a prieſt to reſign his benefice to his *baſtard*.

A *baſtard*'s arms ſhould be croſſed with a bar, fillet, or traverſe from the left to the right. They were not formerly allowed to carry the arms of their father, and therefore they invented arms for themſelves; and this is ſtill done by the natural ſons of a king.

Baſtards cannot be admitted to ſimple benefices, or the loweſt orders, or to more than a ſimple benefice, without orders from the pope: nor are they allowed to bear office without the prince's letters.

A *baſtard*, by the law of England, cannot inherit land as heir to his father; nor can any perſon inherit land as heir to him, but one that is heir of his body. If a child be begotten by him who doth marry the woman after the child's birth, yet it is in judgment of the law a *baſtard*, though the church holds it legitimate.—If one marry a woman, and die before night, and never bed her, and ſhe have a child after, it is yet accounted his child, and legitimate.—If a man or woman marry again, and have iſſue by the ſecond wife or huſband, whilſt the firſt is living, ſuch iſſue is a *baſtard*.—If a woman elope with a ſtranger, and have a child by him, her huſband being within the four ſeas, this is legitimate, and ſhall inherit the huſband's lands.—He that gets a *baſtard* in the hundred of Middleton, in Kent, forfeits all his goods and chattels to the king.

BASTARD *diſeaſes*, &c. See SPURIOUS.

BASTARD *dittany*, &c. See DITTANY.

BASTERNA *, a kind of vehicle, or chariot, uſed by the antient Roman ladies.

* Papias thinks, that *baſterna* was firſt written for *veſterna*: Roſweid ſays, it ſhould be *via ſterna*, which he concludes from Iſidore, who ſays, *baſterna*, *viæ ſterna*. But the word ſeems better derived from the Greek βαςαζω, *porto*, I carry.

Salmaſius obſerves, that the *baſterna* ſucceeded the *lectica*, or litter; from whence it differed very little, except that the litter was borne on the ſhoulders of ſlaves, and the *baſterna* borne or drawn by beaſts. Caſaubon ſays, it was borne by mules. F. Daniel, Mabillon, &c. aſſert it was drawn by oxen, to go the more gently: and Gregory de Tours gives an inſtance of its being drawn by wild bulls. The inſide they called the *cavea*, or cage: it had ſoft cuſhions or beds, beſides glaſſes on each ſide, like our chariots.

The mode of *baſterna*'s paſſed from Italy into Gaul, and thence into other countries; and to this we owe our chariots; which, though we call them *currus*, yet have they no conformity to the antient *currus*, but are in effect *baſterna*'s improved.

The *baſterna* appears alſo to have been uſed in war, for carrying of baggage.

BASTILE denotes a ſmall antique caſtle, fortified with turrets. Such is the *baſtile* of Paris, which ſeems the only caſtle that has retained the name: it was begun to be built in 1369. by order of Charles V. and finiſhed in 1383. under the reign of his ſucceſſor.—Its chief uſe is for the cuſtody of ſtate-priſoners.

BASTION, in the modern fortification, a huge maſſive of earth uſually faced with ſods, ſometimes with brick, rarely with ſtone, ſtanding out from a rampart, whereof it is a principal part.

This anſwers to what in the antient fortification is called a *bulwark*.

A *baſtion* conſiſts of two faces, and two flanks.—The faces are the lines BC and CS (*Tab. Fortificat. fig.* 1.), including the angle of the *baſtion*. See FACE.—The flanks are the lines BA, SD.

The union of the two faces makes the outmoſt or ſaliant angle, called alſo the *angle of the baſtion*, BCS.

The union of the two faces to the two flanks makes the ſide-angles, called the *ſhoulders*, or *epaules of the baſtion*.

And the union of the two other ends of the flanks to the two curtins, the angles of the flanks of the *baſtion*.—See *Tab. Fortific. fig.* 21. *lit. oo. &c. ppp.*

The foundation of the *baſtion*, *i. e.* of a work conſiſting of flanks and faces, is that great rule in fortification, *viz.* that every part of a work muſt be ſeen and defended, from ſome other part: mere angles therefore are not ſufficient, but flanks and faces are indiſpenſably requiſite.—If the *baſtions* EFG and HIK, *fig.* 26. conſiſted of faces alone, the angles G and H could not be defended from the lines FG, or IH. But if the *baſtion* conſiſt of flanks and faces, as ABCSD, all the points may be defended from the flanks; there being none, *v. gr.* in the face BC, but what may be defended from the oppoſite flank EL, nor any in the curtin AE, but may be defended from the adjacent flanks BA and EL; nor any in one flank BA, but may be defended from the other EL.

For the proportions of the faces, they are not to be leſs than twenty-four Rhineland perches, nor more than thirty.

The flanks of *baſtions* are better as they are longer, provided they ſtand at the ſame angle under the line of defence: hence the flank muſt ſtand at right angles to the line of defence. Indeed, in the antient fortification, the flank is made perpendicular to the curtin, ſo as to have the angle out of the enemies eye; but this is now provided for, by withdrawing the lower part of the flank two or three perches, towards the capital line: which part, thus withdrawn, is better, if made concave, than rectilinear; and, if double, with a ditch between, than if ſingle.

The buſineſs of diſpoſing the flanks of *baſtions* makes the principal part of the art of fortification; it is that on which the defence principally depends, and which has introduced the various forms and manners of fortifying.

If the angle of the *baſtion* be leſs than ſixty degrees, it will be too ſmall to give room for guns; and beſides, ſo acute as to be eaſily beaten down by the enemies guns: to which may be added, that it will either render the line of defence too long, or the flanks too ſhort: it muſt therefore be more than ſixty degrees; but whether or no it ſhould be a right angle, ſome intermediate angle between ſixty and ninety, or even whether or no it ſhould exceed a right angle, is ſtill diſputed. Hence it follows, that a triangle can never be fortified, in regard either ſome or all of the angles will be either ſixty degrees, or leſs than ſixty.

Baſtions are of divers kinds, *ſolid*, *void*, *flat*, *cut*, &c.

Solid BASTIONS are thoſe that are filled up intirely, and have the earth equal to the height of the rampart, without any void ſpace towards the centre.

Void or *hollow* BASTIONS are thoſe ſurrounded with a rampart, and parapet, only ranging round their flanks and faces, ſo as to leave a void ſpace towards the centre; where the ground is ſo low, that if the rampart be taken, no retrenchment can be made in the centre, but what will lie under the fire of the beſieged.

Flat BASTION is a *baſtion* built on a right line in the middle of a curtin, when it is too long to be defended by the *baſtion* at its extremes.

Cut BASTION is that, whoſe point is cut off, and in lieu thereof has a re-entering angle, or an angle inwards with two points outwards; this is ſometimes alſo called, *baſtion with a tenaille*; and is uſed either, when, without ſuch a contrivance, the angle would be too acute, or when water or ſome other impediment hinders the carrying on the *baſtion* to its full extent.

Compoſed BASTION is when the two ſides of the interior polygon are very unequal, which makes the gorges alſo unequal.

Regular BASTION is that which hath its due proportion of faces, flanks, and gorges; the faces being of an equal length, the flanks the ſame, and the two angles of the ſhoulder equal.

Irregular BASTION is where this proportion and equality is not obſerved.

Deformed BASTION is where the irregularity of the lines and angles makes the *baſtion* out of ſhape, as when it wants one of its demi-gorges; one ſide of the interior polygon being too ſhort.

Demi-BASTION is that which hath but one face, and one flank; called alſo an *epaulement*.

To fortify the angle of a place that is too acute, they cut off the point, and make two *demi-baſtions*, which form a tenaille, or a re-entering angle.—Their chief uſe is before a hornwork or crownwork.

Double BASTION is that, which on the plain of the great baſtion has another baſtion built higher, ſomewhat after the manner of a cavalier; leaving twelve or eighteen feet between the parapet of the lower and the foot of the higher.

Capital of a BASTION.	See the article	CAPITAL.
Gorge of a BASTION.		GORGE.
Diſtance of the BASTION.		DISTANCE.

BASTION *company of France*. See COMPANY.

BASTON *, in law, is uſed for one of the warden of the fleet's men, who attends the king's courts with a red ſtaff, for taking ſuch to ward as are committed by the court; and likewiſe attends on ſuch priſoners as are ſuffered to go at large by licence.

* The word is French, where it literally ſignifies a *ſtaff*, and technically a *verge*, or *mace*.

BASTON, or BATOON, in architecture, denotes a mould in the baſe of a column, otherwiſe called a *tore*.—See *Tab. Archit. fig.* 3. and 24. *lit. t.*

BASTON, or BATOON, in heraldry, a kind of bend, which has only one-third of the uſual breadth.

The *baſton* does not go from ſide to ſide of the eſcutcheon, as the bend or ſcarf does, but is broken off ſhort, in form of a truncheon: its uſe is a mark of baſtardy.

BASTON alſo ſignifies the earl marſhal's ſtaff.

BATCHELOR. See the article BACHELOR.

BAT-FOWLING, a method of catching birds in the night, by lighting ſome ſtraw, or torches, near the place where they are at rooſt: for, upon beating them up, they fly to the flames, where, being amazed, they are eaſily caught in nets, or beat down with buſhes fixed to the ends of poles, &c.

BATH, BALNEUM, a convenient receptacle of water for perſons to waſh, or plunge in, either for health or pleaſure.

Baths are either *natural* or *artificial*. *Natural*, again, are either *hot* or *cold*.

Hot BATHS, called by the antients *thermæ*, owe their origin partly to the admixture of ſulphureous particles, while the water is paſſing through its ſubterraneous canals, or rather while it creeps through beds and mines of ſulphur, &c. and partly to the fumes and vapours exhaling through the pores of the earth where ſulphur is, either pure or impure, as in coals, amber, &c.—Though in moſt hot *baths* there are likewiſe mixed particles of iron, alum, nitre, and other mineral bodies, which give them an acid aſtringent taſte.

The chief hot *baths* in our country are that near Wells, in Somerſetſhire; and thoſe others at Buxton and Matlock in Derbyſhire; which latter, however, are rather warm or tepid than hot.

In the city of Bath there are four hot *baths*: one triangular, called the *croſs bath*, from a croſs that formerly ſtood in the midſt of it; the heat of which is more gentle than that of the others, becauſe it has fewer ſprings.—The ſecond is the *hot bath*, which heretofore was much hotter than the reſt, when it was not ſo large as it now is.—The other two are the *king*'s and *queen*'s *bath*, divided only by a wall; the laſt having no ſpring, but receiving the water from the king's *bath*, which is about ſixty feet ſquare, and has in the middle of it many hot ſprings, which render its healing quality more effectual.—Each of theſe is furniſhed with a pump to throw out water upon the diſeaſed, where that is required.

The waters abound with a mineral ſulphur: they are hot, of a blueiſh colour, and ſtrong ſcent, and ſend forth thin vapours.—They do not paſs through the body like moſt other mineral waters; though, if ſalt be added, they purge preſently. On ſettlement they afford a black mud, which is uſed by way of cataplaſm in aches; of more ſervice to ſome than the waters themſelves: the like they depoſit on diſtillation, and no other.

Dr. Aſtendoff found the colour of the ſalt drawn from the *king*'s, and *hot bath*, to be yellow; and that from the *croſs bath*, white; whence he concludes, that the *croſs bath* has more alum and nitre than the *hotter*, which abounds more with ſulphur; and yet the *croſs bath* is found to looſen ſhrunk ſinews, by which it ſhould ſeem to abound leſs with alum: it is harſher to the taſte than the others, and ſoaks the hands more.—The *croſs bath* preys on ſilver, and all of them on iron, but none on braſs.

Hot BATHING, it is obſerved, increaſes the weight of the body for the preſent, but cauſes a plentiful perſpiration afterwards; though not ſo great as ſet down by Dr. Keill, who makes it amount to 1½ pound in an hour's time.—By Mr. Martin's experiment at Buxton, it was only 5 ounces in one hour, and from 8 to 12 ounces in an hour and half. *Phil. Tranſ.* N° 407. *p.* 27.

The uſe of theſe *baths* is found beneficial in diſeaſes of the head, as palſies, &c. in cuticular diſeaſes, as leproſies, &c. obſtructions and conſtipations of the bowels, the ſcurvy and ſtone, and in moſt diſeaſes of women and children.—The *baths* have performed many cures, and are commonly uſed as a laſt remedy in obſtinate chronic diſeaſes; where they ſucceed well, if they agree with the conſtitution of the patient: but whether they will agree or not, cannot be known without trial.

Cold BATHS were long baniſhed out of medicine, though the antients had them in the greateſt eſteem: but the improvements accruing to phyſic from geometry and mechanics, have brought them into uſe again; and the preſent age can boaſt abundance of noble cures performed by them, and ſuch as were long attempted in vain by the moſt powerful medicines. The *cold bath* is found one of the moſt univerſal and innocent remedies yet diſcovered. It is ſerviceable in moſt chronic diſtempers, and is reckoned ſo ſafe, that phyſicians ſometimes preſcribe it in a beginning phthiſis, or conſumption, when the lungs are but ſlightly affected.

The effect of cold bathing is attributed not only to its chilneſs, and conſtringing power, but in ſome meaſure to the weight of the water.—For, ſuppoſing a perſon immerged two feet, and the area of his ſkin to be fifteen feet, he ſuſtains a weight of water, added to that of the air, = 2280 *l.* For 2, the number of cubical feet of water preſſing upon a foot ſquare of the ſkin × 76, the number of pounds in a cubical foot of water, is = 152; which × 15, the ſuppoſed number of ſquare feet on the ſurface of the body, is = 2280 *l.* Troy.—Beſides, the water in bathing enters the body, and mixes with the blood, and dilutes this as well as the other juices.

The riſe and progreſs of *cold bathing*, and the cures effected thereby, are deſcribed at large in Sir J. Floyer's, and Dr. Baynard's ψυχϱολȣσια, or *Hiſtory of cold bathing.*

Artificial BATHS are various, according to the various occaſions; ſome aqueous, others vaporous, others dry, *&c.*

Aqueous BATHS are thoſe prepared from common plants, and other ſubſtances of emollient, reſolvent, and nervine kinds.

Aqueous Baths ſometimes conſiſt of milk and emollient herbs, with roſe-water, *&c.* when the deſign is to humectate; at other times of bran and water, when the deſign is only to cleanſe: ſometimes again, they are made of a decoction of roots and plants, with an addition of ſpirit of wine, when a perſon bathes for a great pain or tumour, *&c.*

In *Vapour* BATHS, the fume or ſteam of ſome decoction is received upon the body to promote a perſpiration.—Theſe are alſo by ſome called *balnea Laconica.*

Vapour Baths are, when the patient is not plunged into what is prepared for the *bath*, but only receives its ſteam upon thoſe parts of his body which require it: as in ſome diſtempers of the fundament, and womb, where the patient ſits and receives the fumes of ſome proper fomentation, *&c.*

To theſe may be added the *bagnio*, where people are made to ſweat by the heat of a room, and pouring on of hot water; after which they generally go into a *hot bath.* See BAGNIO.

Dry BATHS are thoſe made of aſhes, ſalt, ſand, ſhreds of leather, and the like.

The ſame name is ſometimes alſo given to another kind of *bath*, made of kindled coals, or burning ſpirit of wine; the patient being placed in a convenient cloſe chair for the reception of the fume, which riſes and provokes ſweat in a plentiful manner: care is here taken to keep the head out, and to ſecure reſpiration.

This *bath* has been found very effectual in removing old, obſtinate pains in the limbs, and venereal complaints; and will often complete a cure left unperformed by ſalivation.

BATHS, BALNEA, in architecture, denote large pompous buildings among the antients, erected for the ſake of bathing. *Baths* made a part of the antient gymnaſia. Though they were frequented more for the ſake of pleaſure than health.

The moſt magnificent *baths* were thoſe of Titus, Paulus Æmilius, and Diocleſian, of which there are ſome ruins ſtill remaining. It is ſaid, that at Rome there were 856 public *baths.* Fabricius adds, that the exceſſive luxury of the Romans appeared in nothing more viſible, than in their *baths.* Seneca complains, that the *baths* of plebeians were filled from ſilver pumps; and that the freed-men trod on gems. Macrobius tells us of one Sergius Oratus, a voluptuary, who had *pendant baths*, hanging in the air.

Knights of the BATH, a military order in England, inſtituted by Richard II. who ordained that there ſhould be no more than four; however, his ſucceſſor Henry IV. increaſed them to forty-ſix. Their motto was *Tres in uno*, ſignifying the three theological virtues.

It was the cuſtom to bathe before they received the golden ſpurs; but this was only obſerved at firſt, being afterwards gradually dropt: however, it was this occaſioned the denomination of *knights of the bath.*

The order of *knight of the bath* is ſcarce ever conferred, but at the coronation of kings, or the inauguration of a prince of Wales, or duke of York. They wear a red ribband beltwiſe.

Camden and others ſay, Henry IV. was the inſtitutor in 1399. and upon this occaſion: that prince, being in the bath, was told by ſome knight, that two widows came to demand juſtice of him; when his majeſty, leaping out of the bath, cried, He ought to prefer doing juſtice to his ſubjects to the pleaſure of the bath; and thereupon created *knights of the bath.*

Some authors, however, will have the order of the *bath* to have been on foot long before Henry IV. even as early as the Saxon times: at leaſt, it is certain, the *bath* had been uſed long before, in the creation of knights, in France; though there was no order of knights under this name.

The order of the *Bath*, after remaining many years extinct, was revived under king George I. by a ſolemn creation of a great number of knights.

BATH *metal.* See the article METAL.

BATHMUS, or BATHMIS, βαθμος, or βαθμις, an appellation given to ſuch cavities of bones as receive the prominences of other bones into them.

BATON, or BATOON. See the article BASTON.

BATRACHITES *, among antient naturaliſts, a kind of gem, found in Egypt, denominated from its reſemblance in colour to a frog.

* The word is formed from the word βατϱαχος, *rana*, a frog.

BATRACHOMYOMACHIA *, *battle of the frogs and the mice*; the title of a fine burleſque poem, uſually aſcribed to Homer.

* The word comes from the Greek βατραχος, frog, μυς, mouſe, and μαχια, *pugna.*

The ſubject of the war is the death of Pſycharpax, a mouſe, ſon of Toxartes, who, being mounted on the back of Phyſignathus, a frog, on a voyage to her palace, to which ſhe had invited him, was ſeized with fear when he ſaw himſelf in the middle of the pond, ſo that he tumbled off, and was drowned. Phyſignathus being ſuſpected to have ſhaken him off with deſign, the mice demanded ſatisfaction, and unanimouſly declared war againſt the frogs.

Stephens, Nunneſius, and other modern authors, take the poem not to be Homer's; but ſeveral of the antients ſeem of another opinion; and Statius, who wrote under Domitian, makes no doubt of it.

BATTABLE * *ground* denotes land lying between England and Scotland, heretofore in queſtion to which it belonged, when they were two diſtinct kingdoms.

* The word imports as much as *litigious*, or *diſputable ground*: from *battre*, to beat or fight.

BATTALION *, in the military art, a little body of infantry ranged in form of battle, and ready to engage.

* The word comes from *battel*, an engagement of two armies, *&c.* and that from *battualia*, the place where two men fight; or from *battalia*, the exerciſe of people who learn to fight.

A battalion uſually contains from 5 to 800 men, of which one third were formerly pikes in the middle, and the other two thirds muſquets poſted on the wings: but the number of men it conſiſts of is not determined.

Battalions are uſually drawn up with ſix men in file, or one before another.—Some regiments conſiſt but of one *battalion*, which is too few: others more numerous are divided into four or five, which are too many.

Angle of a BATTALION.	See the article	ANGLE.
Fraizing a BATTALION.		FRAIZING.
Square BATTALION.		SQUARE.

BATTEN, a name which the workmen give to a ſcantling of wooden ſtuff, from two to four inches broad, and about an inch thick; the length being pretty conſiderable, but undetermined.

The term is chiefly uſed in ſpeaking of doors, *&c.* which are not framed of whole deal, *&c.* with ſtiles, rails, and pannels, like wainſcot, but are made to appear, as if they were, by means of theſe pieces, or *battens*, bradded on the plain board round the edges, and ſometimes croſs them, and up and down.

Hence *batten*-doors, or windows, are ſuch as ſeem to be wainſcot ones, but are not. Theſe are ſaid to be either *ſingle* or *double*, as the *battens* are fitted on to one ſide, or to both.

BATTERING, the attacking a place, work, or the like, with heavy artillery. See BATTERY.

To BATTER *in breach*, *battre en breche*, is to play furiouſly on a work, as the angle of a half-moon, in order to demoliſh and make a gap therein. See BREACH.

In this, they obſerve, never to fire a ſingle piece againſt the top of the wall; but all towards the bottom: 3, 4, 5, or 6 feet from the ground: they alſo fire par camarade, all together, till they perceive the earth fall from behind the lining of the rampart. *Savin. Nouv. Ecol. Milit. p.* 248.

BATTERING-*pieces*, or pieces of battery. See CANNON.

BATTERY *, in the military art, denotes an eminence caſt up, whereon to plant artillery, that it may play to better advantage.—See *Tab. Fortif. fig.* 21. *n.* 33. and *fig.* 23.

* The word is French, formed of *battre*, to beat, ſtrike.

In all *batteries*, the open ſpace left to put the muzzles of the great guns out at, are called *embrazures*; and the diſtances between the embrazures, *merlons* *.—The guns are generally about twelve feet diſtant one from another, that the parapet may be ſtrong, and the gunners may have room to work.

* There are alſo *batteries of mortars*, the ſame with thoſe of cannon, except that they have no merlons.

The *battery* of a camp is uſually ſurrounded with a trench and palliſades at the bottom, as alſo with a parapet on the top, having as many holes as there are pieces of artillery, and two redoubts on the wings, or certain places of arms, capable of covering the troops, which are appointed for their defence.

Sunk or *buried* **Battery** is that whoſe platform is ſunk or let down into the ground, with trenches cut in the earth againſt the muzzles of the guns, to ſerve for embrazures.

This ſort, which the French call *batterie en terre*, and *ruinante*, is generally uſed upon the firſt making approaches, to beat down the parapet of the place.

Croſs-**Batteries** are two batteries at a conſiderable diſtance from each other, which play athwart one another at the ſame time, and upon the ſame point, forming right angles; where, what one bullet ſhakes, the other beats down.

Battery *d'enfilade* is one which ſweeps the whole length of a ſtrait line, a ſtreet, *&c.*

Battery *en echarpe* is that which plays obliquely.

Battery *de revers*, or *murdering battery*, is one that plays on the back of any place; and being placed on an eminence, ſees into it.

Battery *joint*, or *par camerade*, or *cameretta*, is when ſeveral guns play at the ſame time upon one place.

Battery *en rouage* is that uſed to diſmount the enemy's cannon.

Battery, in law, denotes an act that tends to the breach of the peace of the realm, by ſtriking, beating, or offering other violence to another perſon,

Battery is frequently confounded with *aſſault*, though in law they are different offences; for that, in the treſpaſs for *aſſault* and *battery*, one may be found guilty of the aſſault, yet acquitted of the *battery*: there may therefore be *aſſault* without *battery*; but *battery* always implies an *aſſault*.

BATTEURS *d'eſtrade*, *ſcouts*, or horſemen ſent out before, and on the wings of an army, two or three miles, to make diſcoveries; of which they are to give an account to the general.

BATTLE, an action which paſſes between two armies ranged in order of *battle*, and who engage in a country ſufficiently open for them to encounter in front, and at the ſame time; or, at leaſt, for the greater part of the line to engage, while the remainder remains in ſight, by reaſon of ſome difficulty, which hinders it from entering ſo readily into action, with a front equal to that which may be oppoſed to it by the enemy.

Other great actions, though generally of a longer duration, and even frequently attended with greater ſlaughter, are only called *fights*, by the Fench *combats*. *Feuq. Mem. c.* 80.

A *battle* loſt almoſt always draws with it the loſs of the artillery of the army, and frequently alſo that of the baggage: conſequently, as the army beaten cannot again look the enemy in the face till it have repaired thoſe loſſes, it is forced to leave the enemy a long time maſter of the country, and at liberty to execute all its ſchemes.—Whereas a great fight loſt is rarely attended with a loſs of all the artillery, and ſcarce ever of the baggage, becauſe the two armies not meeting in front, they can only have ſuffered in the part that has been engaged. *Feuq. loc. cit.*

An ingenious modern author remarks, that it is not, uſually, the real loſs ſuſtained in a *battle* (that is, of ſome thouſands of men) that proves ſo fatal to a ſtate; but it is the imaginary loſs, and diſcouragement, which deprives it of the uſe of thoſe very powers which fortune had left it. *Conſid. ſur les Cauſ. de la Grand. des Rom. c.* 4. *p.* 39.

The hiſtory of *battles* is only the hiſtory of the faults and overſights of generals: luckily enough, the miſtakes of the two oppoſite commanders generally balance one another: one of them makes a fault, and the other overlooks, or does not take advantage of it. M. de Feuquiere's *Remarks ſur la Guerre* is little elſe but a recital of miſtakes on both ſides: he ſcarce ſpeaks of one modern general, except Turenne, Luxembourg, and the prince of Condé, whoſe conduct was not full of them: Crequi, and Catinat, were guilty of great ones; which, however, they compenſated by their judicious conduct on other occaſions. *Feuq. ubi ſupra.*

Naval **Battles**, or *ſea-fights*.—It is obſervable, that the antient and uſual way of fighting in our fleets was board and board, yard-arm and yard-arm, through and through; and not at a diſtance in a line or half-moon, as is now done: which practice our old ſailors ſay they were ſtrangers to.—For this reaſon our guns are ſhorter, and of larger bore, than thoſe of the French, which are adapted to the method of fighting in line of battle; as being longer, and carrying farther. So that we engage with them in this way at a diſadvantage.—It has been often found, that their balls will fly over our ſhips, before ours can reach them by a mile. *Dennis Eſſ. on Navy, ſect.* 2.

Battle is alſo uſed figuratively for a repreſentation of a *battle* in ſculpture, painting, or the like.—The *battles* of Alexander in the gallery of the Louvre, painted by le Brun, are held by the French the nobleſt pieces of painting that have been executed on this ſide the Alps. *Liſt. Journ. to Paris.*

Line of **Battle**.	See the articles	Line.
Order of **Battle**.		Order.
Square **Battle**.		Square.
Trial by **Battle**.		Duel, Champion, *&c.*
Attainder by **Battle**.		Attainder.

BATTLEMENTS, in the military art, indentures, or notches on the top of a wall, parapet, or other building, in form of embrazures, for the ſake of looking through them; *&c.* much affected in the old fortification.

BATTOLOGY, in grammar, a multiplying of words without occaſion, or a needleſs repetition of the ſame words, or things over and above.

BATTOON, **Batoon**, or **Baston**. See Baston.

BATTUS, an order of penitents at Avignon, and in Provence; whoſe piety carries them to exerciſe ſevere diſcipline upon themſelves, both in public and private.

BAU. See Numerial Character.

BAVINS, in war, bruſh-fagots, made with the bruſh at length. See Fascines.

BAY, in geography, denotes a little gulph; or an arm of the ſea, ſtretching up into the land; being larger in the middle within, than at its entrance, which is called the *mouth of the bay*.

Bay likewiſe ſignifies a pen, or pond-head, made up a great height, to keep in ſtore of water for driving the wheels of a forge or furnace of an iron-mill, by the ſtream that comes thence through a paſſage, or flood-gate, called the *pen-ſtock*.

Among huntſmen, deer are ſaid to *bay*, or *be at bay*, when, after being hard run, they turn head againſt the hounds.

Bay, or **Bayes**, is alſo a ſort of woollen *ſtuff*, made chiefly in Colcheſter; where there is a hall, called the Dutch Bay-hall, or Raw-hall.

None ſhall weave in Colcheſter any *bay* known by the names of *four-and-fifties*, *ſixties*, *ſixty-eights*, *eighties*, or *hundred bays*, but within two days after weaving they ſhall carry it to the Dutch Bay-hall, to be viewed and ſearched; that it may appear whether it be well and ſubſtantially wrought, before it be carried to be ſcoured and thicked: and no fuller or thicker is to receive ſuch bay before it have been ſtamped or marked at ſaid hall. 12 *Car.* II. *c.* 22.

Bay-*ſalt*. See the article Salt.

Bay-*yarn*, is a denomination ſometimes uſed promiſcuouſly with *woollen-yarn*. 10 & 11 *W.* III. *c.* 10. 5 *G.* II. *c.* 21. See Yarn, *&c.*

BAYONET, a ſhort broad dagger, made lancet-faſhion, and having, inſtead of an hilt, an hollow iron handle to fix it to the end of a muſquet, ſo as not to hinder its firing or charging.

Bayonets are of great ſervice to the dragoons and fuſileers, after they have ſpent their powder and ball.

This inſtrument is alſo uſed in hunting the boar or bear; for which purpoſe it is made larger than for the military uſe.

BAYS, in commerce, a kind of coarſe, open, woollen ſtuff, having a long knap; ſometimes frized on one ſide, and ſometimes not frized, according to the uſes it is intended for.

This ſtuff is without wale, being wrought on a loom with two treddles, like flannel.—The manufacture of *bays* is very conſiderable in England, particularly about Colcheſter; and in Flanders, about Liſle and Tournay, *&c.*

Formerly the French, as well as Italians, were furniſhed with *bays* from England; but of late the French workmen have undertaken to counterfeit them, and ſet up manufactures of their own; and that with ſucceſs; eſpecially at Niſmes, Montpellier, *&c.*

The export of *bays* is very conſiderable to Spain, Portugal, and Italy. Their chief uſe is for linings, eſpecially in the army: the looking-glaſs-makers alſo uſe them behind their glaſſes, to preſerve the tin or quickſilver; and the caſe-makers to line their caſes.

BDELLIUM *, ΒΔΕΛΛΙΟΝ, an aromatic gum, brought from the Levant, of ſome uſe, both as a medicine, and a perfume.

There is much uncertainty concerning *bdellium*: we find mention of the name both among the antient naturaliſts, and in ſcripture; but it is doubtful whether any of theſe be the ſame with the modern kind. As for the ſcripture *bdellium*, we know very little of it. Moſes deſcribes *manna* as of the colour of *bdellium*; and Joſephus explains the paſſage, by ſaying it is the gum of a tree reſembling the olive-tree; and that the manna wherewith the Jews were fed in the deſart reſembled this drug.—But Scaliger and others ſet aſide this explication, and own, they do not know what the *bdellium* mentioned in ſcripture is.

BEACON, a ſignal for the better ſecuring the kingdom from foreign invaſions. See Signal.

On certain eminent places of the country are placed lon poles erect, whereon are faſtened pitch-barrels to be fired b night, and ſmoke made by day, to give notice, in a fe hours, to the whole kingdom, of an approaching invaſion.— Theſe are commonly called *beacons*; whence alſo com *beaconage*.

Beacons are alſo marks and ſigns for the ſea; erected on th coaſts by the maſters, *&c.* of Trinity houſe, who are i powered thereto by act of parliament, 8 *El. c.* 13.—Whi ker *beacon* having been blown down in the ſtorm, a bu was laid, till a *beacon* could be conveniently replaced. *Advert. Trin. Houſe.*

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* The word is ſuppoſed to have been formed of the Hebrew בדלח, *bedollach*, which the Engliſh tranſlators render by the appellation *bdellium*. It is alſo written *bedellium*, *bedella*, *ptellium*, *petalium*, *megalium*, and *telinum*.

BEAÇONAGE*, money paid towards the maintenance of a *beacon*.

* The word is derived from the Saxon *beacnian*, to nod, or ſhew by a ſign: hence alſo the word *beckon*.

BEAD, in architecture, denotes a round moulding, carved in ſhort emboſſments, like beads in necklaces.

Sometimes alſo an aſtragal is carved *bead*-faſhion.

There are alſo a ſort of *beads plain*, frequently ſet on the edge of each faſcia of an architrave; ſometimes alſo on the lining-board of a door-caſe; and on the upper end of ſkirting-boards.

BEADS, in a religious ſenſe. See CHAPLET.

BEAD-*Roll*, among the Romiſh prieſts, a liſt or catalogue of ſuch perſons, for the reſt of whoſe ſouls they are obliged to rehearſe a certain number of prayers, &c. which are told by means of their *beads*.

BEADLE, or BEDEL, BEDELLUS, ſignifies a meſſenger or apparitor of a court, who cites men to appear and anſwer.

BEADLE is alſo uſed for an officer in univerſities, whoſe place it is to walk before the maſters at all public proceſſions, &c. with a mace.

Some ſay they are called *bedelli*, from a corruption of *pedelli*, as ſerving and running on foot. Others from *pedo*, *ſeu baculo, quia virga utebantur*; forming *pedellus* from *pedum*, a kind of wand, which is their ſymbol; and from *pedellus*, *bedellus*, Others derive the word from the Hebrew בדל *bedal*, *ordinare*, to range, or diſpoſe.

Spelman, Voſſius, and Somner, derive *beadle* from the Saxon *bidel*, a public crier; in which ſenſe biſhops, in ſome antient Saxon manuſcripts, are called *beadles of God*, *Dei bedelli*.—The tranſlator of the Saxon New Teſtament renders *exactor* by *bydele*; and the word is uſed in the ſame ſenſe in the laws of Scotland.

BEAK, in architecture, a little fillet left on the edge of a larmier, which forms a canal, and makes a kind of pendant chin; anſwering to what Vitruvius calls the *mentum*.

BEAK, or BEAK-*head*, of a ſhip, is that part without the ſhip, before the forecaſtle, which is faſtened to the ſtem, and is ſupported by the main knee: this is uſually carved and painted, and, beſides its uſe, makes the becoming part, or grace of a ſhip.

BEAM, in architecture, the largeſt piece of wood in a building; being laid acroſs the walls, and ſerving to ſupport the principal rafters of the roof.

No houſe has leſs than two of theſe *beams*, *viz.* one at each head: into theſe the girders of the garret-floor are alſo framed; and, if the building be of timber, the teazle-tenons of the poſts.

The proportions of *beams* near London are fixed by ſtatute, as follows: a *beam* 15 feet long muſt be ſeven inches on one ſide its ſquare, and five on the other: if it be 16 feet long, one ſide muſt be eight inches, the other ſix: if 17 feet long, one ſide muſt be ten inches, the other ſix: in the country they uſually make them ſtronger. Sir H. Wotton adviſes theſe to be of the ſtrongeſt and moſt durable timber.

Herrera tells us, that in Fer. Cortez's palace, in Mexico, there were 7000 *beams* of cedar: but he muſt certainly uſe the word *beam* in a greater latitude than we do. In effect, the French, under *poutre*, *beam*, take in not only the pieces which ſupport the rafters, but alſo thoſe which ſuſtain the joiſts for the cielings.

Some of their beſt authors have conſidered the force or ſtrength of *beams*, and brought their reſiſtance to a preciſe calculation; particularly M. Varignon, and M. Parent; the ſyſtem of the latter is as follows.

When, in a *beam* breaking parallel to its baſe, which is ſuppoſed to be a parallelogram, two plans of fibres, which were before contiguous, are ſeparated, there is nothing to be conſidered in thoſe fibres, but their number, bigneſs, tenſion before they broke, and the lever by which they act; all theſe together making the ſtrength or reſiſtance of the *beam* to be broke.

Suppoſe then another beam of the ſame wood, where the baſe is likewiſe a parallelogram, and of any bigneſs, with regard to the other, at pleaſure; the height or thickneſs of each of theſe, when laid horizontal, being divided into an indefinite number of equal parts, and their breadth into the ſame number, in each of their baſes will be found an equal number of little quadrangular cells, proportional to the baſes whereof they are parts.—Theſe then will repreſent little baſes, or which is the ſame thing, the thickneſſes of the fibres to be ſeparated for the fracture of each *beam*: and, ſince the number of cells is equal in each, the ratio of the baſes of both *beams* will be that of the reſiſtance of their fibres, both with regard to number and thickneſs.

Now, the two *beams* being ſuppoſed of the ſame wood, the fibres moſt remote from the points of ſupport, which are thoſe which break the firſt, muſt be equally ſtretched when they break. Thus the fibres, *v. gr.* of the 10th diviſion, are equally ſtretched in each caſe, when the firſt breaks; and in whatever proportion the tenſion be ſuppoſed, it will ſtill be the ſame in both caſes; ſo that the doctrine is intirely free, and unembarraſſed with any phyſical ſyſtem.

Laſtly, it is evident, the levers whereby the fibres of the two *beams* act, are repreſented by the height or depth of their baſes; and, of conſequence, the whole reſiſtance of each *beam*, is the product of its baſe by its height; or, which is the ſame thing, it is the ſquare of the height multiplied by the breadth: which holds, not only in caſe of parallelogrammatic, but alſo of elliptic baſes.

Hence, if the baſes of two *beams* be equal, though both their heights and breadths be unequal, their reſiſtance will be as their heights alone; and, by conſequence, one and the ſame *beam* laid on the ſmalleſt ſide of its baſe, will reſiſt more than when laid flat, in proportion as the firſt ſituation gives it a greater height than the ſecond: and thus an elliptic baſe will reſiſt more, when laid on its greateſt axis, than when on its ſmalleſt.

Since, in *beams* equally long, it is the baſes that determine the proportion of their weights or ſolidities; and ſince, their baſes being equal, their heights may be different; two *beams* of the ſame weight may have reſiſtances differing to infinity: thus, if in the one the height of the baſe be conceived infinitely great, and the breadth infinitely ſmall, while in the other the dimenſions of the baſe are infinite; the reſiſtance of the firſt will be infinitely greater than that of the ſecond, though their ſolidity and weight be the ſame. If therefore all required in architecture were to have *beams* capable of ſupporting vaſt loads, and at the ſame time be of the leaſt weights poſſible, it is plain they muſt be cut thin as laths, and laid edge-wiſe.

If the baſes of two *beams* be ſuppoſed unequal, but the ſum of the ſides of the two baſes equal, *v. gr.* if they be either 12 and 12, or 11 and 13, or 10 and 14, &c. ſo that they always make 24; and further, if they be ſuppoſed to be laid edge-wiſe; purſuing the ſeries, it will appear, that in the *beam* of 12 and 12 the reſiſtance will be 1728, and the ſolidity or weight 144; and that in the laſt, or 1 and 23, the reſiſtance will be 529, and the weight 23: the firſt therefore, which is ſquare, will have leſs than half the ſtrength of the laſt, with regard to its weight.

Hence M. Parent remarks, that the common practice of cutting the *beams* out of trees as ſquare as poſſible, is ill huſbandry: he hence takes occaſion to determine geometrically, what dimenſions the baſe of a *beam*, to be cut out of any tree propoſed, ſhall have, in order to its being of the greateſt poſſible ſtrength; or, which is the ſame thing, a circular baſe being given, he determines the rectangle of the greateſt reſiſtance that can be inſcribed; and finds, that the ſides muſt be nearly as 7 to 5, which agrees with obſervation.

Hitherto the length of the *beams* has been ſuppoſed equal; if it be unequal, the baſes will reſiſt ſo much the leſs, as the *beams* are longer.

To this it may be added, that a *beam* ſuſtained at each end, breaking by a weight ſuſpended from its middle, does not only break at the middle, but alſo at each extreme; or, if it does not actually break there, at leaſt immediately before the moment of the fracture, which is that of the equilibrium between the reſiſtance and the weight, its fibres are as much ſtretched at the extremes, as in the middle.—So that, of the weight ſuſtained by the middle, there is but one third part which acts at the middle, to make the fracture; the other two only acting to induce a fracture in the two extremes.

A *beam* may either be ſuppoſed loaden only with its own weight, or with other foreign weights applied at any diſtance, or elſe only with thoſe foreign weights. Since, according to M. Parent, the weight of a *beam* is not ordinarily above $\frac{1}{70}$ part of the load given it to ſuſtain, it is evident, that in conſidering ſeveral weights they muſt all be reduced by the common rules to one common centre of gravity.

M. Parent has calculated tables of the weights that will be ſuſtained by the middle, in *beams* of various baſes and lengths, fitted at each end into walls, on a ſuppoſition that a piece of oak of an inch ſquare, and a foot long, retained horizontally by the two extremes, will ſuſtain 315 ℔. in its middle before it breaks, which it is found by experience it will. See *Mem. Acad. R. Scienc. an.* 1708.

BEAM, among hunters, denotes the main ſtem of a deer's head, or that part which bears the antlers, royals, and tops; the little ſtreaks wherein are called circles.

BEAMS of a ſhip are the large, main, croſs timbers, which hold the ſides of a ſhip from falling together, and which alſo ſupport the decks and orlops. See SHIP.

The *main beam* is that next the main maſt; and from it they are reckoned by *firſt*, *ſecond*, and *third beam*. The great *beam* of all is called the *midſhip beam*. See *Tab. Ship. fig.* 2. *n.* 36, 45, 61, 28, 91, 87.

Camber-BEAM. See the article CAMBER-*Beam*.

BEAM-*Compaſſes*, an inſtrument made in wood or braſs, with ſliding ſockets, or curſors, ſerving to carry ſeveral ſhifting points, in order to draw and divide circles with very long radii.

They are of uſe in large projections for drawing the furniture on wall-dials, &c. See COMPASSES.

Beam-*Filling*, in building, the filling up the vacant ſpace between the raiſon and roof, with ſtones, or bricks, laid between the rafters on the raiſon, and plaſtered on with loam; this is frequent where the garrets are not pargeted, or plaſtered.

BEAR, in aſtronomy, a name given to two conſtellations called the *greater* and the *leſſer bear*; or *urſa major* and *minor*. See Ursa.

The pole-ſtar is ſaid to be in the tail of the *leſſer bear*; this ſtar is never above two degrees diſtant from the north-pole of the world.

BEARD, the hair growing on the chin, and adjacent parts of the face; chiefly of adults and males. See Hair.

Various are the ceremonies and cuſtoms the *beard* has been liable to: Kingſon aſſures us, that a conſiderable branch of the religion of the Tartars conſiſts in the management of their *beards*; and that they waged a long and bloody war with the Perſians, and declared them infidels, though, in other reſpects, of the ſame faith with themſelves, merely becauſe they would not cut their whiſkers after the mode or rite of the Tartars.

Athenæus, from Chryſippus, obſerves, that the Greeks always wore their *beards* till the time of Alexander; and that the firſt who cut it at Athens ever after bore the addition of κορσης, ſhaven, in medals. Plutarch adds, that Alexander commanded the Macedonians to be ſhaven, leſt the length of their *beards* ſhould give a handle to their enemies: however this be, we find Philip, his father, as well as Amyntas and Archelaus, his predeceſſors, repreſented on medals without *beards*.

Pliny obſerves, that the Romans did not begin to ſhave till the year of Rome 454. when P. Ticinius brought over a ſtock of barbers from Sicily: he adds, that Scipio Africanus was the firſt who introduced the mode of ſhaving every day.

Among that people, it became the cuſtom to have viſits made in form at the cutting of the *beard* for the firſt time: the firſt fourteen Roman emperors ſhaved, till the time of the emperor Adrian, who retained the mode of wearing the *beard*. Plutarch tells us, he did it to hide the ſcars in his face.

Formerly there was a great deal of ceremony uſed in bleſſing the *beard*; and there are ſtill extant the prayers uſed in the ſolemnity of conſecrating it to God, when an eccleſiaſtic was ſhaven.

Perſons of quality had their children ſhaved the firſt time by others of the ſame, or greater quality, who, by this means, became god-father, or adoptive father of the children.

Antiently, indeed, a perſon became god-father of the child by barely touching his *beard*: thus hiſtorians relate, that one of the articles of the treaty between Alaric and Clovis was, that Alaric ſhould touch the *beard* of Clovis to become his god-father. See God-*father*.

As to eccleſiaſtics, the diſcipline has been very different on the article of *beards*: ſometimes they have been injoined to wear them, from a notion of too much effeminacy in ſhaving, and that a long *beard* was more ſuitable to the eccleſiaſtical gravity; and ſometimes again they were forbid it, as imagining pride to lurk beneath a venerable *beard*.

The Greek and Romiſh churches have been long together by the ears about their *beards*: ſince the time of their ſeparation, the Romaniſts ſeem to have given more into the practice of ſhaving, by way of oppoſition to the Greeks; and have even made ſome expreſs conſtitutions *de radendis barbis*.

The Greeks, on the contrary, eſpouſe very zealouſly the cauſe of long *beards*, and are extremely ſcandalized at the beardleſs images of ſaints in the Roman churches.

By the ſtatutes of ſome monaſteries, it appears, that the lay-monks were to let their *beards* grow, and the prieſts among them to ſhave; and that the *beards* of all that were received into the monaſteries were bleſſed with a great deal of ceremony.

To let the *beard* grow is a token of mourning in ſome countries, and to ſhave it is ſo in others. Le Comte obſerves, that the Chineſe affect long *beards* extravagantly; but nature has balked them, and only given them very little ones, which, however, they cultivate with infinite care: the Europeans are ſtrangely envied by them on this account, and eſteemed the greateſt men in the world.

The Ruſſians wore their *beards* till within theſe few years, when the Czar Peter injoined them all to ſhave; but, notwithſtanding his injunction, he was obliged to keep on foot a number of officers to cut off by violence the *beards* of ſuch as would not otherwiſe part with them.

Chryſoſtom obſerves, that the kings of Perſia had their *beards* woven or matted together with gold thread; and ſome of the firſt kings of France had, in the ſame manner, their *beards* knotted and buttoned with gold.

Beard *of a Comet* denotes the rays which the comet emits towards that part of the heavens to which its proper motion ſeems to direct it.

In which the *beard* of the comet is diſtinguiſhed from the *tail*, which is underſtood of the rays emitted towards that part from which its motion ſeems to carry it. See Tail.

It is called *beard*, from ſome fanſied reſemblance it bears to the *beard* of a man.

BEARDING *of Wool*. See the article Wool.

BEARER, in architecture, a poſt, or brick-wall, trimmed up between the two ends of a piece of timber, to ſhorten its bearing, or to prevent its bearing with the whole weight at the ends only.

Bearer *of a bill of exchange* denotes the perſon in whoſe hands it is, and in favour of whom the laſt order or indorſement was made.

When a bill is ſaid to be *payable to bearer*, it is underſtood to be payable to him, who firſt offers himſelf after it becomes due. To be paid a bill of this kind, there needs neither order or transfer; yet it is good to know to whom it is paid. See Bill of Exchange.

Bearers, in heraldry. See Supporters.

Croſs-**Bearer**. See the article Cross.

Bearing, in geography and navigation, the ſituation of one place from another, with regard to the points of the compaſs; or the angle, which a line drawn through the two places makes with the meridians of each.

The *bearings* of places on the ground are uſually determined from the magnetic needle; in the managing of theſe lies the principal part of ſurveying; ſince the *bearing* and diſtance of a ſecond point from a firſt being found, the place of that ſecond is determined; or the *bearings* of a third point from two others, whoſe diſtance from each other is known, being found, the place of the third is determined: inſtrumentally we mean; for to calculate trigonometrically there muſt be more data.

Mr. Collins gives the ſolution of a problem in the *Philoſ. Tranſact.* where the diſtances of three objects on the ſame plain being given, and the *bearings* from a fourth place in the ſame plain obſerved, the diſtances from the place of obſervation to the reſpective objects are required.

Bearing, in the ſea-language.—When a ſhip ſails towards the ſhore, ſhe is ſaid *to bear in with the land*.—When a ſhip that was to windward comes under another ſhip's ſtern, and ſo gives her the wind, ſhe is ſaid *to bear under her lee*.—If a ſhip ſails into an harbour with the wind large, or before the wind, ſhe is ſaid *to bear in with the harbour*, &c.

In conding they ſay, *bear up the helm*, that is, let the ſhip go more large before the wind—*bear up round*, that is, let the ſhip go between her two ſheets, directly before the wind.

They alſo ſay, a ſhip *bears*, when, having too ſlender a quarter, ſhe will ſink too deep into the water with an over-light freght, and therefore can carry but a ſmall quantity of goods.

Bearing *of a piece of timber*, in carpentry, denotes the ſpace either between the two fixt extremes thereof, when it has no other ſupport; which is called *bearing at length*: or between one extreme, and a poſt, brick-wall, or the like, trimmed up between the ends to ſhorten its *bearing*.

Joiſts are not to *bear* above 10 feet length; nor ſingle rafters more than 9 feet. 19 *Car.* II. *c.* 3.

Bearing is alſo a term in heraldry.—Thus, he that has a coat of arms, is ſaid to *bear* in it the ſeveral charges or ordinaries which are in his eſcutcheon: as, if there are three lions rampant in it, he is ſaid *to bear three lions rampant*. See Charge, &c.

High **Bearing** *Cock*. See the article High.

BEASTS *of Chace*, in our ſtatute-books, are five; the buck, doe, fox, martin, and roe. See Chase.

Beasts *of the foreſt* are, the hart, hind, hare, boar, and wolf.

Beasts and *fowls of the warren* are, the hare, coney, pheaſant, and partridge. See Game.

Rother-**Beasts**. See the article Rother.

BEATÆ. See Mass *of the Beatæ*.

BEATIFIC *Viſion*. See the article Vision.

BEATIFICATION, in the Romiſh church, the act whereby the pope declares a perſon happy, after death.

Beatification differs from *canonization*; in the former, the pope does not act as a judge in determining the ſtate of the *beatified*, but only grants a privilege to certain perſons to honour him by a particular religious worſhip, without incurring the penalty of ſuperſtitious worſhipers: but, in *canonization*, the pope ſpeaks as a judge, and determines *ex cathedra*, upon the ſtate of the *canonized*.

Beatification was introduced, when it was thought proper to delay the canonization of ſaints, for the greater aſſurance of the truth, and manifeſtation of the rigorous ſteps taken in the procedure.

BEATING, *pulſation*, in medicine, is applied to the reciprocal agitation or palpitation of the heart and pulſe. See Pu- sation.

Some phyſicians diſtinguiſh 81 different kinds of ſimple *beatings*, and 15 compound ones. They compute 60 beats in the ſpace of a minute, in a temperate man. But, in fact, we generally find a greater number.

Beating *of gold and ſilver*. See Gold-*Beating*, &c.

BEATS, in a watch or clock, are the ſtrokes made by th fangs or pallets of the ſpindle of the balance; or of the pa in a royal pendulum.

To find the *beats* of the balance in any watch, or in one turn of any wheel.—Having found the number of turns, which the crown-wheel makes in one turn of the wheel you ſeek for (by the direction given under the word Turn), thoſe turns of the crown-wheel, multiplied by its notches, give half the number of *beats* in that one turn of the wheel: for the balance or ſwing has two ſtrokes to every tooth of the crown-wheel: inaſmuch as each of the two pallets has its blow againſt each tooth of the crown-wheel: whence it is, that a pendulum which beats ſeconds, has in its crown-wheel only 30 teeth. To explain this, ſuppoſe the numbers of a ſixteen hour watch wherein the pinion of report is 4, the dial-wheel 32, the great wheel 55, the pinion of the ſecond wheel 5, &c. The number of the notches in the crown-wheel 17, being multiplied into 6336 (the product ariſing from the continual multiplication of the quotients 8, 11, 9, 8) gives 107712, for half the number of *beats* in one turn of the dial-wheel; for 8 times 17 is 136, which is half the number of beats in one turn of the contrate-wheel 40, and 9 times 136 is 1224, the half-beats in one turn of the ſecond wheel; and 11 times 1224 is 13464, the half-beats in one turn of the great wheel 55; and 8 times 13464 makes 107712. If you muliply this by the two pallets, *i. e.* double it, it gives 215424, which is the number of *beats* in one turn of the dial wheel, or 12 hours.

4)32(8
——
5)55(11
5)45(9
5)40(8
——
17

To know how many *beats* this watch has in an hour, divide the *beats* in 12 hours into 12 parts, and it gives 17952, which is called the *train* of the watch, or the *beats* in an hour.—If this be divided into 60 parts, it gives 299, and a little more, for the *beats* in a minute; and ſo you may proceed to ſeconds or thirds.

By the *beats* and turns of the fuſy, the hours that any watch will go, may be found thus.—As the *beats* of the balance in one hour, are to the *beats* in one turn of the fuſy; ſo is the number of the turns of the fuſy 1, to the continuance of the watch's going.—Thus, 20196 : 26928 :: 12 : 16.

To find the *beats* of the balance in one turn of the fuſy, ſay, As the number of turns of the fuſy, to the continuance of the watch's going in hours; ſo are the beats in one hour, to the *beats* of one turn of the fuſy; *i. e.* 12 : 16 :: 20196 : 26928.

To find the *beats* of the balance in an hour, ſay, As the hours of the watch's going, to the number of turns of the fuſy; ſo are the *beats* in one turn of the fuſy, to the *beats* of an hour.—Thus, 16 : 12 :: 26928 : 20196.

BEAVER, the fur or ſkin of the *caſtor* or *beaver*; this is much uſed in the making of hats, and ſometimes alſo in that of ſtockings, and even cloaths.

Beaver is chiefly imported by the Hudſon's-bay company, from the northern parts of America; where the animal abounds.—There are chiefly two ſorts: the *coat-beaver*, which has been worn ſometimes by the ſavages as a garment, and of courſe has imbibed much of the ſweat of their bodies—and *parchment-beaver*.

BEAUFET, Buffet, or Bufet, was antiently a little apartment ſeparated from the reſt of a room by ſlender wooden columns, for the diſpoſing china and glaſs ware, &c. called alſo a *cabinet*.

It is now, properly, a large table in a dining room, called alſo a *ſide-board*, for the plate, glaſſes, bottles, baſons, &c. to be placed, as well for the ſervice of the table, as for magnificence.

The *buffet*, among the Italians called *credenza*, is incloſed within a balluſtrade, elbow-high.

BEAU-MASS. See the article Mass.

BEAU-PLEADER, or Bew-Pleader, a writ on the ſtatute of Marlbridge, whereby it is provided, that no fine ſhall be taken of any man in any court for *fair-pleading*, i. e. for not pleading aptly, and to the purpoſe.

BEAUTY is a term whereby we expreſs a certain relation of ſome object, either to an agreeable ſenſation, or to an idea of approbation.

When, therefore, I ſay, a thing is *beautiful*, I either mean that I perceive ſomething that I approve, or that ſomething gives me pleaſure: whence it appears, that the idea annexed to the word *beauty* is double; which renders the word equivocal, and this is the ſource of moſt of the diſputes on the ſubject of *beauty*.

We muſt therefore diſtinguiſh between *ideas* and *ſenſations*. Ideas take up the mind, ſenſations intereſt the heart. Though we ſee nothing in an object to intereſt us, we may yet diſcover ſomething in its idea to merit our approbation. Such an object therefore pleaſes, and does not pleaſe, *i. e.* it pleaſes the underſtanding, and not the ſenſe. On the contrary, there are ſome objects, whoſe ideas do not offer any thing laudable, which yet excite agreeable ſenſations. There is therefore *beauty* of two ſorts.

It is exceeding hard to fix any general characteriſtic of *beauty*: for, as the ideas and ſenſations of different perſons differ according to the habitudes of the body, and the turn of the mind; ſo do the relations of objects to thoſe ideas and ſenſations vary, whence what we call *beauty*, reſults. Hence ariſe thoſe different opinions of a *beautiful* thought, a *beautiful* woman, a *beautiful* painting, &c.

Mr. Perrault diſtinguiſhes two kinds of *beauties* in architecture, which chime in pretty aptly with the two ſpecies of *beauty* above: the one, he calls *poſitive* and *convincing*, ſuch as the richneſs of the materials, grandeur of the ſtructure, neatneſs of the workmanſhip, ſymmetry, &c.

The others he calls *arbitrary*, which depend on the will, and which would admit of having their proportions changed without deformity. Theſe only pleaſe by the connexion, or aſſociation of their ideas with others of a different kind which pleaſe of themſelves; they owe their *beauty* to that prepoſſeſſion of the mind, whereby a thing, whoſe value we do know, inſinuates an eſteem for others which we do not.

Thus, he obſerves, there are many things in architecture, which reaſon and good ſenſe would judge deformed, and which, however, cuſtom has not only made tolerable, but even *beautiful*, by their being always joined with other *beauties* that are poſitive. Thus, being at firſt pleaſed with viewing them in company, and merely on account of their company, at length we become pleaſed with them alone; and thus we frequently fall in love with deformities, and grow fond of faults.

Hence, the uſe of foils may ſeem founded on an ill philoſophy. If a *beauty* takes off from a deformity, the deformity in its turn takes off from the *beauty*: it is the foil, therefore, is the gainer; the diamond loſes. As the diamond pleaſes, we are pleaſed, in ſome meaſure, with every thing about it, particularly the foil; and as the foil diſpleaſes, we are in ſome meaſure diſguſted with every thing about it, therefore with the diamond: the mind cannot be well pleaſed and diſpleaſed at the ſame time: by viewing the diamond and foil together, a man might in a long courſe of time find the one almoſt as *beautiful* as the other. The diſparity would be always diminiſhing, till they came near a level: and by removing them apart, they would by degrees return to their original ſtate, *i. e.* the diamond would recover, and the foil loſe its luſtre. See Deformity.

Beauty *of Chriſt's Perſon* has been the ſubject of ſtrong diſputes in all ages of the church.—Iſaiah deſcribes the Meſſiah, as *without form and comelineſs*, or any beauty to render him deſirable. And the moſt antient writers, as Juſtin Martyr, Clem. Alex. Origen, St. Cyril, Tertullian, &c. not only underſtand the prophet thus, but confeſs that the prophecy was literally fulfilled in the perſon of our Saviour. Tertullian ſays, that Chriſt was *ne aſpectu quidem honeſtus*: de car. Chriſti. And Celſus brings this conſideration as an argument againſt his divine office and miſſion.—But all this was afterwards denied by St. Jerom, and Chryſoſtom; who interpret the words of Iſaiah, of the poverty and humility of the Meſſiah: and take the words of the Pſalmiſt, *ſpecioſus præ filiis hominum*; as meant of his perſonal form.—At length they began to magnify the external *beauty* of his body; and confined themſelves to one kind of picture, with a zealous pretence of a likeneſs, which 800 years ago was known by none; every country having a ſeveral one. Whence that query of the Iconoclaſtæ, which of thoſe images or veronicæ was a true one? And well might they be unlike each other, ſince every nation painted our Saviour in the neareſt reſmblance to the make, air, &c. of the people of the country.

BECHICS *, Bechica, Βηχικα, medicines proper for relieving coughs.

* The word is formed of the Greek βηξ, βηχος, a cough.

Bechics amount to much the ſame with what we otherwiſe call *pneumonics*, *thoracics*, *expectorants*, and *pectorals*. See the articles Expectorant, and Pectoral.

Bechic *Pills*. See the article Pillula.

BED, a place prepared to ſtretch and compoſe the body on, for reſt and ſleep; made chiefly of feathers incloſed in a ticken caſe.

We ſay a feather *bed*, a down *bed*; a ſtanding *bed*, a ſettee *bed*, a tent *bed*, a truckle *bed*, &c.

Bed *of State*. See Parade.

No *beds* are to be ſold, except filled with one ſort of ſtuffing only; *e. gr.* feather *beds* with only dry pulled feathers; and down *beds* with clean down alone. No ſcalded feathers are to be mixed with the former; nor fen-down with the latter, on the pain of forfeiture; the mixture of ſuch things being conceived as contagious for man's body to lie on. *Stat.* 11. *Hen.* VII. *c.* 19.

Alſo *bed*-quilts, matraſſes, and cuſhions ſtuffed with horſe-hair, fen-down, goats-hair, and neats-hair, which are dreſſed in lime; and which the heat of man's body will cauſe to exhale and yield a noxious ſmell, whereby many of the king's ſubjects have been deſtroyed—are prohibited by the ſame ſtatute.

The antient Romans had various kinds of *beds* for repoſe; as their *lectus cubicularis*, or *chamber-bed*, whereon they ſlept—their *table-bed*, or *lectus diſcubitorius*, whereon they eat (for they always eat lying), there being uſually three perſons to one *bed*, whereof the middle place was accounted the moſt honourable, as well as the *middle bed*.—They had alſo their *lectus lucubratorius*, whereon they ſtudied; and a *lectus funebris*, or *emortualis*, whereon the dead were carried to the pile. See Funeral.

Bed *of a great gun* is that thick plank which lies immediately under the piece; being, as it were, the body of the carriage.

Bed, in gardening, a piece of made-ground, raiſed above the level of the adjoining ground, uſually ſquare or oblong, and enriched with dung, or other amendments; intended for the raiſing of herbs, flowers, ſeeds, roots, or the like.

Hot-**Bed**. See the article Hot-*Bed*.

Bed, in maſonry, denotes a courſe or range of ſtones. See Course.

Joint of the **Bed** is the morter between two ſtones placed over each other.

Beds, in ſpeaking of minerals and foſſils, ſignify certain ſtrata, or layers of matter diſpoſed over each other. See Strata.

BED-CHAMBER—*Lords or Gentlemen of the* Bed-Chamber, are perſons of the firſt rank, ten in number; whoſe office is, each in his turn, to attend a week in the king's *bed-chamber*, lying by the king on a pallet-bed all night, and to wait on the king when he eats in private.

The firſt of theſe is called *groom of the ſtole*. See the article Stole.

BED-MOULDING, or **Bedding**-*moulding*, in architecture, is a term uſed by the workmen of thoſe members in a corniche, whicn are placed below the corona or crown.

A *bed-moulding* uſually conſiſts of theſe four members, an O—G, a liſt, a large boultine, and another liſt under the coronet.

BEECH-*Oil*, an oil drawn from the fruit, or maſt, of the *beech-tree*.

The *beech-maſt* is a kind of triangular ſeed, in form of a nut, or rather acorn, containing a whitiſh, oleaginous pith, of a very agreeable taſte; whereof is made an oil much valued for ſallads, *&c.*

It is very common in Picardy, and other places, where the maſt abounds. They draw it cold by expreſſion, after the maſt has been ſhelled, and ground or pounded.

An attempt was made, a few years ago, to introduce the manufacture of *beech-oil* in England, and a patent granted to the proprietor; but without ſucceſs; the country-people, it ſeems, turning their maſt to better account in feeding the hogs with it, than in ſelling it to the patentee, and his co-proprietors, for oil.

BEDOUEENS. See Scenites.

BEEN, or **Behen**, in pharmacy, denotes, a medicinal root, celebrated, eſpecially among the Arabs, for its aromatic, cardiac, and alexiterial virtues.

There are two kinds of *beens, viz.* the *white*, *been album*, which is inſipid, making little impreſſion on the tongue, beſides that of a little bitterneſs which it leaves behind it, and ſuppoſed by ſome modern botaniſts to be the ſame with our lychnis terreſtris, by others called the papaver ſpumeum.

Red been, *been rubrum*, is fibrous, brown without, and reudiſh within; ſuppoſed to be the root of a ſpecies of limonium, or ſea-lavender.

They are both brought from the Levant, and have much the ſame virtues, being ſubſtituted for each other; they muſt be choſen dry, and of an aromatic aſtringent taſte.

BEER *, a popular drink, prepared from malt and hops.

* The word is Saxon, formed from the German *bier*, of the Latin *bibere*, ſometimes written by apocope *biber*.

Matthiolus takes the *zythum* and *curmi* of the antients to be the ſame with the *beer* and *ale* of our days; and thinks the only difference between *zythum* and *curmi* to have lain in ſome circumſtances of the preparation, which rendered the one ſtronger than the other.

Tacitus, in ſpeaking of the antient Germans, as alſo Dioſcorides, Galen, *&c.* condemn *beer*, as prejudicial to the head, nerves, and membranous parts, as occaſioning a more laſting and more uneaſy drunkenneſs than wine, and as promoting a ſuppreſſion of urine, and ſometimes a leproſy.

Meſſ. Perrault, Rainſſant, and others, defend the modern *beer*; urging, that the hops uſed with us, and which the antients were ſtrangers to, having a faculty of purifying the blood, and removing obſtructions, ſerve as a corrective, and free our drink from the inconveniences laid at the door of that of the antients.

For the manner of preparing *beer*, ſee Brewing.

For its qualities, ſee Malt-Liquor.

Eager **Beer** is uſed by callico-printers, chymiſts, lapidaries, ſcarlet-dyers, vinegar-merchants, white-lead-men, *&c.*

Beer-*Meaſure*. See the article Measure.

Beer-*Vinegar*. See Vinegar.

BEES-WAX. See the article Wax.

BEGGAR. See Vagabond, and Rogue.

BEGGING *Order*. See Mendicant.

BEGHARDI, **Beguardi**, or **Begghardi**, the name of an heretical ſect in Germany, which ſprung up towards the end of the 13th century. — Their head was one Dulcinus. Their principal tenets were, That man, in this life, might be impeccable; and that he might arrive to a degree of perfection not to be exceeded; that this ſtate is as happy as heaven; which when once obtained, men are no longer obliged to obſerve the faſts of the church, nor obey their ſuperiors; that every intellectual creature is ſelf-happy; that it ſtands in need of nothing but the light of glory to raiſe it to the viſion and enjoyment of God; that none, but the imperfect, apply themſelves to practiſe virtuous actions; that Chriſt Jeſus ought not to be adored in the elevation of the hoſt, nor the myſteries of his incarnation be regarded: they condemned good works, and are ſaid to have ſpread abroad divers impure doctrines.

Theſe fanatics, who wore the habit of monks, without paying regard to any rule, or obſerving celibacy, were condemned under pope Clement V. at the council of Vienna in 1311.

BEGINNING *of an eclipſe*. } See { Eclipse.
Beginning *of the action*. } See { Action.

BEGLERBEG *, a Turkiſh title for the chief governor of a province, who has under him ſeveral beys or ſangiacs, that is, ſubgovernors.

* The word is alſo written *beylerbey*, *beglerbey*, *begheler beghi*, and *beylerbeg*.—It is compounded of *begler*, lords; the plural of *beg*, lord, with the word *beg* ſubjoined; importing as much as *lord of lords*.

BEGUARDI. See the article Beghardi.

BEGUINS, devout ſocieties of young women, eſtabliſhed in ſeveral parts of Flanders, Picardy, and Lorrain; who maintain themſelves by the work of their own hands; leading a middle kind of life, between the ſecular and religious; but make no vows.

Theſe ſocieties began at Nivelle, in Flanders, A. D. 1226. and ſoon ſpread into France. Their habit was particular, but modeſt; they lived in common, and had men of great piety for their governors. Some of them giving into the errors of the Beghardi, and of Margaret Porreta, pope Clement V. aboliſhed their inſtitution; upon which they ceaſed in France; but John XXII. ſucceſſor to Clement V. explained that decree, and declared only thoſe ſocieties of the *Beguins* extinct, which had fallen into hereſy.

BEHEN. See the article Been.

BELAY, on board a ſhip, ſignifies the ſame as *faſten*.—Thus, they ſay, *belay* the ſheet, or tack, that is, faſten it to the kennel, *&c.*

BELIEF, in its general and natural ſenſe, denotes a perſuaſion, or a ſtrong aſſent of the mind to the truth of any propoſition.

In which ſenſe, *belief* has no relation to any particular kiud of means or arguments, but may be produced by any means whatever.—Thus we are ſaid to *believe* our ſenſes, to *believe* our reaſon, to *believe* a witneſs, *&c.* And hence, in rhetoric, all ſorts of proofs, from whatſoever topics deduced, are celled πιστεις, becauſe apt to beget *belief*, or perſuaſion touching the matter in hand.

Belief, in its more reſtrained and technical ſenſe, invented by the ſchoolmen, denotes that kind of aſſent which is grounded only on the authority, or teſtimony, of ſome perſon or perſons, aſſerting or atteſting the truth of any matter propoſed.

In this ſenſe, *belief* ſtands oppoſed to knowlege and ſcience: We do not ſay, we *believe* that ſnow is white, or that the whole is equal to its parts; but we ſee and know them to be ſo.—That the three angles of a triangle are equal to two right angles, or that all motion is naturally rectilinear, are not ſaid to be things *credible*, but *ſcientifical*; and the comprehenſion of ſuch truths is not *belief*, but *ſcience*.

But, when a thing propounded to us is neither apparent to our ſenſe, nor evident to our underſtanding; neither certainly to be collected from any clear and neceſſary connexion with the cauſe from which it proceeds, nor with the effects which it naturally produces; nor is taken up upon any real arguments, or relation thereof to other acknowleged truths; and yet, notwithſtanding, appears as true, not by a manifeſtation, but by an atteſtation of the truth, and moves us to aſſent, not of itſelf, but in virtue of a teſtimony given to it: —This is ſaid to be properly *credible*; and an aſſent to this is the proper notion of *belief* or *faith*. See Faith.

Biſhop Pearſon, with the generality of divines, holds the *belief* declared in the creed to be of this latter kind. — Dr. Barrow, on the contrary, contends for its being of the firſt or general and vulgar kind; implying, that we profeſs our being perſuaded in our mind of the truth of the propoſitions annexed; not upon one only kind of reaſon, *viz.* authority; but upon all the kinds of reaſon proper for begetting perſuaſion in the ſeveral points enſuing.—In effect, the word πιστευειν is evidently uſed in ſcripture in this ſenſe: as when Thomas is ſaid "to have *believed*, becauſe "he had ſeen," where *belief* is grounded in ſenſe.—Add, that our Saviour himſelf requires men not to rely merely on his bare teſtimony concerning himſelf, but to conſider rationally the quality of his works, and on that to ground their faith: which kind of perſuaſion is grounded on principles of reaſon.—So St. James ſays, "the devils *believe* that there is a "God." But how? They know it by experience; not by any relation or teſtimony.—Add, that the *belief* of the firſt and main article, that there is a God, cannot be grounded only on authority: for human authority alone cannot prove ſuch a point; and divine authority preſuppoſes it. — To ſay no more: the faith of the firſt Chriſtians does not ſeem to have been founded merely on authority; but relied partly on principles of reaſon, and partly on the atteſtations of ſenſe: as they beheld the ſincerity and innocency of our Saviour's converſation; the wiſdom and majeſty of his diſcourſes; the goodneſs and holineſs of his doctrine; the greatneſs of his power diſcovered in his miraculous works; theſe conſiderations had their weight, as well as his own teſtimony. Nay, he ſeems to give up and diſclaim all perſuaſion from his own teſtimony, as inſufficient and ſophiſtical. It was by the following ſyllogiſm, the people became *believers*: He that is ſo qualified (ſo ſpeaks, acts, lives, ſo admirable in himſelf, ſo agreeable to antient prophecies), his pretences cannot reaſonably be deemed falſe, but we muſt of juſtice aſſent to his words: but we ſee and experience, that Jeſus, *&c. Ergo*— With us the caſe is ſomewhat different. The minor propoſition, which was evident from ſenſe to the people of thoſe times, is to be inferred from authority and reaſon by us, *viz.* from the credible hiſtories of it ſtill extant, confirmed by ſo conſtant a tradition, and maintained by ſuch wonderful circumſtances of Providence, as perhaps never concurred to any matter of fact before.

BELCHING. See the article RUCTATION.

BELL, a popular machine, ranked by muſicians among the number of muſical inſtruments of percuſſion. See MUSIC.

The parts of a *bell* are the body or barrel, the *clapper* within-ſide, and the ear or *cannon*, whereby it is hung to a large beam of wood.—Its uſual matter is a kind of compound metal made of twenty pounds of pewter to an hundred of copper, called *bell-metal*. The thickneſs of its edges is uſually $\frac{1}{15}$ of the diameter, and its height twelve times its thickneſs. —The *bell*-founders have a diapaſon, or *bell*-ſcale, wherewith they meaſure the ſize, thickneſs, weight, and tone, of their *bells*.—For the method of caſting *bells*, ſee FOUNDERY.

The uſes of *bells* are ſummed up in the Latin diſtich:

Laudo Deum verum, plebem voco, congrego clerum,
Defunctos ploro, peſtem fugo, feſta decoro.

The firſt *bells* are ſaid to have been made at Nola, in Campania, whereof St. Paulinus was biſhop; at leaſt, it is aſſured, he was the firſt who brought them into uſe in the church. And hence, it is added, they had their Latin names, *nolæ* and *campanæ*: but others ſay, they take theſe names, not from their being invented in Campania, but becauſe it was here the manner of hanging and balancing them, now in uſe, was firſt practiſed; at leaſt, that they were hung on the model of a ſort of balance invented or uſed in Campania. For in Latin writers we find *campana ſtatera*, for a ſteelyard; and in the Greek καμπανιζειν, for *ponderare*, to weigh.

Polydore Virgil aſcribes the invention of church *bells* to pope Sabinian, St. Gregory's ſucceſſor; but by miſtake: for St. Jerom, cotemporary with Paulinus, makes mention of one. In effect, pope Sabinian did not invent *bells*; but he was the firſt who appointed the canonical hours to be diſtinguiſhed by them.

We even find mention made of *bells* in Ovid, Tibullus, Martial, Statius, Manilius, and the Greek authors, under the appellations of *tintinnabula*, and *ſounding braſs*. Suetonius, Dion, Strabo, Polybius, Joſephus, and others, mention them under the names of *petaſus*, *tintinnabulum*, *æramentum*, *crotalum*, *ſignum*, &c, But theſe appear to have been no more than baubles, and little like the huge *bells* in uſe among us.

Hieronymus Magius, who has a treatiſe expreſs on *bells* (written, when in chains, in Turkey, and which is accounted very remarkable, purely from his memory, without the aſſiſtance of any books) makes large *bells* a modern invention. Indeed, we do not hear of any before the ſixth century: in 610. we are told, Lupus, biſhop of Orleans, being at Sens, then beſieged by the army of Clotharius, frighted away the beſiegers by ringing the *bells* of St. Stephen's.—The firſt large *bells* in England are mentioned by Bede towards the latter end of that century. They ſeem to have been pretty common in the year 816. The Greeks are uſually ſaid to have been unacquainted with them till the ninth century, when their conſtruction was firſt taught them by a Venetian.

Indeed, it is not true, that the uſe of *bells* was intirely unknown in the antient Eaſtern churches, and that they called the people to church, as at preſent, with wooden mallets. Leo Allatius, in his *diſſertation on the Greek temples*, proves the contrary from ſeveral antient writers. It is his opinion, that *bells* firſt began to be diſuſed among them, after the taking of Conſtantinople by the Turks; who, it ſeems, prohibited them, leſt their ſound ſhould diſturb the repoſe of ſouls, which, according to them, wander in the air. He adds, that they ſtill retain the uſe of *bells* in places remote from the intercourſe of the Turks; particularly, very antient ones in mount Athos.

F. Simon thinks the Turks rather prohibited the Chriſtians the uſe of *bells*, out of political, than religious reaſons; inaſmuch as the ringing of *bells* might ſerve as a ſignal for the execution of revolts, *&c.*

The city of Bourdeaux was deprived of its *bells* for rebellion; and, when it was offered to have them reſtored, the people refuſed it, after having taſted the eaſe and conveniency of being freed from the conſtant din and jangling of *bells*.

Matthew Paris obſerves, that antiently the uſe of *bells* was prohibited in time of mourning; though, at preſent, they make one of the principal ceremonies of mourning. Mabillon adds, that it was an antient cuſtom to ring the *bells* for perſons about to expire, to advertiſe the people to pray for them; whence our *paſſing-bells*.

Lobineau obſerves, that the cuſtom of ringing *bells*, at the approach of thunder, is of ſome antiquity; but, that the deſign was not ſo much to ſhake the air, and ſo diſſipate the thunder, as to call the people to church, to pray that the pariſh might be preſerved from that terrible meteor.

The cuſtom of chriſtening, or bleſſing *bells*, is very antient. Some ſay it was introduced by pope John XIII. in 972. but it is evidently of an older ſtanding; there being an expreſs prohibition of the practice in a capitular of Charlemain in 789. Alcuin ſays, it was eſtabliſhed long before the eighth century; ſo that what has been ſaid of John XIII. is only to be underſtood of an order of that pope, for reſtoring the practice, which had been diſuſed. See Hoſpinian *de Origine Templorum*, p. 113. where there is a particular account of all the ridiculous ceremonies practiſed about *bells*.

Nankin, a city of China, was antiently famous for the largeneſs of its *bells*; but their enormous weight having brought down the tower, in which they were hung, the whole building fell to ruin, and the *bells* have ever ſince lain on the ground.—One of theſe *bells* is near twelve Engliſh feet high, the diameter ſeven and an half, and its circumference twenty-three; its figure almoſt cylindric, except for a ſwelling in the middle; and the thickneſs of the metal about the edges, ſeven inches.—From the dimenſions of this *bell*, its weight is computed at 50,000 pounds, which is more than double the weight of that of Erfort, ſaid by father Kircher to be the greateſt *bell* in the world. — Theſe *bells* were caſt by the firſt emperor of the preceding dynaſty, about 300 years ago. They have each their name, the hanger *tchoui*, the eater [illegible] the ſleeper *choui*, the will *fi*.—Father le Comte adds, that there are ſeven other *bells* in Pekin, caſt in the reign of Youlo, each of which weighs 120,000 pounds. But the ſounds even of their biggeſt *bells* are very poor; being ſtruck with a wooden in lieu of an iron clapper.

The Egyptians have none but wooden *bells*, except one brought by the Franks into the monaſtery of St. Antony.

The ſound of a *bell* ariſes from a vibratory motion of the parts thereof, much like that of a muſical chord. The ſtroke of the clapper, it is evident, muſt change the figure of the *bell*, and of round make it oval: but the metal having a great degree of elaſticity, that part which the ſtroke drove fartheſt from the centre will fly back again, and this even ſomewhat nearer to the centre than before: ſo that the two points, which before were the extremes of the longer diameter, now become thoſe of the ſhorter. Thus, the circumference of the *bell* undergoes alternate changes of figure, and by means thereof gives that tremulous motion to the air, wherein ſound conſiſts. See SOUND.

M. Perrault maintains, that the ſound of the ſame *bell*, or chord, is a compound of the ſounds of the ſeveral parts thereof; ſo that where the parts are homogeneous, and the dimenſions of the figure uniform, there is ſuch a perfect mixture of all theſe ſounds, as conſtitutes one uniform, ſmooth, even ſound; and the contrary circumſtances produce harſhneſs. This he proves from the *bells* differing in tune according to the part you ſtrike; and yet ſtrike it any-where, there is a motion of all the parts. He therefore conſiders *bells* as compoſed of an infinite number of rings; which, according to their different dimenſions, have different tones, as chords of different lengths have: and, when ſtruck, the vibrations of the parts immediately ſtruck determine the tone; being ſupported by a ſufficient number of conſonant tones in the other parts.

Mr. Haukſbee, and others, have found by experiment, that the ſound of a *bell* ſtruck under water is a fourth deeper than in the air: though Merſenne ſays, it is of the ſame pitch in both elements.

Bells are obſerved to be heard farther, placed on plains, than on hills; and ſtill farther, in valleys, than on plains: the reaſon of which will not be difficult to aſſign, if it be conſidered, that the higher the ſonorous body is, the rarer is its medium; conſequently, the leſs impulſe it receives, and the leſs proper vehicle it is to convey it to a diſtance.

BELL *metal*. } See the articles { METAL.
Foundery of BELLS. } See the articles { FOUNDERY.
Diving BELL. } See the articles { DIVING.

BELLOWS, a machine uſed to give a briſk agitation to the air, by enlarging and contracting its capacity, and thus expiring and inſpiring the air by turns.

Bellows are of various kinds, as *domeſtic bellows*, *enamellers bellows*, *ſmiths bellows*, &c.

There are ſome *bellows* triangular, which only move on one ſide: others, called *lautern-bellows*, from their reſembling a paper lantern: theſe move every way, and yet ſtill continue parallel.

Mr. Triewald, engineer to his Swediſh majeſty, has contrived a kind of *water-bellows*.—This is not the firſt time that water has been applied to blow the fire. The ſame is done at Tivoli, and in other parts of Italy, where the contrivances for this purpoſe are called *ſoffi d'acqua.—Vide Phil. Tranſ.* N°. 448. p. 234.

The action and effect of *bellows* of every kind, whether leathern or wooden, wrought by water or by men, depends on this, that the air which enters them, and which they contain when raiſed, is again compreſſed into a narrower ſpace when they are cloſed. And, as the air, like all other fluids, runs to that place where it meets the leaſt reſiſtance, the air muſt of conſequence fly out of the pipe or aperture with a velocity proportional to the force whereby the air is compreſſed, and muſt of conſequence blow ſtronger or weaker, as the velocity with which the top and bottom of the *bellows* meet is greater or leſſer. The blaſt alſo will laſt in proportion to the quantity of air that was drawn into the *bellows* through the valve or wind-clap.

The *Heſſian bellows* are a contrivance for driving air into a mine for the reſpiration of the miners. This M. Papin improved, changing its cylindrical form into a ſpiral one; and, with this, working it only with his foot, he could make a wind to raiſe two pound weight.

The *bellows* of an organ are ſix feet long and four broad; each having an aperture of four inches, that the valve may play eaſily. There ſhould likewiſe be a valve at the noſe of the *bellows*, that one may not take the air from the other. To blow an organ of ſixteen feet, there are required four pair of theſe *bellows*.

BELOMANCY *, BELOMANTIA, a kind of divination by means of arrows, practiſed in the eaſt, but chiefly among the Arabians.

* The word is of Greek origin; compounded of *βελος*, arrow; and *μαντεια*, divination.

Belomancy has been performed in different manners: one was, to mark a parcel of arrows, and put eleven, or more of them, into a bag; theſe were afterwards drawn out, and according as they were marked, or not, they judged of future events.

Another way was, to have three arrows, upon one of which was written; *God orders it me*; upon another, *God forbids it me*; and upon the third, nothing at all. Theſe were put into a quiver, out of which they drew one of the three at random; if it happened to be that with the firſt inſcription, the thing they conſulted about was to be done; if it chanced to be that with the ſecond inſcription, it was let alone; and, if it proved that without inſcription, they drew over again.

Belomancy is an antient practice, and probably that which Ezekiel mentions, *ch.* xxi. 21. At leaſt St. Jerom underſtands it ſo, and obſerves that the practice was frequent among the Aſſyrians and Babylonians. Something like it is alſo mentioned in Hoſea, *ch.* iv. only that *ſtaves* are there-mentioned inſtead of *arrows*, which is rather *rhabdomancy* than *belomancy*.—Grotius, as well as Jerom, confounds the two together, and ſhews that they prevailed much among the Magi, Chaldeans, and Scythians; whence they paſſed to the Sclavonians, and thence to the Germans, whom Tacitus obſerves to make uſe of *belomancy*.

BELTS, *Faſciæ*, in aſtronomy, two zones or girdles ſurrounding Jupiter's body, more lucid than the reſt, and terminated by parallel lines; being ſometimes broader, and ſometimes narrower, nor conſtantly taking up the ſame places in his diſk.

BEN, BEEN, or BEHEN. See BEEN.

BENCH. See the articles BANC, BANK, &c.

King's BENCH. } See the articles { KING.
Free BENCH. } See the articles { FREE-BENCH.
Widow BENCH. } See the articles { WIDOW.

BENCHERS, in an inn of court, the ſeniors of the houſe, who have the government and direction thereof; and out of whom is yearly choſen a treaſurer, &c. See INN.

BEND, in heraldry, an ordinary, or bearing, formed by two lines, drawn diagonally, or athwart, from the upper part of the ſhield on the right, to the lower part on the left; being ſuppoſed to repreſent a ſhoulder-belt, or ſcarf worn over the ſhoulder.—See *Tab. Herald. fig.* 7.

The *bend* is one of the ten honourable ordinaries, containing a third part of the field when charged, and a fifth when plain.—It is ſometimes indented, ingrailed, &c.

Heralds ſpeak of a *bend dexter*, and a *bend ſiniſter*.

A *bend* is ſubdivided into a *benlet*, or *bandelet*, which is the ſixth part of the ſhield; a *garter*, which is the moiety of a *bend*; a *coſt*, which is the fourth part of a *bend*; and a *ribband*, which is the moiety of a *coſt*.

BEND *dexter*, is that properly and abſolutely called a *bend*, as above defined—The word *dexter* is uſually annexed to prevent miſtakes, and diſtinguiſh it from the

BEND *ſiniſter*, which is the ſame with what is otherwiſe called after the French heralds, a *bar*, *barre*. See the article BAR.

The *bend-ſiniſter* is ſubdivided into the *ſcarf*, or *ſcarp*, and the *battoon*; which latter is the fourth part of the *bend*, and the moſt uſual mark of illegitimacy; but then it never extends it ſelf quite athwart the ſhield, but is cut off a little at each end.

When two ſtrait lines drawn within the *bend* run nearly parallel to the outward edges of it, this is called *voiding*; and, he that bears it, is ſaid *to bear a bend voided*.

Party per BEND *dexter*. } See the article { PARTY.
Point in BEND. } See the article { POINT.

BENDING, in the ſea-language.—They ſay, *bend the cable*, when it is to be made faſt to the ring of the anchor.—To *bend two cables*, ſignifies to tie them together with a knot, which, though leſs ſure than ſplicing, is ſooner done.

To *unbend the cable*, is to looſen it from the ring of the anchor; which is done when a ſhip deſigns to be long at ſea.

To *bend a main ſail*, is to make it faſt to the yard in its proper place.

BENDS, in a ſhip, are the ſame with *wailes*, or *wales*, which are the outermoſt timbers of a ſhip, on which men ſet their feet in climbing up,

They are reckoned from the water, the *firſt*, *ſecond*, and *third bend*: they help much to ſtrengthen the ſhip, and have the beams, knees, and foot-hooks bolted into them.

BENDY, BANDÉ, in blazonry, denotes an eſcutcheon's being divided bend-wiſe into an even number of partitions.—If they be odd, the field muſt firſt be named, and then the number of bends.

Barry-BENDY. } See the articles { BARRY.
Counter-BENDY. } See the articles { COUNTER.
Paly-BENDY. } See the articles { PALY.

BENE. See the article DE BENE *eſſe*.

BENEDICTINS, or BENEDICTIN *order*, is an order of monks, who profeſs to follow the rule of St. Benedict.

The *Benedictines* are thoſe properly called *monachi*, monks; the other orders are better denominated *friers*, or *religious*.

In the canon law, the *Benedictines* are called *black monks*, being diſtinguiſhed from the other orders by the colour of their habit; and not by the name of their patriarch, St. Benedict.—Among us they were formerly alſo denominated *black friers*.

The *Benedictines* wear a looſe black gown, with large wide ſleeves, and a capuche on their heads, ending in a point behind.

The liſt of ſaints of the *Benedictine* order is very ample; but they are accuſed by Baronius, and many other writers, of putting many in the liſt who were never of the order. See RELIGIOUS.

BENEDICTUS *carduus*. See the article CARDUUS.

BENEDITTO *ſacco*. See the article SACCO.

BENEFICE, BENEFICIUM, in an eccleſiaſtical ſenſe, a church endowed with a revenue for the performance of divine ſervice; or the revenue itſelf, aſſigned to an eccleſiaſtical perſon for life, in return for his performing the ſervice of the church.

All church-preferments, except biſhoprics, are called *benefices*; and all *benefices* are, by the canoniſts, ſometimes called *dignities*: but we now ordinarily diſtinguiſh between *benefice* and *dignity*, applying the word *dignity* to biſhoprics, deanries, archdeaconries, and prebends; and *benefice* to parſonages, vicarages, and donatives.

The term *benefice* comes to us from the old Romans, who uſing to diſtribute part of the lands they had conquered on the frontiers of the empire, to their ſoldiers; thoſe who enjoyed ſuch rewards, were called *beneficiarii*, and the lands themſelves *beneficia*, as being held on the pure beneficence and liberality of the ſovereign. Theſe *benefices* at firſt were given for life only; but afterwards they became hereditary and patrimonial.

From the Romans, both the name and the thing paſſed into France and England, with this difference, as Mr. Blount obſerves, that *benefices* were not given as mere gratuities for paſt ſervices, but as warrants for future ones, and were accordingly held by the tenure of ſerving, on occaſion, in the wars, &c. So that what was before a *benefice*, became now converted into a *fee*. See FEE, and SERVICE.

Hence, doubtleſs, came the term *benefice* to be applied to church-livings; for, beſides that the eccleſiaſtics held for life, like the ſoldiers, the riches of the church aroſe from the beneficence of princes.

At to the origin of eccleſiaſtical *benefices*, it is hard to determine when the revenues of the church were firſt divided: it is certain, till the fourth century, all the revenues were in the hands of the biſhops, who diſtributed them by their œconomi; they conſiſted principally in alms, and voluntary contributions.—As the church came to have lands, parts thereof were aſſigned for the ſubſiſtence of the clerks, and called *benefices*; of which we find ſome footing in the fifth and ſixth century: but then there does not appear to have been any certain partition, nor any preciſe quota allotted to each particular; but the allotments were abſolutely diſcretional till about the twelfth century.

At firſt, each was contented with a ſingle *benefice*; but pluralities were, by degrees, introduced, on pretence of equity: for, a ſingle *benefice* being ſometimes ſcarce thought a competency, the prieſt was allowed two: as his quality, or occaſions, increaſed, ſo the number of *benefices* that were to ſupport him were increaſed too. Hence ſome, affecting to equal princes in quality, pretend to revenues anſwerable thereto.

Vinc. Ferrier obſerves, that, in his time, there were five caſes by which *benefices* where acquired: by the *nominative*, as in royal nominations; by the *genitive*, as where the children of great men, &c. are provided of *benefices* by their birth; by the *dative*, as when ſpeaking of a *benefice*, it is ſaid, *date, & dabitur vobis*; by the *accuſative*, as where by virtue of an accuſation, either true or falſe, an incumbent is diſpoſſeſſed, and another admitted; by the *ablative*, as when *benefices* are taken away by force from the poor and helpleſs: but the *vocative* caſe, which is the moſt juſt and legitimate, is out of uſe.—The *nominative* is for the king; the *genitive* for the great, the *dative* for the rich; the *accuſative* for the cunning; and the *ablative* for the ambitious; but the *vocative* is reſerved for the Holy Ghoſt alone.

The canoniſts diſtinguiſh three manners of vacating a *benefice*, viz. *de jure*, *de facto*, and *by the ſentence of a judge*.—A *benefice* is vacated *de jure*, when the perſon enjoying it is guilty of certain crimes, expreſſed in thoſe laws, as hereſy, ſimony, &c.—A *benefice* is vacated *de facto*, as well as *de jure*, by the natural death, or the reſignation of the incumbent: which reſignation may be either expreſs, or tacit; as when he engages in a ſtate, &c. inconſiſtent with it; as among the Romaniſts, by marrying, entering a religious order, or the like.—A *benefice* becomes vacant by the *ſentence of a judge*, by way of puniſhment for certain crimes, as concubinage, perjury, ſorcery, &c.

Benefices are divided by the canoniſts into *ſimple*, and *ſacerdotal*: in the firſt, there is no obligation but to read prayers, ſing, &c.—Such are canonries, chaplainſhips, chantries, &c. The ſecond are charged with a cure of ſouls, or the direction and guidance of conſciences.—Such are the vicarages, rectories, &c.

The Romaniſts, again, diſtinguiſh *benefices* into *regular* and *ſecular*.

Regular or *titular* BENEFICES are thoſe held by a religious, or a regular, who has made profeſſion of ſome religious order.—Such are abbeys, priories conventual, &c.

Or rather, *regular benefice* is that which cannot be conferred on any but a religious; either by its foundation, by the inſtitution of ſome ſuperior, or by preſcription. For preſcription, forty years poſſeſſion by a religious, makes the benefice regular.

Secular BENEFICES are thoſe which are only to be given to ſecular prieſts, *i. e.* by ſuch as live in the world, and are not engaged in any monaſtic order.

All *benefices* are reputed ſecular, till the contrary is made appear.—They are called *ſecular benefices*, becauſe held by ſeculars.—Of which kind are almoſt all cures.

Some *benefices*, regular in themſelves, have been ſecularized by the pope's bull.

A BENEFICE *in commendam* is that, the direction and management whereof, upon a vacancy, is given, or recommended to an eccleſiaſtic for a certain time, till it may be conveniently provided for. See REGULAR, and SECULAR.

Poſſeſſion of a BENEFICE. See POSSESSION.

BENEFICIO. See DEPRIVATIO *a beneficio*.

Suſpenſio a BENEFICIO. } See { SUSPENSIO.
Primo BENEFICIO *eccleſiaſtico habendo.* } { PRIMO.

BENEVOLENCE is uſed, both in our ſtatutes and chronicles, for a voluntary gratuity given by the ſubjects to their ſovereign, to which each perſon contributes in proportion to his eſtate.

In this ſenſe, *benevolence* amounts to much the ſame with what in other nations is called *ſubſidium charitativum*, given ſometimes by tenants to their lords, by the clergy to their biſhops, &c.—In France it is called *free gift*, excepting that this latter is reſtrained to the act of the clergy.

BENZOIN, a medicinal kind of reſin, imported from the kingdoms of Cochinchina, Lao, and ſeveral other parts of the Eaſt-Indies.

Benzoin is the ſame with what is popularly called *benjamin*, or *benjoin*, ſometimes alſo *aſa dulcis*.

It is procured by a wound, or inciſion made in a tree, whoſe leaves reſemble thoſe of the lemon-tree. It is of a yellowiſh colour, of an agreeable ſcent, and melts eaſily.

There are three ſorts of *benzoin*:—the firſt is called *amygdaloides*, becauſe of its being interſperſed with ſeveral white ſpots, which reſemble broken almonds: this comes from Siam, and is eſteemed the beſt.—The ſecond is black, and very odoriferous; it drops from young trees, and comes from Sumatra; it is called *benzoinum de Boninas*.—The third ſort is alſo black, but leſs odoriferous; this is found in the iſlands of Java and Sumatra.

Benzoin is uſed in phyſic, as a pectoral, and anti-aſthmatic; and thrown on live coals, it ſerves to perfume houſes, &c.

BERENGARIANS, a religious ſect, who adhered to the opinions of Berengarius, archdeacon of Anjou, who oppoſed the doctrine of tranſubſtantiation, and the real preſence, a conſiderable time before Luther.

He is further charged by the Romaniſts with decrying marriage, and maintaining the common uſe of all ſorts of women, and aſſerting infant-baptiſm of no effect.

His followers were divided on the head of the euchariſt: though they all agreed, that the bread and wine were not eſſentially changed, yet ſome allowed, that the body and blood of Chriſt were contained in them, though concealed under an impanation, which was the opinion of Berengarius himſelf: others denied any change at all, and reſolved the whole into figure; others again allowed a change in part; and others an intire change, with this reſtriction, that to thoſe who preſented themſelves unworthily it was changed back again.

BERENICE'*s hair*, *coma* BERENICES. See COMA.

BERGAMOT gives the denomination to a kind of eſſence, drawn from a fruit, produced by ingrafting the lemon-tree on the *bergamot* pear-ſtock. It is properly the oily fluid of the peels of theſe lemons, expreſſed by the fingers.

There is likewiſe a kind of ſnuff of the ſame name, which is only clean tobacco, with a little of the eſſence rubbed into it.

BERGHMOT*, or BERGHMOTE, vulgarly BARMOTE, a court held on a hill for deciding pleas and controverſies among the Derbyſhire miners.

* The word is formed from the Saxon *berg*, *mons*; and *mote*, *conventus*, aſſembly, or meeting.

BERLIN, a ſort of vehicle, of the chariot kind, much uſed of late; taking its name from the city of Berlin, in Germany: though ſome attribute the invention of it to the Italians, and derive the word from *berlina*, a name given by them to a ſort of ſtage, whereon perſons are expoſed to public ſhame.

The *berlin* is a very convenient machine to travel in, being lighter, and leſs apt to be overturned, than a chariot.—The body of it is hung high, on ſhafts, by leathern braces; there being a kind of ſtirrup, or footſtool, for the conveniency of getting into it: inſtead of ſide-windows, ſome have ſcreens to let down in bad weather, and draw up in good.

BERME, in fortification, a ſmall ſpace of ground, four or five feet wide, left without the rampart, between its foot and the ſide of the moat; to receive the earth that rolls down from the rampart, and preventing its falling into, and filling up the moat.

This is alſo called liſiere, relais, retraite, pas de ſouris, foreland, &c.

Sometimes, for more ſecurity, the *berme* is paliſadoed.

BERNARDINS, or BERNARDITES, the name of a religious order, extended over great part of Europe; being an improvement on the order of St. Benedict, firſt made by Robert, abbot de Moleme; and further reformed by St. Bernard, abbot de Clervaux, whence they take their name.

Their uſual habit is a white gown, with a black ſcapulary; but when they officiate, they put on a large white coul with great ſleeves, and a hood of the ſame colour.

The *Bernardins* differ very little from the Ciſtercians. They had their origin towards the beginning of the twelfth century.

BERRY, *bacca*, a grain, fruit, or ſeed, produced by ſeveral herbs, trees, and ſhrubs, thence called *bacciferous*, for the conſervation, and reproduction of their kind. See BACCIFEROUS.

Berries are of various ſizes, forms, properties, and uſes, according to the plants whereon they grow.—Some are uſed in medicine, as juniper-*berries*, buckthorn-*berries*, &c.—Others in dying, as French, or yellow *berries*, &c.

Avignon BERRY. } See the articles { AVIGNON.
Ale BERRY. } { ALE.

BERYL, or BERYLL, Βηρυλλος, in the antient phyſiology, denotes a tranſparent ſtone, or gem, brought from India, of a light, or pale green colour; inſomuch that ſome have repreſented it as of two colours, the one green, the other pale.

The *beryl* of the antients is the ſame with what in latter times has been denominated *aqua marina*, by reaſon of its glaucous, or ſea-green colour.

The *beryl* differs from the *chryſoberyl*, which is ſomewhat paler, and partakes more of the yellow; and from the *chryſopraſus*, which partakes more of the green.

Some authors take the *beryl* to be the diamond of the antients.

The *beryl* is ſometimes found in pieces large enough to form fine vaſes. It is ſaid there are many of theſe in Cambaya, Martabam, Pegu, and Ceylon.

The properties of the *beryl* were very wonderful in the opinion of the antient naturaliſts; they tell us, it kept people from falling into ambuſcades of enemies, excited courage in the fearful, and cured diſeaſes of the eyes and ſtomach.—It does none of theſe things now; becauſe people are not ſimple enough to believe it has the virtue to do them. See Supplement, article BERYL.

BES, or BESSIS, an antient Roman weight, containing two thirds of the *as*; that is, eight *unciæ*. See the article AS.

BESANT, BEZANT, BISANT, or BYZANT, a ſort of coin, ſtruck at Byzantium, in the time of the Chriſtian emperors.

The *beſant* was pure gold, or twenty-four carats fine: but its value is not well agreed on.

Hence alſo the gold offered by the king at the altar, on feſtivals, is ſtill called *beſant*, or *biſant*.

BESSIS. See the article BES.

BESTAIL, or **Bestial**, in antient ſtatutes, is uſed for cattle. 5 *Ed.* III. *c.* 2.

BESTIARII, among the antient Romans, thoſe who were hired to combat with beaſts, or thoſe who were expoſed to them, by ſentence of law.

We uſually diſtinguiſh two kinds of *beſtiarii:* the firſt were thoſe condemned to the beaſts; either as being enemies taken priſoners, or as being ſlaves, and guilty of ſome enormous crime.—Theſe were all expoſed naked, and without defence, to the beaſts; nor did it aught avail to conquer and kill the beaſt, freſh ones being continually let looſe on them, till they were dead.—But it ſeldom happened, that two were required for the ſame man; on the contrary, one beaſt frequently diſpatched ſeveral men. Cicero mentions a lion, which alone diſpatched two hundred *beſtiarii.*—Thoſe who ſucceeded the firſt were called ἔφεδροι, and the laſt ἔσχατοι; among the Romans, *meridiani.*

The Chriſtians were *beſtiarii* of this kind, even ſome of them who were Roman citizens; though it was the legal right of ſuch to be exempt from it.

The ſecond kind of *beſtiarii*, Seneca obſerves, conſiſted of young men, who, to become expert in managing their arms, fought ſometimes againſt beaſts, and ſometimes againſt one another; and of bravoes, who, to ſhew their courage and dexterity, expoſed themſelves to this dangerous combat. Auguſtus encouraged this practice in young men of the firſt rank; Nero expoſed himſelf to it; and it was for the killing beaſts in the amphitheatre, that Commodus acquired the title of the *Roman Hercules.*

Vigenere to theſe adds two kinds of *beſtiarii* more: the firſt were thoſe who made a trade of it, and fought for money; the ſecond was where ſeveral *beſtiarii*, armed, were let looſe at once, againſt a number of beaſts.

BEVEL, in maſonry, and among joiners, a kind of ſquare, one leg whereof is frequently ſtrait, and the other crooked, according to the ſweep of an arch, or vault; being withal moveable, on a point, or centre, ſo that it may be ſet to any angle.

The make and uſe of the *bevel* are pretty much the ſame as thoſe of the common ſquare and mitre, except that theſe latter are fixed; the firſt at an angle of ninety degrees, and the ſecond at forty-five; whereas the *bevel*, being moveable, may, in ſome meaſure, ſupply the office of both, and yet, which it is chiefly intended for, ſupply the deficiences of both, ſerving to ſet off, or transfer angles, either greater or leſs than ninety, or forty-five degrees.

Bevel-*angle* is uſed among the workmen, to denote any other angle beſide thoſe of ninety or forty-five degrees. See Angle.

BEVILE', in heraldry, denotes a thing broken, or opening like a carpenter's rule.—Thus he beareth argent a chief *bevilé* vert, by the name of *Beverlis.*—V. *Tab. Herald. fig.* 8.

BEY, or **Beg**, denotes a governor of a country, or town, in the Turkiſh empire.

The Turks write the word *begh*, or *bek*, but they pronounce it *bey:* properly it ſignifies *lord*, but is particularly applied to a *lord of a banner*, whom in the ſame language they call *ſangiakbeg*, or *bey*; *ſangiak*, which among them ſignifies *banner*, or *ſtandard*, being the badge of him who commands in a conſiderable place of ſome province, having under him a conſiderable number of Spahi's, or horſe.

Each province in Turky is divided into ſeven of theſe *ſangiaks*, or banners, each of which qualifies a *bey*; and theſe are all commanded by the governor of the province, whom they alſo call *beghiler-beghi*, or *beyler-bey*, i. e. *lord of the lords*, or *beys* of the province.

Theſe *beys* are, in a great meaſure, the ſame that *bannerets* formerly were in England.

Bey, of Tunis, denotes a *prince*, or *king* thereof; anſwering to what at Algiers is called the dey.

In the kingdom of Algiers, each province is governed by a *bey*, or vice-roy; who is appointed and removed at pleaſure by the dey; but has a deſpotic power within his juriſdiction; and, at the ſeaſon for collecting the tribute from the Arabs, is aſſiſted by a body of troops from Algiers. *Shaw. Trav. p.* 6.

BEZANT. See the article Besant.

BEZOAR *, or **Bezoard**, primarily denotes an antidote, or counter-poiſon.

* The word is formed from the Perſian *pa-zahar*, which denotes the ſame; *pa* ſignifying againſt; and *zahar*, poiſon.

In this ſenſe the name is applied to divers chymical compoſitions of that intention; as the mineral, ſolar, and jovial *bezoards.*

Some have alſo given the appellation *animal bezoard*, to a powder, made of the heart and liver of vipers, pulverized together.

Bezoar, or **Bezoard**, in a more proper ſenſe, denotes a medicinal ſtone, brought from the Eaſt or Weſt-Indies, compoſed of ſeveral coats, laid one over another, generated in the ſtomach of an animal of the goat kind, and eſteemed a powerful antidote and cardiac.—Or, it may be defined, a ſtony ſubſtance, taken out of the ſtomach of ſome animal, compoſed of ſeveral coats, or laminæ, like an onion, and endued with a power of reſiſting poiſon.

This is ſometimes alſo called the *true bezoar*; and is of two kinds, *oriental* and *occidental.*

Oriental **Bezoar** is in the moſt eſteem, and is brought from ſeveral parts of the Eaſt Indies, chiefly Golconda and Cananor: it is there found mingled with the dung of an animal of the goat kind, called *pazan*; in the belly whereof this ſtone is found.—The buds of a certain ſhrub which the animal uſes to brouze, are uſually found in the middle of it, and are ſuppoſed to be the baſis on which it is formed.

The *bezoar* ordinarily grows to the bigneſs of an acorn, ſometimes of that of a pigeon's egg: it is compoſed of ſeveral ſhining ſkins, or coats, like an onion, ſometimes of a blood-colour, ſometimes a greeniſh yellow, a browniſh red, and honey-colour.—The number of *bezoars* produced by each animal is various, ſome yielding one, two, &c. to ſix, and others none at all.

The larger the ſtone, the more valuable it is held; its price increaſing like that of the diamond.—A ſtone of one ounce is ſold in the Indies for 100 franks, and one of four ounces for 2000 livres.

Oriental *bezoar* muſt be choſen gloſſy, of a ſmell like that of ambergriſe, ſmooth to the touch, and in large pieces; its figure is indifferent, its colour uſually olive.

Bezoar is eaſily ſophiſticated; but the deceit is as eaſily diſcovered. The methods of proving it are, 1*ſt*, to ſteep it three or four hours in lukewarm water; if the water be not tinged, nor the *bezoar* loſe of its weight, it is pure. 3*dly*, To try it with a ſharp, red-hot iron; if it enters the ſtone, and the heat makes it fry and ſhrivel, it is factitious. 2*dly*, To rub it over a paper, ſmeared with chalk, or quick-lime; if it leave a yellow taint on the former, or a green one on the latter, it is good.

Bezoar is given in vertigo's, epilepſies, palpitations of the heart, jaundice, colic, and ſo many other diſeaſes, that were its real virtues anſwerable to its reputed ones, it were doubtleſs a *panacea.* Indeed, its rarity, and the peculiar manner of its formation, have contributed as much to its reputation, as any intrinſic worth. At preſent it begins to be prized leſs, and a great many able phyſicians diſcard it, as of no uſe or efficacy at all.

Occidental **Bezoar** is heavier, more brittle, of a dirtier green colour, as alſo leſs gloſſy, and generally held much inferior in virtue to the oriental kind.—It is found in the belly of ſeveral animals, eſpecially in Peru; as the guanaco's, jacho's, vicunna's, and taragua's; the *bezoar* of which laſt is the moſt eſteemed, this animal being much like the goat that produces the oriental.—But that of the firſt is more common, *viz.* the guanaco's, a creature about the ſize of a horſe, by ſome deſcribed, as a ſpecies between a camel and a wild goat.

In ſome, this ſtone is of the bigneſs of a nut, in others of a pullet's egg: in ſome it is oval, in others flat, in others round; it is uſually of an aſh-colour, ſometimes duſky; and formed of ſcales, like the oriental, but much thicker: it is ſmooth and even without ſide, but when broken, looks as if it had been ſublimated, by reaſon of the little ſhining needles whereof it appears to be compoſed.

German **Bezoar**, which ſome call *cow's egg*, is ſaid to be found in the ſtomach of ſome cows, but more frequently in that of the chamois, a ſort of rupicapra, or wild goat.

Theſe *bezoars* are ſuppoſed to be nothing elſe but the hair of thoſe animals, which being occaſionally licked off by the tongue, is ſwallowed down, and, being impregnated with the ſaliva, &c. is condenſed into balls.

Some of them weigh 18 ounces; but they are not much eſteemed, tho' they are uſed in ſome medicines, and by the painters in miniature, to make a yellow colour.

Beſides theſe three kinds of *bezoar* which the ſhops afford, there are three other kinds much rarer; *viz.* the

Hog or *Boar* **Bezoar**, called by the Dutch, *pedro de porco*, and by the Portugueſe, who firſt brought it into Europe, *pedro de vaparis*, found in the gall-bladder of a boar in the Eaſt Indies.

In figure and ſize it reſembles a filbert, though more irregular; its colour not fixed, but moſt commonly white, with a teint of blue; it is ſmooth and ſhining; and is valued at ten times its weight in gold.

The Indians attribute infinite virtues to this *bezoar:* they call it *maſtica de ſoho*, and prefer it to the *goat bezoar*; not ſo much on account of its being ſuppoſed the beſt preſervative in the world againſt poiſons, as on account of its being ſovereign in the cure of the mardoxi, a diſeaſe they are very liable to, and which is not leſs dangerous than the plague in Europe. Other properties which they aſcribe to it are, that it is admirable againſt malignant fevers, ſmall-pox, and moſt diſeaſes of women not with child; experience ſhewing, that it promotes abortion in thoſe who are, if they uſe it indiſcreetly. To uſe it, they infuſe it in water, or wine, till it has communicated a little bitterneſs to it. To facilitate the infuſion, and at the ſame time preſerve ſo precious a ſtone, they uſually ſet it in a gold caſe pierced with holes.

Porcupine and Monkey **Bezoars** only differ from thoſe of the hog, in that they are found in the gall-bladders of thoſe animals; unleſs we ſay with Tavernier, that theſe two, which h

call

calls *Malacca-ſtones*, are not taken from the gall-bladders, but from the heads, of the monkey and porcupine; and that they are held in ſuch eſteem by the natives of Malacca, that they never part with them, unleſs as preſents to embaſſadors, or the greateſt princes of the eaſt.

Some add, that they are likewiſe found in Siam.—Indeed, the form, colour, and properties off theſe three *bezoars* are ſo near akin, that it is more than probable, they are all the ſame ſtone under three different names.

BEZOARDICUM *Minerale*, or *Mineral* BEZOAR, is a preparation of antimony corrected with ſpirit of nitre, and ſoftened by repeated lotions, which carry of the purgative virtue, and ſubſtitute a diaphoretic one; by which it promotes ſweat, like the ſtone of that name.

BEZOARDICUM *Joviale*, or BEZOAR *of Jupiter*, is a regulus made by melting three ounces of regulus of antimony, and two of block-tin, which, powdered and mixed with ſix ounces of corroſive ſublimate, and diſtilled off in a kind of butter, and that diſſolved in ſpirit of nitre, and the ſolution diſtilled three times; the *bezoar* remaining at the bottom is to be powdered, waſhed, and mingled with ſpirit of wine, till it grow inſipid.

BEZOARDICUM *Lunale*, or *of ſilver*, is made by mixing rectified butter of antimony with fine ſilver, diſſolved in ſpirit of nitre; upon which, a powder falls to the bottom, which is the bezoar.

BEZOARDICUM *Martiale*, is a diſſolution of crocus martis by reverberation in butter of antimony, with ſpirit of nitre poured on it: commended by ſome againſt hyſterical, hypochondriacal, and icterical diſorders.

BIATHANATI, ΒΙΑΘΑΝΑΤΟΙ *, the ſame with ſuicides, or thoſe who kill themſelves.

* Dr. Donne, dean of St. Paul's, has a work under the title of *Biathanatus:* wherein he undertakes to prove this poſition, or paradox:—That ſuicide is not ſo naturally ſin, as that it may never be otherwiſe. *Lond.* 4to.

BIBERE *ad pinnas*. See the article PINNAS.

BIBITORY *Muſcle*. See ADDUCTOR *Oculi*.

BIBLE, a book, by way of eminence ſo called, containing the Scriptures, *i. e.* the writings of the Old and New Teſtament.

Bibles are diſtinguiſhed, according to their language, into Hebrew, Greek, Latin, Chaldee, Syriac, Arabic, Cophtic, *&c.* Some account of each whereof, and their ſeveral editions, *&c.* we ſhall here ſubjoin.

Hebrew BIBLES are either manuſcript, or printed.—The beſt *manuſcript bibles* are thoſe copied by the Jews of Spain. Thoſe copied by the Jews of Germany are leſs exact, but more common. The two kinds are eaſily diſtinguiſhed from each other; the former being in beautiful characters, like the *Hebrew bibles* of Bomberg, Stephens, and Plantin; the latter in characters, like thoſe of Munſter, and Gryphius.—F. Simon obſerves, that the oldeſt manuſcript *Hebrew bibles* are not above 6 or 700 years old; nor does Rabbi Menaham, who quotes a vaſt number of them, pretend any of them exceed 600 years.

The moſt antient *printed Hebrew bibles* are thoſe publiſhed by the Jews of Italy, eſpecially of Peſaro and Breſſe. Thoſe of Portugal alſo printed ſome parts of the *bible* at Liſbon, before their expulſion.—This may be obſerved in the general, that the beſt *Hebrew bibles* are thoſe printed under the inſpection of the Jews; there being ſo many minutiæ to be obſerved, that it is ſcarce poſſible for any other to ſucceed in it.

In the beginning of the ſixth century Dan. Bomberg printed ſeveral *Hebrew bibles* in folio and quarto at Venice, moſt of which are eſteemed both by the Jews and Chriſtians: the firſt in 1517. which is the leaſt exact, and generally goes by the name of Felix Pratenſis, the perſon who reviſed it: the ſecond in 1526. with the maſſora, and the commentaries of ſeveral rabbins, and a Hebrew preface by Rabbi J. Benchajim.—In 1548. the ſame Bomberg printed the *folio bible* of Rabbi Benchajim, which is the beſt and moſt perfect of them all: it is diſtinguiſhed from the firſt of the ſame rabbi, by the comment of Rabbi D. Kimchi on the chronicles, which is not in the preceding. From this edition it was, that Buxtorf, the father, printed his rabbinical *Hebrew bible* at Baſil, in 1618. but in this are ſeveral faults, eſpecially in the commentaries of the rabbins, where that learned man altered ſome places that were againſt the Chriſtians.—In the ſame year appeared at Venice, a new edition of the rabbinical *bible* by Leo of Modena, a rabbin of that city, who pretended to have corrected a great number of faults in the former edition; but, beſides that it is much inferior to the other *Hebrew bibles* of Venice, with regard to paper and print, it has paſſed through the hands of the inquiſitors, who have altered many paſſages in the commentaries of the rabbins.

For *Hebrew bibles* in 4to, that of R. Stephens is eſteemed for the beauty of the characters; but it is very incorrect. Plantin alſo printed ſeveral beautiful *Hebrew bibles* at Antwerp; the beſt is that of 1566. in 4to. Manaſſeh Ben Iſrael, a learned Portugueſe Jew, publiſhed two editions of the *Hebrew bible* at Amſterdam, the one in 4to, the other in 8vo; the firſt has two columns, and for that reaſon is commodious for the reader. In 1634. R. Jac. Lombroſo publiſhed a new edition in 4to at Venice, with ſmall literal notes at the bottom of each page, where he explains the Hebrew words by Spaniſh words. This *bible* is much eſteemed by the Jews at Conſtantinople: in the text they have diſtinguiſhed between words where the point camets is to be read with a camets-hatuph, that is, by o, and not an a.

Of all the editions of the *Hebrew bible* in 8vo, the moſt beautiful and correct are the two of Jo. Athias, a Jew of Amſterdam. The firſt, of 1661. is the beſt paper; but that of 1667. is the moſt exact: that, however, publiſhed ſince at Amſterdam by Vander Hooght 1705. is preferable to any of them.

After Athias, three Hebraizing Proteſtants engaged themſelves in reviſing and publiſhing the *Hebrew bible*; *viz.* Clodius, Jablonſki, and Opitius.—Clodius's edition was publiſhed at Frankfort, in 1677. in 4to. At the bottom of the page it has the various readings of the former editions; but the author does not appear ſufficiently verſed in the accenting, eſpecially in the poetical books; beſides, that not being publiſhed under his eye, many faults have crept in.—That of Jablonſki in 1699. in 4to, at Berlin, is very beautiful as to letter and print: but, though the editor pretends he made uſe of the editions of Athias and Clodius, ſome critics find it ſcarce in any thing different from the 4to edition of Bomberg.—That of Opitius is alſo in 4to, at Keil, in 1709. the character is large and good, but the paper bad: it is done with a great deal of care; but the editor made uſe of no manuſcripts but thoſe of the German libraries; neglecting the French ones, which is an omiſſion common to all three.—They have this advantage however, that beſides the diviſions uſed by the Jews, both general and particular, into paraſkes and peſukim, they have alſo thoſe of the Chriſtians, or of the Latin *bibles*, into chapters and verſes; the keri ketib, or various readings, Latin ſummaries, *&c.* which make them of conſiderable uſe, with reſpect to the Latin editions, and the concordances.

The little *bible* of R. Stephens, in 16to, is very much prized for the beauty of the character. Care, however, muſt be taken; there being another edition of Geneva, exceedingly like it, excepting, that the print is worſe, and the text leſs correct.—To theſe may be added ſome other *Hebrew bibles* without points, in 8vo and 24to which are much coveted by the Jews; not that they are more exact, but more portable than the reſt; and are uſed in their ſynagogues and ſchools: of theſe there are two beautiful editions, the one of Plantin, in 8vo, with two columns, and the other in 24to, reprinted by Raphalengius at Leiden, in 1610. There is alſo an edition of them by Laurens at Amſterdam, in 1631. in a larger character: and another in 12mo, at Frankfort, in 1694. full of faults, with a preface of M. Leuſden at the head of it.

Greek BIBLES.—There are a great number of editions of the *bible* in Greek; but they may be all reduced to three or four principal ones, *viz.* that of Complutum, or Alcala de Henares, that of Venice, that of Rome, and that of Oxford.—The firſt was publiſhed in 1515. by Cardinal Ximenes, and inſerted in the polyglot *bible*, uſually called the Complutenſian *bible:* this edition is not juſt, the Greek of the Seventy being altered in many places according to the Hebrew text.—It has, however, been reprinted in the Polyglot *bible* of Antwerp, in that of Paris, and in the 4to *bible* of commonly called *bible of Vatable.*

The ſecond *Greek bible* is that of Venice in 1518. Here the Greek text of the Septuagint is reprinted juſt as it ſtood in the manuſcript, full of faults of the copiſts, but eaſily amended.—This edition has been reprinted at Straſburg, Baſil, Frankfort, and other places, with ſome alterations to bring it nearer the Hebrew. The moſt commodious is that of Frankfort; there being added to this, little ſcholia, where are ſhewn the different interpretations of the old Greek tranſlators: the author of this collection has not added his name; but it is commonly aſcribed to Junius.

The third *Greek bible* is that of Rome in 1587. with Greek ſcholia collected from the manuſcripts in the Roman libraries by Pet. Morin. This fine edition has been reprinted at Paris in 1628. by J. Morin, prieſt of the oratory, who has added the Latin tranſlation, which in the Roman was printed ſeparately, with ſcholia.—The Greek edition of Rome has been printed in the Polyglot *bible* of London; to which are added, at bottom, the various readings of the Alexandrian manuſcript. This has been alſo reprinted in England in 4to and 12mo, with ſome alterations. It has been again publiſhed at Franeker in 1709. by Bos, who has added all the various readings he could find.

The fourth *Greek bible* is that done from the Alexandrian manuſcript, begun at Oxford by Dr. Grabe in 1707. In this the Alexandrian mannſcript is not printed ſuch as it is, but ſuch as it was thought it ſhould be, *i. e.* it is altered wherever there appeared any fault of the copiſts, or any word inſerted from any particular dialect: this, ſome think a piece of merit, but others a fault; urging, that the manuſcript ſhould have been given abſolutely and intirely of itſelf, and all conjectures, as to the readings, have been thrown into the notes. See SEPTUAGINT.

Latin BIBLES, how numerous ſoever, may be all reduced to three claſſes; *viz.* the *antient vulgate*, tranſlated from the

Greek ſeptuagint: the *modern vulgate*, the greateſt part of which is done from the Hebrew text; and the *new Latin tranſlations*, done alſo from the Hebrew text in the 16th century.—We have nothing remaining of the antient vulgate, uſed in the primitive times in the Weſtern churches, but the Pſalms, Wiſdom, and Eccleſiaſtes. Nobilius has endeavoured to retrieve it from the works of the antient Latin fathers; but it was impoſſible to do it exactly, in regard moſt of the fathers did not keep cloſe to it in their citations. See Vulgate.

As to the *modern vulgate*, there are a vaſt number of editions very different from each other. Cardinal Ximenes has inſerted one in the *bible* of Complutum, corrected and altered in many places. R. Stephens, and the doctors of Louvain, have taken a world of pains in correcting the modern vulgate. The beſt edition of Stephens's *Latin bible* is that of 1540. reprinted in 1545. in which are added, on the margin, the various readings of ſeveral Latin manuſcripts, which he had conſulted. The doctors of Louvain reviſed the modern vulgate after R. Stephens; and added the various readings of ſeveral Latin manuſcripts. The beſt of the Louvain editions are thoſe, at the end of which are added the critical notes of Francis Lucas of Bruges.

All theſe reformations of the *Latin bible* were made before the time of Pope Sixtus V. and Clement VIII. Since which, people have not dared to make any alterations, excepting in comments, and ſeparate notes. The correction of Clement VIII. in 1592. is now the ſtandard throughout all the Roman churches: that pontiff made two reformations; but it is the firſt of them that is followed. From this the *bibles* of Plantin were done, and from thoſe of Plantin all the reſt; ſo that the common *bibles* have none of the after-corrections of the ſame Clement VIII.—It is a heavy charge that lies on the editions of Pope Clement, *viz.* that they have ſome new texts added, and many old ones altered, to countenance and confirm what they call the Catholic doctrine: witneſs that celebrated paſſage of St. John, *tres ſunt*, &c.

There are a great number of *Latin bibles* of the third claſs, comprehending the verſions from the originals of the ſacred books made within theſe 200 years.—The firſt is that of Santes Pagninus, a Dominican, printed at Lions in 4to, in 1528. much eſteemed by the Jews. This the author improved in a ſecond edition. In 1542. there was a beautiful edition of the ſame at Lions in folio, with ſcholia, publiſhed under the name of Michael Villanovanus, *i. e.* Michael Servetus, author of the ſcholia. Thoſe of Zurich have likewiſe publiſhed an edition of Pagninus's *bible* in 4to. And R. Stephens reprinted it in folio, with the vulgate, in 1557. pretending to give it more correct than in the former editions. There is alſo another edition of 1586. in four columns, under the name of Vatable; And we find it again in the Hamburgh edition of the *bible* in four languages.

In the number of *Latin bibles* is alſo uſually ranked the verſion of the ſame Pagninus corrected, or rather rendered literal, by Arias Montanus; which correction being approved of by the doctors of Louvain, *&c.* was inſerted in the polyglot *bible* of Philip II. and ſince in that of London. There have been various editions of this in folio, 4to, and 8vo; to which have been added the Hebrew text of the Old Teſtament, and the Greek of the New. The beſt of them all is the firſt, which is in folio, 1571.

Since the reformation, there have been ſeveral Latin verſions of the *bible* from the originals, by Proteſtants. The moſt eſteemed are thoſe of Munſter, Leo Juda, Caſtalio, and Tremellius: the three laſt whereof have been reprinted various times.—Caſtalio's fine Latin pleaſes moſt people; but there are ſome who think it too much affected: the beſt edition thereof is that in 1573. Leo Juda's verſion, altered a little by the divines of Salamanca, was added to the antient Latin edition, as publiſhed by R. Stephens with notes, under the name of Vatable. That of Junius and Tremellius is preferred, eſpecially by the Calviniſts, and has undergone a great number of editions.

One may add a fourth claſs of *Latin bibles*, comprehending the Vulgate edition corrected from the originals. The *bible* of Iſidorus Clarus is of this number: that author, not being contented with reſtoring the antient Latin copy, has corrected the tranſlator in a great number of places, which he thought ill rendered. Some Proteſtants have followed the ſame method; and, among others, Andrew and Luke Oſiander, who have each publiſhed a new edition of the Vulgate, corrected from the originals.

Oriental Bibles.—At the head of the Oriental verſions of the *bible* muſt be placed the Samaritan; as being the moſt antient of all, and admitting no more for holy Scripture but the Pentateuch, or five books of Moſes.—This tranſlation is made from the Samaritan Hebrew text, which is a little different from the Hebrew text of the Jews. This verſion has never been printed alone; nor any-where but in the Polyglots of London and Paris.

Chaldee Bibles are only the gloſſes or expoſitions made by the Jews in the time when they ſpake the Chaldee tongue. Theſe they call by the name of *Targumim*, or *paraphraſes*, as not being any ſtrict verſions of the Scripture. They have been inſerted intire in the large Hebrew *bibles* of Venice and Baſil; but are read more commodiouſly in the Polyglots, being there attended with a Latin tranſlation.

Syriac Bibles.—In the year 1562. Widmanſtadius printed the whole New Teſtament, in Syriac, at Vienna, in a beautiful character: after him there were ſeveral other editions; and it was inſerted in the *bible* of Philip II. with a Latin tranſlation. Gabriel Sionita alſo publiſhed a beautiful Syriac edition of the Pſalms, at Paris, in 1525. with a Latin interpretation. The whole *bible* is printed in Syriac in the Polyglots of London, and Paris.

Arabic Bibles.—In the year 1516. Aug. Juſtinian, biſhop of Nebio, printed at Genoa an Arabic verſion of the Pſalter, with the Hebrew text, and Chaldee paraphraſe, adding Latin interpretations. There are alſo Arabic verſions of the whole ſcriptures in the Polyglots of London and Paris; and we have an edition of the Old Teſtament intire, printed at Rome in 1671. by order of the congregation *de propaganda fide*; but it is of little eſteem, as having been altered agreeably to the Vulgate edition. The *Arabic bibles* among us are not the ſame with thoſe uſed with the Chriſtians in the Eaſt.—Some learned men take the Arabic verſion in the Old Teſtament, printed in the Polyglots, to be that of Saadias: at leaſt in the main. Their reaſon is, that Aben Ezra, a great antagoniſt of Saadias, quotes ſome paſſages of his verſion, which are the ſame with thoſe in the Arabic verſion of the Polyglots; yet others are of opinion, that Saadias's verſion is not extant. In 1622. Erpenius printed an Arabic Pentateuch, called alſo the Pentateuch of Mauritania, as being made by the Jews of Barbary, and for their uſe. This verſion is very literal, and eſteemed very exact. The four Evangeliſts have alſo been publiſhed in Arabic, with a Latin verſion, at Rome in 1591. folic. Theſe have been ſince reprinted in the Polyglots of London and Paris, with ſome little alterations of Gabriel Sionita. Erpenius publiſhed an Arabic New Teſtament, intire, as he found it in his manuſcript copy, at Leyden, in 1616.

Cophtic Bibles.—We have no part of the *bible* printed in Cophtic; but there are ſeveral manuſcript copies in ſome of the great libraries, eſpecially in that of the French king.

Ethiopic Bibles.—The Ethiopians have alſo tranſlated the *bible* into their language. There have been printed ſeparately, the Pſalms, Canticles, ſome chapters of Geneſis, Ruth, Joel, Jonah, Zephaniah, Malachi, and the New-Teſtament; all which have been ſince reprinted in the Polyglot of London.—For the Ethiopic New Teſtament, which was firſt printed at Rome in 1548. it is a very unaccurate work, and is reprinted in the Engliſh Polyglot with all its faults.

Armenian Bibles.—There is a very antient Armenian verſion of all the *bible*, done from the Greek of the Seventy, by ſome of their doctors about the time of St. Chryſoſtom. This was firſt printed intire in 1664. by one of their biſhops at Amſterdam in 4to; with the New Teſtament in 8vo.

Perſian Bibles.—Some of the fathers ſeem to ſay, that all the Scripture was formerly tranſlated into the language of the Perſians; but we have nothing now remaining of the antient verſion, which was, doubtleſs, done from the Septuagint. The Perſian Pentateuch printed in the London Polyglot is, doubtleſs, the work of Rabbi Jacob, a Perſian Jew. In the ſame Polyglot we have likewiſe the four Evangeliſts in Perſian, with a Latin tranſlation; but this appears very modern, incorrect, and of little uſe.

Gothic Bibles.—It is generally ſaid, that Ulphilas, a Gothic biſhop, who lived in the fourth century, made a verſion of the whole *bible*, excepting the book of Kings, for the uſe of his countrymen. That book he omitted, by reaſon of the frequent mention of the wars therein; as fearing to inſpire too much of the military genius into that people. We have nothing remaining of this verſion, but the four Evangeliſts, printed in 4to, at Dort, in 1665. from a very antient MS.

Muſcovite Bibles.—An intire *bible*, in the Sclavonic tongue, was printed at Oſtravia in Volhinia, in the year 1581. and this is what we commonly call the *Muſcovite bible*. It was printed at the expence of Con. Baſil, duke of Oſtravia, for the common ſervice of all Chriſtians, who ſpake the Sclavonic language, whereof the Muſcovitiſh is a dialect.

Bibles *in the vulgar tongues* are too numerous to be here rehearſed. See F. Simon's *Critical Hiſtory*, Le Long's *Bibliotheca Sacra*, and the *Bibliotheca Sacra* of F. Calmet, annexed to his dictionary of the *bible*.

BICEPS, in anatomy, is a name common to ſeveral muſcles, from their having two heads.—Such is the

Biceps *cubiti*, or *humeri*, a muſcle of the arm, one of whoſe heads ariſes from the upper edge of the cavity of the head of the ſcapula, and is round and tendinous, and incloſed in the chanel in the head of the humerus: the other ariſing from the proceſſus coracoides, is broad and tendinous: and both *unite* about the middle and fore-part of the arm, and make one belly, which is *inſerted* by a ſtrong and round tendon into the tuberoſity at the upper end of the radius.—See *Tab. Anat.* (Myol.) *fig.* 1. *n.* 24. *fig.* 2. *n.* 20. *fig.* 6. *n.* 15.

Some of the fibres of the tendon form a large and thin aponeuroſis, which covers all the muſcles of the radius and fingers externally.—Care ought to be taken in blood-letting, not to cut a-croſs, but according to the length of the fibres of this aponeuroſis.—This muſcle, with the brachiæus internus, bends the arm.

Biceps *Externus*, called alſo *gemellus*. See Gemellus.

Biceps *Tibiæ*, or *Femoris*, a muſcle of the leg with two heads; the one coming from the tuberoſity of the iſchium, and the other from the lower-part of the femur; both which join together, and are inſerted by one tendon into the ſuperior and external part of the perone.—Its uſe is to help to bend the tibia, and is likewiſe employed in turning the leg, together with the foot and toes, outward, when we ſit down.—See *Tab. Anat.* (Myol.) *fig.* 6. *n.* 40.

BIDENTALES, prieſts among the antient Romans, inſtituted for the performance of the ceremonies of a *bidental*.

The *Bidentales* conſtituted a college, or decury, who had the ſervice and procuration, or interpretation of thunder and lightning.

The firſt and principal part of their office was, the ſacrificing a ſheep of two years old, which in their language was called *bidens*, as having only two teeth, one on each ſide; or rather from *bidennis*, antiently written for *biennis*, two years old.

BIGA*, a chariot for racing, drawn by two horſes a-breaſt.

* The word ought rather to be written *bigæ*, in the plural; *q. d. bijugæ*, two horſes being joined by a *jugum*, or yoke.

Bigæ ſtand contradiſtinguiſhed from *trigæ*, *quadrigæ*, &c.

Bigæ are of very antient ſtanding: all the heroes in Homer, Heſiod, Virgil, *&c.* fought in them.

BIGAMY, a double marriage, or the poſſeſſion of two wives at the ſame time.

Among the antient Romans, thoſe convicted of *Bigamy* were branded with a note of ignominy; and, in France, they were antiently puniſhed with death.

Bigamy, in the canon law, is alſo where a perſon either marries two women ſucceſſively; or only marries one woman who had been married before.—Each of which the canoniſts account impediments to be a clerk, or to hold a biſhopric without a diſpenſation: a point of diſcipline founded on that of St. Paul, *Let a biſhop be the husband of one wife*, 1 Tim. iii. 2. Apoſt. Conſt. 17, 18.

Bigamy they make of two kinds—*real*, as where the party actually marries twice—and *interpretative*, where he marries a widow, or woman debauched before, which is eſteemed a kind of ſecond marriage.

Here, F. Doucine diſtinguiſhes, and obſerves, that Irenæus having been married twice, muſt in this ſenſe have been guilty of *Bigamy*; and therefore have been made biſhop of Tyre contrary to the canons. He therefore thinks, with St. Jerom, *&c.* that thoſe only who married two wives after baptiſm, came under the incapacity of *Bigamy*: but St. Ambroſe, Auguſtine, *&c.* are expreſs, that it is *Bigamy*, whether the firſt wife were married before, or after baptiſm. *Hiſt. du Neſtor.*

The Romaniſts make a third kind of *Bigamy*, *by interpretation*; as, when a perſon in holy orders, or that has taken on him ſome monaſtic order, marries.—This the biſhop can diſpenſe withal, at leaſt on ſome occaſions.

There is alſo a kind of *ſpiritual Bigamy*; as, when a perſon holds two incompatible benefices, *v. gr.* two biſhoprics, two vicarages, two canonries *ſub eodem tecto*, *&c.*

BIGNESS. See the article Magnitude.

BIGOT*, a perſon fooliſhly obſtinate, or perverſely wedded to an opinion.

* The word comes from the German *bey*, and *Gott*, or the Engliſh *by-God*.

Camden relates, that the Normans were firſt called *Bigots*, on occaſion of their duke Rollo; who receiving Giſſa, daughter of king Charles, in marriage, and with her the inveſtiture of the dukedom, refuſed to kiſs the king's foot in token of ſubjection, unleſs he would hold it out for that purpoſe: and being urged to it by thoſe preſent, anſwered haſtily, *No by God*; whereupon, the king, turning about, called him *Bigot*; which name paſſed from him to his people.

BILARIUS *porus*, **Bilary** *pore*, or *hepatic duct*, a conſiderable appendage of the liver, formed from the concurrence of a multitude of ſmall ramifications ſpringing from the glands of the liver, which unite into ſeveral trunks equal in magnitude to the branches of the hepatic arteries; and accompany them branch for branch through the whole ſubſtance of the liver; being wrapped up in the ſame capſula with the porta. See *Tab. Anat.* (Splanch.) *fig.* 5. *lit. ff.* See alſo Porus.

Theſe branches are about the ſize of a wheat-ſtraw, the biggeſt large enough to admit the little finger; and are diſtinguiſhable from the porta by their contents, being always full of bile. Beſides the capſula common to theſe and the porta, each has a thick white coat proper to itſelf, like the muſculous coat of an artery.

On the concave ſide of the liver the ſeveral ramifications meet, and form one trunk, or channel, properly called the *bilary pore*, about the bigneſs of a gooſe-quill, which deſcending about two inches, meets with the cyſtic duct, and together with it forms what we call the *ductus communis*; which deſcending in a right line, about four inches, diſcharges itſelf into the duodenum, by an oblique inſertion, oftentimes at the ſame aperture with the pancreatic duct.

The *porus Bilarius* communicates with the gall-bladder, by a duct firſt deſcribed by Dr. Gliſſon, and afterwards by Blaſius and Perrault, who gave it the name of the *cyſt-hepatic duct*. Verheyen, in oxen, found two, three, or four, of theſe cyſt-hepatic ducts; and the like has been obſerved in a dog, and a man.

BILAWS, or **Bilawes**. See the article By-laws.

BILDGE, or **Bilge**, of a ſhip, denotes the bottom of her floor; or the breadth of that part which ſhe reſts on, when ſhe is a-ground.

Bildge-*water* is that, which, by reaſon of the flatneſs of the ſhip's bottom, lies on her floor, and cannot go to the well of the pump.

The Dutch, whoſe ſhips are often of this form, uſe a ſort of pumps called *Bildge-pumps*; or, as we call them, *burr-pumps*, to carry off the *Bildge-water*.

When a ſhip ſtrikes on a rock, they alſo ſay, ſhe is *bildged*, or *buldged*.

BILE*, **Bilis**, a yellow bitter juice, ſeparated from the blood in the liver, collected in the porus bilarius, and gall-bladder, and thence diſcharged by the common duct into the duodenum.

* The word *Bile* comes from the Latin *bilis*, which ſome fetch further, from the Greek βια, violence; becauſe bilious people are inclined to anger: others derive it from the Latin *bullire*, to boil.

Bile is of two kinds; *hepatic*, and *cyſtic*.—The firſt, moſt properly called *Bile*, is ſeparated immediately from the glands of the liver into the porus bilarius.—The ſecond, more properly called *gall*, is ſeparated likewiſe from the glands of the liver into the gall-bladder, by roots or ducts proper to itſelf.

The *cyſtic Bile* is thicker, of a deeper yellow, and bitterer; is not evacuated continually, but only when its receptacle is replete; in which caſe, the contraction of the irritated fibres propels it into the duodenum.—The *hepatic Bile* is greener, thinner, more mild and pellucid, and is continually ouſing out; being expelled by the ſole action of the neighbouring parts. The *cyſtic Bile* reſiſts acids, and, mixed with other fluids, gives them the like property: it abſterges like ſoap, and renders oils capable of mixing with water; it reſolves and attenuates reſins, gums, and other tenacious bodies, rendering them homogeneal to itſelf. It is neither alcalious nor acid, but ſeems a concretion of oil, ſalt, and ſpirits diluted with water.—By a chymical analyſis, Dr. Drake obſerves, it affords ſome ſulphur, or oil, ſome volatile ſalt, a good deal of fixt ſalt (in which particular it differs from all other animal liquors), and a moderate quantity of caput mortuum, or earth: the baſis is phlegm.

The principal uſe and effect of the *Bile* is, by mixing with the chyle and the fæces, to attenuate, reſolve, abſterge, and ſtimulate the fibræ motrices of the inteſtines; as alſo to mix together things very different, to bruiſe and blunt thoſe that are ſharp and ſaline, to divide thoſe that are coagulated, to open the paſſages for the chyle, to excite appetite, to act the part of a ferment, and to aſſimilate crude things to things concocted.—Theſe effects the *cyſtic Bile* has in a greater, the *hepatic* in a leſſer degree.

Dr. Quincy thinks the principal uſe of both ſorts of *Bile* is to ſheath and blunt the acids of the chyle, entangling them with its ſulphur, ſo as to prevent their being ſufficiently diluted by the pancreatic juice to enter the lacteals: which ſeems confirmed by this; that, notwithſtanding the great quantity of acid ſalts in the aliment in the ſtomach, there are never any found in the chyle after it has paſſed the duodenum, and been impregnated with the *Bile* continually ouſing out of the porus bilarius. See Acid, and Blood.

Borelli aſſerts, that part of the *Bile* diſcharged into the inteſtines re-enters the meſeraic veins, and, mixing with the blood of the vena porta, is again percolated through the liver; and Boerhaave ſeems of the ſame opinion: on which footing the *Bile* has its circulation, as well as the blood.

Some will have the *cyſtic Bile* brought to its receptacle three different ways, and that it is even compoſed of three different kinds of *Bile*, whence its different properties.—Though Boerhaave takes thoſe properties rather to reſult from its ſtagnating in the gall-bladder; and, with Malpighi, thinks the bitter part may probably become ſo in the glands between the coats of the gall-bladder, which are furniſhed from the cyſtic arteries; whence it proceeds bitter, and mixes with the reſt in the bladder.

The *Bile* is a juice of great importance, with regard to the good or ill habitude of the animal. Dr. Woodward has traced its effects throughout the body very minutely, and makes no ſcruple to aſcribe moſt of the diſeaſes thereof to ſome diſorder of the *Bile*. This he takes to be the chief ſpring in the animal machine, and from this accounts for moſt of the phænomena of a body, whether healthy or diſeaſed: and yet the antients generally took it to be no more than an excrement, for which they could not find any uſe.

Many of the moderns, from the ſmall quantity of *Bile* ſecerned, have been led into a miſtake, that this ſecretion is not the ſole end of ſo conſiderable a viſcus as the liver. Dr. Keill obſerves, that in a dog, whoſe common duct was near as big as that of a man, he gathered at the rate of about two drachms an hour; though, in a human body, there is reaſon to think the quantity ſecreted to be greater.

The *Bile* is a part found in all animals; even pigeons, *&c.* which have no gall-bladder, yet have *Bile*: their liver being found very bitter. Mr. Tauvry obſerves, that the *Bile* becomes one of the principal cauſes of thirſt, by mixing with the ſalival juice. See Thirst.

Sometimes the *Bile* from yellow becomes greeniſh, like verdegriſe, and frequently pale, like the yolks of eggs, and that without any other apparent cauſe than a little motion, a convulſion, or a violent paſſion of the mind. This occaſions many and terrible diſeaſes; as nauſeas, an abhorrence of food, anxiety, ſighing, cardialgias, wind, diarrhœas, dyſenteries, acute diſeaſes, fevers, and convulſions.

Sometimes it becomes black, and takes the name of *choler*: in this caſe, it ſometimes taſtes like a very ſharp vinegar; ſometimes like putrified blood; gnawing, burning, diſſolving, conſuming, occaſioning inflammations, gangrenes, mortifications, violent pains, and terrible fermentations.

Of *atra bilis*, or *black Bile*, Boerhaave diſtinguiſhes three kinds: *1ſt*, The mildeſt, ariſing from the matter of the blood, put in too great a motion, which hence takes the name of *aduſt*: the *2d* is an aggravation of the firſt, ariſing from the ſame cauſes, only heightened: the *3d* is a corrupt, parched *Bile*, which, if it aroſe from a greeniſh or paliſh ſort, is ſtill worſe.

Too great an evacuation of the *Bile*, either upwards or downwards, robs the chylefaction of its main inſtrument: hence it prevents digeſtion, ſecretion, excretion of the fæces, and produces an acid temperature, coldneſs, weakneſs, paleneſs, ſwoonings, *&c.*—If the *Bile*, when prepared, be prevented its diſcharge into the inteſtines, it produces a jaundice. See Jaundice.

Secretion of the Bile.—For the manner in which the *Bile* is ſeparated in the liver, there are various opinions.—Some maintain, that the pores of the ſecretory glandules of the liver have a certain configuration and magnitude, to which the particles of the *Bile* floating in the blood being juſt anſwerable, both in bulk and figure, are admitted in, and all the reſt excluded.—Others, with Sylvius and Liſter, not allowing any difference in the configuration, as knowing that the pores of all the veſſels are circular, and that particles of all kinds will be admitted, if ſmall enough; have recourſe to a ferment, which they ſuppoſe to reſide in the liver, by means whereof the particles of the blood, in their paſſage through the ſecretory ducts, aſſume the form of *Bile*. But, as this is little elſe than begging the queſtion, others have recourſe to another hypotheſis; maintaining, that the fluids contained in the blood of the vena porta, while that enters the ſubſtance of the liver in its way to the extremities of the vena cava, indifferently apply to the apertures of the ſecretory tubes contiguous to the extreme branches of the porta, which are wide enough, and to the roots of the cava, which are not wide enough, to receive them; by which means, being ſeparated from the ſociety and the inteſtine motion of the other and eſſential part of the blood, and being no longer agitated by the vital action of the blood-veſſels, and becoming expoſed to the actions of the *bilary* veſſels, they conſtitute a new humour, diſtinct from the blood, called *Bile*, &c.—Dr. Keill chooſes to account for the ſecretion of the *Bile* from the ſtrong attraction between the particles whereof it is compoſed. He obſerves, that the heart and liver being ſo near each other, were the cœliac artery to have carried all the blood to the liver, conſidering the velocity of the blood, ſo viſcid a ſecretion as the *Bile* could never have been effected. Nature, therefore, forms a vein for the purpoſe; *viz.* the porta; and by it ſends the blood from the branches of the meſenteric and cœliac arteries to the liver; by which the blood is brought a great way about, paſſing through the inteſtines, ſtomach, ſpleen, and pancreas, ere it arrives at the liver: thus its velocity is exceedingly diminiſhed, and the particles that are to form the *Bile* have a ſufficient time to attract one another, and unite, before they come to their ſecerning veſſels. But, as if this diminution of velocity were not ſufficient for the purpoſe, nature has gone farther; having made the cavities of all the arteries increaſe as they divide: thus the ſum of the branches, ariſing from the aorta, is to the aorta itſelf, as 102740 to 100000. And yet, as if that proportion were too little for the preſent purpoſe, nature has here taken a further ſtep, and increaſed the branches ſpringing from the meſenteric artery in a greater ratio. Thus, in a body which he examined, he found the ſum of the branches more than double that of the trunk; and therefore the velocity of the blood, in the former, muſt be leſs than half that of the latter. He further ſhews, from a juſt calculation, that the time the blood now takes, in its paſſage from the aorta to the liver, is at leaſt twenty-ſix minutes: whereas, had an artery gone directly from the aorta to the liver, it would have paſſed in little more than half a ſecond; *viz.* 2437 times in the ſpace it now takes up in its paſſage. Whence it appears, that the blood was not in a ſtate fit to yield *Bile*, had it gone directly from the aorta to the liver; and that a longer time, and more languid motion, was neceſſary, to have the *bilious* particles in a readineſs to be ſeparated. He adds, that did the humours exiſt in the glands the ſame as they are found after ſecretion, nature would not, on this occaſion, have been at ſo much expence to retard the blood's velocity: beſides, that the *Bile* has another advantage from the uſe of the porta: for, by running through ſo many parts ere it reach the liver, it leaves behind it moſt of its lympha; by which means the particles being brought nearer each other, are, by their mutual attraction, ſooner united.

BILGE. See the article Bildge.

BILINGUIS, in law, a denomination given the jury which paſſes in any caſe betwixt an Engliſhman and an alien; whereof one moiety is to be natives, and the other, foreigners, if required.

BILIOUS *complexion.* See Complexion, Temperament, Choleric, *&c.*

Bilious *colic.* See the article Colic.

BILL, in huſbandry, denotes an edge-tool, of the ax-kind, fitted to a handle, and uſed to lop trees, *&c.*—When ſhort, it is called an *hand-bill*; when long, an *hedge-bill*.

Bill, in law, denotes a ſecurity for money under the hand and ſometimes ſeal of the debtor, without any condition, or forfeiture, in caſe of non-performance.—In which it is diſtinguiſhed from a bond or obligation.

Bill alſo denotes a declaration in writing, expreſſing a wrong, or grievance, which the complainant hath ſuffered by the party complained of; or elſe ſome offence committed by him againſt ſome law or ſtatute of the realm.

This *Bill* is commonly addreſſed to the lord chancellor, eſpecially for unconſcionable wrongs done ſometimes to others having juriſdiction, according as the law they are grounded on directs.—It contains the fact complained of, the damages ſuſtained, and the petition of proceſs againſt the defendant for redreſs.

Bill, in parliament, denotes a paper containing propoſitions offered to the houſes, to be paſſed by them, and then to be preſented to the king to paſs into an act, or law. See Parliament.

Bill *of attainder.* } See the article { Attainder.
Bill *of appeal.* } { Appeal.

Bill *of exchange*, a ſhort note, or writing, ordering the payment of a ſum of money in one place, to ſome perſon aſſigned by the drawer, or remitter, in conſideration of the like value paid to him in another place. See Exchange, and Remittance.

The whole eſtate and effects of merchants often conſiſt in *Bills of exchange*.

A *Bill* of exchange is an inſtrument ſo noble and excellent, that though it want thoſe formalities required by the common law; as ſeal, delivery, and witneſſes; and ſo cannot be deemed a ſpeciality; yet is it ſuperior to any bond or ſpeciality by the reſpect that is paid it, and the punctuality and preciſeneſs of the payment.

There is ſome diſpute about the nature and ſanction of a *Bill of exchange*: ſome take it to be a contract of permutation, or exchange; but the more general opinion is, that it is a mere contract of buying and ſelling; that the money given the perſon who draws the *Bill* is the price of ſale; and that paid at the appointed place, the thing bought and ſold.

Bills of exchange were unknown in the antient Roman commerce, as well as juriſprudence. According to the common opinion, they are the invention of the Jews; who, being baniſhed France, for ſome enormous crimes charged on them, retired into Lombardy, about the twelfth century, and found means to withdraw their effects, which they had lodged in the hands of friends, by ſecret letters and *Bills* conceived in ſhort preciſe terms, like the modern *Bills of exchange*; and this, by the aſſiſtance of merchants and travellers.—The faction of the Gibellins, being expelled Italy by the Guelphs, retired to Amſterdam, and uſed the ſame means, for the recovery of their effects in Italy, as the Jews had done; hence the Dutch merchants took the hint of negotiating *Bills of exchange*; and ſoon ſpread the practice throughout all Europe.—The ſame Gibellins are ſaid to be the inventors of the *rechange*, on account of damages and intereſts, when *Bills of exchange*, which they called *polizza di cambio*, are not paid, but returned on proteſt. See Re-exchange.

That which conſtitutes the form and eſſence of a *Bill of exchange* is, the ceſſion, or transferring of a ſum of money made by the drawer, to him, on whoſe account it is drawn, to be received of his correſpondent in another place; which ceſſion, or transfer, is made, in the mercantile terms, *for value received*, i. e. for a like ſum given by the perſon for whoſe ſake the *Bill* is drawn, to the drawer, in money, merchandize, or other effects.

There are therefore three things neceſſary to conſtitute a *Bill of exchange*: *1ſt*, That it be drawn in one city on another. *2dly*, That there be three perſons concerned; the drawer, the preſenter, or the perſon for whom it is drawn, and the acceptor, or he on whom it is drawn. See Acceptor. *3dly*, That it make mention, that the value which the drawer has received, is either in *Bills of exchange*, in money, merchandize, or other effects, which are to be expreſſed; otherwiſe it is no *Bill of exchange*.

When a *Bill of exchange* is expreſſed to be *value in myſelf*, it is not ſuppoſed the drawer has received the ſum ; but the perſon for whom it is drawn, ſtands debtor to him for it.—When a *Bill of exchange* bears, *for which ſum I promiſe to furniſh bills of exchange* to ſuch a place, the perſon for whom the *Bill* is drawn may compel him to give the *Bills*, or to return the money.

Bills of exchange may be divided into *inland* and *outland.*—*Outland* or *foreign Bills* are thoſe made for money taken up in ſome other country, and to be paid in England ; or *vice verſa.*—*Inland Bills* are thoſe made for money taken up in one part of the kingdom, and to be repaid in another.—By the ſtat. 9 & 10 Gul. III. theſe latter are made equally binding with the former.

To note a BILL. See the article NOTE.

To proteſt a BILL. See the article PROTEST.

Bank-BILLS are printed inſtruments, whereby private perſons become intitled to a part in the bank-ſtock. See BANK.

BILL *of parcels*, an account of the particular ſorts and prices of goods bought, given by the ſeller to the buyer.

BILL *of lading*, an inſtrument ſigned by the maſter of a ſhip, acknowleging the receipt of a merchant's goods, and obliging himſelf to deliver them, at the place to which they are conſigned, in good condition.

Of ſuch *Bills* there are uſually three : the *firſt* the merchant keeps ; the *ſecond* is ſent to the factor to whom the goods are conſigned ; and the third is kept by the maſter of the ſhip.

BILL *of ſale* is when a perſon, wanting a ſum of money, delivers goods as a ſecurity to the lender, to whom he gives this *Bill*, impowering him to ſell the ſaid goods, in caſe the ſum borrowed is not repaid, with intereſt, at the time appointed.

BILL *of ſtore*, a kind of licence granted at the cuſtom-houſe to merchants, to carry ſuch ſtores and proviſions as are neceſſary for their voyages, cuſtom-free.

BILL *of ſufferance*, a licence granted at the cuſtom-houſe to a merchant, to ſuffer him to trade from one Engliſh port to another, without paying cuſtom.

BILL *of entry*, an account of goods entered at the cuſtom-houſe, both inward and outward ; wherein is expreſſed, the merchant importing or exporting the quantity of goods, and the ſorts, and from whence imported, or to what place exported.

BILLS *of mortality*. See the article MORTALITY.

BILLA VERA, *the Bill is true.*—The grand jury indorſing a *Bill* whereby any crime puniſhable in that court is preſented to them, with the words *billa vera*, ſignify thereby, that the preſenter has furniſhed his preſentment with probable evidence, and worthy of further conſideration ; whereupon the party preſented is ſaid to ſtand *indicted* of the crime, and bound to make anſwer thereto, either by confeſſing or traverſing the indictment.

If the crime touch his life, it is yet referred to another inqueſt, called the *inqueſt of life and death*, by whom if he be found guilty, he ſtands convicted of the crime, and is condemned by the judge.

BILLET, in heraldry, a bearing, in form of a long ſquare. See *Tab. Herald. fig.* 9.

Billets are ſaid to be couched, or inverted, when their longeſt ſide is parallel to the top of the ſhield, and the ſhorteſt perpendicular.

They are ſuppoſed to repreſent pieces of cloth of gold or ſilver, longer than broad, placed at a diſtance by way of ornament, on cloaths, and afterwards tranſlated to their coat-armour ;—though Guillim takes the *Billet* to repreſent a letter ſealed up.

A coat is ſaid to be *billeted*, when it is charged with *Billets* : thus, he bears *argent-billette* a croſs engrailed gules by the name of *Heath.*—Bloom ſays, the number of the *Billets* muſt be expreſſed when they are not above ten.

BILLIARDS *, an ingenious kind of game played on an oblong table, covered with green cloth, and placed exactly level, with little ivory or wooden balls, which are driven by crooked ſticks, made on purpoſe, into hazards, or holes, on the edge and corners, according to certain laws, or conditions of the game.

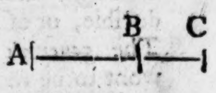
* The word comes from the French *billard*, of *bille*, the ball made uſe of ; and that from the Latin *pila*, a ball.

BILLON *, BILLIO, in coinage, a kind of baſe metal, either of gold or ſilver, in whoſe mixture copper predominates.

* The word is French, formed, according to Menage, from the Latin *bulla*, or *bullo*, *bullion.*——We do not find it is naturalized among us ; but the neceſſity we are frequently under of uſing it in the courſe of this work, required its being explained.

According to M. Boutteroue, *Billon of gold* is any gold beneath ſtandard, or twenty-one carats ; and *billon of ſilver*, all below ten peny-weights. But, according to others, and amongſt the reſt M. Boizard, gold and ſilver beneath the ſtandard, as far as twelve carats, and ſix peny-weights, are properly baſe gold and ſilver, and all under thoſe, *Billon of gold*, and *Billon of ſilver*, in regard copper is the prevailing metal.

BIMEDIAL, in mathematics.—When two medial lines, as AB and BC, commenſurable only in power, and containing a rational rectangle, are compounded ; the whole AC ſhall be irrational, and is called a *firſt Bimedial* line. Eucl. *l.* 10. *prop.* 38.



BINARY *number*, that compoſed of two units. See NUMBER.

BINARY *arithmetic*, a method of computation, firſt propoſed by M. Leibnitz *; wherein, in lieu of the ten figures in the common arithmetic, and the progreſſion from 10 to 10, he has only two figures, and uſes the ſimple progreſſion from two to two.

* Joſ. Pelican of Prague has more largely explained the principles and practice of the binary arithmetic, in a book entituled, *Arithmeticus perfectus, qui tria numerare neſcit.* 1712.

All his characters uſed in this arithmetic are 0 and 1 : and the cypher, here, multiplies every thing by 2, as in the common arithmetic by 10.—Thus, 1 is one ; 10, two ; 11, three ; 100, four ; 101, five ; 110, ſix ; 111, ſeven ; 1000, eight ; 1001, nine ; 1010, ten, &c. which is built on the ſame principles with the common arithmetic.

Hence immediately appears the reaſon of a celebrated property of the duplicate geometrical proportion in whole numbers ; *viz.* that one number of each degree being had, we may thence compoſe all the other whole numbers above the double of the higheſt degree. It being here, *v. gr.* as if one ſhould ſay, 111 is the ſum of 4, 2, and 1, which property may ſerve eſſayers to weigh all kinds of maſſes with a little weight ; and may be uſed in coins, to give ſeveral values with ſmall pieces.

100	4
10	2
1	1
111	7

This method of expreſſing numbers once eſtabliſhed, all the operations will be eaſy : in multiplication particularly, there will be no need for a table, or getting any thing by heart.

The author, however, does not recommend this method for common uſe, becauſe of the great number of figures required to expreſs a number ; adding, that if the common progreſſion were from 12 to 12, or from 16 to 16, it would be ſtill more expeditious : but its uſe is in diſcovering the properties of numbers, in conſtructing tables, &c.

What makes the *Binary* arithmetic the more remarkable is, that it appears to have been the ſame with that uſed 4000 years ago among the Chineſe, and left in ænigma by Fohi, the founder of their empire, as well as of their ſciences.

M. Lagni has propoſed a new ſyſtem of logarithms, on the foot of the *Binary* arithmetic ; which he finds ſhorter, more eaſy and natural, than the common ones.

BINARY *meaſure*, in muſic, is that which is beaten equally ; or where the time of riſing is equal to that of falling. See TIME, and MEASURE.

BINDER'*s preſs*. See the article PRESS.

BINDING *books*. See the article BOOK-BINDING.

BINOCULAR *teleſcope*, that to which both the eyes may be applied, and conſequently the ſame object be obſerved at the ſame time by both.

It conſiſts of two tubes, with two ſets of glaſſes of the ſame power, and adjuſted to the ſame axis ; and has been pretended to repreſent objects much larger and clearer, than a ſingle, or monocular glaſs.

BINOMINAL, or BINOMIAL, in algebra, a root conſiſting of two parts, or members, connected by the ſign +, or —.

Thus $a+e$ and $5-3$ are *Binomials*, conſiſting of the ſums and difference of thoſe quantities.

If a root have three parts, as $a+b+c$, it is called a *trinomial* ; if more, a *multinomial.* See TRINOMIAL, ROOT, &c.

BIOGRAPHER *, an author who writes the hiſtory, or life, of one or more perſons.—Such were Plutarch, Corn. Nepos, &c.

* The word is formed from the Greek βιος, life ; and γραφω, *ſcribo*, I deſcribe.

BIQUADRATE, or BIQUADRATIC, is the next power above the cube, or the ſquare of a cube root. See POWER, ROOT, QUADRATOQUADRATUM, &c.

BIQUINTILE, an aſpect of the planets, when they are 144 degrees diſtant from each other. See ASPECT.

BIRD, a two-footed animal, covered with feathers, and furniſhed with wings, whereby it can ſuſtain itſelf in the air, and fly from place to place.

Birds are uſually divided into *terreſtrial* and *aquatic.*

Terreſtrial BIRDS are ſubdivided into thoſe which have *crooked beaks* and *talons* ; and thoſe whoſe beaks and claws are *ſtraiter.*

Of birds with *crooked beaks and talons*, ſome are carnivorous and rapacious, called *birds of prey* ; others are frugivorous, called by the general name of *parrots.*

Of *Birds of prey*, ſome prey in the day-time, and are called *diurnal* ; others in the night, and are called *nocturnal birds.*

Diurnal birds of prey are either of a *greater* or a *leſſer* ſize.—The *greater* are either of a more bold and generous nature, as the eagle-kind, or of a more cowardly and ſluggiſh, as the vulture.

The *leſſer* diurnal *Birds* of prey are either of a generous and docible, or of a cowardly, ſluggiſh, and untractable nature. The *generous* and *docible* are the hawk-kind, which are wont to be reclaimed and manned for fowling. Theſe by the falconers are diſtinguiſhed into *long-winged*, as the falcon, lanner, ſacre, gerfalcon, keſtril, &c. whoſe wings reach almoſt as far as the end of their train; and *ſhort-winged*, as the goſs hawk and ſparrow-hawk, whoſe wings, when cloſed, fall much ſhort of the end of their trains.

The *cowardly* and *ſluggiſh* are neglected by our falconers, and ſo live at large.—Of theſe alſo there is a *greater* ſort, as the buzzard-kind; to which may be added, the ringtail and kite; and a *leſſer*, as the butcher-kind, or ſhrike, about the bigneſs of a blackbird.

Of *Birds* of prey with crooked beaks and talons, others are *nocturnal*, as the owl-kind, which prey by night: and theſe are either horned or eared, as the eagle-howl, horn owl, &c. or without horns or ears, as the brown owl, white owl, grey owl, howlet, fern-owl or goat-ſucker, &c.

Frugivorous land-birds, with crooked beaks and talons, are diſtinguiſhed into three ſorts, according to their bigneſs; the *greateſt* ſize being called maccaws, and cockatoons; the *middle-ſized*, and moſt common, parrots, and poppinjays; and the *leaſt* ſort, parrakeets: theſe all make uſe of their beak in climbing, and move the upper jaw.

Land-birds, which have their bills and claws more ſtrait, are diſtinguiſhed into three ſizes; the *greateſt* kind are, ſuch as by reaſon of the bulk of their bodies, and ſmalneſs of their wings, cannot fly at all; ſuch are the oſtrich, the caſſowary; and the dodo.

The *middle-ſized* are divided into ſuch as have either *large* and *long*, or *ſmaller* and *ſhorter* bills.

Of thoſe with large, thick, ſtrong, and long bills, ſome feed promiſcuouſly on fleſh, inſects, and fruits, as the crow-kind, which are wholly black; and the pye kind, which are party-coloured, as the magpye, jay, &c. others feed on fiſh only, as the king's-fiſher; and others on inſects only, as the woodpecker.

For thoſe which have a ſmaller and ſhorter bill; their fleſh is either white, as the poultry kind; or blackiſh, as the pigeon, and thruſh kind.

The *leaſt-ſized* kind of *land-birds*, with ſtrait bills and claws, are called *ſmall-birds*.—Theſe are of two kinds; *ſoft-beaked*, which have ſlender, ſtrait, and pretty longiſh bills, moſt of them, and feed chiefly upon inſects; and *hard-beaked*, which have thick and hard bills, and feed moſtly on ſeeds.

Among *Birds* which have ſtrait beaks and claws, Mr. Willughby obſerves, that the caſſowary (as well as the pelican) is without a tongue; ſwallowing not only bits of iron, as the oſtriches, but alſo red-hot coals; yet, not digeſting the iron, but voiding it whole, as the oſtrich alſo does.

Aquatic Birds, or *water-fowl*, are diſtinguiſhed into ſuch as *walk* in the waters, and ſuch as *ſwim* in them.

Aquatics which *walk*, are all cloven-footed, and generally have long legs, and thoſe naked, or bare of feathers, a good way above the knee, that they may the more conveniently wade in waters.—Of theſe authors reckon two kinds; a *greater* and a *leſſer*.—To the *greater* belong the crane, jabiru, &c.—The *leſſer* are either *piſcivorous*, as the heron, ſpoon-bill, ſtork, &c. or mudſuckers, and *inſectivorous*.

Of *inſectivorous* water-fowl, ſome have *very long* bills; others *middle-ſized* ones, as the ſea-pye and red-ſhank; others *ſhort bills*, as the lapwing and plover.

Of thoſe with *long bills*, ſome have them crooked, as the curlieu and wimbrel: and others ſtrait, as the woodcock and godwit.

Note, thoſe are reckoned ſhort bills, which exceed not an inch and half; middle-ſized bills, to two inches and an half; and long bills above two inches and an half.

Of aquatics, which *ſwim* in the water, ſome are *fiſſipedes*, cloven-footed, as the moor-hen and coot, &c. but moſt are whole-footed, or web-footed, *palmipedes*.

Of theſe, ſome few have very long legs, as the flammant, the avoſetta, and corrira; but the generality are ſhort-legged.

Of the *ſhort-legged*, *whole-footed aquatics*, ſome have but three toes on each foot, as the penguin, razor-bill, &c. but generally they have four toes on each foot, and theſe either all connected together by intervening membranes, as in the pelican, ſoland-gooſe, &c. or more uſually with the back-toe looſe.

This laſt kind are either *narrow-billed*, or *broad-billed*—Thoſe with *narrow bills* have them either blunt or hooked at the tip, or ſharp pointed and ſtraiter.

Of the former ſort ſome are ſerrate, as in the diver-kind; and ſome not toothed, as in the puffin.

Of thoſe with ſharp-pointed and ſtraiter bills, ſome have long wings, as the gull-kind, and ſome ſhorter, as thoſe diving *birds* called *douckers*.

Thoſe with *broad bills* may be divided into the gooſe-kind, which are larger; and the duck-kind, which are ſmaller; and theſe latter into ſea-ducks, or river, and plaſh-ducks.

Moſt water-fowls have a ſhort tail; and none of this kind have their feet diſpoſed like parrots and woodpeckers, which have two toes forward, and two backward; whereas none of theſe have more than one back-toe, and ſome have none at all.

Birds *of Paſſage*. See Migration, Paſſage, &c.

BIRDLIME, a viſcid ſubſtance, prepared various ways, and from various materials, for the catching of birds, mice, and other vermin.

The *Birdlime*, ordinarily uſed among us, is made from holly-bark, boiled ten or twelve hours: when the green coat being ſeparated from the other, it is covered up a fortnight in a moiſt place, then pounded into a tough paſte, ſo that no fibres of the wood be left, and waſhed in a running ſtream till no motes appear, put up to ferment four or five days, ſkimmed as often as any thing ariſes, and laid up for uſe.—To uſe it, a third part of nut-oil, or any thin greaſe, is incorporated with it over the fire.

The *Birdlime* brought from Damaſcus is ſuppoſed to be made of ſebeſtens, their kernels being frequently found in it; but this does not endure either froſt or wet.—That brought from Spain is of an ill ſmell; that of the Italians is made of the berries of miſleto heated, mixed with oil, as before; to make it bear the water, they add turpentine.—It is ſaid, the bark of our viburnum, or way-faring ſhrub, makes *Birdlime* as good as the beſt. Vid. *Hought. Collect.* N° 426, 427.

BIRTH, the natural excluſion of a perfect fœtus from the womb by the vagina. See Foetus, Delivery, &c.

An *Immature* Birth is called an *abortion*. See Abortion.

Præternatural Births are thoſe made by the way of the anus, navel, &c.

For the number of *Births*, ſee Marriage: under which the proportion of *Births* to marriages, of *Births* to burials, and of male-*births* to females, are computed.

Birth, or Birthing, among ſeamen, denotes the due diſtance obſerved between ſhips lying at an anchor, or under ſail.—A convenient place a-board for a meſs to put their cheſts, &c. is alſo called a *Birth*.—And a proper place to moor a ſhip in, is called by the ſame name.

After-Birth. See the article After-*Birth*.

BISANT. See the article Besant.

BISHOP*, a prelate, or perſon conſecrated for the ſpiritual government and direction of a dioceſe.

A *Biſhop* differs from an archbiſhop in this, that an archbiſhop with *Biſhops* conſecrate a *Biſhop*, as a *Biſhop* with prieſts ordain a prieſt; that the archbiſhop viſits a province, as the *Biſhop* a dioceſe; that the archbiſhop convocates a provincial ſynod, as the *Biſhop* a dioceſan one; and that the archbiſhop has canonical authority over all the *Biſhops* of his province, as the *Biſhop* over the prieſts in his dioceſe.

It is a long time that *Biſhops* have been diſtinguiſhed from mere prieſts or preſbyters; but whether that diſtinction be of divine or human right, whether it was ſettled in the apoſtolical age, or introduced ſince, is much controverted. On the one ſide ſtands the New Teſtament, wherein it is certain the names *Biſhop* and prieſt are uſed indifferently: on the other ſide is tradition, the fathers, and the apoſtolical conſtitutions.

Indeed there appear no footſteps of any inſtitution of *Biſhops*, diſtinct from prieſts, in the Scriptures; neither do the oppoſers thereof pretend to ſhew any mark of any other form of church-government therein: ſo that it may ſeem probable, the apoſtles did not ſettle any thing of this kind at all; but either left the ſpiritual œconomy in the hands of the preſbyters, or of thoſe together with the people.

Accordingly, new occaſions requiring new meaſures, in a little time the functions of the prieſthood were divided, and the prieſts diſtinguiſhed into degrees; the political part of religion being aſſigned principally to *Biſhops*, and the evangelical to the prieſts, &c. Or rather, as ſome will have it, the functions of teaching and preaching were reſerved to the *Biſhop*, and that of ordination ſuperadded; which was their principal diſtinction, and the mark of their ſovereignty in their dioceſe.

The function of a *Biſhop*, in England, may be conſidered as two-fold; *viz.* what belongs to his order, and what to his juriſdiction.—To the epiſcopal order belong the ceremonies of dedication, confirmation, and ordination; to the epiſcopal juriſdiction, by the ſtatute-law, belong the licenſing of phyſicians, chirurgeons, and ſchool-maſters, the uniting ſmall pariſhes (though this laſt privilege is now peculiar to the *Biſhop* of Norwich), aſſiſting the civil magiſtrate in the execution of ſtatutes relating to eccleſiaſtical matters, and compelling the payment of tenths and ſubſidies due from the clergy.

By the common law, the *Biſhop* is to certify the judges, touching legitimate and illegitimate births and marriages; and by that and the eccleſiaſtical law, he is to take care of the probate of wills, and granting adminiſtrations; to collate to benefices, grant inſtitutions on the preſentation of other patrons, command induction, order the collecting and preſerving the profits of vacant benefices for the uſe of the ſucceſſors, defend the liberties of the church, and viſit his dioceſe once in three years. To the *biſhop* alſo belong ſuſpenſion, deprivation, depoſition, degradation, and excommunication.

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* The word comes from the Saxon *biſchop*, and that from the Greek ἐπισκοπος, an overſeer, or inſpector; which was a title the Athenians gave to thoſe whom they ſent into the provinces ſubject to them, to ſee whether every thing were kept in order: and the Romans gave the ſame title to thoſe who were inſpectors and viſitors of the bread and proviſion. It appears from a letter of Cicero, that he himſelf had a biſhopric; being *epiſcopus Oræ & Campaniæ*.

The *biſhops* of England are all barons and peers. Barons in a twofold manner; *viz.* feudal, in regard of lands and baronies annexed to their biſhopricks; and by writ, as being ſummoned by writ to parliament.—They have the precedence of all other barons, and ſit in the upper houſe, both as barons, and as *biſhops*.

Biſhops have two ſpecial privileges next to regal: the firſt, that in their courts they ſit, and paſs ſentence, of themſelves, and by their own authority: the *biſhops* courts being not like other courts; but writs are ſent out in their own name, *teſte* the *biſhop*, not in the king's name, as is done in the king's courts.—The ſecond, That, like the king, they can depute their authority to another, as their ſuffragan, chancellor, commiſſary, *&c.*

They have alſo this advantage over lay-lords, that, in whatever Chriſtian country they come, their epiſcopal degree and dignity is acknowleged; and they may, *quatenus biſhops*, ordain, *&c.*

They have their vote in the tyral and arraignment of a peer; but ere ſentence of death, *&c.* they withdraw, and vote by proxy.—They have ſeveral immunities, as from arreſts, outlawries, diſtreſs, *&c.* liberty to hunt in the king's foreſts, *&c.* to have certain tuns of wine duty-free, *&c.* Their perſons may not be ſeized, as lay-peers may, upon contempt, but their temporalties alone. They may qualify as many chaplains as a duke; *viz.* ſix.

By law, the crime of epiſcopicide, which a clergyman commits by killing his *biſhop*, is equivalent to parricide; *viz.* it is petty-treaſon.

The form of conſecrating a *biſhop* is different in different churches.—In the Greek church, the *biſhop* elect being by the aſſiſtant *biſhops* preſented for conſecration, and the inſtrument of election put in his hand; after ſeveral prayers (the firſt called diaconicum) the *biſhop* elect demanding conſecration, makes profeſſion of his faith: after which he receives a benediction. He is then interrogated as to the belief of the Trinity; to which he anſwers by a long profeſſion of faith, and receives a ſecond benediction. Laſtly, he is aſked what he thinks of the incarnation; to which he anſwers in a third profeſſion of faith; which is followed by a third benediction: after which the conſecrator gives him the paſtoral ſtaff: then he is led up to the altar; where, after certain prayers, and three croſſes on his head, he receives the pallium, if he be an archbiſhop, or patriarch; he then receives the kiſs of peace, of his conſecrator, and two aſſiſtants; and, ſitting down, reads, prays, and gives the communion to his conſecrator and others.

In the Romiſh church, the *biſhop* elect, being preſented by the elder aſſiſtant to the conſecrator, takes the oath: he is then examined as to his faith; and, after ſeveral prayers, the New Teſtament is drawn open over his head, and he receives the chriſm or unction on his head. The paſtoral ſtaff, ring, and goſpel, are then given him; and, after communion, the mitre is put on his head: each ceremony being accompanied with proper prayers, *&c.* the proceſs ends with Te Deum.

In England, the king being certified of the death of a *biſhop* by the dean and chapter, and his leave requeſted to elect another, the congé d'elire is ſent to them, nominating the perſon he would have choſen. The election is to be within twenty days after the receipt of the congé d'elire; and the chapter, in caſe of refuſing the perſon named by the king, incurs a præmunire.—After election, and its being accepted of by the *biſhop*, the king grants a mandate under the great ſeal for confirmation; which the archbiſhop conſigns to his vicar-general; conſiſting moſtly in a ſolemn citation of ſuch as have any objections to the *biſhop* elect, a declaration of their contumacy in not appearing, and an adminiſtration of the oaths of ſupremacy and canonical obedience. Sentence being read by the vicar-general, the confirmation concludes with a treat. Then follows the conſecration, by the archbiſhop, and two aſſiſtant *biſhops:* the ceremony of which is much the ſame as in the Romiſh church, ſave that, having put on the epiſcopal robes, the archbiſhop and *biſhops* lay their hands on the new prelate's head, and conſecrate him with a certain form of words.—After communion they go to a banquet.

The proceſs of the tranſlation of a *biſhop* to another biſhoprick only differs in this, that there is no conſecration.

In Denmark there are ſix ſuperintendants, who take it very kindly to be called *biſhops*, and *my lords*.—They have no temporalties; keep no eccleſiaſtical courts; have no cathedrals, or prebends, *&c.* but are only *primi inter pares*, having the rank above the inferior clergy of the province, and the inſpection into their doctrine and manners.

The revenue of the ſuperintendant *biſhop* of Copenhagen is about 2000 rixdollars, yearly; and of the reſt, 1500 rixdollars. They are allowed two or three pariſhes each. Their habit is common with that of the other miniſters. *Account of Denmark*, p. 161.

In Sweden are an archbiſhop, and ten *biſhops*, with ſeven or eight ſuperintendants under them.—The archbiſhoprick of Upſal is worth but 400 *l.* per annum, and the reſt in proportion.—They have alſo eccleſiaſtical courts, *&c.* *Robinſ. Acc. of Swed.* c. 5.

Regionary BISHOPS. See the article REGIONARY.

BISHOP'*s-Court*, an eccleſiaſtical court held in the cathedral of each dioceſe; the judge whereof is the *biſhop's* chancellor, antiently called *eccleſiaſticus*, and *eccleſiæ cauſidicus*, *q. d.* the church-lawyer; who judges by the civil and canon law; and, if the dioceſe be large, has his commiſſaries in remote parts, who hold what they call *conſiſtory courts*, for matters limited to them by their commiſſion.

BISHOPRICK, the juriſdiction of a *biſhop:* or the diſtrict within which it is compriſed; called alſo *dioceſe*.

There are 24 *biſhopricks*, and two archbiſhopricks, in England and Wales.—To the *old* ones, ſubſiſting before the times of the reformation, Henry VIII. by letters patent added five *more biſhopricks*; viz. thoſe of Cheſter, Glouceſter, Peterborough, Briſtol, and Oxford, *Stat.* 34 *&* 35 *H.* VIII. *c.* 17.

BISKET *, or BISQUET, uſually denotes a delicate kind of bread, prepared by the confectioners, of fine flour, eggs, ſugar, and roſe or orange-water; or of flour, eggs, and ſugar, with aniſeeds and citron-peel; baked again and again in the oven in tin or paper molds.

* The word comes from the Latin *bis*, twice; and the French *cuit*, *coctus*, q. d. *twice baked*.

We find divers ſorts of ſuch *biſkets*; as, ſeed-*biſket*, fruit-*biſkte*, long-*biſket*, round-*biſket*, Naples-*biſket*, ſpunge-*biſket*, &c.

Sea-BISKET is a ſort of bread much dried, by paſſing the oven twice, to make it keep for the ſervice of the ſea.—For long voyages they bake it four times, and prepare it ſix months before the embarkation. It will hold good a whole year.

BISMUTH, a mineral body, of the ſemimetallic kind; by many ſuppoſed to be compoſed of the firſt matter of tin, while yet imperfect. It is found uſually in tin-mines, ſometimes alſo in ſilver-mines.

Its ſubſtance is hard, ponderous, and brittle, of a large grain, gloſſy, white, and ſhining.—It is alſo called *tin-glaſs*; becauſe, when broken, it ſhews a vaſt number of little poliſhed laminæ like glaſs: it is alſo called *marcaſite*, by way of excellence, becauſe ſurpaſſing all other marcaſites or ſemimetals in whiteneſs and beauty.

Biſmuth contains an arſenical ſalt, very dangerous to take inwardly. Its precipitate makes a very white magiſtery, which is mixed with waters and pomatums to make a fucus to beautify the complexion. There are alſo flowers prepared from it, which take away ſpots in the face. See the proceſs in Quincy.

There is alſo an *artificial biſmuth*, which is that ordinarily found in the ſhops, made by reducing tin into thin laminæ, or plates, and cementing them by a mixture of white tartar, ſalt-petre, and arſenick, ſtratified in a crucible over a naked fire. The ſame is alſo by ſome made of a mineral called zink, uſing lead inſtead of tin, and a little calamine. See Supplement, article BISMUTH.

BISQUET. See the article BISKET.

BISSECTION, in geometry, the diviſion of any quantity into two equal parts, otherwiſe called *bipartition*. See DIVISION, *&c.*

BISSEXTILE, or *leap-year*, in chronology, a year conſiſting of 366 days, happening once each four years, by reaſon of the addition of a day in the month of February, to recover the ſix hours which the ſun ſpends in his courſe each year, beyond the 366 days, ordinarily allowed for it. See YEAR.

The day thus added, is alſo called *biſſextile*; Cæſar having appointed it to be the day before the 24th of February, which among the Romans was the ſixth of the calends of March.

Thus the ſixth of the calends of March was this year reckoned twice over; whence the intercalary day, and the year when it happens, were both called by the name *biſſextile*.—By the ſtatute *de anno biſſextile*, 21 H. III. to prevent miſunderſtandings, the intercalary day, and that next before it, are to be accounted as one day,

The aſtronomers concerned in reforming the calendar, by order of pope Gregory III. obſerving, that the *biſſextile* in four years added 40 minutes more than the ſun ſpent in returning to the ſame point of the zodiac; and computing that theſe ſupernumerary minutes in 133 years would form a day; to prevent any changes being thus inſenſibly introduced in the ſeaſons, it was appointed, that, in the courſe of 400 years, there ſhould be three *biſſextiles* retrenched: accordingly, in the year 1700. there was no *biſſextile*, for that reaſon.

BISTER, or BISTRE, among painters and deſigners, a colour made of chimney-ſoot boiled, and afterwards diluted with water; ſerving to waſh their deſigns. See WASHING.

Inſtead of this, ſome uſe the hatches of a pen, with a little Indian ink, others red chalk, others black lead, *&c.*

FISTOURY, a kind of ſurgeon's cutting inſtrument, of the knife-kind; much uſed in making inciſions. — There are three kinds: the blade of the *firſt* turns backwards and forwards like a lancet for opening abſceſſes, and is ſometimes uſed inſtead of it.—The *ſtrait biſtoury* does not turn, but ſtands ſtrait in the handle like a common knife.—the *crooked biſtoury* is ſhaped like a half-moon, the keen edge being on the inſide. *Dionis ap. Bibl. Anat. t.* 1. *p.* 427.

BIT, or **BITT**, an eſſential part of a bridle; its form and uſe well known; its parts and kinds various.

The kinds of *bits* are, 1. The muſroll, ſnaffle, or watering *bit*. 2. The cannon-mouth, jointed in the middle; preferred by Solleyſel to all others. 3. The cannon with a faſt mouth all of a piece, only kneed in the middle, to form a liberty or ſpace for the tongue; fit for horſes too ſenſible or ticklıſh, and liable to be continually bearing on the hand. 4. The cannon-mouth, with the liberty in form of a pigeon's neck; proper where a horſe has too large a tongue. 5. The cannon with a port, mouth, and an upſet, or mounting liberty, uſed where a horſe has a good mouth but large tongue. 6. The ſcatch-mouth, with an upſet; ruder, but more ſecure than a cannon-mouth. 7. The cannon-mouth with a liberty, after M. Pignatel's manner; proper for a horſe with a large tongue and round bars. 8. The maſticadour, or ſlavering *bit*. 9. The cat's foot *bit*. 10. The baſtonet *bit*, &c.

The ſeveral parts of a ſnaffle or curb-*bit* are—the mouthpiece, the cheeks and eyes, guard of the cheek, head of the cheeks, the port, the welts, the campanel or curb and hook, the boſſes, the bolſters and rabbets, the water-chains, the ſide-bolts, bolts and rings, kirbles of the bit or curb, trench, toproll, flap, and jeive.

BITE *of a mad dog*. See the article HYDROPHOBIA.

BITE *of a viper*. See the article VIPER.

BITE *of a tarantula*. See the article TARANTULA.

BITTER *Almonds*.	See the articles	ALMOND.
BITTER *Waters*.		WATER.
BITTER *Wine*.		WINE.

BITTERNESS, a kind of ſavour or ſenſation, oppoſite to ſweetneſs, ſuppoſed by ſome to reſult from this, that all the particles of the bitter body are broken, blunted, and diminiſhed; ſo as none of them remain long and rigid: which is confirmed from this, that foods burnt, and their particles much comminuted and broken by the fire, become bitter.

BITUMEN, in a general ſenſe, a fatty, tenacious, mineral juice, very inflammable: or a foſſil body, which readily takes fire, yields an oil, and is not ſoluble in water.

Naturaliſts diſtinguiſh three kinds of *bitumens*; *hard*, *ſoft*, and *liquid* or *oily*; each of which they ſubdivide into ſeveral ſpecies.

Among the *hard bitumens* are ranked, yellow amber, ambergriſe, jet, aſphaltum, piſſaſphaltum, pit-coal, and ſulphurs. —The *ſoft* are, maltha, *bitumen* of Colao, and of Surinam. —Laſtly, the naphtha of Italy, and petroleum, are ranked among the liquid *bitumens*.

Of *bitumens*, ſome again are foſſil, others are found floating on the ſurface of certain lakes, and others ſpring from the earth like fountains; as at Pitchford in Shropſhire, *&c.* — Some *bitumens* are ſo hard, that they are uſed in forges, inſtead of coals: others ſo glutinous, that they ſerve inſtead of cement, or mortar, in buildings; of which kind that was which the famous walls of Babylon were built with: and others ſo liquid, that they are burnt in lamps inſtead of oil.

The *bitumen* in moſt eſteem is that of Judea. See Supplement, article BITUMEN.

BIVALVE, or **BIVALVULAR**, a term uſed by the writers of natural hiſtory, for ſuch ſhell-fiſh as have two ſhells, *e. gr.* cockles, muſcles, oyſters, *&c.* which are ſaid to be of the *bivalvular* kind.

A certain *bivalve* ſhell, being a large blood-red ſpondile in Buco's cabinet, is ſaid by Dr. Liſter to have been purchaſed by the duke of Orleans for 900 livres, which is upwards of 50 *l.* ſterling. The ſame prince alſo offered a Pariſian 11000 livres for 32 ſhells, and was refuſed.

BIVALVE is alſo applied to the ſiliquæ, or ſeed-pods, of ſuch plants as open their whole length to diſcharge their ſeeds. —Such are peas, beans, *&c.* which the botaniſts ſay, have *bivalve* or *bivalvular* ſiliquæ.

BIVENTER, in anatomy, a denomination given to the ſixth muſcle of the lower jaw; being the laſt of thoſe ſerving to depreſs or open it: thus called, as having two bellies for its two extremities, and a tendon in the middle. — See *Tab. Anat.* (*Myol.*) *fig.* 2. *n.* 2.

The *biventer* or *digaſtricus* has its origin from a ſciſſure between the occipital bone and the maſtoidal apophyſis; whence paſſing its tendon through a hole in the ſtylo-hyoideus, and an annular ligament of the os hyoides, there ariſe ſome fibres, which join its ſecond belly: hence, growing fleſhy, and returning upwards, it is inſerted into the middle of the inferior part of the lower jaw.—By this contrivance it is enabled to draw the jaw downwards.

BLACK, ſomething opake and porous, that imbibes all the light falling on it, reflects none, and therefore exhibits no colour.

There are various kinds of *blacks*, which paſs in commerce; *viz. dyers black*, *painters black*, *german black*, *ivory black*, *ſpaniſh black*, *lamp black*, &c.

Dyers **BLACK**, is one of the five ſimple and mother colours uſed in dying; and given differently, according to the different quality and value of the ſtuffs to be dyed. See DYING.

For broad-cloths, fine ratines, and druggets, *&c.* they uſe woad and indigo; the goodneſs of the colour conſiſts in there not being above ſix pounds of indigo to a ball of woad, when the latter begins to caſt its blue flower; and, in its not being heated for uſe above twice.—Thus blued, the ſtuff is boiled with alum, or tartar, then maddered; and, laſtly, the *black* given with galls, copperas, and ſumac.—To bind it, and prevent its ſmearing in uſe, the ſtuffs are to be well ſcoured in the fulling-mill, when white, and well waſhed afterwards.

For ſtuffs of leſs value, it is ſufficient they be well blued with woad, and *blacked* with galls and copperas: but no ſtuff can be regularly dyed from white into *black*, without paſſing through the intermediate blue.

Yet there is a colour called *coal black*, or *jeſuit's black*, prepared of the ſame ingredients as the former, but without being firſt dyed blue.—Here the drugs are diſſolved in water that had boiled four hours, and ſtood to cool till the hand would bear it; then the ſtuff dipped in it, and again taken out ſix or eight times. Some even prefer this *black* to the other.—This method of dying *black* is ſaid to have been invented by the Jeſuits, and to be ſtill practiſed in their houſes, where they retain numbers of dyers.

By 23 *El. c.* 9. Nothing of the nature of cloth ſhall be maddered for a *black*, except it be firſt grounded with woad only, or with woad and anele [blue ind.] unleſs the madder be put in with ſumac or galls; on pain of forfeiting the value of the thing dyed. Provided it ſhall be lawful to dye any manner of *gall-black*, and *ſumac-black* [*plain black*] wherein no madder ſhall be uſed.

Earth-**BLACK** is a kind of coal found in the ground, which, well-pounded, is uſed by painters in freſco.

There is alſo a kind of BLACK made of ſilver and lead, uſed to fill up the ſtrokes and cavities of things engraved.

German or *Frankfort* **BLACK** is made of the lees of wine burnt, then waſhed in water, and ground in mills for that purpoſe, together with ivory or peach-ſtones burnt.

This *black* makes the principal ingredient in the rolling-preſs-printers ink. See INK. —It is ordinarily brought from Frankfort, Mentz, or Straſbourg, either in lumps or powder. That made in France is leſs valued than that of Germany, by reaſon of the difference between the lees of wine uſed in the one and the other; though ſome prefer that made at Paris to that of Frankfort.

Ivory-**BLACK** is made of ivory burnt or charred, ordinarily between two crucibles well luted; which, being thus rendered perfectly *black*, and in ſcales, is ground in water, and made into troches, or little cakes, uſed by the painters; as alſo by the jewellers to blacken the bottom or ground of the collets, wherein they ſet diamonds to give them their teint or foil.

Lamp-**BLACK**, or *Lam*-**BLACK**, the ſooty fumes of reſin, prepared by melting and purifying the reſin in iron veſſels; then ſetting fire to it under a chimney, or other place made for the purpoſe lined a-top with ſheep-ſkins, or thick linen-cloth, to receive the vapour or ſmoke, which is the *black*: in which manner they prepare vaſt quantities of it at Paris.

In England it is ordinarily prepared from the reſinous and fatty parts of woods, burnt under a kind of tent, which receives it; but the greateſt part is brought from Sweden and Norway.

It is uſed on various occaſions, particularly in the printers ink; for which it is mixed with oils of turpentine and linſeed, all boiled together. See INK.

It muſt be obſerved, that this *black* takes fire very readily, and when on fire, is very difficultly extinguiſhed: the beſt method of putting it out is with wet linen, hay, or ſtraw; for water alone will not do it.

Spaniſh **BLACK**, ſo called, becauſe firſt invented by the Spaniards, and moſt of it bought from them, is no other than burnt cork uſed in various works, particularly among painters.

BLACK *book of the Exchequer*.	See	EXCHEQUER.
BLACK *eagle*.		EAGLE.
BLACK *hellebore*.		HELLEBORE.
BLACK *lead*.		LEAD.
BLACK *money*.		MONEY.
BLACK *order*.		ORDER.
BLACK *ſtar*.		STAR.

BLACKMAIL, a certain rate of money, corn, cattle, or other matter, paid by the inhabitants of towns in Weſtmorland, Cumberland, Northumberland, and Durham, to divers perſons inhabiting on or near the borders, being men of name, and allied with others in thoſe parts, known to be great robbers and ſpoil-takers: in order to be by them freed and protected from any pillage.—Prohibited by 34 El. *c.* 13.

BLACKNESS, the quality of a black body; or a colour ariſing from ſuch a texture and ſituation of the ſuperficial parts of the body, as does, as it were, deaden, or rather abſorb, the light falling on it, without reflecting any, or very little, of it to the eye.

In which ſenſe, *blackneſs* ſtands directly oppoſed to *whiteneſs*; which conſiſts in ſuch a texture of parts, as indifferently reflects all the rays thrown upon it, of what colour ſoever they be.

Sir Iſaac Newton, in his *Optics*, ſhews, that for the production of *black* colours, the corpuſcles muſt be leſs than thoſe which exhibit any other colours; becauſe, where the ſizes of the component particles are greater, there is too much light reflected to conſtitute this colour: but, if there be a little leſs than is requiſite to reflect the white, and very faint blue of the firſt order, they will reflect ſo little light, as to appear intenſely black; and yet may, perhaps, reflect it variouſly to and fro within them ſo long, till it happen to be ſtifled and loſt; by which means they will appear *black* in all poſitions of the eye, without any tranſparency.

And from hence it appears, why fire, and putrefaction, by dividing the particles of ſubſtances, turn them black:—Why ſmall quantities of *black* ſubſtances impart their colours very freely, and intenſely, to other ſubſtances, to which they are applied; the minute particles of theſe, by reaſon of their very great number, eaſily overſpreading the groſs particles of others.—Hence alſo appears, why glaſs, ground very elaborately with ſand, on a copper plate, till it be well poliſhed, makes the ſand, together with what by rubbing is worn off from the glaſs and copper, become very black;—and why black ſubſtances do, ſooneſt of all others, become hot in the ſun's light, and burn (which effect may proceed partly from the multitude of refractions in a little room, and partly from the eaſy commotion of ſuch very ſmall particles)—alſo, why blacks are uſually a little inclined towaads a bluiſh colour: for, that they are ſo, may be ſeen by illuminating white paper with light reflecting from black ſubſtances, where the paper will uſually appear of a bluiſh white; and the reaſon is, that black borders on the obſcure blue of the firſt order of colours; and therefore reflects more rays of that colour than of any other.

BLACK ROD, *Gentleman-uſher* of the BLACK *Rod*, is the chief gentleman-uſher to the king; called in the black book, *Lator virgæ nigræ, & haſtiarius*, and elſewhere *virgi-bajulus*.

His duty is to bear the rod before the king at the feaſt of St. George at Windſor: he has alſo the keeping of the chapter-houſe door, when a chapter of the order of the garter is ſitting; and, in time of parliament, attends the houſe of peers.—His badge is a *black rod*, with a lion in gold a-top. This rod has the authority of a mace.

BLACKS, *Negroes*: a nation of people, ſo called from the colour of their ſkin.—For the reaſon of their colour, and the commerce of them. See NEGRO.

BLACKS, is alſo a name given to an aſſociation of diſorderly, and ill-deſigning perſons, herding chiefly about Waltham in Eſſex, who deſtroyed deer, robbed fiſh-ponds, ruined timber, &c.—Many of them were armed, and diſguiſed, with their faces *blacked*.

Hence, we ſay, the *black* act, the Waltham *blacks*, &c.—Such doings for the future are made felony, by 9 *Geo.* *c.* 22.

BLADDER, in anatomy, a thin expanded membranous body, found in ſeveral parts of an animal, ſerving as a receptacle of ſome juice, or of ſome liquid excrement; from whence it takes various denominations, as *urine-bladder*, *gall-bladder*, &c.

BLADDER *, by way of eminence, is a large veſſel, which ſerves as a receptacle of the urine of animals, after its ſecretion from the blood in the kidneys.

* This is ſometimes alſo called, by way of diſtinction, the *urinary bladder*, *verſica urinaria.*

The *bladder* is ſituated in the pelvis of the abdomen; in men, immediately on the rectum; in women, on the vagina uteri: its figure in quadrupeds reſembles a pear, with the baſis upwards; but in human bodies the lower part is almoſt on a level with the upper; and its orifice, or neck, placed ſideways, while the fundus, or bottom, which, in a human bladder is very broad, reſts either on the rectum, or the vagina uteri.—It is faſtened to the navel by the urachus degenerated into a ligament, its ſides to the umbilical arteries, and its neck to the inteſtinum rectum in women.

The *bladder* is compoſed of three coats; the firſt a covering of the peritonæum, the ſecond conſiſts of muſcular fibres, which run irregularly ſeveral ways; and the third, which is full of wrinkles for facilitating its dilatation, is both glandulous and nervous.—Its glands ſeparate a viſcous and ſlimy matter, which defends the *bladder* from the acrimony of the ſalts in the urine. Around its neck there goes a ſmall muſcle, called *ſphincter veſicæ*, which contracts the orifice of the *bladder*, to prevent the urine from dripping involuntarily, or till it thruſt open the paſſage, by the contraction of the ſecond *coat* of the *bladder*, which is therefore called *detruſor urinæ*.

The *diſeaſes of the Bladder* are the ſtone, inflammations, ulcers, and palſies; to which may be added, incontinence of urine, ſuppreſſion of urine, &c. See STONE, URINE, &c.

Swimming, or *Air* BLADDER. See the article SWIMMING.

BLADE. See the article SHOULDER-BLADE.

BLAIN, a diſtemper incident to beaſts, conſiſting in a bladder growing on the root of the tongue againſt the wind-pipe, which at length ſwelling, ſtops the breath.

It comes by great chafing, and heating of the ſtomach; whereby, as ſome judge, it ſtill grows, and increaſes by more heat.

BLANCHE *carte*. See the article CARTE.

BLANCHING, the art or manner of *bleaching*, or whitening. See BLEACHING, and WHITENING.

BLANCHING *of copper* for ſale, in imitation of ſilver; or mixing blanched copper with ſilver; or expoſing the ſame to ſale; or any malleable compoſition or mixture of metals or minerals heavier than ſilver, and which looks, and touches, and wears like gold, but is manifeſtly worſe than ſtandard, is made felony, 8 & 9 *W.* III. &c. 26.

BLANCHING *of wax*. See the article WAX.

BLANCHING, in coinage, the operation of preparing the pieces before ſtriking, to give them the requiſite luſtre and brightneſs.

The *blanching*, as now practiſed, is performed by nealing or heating the pieces in a kind of pan or ſhovel, with a wood-fire, in manner of a reverberatory furnace, ſo as the flame paſſes over the ſhovel. The pieces being ſufficiently heated, and cooled again, are put ſucceſſively to boil in two copper pans, wherein are aqua fortis, common ſalt, and tartar of Montpellier; when they have been well-drained of this firſt water in a copper ſieve, they throw ſand and freſh water over them; and when dry, they are well rubbed.

The antient method of *blanching* was, by putting the pieces, after heating, in a large veſſel of common water, and ſome ounces of aqua fortis; but in different proportions for gold and ſilver.—The method is now diſuſed, partly by reaſon of its expenſiveneſs, and partly becauſe it diminiſhes the weight of the metal.

BLANCHE *firme*. See the article WHITE-MONEY.

BLANCHED *money*. See the article MONEY.

BLANKS in coining. See COINING.

BLANK *verſe*. See VERSE, and RHYME.

Point BLANK. See the article POINT *blank*.

BLANKET. See HYKES.

BLATTA *, *Byzantia*, in phyſiology and pharmacy, a teſtaceous body, being the operculum, or lid of a turbinated ſhell, whoſe fiſh yields a purple dye.

* This is otherwiſe called *blattium Byzantium*, βλαττιον Βυζαντιον.

The *blatta* differs from the lid of the *buccinum*, or *purpura*, in figure; the firſt being oblong, the latter round: but in the ſhops they are ordinarily confounded, and ſold for each other. The *blatta Byzantia* is alſo confounded by apothecaries with the *unguis odoratus*, from which it ought to be diſtinguiſhed as belonging to another kind of ſhell-fiſh.

Dr. Liſter takes the *blatta Byzantia* to have ſucceeded the *unguis odoratus*, and to have been brought into the ſhops in its place. In Dioſcorides's time, the beſt was brought from the Red-Sea, *viz.* the paleſt and fatteſt; the blacker and leſs from Babylon, or the Perſian gulph: but, it ſeems, latter times took up with thoſe found about Conſtantinople; whence the preſent ſhop-*blatta* had its name.

The name *blatta* ſeems to have been given to this operculum from the colour; as being of a dark hair-colour, as the common *blatta piſtinaria*, or *bakehouſe-beetle*, ſo frequent in London, is. See Supplement, article BLATTA BYZANTIA.

BLAZE, in the manage. See the article STAR.

BLAZING-*Star*. See the article COMET.

BLAZON *, or BLAZONRY, in heraldry, the art of deciphering the arms of noble houſes; or of naming all the parts in their proper and particular terms.

* Various etymologies are given of the word *blazon*: the moſt probable is that which brings it from the German *blaeſen*, to blow a horn; it being the cuſtom of thoſe who preſented themſelves at the liſts in the antient turnaments to blow a horn, to notify their coming. After this the heralds ſounded their trumpets, and then *blazoned* the arms of thoſe who preſented themſelves; deſcribing them aloud, and ſometimes expatiating on the praiſes, and high exploits, of the perſons who bore them.

There is this difference between *arms* and *blazon*; that the firſt are the deviſe or figures borne on the coat, or ſhield; and *blazon*, the deſcription thereof in words.

The rules of *blazon* are, 1°. To name the metal or colour of the field firſt: as, *or*, *argent*, or *gules*, &c. 2°. To name the manner of the diviſion of the eſcutcheon by line, whether downright or bendwiſe, and alſo the difference of the line, whether it be indented, ingrailed, &c. in the next place. 3°, Then to name the charge that is on the field. 4°, Having thus expreſſed the field, the diviſion, and the charge, if there be more parts of the field occupied by the charge than one, you are to name the principal part of the field firſt. 5°, If there be more than one kind of charge in a field, that in the chief part is to be named firſt. 6°, To uſe no iteration or repetition of words in *blazoning* a coat, eſpecially of any of theſe four words, *of*, *or*, *and*, *with*. 7°, The three forms of *blazon* are by metals and colours, by precious ſtones, and by the celeſtial planets: the firſt for private gentlemen; the ſecond for perſons ennobled with titles, as dukes, earls, &c. and the third for emperors, kings, and princes. Though this variety of form is rejected by the French, from whom we had our heraldry, and by all other nations, who uſe none but metals and colours for all degrees. 8°, That metal upon metal, and colour upon colour is falſe heraldry: which admits of no exception, except in the arms of Jeruſalem, which are, argent, a croſs potent between four croſlets, or.—Add, that when lions ſtand upright in a coat, they are called *rampant*; when walking forward, *paſſant*; when they look you in the face, *paſſant guardant*: in other poſtures they have other terms, as *ſaliant*, *regardant*, &c. Wolves and bears are termed after the manner of lions; griffons (inſtead of *rampant* and *ſaliant*) are termed *ſegreant*; lions, griffins, and eagles, are alſo ſaid to be *langued* and *armed*; ſwans, *membred*; hawks, *jeſſed* and *belled*; cocks, *armed*, *creſſed*, and *jowloped*:—that is, when the tongues, bills, and claws of ſuch creatures are found of different colours from the body.—When an animal proceeds from the bottom of the ordinary, it is termed *iſſuant*; when over ſome ordinary, *jeſſant*; and if it proceed from the middle of any ordinary, or common charge, *naiſſant*.

BLEACHING, or **Blanching**, the art of whitening linens, ſtuffs, ſilks, and other matters.

Bleaching *of ſilk*. — While it is yet raw, it is put into a thin linen bag, and thrown into a veſſel of boiling river water, wherein ſoap has been diſſolved, then boiled two or three hours, and the bag being turned ſeveral times, taken out, beaten and waſhed in cold water, ſlightly wrung out, and thrown into a veſſel of cold water, mixed with ſoap and a little indigo: the indigo gives it the bluiſh caſt always obſerved in white ſilks. After taking it out of the ſecond veſſel, it is wrung out, and all the water and ſoap expreſſed, ſhook out to untwiſt and ſeparate the threads, and hung up in the air, in a kind of ſtove made on purpoſe, wherein is burnt ſulphur; the vapour whereof gives the laſt degree of whiteneſs to the ſilk.

Bleaching *or ſcouring of woollen ſtuff*. — There are three manners of whitening woollens; the firſt with water and ſoap; the ſecond with vapour of ſulphur; the third with chalk, indigo, and vapour of ſulphur.

For the firſt, the ſtuffs being taken from the fulling-mill, are put into ſoaped water pretty hot, and worked afreſh by force of arms over a bench, which finiſhes the whitening the fulling-mill had begun; and laſtly, waſhed out in clear water and dried: this is called *the natural way of bleaching*.

In the ſecond method, they begin with waſhing the ſtuff in river-water: it is then laid to dry on poles, and, when half dry, ſpread out in a kind of ſtove well-cloſed, wherein is burnt ſulphur; the vapour whereof diffuſing itſelf, ſticks by little and little over all the ſtuff, and gives it a fine whitening: this is commonly called *bleaching by the flower*.

In the third method, after the ſtuffs have been waſhed, they are thrown into cold water impregnated with chalk and indigo; after they have been well agitated here, they are waſhed afreſh in clear water, half dried on poles, and ſpread in a ſtove to receive the vapour of the ſulphur: which finiſhes the operation. This is not eſteemed the beſt method of *bleaching*, tho' agreeable enough to the ſight.

It may be here obſerved, that when a ſtuff has once received the ſteam of ſulphur, it will ſcarce receive any beautiful dye, but black or blue.

Bleaching *of hollands or fine linens*. — After taking them from the loom, while yet raw, they are ſteeped a day in fair water, waſhed out and cleared of their filth, and thrown into a bucking-tub filled with a cold lixivium, or lie of wood-aſhes and water. When taken out of the lie, they are waſhed in clear water, ſpread in a meadow, and watered, from time to time, with water from little dikes, or canals, along the ground, by means of ſcoops, or hollow peels of wood, called by the Dutch, who pretend to be the inventors of them, *gieter*. After lying a certain time on the ground, they are paſſed through a new lie, poured on hot; and again waſhed in clear water, and laid a ſecond time on the ground, and every thing repeated as before; then paſſed through a ſoft gentle lie, to diſpoſe them to reſume the ſoftneſs which the other harſher lies have taken from them, waſhed in clear water, ſoaped with black ſoap, and that ſoap again waſhed out in clear water: they are then ſteeped in cow's milk, the cream firſt ſkimmed off, which finiſhes their whitening; and ſcouring gives them a ſoftneſs, and makes them caſt a little knap: when taken out of the milk, they are waſhed in clear water for the laſt time.—After all this proceſs, they give the linen its firſt blue, by paſſing it through a water wherein a little ſtarch, ſmalt, and Dutch lapis lazuli, have been ſteeped. — Laſtly, the proper ſtiffneſs and luſtre is given with ſtarch, pale ſmalt, and gums, the quantity and quality whereof may be adjuſted according to occaſion.

In fine weather, the whole proceſs of *bleaching* is completed in a month's time; in ill weather it takes up ſix weeks, or more.

Bleacher. See the article WHITSTER.

Bleaching *of coarſe linens*. They are taken from the loom, and laid in wooden frames, full of cold water; where, by means of wooden hammers, worked by a water-mill, they are beat ſo, as inſenſibly to waſh and purge them of their filth; then ſpread on the ground, where the dew, which they receive for eight days, takes off more of their impurity; then put into a kind of wooden tubs or pans, with a hot lie over them. Thus lixiviated, they are again purged in the mill, laid afreſh on the ground, and after eight days more, paſſed through a ſecond lie, and all things repeated, till ſuch time as they have acquired their juſt degree of whiteneſs.

Perſons appointed by the truſtees for improving the hempen and flaxen manufactures in Scotland, may enter into any bleach-yard, back-houſe, &c. and ſearch all rooms, and the boilers therein, and view the lees, and refuſe and dregs thereof—to ſee whether there have been any lime, pigeons-dung *, or ſoap-dregs, uſed in the *bleaching* of linen cloth or yarn, contrary to the ſtatute, 13 *G*. c. 26. § 16.

* Lime, or pigeons-dung, are not to be uſed in *bleaching* and whitening of linen, 10 *A*. *c*. 21.

For **Bleaching** *of hair*. See the article HAIR.

For **Bleaching** *of wax*. See the article WAX.

BLEEDING, *phlebotomy*, an operation in chirurgery; being the opening of a vein with a lancet, for the evacuation of corrupt or redundant blood.

Some phyſicians extol *bleeding* as the ſureſt, and moſt efficacious ſpecies of evacuants. Yet was it very rare among the antients, however frequent among the moderns. — Oſtenſius obſerves, that at Rome perſons of quality are not allowed to be let blood, even in the moſt dangerous diſeaſes, without leave from the pope.

The hippopotamus is ſaid to have firſt taught men the uſe of *bleeding*: for that animal, being overcharged with blood, rubs herſelf againſt a pointed bulruſh, and opens a vein; till finding its plenitude diſcharged, it welters in the mire to ſtanch the blood again. See PHLEBOTOMY.

BLEMISH, a term in hunting, uſed when the hounds, or beagles, finding where the chace has been, make a proffer to enter, but return.

BLEMMYES *, or **Blemyes**, ΒΛΕΜΥΕΣ, among the antient geographers, a fabulous ſort of people, ſuppoſed without heads; having eyes and mouths on their breaſts; ſaid to have inhabited part of Æthiopia.

* Bochart derives the word *Blemmyes* from בלי, which implies a negation, and מוח brain: in which ſenſe the *Blemmyes* ſhould have been people without brains.

BLENDING *of mortar*. See MORTAR.

BLIGHT, a diſeaſe incident to plants, and affecting them variouſly; the whole plant ſometimes periſhing of it, and ſometimes only the leaves and bloſſoms, which will be ſcorched, and ſhriveled up, the reſt remaining green and flouriſhing.

This diſorder ſeldom happens but upon the blowing of ſharp eaſterly winds, which are moſt frequent with us about March; whence that month proves, of all others, the moſt fatal to plants.—From this circumſtance, ſome imagine the colds that then reign, being exaſperated by the eaſtern winds, effect *blights*; but Mr. Bradley furniſhes a more plauſible account: for, on this principle, it were hard to ſay why one plant, or one part of a plant, ſhould be blighted more than another. He obſerves then, that caterpillers and other inſects generally attend thoſe winds; and that they infect ſome one kind of tree more than another, and even ſome particular branch more than others; and thence infers, either that the eggs of thoſe inſects, or the inſects themſelves, are brought to us by the eaſterly winds; or that the temperature of the air, when the eaſtern winds blow, is neceſſary to hatch thoſe creatures, ſuppoſing the eggs to have been already laid on the infected parts. Now each of theſe cauſes ſeems to have its effect: thoſe *blights* attended with large worms, or caterpillers, ſeem hatched by the eaſtern winds; and thoſe others, which only produce the ſmall inſects, that occaſion the curling of the leaves of trees, may proceed from ſwarms of them, either ready hatched, or in the egg, brought with the wind.

The coldneſs of thoſe winds he ſhews to be no objection againſt their being fitted to hatch inſects; different inſe requiring vaſtly different degrees of heat. To this he add that every inſect has its proper plant, or tribe of plants, whic it naturally requires for its nouriſhment, and will feed on n other; and in which, therefore, it lays its eggs: it is n wonder then, that one kind of tree ſhould be infected, an all the reſt eſcape. That wind, *v. gr.* which brings hatches the caterpillers on the apple-tree, will not infect th pear, plum, or cherry; becauſe, were the ſhoals of inſe natural to the apple to light on thoſe other trees mention th they would either want their proper matrix to hatch in; or, were they ready hatched, would periſh for want of proper food. So that it is morally impoſſible, all kinds of plants ſhould be blighted at the ſame time, unleſs the eggs of every kind of inſect natural to each tree could be brought at one time with the wind; or, that an eaſterly wind could contain in it, at once, as many different degrees of cold, or heat, as would be required to hatch and maintain each different claſs of inſects. Nor is it any objection, that in *blights* there are not frequently any animals immediately perceivable. By the microſcope, we diſcover animalcules a million of times leſs than the ſmalleſt which come under ordinary notice; theſe, the gentleſt air may be conceived capable of blowing from place to place; ſo that it is no wonder if they be brought to us from the remoteſt regions, eſpecially the north-eaſt part of Great Tartary, *&c.* where the cold is intenſe enough to give them life; and from whence there is not ſea enough, by the warmth and ſaltneſs of whoſe vapours they might be ſuffocated. Theſe brought from the north-eaſt parts of America are probably deſtroyed by paſſing the vaſt Atlantic ocean, which may be the reaſon why the north-weſt wind is not ſo infectious.

To prevent *blights*, the more knowing among country-people, while the eaſterly winds blow, uſed to guard againſt them by burning heaps of weeds, chaff, and other combuſtibles, on the wind-ſide of their orchards, that the ſmoke may either poiſon the inſects, or their eggs, as they paſs along. It may be added, that theſe fires are often made with good ſucceſs, to deſtroy the caterpillers, even after they are hatched, and have begun to devour the trees.—Another method of preſerving trees from *blights* is, by ſprinkling tobacco-duſt, or pepper-duſt; which, it is ſaid, is preſent death to all inſects, and animalcules.

Corn is liable to *blights*, like other ſorts of grain.

BLIGHT *of Corn* is called *Smut*. See the article SMUT.

BLIND *Faith*. See the article FAITH.

BLIND *Gut*. See COECUM.

BLINDNESS, a privation of the ſenſe of ſight, ariſing from a total depravation of the organs thereof, or an involuntary obſtruction of their functions.

The cauſes of *blindneſs* are various; proceeding from cataracts, gutta ſerena's, *&c.*

We meet with divers inſtances of periodical *blindneſs*; ſome perſons only finding the defect of their ſight toward night; others only in the day.—

A *Nocturnal blindneſs* is called *Nyctalopia*.

A *Diurnal* one, *Hemeralopia*. See NYCTALOPIA.

The author of the embaſſy of D. Garcias de Silva Figueroa into Perſia tells us, that in ſeveral parts of that kingdom are found vaſt numbers of blind people of all ages, ſexes, and conditions; by reaſon of a ſpecies of little flies which prick the eyes and lips, and enter the noſtrils, carrying certain *blindneſs* with them when they light on the eyes.

Aldrovandus ſpeaks of a ſculptor, who became *blind* at twenty years of age, and yet ten years after made a perfect marble ſtatue of Coſmo II. de Medicis; and another of clay like Urban VIII. Bartholin tells us of a *blind* ſculptor in Denmark, who diſtinguiſhed perfectly well, by mere touch, not only all kinds of wood, but all the colours; and F. Grimaldi gives an inſtance of the like kind; beſide the *blind* organiſt lately living in Paris, who is ſaid to have done the ſame. F. Zahn recites abundance of inſtances of the amazing ſagacity of blind people in his *oculus artificialis*.

Uſually among chymiſts veſſels are ſaid to be *blind*, which have no opening but at one ſide.

BLINDS, or BLINDES, in fortification, a ſort of defences, uſually made of oziers, or branches interwoven and laid acroſs, between two rows of ſtakes about the height of a man, and four or five feet apart; uſed particularly at the heads of trenches, when they are extended in front towards the glacis; ſerving to ſhelter the workmen, and prevent their being overlooked by the enemy.

BLISTER. See VESICATORY, and EPISPASTIC.

BLOCK is uſed for a piece of marble, as it comes out of the quarry, ere it has aſſumed any form from the workman's hand.

BLOCK, in falconry, denotes the perch whereon a bird of prey is kept. This is to be covered with cloth.

BLOCKADE *, a ſort of ſiege of a place, intended to be taken by famine; wherein all the paſſages, and avenues, are ſeized, and ſhut up, ſo as no ſupplies of proviſion can be brought in.

* It comes from the German *blochus*, or *blockhauſe*, a bulwark, or houſe of wood; or from the Gauliſh *blocal*, barricade: though others derive it from the Latin *buculare*, to ſtop a paſſage.

A *blockade* is no regular ſiege; inaſmuch as there are no trenches or attacks. *Blockades* are formed by the cavalry.

The word *blockade* is ſometimes alſo uſed in ſpeaking of the beginning of a ſiege, when forces are ſent to ſeize the principal avenues where the beſiegers intend to fix their quarters. See SIEGE.

BLOCKS, on board ſhips, are pieces of wood, in which the ſhivers of pullies are placed, and wherein the running-ropes go. Of theſe, ſome are ſingle, ſome double; and ſome have three, four, or five ſhivers in them. They are named and diſtinguiſhed by the ropes they carry, and the uſes they ſerve for.—See *Tab. Ship. fig.* 2. *n.* 77.

BLOCK-*Wood* is a name ſometimes given in our laws to *Logwood*. 23 *Eliz. c.* 9. See LOG-WOOD.

Wind-Tackle BLOCKS. See the article WIND.

BLOMARY, or BLOOMARY, the firſt forge in an iron-work, through which the metal paſſes after it is melted out of the ore. See IRON.

BLOOD, a warm, red liquor or humour, circulating, by means of arteries and veins, through every part of the body.

The *blood*, while in its veſſels, appears to the naked eye uniform and homogeneous; but, when let out and cold, it ſeparates ſpontaneouſly into two different parts: the one red and fibrous, which coheres into a maſs, and is called the *cruor*; the other thin and tranſparent, which retains its fluidity when cold, and, being ſuppoſed ſpecifically heavier than the other, ſuſtains and bears it up, and is called the *ſerum*.—The proportion of the ſerum to the cruor, Dr. Drake makes at a medium, as one and a half to one: but Mr. Boyle, more accurately, makes the ſerum $\frac{13}{15}$ of the whole *blood*; and Dr. Jurin $\frac{15}{17}$ of the whole weight, or $\frac{3}{4}$ of the bulk.

By the microſcope, the *blood* appears to conſiſt of little red globules, ſwimming in an aqueous liquor, ſuppoſed to be the cruor and ſerum that appear diſtinct when let out. Mr. Leewenhoeck computes theſe globules to be twenty-five thouſand times ſmaller than the ſmalleſt grains of ſand; and Dr. Jurin makes them ſtill leſs. Upon an accurate menſuration, he found the diameter of one, equal to $\frac{1}{3240}$ of an inch, or leſs than $\frac{1}{324}$ of an ordinary hair of the head.

Dr. Drake thinks, that though the rapid motion of the *blood* may make the cruor appear round, and perhaps, by a kind of whirling or rotation, really convolute its parts; yet that their figure is not naturally globular, when let out, as appears from their coheſion, or hanging together in a lump; which ſpherical bodies, touching in a very few points, are not apt to do: but, on the contrary, this phænomenon, he thinks, argues an implication of their fibres within one another: which is confirmed by what Dr. Adams obſerved with his microſcope, *viz.* that immediately after emiſſion of *blood*, it is ſo far from exhibiting any red globules, that it appears to conſiſt of infinite branches, running in no other order, and variouſly coloured.

Principles of the BLOOD.—By a chymical analyſis, the *blood* is found to conſiſt chiefly of phlegm, as the baſis or vehicle; of volatile ſalts; of oil, which, by ſome nice examiners, has been found of two kinds: and of caput mortuum or earth, which, though it may conſiſt of divers ſubſtances, eſſentially different from each other, yet all we get out of it is a little fixed ſalt.—From the beſt experiments in this kind it appears, that in ſeven ounces of human *blood*, there are five ounces two drachms of phlegm, three drachms of a ſubtile ſpirituous oil, a ſmall quantity of a thicker oil, two drachms of ſalt, and about two of earth.

Dr. Jurin adds, that the ſerum, upon a chymical analyſis, exhibits a great deal of phlegm, and of the other principles a ſmall quantity; and, on the contrary, the cruor yields leſs phlegm, but the other principles much more copiouſly than the ſerum. From which data he concludes, that the globules conſiſt of ſome phlegm united with the oil and ſalts, and a ſmall quantity of earth; but, in what proportion, and how, and in what parts they are formed, *&c.* is not determined. Indeed, it muſt be conſidered, that the principles which the chymiſts thus produce ſeparate, may poſſibly be much altered by the fire. Thus, it is paſt doubt, the oils drawn from the *blood* by fire are vaſtly different from the natural oil, which circulates with the *blood*. To which may be added, that the caput mortuum remaining after diſtillation may, poſſibly, be a new production, which had no exiſtence under any form reſembling that in the *blood*.

The origin of the BLOOD is in the chyle, which, paſſing the lacteals, is delivered into the ſubclavian; where, mixing with the *blood*, they proceed together to the right ventricle of the heart; and there, being yet more intimately mixed, they circulate together through the whole body: till, after ſeveral circulations, and ſecretions at the ſeveral ſtrainers of the body, they are aſſimilated, ſo as to make one uniform compound maſs, which appears to be nothing elſe but chyle altered by the artifice of nature, and exalted into *blood*; there being no appearance of any thing extraneous mixed with the liquor circulating in the *blood-veſſels*, but chyle; excepting what had been before ſeparated from it, for ſome particular purpoſes, which being once ſerved, it is returned to it again; unleſs, perhaps, it may receive ſome portion of air in the lungs.

That there is *Air mixed in the* BLOOD, and circulating with it, is paſt doubt; but, whether any more than was at firſt contained in the food whereof the chyle is formed, is a queſtion not yet decided. The principal arguments urged for it are, the neceſſity of reſpiration; which may be accounted for on another principle: and the florid colour the *blood* receives in the lungs, and firſt ſhews in the vena pulmonalis; which is countenanced by an experiment made with the red grumous part of the *blood* after coagulation on *blood*-letting; for, upon turning the under-ſurface, which was before black, upwards, and expoſing it to the air, by its contact therewith it acquires a florid colour, like that of the *blood* in the vena pulmonalis. But this effect others account for from the extraordinary agitation and comminution of the *blood* in the lungs.

Indeed, Dr. Keil, Bohnius, Bernoulli, and ſome other mathematic phyſiologiſts, go farther. Mr. Boyle having examined the ſpecific gravity of *blood*, and found that of the ſerum to be greater than that of *blood*, in the proportion of 1190 to 1040, *i. e.* nearly as 8 to 7, it followed, that the cruor, or *blood*-globules, were ſpecifically lighter than the ſerum, and that in a conſiderable degree; which was further confirmed by the globules being ſuſtained in the ſerum, both while circulating, and when let out.—Hence it was conjectured, that theſe globules were nothing elſe but thin veſicles filled with a ſubtile aerial ſubſtance: and this opinion was confirmed from its being obſerved, in viewing the circulation by a microſcope, that a *blood*-globule, in paſſing through a very narrow veſſel, would change its ſhape from a globular, to an oval form, and would again recover its former figure, as ſoon as it was got through its narrow paſſage; which appearance was naturally enough aſcribed to the elaſticity of the included air: and, from this conjecture, were accounted for a great number of the phænomena of the animal œconomy, particularly Dr. Keil's theory of muſcular motion.

But this principle Dr. Jurin has examined, and appears to have overthrown. He made ſeveral experiments, in ſome of which the cruor before ſuſpended a-top of the ſerum, by its adheſion to the ſides of the porringer being cut off, and put in another veſſel of ſerum, immediately ſunk. In others, where the cruor buoyed up in the ſerum, even without any adheſion to the ſides of the glaſs, and merely by the bubbles of air adhering to its ſurface, upon including it in a receiver, and exhauſting the air, the bubbles burſting, the cruor would ſink: whence he concludes the globular part of the *blood* to be heavier than the ſerous: and, from other experiments, he aſcertains the proportion of the gravity of *blood* to that of ſerum, to be as 1054 to 1030; whence the quantity of the globules being before fixed at $\frac{1}{4}$ of the whole, the preciſe gravity of the globules beyond that of the ſerum is eaſily determined.—The *blood*-globules therefore are not veſicles filled with air, or any other fluid ſubſtance lighter than ſerum: which is further confirmed from this, that *blood*-globules are not found to dilate, or undergo any alteration, in an exhauſted receiver, when viewed through a microſcope; whereas, were they filled with any elaſtic fluid, they would either burſt, or at leaſt dilate into 70 or 80 times the ſpace.

As to the *Heat of the* BLOOD, authors are exceedingly divided about the cauſe thereof: the antients aſcribe it to a vital flame, or innate heat lodged in the heart, and thence communicated to the *blood*. Dr. Willis imagines a kind of accenſion in the *blood*; and thinks its heat reſults from its being, as it were, ſet on fire, and perſevering in that ſtate. Dr. Henſhaw ſolves it from an ebullition conſequent on the mixture of two fluids, ſo diſſimilar as the chyle and *blood*. Others have recourſe to the chymical principles of alcali and acid; others to the mutual action of the principles, or component parts of the *blood*, by means whereof an inteſtine motion, and by that means an inteſtine heat, or incaleſcence, is effected.

Dr. Drake, with more reaſon, attributes the heat of the *blood* to the ſpring of the air incloſed together with it in the veſſels: for, air being incloſed in the *blood*-veſſels, will endeavour to expand itſelf; and, conſequently, if it have force enough, will drive outwards the parts of the body that incloſe it; by which means it cauſes the *blood* to beat againſt the ſides of the veſſels; which, having muſculous, contractile coats, do in their turns compreſs it again, and ſo cauſe a reciprocal æſtus in the *blood*, greater than the mere circulatory motion could; whence the parts of the ſolids, or containing veſſels, being put into a conſtant agitation, a heat is produced in both, which they mutually impart to each other. See ATTRITION, &c.

Laſtly, Dr. Boerhaave accounts for the heat of the *blood* from the action of the heart, and the re-action of the aorta: for, the *blood*, driven by the heart obliquely againſt the ſides of the aorta, preſſes them, and ſpends almoſt its whole momentum againſt the curvity thereof, and is, by the figure and elaſticity of this veſſel, preſſed back again. Every moment of time, therefore, each particle of *blood* acquires a new motion, a new niſus, and rotation: hence follows a perpetual attrition, attenuation, rubbing off of angles, and a ſimilitude and homogeneity of all the parts; and hence the maſs derives its fluidity, heat, diviſion into particles accommodated to all veſſels, preſſure into the lateral tubes, &c.

Nor is the cauſe of the *Redneſs of the* BLOOD leſs obſcure: the chymiſts account for it from the exaltation of its ſulphur; others from the mixture of ſaline and ſubacid juices with ſulphurous ones; and others from the colour of the heart. The French philoſophers attribute this redneſs to the ſmalneſs of the ſize, and roundneſs of the figure, of the particles that compoſe the cruor; notwithſtanding that red, being the colour of all others leaſt refrangible, and the globular figure of all others the moſt refrangible, that figure ſeems, of all others, leaſt apt to produce this colour. Others fetch the colour of the *blood* from the impregnation of the air in the lungs; for, that air is diſpoſed to produce ſuch an effect, appears from the experiment above.

But others, more reſerved, extend this effect of the air no further than to account for the difference of redneſs between the venal and arterial *blood*; ſuppoſing, that after its colour has been heightened, and rendered more florid, by the mixture of the air in the lungs, it retains it pretty well in the arteries; but that, circulating in the body, and carried through the veins, the air tranſpires, by degrees, through the pores of the veſſels, and leaves the liquor of a paler dye.

Boerhaave accounts for the colour of the *blood* from the ſame cauſe as for its heat; *viz.* from the action of the heart, and re-action of the ſides of the aorta. Borelli, to aſcertain the cauſe of the redneſs, took a parcel of the cruor, after it had ſeparated itſelf as far as ſpontaneouſly it would from the ſerum, and, waſhing it frequently in water, found it ſeparable into a viſcous, ſlippery ſubſtance, conſiſting of white or colourleſs fibres (which roſe to the ſurface of the water, and there gathered into a ſkim, or coherent pellicle of a reticular texture), and a deep-red powder, which precipitated pretty plentifully to the bottom. Hence, it appears, that the red colour of the *blood* is imparted to it by red tinging particles, as in the common caſe of dyers. By examining the red precipitate apart, and finding which of the elements it conſiſted chiefly of, a man who would reaſon about the colour of the *blood* from principles of the chymiſts, might carry that matter nearer an iſſue.

However, this *red* colour, though generally found in all terreſtrial animals, is not yet abſolutely neceſſary and eſſential; there being whole ſpecies which have their circulating liquor, or *blood*, white and limpid: to which Dr. Drake adds an inſtance of a pure white *blood*, like milk, which he let out of the median vein of a man, and which, when cold, did not ſeparate into a craſſamentum, as the red uſually does; nor yield a ſkim or cream, or turn ſour upon keeping, as milk does. Dr. Beal gives us another inſtance of the like kind; and Dr. Lower adds a third, of a perſon who bled ſo long at the noſe, till at laſt the broth he drank flowed, little altered, that way, as *blood*.

Changes and diſorders of the BLOOD.—From the principles, or conſtituent parts of the *blood* above recited, variouſly combined and diſtributed by the circulatory motion impreſſed by the heart, and by the oſcillatory expanſive motion of the interſperſed air, and the re-action of the contractile veſſels, flow all the properties and operations of the *blood*. From this mixture of elements, and their lax compoſition, it becomes ſuſceptible of various alterations and impreſſions; the principal whereof are, *coagulation*, which uſually attends it out of the body, ſometimes in it, and ſcarce ever without an artificial procurement, but always mortal: and *diſſolution*, which is juſt oppoſite to the former, and conſiſts in ſuch a comminution of the fibrous parts of the *blood*, as indiſpoſes it for a ſeparation of the cruor from the ſerum. This is frequently the conſequence of malignant and peſtilential fevers, &c. and is likewiſe occaſioned by ſome kinds of poiſons.

Theſe two contrary affections of the *blood*, Dr. Drake aſcribes to the oppoſite kinds of ſalts, acids, and volatile alcalies. For though, adds he, in a human body, no ſincere acid is found, nor could it, indeed, be conſiſtent with life; yet it may, and does often, enter the *blood*, ſo compounded as to bridle the volatile, alcalious ſalt of the *blood*, and ſo hinde the due attenuation and mixture of the ſeveral parts; as is th caſe in a diabetes, and perhaps in a chloroſis, where th *blood* is thick and torpid: on the other hand, where th alcalious ſalts are too redundant, the *blood* is rendered to thin and fluid, ſo that the difference of its conſtituent parts i loſt.

Another affection frequent in the *blood* is, a too great abu dance of oils, or oily particles, by means whereof th active parts of the *blood* are too much clogged, and thoſe pa which ſhould be ſecreted, for peculiar uſes in the body, a detained; and perhaps the ſolids, through which it paſſe too much lubricated, their tone vitiated, ſhrunk, relaxe &c. whence that ſluggiſhneſs and inactivity of very f people.

The contrary affection to this is, the defect of oil in th *blood*; which, being, as it were, its balſam, lines and preſer the parts from being fretted and corroded by the ſalts, wh ſpicula or edges are, as it were, ſheathed in this ſoft b ſamic matter, and their attrition againſt the ſolid parts p vented: this ſtate of the *blood* is uſually attended with a g neral atrophy, and a fretting and corroſion of ſome partic parts; whence ſerous defluxions, apoſthumations, and ulce eſpecially in the lungs, whoſe tender veſiculous ſubſtanc mo more eaſily annoyed than any other, by the acrimony of the ſaline ſerum. See CATARRH, CORPULENCY, *&c.*

There are other affections of the *blood*, reſulting from its inordinate temperature and mixture, with regard to the earthy parts; the conſequences of which are, the ſtone, *&c.* and others that do not originally ſpring from any dyſcraſy, or undue mixture of the elements, but from an alteration in its motion; ſuch as an augmentation or diminution of its progreſſive motion, or the like changes in its inteſtine motion; whence ſupernatural fermentations are induced.—The occaſions here may be various; ſometimes fevers, and other diſorders occaſioned by ſurfeits, debauches, catching cold, violent exerciſe, *&c.* whence atonias; at other times ſome latent malignity of the air, whence epidemical diſeaſes.

The *blood*, thus variouſly compounded and circumſtantiated, viſits even the minuteſt parts of the body, by means of its circulatory motion: the cauſe and courſe whereof ſee under CIRCULATION.—In this round, thoſe particles of the *blood* which conform beſt to the figure and ſtructure of the parts through which they paſs, are appoſited to them, either for their accretion, or for the reparation of ſuch as the conſtant rapid force of the *blood* wears off.

About the matter of nutrition, or the ſource whence the nouriſhment is derived, great conteſts have ariſen among phyſicians and anatomiſts; ſome contending for a nutritious juice conveyed through the lungs; ſome ſetting up the lymph, others the chyle, ſome the ſerum of the *blood*, ſome the cruor, as the univerſal ſuccus alibilis, *&c.* However, all theſe, except they who bring the nutriment through the nerves, make the *blood* the vehicle, that conveys the alimentary parts through the body, whatever they be, and whenceſoever derived: but perhaps it was on the ſcore of its heterogeneity, or compoſition of different elements, that they did not make itſelf the nutritious fluid, without reſtraining that faculty to ſome particular parts thereof. But Dr. Drake makes no ſcruple to ſay, that the *blood*, in its largeſt acceptation, as conſiſting of all the parts before deſcribed, is ſimple and homogeneous enough for the purpoſes of nutrition; and that every part thereof contributes ſomething, either materially or inſtrumentally, to the augmentation, or reparation, of the parts through which it paſſes.

For the manner in which the *blood* is formed, and how the chyle is aſſimilated into *blood*, ſee SANGUIFICATION.

The quantity of BLOOD in a human body, has been variouſly eſtimated by various authors: Dr. Lower computes it in an ordinary man, at about twenty pounds; Dr. Moulin by obſerving the proportion of the weight of ſeveral animals to their *blood*, eſtimates it at about $\frac{1}{20}$ of the weight of the whole man, which may amount to eight or ten pounds: Dr. Keil, from a calculation built on the proportion of the coats to the diameters of the veſſels, ſhews, that in a body weighing 160 pounds, 100 pounds thereof are *blood*; but then under *blood* he includes the juices of the lympheducts, nerves, and other veſſels which are ſecreted from it.

Hence he alſo propoſes a method of determining the velocity of the *blood*: for, as each ventricle of the heart is capable of receiving an ounce of *blood*; being full in their diaſtole, we may ſuppoſe they throw out about an ounce each ſyſtole. Now, the heart beats about 4000 times in an hour; therefore every hour 4000 ounces, or 250 pounds of *blood*, paſs through the heart. So that a quantity of *blood* equal to the whole maſs, paſſes in two hours and a half: but, the ſum of the ſections of the branches of an artery being always greater than that of the trunk, the velocity of the *blood* will conſtantly decreaſe as the artery divides; and the ratio of its greateſt to its leaſt velocity in the arteries may be thus found to be as 5223 to 1. Again, the veins are to the arteries, as 441 to 324; wherefore, as the *blood* returns to the heart by the veins, its velocity will be ſtill further diminiſhed, and may be found to move more ſlowly in the veins than in the aorta, 7116 times. Again, the farther the *blood* goes off the heart, the more ſlowly it returns. The times of theſe are directly as the ſpaces, and reciprocally as the velocities; conſequently, ſome parts may be ſome thouſands of times longer in returning to the heart than others.—From the diameter of the aorta, and the quantity of *blood* driven out every pulſe, the velocity of the *blood* in the aorta is eaſily determined, and found to be at the rate of 52 feet in a minute.

But Dr. Jurin ſhews, that in any two arteries tranſmitting equal quantities of *blood*, the momentum of the *blood* is greater in the artery more remote from the heart than in that nearer; and that its momentum is greater in all the capillary arteries together, than in the aorta; and, laſtly, that the momentum of the *blood* is greater in any of the veins, than in the artery correſponding to it; and therefore greater in the vena cava, than the aorta.

Laſtly, he ſhews, that the momentum of the *blood* in the vena cava is equal to that of the quantity of *blood* thrown out into the aorta at each ſyſtole, whoſe velocity is ſuch as would paſs the whole length of the arteries and veins in the interval of time between two pulſes; and that the abſolute momentum of the *blood* in the cava, without any regard to the reſiſtance, is equal to the momentum of the weight of thirty pounds paſſing over the ſpace of an inch in a ſecond.—But note, that the motion of the *blood* is here ſuppoſed equable, which in reality it is not.

For the *depuration of the blood*, and how the animal juices are ſecerned from it, ſee ANIMAL SECRETION.

AS to the *tranſfuſion of the* BLOOD of one animal into the veins of another, firſt ſet on foot by Dr. Lower, ſee the method and effects thereof under TRANSFUSION.

In the Philoſophical Tranſactions we have ſeveral very uncommon inſtances of ſpontaneous hæmorrhages or effuſions of *blood*; particularly of a child that bled at the noſe, ears, and hind-part of the head, for three days; from that to the ſixth, ſhe ſweat *blood* from the head; on the ſixth, bled at the head, ſhoulders, and waiſt; and for three days more continued to bleed at the toes, bend of the arms, joints of the fingers of each hand, and at the fingers ends, till ſhe died: after her death were found, in the places whence the *blood* iſſued, little holes like the prickings of a needle.

For the ſtanching of BLOOD, ſee STYPTIC.

Dragons BLOOD. } See the article { DRAGON.
Salamanders BLOOD. } See the article { SALAMANDER.

BLOOD *of Chriſt* is the denomination of a military order inſtituted at Mantua in 1608. by Vinc. Gonzagua IV. its device was, *Domine, probâſti me*; or, *Nihil hoc triſte recepto*.

Hermant ſpeaks of this order, and obſerves it took its name from ſome drops of the *blood of Chriſt*, ſaid to have been preſerved in the cathedral church of Mantua.

The number of knights was reſtrained to twenty, beſides the grand maſter; the office whereof was annexed to himſelf, and his ſucceſſors.

There is alſo a congregation of nuns at Paris called by the ſame name, reformed from the Bernardines.

BLOOD-HOUND. See the article HOUND.

BLOOD-LETTING. See BLEEDING, and PHLEBOTOMY.

BLOOD-SHOTTEN, a diſtemper of the eyes, wherein the blood-veſſels are greatly diſtended, ſo as to make the eyes appear red. See OPHTHALMIA.

BLOOD-STONE. See HÆMATITES, and SANGUINE.

BLOODY *Hand*, one of the four kinds of treſpaſſes in the king's foreſt, by which the offender being taken with his hands or other part bloody, is judged to have killed the deer, though he be not found either hunting or chaſeing.

BLOODY *heel-cock*. See HEELER.

BLOODY *rains*. See the article RAIN.

BLOODY *flux*. See FLUX, and DYSENTERY.

BLOODY *urine*, a diſorder wherein the urine comes away mixed with blood, in greater or leſs quantity. See URINE.

The blood here voided uſually comes from the kidneys, though ſometimes from the bladder or ureters.—It is ſometimes occaſioned by violent motion, or a fall on the back, cauſing a rupture of ſome of the blood-veſſels of the urinary parts: ſometimes it ſucceeds ſudden ſuppreſſions of the hæmorrhoids or menſes. The ſtone, eſpecially in the kidneys, will alſo occaſion frequent paroxyſms of this diſeaſe: and cantharides taken internally, or even applied externally without acids, will ſometimes have the ſame effect.—Bloody urine is a terrible ſymptom in the ſmall-pox, and malignant fevers; though on ſome occaſions it has proved critical, and carried off the diſtemper.

BLOOM. } See the article { HALF *bloom*.
BLOOMARY. } See the article { BLOMARY.

BLOWING *of glaſs*, one of the methods of forming the divers kinds of works in the glaſs manufacture.—It is performed by dipping the end of an iron ponteglo or blowing-pipe in the melted glaſs, and *blowing* through it with the mouth, according to the circumſtances of the glaſs to be blown.

BLUE, one of the primitive colours of the rays of light.

Antiently, *blue* was the ſymbol of the ſea; for which reaſon, in the Circenſian games the combatants who repreſented the ſea were clad in *blue*; and thoſe who had diſtinguiſhed themſelves by any notable exploit at ſea, were rewarded with a *blue* enſign.

The painters BLUE is made differently according to the different kinds of paintings. In limning, freſco, and miniature, they uſe indifferently ultramarine, *blue* aſhes, and ſmalt; theſe are the natural *blues*, excepting the laſt, which is partly natural, partly artificial: ſee each under its proper head.

In oil and miniature they uſe indigo, *blue* bice, *blue* verditer, lapis Armenus, ſmalt, and litmouſe; alſo a counterfeit ultramarine.

Enamellers and painters on glaſs have *blues* peculiar to themſelves; each preparing them after their own manner. See ENAMELLING, and painting on GLASS.

Dyers BLUE is one of their ſimple or mother-colours, uſed in the compoſition of others: it is given chiefly with woad, and indigo. Some dyers heighten their *blue*, by adding madder, braſil, and other woods. The way of brightening *blues* is by paſſing the ſtuff, when dyed and well waſhed, through luke-warm water; or, which is much better, by working and fulling the dyed ſtuff with melted ſoap, and then ſcouring it well.—*Blues* are dyed immediately from the whites, without any other preperation than ſcouring. See Dying.

Turnſol Blue is a *blue* uſed in painting on wood, made of the ſeed of that plant. It is prepared by boiling four ounces of turnſol in a pint and a half of water wherein lime has been ſlacked. See Turnsol.

Flanders Blue is a colour ſeldom uſed but in landſkips, as being apt to turn green. The French call it *cendre verte*, or green aſhes.

Blue-*coat hoſpital.*	See the article	Hospital.
Blue *Vitriol.*		Vitriol.

BLUEING *of metals* is done by heating of them till they aſſume a blue colour; particularly practiſed by gilders, *&c.* who blue their metals, ere they apply the gold or ſilver leaf. See Gilding.

BLUENESS, that quality which denominates a body *blue*; or, ſuch a ſize and texture of the parts that compoſe the ſurface of a body, as diſpoſes them to reflect the blue or azure rays of light, and thoſe only, to the eye.

For the *blueneſs* of the ſkies, Sir Iſaac Newton obſerves, that all the vapours, when they begin to condenſe and coaleſce into natural particles, become firſt of ſuch a bigneſs as to reflect the azure rays, ere they can conſtitute clouds of any other colour. This, therefore, being the firſt colour they begin to reflect, muſt be that of the fineſt and moſt tranſparent ſkies, in which the vapours are not arrived to a groſſneſs ſufficient to reflect other colours.

M. de la Hire, after Leonardo da Vinci, obſerves, that any black body, viewed through a thin white one, gives the ſenſation of blue; and this he aſſigns as the reaſon of the *blueneſs* of the ſky, the immenſe depth whereof being wholly devoid of light, is viewed through the air illuminated and whitened by the ſun. For the ſame reaſon, he adds, it is, that ſoot mixed with white makes a blue; for white bodies, being always a little tranſparent, and mixing themſelves with a black behind, give the perception of blue. From the ſame principle he accounts for the *blueneſs* of the veins on the ſurface of the ſkin, though the blood they are filled with be a deep red; for red, he obſerves, unleſs viewed in a clear, ſtrong light, appears a dark brown, bordering on black: being then in a kind of obſcurity in the veins, it muſt have the effect of a black; and this, viewed through the membrane of the vein, and the white ſkin, will produce the perception of *blueneſs*.

BLUSHING, a ſuffuſion, or redneſs of the cheeks, excited by a ſenſe of ſhame, on account of a conſciouſneſs of ſome failing, or imperfection.

Bluſhing is ſuppoſed to be produced from a kind of conſent, or ſympathy, between ſeveral parts of the body, occaſioned by the ſame nerve being extended to them all. Thus the fifth pair of nerves being branched from the brain to the eye, ear, muſcles of the lips, cheeks, palate, tongue, and noſe; hence a thing ſeen, or heard, that is ſhameful, affects the cheeks with *bluſhes*, driving the blood into the minute veſſels thereof; at the ſame time that it affects the eye, and ear.

For the ſame reaſon it is, as Mr. Derham obſerves, that a ſavoury thing ſeen or ſmelt affects the glands and parts of the mouth: if a thing heard be pleaſing, it affects the muſcles of the face with laughter; if melancholy, it exerts itſelf on the glands of the eyes, and occaſions weeping, *&c.* And to the ſame cauſe Dr. Willis aſcribes the pleaſure of kiſſing.

BOARD, a piece of timber ſawed thin, for the purpoſes of building. See Timber.

We ſay a *deal-board*, an *oak-board*, &c.—*Boards* thicker than ordinary are called *planks*.—*Boards* formed ready for the coopers uſe are called *clap-boards*. We have alſo *mill-board*, and *ſcale-board*, ſhaved very thin for caſes, band-boxes, *&c.*—*Paſt-board.* See Past-board.

Feather-edged Board.	See the articles	Feather.
Graining-Board.		Graining.
Log-Board.		Log.
Sound-Board.		Sound.
Trail-Board.		Trail.
Waſte-Boards.		Waste.
Weather-Board.		Weather.

BOARDED *floors.* See the article Floor.

BOAT, a ſmall, open, floating veſſel, commonly wrought or moved only by rowing; intended chiefly for the navigation of rivers, lakes, and the like.

The *boat* acquires various names, according to its various ſtructure, and the various uſes it is appointed for, and the places where it is to be uſed.—The ſeveral *boats*, and their names are,

A *jolly boat.*
A *long boat.*
A *ſkiffe.*
A *pinnace.*
A *water boat.*
A *yaul.*
Boats for ſhips
A *gondola.*
A *Greenland boat.*
A *Bermudas boat.*
A *ballon of Siam.*
A *horſe boat.*
A *periaga.*
A *pleaſure boat.*
A *ponton.*
A *canoe.*
A *crucle.*
A *currycurry.*
A *deal hooker.*
A *felucca.*
A *ferry boat.*
A *praw.*
A *flying praw.*
A *punt.*
A *tilt boat.*
A *tod boat.*
A *well boat.*
A *wherry.*

The *boats*, or wherries, allowed to ply about London are either *ſkullers*, wrought by a ſingle perſon with two oars; or *oars*, wrought by two perſons, with each an oar.—All *boats* rowed with more than four oars above or below London bridge are forfeited. 8 *Geo. c.* 18.

De Chales propoſes the conſtruction of a *boat*, which, what burden ſoever it bear, ſhall not only move againſt the current, without either ſails or oars, but alſo advance ſo much the faſter, as the rapidity of the water is greater. Its make is the ſame with that of the others, excepting only a wheel added to its ſide, with a cord, which winds round a roller as faſt as the wheel turns.

Something of the like kind has alſo been ſince done by M. Pitot. *Vid. Mem. Acad. R. Scienc. an.* 1729. *p.* 359. and *p.* 540.

A new attempt, and with greater ſucceſs, is alſo ſaid to have been lately made at Vienna.

M. de la Hire has given us an examination of the force neceſſary to move *boats*, both in ſtagnant and running water, either with ropes faſtened to them, or with oars, or with any other machine: wherein, he ſhews, that the larger the ſurface of the oars plunged in the water, and the ſmaller that of the *boat* preſented to the water, is; and again, the longer that part of the oar between the hand and the place where the oar reſts on the *boat*, and the ſhorter that between this laſt point and the water; the freer will the *boat* move, and the greater effect will the oar have. See Oar.

Hence it is eaſy to calculate the force of any machine that ſhall be applied to rowing; *v. gr.* if we know the abſolute force of all the men who row, it muſt be changed into a relative force, according to the proportion of the two parts of the oar; *i. e.* if the part out of the veſſel be double the other, and all the men together can act with the force of 900 pounds, we compute firſt, that they will exert 300: which 300, multiplied by the ſurface the veſſel preſents to the water, gives a ſolid water of a certain weight; which weight may be found, and of conſequence the velocity impreſſed on the veſſel by the oars. Or, the velocity of the oars may be found in the ſame manner, by multiplying the 300 pounds by the ſurface of all the parts of the oars plunged in the water. Nor would there be any difficulty in finding firſt the relative forces, then the abſolute ones; the velocities either of the oars, or of the veſſel, being given, or the proportion of the two parts of the oar.

BOAT-SWAIN, an officer on board a ſhip, who has charge of her rigging, ropes, cables, anchors, ſails, flags, colours, and pendants; and is alſo to take care of the long-boat, and its furniture, and to ſteer her, either by himſelf, or his mate.

He calls out the ſeveral gangs aboard, to the due execution of their watches, works, *&c.*—He is likewiſe a kind of a provoſt-marſhal, who ſees and puniſhes all offenders ſentenced by the captain, or a court-martial of the fleet. See Provost.

BOBBING. See Fishing.

BOCARDO, in logic, the fifth mode of the firſt figure of ſyllogiſms, wherein the firſt propoſition is particular and negative, the ſecond univerſal and affirmative; and the third or concluſion particular and negative. Thus,

BOC *Some animal is not man.*
AR *Every animal has a principle of ſenſation.*
DO *Therefore ſomething has a principle of ſenſation,* that is *not man.*

BOCK-LAND formerly denoted that which we now call *freehold-land*, or *charter-land*; and it was by that name diſtinguiſhed from *folk-land*, which was *copyhold-land.* See Freehold.

BODY*, in phyſics, a ſolid, extended, palpable ſubſtance; of itſelf merely paſſive, and indifferent either to motion or reſt, but capable of any ſort of motion, and of all figures and forms.

Body is compoſed, according to the Peripatetics, of *matter*, *form*, and *privation*; according to the Epicureans and Corpuſcularians, of an aſſemblage of hooked, heavy *atoms*; according to the Carteſians, of a certain quantity of *extenſion*; according to the Newtonians, of a ſyſtem, or aſſociation of ſolid, maſſy, hard, impenetrable, moveable *particles*, ranged or diſpoſed in this or that manner; whence reſult *bodies* of this or that form; diſtinguiſhed by this or that name.

Theſe elementary or component particles of *bodies* muſt be infinitely hard; vaſtly harder than the *bodies* compounded of them; nay, ſo hard as never to wear, or break in pieces. "This Sir Iſaac Newton obſerves is neceſſary, in order to "the world's perſiſting in the ſame ſtate, and *bodies* continu-"ing of the ſame nature and texture in ſeveral ages."

* The word alludes to the Saxon *bodige*, ſtature; and to the Belgic *boode*, a cover, *q. d.* the tabernacle of the ſoul.

Affections of BODY. See the article AFFECTION.

Modes of BODY. See the article MODE.

Elements of BODY. See the article ELEMENT.

The Exiſtence of BODIES is a thing incapable of being demonſtrated: the order in which we arrive at the knowlege of their exiſtence, ſeems to be this.—We firſt find we have ſenſations; we then obſerve we have not thoſe ſenſations when we pleaſe: and thence conclude, we are not the abſolute cauſe thereof, but that there is required ſome other cauſe for their production. Thus we begin to know, that we do not exiſt alone, but that there are ſeveral other things in the world together with us.—But this, Dr. Clark owns, comes far ſhort of a demonſtration of the exiſtence of a corporeal world: he adds, that all the proof we have of it is this; that God would not create us ſuch, as that all the judgments we make about things exiſting without us, muſt neceſſarily be falſe. If there be no external bodies, it follows, that it is God who repreſents the appearance of *Bodies* to us; and that he does it in ſuch a manner as to deceive us.—Some think this has the force of a demonſtration: "It is evident God cannot deceive "us; it is evident he does deceive and delude us every mo"ment, if there be no *Bodies*; it is evident therefore, there "muſt be *Bodies*."—But the minor of this argument may be denied without any ſuſpicion of ſcepticiſm.

"In effect, were it poſſible for *Bodies*, *i. e.* ſolid, figured, "*&c.* ſubſtances to exiſt without the mind, correſponding to "thoſe ideas we have of external objects, yet how were it "poſſible for us to know it? Either we muſt know it by ſenſe, "or reaſon: as for our ſenſes, by them we have only the "knowlege of our ſenſations or ideas: they do not inform "us, that things exiſt without the mind, or unperceived, like "thoſe which are perceived. It remains, therefore, that if "we have any knowlege at all of external things, it muſt "be by reaſon inferring their exiſtence from what is imme"diately perceived by ſenſe. But how ſhall reaſon induce us "to believe the exiſtence of *Bodies* without the mind, when "the patrons of matter themſelves deny, that there is any ne"ceſſary connexion betwixt them and our ideas? in effect, "it is granted on all hands, and what happens in dreams, "phrenſies, deliriums, extaſies, *&c.* puts it beyond diſpute, "that we might be affected with all the ideas we have now, "though there were no *Bodies* exiſting without, reſembling "them. Hence, it is evident, the ſuppoſition of external "*Bodies* is not neceſſary for the production of our ideas." *Berkeley's Princ. of Human Knowlege, p.* 59.—"Granting "the materialiſts their external *Bodies*, they, by their own "confeſſion, are never the nearer knowing how our ideas "are produced; ſince they own themſelves unable to com"prehend in what manner *Body* can act upon ſpirit; or how "it is poſſible it ſhould imprint any idea on the mind. Hence, "the production of ideas or ſenſations, in our minds, can be "no reaſon why we ſhould ſuppoſe *Bodies*, or corporeal "ſubſtances; ſince that is equally inexplicable with or "without the ſuppoſition. In ſhort, though there were "external *Bodies*, it is impoſſible we ſhould ever come "to know it; and if there were none, we ſhould have the "ſame cauſe to think there were, that we now have." *Id. ib. p.* 60, 61.

"Try whether you can conceive it poſſible for a ſound, or "figure, or motion, or colour, to exiſt without the mind, "or unperceived.—If you can but conceive it poſſible for one "extended moveable ſubſtance, or, in general, for any one "idea, to exiſt otherwiſe than in a mind perceiving it; I ſhall "readily give up the cauſe." *Id. ibid. p.* 63.—"It is worth "while to reflect a little on the motives which induced men "to ſuppoſe the exiſtence of material ſubſtance; that ſo, "having obſerved the gradual ceaſing and expiration of thoſe "motives, we may withdraw the aſſent grounded on them. "Firſt, therefore it was thought that colour, figure, motion, "and the reſt of the ſenſible qualities, did really exiſt with"out the mind; and for this reaſon, it ſeemed neceſſary to "ſuppoſe ſome unthinking ſubſtratum, or ſubſtance, wherein "they did exiſt, ſince they could not be conceived to ſubſiſt "by themſelves. Afterwards, in proceſs of time, men being "convinced, that colours, ſounds, and the reſt of the ſen"ſible ſecondary qualities had no exiſtence without the mind; "they ſtripped this ſubſtratum of theſe qualities, leaving only "the primary ones, figure, motion, *&c.* which they ſtill "conceived to exiſt without the mind, and conſequently "to ſtand in need of a material ſupport. But having "ſhewn above, that none, even of theſe, can poſſibly "exiſt otherwiſe than in a ſpirit, or mind, which perceives "them, it follows, that we have no longer any reaſon to "ſuppoſe the being of matter." *Id. ibid.* p. 118, 119.

For the Colours of BODIES: Sir Iſaac Newton ſhews, that *Bodies* appear of this or that colour, as they are diſpoſed to reflect moſt copiouſly the rays of light originally endued with ſuch colours. But the particular conſtitutions, whereby they reflect ſome rays more copiouſly than others, remain yet to be diſcovered. However, ſome of the laws and circumſtances thereof he delivers in the following propoſitions.

1. Thoſe ſurfaces of tranſparent *Bodies* reflect the greateſt quantity of light, which have the greateſt refracting power; *i. e.* which intercede mediums, that differ moſt in their refractive denſities: and in the confines of equally refracting mediums, there is no reflexion. 2. The leaſt parts of almoſt all natural *Bodies* are in ſome meaſure tranſparent; and the opacity of thoſe *Bodies* ariſes from the multitude of reflexions cauſed in their internal parts. 3. Between the parts of opake and coloured *Bodies* are many ſpaces, either empty, or replete with mediums of different denſities; as water between the tinging corpuſcles wherewith a liquor is impregnated, air between the aqueous globules that conſtitute clouds or miſts: and even ſpaces void both of air and water, between the parts of hard *Bodies*, are not wholly void of all ſubſtance. 4. The parts of the *Bodies*, and their interſtices, muſt be leſs than of ſome definite bigneſs, to render them opake and coloured. 5. The tranſparent parts of *Bodies*, according to their ſeveral ſizes, reflect rays of one colour, and tranſmit thoſe of another, for the ſame reaſon that thin plates or bubbles do reflect or tranſmit thoſe rays: and this appears to be the ground of all their colour. 6. The parts of *bodies*, on which their colours depend, are denſer than the medium which pervades their interſtices. 7. The bigneſs of the component parts of natural *Bodies* may be conjectured from their colours; on this principle, that tranſparent corpuſcles, of the ſame thickneſs and denſity with a plate, do exhibit the ſame colour. 8. The cauſe of reflexion is not the impinging of light on the ſolid or impervious parts of *Bodies*, as commonly believed. 9. *Bodies* reflect and refract light, by one and the ſame power variouſly exerciſed, in various circumſtances.

BODIES are divided into *animate* and *inanimate*; *i. e.* into thoſe informed by a ſoul, and thoſe which are not; or thoſe that have life, and thoſe that have none.

Some conſider *Bodies*, either as *natural* and *ſenſible*; *viz.* as formed by phyſical cauſes, and cloathed with phyſical qualities (in which ſenſe, *Body* makes the object of phyſics, See PHYSICS): or, as *intellectual* or *quantitative*, in the general or abſtract; and according to three dimenſions: in which ſenſe, *Body* makes the ſubject of geometry.

Alkaline BOBIES.	See the article	ALKALINE.
Conſiſtent BODIES.		CONSISTENT.
Elaſtic BODIES.		ELASTIC.
Fixt BODIES.		FIXT.
Heterogeneous BODIES.		HETEROGENEOUS.
Atmoſphere of BODIES.		ATMOSPHERE.
Deſcent of BODIES.		DESCENT.
Mercury of BODIES.		MERCURY.

BODY, with regard to animals, is uſed in oppoſition to *ſoul*; *viz.* for that part of an animal, compoſed of bones, muſcles, canals, juices, nerves, *&c.*

In which ſenſe, *Body* makes the ſubject of comparative anatomy.

The human BODY, conſidered with regard to the various voluntary motions it is capable of performing, is an aſſemblage of an infinite number of levers, drawn by cords: if conſidered with regard to the motions of the fluids it contains, it is another aſſemblage of an infinity of tubes, and hydraulic machines. Laſtly, if conſidered with regard to the generation of thoſe ſame fluids, it is another infinite aſſemblage of chymical inſtruments and veſſels; as, philtres, alembics, recipients, ſerpentines, *&c.* and the whole is a compound which we can only admire, and whereof the greateſt part eſcapes our admiration itſelf.—The principal chymical apparatus in the whole *Body*, is that wonderful laboratory the brain: it is in this, that precious extract, called animal ſpirits, the only material mover of the whole fabric, is ſecreted from the blood.

In the machine of the *animal Body*, the retainers to the doctrine of trituration maintain the brain to do the office of the beam of a preſs; the heart, of a piſton; the lungs, of bellows; the mouth, of a millſtone; and the teeth, of peſtles; the ſtomach, of a preſs; the inteſtines, of a reſervoir; the veſſels, of ſieves or ſtrainers; and the air, of a pondus, or ſpring, that ſets the machine a going.

The ſoul, Rohault obſerves, is not the form of the human *body*, as the Peripatetics aſſert. So far is animal life from depending on the ſoul, becauſe of its ceaſing when the ſoul is ſeparated; that, on the contrary, the continuance of the ſoul depends intirely on the ſtate of the *Body*; the former never quitting the latter, till its œconomy or order is interrupted.

The Carteſians maintain the ſoul and *Body* to be too diſproportionate, for thoughts or ideas of the ſoul to be cauſed by the motions of the *Body*; and *vice verſa*: thus their reciprocal motions, not being able to be the direct cauſe of the one and the other, are only deemed the occaſion, or occaſional cauſe. God, on occaſion of the motion of a *Body*, impreſſes an idea or ſenſation on the ſoul; and again, on occaſion of an idea of the ſoul, communicates a motion to the *Body*: of conſequence, God is the only agent in the whole intercourſe between ſoul and *body*.

Phyſicians divide the *Body* into ſolids, and fluids.—Alſo into venters, or cavities, the head, thorax, and lower venter.

The reſt of the *Body* they call members, or extremities.

Faculties of the Body. See the article Faculty.

Body, *corpus*, is alſo applied by anatomiſts to ſeveral particular parts of the animal fabric.—As, the callous *Body* of the brain, the cavernous or ſpongeous *Bodies* of the penis, *&c.* See Corpus *Calloſum*, Corpora *Cavernoſa*, &c.

Reticular Body. See the article Reticular.

Body *in Geometry* denotes the ſame with *ſolid.* See Solid.

The Regular or Platonic Bodies are thoſe which have all their ſides, angles, and planes, ſimilar and equal.

Of theſe there are only five; *viz.* the tetrahedron, conſiſting of four angles; the octahedron, of eight; the icoſahedron, of twenty; the dodecahedron, of twelve pentagons; and the cube, of ſix ſquares.

Body *in Law.*—A man is ſaid to be bound or held in *Body and goods*; that is, he is liable to remain in priſon, in default of payment.

In France, by an ordonnance of 1667. all reſtraints of the *Body*, for civil debts, are null after four months, unleſs the ſums exceed two hundred livres.

A woman, though in other reſpects ſhe cannot engage her perſon but to her huſband, may be *taken by the Body*, when ſhe carries on a ſeparate trade.

Body, *corps*, in war, is an aggregate or aſſemblage of forces, horſe and foot, united and marching under ſome chief.

An army, ranged in form of battle, is divided into three *Bodies*; the van-guard, the rear-guard, and the main *Body*; which laſt is ordinarily the general's poſt.

Body *of Reſerve.* See the article Reserve.

BOG *, a moiſt, rotten ſpot of earth, which ſinks and gives way to the weight of the body, formed of graſs and plants putrified by ſome ſpring; frequent, eſpecially in Ireland.

* The word may be derived from the Italian *buca*, a hole; or rather from the Belgic *boogen*, to bend; on account of its giving way when trod upon.

In this ſenſe, *Bog* amounts to much the ſame with what in other places are called *moſſes*, *marſhes*, *fens*, &c.

Ireland is become infamous for *Bogs:* they diſtinguiſh between a *turf-bog*, called alſo *red-bog*, out of which turf or peat is dug; and a *quaking-bog*, which will ſink under a man in the place where he ſtands to a conſiderable depth, and riſe before and behind proportionably: underneath, is frequently clear water, into which a perſon often ſlips to the middle, upon breaking the ſurface.—*Quaking-bogs* frequently turn into *turf-bogs*.

Every red *Bog* is incompaſſed with a deep marſhy ſloughy ground, called the *bounds of the Bog.*—Horns and ſkeletons of mooſe-deer are ſometimes found in *Bogs* fourteen foot deep.

The inconveniences of *Bogs* are, that a conſiderable part of the kingdom is rendered uſeleſs by them: they alſo keep people at a diſtance from each other, and thus hinder buſineſs from going forward. They occaſion the roads to be crooked and circuitous to avoid them: they are a great deſtruction to cattle, the chief commodity of Ireland; which are encouraged by the graſs growing on the edges of the *Bogs* to venture in, where they are loſt: they are alſo a ſhelter to tories and thieves. The ſmell and vapour ariſing from them is accounted unwholſome, and the fogs putrid and ſtinking. Add, that they corrupt the water, both as to its colour and taſte.

Bogs have alſo their uſes: moſt of the people in Ireland have their firing from them; the wood being impolitickly deſtroyed, and little pit-coal yet diſcovered. The Iriſh could hardly do without ſome *Bogs.*—The natives had antiently another advantage from *Bogs*; *viz.* that by means of them they were preſerved from the conqueſt of the Engliſh: and it ſeems to be from the remembrance hereof that they ſtill chooſe to build near *Bogs*.

For the origin and formation of Bogs, it is to be obſerved, that there are few places, in the northern world, but have formerly been as famous for them, as Ireland now is: every wild, ill-inhabited country has them: the *loca paluſtria*, or *paludes*, to which the antient Gauls, Germans, and Britons, retired when beaten, appear to be no other than what we now call *Bogs*. The like may even ſtill be found in the barren parts of Italy, as Liguria.

The true cauſe of *Bogs*, then, ſeems to be the want of induſtry; at leaſt it is certain induſtry may remove, and much more prevent them. There are many *Bogs* of late-ſtanding in Ireland, formed within our own memory, through the miſeries of the times, and the deſolations of civil war.—It is no wonder if a country famous for lazineſs ſhould abound with them.

To ſhew how want of induſtry cauſes *Bogs*, it muſt be remembered, that Ireland abounds with ſprings; that theſe ſprings are dry, or nearly ſo, in the ſummer-time; and that the graſs and weeds grow thick about the places where they burſt out: in the winter the ſame ſprings ſwell again, and run, and ſoften and looſen the earth about them; and the ſwerd or ſcurf of the earth, which conſiſts of the roots of graſs, being lifted up and made fuzzy by the water, becomes dried againſt the ſpring; and does not fall together, but withers in a tuft, and new graſs ſprings through it; which, the next winter, is again lifted up: thus the ſpring is more and more ſtopt; and the ſcurf grows thicker and thicker, till it firſt makes what we call a *quaking-bog.*: and as it grows higher and drier, and the graſs-roots and other vegetables become more putrid, together with the mud and ſlime of the water, it acquires a blackneſs, and grows into what we call a *turf-bog*.

What confirms this account is, that *Bogs* are generally found higher than the land about them, and the higheſt in the middle: the chief ſprings which cauſe them being commonly about the middle; from whence they dilate themſelves by degrees, as one would blow a bladder; but not always equally, becauſe they ſometimes meet with greater obſtacles on one ſide, than on the other.—Add, that if a deep trench be cut through a *Bog*, you will find the original ſpring, and vaſt quantities of water will run from it, and the *Bog* will ſubſide; ſometimes a dozen or 15, ſome even ſay, 30 foot.—Laſtly, thoſe hills which have no ſprings, have no *Bogs*; and thoſe which have ſprings, and want culture, are never without them. In brief, where-ever *Bogs* are, there are great ſprings: the turf generally diſcovers a vegetable ſubſtance; it is light, and impervious to water, while the ground under it is very pervious.

True, there are ſome quaking *Bogs* cauſed otherwiſe: as, when a ſtream or ſpring runs through a flat; if the paſſage be not tended, it fills with weeds in ſummer, trees fall acroſs it, and dam it up; then, in winter, the water ſtagnates farther and farther every year, till the whole flat be covered; next, there riſes a coarſe kind of graſs peculiar to theſe *Bogs*; it grows in tufts, and the roots conſolidate together, and yearly grow higher, inſomuch as ſometimes to reach the height of a man: this graſs rots in winter, and falls on the tufts, and the ſeed with it, which ſprings up next year, and thus makes a new addition: ſometimes the tops of flags and graſs being interwoven on the ſurface of the water, and become by degrees thicker, till they lie like a cover on the water; other herbs take root in it, and by a plexus of thoſe roots it becomes ſtrong enough to bear the weight of a man.

Another cauſe of *Bogs* is moſs, with which Ireland abounds extremely.—That which grows in *Bogs* is remarkable; the light ſpongy turf above-mentioned being nothing but a congeries of the threads of this moſs, which is ſometimes in ſuch quantities, and ſo tough, that the turf-ſpades cannot cut it. In the north of Ireland they call it old wives tow; not being much unlike flax. The turf-holes in time grow up with it again, and all the little gutters in *Bogs* are generally filled with it. In reality, to this the *red* or *turf-bogs* ſeem to be chiefly owing.

For the draining of Bogs, to render them fit for paſture or arable, it is not impoſſible; the ſame having been performed in England, France, Germany, *&c.*—People commonly diſtinguiſh between *Bogs* which have no fall to carry away the water from them, and thoſe which have: the laſt are reputed drainable, the former not. But Mr. King aſſures, he never obſerved one *Bog* without a fall ſufficient to drain it, nor doe he believe there is any. In reality, the great objection again draining is the charge; which, it is commonly reckoned, wi amount to much more than would purchaſe an equal quantit of good ground: for an acre of this laſt, in moſt parts of Ireland, is not worth above 4*s.* *per annum*, and 14 or 15 year purchaſe; ſo that three pounds will buy an acre of good land and it is very doubtful with moſt, whether that ſum will reduc a *Bog:* this reaſoning paſſes current, and is the great impediment of this work.

To this it is anſwered, that *quaking-bogs*, though land be neve ſo cheap, never fail to be worth draining: one trench wi drain many acres; and, when dry, it is generally meadow, the beſt grazing ground. Again, what is called the boun of a *red-bog*, never fail to be worth the draining; being done b one deep trench drawn round the *Bog:* by this cattle are ke out of the *Bog*, and the bounds turned into meadow.—Ad that even *red-bogs* might be made fit for grazing at a mu cheaper rate than has hitherto been done, by a proper co duct in the digging of trenches, particularly deſcribed by M King.—See *Philoſ. Tranſ.* N° 170. *p.* 948. *ſeq.* & N° 33 *p.* 305. *Item* N° 314. *p.* 59. *Plot. Nat. Hiſt. Oxford.* c. §. 81. *ſeq. Mortim. Husband. T.* 1. *l.* 1. *c.* 2. *p.* 21.

BOGOMILI *, or Bogarmitæ, a ſect of heretics, ſpru from the Manichees, or rather from the Maſſalians, tow the cloſe of the 11th century; whoſe chief, Baſil, was bu alive by order of the emperor Alexander Comnenus.

* Du Cange derives the name from two words in the Pulga language; *bog*, *deus*, and *milvi*, *miſerere*, have mercy.

The *Bogomili* denied the trinity; maintaining, that God a human form; that the world was created by evil ang and that it was the archangel Gabriel that became incarn They rejected the books of Moſes, and only admitted ſe books of Scripture: they maintained the lord's prayer to the only euchariſt; that the baptiſm of the Catholics only that of St. John, and theirs that of Jeſus Chriſt; that all thoſe of their ſect conceived the word, or logos much as the virgin. Laſtly, that there was no other reſurrection but repentance.

BOILING, or Boyling, *ebullition*, in phyſics, the agitation of a fluid body, ariſing from the application of fire, *&c.*

The phænomenon of *Boiling* may be thus accounted for: the minute particles of the fuel being detached from each other, and impelled in orbem, with a great velocity (*i. e.* being converted into fire), paſs the pores of the containing veſſel, and mix with the liquid. By the reſiſtance they here meet withal, their motion is deſtroyed; *i. e.* they communicate it wholly to the quieſcent water: hence ariſes, at firſt, a ſmall inteſtine motion in the water, and from the continued action of the firſt cauſe, the effect is increaſed, and the motion of the water continually accelerated: ſo that the water, by degrees, becomes ſenſibly agitated. But now the particles of the fire ſtriking on thoſe in the loweſt ſurface of the water, will not only give them an impulſe upwards, contrary to the laws of æquilibrium, but will likewiſe render them ſpecifically lighter than before, ſo as to determine them to aſcend according to the laws of æquilibrium; and this, either by inflating them into little veſicles, by the attraction of the particles of water around them; or by breaking and ſeparating the little ſpherules of water, and ſo increaſing the ratio of their ſurface to their ſolid content. There will therefore be a conſtant flux of water from the bottom of the veſſel to the top, and conſequently a reciprocal flux from the top to the bottom; *i. e.* the upper and under water will change places; and hence we have the reaſon of that phænomenon, of the water's being hot at top ſooner than at bottom.

Again, an intenſe heat will diminiſh the ſpecific gravity of water, ſo as not only to make it mount in water, but alſo in air; whence ariſe the phænomena of vapour and ſmoak; though the air incloſed in the interſtices of the water muſt be allowed a good ſhare in this appearance: for that air being dilated, and its ſpring ſtrengthened by the action of the fire, breaks its priſon, and aſcends through the water into the air; carrying with it ſome of the contiguous ſpherules of water, ſo many as ſhall hang in its villi, or can adhere immediately to it.

The particles of air in the ſeveral interſtices of the fluid maſs thus expanded, and moving upwards, will meet and coaleſce in their paſſage; by which means great quantities of the water will be heaved up, and let fall again alternately, as the air riſes up, and again paſſes from the water: for the air, after coalition, though it may buoy up a great heap of water, by its elaſticity while in the water; yet cannot carry it up, together with itſelf, into the atmoſphere; ſince, when once got free from the upper ſurface of the water in the veſſel it will unbend itſelf in the atmoſphere, and ſo its ſpring and force will become juſt equal to that of the common unheated air. Add to this, that were the ſpring and motion of the air ſufficient to carry up the water with it, yet it would not have that effect; but the water would run off at the extremities of the air; all, except ſo much as ſhould be either entangled in its villi, or immediately adhere to its ſurface by attraction: and hence we ſee the reaſon of the principal phænomenon of *Boiling*, *viz.* the fluctuating of the ſurface of the water.

Water, only lukewarm, *boils* very vehemently in the recipient of an air-pump, when the air is exhauſted: the reaſon is obvious; for the preſſure of the atmoſphere being taken off from its ſurface, the air included in the interſtices of the water, dilated by a feeble heat, has ſpring enough to heave up the water, and diſengage itſelf.—When the water ceaſes *boiling*, it is again excited thereto by pouring cold water upon the recipient; and when it *boils* the moſt vehemently, it ceaſes by pouring on hot water: the reaſon whereof is ſcarce gueſſed at. See Vacuum.

Boiling *Waters*, in natural hiſtory. See Water.

BOLE, in medicine, is applied to ſeveral kinds of earths that enter ſome of the Galenical compoſitions. See Supplement, article Bole.

Bole *Armoniac**, or the *Armenian* Bole, is a ſoft, friable, fatty earth, uſually of a pale red colour; tho' there are two other kinds, a yellow and a white. They are all eaſily pulverized, and adhere to the tongue. The common or red kind is eſteemed a good drier, ſtyptic, and vulnerary; and in thoſe qualities is uſed in divers diſeaſes, both internally and externally.

* This, popularly, though corruptly, called in Engliſh, *Bole Armoniac*, is called, by the naturaliſts, *Armenia terra*, ſome times πηλος Αρμενικος, or *Armenian clay*.

This *Bole* is eaſily falſified; and the druggiſts frequently ſell ſome other earth in lieu thereof. Matthiolus ſays, it is found in gold, ſilver, and copper-mines.

Bole *of the Levant* is a medicinal earth brought from the Levant; nearly of the ſame nature, and having the ſame uſes with the *Bole-armoniac*.

Pomet ſays, there is no ſuch thing, among us, as either true *Bole-armoniac*, or *Bole of the Levant*; and that all the *Boles* now in uſe are brought either from the provinces of France, or the neighbouring countries: but this does not ſeem ſufficiently warranted; and the new tarifs, or duties on goods imported into France, which mention them both, make it credible that there are of each kind imported into that kingdom. Indeed, it appears, that it is the *Levant Bole* which uſually paſſes among us for the *Armoniac*. See Supplement, article Bolus-Armena.

BOLLANDISTS, in literary hiſtory, a denomination given to certain Jeſuits of Antwerp, who have been a conſiderable time employed in collecting the lives and acts of the ſaints.—Thus called from F. Bollandus, one of the firſt and chief of the aſſociation.

As we find frequent occaſion to quote that learned body in this work, and are indebted to them for ſeveral excellent obſervations that occur herein; the reader will not be diſpleaſed to find ſome account of them.

In the beginning of the 17th century, F. Heribert Roſweide, a Jeſuit of Antwerp, laid a deſign of collecting the lives of the ſaints, as wrote by the original authors, with notes, like thoſe added to his lives of the fathers, to clear obſcure paſſages, and diſtinguiſh the genuine from the ſpurious: but he died in 1629. ere the work was begun.—The year following, J. Bollandus, a Jeſuit of the ſame houſe, took up the deſign; and whereas Roſweide only propoſed to collect the lives already compoſed; Bollandus undertook, where there was no life of a ſaint extant, to compoſe new ones from the authors who had mentioned him.—In 1635. he took in G. Henſchenius, as a partner with him; and in 1641. publiſhed *the acts of the ſaints of the month of January*, in two large volumes, folio. In 1650. F. Papebroch became an aſſociate; and, Henſchenius dying, the fathers, Baert, Janning, Sollier, and Raye, were called in, who continued the work: whereof, in eight years, there have appeared twenty-four volumes, for the firſt ſix months of the Roman calendar.

BOLONIAN. See Bononian.

BOLT, in building, an iron faſtening, fixed to doors and windows.

Bolts are chiefly of three kinds; *plate*, *round*, and *ſpring-bolts*.

Bolt *of a Lock*. See the article Lock.

Bolts, or iron pins, in a ſhip, are of ſeveral ſorts, frequently diſtinguiſhed according to the places where they are uſed; as, *chain-bolts*, *bolts for carriages*, &c. *ring-bolts*, ſerving for the bringing to of the planks, *&c.* *drive-bolts*, uſed to drive out others; *ſet-bolts*, employed for forcing the planks and other works, and bringing them cloſe to one another; *rag-bolts*, on each ſide full of jags or barbs, to keep them from flying out of their holes; *clench-bolts*, thoſe which are clenched or faſtened at the ends where they come through; *fore-lock-bolts*, made like locks with an eye at each end, whereinto a fore-lock of iron is driven to prevent ſtarting out; *fend*, or *fender-bolts*, made with long and thick heads, ſtruck into the uttermoſt bends or wales of a ſhip, to ſave her ſides from bruiſes and hurts.

Thunder-Bolt. See the article Thunder-bolt.

BOLT-HEAD, the ſame as *matraſs*; a veſſel uſed by the chymiſts. See Matrass.

BOLTING*, a method of pleading, or arguing, in uſe in the inns of courts; inferior to mooting. The caſe is argued firſt by three ſtudents, then by two barriſters; a ſenior ſitting judge.

* The word comes from the Saxon *bolt*, an houſe; becauſe done privately within-doors, for inſtruction.

BOLUS, in medicine, an extemporaneous form of remedy, of a ſoft conſiſtence, ſomewhat more ſo than that of an electuary, and of the quantity of one doſe, or morſel to be ſwallowed down; contrived principally for the ſake of ſuch as have an averſion to potable medicines; as alſo for the better conveyance of certain preparations of mercury, antimony, *&c.* which, by their weight, would ſink to the bottom of the glaſs, were they given in draughts.

There are *Bolus's*, of various kinds, made with electuaries, confections, conſerves, pulps, powders, ſalts, oils, eſſences, extracts, ſyrups, *&c.* ſome of which ingredients muſt always have ſolidity or drineſs enough, to give a conſiſtence to thoſe that are liquid.

BOMB*, a hollow iron ball, or ſhell, filled with gunpowder, and furniſhed with a vent for a fuſee, or wooden tube filled with combuſtible matter; to be thrown out from a mortar.

* The word *bomb* comes from the Latin *bombus*, *crepitus*, or *ſibilus ani*; by reaſon of the noiſe it makes.

The method of preparing a *Bomb* is as follows: a hollow iron globe A B (*Tab. Fortification*, *fig.* 8.), is caſt pretty thick, having a round aperture A, by which it may be filled and lighted; and circular anſæ C D, for the commodious putting it into the mortar.

To prove whether it be ſtaunch, after heating it red-hot on the coals, it is expoſed to the air, ſo as it may cool gently: for ſince fire dilates iron, if there be any hidden chinks or perforations, they will thus be opened, and enlarged; and the rather, becauſe of the ſpring of the included air continually acting from within. This done, the cavity of the globe is filled with hot water, and the aperture well ſtopped, and the outer ſurface waſhed with cold water and ſoap; ſo that if there be the ſmalleſt leak, the air, rarified by the heat, will now perſpire, and form bubbles on the ſurface.

If no defect be thus found in the globe, its cavity is filled with whole gunpowder; a little ſpace or liberty is left, that when a fuſee or wooden tube *a e*, of the figure of a truncated cone, is driven through the aperture, and faſtened with a cement made of quick-lime, aſhes, brick-duſt, and ſteel-filings, worked together in a glutinous water; or of four parts of pitch, two of colophony, one of turpentine, and one of wax; the powder may not be bruiſed. This tube is filled with a combuſtible matter, made of two ounces of nitre, one of ſulphur, and three of gunpowder-duſt, well rammed.

This fuſee, ſet on fire, burns ſlowly till it reach the gunpowder, which goes off at once, burſting the ſhell to pieces with incredible violence: whence the uſe of *Bombs* in beſieging towns.

Special care, however, muſt be taken, that the fuſee be ſo proportioned, as that the gunpowder do not take fire ere the ſhell arrives at the deſtined place; to prevent which, the fuſee is frequently wound round with a wet clammy thread. See FUSEE.

Bombs being made of different magnitudes, it may be proper to exhibit ſome of their dimenſions; as in the following table.

Diam. of Bomb.	Thickneſs of Metal.		Diam. of Apert.	Quant. of Gunpow.	Weight of Bomb.
17,In.10	2 In.	2,10	,20	48 ℔	490 ℔
11, 8	1	,18	,16	15	130
8	0,10	,13	,10	4	40

Others make the thickneſs of the *Bomb* $\frac{1}{8}$, or $\frac{1}{9}$, or $\frac{1}{10}$, of the whole diameter; and the diameter of the aperture $\frac{1}{9}$ or $\frac{1}{7}$ of the ſame.

Bombs only differ from *granadas*, in that the latter are much leſs; and, inſtead of mortars, are thrown out of the hand.

M. Blondel, who has wrote on the art of throwing *Bombs*, obſerves, that the firſt *Bombs* were thoſe thrown into the city of Watchtendonch in Guilderland, in 1588. though others pretend they were in uſe a century before; *viz.* at the ſiege of Naples by Charles VIII. in 1495.

BOMB-BATTERY. See the article BATTERY.

BOMB-CHEST is a kind of cheſt filled uſually with bombs, ſometimes only with gunpowder, placed under-ground, to tear and blow it up in the air, with thoſe who ſtand on it. *Bomb-cheſts* were formerly much uſed to drive enemies from a poſt they had ſeized, or were about to take poſſeſſion of: they were ſet on fire by means of a ſauciſſee faſtened at one end, but they are now much diſuſed.

BOMBARD*, BOMBARDA, a piece of artillery antiently in uſe, exceedingly ſhort and thick, and with a very large mouth, by ſome alſo called *baſilic*, by the Dutch *donderbuſs*.

* Some derive the word, by corruption, from *Lombard*, as ſuppoſing this piece firſt uſed in Lombardy. Du Cange, after Voſſius, derives it from *bombus*, and *ardeo*; Menage, from the German *bombarden*, the plural of *bomber*, *baliſta*. But we doubt whether the Germans know any ſuch word. It is no unuſual thing with Menage, and many other etymologiſts, to give derivations from words of their own making.

There were ſome of theſe pieces ſaid to have carried balls of 300 pounds weight: Froiſſart mentions one of 50 foot long. To load them, they made uſe of cranes, &c. The *Bombard* is ſuppoſed to have been in uſe before the invention of cannons.

BOMBARDIER, an engineer, or perſon whoſe buſineſs is to take care of the firing and throwing *Bombs* out of mortars.—He firſt drives the fuſee, then fixes the ſhell, points, loads, and fires.

BOMB-KETCH is a ſmall veſſel, ſtrengthened with large beams, for the uſe of mortars at ſea.

BOMBYCINUM *velamentum*. See VELAMENTUM.

BONA *mobilia*. See the article MOBILIA.

BONA *notabilia*, in law. Where a perſon dying has goods, or good debts, in another dioceſe, but within the ſame province, beſides his goods in the dioceſe where he dies, amounting to the value of five pounds, at leaſt; he is ſaid to have *bona notabilia*: in which caſe, the probate of his will, &c. belongs not to the biſhop of the dioceſe where he dies, whoſe juriſdiction cannot extend beyond the bounds of his own dioceſe, but to the archbiſhop of the province.

BONA *patria*, a jury or aſſiſe of countrymen, or good neighbours. See JURY, and ASSISE.

BONIS *arreſtandis, ne diſſipentur*. See ARRESTANDIS.

Terris **BONIS**, *& catallis rehabendis poſt purgationem*. See TERRIS.

Arreſto facto ſuper **BONIS** *mercatorum*. See ARRESTO.

BONORUM *attachiamenta*. See ATTACHIAMENTA.

Summum **BONUM**. See SUMMUM.

BOND. See the articles OBLIGATION, and COUNTER-BOND.

BONE, in anatomy, a white, hard, brittle, inſenſible part of the body, framed for the defence of the ſoft parts, and the ſupport of the whole fabric. See BODY, PART, &c.

The *Bones* are all covered with a peculiar membrane, called the *perioſteum*; and are moſt of them hollow, and filled with an oily ſubſtance called *marrow*.

Dr. Havers, deſcribing the texture of the *Bones*, obſerves, that they conſiſt of lamellæ, or plates lying one upon another; and thoſe, again, of fibres running lengthwiſe, ſome to the extremities of the *Bones*, others not ſo far; but none of them terminating there in diſtinct ends, as they ſeem to do; but, in lieu of that, continued tranſverſly, and as it were arched: the fibres of one ſide meeting and uniting with thoſe of the other; and this at each extremity. So that the fibres are a continuation of each other; though not in the ſame uniform order, but in very long ellipſes; not all of a length, however, but in each plate ſhorter and ſhorter than other.

Theſe lamellæ, or plates, are differently diſpoſed in different *Bones*; *v. gr.* in thoſe that have a large cavity, they are contiguous on each ſide, and very cloſely united; in thoſe again, whoſe cavities are ſmall, or which are altogether ſpongeous within, many of the internal laminæ are placed at a diſtance from each other, having betwixt them little *bony* cells; and even in *Bones* that have a larger cavity, ſome of theſe leſſer cells are uſually found at each extremity. In ſuch *Bones* as have their plates contiguous, there are pores through and between the plates, beſides thoſe made for the paſſage of the blood-veſſels: the firſt penetrate the laminæ tranſverſly, and look from the cavity to the external ſurface of the *Bone*; the ſecond run longitudinally between the plates: the firſt are found in every lamina; though the nearer the cavity, the greater the number of pores; but they do not lie directly over one another, ſo as to form any continued paſſage from the cavity to the ſurface. The ſecond are ſeldom found but by good glaſſes: a medullary oil is diffuſed, by theſe, throughout the plates; and to thoſe, the firſt kind ſeems only ſubordinate; ſerving to bring the oil into them.

The marrow in the cavity of the *Bones* is inveſted with a membrane, wherein are included little bags, or lobules; and in theſe bags are veſiculæ, or glandulous bladders, ſerving both for the ſecretion of the medullary oil from the blood, and for the reception and conſervation of the ſame. They ſeem to have paſſages into each other, as have alſo the bags; whereby the oil has a freer courſe to the joints and ſubſtance of the *Bone*. The uſe of the marrow is to oil the ſubſtance of the *Bone*, and to prevent its being too dry and brittle; it alſo lubricates the articulation of the *Bones*, and hinders their ends from being worn, or overheated with motion; and it moiſtens the ligaments by which they are tied to each other: in which it is aſſiſted by the mucilaginous glands, found in all the articulations of the *Bones*.

The *Bones* are generally bigger at their extremities than in the middle; that the articulations might be firm, and the *Bones* not ſo eaſily diſlocated: but to render the middle of the *Bone* ſtrong withal, ſo as to ſuſtain its allotted weight, and reſiſt accidents, the fibres are there more cloſely compacted together, and ſupport one another: to which it may be added, that the *Bone*, being hollow, is not ſo eaſily broken, as if it had been ſolid, and ſmaller; for of two *Bones* of equal length, and of equal numbers of fibres, the ſtrength of the one to the ſtrength of the other, will be as their diameters.

The *Bones* are joined and connected together various ways, according to the various purpoſes they are to ſerve: ſome being intended for motion, others for reſt, and the ſupport of the incumbent parts only.—That jointure intended for motion, is called *arthroſis*, or *articulation*; that for reſt, *ſymphyſis*, or *coalition*.

Articulation is divided into two kinds; *diarthroſis*, and *ſynarthroſis*: and each of theſe again ſubdivided into ſeveral others. See ARTICULATION, DIARTHROSIS, &c.—*Symphyſis* is divided into *ſutura*, *harmonia*, and *gomphoſis*.—Beſides which there are five other kinds of connection; *viz.* *ſyſſarcoſis*, *ſynchondroſis*, *ſynneuroſis*, *ſyntenoſis*, and *ſynymenſis*. See SYMPHYSIS, SYSSARCOSIS, &c.

The number of the *Bones* is various in various ſubjects: ordinarily it is about 242; ſome ſay 300; others 307; others 318: but the later writers fix it at 249 or 250; 61 of which are in the head, 67 in the trunk, 62 in the arms and hands, and 60 in the legs and feet: the variations are in the number of the ſeſamoidea, the teeth, and the ſternum.

The names of the ſeveral *Bones* are given in the following table; their figures and places are repreſented in *Tab. Anatomy*, *P.* 1. (Oſteol.) and particular deſcriptions of each are given under their proper heads.—

Os frontis	1	*Vertebræ Cervicis*	7	The *Os Femoris*	2
—Occipitis	1	*—Dorſi*	12	*Rotula*	2
Oſſa Parietalia	2	*—Lumborum*	5	*Tibia*	2
—Temporum	2	*—Oſſis Sacri*	6	*Fibula*	2
Oſſicula Auditus	8	*Os Coccygis*	3	*Oſſa Tarſi*	14
Os Ethmoides	1	*Scapula*	2	*—Metatarſi*	10
—Sphenoides	1	*Claviculæ*	2	*—Digitorum*	28
—Malæ	2	*Coſtæ*	24		—
—Maxillare	2	*Sternum*	1		60
—Unguis	2	*Oſſa Innominata*	2		—
—Naſi	2		—	In all	245
—Palati	2		64		---
Vomer	1		—		
Maxilla Inferior	1	The *Humerus*	2		
Dentes Inciſivi	8	*Ulna*	2		
—Canini	4	*Radius*	2		
—Molares	20	*Oſſa Carpi*	16		
Os Hyoides	1	*—Metacarpi*	8		
	—	*—Digitorum*	30		
	61		—		
			60		

Beſide the *Oſſa Seſamoidea*, which are ſaid to be found to the number of 48.

Of the bones the leaſt is the *Orbiculare*; the biggeſt, the *Femur*.

The blood-veſſels of the *bones*, Dr. Havers divides into nutritious and medullary; the one furniſhing matter for the nutrition, the other for the lubrication of the *bones*. The chief of the nutritious enter the ends of the *bone*, *viz.* the arteries at one end, and the veins at the other. The medullary commonly enter the ſides of the *bone*, and that obliquely; but both by the ſame foramen.

The medullary oil is diſpenſed from the cavity where it is depoſited, throughout the whole ſubſtance of the *bone*; paſſing firſt through the tranſverſe pores of the firſt internal laminæ into the longitudinal ones; where it proceeds till it finds other tranſverſe pores, when it alters its courſe again, and exudes farther: thus it paſſes alternately through and between the plates, till it is diffuſed throughout. This is the method of its conveyance in *bones*, whoſe plates are contiguous: where the plates are at a diſtance, as in *bones* that have no great cavity, the ſmall caverns above-mentioned contain medullary glands; whence the plates have the benefit of the marrow without the former method of conveyance.

Thus are all the *bones* ſtocked with pores, *&c.* excepting the teeth; which have this further diſtinction, that they have nerves inſerted into them: whereas, in all the other *bones*, the nerves go no farther than the perioſteum. See Tooth.

Beſides the large cavities in the inſide, moſt *bones* have ſuperficial cavities, or *ſinus's*, which may be diſtinguiſhed into *ſulci*, or furrows, the longer ſort; and *foveæ*, pits, the ſhorter ones.

On the outſide are alſo obſerved prominences, whereof there are two kinds; the one a continued part of the *bones*, jetting apparently above its plane ſurface, for the more commodious inſertion of the muſcles, *&c.* called *apophyſis*, or *proceſſus*; the other an additional *bone*, growing to another by mere contiguity, being generally more ſoft and porous than the other, and called an *epiphyſis*, or *appendage*. If the protuberance be round, it is called the *caput*, under which is the *cervix*; if flat, *condylus*; if ſharp, *corone*.

The general uſe of the *bones* is, to ſupport and ſtrengthen the body, like beams and pillars in a building; to defend ſome of the more eſſential parts, as the brain, *&c.* to give ſhape to the body, and to aſſiſt in motion.

The diſeaſes of the *bones* are, aches, caries, exoſtoſes, rickets, *&c.* to which add, fractures, fiſſures, luxations, *&c.* See Caries, Rickets, *&c.*

Hurle Bone.	See the articles	Hurle.
Neper's Bones.		Neper.
Quitter Bone.		Quitter.
Ring Bone.		Ring.
Whale Bone.		Whale.

BONE-SETTING. See the articles Reduction, Fracture, and Luxation.

BONNET, in a general ſenſe. See Cap, Hat, *&c.*

Bonnet, in fortification, a kind of little ravelin, without a ditch, having a parapet three feet high; antiently placed before the points of the ſaliant angles of the glacis; being paliſadoed round: of late alſo uſed before the angles of baſtions, and the points of ravelins, and fauſſebrayes. See *Tab. Fortif. fig.* 21. *lit. m.*

The *bonnet* has two faces, from ten to fifteen, or more rods long: the parapet is made of earth, from thirty to thirty-ſix feet thick, and from nine to twelve feet high: it is environed with a double row of paliſadoes, ten or twelve paces diſtant from each other; hath a parapet three feet high, and is like a little advanced corps du guard.

Bonnet *à prêtre*, or prieſt's cap, is an outwork, having at the head three ſaliant angles, and two inwards.

It differs from the *double tenaille* only in this, that its ſides, inſtead of being parallel, grow narrower, or cloſer at the gorge, and open wider at the front; on which account it is alſo denominated *queue d'aronde*, or ſwallow's tail. See Queue d'Aronde, and Tenaille.

BONNETS, in the ſea-language, ſmall ſails, ſet on the courſes, on the mizzen, main-ſail, and fore-ſail of a ſhip, when theſe are too narrow, or ſhallow to clothe the maſt; or in order to make more way in calm weather.

BONONIAN *ſtone*, a ſmall, grey, ſoft, gloſſy, fibrous, ponderous, ſulphurous ſtone, about the bigneſs of a large walnut; when broken, having a kind of cryſtal, or ſparry talc within; found in the neighbourhood of Bologna, or Bononia in Italy; and, when duly prepared, making a ſpecies of phoſphorus.

This ſtone is found in divers parts of that country, particularly in a river at the foot of mount Palermo; where a chymiſt, one Vincenzo Caſciarlo, having gathered ſome pieces, and carried them home, in hopes by the fire to draw ſilver out of them; inſtead of what he expected, found that admirable phænomenon they exhibit, which conſiſts in this, that having been expoſed to the light, they retain it, and ſhine, for the ſpace of ſix or eight hours in the dark.

M. Homberg is ſaid to be the perſon who firſt taught us the true manner of preparing and calcining the *Bononian ſtone*, having made a journey to Italy on purpoſe to learn it.—Though others allege, that the true art of preparing and calcining the ſtone is loſt; there having been but one, an eccleſiaſtic, who had the true ſecret, and who is ſince dead, without communicating it to any perſon. See *Philoſoph. Tranſact.* N° 21.

M. Elpigni obſerves, that one Zagonius had a method of making ſtatues and pictures of the *Bononian ſtone*, which would ſhine variouſly in the dark; but he adds, the perſon died without diſcovering his ſecret. See *Phil. Tranſ.* N° 134.

BONS-HOMMES. See Albigenses.

BOOK *, a writing compoſed on ſome point of knowlege by a perſon intelligent therein, for the inſtruction or amuſement of the reader.

* The word is formed from the Saxon *boc*, which comes from the Northern *buech*, of *buechaus*, a beech or ſervice-tree, on the bark of which our anceſtors uſed to write.—*V.* Rudbeck *Atlant. P.* 3. *Phil. Tranſ.* N° 301. *p.* 2061.

Book may be defined more preciſely, a compoſition of ſome man of wit or learning, deſigned to communicate ſomewhat he has invented, experienced, or collected, to the public, and thence to poſterity; being withal of a competent length to make a volume.—*Vid.* Saalbach *Sched. de Libr. Veter.* §. 8. Reimm. *Idea Syſt. Antiq. Liter. p.* 230. Trev. *D. Univ. T.* 3. *p.* 1506. *voc.* Livre. See alſo the article Volume.

In this ſenſe, *book* is diſtinguiſhed from *pamphlet*, or ſingle paper, by its greater length; and from *tome* or *volume*, by its containing the whole writing.—Iſidore makes this diſtinction between *liber* and *codex*; that the former denotes a ſingle book; the latter a collection of ſeveral[a]; though, according to Scipio Maffei, *codex* ſignifies a *book* in the ſquare form, *liber*, a *book*, in the roll-form[b].—[a] *Vid.* Iſid. *Orig. l.* 6. *c.* 13. [b] Maffei *Iſtor. Diplom. l.* 2. *Bibl. Ital. T.* 2. *p.* 244. See alſo Saalbach *Lib. cit.* §. 4. Reimm. *ubi ſupra.*

According to the antients, a *book* differed from an *epiſtle*, or *letter*, not only in bulk, but in that the latter was folded up, the former only rolled[a]: not but that there are divers *books* now extant under the names of *epiſtles.*—[a] *Vid.* Pitiſc. *L. Ant. T.* 2. *p.* 84. *voc. Libri.*

We ſay an old *book*, a new *book*; a Latin, a Greek *book*; to read, to write, to publiſh a *book*; the preface, the title, the dedication, the index of a *book*. See Index, *&c.*—To *collate a book* is to ſee that it be perfect, and that none of the ſheets be either wanting, or tranſpoſed.—Bookbinders ſpeak of *folding*, *ſewing*, *beating*, *preſſing*, *covering*, *gilding*, and *lettering* of *books*. See Bookbinding.

A large collection of *books*, for uſe, is called a *library*. See Library.--An inventory of a library, in order for the reader's finding any *book*, is called a *catalogue*. See Catalogue.—Cicero calls M. Cato, *helluo librorum*, a glutton, or devourer of *books*[a]. Gaza holds Plutarch[b], and Herm. Barbarus, Pliny, the beſt of all *books*[c]; —Crenius[d] has a diſcourſe on the beſt, or capital *books* of each author; Tertullian's beſt is held to be his *book De Pallio*; St. Auguſtin's maſter-piece is that *De Civitate Dei*; that of Hippocrates, the *Coacæ prænotiones*; of Cicero, *de Officiis*; of Ariſtotle, *de Animalibus*; of Galen, *de Uſu Partium*; of Virgil, *the ſixth Æneid*; of Horace, the *firſt and ſeventh Epiſtles*; of Catullus, the *coma Berenices*; of Juvenal, the *ſixth Satire*; of Plautus, the *Epidicus*; of Theocritus, the *27th Idyl*: Paracelſus's beſt *book* is his *Chirurgia*; that of Severinus, *de Abſceſſibus*; of Budæus, *Commentarii Linguæ Græcæ*; of Joſ. Scaliger, *de Emendatione temporum*; of Eraſmus, the *Adagia*; of Petavius, the *Rationarium temporum*; of Bellarmin, *de Scriptorib. Eccleſiaſticis*; of Salmaſius, the *Exercitationes Plinianæ*; of Voſſius, *Inſtitut. Oratoriæ*; of Heinſius, *Ariſtarchus Sacer*; of Caſaubon, *Exercitationes in Baronium.*—[a] *Vid.* Cic. *de Finib. l.* 3. *n.* 1. [b] Gentzken. *Hiſt. Philoſ. p.* 130. [c] Harduin. *Præf. ad Plin.* [d] Cren. *de Libr. Script. Optim.* Act. Erud. Lipſ. *an.* 1704. *p.* 526. Barthol. *de Libr. Legend. diſſ.* 3. *p.* 66.

It would be of good uſe to know which is the beſt *book* on each ſubject; *e. gr.* the beſt logic, beſt dictionary and grammar, beſt phyſics, beſt commentary on the bible, or on the inſtitutes, or Geneſis, or the epiſtle to the Hebrews; the beſt harmony of the Evangeliſts; beſt defence of the truth of

Chriſtianity, and the like; by which a library might be compoſed of none but the beſt *books* of each kind.—For this purpoſe we have the ſentiments of many authors of eſtabliſhed reputation on the moſt conſiderable writers, in Sir Tho. Pope-Blount's *Cenſura celebriorum auctorum*, which may be of uſe to direct one's choice. But, to be more expreſs,

The *hiſtory*, or *notitia* of Books makes the firſt part, according to ſome, the whole, of the literary ſcience.—The principal points in the notitia of a *book*, are, its *author*, *date*, *printer*, *edition*, *verſions*, *comments*, *epitomes*, *ſucceſs*, *eloges*, *cenſures*, *condemnation*, *ſuppreſſion*, *adverſaries*, *vindicators*, *continuators*, and the like.

The hiſtory of a *book* is either of its *contents*, which is given by analyſing it, as is done by journaliſts; or of its *appendages* and *accidents*, which is the more immediate province of thoſe called *literators*, and *bibliothecarians*.

The *contents* of a *book* are the matters delivered in it; which make the province of the author.—Of theſe there is one principal matter, called the *ſubject*; in reſpect of which the reſt are only *incidents*.

The *appendages* of a *book* are, the *title*, *preface*, *epiſtle dedicatory*, *ſummaries*, *table of contents*, *index*, and the like, which are the proper province of the editor, unleſs perhaps the title-page, which is frequently uſurped by the bookſeller.

In the *compoſition* of a *book*, there occur *ſentiments*, which are alſo the materials of it; *method*, the order wherein theſe are diſpoſed; and *ſtyle*, or *expreſſion*, which is the language wherein they are cloathed.

The giving hiſtories, catalogues, and bibliotheca's of *books*, is ſaid to have been firſt introduced by the Germans [a]: we may add, that it is they who have beſt ſucceeded in them; and to whom the chief works of this kind are owing.---J. Alb. Fabricius has given us the hiſtory of the Greek and Latin *books*, Wolfius that of the Hebrew *books* [b]: Boecler, of the principal *books* in each ſcience and faculty: Struvius, of the *books* of hiſtory, law, and philoſophy: the abbot Fabricius, of the *books* in his own library: Lambecius, of thoſe in the Vienna library: Le Long, of the *books* of ſcripture: Mattaire, of the *books* printed before the year 1550. *&c.*--[a] *Vid.* Reimm. *Bibl. Acroam. in præf.* §. 1. *p.* 3. [b] Boſ. *Introd. ad Not. Script. Eccleſ. c.* 4. §. 13. *p.* 124. *ſeq.*

Burning of Books was a kind of puniſhment much in uſe among the Romans, by legal ſentence: ſometimes the care of the execution was committed to triumviri appointed on purpoſe [a]; ſometimes to the prætors [b], and ſometimes to the ædiles [c]. Labienus, whom from his ſatirical ſpirit ſome have called *Rabienus*, is ſaid to have been the firſt, who underwent the ſeverity of it. His enemies procured a ſenatuſconſultum, whereby all his *books*, publiſhed during ſeveral years, were ordered to be collected and burnt: "The thing (ſays Seneca) then appeared new and ſtrange, to take revenge on "learning!" *Res nova & inſueta! ſupplicium de ſtudiis ſumi* [d]. Caſſius Servius, a friend of Labienus, hearing the ſentence pronounced, cried aloud, "That they muſt burn him too, "ſince he had got all the books by heart:" *Nunc me vivum uri oportet, quia illos didici.* Labienus could not ſurvive his *books*, but ſhutting himſelf up in the tomb of his anceſtors, pined away, and was buried alive [e].---[a] *Vid.* Tacit. *Agric. c.* 2. *n.* 1. [b] Valer. Max. *l.* 1. *c.* 1. *n.* 12. [c] Tacit. *Annal. l.* 4. *c.* 35. *n.* 4. [d] Senec. *Controv. in præf.* §. 5. [e] Rhodig. *Ant. Lect. c.* 13. *l.* 2. Salmuth. *ad Pancirol. P.* 1. *tit.* 22. *p.* 68. Pitiſc. *L. Ant. T.* 2. *p.* 84. Divers other antient teſtimonies concerning the burning of *books* are given in Reimm. *Idea Syſt. Antiq. Liter. p.* 389. *ſeqq.*

For the *matter* of Books.---They were firſt written on ſtones, witneſs the Decalogue given to Moſes (which is the oldeſt *book* we have any warranted account of); then, on the parts of plants, *e. gr.* the leaves, chiefly of the palm-tree; the rinds and barks, eſpecially of the tilia, or philyra, and the Egyptian papyrus*. By degrees, wax, then leather, were introduced, eſpecially the ſkins of goats and ſheep, of which, at length, parchment was prepared: then lead came in uſe; alſo linen, ſilk, horn, and, laſtly, paper itſelf.---*Vid.* Calm. *Diſſ.* 1. *ſur Geneſ. Comment. T.* 1. ejuſd. *D. Bibl. T.* 1. *p.* 316. Du Pin *Bibl. Eccleſ. T.* 19. *p.* 381. Barthol. *de legend. libr. diſſ.* 4. *p.* 70. *ſeqq. Hiſt. Acad. R. Inſcr. T.* 3. *p.* 103. Schwartz *de Ornam. libror. diſſ.* 1. Reimm. *Idea Syſt. Antiq. liter. p.* 235. & 286. *ſeq.* Montfauc. *Palæogr. l.* 2. *c.* 8. *p.* 180. *ſeq.* Guiland. *Papyr. Memb.* 3. See alſo the article Paper.

* The parts of vegetables continued long the common matter of *books*; inſomuch that moſt of the names and terms belonging to *books*, in moſt languages, are taken thence: as the Greek *biblos*, the Latin *liber*, *codex*, *folium*, *tabulæ*, and the Engliſh *book* itſelf.—We may add, that vegetable barks appear ſtill in ſome meaſure retained for *books* in certain of the Northern countries, as among the Calmuc Tartars, where a library was lately diſcovered by the Ruſſians, of an unuſual form as well as matter; the *books* were exceedingly long, but of no breadth; the leaves very thick, and made of barks of trees, ſmeared over with a double verniſh; the ink or writing being white on a black ground.—*Vid. Hiſt. Acad. R. Inſcr. T.* 3. p. 6.

The firſt *books* were in form of blocks and tables, of which we find frequent mention in ſcripture, under the appellation *ſepher*, which the ſeptuagint render αξονες, q. d. *ſquare tables* of which form the *book* of the covenant, *book* of the law, *book* or bill of divorce, *book* of curſes, *&c.* appear to have been [a].—As flexible matters came to be wrote on, they found it more convenient to make their *books* in form of rolls [b], called by the Greeks κονδακια, by the Latins *volumina**, which appear to have been in uſe among the antient Jews, as well as Grecians, Romans, Perſians, and even Indians. And of ſuch did the libraries chiefly conſiſt, till ſome centuries after Chriſt.—The form which obtains among us is the ſquare, compoſed of ſeparate leaves; which was alſo known, though little uſed, among the antients; having been invented by Attalus, king of Pergamus, the ſame who alſo invented parchment [c]: but it has now been ſo long in poſſeſſion, that the oldeſt manuſcripts are found in it. Montfaucon aſſures us, that of all the antient Greek MSS. he has ſeen, there are but two in the roll form; the reſt being made up much after the manner of the modern *books* [d].—[a] *Vid.* Calm. *lib. cit.* [b] Du Pin *Bibl. Eccleſ. T.* 19. *p.* 382. [c] Barth. *de Libris legend. diſſ.* 4. *p.* 95. *ſeqq.* [d] Montfauc. *Palæogr. Græc. l.* 1. *c.* 4. *p.* 26. Reimm. *Idea Syſt. Antiq. liter. p.* 227. Item *p.* 242. Schwartz. *de Ornam. libror. diſſ.* 2. See alſo the article Bookbinding.

* The rolls, or volumes, were compoſed of ſeveral ſheets, faſtened to each other, and rolled upon a ſtick, or *umbilicus*; the whole making a kind of column, or cylinder, which was to be managed by the umbilicus, as a handle; it being reputed a kind of crime to take hold of the roll itſelf. The outſide of the volume was called *front*; the ends of the umbilicus *cornua*, horns; which were uſually carved, and adorned likewiſe with bits of ſilver, ivory, or even gold and precious ſtones. The title Συλλαβος, was ſtuck on the outſide. The whole volume, when extended, might make a yard and half wide, and fifty long.—*Vid.* Salmuth. *ad Pancirol. P.* 1. *tit.* 42. *p.* 143. *ſeq.* Walc. *Parerg. Acad. p.* 72. Pitiſc. *L. Ant. T.* 2. *p.* 48. *voc.* libri. Barth. *Adverſ. l.* 22. *c.* 18. Schwartz. *de Ornam. Libror. diſſ.* 2. Reimm. *Idea Syſt. Ant. Liter. p.* 242. *ſeq. Item p.* 251. To which may be added divers other writers on the form and ornaments of the antient books recited in Fabric. *Bibl. Antiq. c.* 19. §. 7. *p.* 607.

To the form of *books* belongs alſo the *Oeconomy of the inſide*, or the order and arrangement of points and letters into lines and pages [a], with margins, and other appurtenances: this has undergone many varieties; at firſt, the letters were only divided into lines, then into ſeparate words; which, by degrees, were noted with accents, and diſtributed by points and ſtops into periods, paragraphs, chapters, and other diviſions. In ſome countries, as among the Orientals, the lines began from the right, and ran to the leftward; in others, as the Northern and Weſtern nations, from the left to the rightward: others, as the Grecians, followed both directions alternately, going in the one, and returning in the other, called *bouſtrophedon.*--In moſt countries the lines run from ſide to ſide of the page; in ſome, particularly the Chineſe, from top to bottom. Again, the page in ſome is intire, and uniform; in others, divided into columns; in others diſtinguiſhed into text and notes, either marginal, or at the bottom: uſually it is furniſhed with ſignatures and catch-words; ſometimes alſo with a regiſter to diſcover whether the *book* be complete.---To theſe are occaſionally added the apparatus of ſummaries, or ſide-notes; the embelliſhments of red, gold, or figured initial letters, head-pieces, tail-pieces, effigies, ſchemes, maps, and the like.---The end of the *book*, now denoted by *finis*, was antiently marked with a <, called *coronis*; and the whole frequently waſhed with an oil drawn from cedar, or citron chips, ſtrewed between the leaves to preſerve it from rotting [b].---There alſo occur certain formula's at the beginnings and ends of *books*: as, among the Jews, the word חזק, *eſto fortis*, which we find at the end of the *books* of Exodus, Leviticus, Numbers, Ezekiel, *&c.* to exhort the reader to be courageous, and proceed on to the following *book* [c].--The concluſions were alſo often guarded with imprecations againſt ſuch as ſhould falſify them [d]; of which we have an inſtance in the Apocalypſe [e]*.---The Mahometans for the like reaſon place the name of God, at the beginning of all their *books*, which cannot fail to procure them protection, on account of the infinite regard had among them to that name where-ever found [f].---For the like reaſon it is, that divers of the laws of the antient emperors begin with the formula, *In nomine Dei* [g].----*Vid.* Barth. *de Libr. legend. diſſ.* 5. *p.* 106. *ſeqq.* Montfauc. *Palæogr. l.* 1. *c.* 4. Reimm. *Idea Syſt. Antiq. Liter. p.* 227. Schwartz. *de Ornam. Libr. diſſ.* 1. Reimm. *Idea Syſt. Antiq. Liter. p.* 240. *ſeq.* [b] Schwartz. *de Ornam. libror. diſſ.* 2. Reimm. *Idea Syſt. Ant. Liter. p.* 251. [c] Schwartz. *ubi ſupra diſſ.* 3. Reimm. *l. c. p.* 260. *ſeq.* [d] Fabric. *Bibl. Græc. l.* 1. *c.* 5. *p.* 74. [e] Revel. *c.* 22. *v.* 19. [f] Sale *Prelim. Diſc. to Koran*, *ſect.* 3. *p.* 59. [g] Barthol. *lib. cit. p.* 117.

* At the end of each book the Jews alſo added the number of verſes contained in it, and at the end of the Pentateuch the number of ſections; that it might be tranſmitted to poſterity intire: the Maſoretes, and Mahometan doctors, have gone farther; ſo as to number the ſeveral words and letters in each book, chapter, verſe, *&c.* of the Old Teſtament, and the Alcoran. See Massora, Alcoran, *&c.*

The kinds and denominations of Books are various: with regard to their uſe and authority, *books* may be divided into, —*human*, thoſe compoſed by mere men; — *divine*, thoſe ſent from heaven, or dictated by God himſelf, containing his word and will; which latter are alſo called *ſacred* and *inſpired books*.

The Mahometans reckon one hundred and four divine *books*, given by God to his prophets; *viz.* ten to Adam, fifty to Seth; thirty to Enoch; ten to Abraham; one to Moſes, the Pentateuch (ſuch as it was before the Jews and Chriſtians corrupted it); another to Jeſus, the Goſpel; another to David, the Pſalms; and another to Mahomet, the Alcoran. He that denies theſe, or any of them, or any part, verſe, or even word of them, is deemed an infidel [a]: and God preſerve us from infidels! —They make it a criterion of a divine *book*, that God himſelf ſpeak in it, not others concerning God, in the third perſon; as it does in our *books* of the old and new teſtament, which they therefore reject as compoſitions merely human [b]. — [a] *Vid.* Reland. *de Relig. Mohamm. l.* 1. *c.* 4. *p.* 21. *ſeq.* [b] *Id. ibid. l.* 2. §. 26. *p.* 231.

Sibylline Books are thoſe compoſed by certain pretended propheteſſes, depoſited in the capitol, under the care of duumviri. —*Vid.* Lomei. *de Biblioth. c.* 13. *p.* 377. See alſo Sibyl.

Canonical Books are thoſe received and allowed by the church, as parts of holy ſcripture.—Such are the *books* of the old and new teſtament.

Apocryphal Books, thoſe excluded out of the canon, yet received and read in churches.

Authentic Books, thoſe which are deciſive, and of authority: ſuch, in the civil law, are the code, digeſt, *&c.* in our law, the ſtatutes, *&c.*—*Vid.* Bac. *de Augm. Scient. l.* 8. *c.* 3. Works, *T.* 1. *p.* 257.

Auxiliary Books, thoſe leſs eſſential, yet of uſe, as ſubſerveint to the others: as, in the ſtudy of the law, *books* of inſtitutes, formulæ, maxims, reports, *&c.*

Elementary Books, thoſe which deliver the firſt principles of ſciences: ſuch are thoſe under the titles of *rudiments*, *methods*, *grammars*, &c. by which they ſtand contradiſtinguiſhed from *books of a ſuperior order*, which aim at making further advances in the ſcience.—*Vid. Mem. de Trev. an.* 1734. *p.* 804.

Library Books, ſuch as are not ordinarily read over, but turned to, and conſulted occaſionally: ſuch are dictionaries, comments, corpus's, theſaurus's, *&c.*

Exoteric Books, thoſe intended for the uſe of popular and ordinary readers.

Acroamatic Books, thoſe containing more ſecret and ſublime matters, calculated for adepts and proficients in the ſubject. —*Vid.* Reimm. *Idea Syſt. Antiq. Liter. p.* 136.

Prohibited Books, thoſe condemned and forbidden by the ſuperiors of the church, as either containing matters of hereſy, or things contrary to good morals.—*Vid.* Bingh. *Orig. Eccleſ. l.* 16. *c.* 11. §. 11. Paſch. *de Var. Mod. Mor. Trad. c.* 3. *p.* 298. & 250. Trev. *D. Univ. T.* 3. *p.* 1507. Pfaff. *Introd. Hiſt. Theol. T.* 2. *p.* 65. Heuman *Via ad Hiſt. Lit. c.* 4. §. 63. *p.* 163. See alſo the article Index.

Public Books, *libri publici*, the records of paſt times and tranſactions kept by public authority.—*Vid.* Calv. *L. Jur. p.* 534. *voc. Libri.* Trev. *D. Univ. T.* 1. *p.* 1509. See alſo Acts, *&c.*

Church Books, or *eccleſiaſtical* Books, thoſe uſed in the public offices of religion [a].—Such, in the Latin church, are the *ſacramentary*, *antiphonary*, *lectionary*, *pſalter*, *evangelary*, or *evangeliſtary*, *ordo*, *miſſal*, *pontifical*, *ritual*, *proceſſional*, *breviary*, *roſary* [b], &c.—In the Greek church the *menologium*, *euchologium*, *tropologium*, &c. Alſo, the *book of peace*, *liber pacis*, which is a book given to be kiſſed in the ceremony of the maſs. The *muſic-book*, containing the pſalms, troparies, and other prayers of that kind, which are uſed to be ſung, with the notes marked to each. *Book of liturgies*, *liber liturgiarum*, containing not all the liturgies of the Greek church, but the four now in uſe; *viz.* the liturgy of St. Baſil, of St. Chryſoſtom, that of the preſanctified, *προηγιασμενων*, and that of St. James, which is only uſed in the church of Jeruſalem, and that but once a year [c].— [a] *Vid.* Pfaff. *Introd. Hiſt. Theol. l.* 4. §. 8. *T.* 3. *p.* 287. [b] Trev. *D. Univ. T.* 3. *p.* 1507. [c] *Id. ibid.*

The Engliſh *church-books*, in uſe in the middle of the tenth century, as enumerated in Elfric's canons, were the *bible*, *pſalter*, *piſtol-book* (*i. e.* epiſtles), *goſpel-book*, *maſs-book*, *ſong-book* (elſewhere called *antiphonary*), *hand-book* (or *manual*), *kalendar*, *paſſional* (or *martyrology*), *penitential*, and the *leſſon-book*. *Vid.* Johnſ. *Eccleſ. Laws*, *An.* 957. §. 21 *.

The Jewiſh *church-books* were the *books* of the *law*, the *hagiographa*, the *prophets*, &c.—See Pentateuch, Prophet, and Hagiographa.—The firſt was alſo called the *book of Moſes*, becauſe compoſed by him; and the *book of the covenant*, becauſe the terms thereof were contained in it. In a more abſolute ſenſe, *book of the law* denotes Moſes's original, or autograph, found in a hole of the temple in king Joſiah's time.

Books, again, with regard to their ſcope and ſubject, may be divided into—*hiſtorical*, thoſe which relate facts, either of nature or mankind — *dogmatical*, thoſe which lay down doctrines, or general truths—*miſcellaneous*, thoſe of a neutral kind, containing both facts and doctrines—*hiſtorico-dogmatical*, and thoſe which only rehearſe doctrines, or, at moſt, indicate the arguments by which they are proved, as Mallet's *geometry*;—*ſcientifico-dogmatical*, thoſe which not only recite the doctrines, but demonſtrate them, as Euclid's *Elements.* — *Vid.* Wolf. *Phil. Rat. ſect.* 3. *c.* 1. §. 744. 750, 751, *&c.*

Pontifical Books, *libri pontificales*, *ἱερατικα βιϐλια*, among the Romans, were thoſe appointed by Numa to be kept by the pontifex maximus; deſcribing all the ceremonies, ſacrifices, feaſts, prayers, and other religious matters, with the manner, and circumſtances, wherewith each was to be celebrated: theſe were alſo called *indigitamenta*, as containing the names of all the gods, and the occaſions, and formula's of invoking each.—*Vid.* Liv. 1. *p.* 23. Lomei. *de Bibl. c.* 6. *p.* 107. Pitiſc. *L. Ant. T.* 2. *p.* 85. *voc. Libri.*

Ritual Books, *libri rituales*, thoſe which directed the order and manner of founding, building, and conſecrating cities, temples, and altars; the ceremonies belonging to walls, gates, tribes, curiæ, camps, and the like.—*Vid.* Lomei. *lib. cit. c.* 6. *p.* 111. Pitiſc. *ubi ſupra.*

Augural Books, *libri augurales*, called by Cicero [a], *reconditi*, were thoſe wherein the ſcience of foretelling futurity from the flight and chattering of birds were contained [b].— [a] *Vid.* Cic. *Orat. pro domo ſua ad pontif.* [b] Serv. *ad Æn. l.* 5. *v.* 738. Lomei. *lib. cit. c.* 6. *p.* 109.

Aruſpicine Books, *libri aruſpicini*, thoſe wherein the myſteries of divining from the entrails of victims were preſcribed. ---*Vid.* Lomei. *ubi ſupra c.* 6. *p.* 111.

Acherontic Books, *libri Acherontici*, thoſe wherein the ceremonies, and diſcipline of Acheron was contained; ſometimes alſo called *libri Etruſci*, as being ſuppoſed to have been compoſed by Tages the Hetrurian, though others pretend, that he had received them from Jupiter himſelf [a]: ſome ſuppoſe theſe to have been the ſame with the *libri fatales*; others, with the *libri aruſpicini* [b].— [a] *Vid.* Serv. *ad Æneid. l.* 8. *v.* 398. Lomei. *de Bibl. c.* 6. *p.* 112. Pitiſc. *l. c. p.* 84. [b] Lindenbrog. *ad Cenſorin. c.* 14.

Fulgural Books, *libri fulgurales*, thoſe written touching thunder and lightning, and the interpretation thereof.—As that compoſed by the Tuſcan nymph Bigois, preſerved in the temple of Apollo.—*Vid.* Serv. *ad Æn.* 6. *v.* 72. Lomei. *de Bibl. c.* 6. *p.* 111.

Fatal Books, *libri fatales*, thoſe wherein the ages, or terms of the life of men were written, according to the Hetrurian diſcipline. Theſe were conſulted by the Romans in all public calamities; and inſtructions taken from them, how to expiate the offended deities.—*Vid.* Cenſor. *de die Natal. c.* 14. Lomei. *lib. cit. c.* 6. *p.* 112. Pitiſc. *ubi ſupra*, *p.* 85.

Black Books, thoſe which treat of necromancy and witchcraft.

The ſame denomination is alſo given to ſome other *books*, on account of the colour of their backs, or the diſmalneſs of their contents; whence alſo *red book*, and *domeſday book*.

Good Books, in the common uſage, are thoſe of devotion and piety; as ſoliloquies, meditations, prayers, *&c.*—*Vid.* Shafteſb. *Charact. T.* 1. *p.* 165. *Item*, *T.* 3. *p.* 327.

A *good book*, in the bookſellers language, is a ſaleable one; in the language of the curious, a ſcarce one; in that of men of ſenſe, an uſeful and inſtructive one.

Among five principal things which Rabbi Akiba recommended to his ſon, one was, that if he ſtudied the law, he ſhould take care to do it in a *good book*, leſt he ſhould be obliged to unlearn all again.--*V.* Cren. *de Furib. Librar.* See alſo, further on, the head of judging and chooſing of Books.

Spiritual Books, thoſe which treat more expreſly of the ſpiritual or chriſtian life, and the exerciſes thereof, as contemplation, *&c.*---Such are thoſe of St. John Climax, St. Francis de Sales, St. Thereſa, Thomas a Kempis, Granadenſis, Dr. Horneck, *&c.*

Profane Books, ſuch as do not treat of matters of religion. See Profane.

Books, with regard to their authors, may be divided into-- *Anonymous*, thoſe without any author's name.---*Cryptonymous*, thoſe whoſe authors names are concealed in ſome anagram, or the like---*Pſeudonymous*, thoſe which bear falſe names of authors [a]---*Poſthumous*, thoſe publiſhed after the author's death [b]---*Genuine*, thoſe really written by the perſons whom they pretend for their authors, and ſtill remaining in the ſtate wherein they were left by them---*Spurious*, or *ſuppoſititious*, thoſe pretending to be written by others than their real authors---*Interpolated*, thoſe which ſince their compoſition have been corrupted by ſpurious additions, or inſertions.--- [a] *Vid.* Paſch. *de Var. Mod. Moral. Trad. c.* 3. *p.* 287. [b] Heuman. *Via ad Hiſtor. Liter. c.* 6. §. 40. *p.* 344.

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* By 3 and 4 *Ed.* VI. *c.* 10. Popiſh *books* (under the names of antiphoners, couchers, grailes, journals, legends, manuals, miſſals, ordinals, pies, portuaſſes, primers, proceſſionals) are aboliſhed.—But it is doubted whether this ſtatute be in force, becauſe repealed by 1 *M. c.* 2. for, though 1 *M.* is afterwards repealed by 1 *Jac.* I. *c.* 25. yet, becauſe this of *E.* VI. was once repealed, and not ſince revived by ſpecial words; it may be queſtioned whether it be now in force.

BOOKS, with regard to their qualities, may be divided into—*Clear* or *perſpicuous*, which, in the dogmatical kind, are thoſe where the authors define all their terms accurately, and keep ſtrictly to thoſe definitions in the courſe of their works.—*Obſcure*, thoſe where words are uſed vaguely, and without defining.—*Prolix*, thoſe which contain more things than were neceſſary to the author's deſign: as, if in a *book* of ſurveying a man ſhould give all Euclid.—*Uſeful*, thoſe which deliver things neceſſary to be known, either in other ſciences, or in the buſineſs of life.—*Compleat*, thoſe which contain all that is known concerning the ſubject.—*Relatively compleat*, thoſe which contain all that was known on the ſubject, at a certain time; or, if a *book* were written with any particular deſign, or view, it may be ſaid to be *compleat*, if it contain neither more nor leſs than is neceſſary for the accompliſhing that end.—In the contrary caſes, *books* are ſaid to be *incompleat*.—*Vid.* Wolf. *Log.* §. 815. *p.* 818. 820. 825. *&c.*

BOOKS, with regard to the matter they conſiſt of, may be divided into—*Paper-books*, thoſe written either on linen and cotton paper, or on the papyrus, of which laſt kind few are now remaining.—*Vid.* Montfauc. *Palæogr. Græc. l.* 1. *c.* 2. *p.* 14. *ſeq.* See alſo PAPER.

Parchment-BOOKS, *libri in membrana*, thoſe written on ſkins, or pelts, chiefly of ſheep. See PARCHMENT.

Linen BOOKS, *libri lintei*, among the Romans, were thoſe written on blocks, or tables, covered with a linen cloth.—Such were the Sibylline *books*, and divers antient laws, epiſtles of princes, leagues, annals, *&c.*—*Vid.* Plin. *Hiſt. Nat. l.* 13. *c.* 2. Dempſt. *ad Roſin. l.* 3. *c.* 24. Lomei. *de Bibl. c.* 6. *p.* 106.

Leathern BOOKS, *libri in corio*, mentioned by Ulpian[a], are by Guilandinus taken for ſuch as were written on barks, different from that uſually writen on; which was the tilia[b]: by Scaliger, with more probability, for ſuch as were written on certain ſkins, or certain parts of ſkins, different from thoſe commonly uſed, which were the pelts, or back-parts of ſheep[c].—[a] *Vid.* Ulph. *l.* 52. ff. *de Leg.* 3. [b] Guiland. *Papyr. membr.* 3. *n.* 50. Salmuth. *ad Pancirol. P.* 2. *tit.* 13. *p.* 253. [c] Scalig. *ad Guiland. p.* 17. Pitiſc. *L. Ant. T.* 2. *p.* 84. *voc. Libri.*

Block BOOKS, *libri in ſchedis*, thoſe written on wooden planks, or tablets, ſmoothed for that purpoſe with an aſcia, and a plane.—Such were the ordinary *books* among the Romans.—*Vid.* Pitiſc. *loc. cit.*

Waxen BOOKS, *libri in ceris*, mentioned by Pliny, have occaſioned ſome diſpute. Herm. Barbarus ſuſpects the term to be a corruption, and inclines to read *in ſchedis* inſtead of it, on the authority of ſome antient MSS. Others ſee no need of the emendation, ſince it is known the Romans ſometimes covered their planks, or ſchedæ, with a thin ſkin of wax, to make them ſuſceptible of eraſements, and amendments, which the *libri in ſchedis* were not, and, conſequently, were leſs fit for works that required elegance and accuracy than the waxen ones, which are alſo called *ceræ*, or *libri cerei*.—*Vid.* Pitiſc. *ubi ſupra.*

Elephantine BOOKS, *libri elephantini*, according to Turnebus, were thoſe written on thin ſlices, or leaves of ivory[a]; according to Scaliger, thoſe made of the guts of elephants[b]; according to others, thoſe wherein the acts of the ſenate, relateing to the emperors, were written[c]; according to others, certain huge, or bulky *books*, conſiſting of 35 volumes, containing all the names of the 35 tribes[d].—[a] *Vid.* Salmuth. *ad Pancirol. P.* 2. *tit.* 13. *p.* 255. Guiland. *Papyr. membr.* 2. *n.* 48. [b] Scalig. *ad Guiland. p.* 16. [c] Calv. L. Jur. *p.* 534. *voc. Libri.* [d] Fabric. *Deſcript. Urb. c.* 6. Donat. *de Urb. Rom. l.* 2. *c.* 23. Pitiſc. L. Ant. *loc. cit. p.* 84. *ſeq.*

BOOKS, with regard to their manufacture and commerce, may be divided into—*Manuſcript*, thoſe written with the hand, whether originally by the authors, called *autographs*, or at ſecond hand by *librarii*, or *copiſts*. See MANUSCRIPT, LIBRARIUS, *&c.*—*Printed*, thoſe wrought off from the preſs. See PRINTING.—*Books in quires*, or *ſheets*, thoſe not bound, or ſtitched.—*Books in folio*, thoſe wherein a ſheet is folded but once, or makes two leaves, or 4 pages: *Books in* 4to, where it makes four leaves; *in* 8°, where eight; *in duodecimo*, where twelve; *in* 16°, where ſixteen; *in* 24°, where twenty-four.

BOOKS, with regard to circumſtances and accidents, may be divided into—*Loſt*, thoſe which have periſhed by the injuries of time, or the malice or zeal of enemies.—Such as are divers even of the antient *books* of ſcripture, written by Solomon, and others of the prophets.—*Vid.* Fabric. *Cod. Pſeudepig. Vet. Teſt. T.* 2. *p.* 171. Joſeph. *Hypomn. l.* 5. *c.* 120. *ap.* Fabric. *lib. cit. p.* 247.

Promiſed BOOKS, thoſe which authors have given expectations of, which they have never accompliſhed.—Janſ. ab Almeloveen has given a bibliotheca of *books* promiſed, but ſtill latent, or not publiſhed.—*Vid.* Struv. *Introd. ad Notit. Rei. Liter. c.* 8. §. 21. *p.* 754.

Fictitious BOOKS, thoſe which never exiſted.—Such is the *book de tribus Impoſtoribus*, ſo much talked of by ſome, ſuppoſed to be by others: to whom may be added, divers feigned titles of *books* [a] in Baillet[b], and others. Loeſcher[c] has publiſhed a great number of plans, or projects of *books*, many of them good and uſeful enough, if there were but *books* written to them. M. Dugono has a whole volume of *ſchemes*, or *projects of books*[d], containing no leſs than 3000[e].—[a] *Vid.* Paſch. *de Var. Mod. Mor. Trad. c.* 3. *p.* 282. [b] Bail. *des Satyr. Perſonel.* [c] Loeſch. *Arcan. Liter.* [d] *Projets Literaires.* [e] *Jour. Liter. T.* 1. *p.* 470.

BOOKS *in Ana, Anti*, &c. See the articles ANA, ANTI, *&c.*

The Scope or Deſign of BOOKS are various; that of ſome is, to trace the origin of things diſcovered; of others, to fix and eſtabliſh ſome truth, or raiſe ſome doctrine to a higher pitch of ſubtility; of others, to remove ſome ſcruple, or prejudice, which had before obtained, or fix more accurate and preciſe ideas of things; of others, to explain the names and words uſed in different nations, ages, and ſects; of others, to improve our knowlege of facts, and events, and ſhew the order and ways of providence: laſtly, others aim at divers, or all of theſe ends.—*Vid.* Loeſch. *de Cauſ. Ling. Hebr. in præf.*

The Uſes of BOOKS are numerous: they make one of the chief inſtruments, or means of acquiring knowlege: they are the repoſitories of laws, and the vehicles of learning of every kind: our religion itſelf is founded on books: without them, ſays Bartholin, God is ſilent, juſtice dormant, phyſic at a ſtand, philoſophy lame, letters dumb, and all things involved in Cimmerian darkneſs.—*Vid.* Barth. *de Libr. Legend. Diſſ.* 1. *p.* 5. *Sine libris Deus jam ſilet, juſtitia quieſcit, torpet medicina, philoſophia manca eſt, literæ mutæ, omnia tenebris involuta Cimmeriis.*

The elogiums which have been beſtowed on *books* are infinite: they are repreſented, ' as the refuge of truth, which ' is baniſhed out of converſation; as ſtanding counſellors, ' and preachers, always at hand, and always diſintereſted; ' having this advantage over oral inſtructors, that they are ' ready to repeat their leſſon, as oft as we pleaſe.'—*Books* ſupply the want of maſters, and even, in ſome meaſure, the want of genius and invention; and can raiſe the dulleſt perſons, who have memory, above the level of the brighteſt, without.—An author, who wrote not inelegantly, though in a barbarous age, ſums up all their praiſes.—*Vid.* Lucas *de Penna ap.* Morhoff *Polyhiſt. l.* 1. *c.* 3. *p.* 27. *Liber eſt lumen cordis, ſpeculum corporis, virtutum magiſter, vitiorum depulſor, corona prudentum, comes itineris, domeſticus amicus, congerro tacentis, collega & conſiliarius præſidentis, myrothecium eloquentiæ, hortus plenus fructibus, pratum floribus diſtinctum; memoriæ penus, vita recordationis; vocatus properat, juſſus feſtinat, ſemper præſto eſt, nunquam non morigerus, rogatus confeſtim reſpondet: arcana revelat, obſcura illuſtrat, ambigua certiorat, perplexa reſolvit, contra adverſam fortunam defenſor, ſecundæ moderator, opes adauget, jacturam propulſat*, &c.

Perhaps their greateſt glory is, the affection borne them by many of the greateſt men of all ages: M. Cato *, the elder Pliny[a], the emperor Julian, and others, are on record for an exceſſive devotion to books. The laſt has perpetuated his paſſion by ſome Greek epigrams in their praiſe. Richard Bury, biſhop of Durham, and lord chancellor of England, has a treatiſe expreſs on the *love of books*[b].—[a] *Vid.* Plin. Epiſt. 7. *l.* 3. [b] *Philobiblion, ſive de Amore Librorum.* Fabric. *Bibl. Lat. Med. Ævi, T.* 1. *p.* 842. *ſeq.* Morhoff *Polyhiſt. l.* 1. *c.* 17. *p.* 190. Salmuth. *ad Pancirol. l.* 1. *tit.* 22. *p.* 67. Barth. *de lib. legend. diſſ.* 1. *p.* 1. *ſeq.*

* *M. Catonem vidi in bibliotheca ſedentem multis circumfuſum Stoieorum libris. Erat enim, ut ſcis, in eo inexhauſta aviditas legendi, nec ſatiari poterat: quippe qui, ne reprehenſionem vulgi inanem reformidans, in ipſa curia ſoleret legere, ſæpe dum ſenatus cogeretur, nihil operæ reipublicæ detrahens.*—*Vid.* Cic. *de Divin. l.* 3. *n.* 11.

The ill Effects objected to BOOKS are, that they employ too much of our time and attention; engage us in purſuits of no uſe to the commonwealth, and indiſpoſe us for the functions of civil life; that they render men lazy, and prevent their exerting their own talents, by furniſhing them, on every occaſion, with things of the growth of others; and that our natural lights become weakened and extinguiſhed, by inuring ourſelves to ſee only with foreign lights: beſides, that ill men are hereby furniſhed with means of poiſoning the people, and propagating ſuperſtition, immorality, enthuſiaſm, or irreligion, which will always ſpread faſter, and be received more greedily than leſſons of truth and virtue.—Many other things are added concerning the emptineſs of *books*, and the errors, fables, and follies, they are fraught with; which, together with the multitude and perplexity of them, is ſuch, that it may ſeem eaſier to diſcover truth in the nature and reaſon of things, than in the uncertainty and confuſion of *books*.—Add, that *books* have turned the other inſtruments of knowlege out of doors, as experiments, obſervations, furnaces, and the like, without which the natural ſciences can never be cultivated to purpoſe[a]; and that, in mathematics, *books* have ſo far ſuperſeded the exerciſe of invention, that the generality of mathematicians are now contented to learn the ſolution of problems from others; which is to relinquiſh the chief end of their ſcience: ſince what is contained in mathematical *books* is properly the hiſtory only of mathematics, not the ſcience, art, or talent of ſolving queſtions; which is hardly to be had from *books*; but only from nature and meditation.—[a] *Vid.* Bac. *de Augm. Scient. l.* 2. *Works, T.* 1. *p.* 61.

For the art of Writing or Compoſing BOOKS, we have much fewer helps and inſtructions than for the art of ſpeaking; though the former be the more difficult of the two; as a reader is not ſo eaſy to be impoſed upon, but has better opportunities of detecting faults than a hearer.—A great cardinal, indeed, reduces an author's buſineſs to a few heads; were they but as eaſily practiſed as preſcribed: "Let him conſider who it is "writes, what, how, why, and to whom:" *Quis ſcribat, quid ſcribatur, quomodo, cur, & ad quos.* — *Vid.* Auguſt. Valer. *de caut. in edend. libr.*

To write a good *book*, an intereſting ſubject muſt be choſen, which is to be long and cloſely meditated on; and of the ſentiments which offer themſelves, thoſe which are already commonly known are to be rejected; few or no digreſſions from the main points are to be allowed; quotations rarely made, and then only to prove ſome important truth, or embelliſh the ſubject with ſome beautiful and uncommon obſervation; never bringing an antient philoſopher on the ſtage to ſay what the meaneſt lacquey could have ſaid as well; nor making a ſermon, unleſs where the buſineſs is to preach.—*Vid. Nouv. Rep. Lett. T.* 39. *p.* 427.

The conditions required in a book are, according to Salden, "Solidity, perſpicuity, and brevity:" the firſt will be beſt attained, by keeping the piece long by us, often reviewing and correcting it by the advice of friends: the *ſecond*, by diſpoſing the ſentiments in a due order, and delivering them under proper and uſual expreſſions: the *third*, by throwing every thing aſide that does not immediately concern the ſubject.

Were theſe rules obſerved, it would ſcarce be poſſible for any, except an angel from heaven, to write many *books*: *Vix totidem quot Thebarum portæ, vel divitis oſtia Nili.* —We ſhould hear no more of thoſe volatile authors, who throw off yearly ſix or eight *books*, for ten or twelve years running[*]; of thoſe voluminous authors, who number their *books* by ſcores and hundreds[†]; nor of thoſe childiſh authors, who publiſh *books* by that time they are able to ſpeak[‖].

[*] Severin. Lintrupius, profeſſor at Copenhagen, has given a catalogue of ſeventy-two *books*, which he compoſed within the compaſs of twelve years: containing ſix volumes in theology, eleven in eccleſiaſtical hiſtory, three in philoſophy, fourteen on miſcellaneous ſubjects, and thirty-eight on literary ſubjects.—*Vid.* Lintrup. *Reliq. Incend. Berg. ap. Nov. Lit.* Lubec. *an.* 1704. p. 247.

[†] Fa. Macedo, a Franciſcan frier, wrote, according to his own teſtimony, 44 volumes, 53 panegyricks, 60 Latin ſpeeches, 105 epitaphs, 500 elegies, 110 odes, 212 epiſtles dedicatory, 500 familiar epiſtles, *poemata epica juxta bis mille ſexcenta* (it is to be ſuppoſed he means 2600 poems in heroics, or hexameters); and in fine 150000 verſes. — *Vid.* Noris *Miles Macedon. ap. Jour. des Scav. T.* 47. p. 179.

[‖] The young duke de Maine's works were publiſhed at ſeven years old, under the title of, *Oeuvres diverſes d'un auteur de ſept Ans*, Paris, 4to, 1685.—*Vid. Jour. des Scav. T.* 13. p. 7. — Dan. Heinſius publiſhed his notes on Silius Italicus ſo young, that he entitled them his Rattles, *Crepundia Siliana.* Lugd. Bat. 1600. 60°.—Caramuel is even ſaid to have written a *book* on the ſphere, before he was old enough to go to ſchool; and, what is pleaſant, he took it chiefly from Sacro Boſco's treatiſe *de Sphæra*, before he had learnt a word of Latin.—*Vid.* Baillet *Enfans celebres, n.* 81. p. 300.—We may add, that Placcius aſſures us, he began to make his collections, while under the tutorage of his nurſe, and when he had nothing to collect out of, but his nurſe's prayer-*books*.—Placc. *de Art. Excerpt.* p. 190.

M. Cornet D. de S. uſed to ſay, that to write *books*, a man muſt be either very fooliſh, or very wiſe[a]: there are doubtleſs many of both ſorts in the number of authors; yet the majority ſeems to conſiſt of thoſe, who are neither the one nor the other. The cuſtom is much altered ſince the times of the antients, who carried their ſcrupulouſneſs in what relates to the compoſition of *books* beyond all that has been above expreſſed: ſo auguſt was the idea they formed of a *book*, that nothing would ſuffice leſs than its being a treaſure: *theſauros oportet eſſe, non libros*: no labour, no aſſiduity and exactneſs, was thought enough to fit a work for the public view: every ſentiment and expreſſion was to be maturely weighed, and turned on all its ſides; and not ſuffered to paſs, unleſs every word were a pearl, and every page beſet with gems. So that they put the reader in poſſeſſion in a ſingle hour, of what had coſt them perhaps ten years intenſe thought and application. —Such were thoſe *books*, which were reputed *cedro digni*, to be anointed with cedar-juice, and thus rendered incorruptible, for the inſtruction of all future ages[b].—With us, the caſe is otherwiſe: the ambition of being an author poſſeſſes every body, even thoſe who have nothing to ſay, or, at moſt, only one thing, and that perhaps a trifle, and already ſaid by a hundred others[c]: to furniſh out a *book*, we have recourſe to various arts and ſtratagems; a formal method is firſt chalked out, which like a drag-net gathers all before it, old and new, common and uncommon, good, bad, and indifferent, which we adopt with little choice; the chief attention being, with Albutius the rhetor, to ſay all on the ſubject we can, not merely all we ought[d]. — [a] *Vid.* Vign. *de Marv. ap.* Trev. *D. Univ. T.* 3. *p.* 1509. *voc.* LIVRE. [b] Salmuth. *ad Pancirol. P.* 1. *tit.* 42. *p.* 144. Guiland. *de Papyr. membr.* 24. Reimm. *Idea Syſt. Ant. Liter. p.* 296. [c] Bartholi *de l'Huomo di Liter. P.* 2. *p.* 318. [d] Barthol. *lib. cit. diſſ.* 5. *Cum Albutio rhetore de omni cauſa ſcribere, non quæ debeant, ſed quæ poterant.*

A modern author, let his ſubject be what it will, generally takes occaſion to retail his whole ſtock of knowlege then on hand: if he write, for inſtance, on the gout, as M. Aignan, he will give you the nature of all diſeaſes, and their cures, and perhaps a ſyſtem of phyſics into the bargain, and over and above many important doctrines of theology, and rules of morality[a]: if, on the building of Solomon's temple, as Caramuel, he will not confine himſelf to architecture, but treat of numerous matters relating to theology, mathematics, geography, hiſtory, grammar, &c. inſomuch that, if we may believe the author of a piece inſerted in Caramuel's work, if God ſhould permit all the ſciences in all the univerſities in the world to be loſt, they might be reſtored by means of this *book* alone. — [a] *Vid.* Aignan *Trait. de la Goute*, Par. 1707. 12°. *Jour. des* Scav. *T.* 39. *p.* 421. *ſeq.* [b] *Architect. civil recta y obliqua conſid. en el templ. de Jeruſ.* 3 *vol. folio.* Vegev. 1678. *Jour. des* Scav. *T.* 10. *p.* 348. *ſeq. Nouv. Rep. Lett. T.* 1. *p.* 103.

He ſets out with a tedious preamble, perhaps foreign to the queſtion; and thence proceeds on to a digreſſion: this gives riſe to a ſecond: which carries him ſuch a length, that we loſe ſight of him; he oppreſſes us with proofs of things that needed none; makes objections nobody would have thought of; and, to anſwer them, is ſometimes forced to make a diſſertation in form, to which he gives a particular title; and to lengthen it out, ſubjoins the plan of ſome future work, wherein he will treat the point more at large. Sometimes he argues in form, accumulates ſyllogiſm on ſyllogiſm, and induction on induction; being careful to note, that they are ſo many geometrical demonſtrations. At length you come to a ſtring of conſequences, which you never expected; and after twelve or fifteen corollaries, wherein contradictions are not ſpared, you are ſurpriſed for the concluſion to find a propoſition which had never been mentioned, or at leaſt had been utterly put out of your head, or perhaps one which has no relation to the ſubject.

The ſubject of the *book*, in all probability, is ſome trifle; perhaps the uſe of the particle *and*, or the pronunciation of the Greek *eta*, or the praiſe of an aſs, or a louſe, or a ſhadow, or folly, or idleneſs, or the art of drinking, or loving, or dreſſing; or the uſe and abuſe of ſpurs, or ſhoes, or gloves, or the like.—Suppoſe, for inſtance, it be the laſt, and let us ſee how a modern writer of note proceeds to make his book. —For method, he takes that of the Lulliſts, and begins with the name and etymology of *glove*; which he gives not only in the language he writes in, but in all the languages he underſtands, or of which he has dictionaries in his ſtudy, oriental or occidental, living or dead; accompanying each with its reſpective etymon, and ſometimes too with its compounds and derivatives, and referring for more thorough knowlege to the ſeveral dictionaries from whence he took them; always moſt religiouſly quoting chapter and page. From the name he proceeds at length to the thing, and paſſes with great pains and exactneſs through all the common places of arguments, as the matter, form, uſe, abuſe, adjuncts, conjuncts, disjuncts, &c. of gloves: on each of which he does not confine himſelf to give us what is new, ſingular, or ſome way uncommon, but thinks himſelf obliged to exhauſt his ſubject, and give us all he can find. Thus, gloves, he informs us, preſerve the hands from cold; and proves, that if we go much in the ſun without them, our hands will be tanned. He goes on next to ſhew, how chaps on the hands will enſue in winter, if we leave our gloves at home; and how painful as well as unſightly a thing chapped hands are[a].—Yet muſt this be allowed an author of merit, and far from being ſingular in his method of writing. In reality, we all do the ſame thing, ſome in a greater degree, and ſome in a leſs, with good Mr. Nicolai.— [a] *Vid.* Nicolai *Diſquiſ. de Chirothecarum Uſu & Abuſu, Gieſſ.* 1702. 12*mo. Nouv. Rep. Lett. Aout.* 1702. *p.* 158. *ſeqq.*

The form or method is the ſpirit or archeus that directs all: one writer ſuppoſes his *book* to be a *candle-ſtick*, and every chapter a ſocket[a]; another reduces his work to the form of a *pair of folding-doors*, which open into two parts, to admit the reader into a dichotomy[b]. Mr. Waltherus conſiders his *book*, *officina biblica*, as a *ſhop*; and divides or ranges the materials of it accordingly, on ſo many *ſhelves*, treating his reader throughout as a cuſtomer. Another turns his *book* into a *tree*, with its trunk, branches, flowers, and fruits; the twenty-four letters of the alphabet being the *branches*; the ſeveral words the *flowers*, and 120 ſermons the *fruit*[c]. —[a] *Vid.* Wolf. *Bibl. Hebr. T.* 3. *p.* 987. [b] R. Schabtai *Labra Dormientium. ap. Wolf. lib. cit. Item T.* 1. *in præf. p.* 12. [c] Caſſian. *a S. Elia, Arbor omnium opinionum moralium, quæ ex trunco pullulant, tot ramis quot ſunt literæ alphabetæ, cujus flores ſunt verba, fructus ſunt* 120 *conciones*, &c. *Venet.* 1688. *fol. V. Giorn. de Parma, an.* 1688. *p.* 60.

For the *origin of* BOOKS, we have nothing that is clear: the *books* of Moſes are doubtleſs the oldeſt of all that are extant[a]; but there were *books* before thoſe of Moſes, who cites ſeveral[b]: Scipio Sgambati, and others[c], even talk of *books* before the deluge, written by the patriarchs Adam, Seth, Enos, Cainan, Enoch[*], Methuſalem, Lamech, Noah and his wife, alſo by Ham, and Japhet and his wife, beſides others by the dæmons

mons or angels; of all which ſome moderns have found enough to fill an antediluvian library: but they appear all, either the dreams of idle writers, or the impoſtures of fraudulent ones. — [a] *Vid. Mem. Acad. R. Inſcr. T.* 6. *p.* 32. [c] *Id. ibid. T.* 8. *p.* 18. [b] Sgambat. *Archiv. Vet. Teſt.* Fabric. *Cod. Pſeudep. V. Teſt. paſſim.* Heuman. *Via ad Hiſt. Liter. c.* 3. § 3. *p.* 29.

* A *book* of Enoch is even cited in the epiſtle of Jude v. 14, and 15. from which ſome endeavour to prove the reality of antediluvian writings; but the *book* cited by that apoſtle is generally allowed both by antient and modern writers to be ſpurious.—*Vid.* Saalbech. *Sched. de Libr. Vet.* § 42. Reimm. *Idea Syſt. Ant. Liter.* p. 233.

Of profane *books*, the oldeſt extant are Homer's poems, which were even ſo in the time of Sextus Empiricus [a]; though we find mention in Greek writers of about ſeventy others prior to Homer, as Hermes, Orpheus, Daphne, Horus, Linus, Muſæus, Palamedes, Zoroaſter, &c. but of the greater part of theſe, there is not the leaſt fragment remaining; and of the others, the pieces which go under their names are generally held by the learned ſuppoſititious.—F. Hardouin goes farther; charging all the antient *books*, both Greek and Latin, except Cicero, Pliny, Virgil's georgics, Horace's ſatires and epiſtles, Herodotus, and Homer, as ſpurious, and forged in the thirteenth century, by a club of perſons under the direction of one Severus Arcontius [b].—[a] *Vid.* Fabric. *Bibl. Græc. l.* 1. *c.* 1. § 1. *T.* 1. *p.* 1. [b] *Id. Ibid.* § 6. *p.* 4. Hardouin. *de Numm. Herodiad. in Proluſ. Act. Erud. Lipſ. an.* 1710. *p.* 70.

Among the Greeks, it is to be obſerved, the oldeſt *books* were in verſe, which was prior to proſe [a]: Herodotus's hiſtory is the oldeſt book extant of the proſaic kind [b].—[a] *Vid.* Strabo *Geogr. l.* 1. Heuman. *lib. cit.* § 20. *p.* 50. [b] *Id. Ibid.* § 21. *p.* 52.

The multitude of BOOKS has been long complained of: they are grown too numerous, not only to procure and read, but to ſee, learn the names of, or even number. Solomon, three thouſand years ago, complained, that "of writing *books* there "was no end." But modern writers cannot keep within terms of ſo much moderation: "You may ſooner empty the "ſea, ſays one, than exhauſt the immenſe ocean of *books*, or "number the ſands on the ſhore than the volumes extant. "They are not to be told, ſays another, tho', like an in- "habitant of Mahomet's paradiſe, a man had ſeventy thou- "ſand heads, and to each head ſeventy thouſand mouths, "and to each mouth ſeventy thouſand tongues, which each "ſpoke ſeventy thouſand languages."—Yet how is the number continually increaſing! When we conſider the multitude of hands employed in writing, of copiſts throughout the eaſt in tranſcribing, and of preſſes in the weſt, continually pouring in freſh quantities, it ſeems a kind of miracle, the world ſhould be able to contain them [a]! England has more to fear on this ſcore than other countries; ſince, beſides our own produce, we have for ſome years paſt, drained our neighbours. The Italians and French make great complaints, that their beſt *books* are carried out of the country by foreigners: "It "ſeems, ſay they, to be the fate of the provinces which "compoſed the antient Roman empire, to be plundered by "the northern nations: antiently they conquered and took "poſſeſſion of the country; of late, they leave the inhabit- "ants their lands, and only take their learning." *Commigrant ad nos quotidie* (cries Sig. Facciolati) *callidi homines pecunia inſtructiſſimi, & præclaram illam muſarum ſupellectilem, optima volumina, nobis abripiunt; artes etiam, ac diſciplinas, paulatim abducturi alio, niſi ſtudio & diligentia reſiſtatis* [b]. — [a] *Vid.* Barth. *de Libr. legend. diſſ.* 1. *p.* 7. Heuman. *Via ad Hiſt. Liter. c.* 6. § 43. *p.* 338. *ſeqq.* [b] Facciolat. *Orat.* 1. *Mem. de Trev. an.* 1730. *p.* 1793.

Elementary *books* ſeem the leaſt to need to be multiplied; ſince a good grammar, or dictionary, or inſtitutions of any kind, ſeem hardly to admit of a ſecond in one age, or even in many ages. Yet it has been obſerved, that in France alone, within the compaſs of thirty years, there have appeared no leſs than fifty new elements of geometry, as many treatiſes of algebra, as many of arithmetic, and as many of ſurveying and meaſuring; it is added, that within the ſpace of fifteen years, there have been above a hundred French and Latin grammars publiſhed in the ſame country; and of dictionaries, abridgments, methods, &c. in proportion: all which are but an eternal round of the ſame things, the ſame ideas, ſame diſcoveries, ſame truths, ſame falſhoods. —*Vide Mem. de Trev. an.* 1734. *p.* 804.

The beſt of it is, we are not obliged to read them all: Thanks to providence, the good biſhop Caramuel's ſcheme miſcarried, which was, to write about an hundred volumes in folio, and then prevail on the civil and ſpiritual powers to oblige all their ſubjects to read them! Ringelberg had laid the ſchemes of no leſs than a thouſand ſeveral *books*, which he alone was to have compoſed, had he lived long enough [a]: and apparently would not have been leſs eager in obtruding them on the public. Had the ſame thought entered Hermes Triſmegiſtus, who, according to the account given by Jamblichus, wrote 36525 *books*, people would have had much more reaſon to complain of the multitude of *books* than they now have. —[a] *Vid.* Baill. *Enfans Celebr. ſec.* 12. *Jugem. des Scav. T.* 5. *P.* 1. *p.* 373.

In reality, there are few of the immenſe number of *books*, which deſerve ſeriouſly to be ſtudied: for the reſt, part of them are only to be occaſionally conſulted, and the reſt read for amuſement. A mathematician, for inſtance, ought not to be intirely ignorant of what is contained in the mathematical *books*; but then a general knowlege is ſufficient, which may eaſily be had by running over the chief authors; out of whom references may be made, directing to the places where they may be found, when wanted. For there are many things which are much better preſerved in *books* than in the memory: as aſtronomical obſervations, tables, rules, theorems, proportions, and in fine, whatever does not ſpontaneouſly adhere to the memory, when once known. For the leſs we croud that faculty, the readier and freer will the wit remain for inventing. —*Vid.* Cartes *Epiſt. ad Hoghel. ap. Hook Phil. Collect. N*° 5. *p.* 144. *ſeq.*

Thus, a few *books* well-choſen, and thoroughly ſtudied, may ſuffice: many have even held the bible alone ſufficient for all the purpoſes of knowlege; others, the alcoran: Cardan requires but three *books* for any perſon, who does not make a profeſſion of learning: one, to contain the lives and acts of the ſaints, and other virtuous men; another to amuſe the mind with pleaſing verſes; and a third to teach the rules of civil life. — Some have only propoſed two *books* for our ſtudy; *viz.* that of ſcripture, which diſcovers the will of God: and that of the creation, which ſhews his power; the latter of which is the key of the former [a].—But this, under pretence of retrenching ſuperfluities, ſeems to be running into the oppoſite extreme. The buſineſs is, rather to make a due choice among the multitude, of a number of good ones.—It may be added, that as knowlege is naturally advantageous, and as every man ought to be in the way of information, even a ſuperfluity of *books* is not without its uſe, ſince hereby they are brought to obtrude themſelves on us, and engage us when we had leaſt deſign.—This advantage, an antient father obſerves, we owe to the multiplicity of *books* on the ſame ſubject, that one falls in the way of one man, and another beſt ſuits the level, or the apprehenſion, of another. —"Every thing that is written, ſays he, does not come into "the hands of all perſons: perhaps ſome may meet with my "*books*, who may hear nothing of others which have treated "better of the ſame ſubject. It is of ſervice therefore, that "the ſame queſtions be handled by ſeveral perſons, and after "different methods, though all on the ſame principles, that "the explications of difficulties, and arguments for the truth, "may come to the knowlege of every one, by one way or "other [b]."—Add, that the multitude is the only ſecurity againſt the total loſs, or deſtruction of *books*: it is this has preſerved them againſt the injuries of time, the rage of tyrants, the zeal of proſecutors, and the ravages of barbarians; and handed them down, through long intervals of darkneſs, and ignorance, ſafe to our days [c].—*Solaque non nôrunt hæc monumenta mori.*— [a] *Vid.* Bac. *de Augment. Scient. l.* 1. *Works, T.* 1. *p.* 49. [b] Auguſt. *de Trin. l.* 1. *c.* 3. [c] Barth. *lib. cit. Diſſ.* 1. *p.* 8. *ſeq.*

Chooſing and judging of BOOKS.—Authors are not well agreed on the conditions neceſſary to denominate a *book, good.* Some require only good ſenſe in the writer, and an acquaintance with the ſubject; others with Salden demand ſolidity, perſpicuity, and brevity: others think intelligence and exactneſs enough: the generality of critics ſeem to hold, that none of the perfections, which the human mind is capable of, ought to be wanting; but on this footing there is ſcarce any ſuch thing as a good *book*; at leaſt, none which they themſelves will all agree to be ſuch [a]. The more reaſonable allow a *book* to be very good, which has but few faults; *optimus ille, qui minimis urgetur*: at leaſt where the good things in it exceed the bad and indifferent. Nor is a *book* to be called *bad*, where the indifferent is the prevailing part, and the good and bad are proportioned equally [b]. — [a] *Vid.* Baillet. *Jugem. des Scav. T.* 1. *P.* 1. *c.* 6. *p.* 19. *ſeq.* [b] Honor. *Reflex. ſur les Regl. de Crit. diſſ.* 1.

Since the fall of the Latin tongue, authors do not ſeem ſo much to aim at the glory of writing well, as of writing good things: ſo that a *book* is commonly allowed for good, if it be happily conducted to the end which the author aimed at; whatever other faults it may have: thus a *book* which is not written on account of ſtyle, may be good, though the ſtyle be naught [a]. Thus, an hiſtorian, who is well informed, faithful, and judicious; a philoſopher, who reaſons juſtly, and on ſound principles; a divine, who is orthodox, and departs not from ſcripture and antiquity; will be allowed good in their kinds, though they be faulty in the leſs material things. —[a] *Vid.* Baillet. *lib. cit. c.* 7. *p.* 24. *ſeq.*

And thus moſt *books*, in one reſpect or other, will be found good and uſeful; ſo that the choice ſeems difficult; not ſo much what to take, as what to reject [a]. The elder Pliny uſed to ſay, there was no *book* ſo bad, but ſome good might be had from it: *Nullum librum tam malum eſſe, qui non edi qua ex parte proſit* [b]. But there are degrees of goodneſs: and, in many *books*, the good is ſo thin ſown, that it is hardly

wort

worth the gathering [d]; or hid ſo deep, or ſo beſet with thorns, that it will not quit the coſt of digging. Virgil could gather gold out of Ennius's dunghil; but every body has not the zeal, or the ſkill and attention, neceſſary to do the like. — [a] *Vid.* Hook, *Collect.* N° 5. *p.* 127, *&* 135. *ſeq.* [b] Plin. *Epiſt.* 5. *l.* 3. [c] Reimman. *Bibl. Acroam. in Præf.* § 7. *p.* 8. *ſeq.* [d] Sacchin. *de Rat. Libr. legend. c.* 3. *p.* 10. *ſeq.*

It is better judged in thoſe who recommend a ſmall number of the beſt *books*; adviſing us to read much, but not many: *multum legendum eſſe, non multa* [a]. But how is the choice to be made?—[a] *Vide* Plin. *Epiſt.* 9. *l.* 7.

To *judge of a book*, thoſe who have treated of the ſubject, direct us to obſerve the title, the author's or editor's name, the number of the edition, the place where, and year when it was printed (which in old *books* is frequently marked at the end) and the printer's name, eſpecially if he be a celebrated one [a]: proceed thence to the preface, and look for the author's deſign, and the occaſion of his writing: conſider alſo his country (each nation having its peculiar genius [b]) and the perſon by whoſe order he wrote, which may ſometimes be learned from the dedication: if his life be annexed, run it over, and note his profeſſion, what rank he was of, and any thing remarkable that attended his education, ſtudies, converſation, or correſpondences with learned men: not forgetting the elogies which have been given the author, which often occur at the beginning, or even any critique or cenſure, eſpecially if made by a man of judgment. If the preface do not give an account of the method of the work, run briefly over the order and diſpoſition of it, and note what points the author has handled; obſerve whether the things and ſentiments he produces be trite and vulgar, or ſolid and fetched from greater depths. Note, whether he go in the common road, or make any innovation, and introduce any new principle. Obſerve alſo his method, whether it be a dichotomy, or according to the four cauſes, or any other more peculiarly adapted to the ſubject [c]. — [a] *Vide* Barth. *Diſſ.* 4. *p.* 93. *ſeq.* [b] Baill. *c* 7. *p.* 228. *ſeq.* [c] Struv. *Introd. ad Notit. Rei Liter. c.* 5. § 2. *p.* 338. *ſeq.*

But it is a ſmall number of *books* we have opportunity of thus judging of, by peruſing them; beſide, that when we have read a *book* over, the judgment comes too late for many purpoſes: it ſeems neceſſary therefore to have other indications, wherby to prevent our being at the charge of procuring, or the pains of peruſing a worthleſs *book*: divers rules of this kind are given by Baillet [a], Struvius [b], Stollius [c], and others; which though, in reality, no more than preſumptions, and frequently liable to be falſified [d], are not without their uſe. The journaliſts de Trevoux objected to them all: "The ſhorteſt way, ſay "they, to judge of a *book* is to read it, if you be qualified in "the ſubject; otherwiſe, to refer yourſelf to thoſe who are "ſo [e]." Heuman is ſomewhat more explicit; making it a "mark that a *book* is good, when it is eſteemed by perſons "intelligent in the ſubject it treats of; and when thoſe who "commend it receive no advantage from the applauſe they "beſtow on it, nor are leagued with the author in any "cabal, for eſpouſing any particular principle, ſyſtem, or "party in religion or learning [f]."— [a] *Vid.* Baillet. *Jugem. des Scav. T.* 1. *P.* 2. *p.* 121. *ſeq.* [b] Struv. *lib. cit. c.* 5. § 3. *p.* 390. [c] Stoll. *Introd. Hiſt. Liter. P.* 1. § 11. *p.* 9. [d] Budd. *de Criteriis boni Libri paſſim.* Walc. *Hiſt. Crit. Ling. Lat. c.* 7. § 6. *p.* 320. [e] *Mem. de Trev. an.* 1712. *art.* 17. [f] Keuman *Conſp. Reipubl. Liter. c.* 6. § 11. *p.* 280. *ſeq.*

But more particularly, it is an indication that a *book* is good, 1°, If the author be known to excel in that talent more immediately neceſſary for ſuch a ſubject; or have already publiſhed any thing on the ſame that is eſteemed. Thus we may conclude, that Julius Cæſar will teach us the art of war better than Peter Ramus; Cato, Palladius, and Columella, agriculture better than Ariſtotle; and Cicero oratory better than M. Varro [a]: add, that it is enough, the author be ſkilled in the faculty, but that he be ſo in the particular branch of it he treats of: ſome, for inſtance, excel in the civil law, yet not in the public law: Salmaſius proved himſelf an excellent critic in his *Exercitat. Plinian.* but came much inferior to Milton in his *Defenſio Regia* [b]. 2°, If the *book* be on a ſubject that requires great reading, it may be preſumed good, if the author have a copious library, or can have acceſs to one; or if he lived in a place where *books* were not wanting: though here is danger too of running into exceſs in quotations; eſpecially, ſays Struvius, if the author be a lawyer [c]. 3°, A *book* which took up a long time in compoſing, cannot often fail of being good: thus Villalpandus's commentary on Ezekiel was a work of forty years: Baronius's annals of thirty; Gouſſet's Hebrew commentaries of thirty; Paulus Æmilius employed the ſame time in his hiſtory; and Vaugelas in his tranſlation of Q. Curtius; Lamy was thirty years in his treatiſe of the temple: Em. Teſauro forty years in his *Idea argut ædictionis*: and the Jeſuit Carra forty years in his poem called *Columbus*. — It is true, they who are ſo long on the ſame ſubject, rarely bring it out uniform and methodical; beſides, that they are apt to flag, and grow cold, in ſo long a purſuit: men cannot attend the ſame thing for ſo many years without being tired; which will be apt to ſhew itſelf in the compoſition: and hence it has been obſerved, that in thoſe large *books* ſo long about, the beginnings glow, the middle-parts are lukewarm, the latter ends frigid, *apud vaſtorum voluminum auctores, principia fervent, medium tepet, ultima frigent* [d]. But then they muſt excel in the materials, which have been gathering for ſo long a tract of time: this is particularly obſerved of the Spaniſh writers; and is at leaſt more commendable, than the levity and precipitancy of ſome of their neighbours. Not but the public are ſometimes diſappointed in their expectations, from writers who are ſo long in labour: as was the caſe in Chapelain's poem *la Pucelle*, in the finiſhing of which he ſpent thirty years: and concerning which, we have that epigram of Monmor:

Illa Capellani dudum expectata puella,
Poſt tanta in lucem tempora prodit anus.

Some, it is certain, have carried their ſcrupulouſneſs to an exceſs, as Paulus Manutius, who often ſpent three or four months in writing a ſingle epiſtle; and Iſocrates, who was three olympiads in writing one panegyric [e]. 4°, *Books* on points of doctrine by eclectic writers, are to be preſumed better than thoſe writ by the retainers to particular ſects. 5°, The age of a writer may alſo give us ſome indication: *books*, which require labour, are uſually better performed by younger perſons, than thoſe who are far advanced in years: thus, there is more liſe in Luther's firſt publiſhed pieces, than in thoſe he wrote a little before his death: ſtrength decays, buſineſs increaſes, we truſt too much to our judgment, and are not ſcrupulous enough in making inquiries [f]. 6°, Another indication may be taken from the author's ſtate and condition: thus hiſtory written by a perſon who was an eye-witneſs of what he relates, or is concerned in public affairs, or has acceſs to the public records, or other monuments, from whence intelligence may be drawn; or who is not byaſſed by party, or hired by any great man; will be ſuppoſed to be good. Thus Salluſt and Cicero were well able to write the hiſtory of Catiline's conſpiracy, as having ſome concerns in it: D'Avila, de Comines, Guicciardin [g], Clarendon, *&c.* were preſent in the civil wars they deſcribe: Xenophon, having an employment in the Spartan ſtate, has treated excellently of that commonwealth: and Amelot de la Houſſaye, by living long at Venice, was enabled to explain the ſecrets of their policy: Camden wrote annals of the affairs of his own time; Thuanus had correſpondences with the beſt writers in every country; and Puffendorf had acceſs to the public archives. So, in practical divinity, more regard is due to thoſe who have actually diſcharged the office of paſtors than to others; and, in literary matters, we give credit to thoſe who have the direction of libraries. 7°, The time or age wherein the author lived may give ſome light; every age having, according to Barclay, its peculiar genius and excellency [h].— [a] *Vid.* Barth. *de Lib. legend. diſſ.* 2. *p.* 45. [b] Struv. *lib. cit. c.* 5. § 3. *p.* 390. Budd. *diſſ. de criter. boni libri*, § 7. *p.* 7. Heuman. *Conſp. Reipub. Liter. p.* 152. [c] Struv. *lib. cit.* § 4. *p.* 393. [d] Miſc. *Lipſ. T.* 3. *p.* 287. [e] Struv. *lib. cit.* § 5. *p.* 396. *ſeq.* Baill. *c.* 10. *p.* 396. [f] Baill. *c.* 9. *p.* 378. Barth. *Diſſ.* 2. *p.* 43. *ſeq.* Struv. § 6. [g] *Id. ibid. p.* 45. [h] Struv. *lib. cit.* § 15. *p.* 430. *ſeq. &* 404. *ſeq.* Baill. *c.* 1. *p.* 121. *ſeq.* Heuman *Via ad Hiſt. Liter. c.* 7. § 7. *p.* 356.

Some judge by the bulk or ſize of *books*; following the grammarian Callimachus's rule, that every great *book* is of courſe an ill one, μεγα βιβλιον, μεγα κακον [a]: a ſingle leaf of the Sibyl was doubtleſs preferable to the vaſt annals of Voluſius: yet Pliny's obſervation will nevertheleſs hold true, that "a "good *book* is ſo much the better by how much it is bigger." *Bonus liber melior eſt quiſque, quo major* [b]. Martial gives us a remedy againſt the largeneſs of a *book*, where that is the only complaint: read but a little of it.

Si nimius videar, ſeraque coronide longus
Eſſe liber, legito pauca, libellus ero.

Yet is the ſmalneſs of a *book* a real preſumption in its favour: he muſt be a poor author who cannot furniſh a pamphlet, or looſe ſheet, with things curious, and written with ſpirit: but to ſupport the ſame through a volume in folio, requires otherguiſe funds. In reality, in large *books* it is allowed a man to be ſometimes dull: a heavy preamble is expected, and a ſeries of words of courſe, ere you come to the buſineſs; in the proſecution of which many nodding-places are likewiſe allowed; but ſmaller pieces are indulged with none of theſe privileges: they muſt immediately fall into their ſubject, and treat every part of it in a lively manner: the matter muſt be thrown cloſe together, and either be new in itſelf, or in the turn which is given it.—Were the beſt authors of volumes in form retailed to the public piece-meal, we ſhould complain of many flat expreſſions, trivial obſervations, beaten topics, and common thoughts, which paſs well enough off in the lump [c].— [a] *Vid.* Barth. *lib. cit. diſſ.* 3. *p.* 62. *ſeq.* [b] Plin. *Epiſt.* 20. *l.* 1. [c] Addiſ. *in Spectat.* N° 124.

See further concerning *books*, in the writers on literary hiſtory, libraries, ſtudies, learning, arts and ſciences; more eſpecially in Salden [a], Bartholin [b], Hodannus [c], Sacchinus [d], Baillet [e], Buddeus [f], Saalbech [g], Putherbeus [h], Raynaud [i], Schufner [k], Lauffer [l], Schwartzius [m], Crenius [n], and others, who have written treatiſes expreſs concerning *books*.— [a] Chriſt. Liberius, *i. e.* Gul. Saldenus, βιβλιοφιλια, *ſive de libris ſcribendis*

dis & legendis Ultraj. 1681. 12°. & Amſtel. 1688. 8°. Struv. *Introd. ad Hiſt. Liter. c.* 5. § 21. *p.* 454. [b] Th. Bartholini. *de libris legendis*, 1678. 8°. & Francof. 1711. 12°. Struv. *loc. cit.* [c] Jo. Fred. Hodanni *Diſſert. de libris legendis*, Hanov. 1705. 8°. Struv. *loc. cit.* [d] Fr. Sacchini *de Ratione libros cum prefectu legendi*, Lipſ. 1711. 12°. [e] Baillet *Jugemens des ſcavans ſur les paincipaux ouvrages des auteurs*, *T.* 1. [f] Car. Frid. Buddeus, *de Criteriis boni libri*, Jen. 1714. [g] Chr. Saalbach. *Schediaſma de libris veterum*, Gryphis, 1705. 4°. Fabric. *Bibl. Ant. c.* 19. § 7. *p.* 607. Reimm. *Idea Syſt. Antiq. Liter. p.* 229. *ſeqq.* [h] Gab. Putherbeus *de tollendis & expurgandis malis libris*, Par. 1549. 8°. Struv. *lib. cit. c.* 8. *p.* 694. *ſeqq.* [i] Theoph. Raynaud *Erotemata de bonis ac malis libris*, Lugd. 1653. 4°. Morhof. *Polyhiſt. Liter. l.* 1. *c.* 16. *n.* 28. *p.* 177. [k] Schuſner *Diſſert. Acad. de multitudine Librorum.* Jenæ 1702. 4°. [l] Lauffer *Diſſert. adverſ. nimiam Librorum multitudinem. Vid. Jour. des Scav. T.* 75. *p.* 572. [m] Chr. Got. Schwartzius *de Ornamentis librorum apud veteres*, Lipſ. 1705. & 1707. Reimm. *Idea Syſt. antiq. p.* 335. [n] Tho. Crenius *de Libris ſcriptorum optimis & utiliſſimis.* Lugd. Bat. 1704. 8°. an extract of which is given in *Act. Erud. Lipſ. an.* 1704. *p.* 526. *ſeq.*

Cenſors of BOOKS. *Privileges of* BOOKS.	See the article	CENSOR. PRIVILEGE.
Common place BOOK. *Text* BOOK.	See the article	COMMON PLACE. TEXT.

BOOK is alſo uſed for a part or diviſion of a volume, or large work.

In this ſenſe we ſay the *book* of Geneſis, the firſt *book* of Kings, the five *books* of Moſes, *&c.* — The Digeſt is contained in fifty *books*, the Code in twelve *books*.

Books are uſually ſubdivided into chapters, ſometimes into ſections, or paragraphs: accurate writers quote chapter and *book*.

BOOK is alſo uſed for a liſt or catalogue of perſons names.—Such among the antients were the cenſorial *books*, *libri cenſorii*; being tables or regiſters containing the names of all thoſe who were cenſed or taxed under Auguſtus. Tertullian aſſures us, that our Saviour's name was found in the cenſorial *books* of Auguſtus.—*Vid.* Tertul. *adv. Marcion. l.* 4. *c.* 7. *De cenſu Auguſti, quem teſtem fideliſſimum dominicæ nativitatis Romana archiva cuſtodiunt. Vid.* Lomei. *de Biblioth. p.* 104. Pitiſc. *L. Ant. T.* 2. *p.* 84.

BOOKS, in matter of commerce, denote the ſeveral regiſters wherein merchants and other dealers keep their accounts.

We ſay, ſuch a perſon's *books* are in good order: merchants cannot poſſibly do without *books*; they are even obliged by the laws to keep *books*. But more or fewer are required, according to the nature and extent of their dealings, or the preciſion and exactneſs they deſire therein. —*Vid.* Savar. *D. Comm. T.* 2. *p.* 569. *voc. Livres.*

The antients had alſo their *books* of accounts; witneſs the codex accepti & expenſi, ſo often mentioned in Roman writers; and the patrimonial *books*, *libri patrimoniorum*, which were rentals, or terriers, containing an account of the lands, goods, and chattels, and other effects belonging to each perſon.—*Vid.* Senec. *de Benef. l.* 7. *c.* 10. Meurſ. *de Lux. Rom. c.* 1. Pitiſc. *L. Ant. T.* 2. *p.* 85.

Merchants BOOKS are divided into *eſſential* and *auxiliary.*—*Eſſential*, or *neceſſary*, are thoſe without which regular accounts cannot be kept; in which number ſome include the *journal*, *waſte-book*, and *ledger*; others only the two latter. —*Vid.* Malc. *Treat. of Book-keep. c.* 1. *Sect.* 2. *p.* 3. —*Subſidiary*, or *auxiliary*, are ſeparate *books*, wherein particular accounts are kept more diſtinctly, for eaſing the ledger. —Such are the *caſh-book*, *debt-book*, *book of expences*, &c.

Waſte-BOOK is the firſt, and moſt eſſential: in this, all kinds of matters are, as it were, mixed and jumbled together; to be afterwards ſeparated and transferred into the others: ſo that this may be called the elements of all the reſt.—It may be kept two ways; the firſt by entering things down ſimply as they happen; *v. gr. Bought of ſuch a one, ſold to ſuch a one, paid ſuch a one, lent ſo much*, &c. the ſecond by entering at once, each article, debtor and creditor: this laſt is eſteemed the beſt; in regard, forming a kind of little journal, it ſaves the keeping any other.—*Vid.* Savar. *loc. cit. p.* 570.

The *waſte-book*, Mr. Malcolm obſerves, is an univerſal and complete memorial of all the tranſactions and events of buſineſs, taken in the natural order of time; whereby all things of one date are placed together; ſerving as a preparation for the ledger-book, into which they are all to be transferred, upon diſtinct accounts, according to the order of ſubjects.

The *waſte-book* begins with the inventory of a merchant's effects, and debts; and contains a complete record of every tranſaction of his affairs, with all the circumſtances, in a plain narration of matter of fact; every tranſaction following another in the order of the dates.

This *book* is in reality a journal, or day-book; but that name being applied to another, the name *waſte-book* is given to this by way of diſtinction: though what relation the word *waſte* bears to the nature of this *book*, is not very obvious.—Some authors better call it the *memorial-book*, or *memorandum-book*, in regard its principal uſe is for taking memorandums.—*Vid.* Malc. *lib. cit. c.* 1. *ſect.* 2. *p.* 4. *ſeqq.*

Journal-BOOK, or *day*-BOOK, is that wherein the affairs of each day are entered orderly down, as they happen, from the waſte-book.—Each article in this *book* is to conſiſt of ſeven parts; *viz.* the date, debtor, creditor, ſum, quantity and quality, how payable, and the price.

The journal, ſo far as it differs from the *waſte-book*, is only a *book* of aid to the ledger.—There are two different methods of keeping it: in the firſt, which is that hitherto chiefly in uſe, the journal is a complete tranſcript of the *waſte-book*, in the ſame order of time, but in a different ſtile: for that the *waſte-book* expreſſes every tranſaction in a ſimple narration of what is done; whereas the *journal* diſtinguiſhes the debtors and creditors, as a preparation for the ledger: thus, when any tranſaction is to be transferred from the *waſte-book* into the *journal*, they examine it by the rules of the ledger, as i it were to be entered immediately there; and, finding the debtors and creditors to which it belongs, theſe are diſtinctly marked by their denominations of *debtor* and *creditor*, in the ſtile of the journal; at leaſt, the accounts that are debtor are expreſly ſo named; and by their being directly connecte debtor to ſome other accounts, theſe are ſufficiently determined to be the creditors, though the word *creditor* be no written.

Model of an article in the Journal.

	l.	*s.*	*d.*
15th July, 1723. Wine Dr. *to* Caſh——*L.* 160 : — : — *Bought of* Duval, *ready Money*, 16 *Pipes of* *Burgundy, at* —— —— *L.* 10. —— ——	160	0	0

The other form of a journal, which Mr. Malcolm judges preferable in certain reſpects to the former, makes the journal a complete tranſcript of the waſte-book, without any alteration, leaving on the left ſide of every page a large margin, about a third part of the page; on which againſt every tranſaction, are to be written the names of the debtors and creditors of that tranſaction, with their titles of debtor and creditor, and ſums of money; obſerving, that where there are ſundry debtors or creditors to one creditor or debtor, they write their names next each other, and the name of the one correſponding debtor or creditor, againſt the total of the other ſums; by which means the balance and connexion appears at ſight. Then, when the tranſaction is transferred to the ledger, they write on this margin the numbers of the folios where the accounts ſtand in the ledger; for the purpoſes already mentioned in ſpeaking of the former method.

This *book* may be called either the *waſte-book*, or *journal*, being in reality both; not only as every *waſte-book* is a *journal*, but as there is here alſo that which diſtinguiſhes both a *waſte-book*, and a *journal.*—Malc. *lib. cit. ſect.* 4. *p.* 30.

By an ordonnance of the year 1673. all traders in France, whether by wholeſale or retail, are obliged to keep a journal, containing all their affairs, debts active and paſſive, bills of exchange, *&c.* For want of keeping this, and ſurrendering it up on a failure, they are to be reputed fraudulent bankrupts, and ſubjected to the penalties thereof.—*Vid.* Savar. *D. Comm. T.* 2. *p.* 570. *ſeq.*

Ledger, or *Ledger*-BOOKS, ſometimes alſo called the *great-book*, and the *poſt-book*, is a large volume, containing all the tran actions of a man's affairs in ſuch order, as that thoſe belon ing to every different ſubject lie together in one place; ma ing ſo many diſtinct or ſeveral accounts.

The ledger is only the waſte-book ſtill further digeſted; b ing extracted either immediately from it, or from the jou nal. It is uſually ruled in ſix columns. In it all the accou diſperſed in the journal are drawn out and ſtated in deb and creditor. To form each account, two pages are requi oppoſite to each other; that on the left ſerving for debt the other for creditor: each article to conſiſt of five pa or members; the date, the perſon whom we credit, or credited by; the ſubject, *i. e.* the thing credited or indeb for; the page where it is found; and the ſum or amount the article.—Two inſtances, the one of an article of cre the other of debt, will illuſtrate the form and uſe of *book.*

Model of an article in debtor.

			l.	*s.*
May 14. 1701.	Antony Roberts *Dr.* *To* Caſh, *paid by his order to* Wilks	*Fo.* 16.	1900	0

Model of an article in creditor.

		l.	*s.*
Cr. *By* Caſh, *for his remittance on* James	*Fo.* 16.	1900	0

The management of the ledger being of great importan accounts, we will ſubjoin, from Mr. Malcolm, the follo rules relating thereto. 1°, That

For every diſtinct ſubject, with which you have an account (*i. e.* for every perſon with whom you deal on mutual truſt and credit, or who, by any means, becomes your debtor, or you his) as well as for every thing you deal in; there muſt be a certain ſeparate ſpace, or portion allowed; wherein are to be written all, and only, the tranſactions relating to that ſubject, whoſe name is to be inſcribed, or written on the head thereof; making thereby diſtinct particular accounts.

2°, Every account is to be diſtinguiſhed into two parts, taking for each an equal portion (leſs or more, as you think fit) of right and left pages, of one folio or opening; the name of the ſubject being written on the head of the account, on both ſides, which are diſtinguiſhed by the words *debtor* on the left ſide, and *creditor* on the right, for the uſes following: to which the columns explained below are ſubſervient.

3°, Every perſonal account to contain, on the debtor ſide, all the articles which that perſon owes you, and the payments you make of your debts to him: and, on the creditor ſide, all that you owe to him, and the payments he makes of his debts to you. Or, becauſe this rule conſiders payments under the notion of mutual oppoſite debts upon the receiver, if this be once ſuppoſed, the rule may be briefly expreſſed thus: Every perſon is debtor for what he owes me, and creditor for what I owe him.

4°, Every real account ought to contain, on the debtor ſide, the quantity and value of what was upon hand at the beginning of the account, and what was afterwards received, with all coſts and charges: and, on the creditor ſide, the quantity and value of what is diſpoſed of, or any way taken away, or gone out of it, with all the returns that ſubject makes me. Or, more briefly, thus: it is debtor for all received, firſt coſt and charges; and creditor for all gone out of it, with the returns.

5°, Every tranſaction muſt be entered in the *ledger-book*, with a balance of debt and credit, *i. e.* ſo as that every article be placed on the debtor ſide of one account, and the creditor ſide of ſome other, making thereby equal debt and credit in the ledger; and where the perſonal and real accounts concerned in the tranſaction do not, in the articles belonging to them, make this balance (as they will in moſt caſes), then ſome imaginary account muſt be uſed to ſupply the defect.

6°, Thoſe accounts, whoſe articles of debt and credit, in any tranſaction, balance one another, are, in the ledger, to be connected together in the ſtile of every article, as mutual and correſpondent debtors and creditors; by writing in each of the correſponding accounts the name of the other, after the particle *to* in the debtor's account, and *by* in the creditor's, which connects the two; the name of the account, in which the articles are written, with its quality of debtor and creditor, being underſtood as joined to, and ſo is read before the word *to*, or *by*, in every article (though it be written only once for all upon the head of the account). Then, after the name of the correſponding creditor or debtor, follows a brief narration of the fact; the date and other numbers being placed in their proper columns.—Hence we find the uſe of the column that ſtands within the money-columns, which is this, to write in it the number of the folio where ſtands the correſponding account, with which the account, in which you write, is connected in every article.—*V.* Malc. *Treat. of Book-keep. c.* 1. *ſect.* 3. *p.* 7.—20.

To facilitate the uſe of the ledger, there is an alphabet to ſerve as an index, or repertory; conſiſting of 24 leaves, each cut on the edge, and marked with one of the 24 letters; wherein, the initial letters of the perſons names, with whom you have accompts, are inſerted, with the folio of the ledger, where the account is ſtated.—*V.* Savar. *lib. cit. p.* 571.

The more exact *book*-keepers extend the index to the things or commodities a man has dealings in, as well as the perſons he deals with. Generally, it is a letter of a man's ſurname, and the proper name of the thing, that directs its place in the index: thus John Gordon is put under G; and claret wine under C, unleſs all ſorts of wines be comprehended in one account, in which caſe it is put under W.—*V.* Malc. *ubi ſupra, ſect.* 4. *p.* 27. *ſeq.*

Debt-BOOK, or BOOK *of Payments*, a *book* wherein is entered the day whereon all ſums fall due, whether to be paid, or received by bills of exchange, merchandizes, or otherwiſe: to the end that, by comparing receipts and payments, proviſion may be made, in time, for a fund for payment; by receiving bills, &c. due, or taking other precautions.

Two models will ſuffice for the uſe and form of this *book*: it is only to be obſerved, that, like the ledger, it muſt be on two oppoſite pages; moneys to be received on the left hand, thoſe to be paid on the right.

Model of the page of payment.

an.	1708. To pay	l.	s.	d.
1	*To* Charles Horn, *for a purchaſe of the 1ſt of* July.	700	0	0
	To R. Hart, *a note under hand of the* 5th *of* Auguſt.	400	0	0
2	*Remittance of* Lucas, *of 15th of* December, *to* Hall.	1700	0	0
	My own bill of 25th of October, *to bearer.*	100	0	0

Model of the page of receipt.

May	1708. To receive.	l.	s.	d.
1	*Remittance of* J. Vaſſor, *of the 10th of* March, *on* Pits.	600	0	0
	Of Cade, *for wool ſold the* 6th *of* July.	150	0	0
2	*Of* Dykes *by bond of 23d of* May *laſt.*	2000	0	0
	Remittance of Price, *of 23d of* October *on* Page.	170	0	0

The Caſh BOOK is the moſt important of all the auxiliary ones: it is ſo called, becauſe it contains, in debtor and creditor, all the caſh that comes in, or goes out, of the merchant's ſtock.—In this are entered all the ſums received and paid daily; thoſe received on the left hand, with the perſon's name, of whom received, for what, for whom, and in what ſpecies: thoſe paid on the ſide of creditor; mentioning likewiſe the ſpecies, the reaſon why, the perſon to whom, and for whom, the payment is made.—For inſtance;

Model of an article in debt.
Caſh *Dr.*

June 29th, 1708.	l.	s.	d.
Recd. *of* Paul Simon, *for 2 tonn of wax, ſold the 6th inſtant,* *A purſe of*——*L.* 1000:—:— *Pieces of eight, L.* 108:—:— *L.* 1108:—:—	1108	0	0

Model of an article in Credit.
Cr.

May 14th, 1711.	l.	s.	d.
Paid. *To* Tim. Hall, *for 2 tonn of wax, bought the 2d inſtant,* *A purſe of*——*L.* 1000:—:— *Pieces of eight, L.* 300:—:— *L.* 1300:—:—	1300	0	0

Better to conceive the nature of this *book*, it is to be obſerved, that in buſineſs, where caſh happens to be an account which has numerous articles, it is convenient to keep a particular account thereof, in a *book* diſtinct from the ledger; and for this reaſon called the *caſh-book*. This is formed, in all reſpects, like the caſh-account in the ledger, with a debtor and creditor ſide; in which all the caſh received and given out is entered; either in a ſimple ſtile, or in that of the ledger: but which way ſoever the narration is made, every article muſt be duly entered on the oppoſite ſide of the correſponding account in the ledger; with a reference to the ledger account of caſh: for ſuch an account there muſt alſo be, into which the ſums of the debtor and creditor ſides of the particular account muſt be transferred once a week or month, as is found convenient: thus, in the caſh-*book*, the ſums being written down againſt them, write transferred to the ledger, and mark the folio; and in the ledger account, enter the ſum with the date of the transfer, debtor *to*, and creditor *by*, ſundry accounts, as *per* the caſh-*book*. The caſh account in the ledger is neceſſary for the balance of the whole; and the convenience of the ſeparate account of all the particulars is, that we have them all together, in one continued account: whereas, the rule of the ledger being not to allow more than one folio for one account, till that be filled up, the account might hereby lie in ſeveral different folios.—*V.* Savar. *l. c. p.* 571. *ſeq.* Malc. *c.* 2. *ſect.* 2. *p.* 54.

BOOK *of Invoyces*, a *book* to ſave the journal from the eraſures inevitable in taking accompts or invoyces of the ſeveral goods received, ſent, or ſold; where it is neceſſary to be very particular, and to render thoſe invoyces eaſier to find than they can be in the waſte-*book*. The invoyces here entered are to be thoſe of goods bought, and ſet to account of ſome other; thoſe of goods ſold by commiſſion; of goods ſent away to be ſold on our accompt; and thoſe of goods ſold in partnerſhip, whereof we have the direction, or whereof others have the direction.—*V.* Savar. *p.* 575.

This *book* contains an account or invoyce of all the goods which a perſon ſhips off, either for his own account, or for others in commiſſion, according to the bills of lading; with the whole charges till on board; every invoyce following after another, in order as they happen.

The invoyce *book* is only a copy of what is written in the waſte *book*, in thoſe caſes.—After the date, the narration is to begin thus:—Shipped aboard the ſhip—A. B. maſter; bound for—the following goods; conſigned to—for my account, or by order, and the account of.—Or, it may be begun thus:—Invoyce of goods ſhipped aboard—&c.

The deſign of this *book* is for the more ready finding out theſe invoyces, than can be done in the waſte-*book*.—*V.* Malc. *ubi ſupra, c.* 2. *ſect.* 3. *p.* 62.

Factor-BOOK is an account of what a perſon receives to ſell in commiſſion for others, and of the diſpoſal thereof.—It is numbered and diſtinguiſhed into folios, like the ledger; on the left-hand ſide is written, in a plain narrative ſtile, an account of the goods received, with all charges: and, on the oppoſite ſide, an account of all the ſales and diſpoſals of thoſe goods.--So that this is only a copy of the employer's account of goods in the ledger, in the ſtile of the waſte-*book*. Where a perſon does little in commiſſion, a ſeparate *book* for this purpoſe is needleſs.—*V.* Malc. *loc. cit. p.* 63. Savar. *p.* 575.

Book *of Accompts current* is kept in debtor and creditor, like the ledger; and ſerves for accompts ſent to correſpondents, to be regulated in concert with them, ere they are entered in the ledger. This is properly a duplicate of the accompts current, kept to have recourſe to on occaſion.

Book *of Acceptances* is deſtined for the regiſtring all bills of exchange, notified by letters of advice from correſpondents; to be able to know, on the bills being preſented, whether they have orders to accept them or not.--When they chooſe to decline accepting a bill, againſt the article thereof in the *book* they put P, *i. e.* proteſt; that, on offering the bill, the bearer may be told he may proteſt it: on the contrary, if they accept it, they write againſt it an A; adding the date, or day of acceptance. And this, upon being transferred to the debt-*book*, is cancelled.

Book *of Remittances* ſerves to regiſter bills of exchange, or they are remitted by correſpondents, to require the payment thereof.--If they be proteſted for want of acceptance, and returned to thoſe who remitted them, mention is made thereof againſt each article, by adding a P in the margin, and the date of the day when they were returned, then cancelled.

The *books* of acceptances and remittances have ſo near a relation to each other, that many merchants, *&c.* make but one of the two, which they keep in debtor and creditor; putting acceptances on the ſide of debt, and remittances on that of credit.

Book *of Expences*, a detail of the petty expences, both domeſtic and mercantile; which at the end of each month are ſummed up, and make an article for the caſh-*book*.—*V.* Savar. *p.* 577.

This *book*, being a ſeparate account of all the expences of living, ſerves to keep both the profit and loſs account, and alſo the caſh-*book*, more diſtinct: the greater and more conſiderable articles are to be placed here particularly; but the ſeveral ſmall articles, of daily diſburſements, only in totals: though under what denominations, and how general or particular the articles of this *book* are to be made, muſt be left to every one's choice. All neceſſary to obſerve here is, that the caſh paid out, on ſuch accounts, muſt be carefully entered here; and thence, once a week or month, be transferred to the caſh-*book*, and to the profit and loſs account in the ledger; which is debtor to caſh for it.—*Vid.* Malc. *loc. cit. p.* 54.

Book *of Numero's* or *Wares* is kept for the eaſy knowlege of all the goods brought in, ſent out, or remaining in a warehouſe.—On the left-hand page are entered the quantity, quality, and number or mark, of the goods brought in; on the right, the diſcharge of the goods out of the warehouſe, againſt the reſpective articles of the firſt. Thus,

N° 1	*A bale of white pepper——weighing*	400 *l.*
2	*A piece of crimſon damaſk ——ells*	63

March 1	*Sold to* Charles Mitchell.
Apr. 10	*Sent to* Nichols *of* Briſtol.

Month-Book is numbered in folios like the ledger, and divided into ſpaces, on the top of each of which are the names of the 12 months of the year; January, February, *&c.* allowing a whole folio, or what you pleaſe, to each month; and a different ſet of 12 ſpaces for every different year.—On the left-hand page enter the payments to be made to you, in that month: and on the right-hand page the payments you are to make. Make a column likewiſe on the left-hand of every page; in which, write the day of payment; and after this, the name of the debtor or creditor; and draw the ſum into the money-columns.---*Vid.* Malc. *p.* 64.

Book *of veſſels* is kept in debtor and creditor; a particular accompt being kept for each veſſel. To the ſide of debtor, are put victualling, fitting out, wages, *&c.* To the ſide of creditor, are put every thing the veſſel has produced; whether by way of freight or otherwiſe. Laſtly, the total of each is entered in the journal, upon balancing the accompt of each veſſel.

Book *of Workmen* is particularly in uſe among manufacturers, who have conſiderable works in their hands. It is kept in form of debtor and creditor for each workman employed. On the ſide of debt are put the matters given them to work; and on that of credit, the work they return.

Book *of Cargo*, or *Loading*, *livre de bord*, is kept by a clerk of a ſhip; wherein are entered all the goods aboard the veſſel, whether thoſe only for freight, or for ſale, or exchange; the whole according to the ſpecification in the maſter's bills of loading.---*V.* Savar. *D. Comm. Suppl. p.* 965.

Bank-Book. In cities, where there are public banks, as at Venice, Amſterdam, Hamburgh, and London, a *book* is neceſſary wherein to keep an account of the ſums paid to, or received from the bank.

Book, abſolutely uſed, denotes the waſte-book, ſometimes the journal, or day-book.

In this ſenſe it is, they ſay, I have put down ſuch a ſum in my *book*: you ſhall have an extract of my *book*, &c.—*V.* Savar. *D. Comm. T.* 1. *p.* 569. *voc.* Livre.

Book *of Rates* is a *book* eſtabliſhed in parliament, ſhewing at what value goods, which pay poundage, are to be reckoned at the cuſtom-houſe.—*Vid.* D. Ruſt. *T.* 1. *in voc.* See alſo Custom, Duty, Tonnage, and Poundage.

The *book* of rates annexed to the act of tonnage and poundage made in the 12th year of king Charles II. is ſubſcribed with the hand of Sir Harbottle Grimſtone, then ſpeaker of the houſe of commons.--An additional *book* of rates of goods and merchandizes uſually imported, and not particularly rated in the former, with rules, orders, *&c.* is ſigned by Spencer Compton, Eſq; ſpeaker of the houſe of commons, 11 *G.* I. *c.* 7.

BOOKBINDING, the art of ſewing together the ſheets of a book, and covering them with a back, *&c.*

Binding is diſtinguiſhed from *ſtitching*, as, in the latter, the leaves are only ſewed, without bands, or backs.

We ſay, French-binding, law-binding, marble-binding, binding in leather, in wood, in parchment, in ſheep, in calf, *&c.*

Dutch-binding is, where the backs are of velom.—The Italians are ſtill contented to bind in a coarſe, thick paper, called *binding alla Ruſtica*, the inconvenience of which is its being liable to wear out without careful uſe.—*V.* Barth. *de Lib. legend. diſſ.* 4. *p.* 99.

No doubt, but the art of binding is almoſt as antient as the ſcience of compoſing *books*; and that both the one and the other followed immediately the firſt invention of letters. Whatever the matter were, whereon men firſt wrote, there was a neceſſity of uniting the ſeveral parts together*; as well for the making them of one piece, as for the better preſerving them: hence the origin of *bookbinding*; for which, in all appearance, we are indebted to the Egyptians, that learned people, among whom the arts and ſciences began to flouriſh ſo early.

* According to Olympiodorus (apud Phot.) it was one Phillatius, a learned man at Athens, who firſt taught the uſe of a kind of glue, to faſten the ſeveral leaves together: on which account a ſtatue was erected to him.

The manner of binding Books *in Volumes*, *i. e.* of gluing the leaves together, to roll them on round pieces, or cylinders of wood, appears the moſt antient; though that of binding them ſquare, and of ſewing ſeveral quires one over another, lays claim to good antiquity. The firſt of the two, which we call *Egyptian-binding*, held a long time after the ag of Auguſtus; but it is now diſuſed, excepting in the Jewi ſynagogues, where they continue to write the *books* of th law on velom ſewed together; making, as it were, only one long page, with two rollers, and their claſps of gold o ſilver, at each extremity.—*V.* Reimman. *Idea Antiq. Liter p.* 243.

The form now in uſe is the ſquare binding, which is ſaid t have been invented by one of the Attali, kings of Pergamus to whom we likewiſe owe the manner of preparing parchment; called in Latin, from the name of his capital, *Perg mena*, or *Charta Pergamea.*

Manner of binding Books. The firſt operation is to fold th ſheets according to the form, *viz.* into two for folio's, fou for quarto's, eight for octavo's, *&c.* which they do with ſlip of ivory or box, called a *folding-ſtick*: in this the workma is directed by the catch-words and ſignatures at the botto of the pages. The leaves thus folded, and laid over ea other in the order of the ſignatures, are beaten on a ſto with a hammer, to make them ſmooth, and open well, a then preſſed. Being thus prepared, they are ſewed in ſewing-preſs upon pack-threads or cords, which are cal *bands*, at a proper diſtance from each other, and in a co venient number; which is done by drawing a thread throu the middle of each ſheet, and giving it a turn round ea band, beginning with the firſt, and proceeding to the la The common number of bands are ſix in folio's, and five quarto's, octavo's, *&c.* After this the books are glued, the e of the bands being opened, and ſcraped with a knife, for more convenient fixing the paſte-boards; then the back turned with a hammer, the book being fixed in a preſs tween boards, called backing-boards; in order to make groove for fixing the paſte-boards. The boards being appl holes are made for fixing the boards to the book; wh operation is called *drawing in.* Then the book is preſſed order for cutting; which is performed by a machine call *plough*, to which is fixed a knife. After this the book is into a preſs called a *cutting-preſs*, betwixt two boards, one lying even with the preſs, for the knife to run upon, other above it for the knife to cut againſt.

The book being cut, the paſte-boards are ſquared wi pair of iron ſhears; it being then ready for ſprinkling, gild blacking, or marbling the leaves. The colours with whi is ſprinkled, are uſually vermilion, and ſap-green; whi done by a bruſh made with hog's briſtles, holding the b in one hand, and moving the hair with the other.

In the French binding, a *book* is put in parchment, *i.*

ſlip of parchment, the length of the *book*, is applied on the inſide of each paſte-board; ſo, however, as that being cut or indented in the places againſt the bands, it comes out between the edge of the paſte-board, and the leaves of the *book*, to cover the back: this preparation, called *indorſing*, ſeems peculiar to the French binders; who are injoined by ordonnance to back their *books* with parchment, on the penalty of 30 livres, and the re-binding of the *book*: it is done in the preſs, where the back being grated with an iron inſtrument, with teeth, to make the paſte take hold, wherewith the parchment is firſt faſtened; they afterwards add ſtrong glue to fortify it.

Manner of gilding books on the edges.—The *book*, being put in the preſs, between two boards, is ſcraped with a knife called a *ſcraper*; and after that with another called a *ſmoother*, in order to take out all ſcratches. Being thus prepared, they ſcrape a little yellow oker upon the *book*, then wet it with a little ſize-water, and rub it off with ſome clean ſhavings. The gilding-ſize is made with the white of an egg, mix'd with water, and beat well together. The leaves being wetted with the ſize-water, with a bruſh, the gold is then laid upon it, and afterwards dried before the fire. When dried, it is burniſhed off with a dog's-tooth ſet in a handle. Blacking the leaves is done with fine antimony, the leaves being wet, and the antimony, rubbed upon them, and burniſhed off when dry.

On the gold thus applied, they antiently made ornaments, with hot irons of various forms and devices; the practice of which ſeemed to have been retrieved in France about the beginning of the eighteenth century, and carried to a good perfection by the abbot de Seuil, and others; and called by a new invented name, *antiquing*: but as the modern taſte ſeems rather inclined to ſimplicity, it is probable theſe antiquo-modern ornaments will be dropped again.

The headband is now added; which is an ornament of ſilk of ſeveral colours, or even, ſometimes, of gold or ſilver, placed at each extreme of the back, acroſs the leaves; and woven or twiſted, ſometimes about a ſingle, and ſometimes a double piece of rolled paper.

For the covers; though the ſkins uſed herein undergo ſeveral preparations in the hands of other workmen; yet there are ſome ſtill left for the *bookbinder*, and peculiar to his art: theſe we ſhall explain, in calf, as being the leather moſt uſed; and as being that to which all the reſt, with a little variation, may be referred.—The calf-ſkin being then moiſtened in water, is cut out to the ſize of the *book* with a knife. It may be eaſily imagined, that none of theſe preparations, except the laſt, are uſed in velvet, *&c.* wherewith *books* are ſometimes cover'd; in regard the water would ſpoil them.

The cover is next ſmeared over with paſte made of wheat-flour; then ſtretched over the paſte-board on the outſide, and doubled over the edges withinſide; after having firſt taken off the four angles, and indented and plaited it at the head-bands.—They then *cord the book*, or *bind* it firmly between two boards with a kind of whip-cord, to make the cover ſtick the ſtronger to the paſte-boards, and the back; as alſo to form the bands or nerves the more accurately: in this operation the workman arms his hand with leather, to enable him to pinch it the harder; and uſes a pair of pinchers to bring the thread nearer each band.

The *book* is now ſet to dry; and when dry, uncorded, and the leaves at each end opened, the *book* is waſhed over with a little paſte and water, the edges and ſquares blacked with ink, and then ſprinkled fine with a bruſh, by ſtriking it either againſt the hand, or a ſtick, or with larger ſpots mix'd with vitriol, which is called *marbling*.

The cover is now glazed twice with the white of an egg, beaten; and at laſt poliſhed with a poliſhing iron, paſſed hot over the glazed colour.

f the *book* be required to be lettered, they paſte a piece of ed morocco on the back, between the firſt and ſecond band, o receive the title in gold letters; and ſometimes a ſecond between the next bands underneath, to receive the number of he volume.

The *binding*, properly ſo called, is now complete; and there mains nothing but the gilding work on the back and cover; hich, as it makes a part of the *bookbinder*'s buſineſs among (though with the French, *&c.* it is a diſtinct profeſſion), ſhall here ſubjoin.

ner of gilding books on the backs and covers.—In ordinary *ding*, they gild little elſe but the backs, and the outward ges of the cover. On the backs are gilt the title of the ok, *&c.* with flowers, roſes, knots, ſtars, *&c.* between bands: on the covers are ſometimes added compartnts, arms, *&c.* All theſe ornaments are made with each ſeveral gilding-tool, engraven in relievo; either on the nts of punchions, as thoſe of letters, roſes, ſtars, *&c.* or und little cylinders of braſs, as the lines, embroideries, *&c.* punchions make their impreſſion by being preſſed flat n; and the cylinders by being rolled along by an iron , by means of a double branch; in the middle whereof, are fitted on an iron ſtay, or axis, that paſſes the middle their diameters.

apply the gold, they glaze thoſe parts of the leather, whereon the tools are to be applied, lightly over with a pencil or ſponge; and, when half-dry, lay over them pieces of leaf-gold, cut out near the ſize; and on theſe ſtamp the punchions, or roll the cylinders, both the one and the other reaſonably hot. If the figures be large, and require a great relievo, as arms, *&c.* they are beat down with a mallet, or hammer.—The gilding thus finiſhed, they rub off the ſuperfluous gold with a hare's-foot; leaving nothing covered with gold, but the places whereon the hot tools had left their impreſſions.—*V.* Savar. *T.* 2. *p.* 1373—1377. *Voc.* RELIEURE.

Ahaſ. Fritſch, chancellor of the univerſity of Jena, has a diſſertation, expreſs, concerning *bookbinders*, *de bibliopegis*; wherein he treats of the laws preſcribed by theſe artificers, and the tax or price ſettled by the magiſtrate for *binding* books, of every ſort, in ſheep-ſkin, velom, *&c.*—The rates fixed for binding in ſheep, throughout the electorate of Saxony, are, for large folio's, 1 guilder or florin, 3 groſſes; common folio, 1 florin; large quarto, 12 groſſes; common quarto, 8 groſſes; large octavo, 5 groſſes; common octavo, 4 groſſes; duodecimo, 3 groſſes; ſedecimo, 2 groſſes.—*Vid.* Fritſch. *Tract. de Typogr. Bibliopol. Chartar. & Bibliopeg. diſſ.* 4. § 3.

BOOK-KEEPING, the art of keeping accounts; that is, of recording the tranſactions of one's affairs in ſuch a manner, that the true ſtate of any part, or of the whole, may be thereby known with the greateſt clearneſs, exactneſs, and eaſe. —*V.* Malc. *Treat. of book-keep. c.* 1. *ſec.* 1. *p.* 1. See alſo the article ACCOUNTS.

By the *tranſactions of one's affairs* are meant, either ſuch as relate to the perſons with whom we deal, or the things in which we deal; which laſt are either money, the principal means of commerce, or goods, comprehending all other effects.

By *knowing the true ſtate of one's affairs* is meant, to know what relates to every perſon we deal with, and every thing we deal in; that is, what every perſon owes me, or I owe him; and what quantity and value of every kind of effect is in my hand, with the gain and loſs on that ſubject within the time of the account.

The art of *book-keeping* is compriſed in the uſe of ſeveral books of accompts, which are partly eſſential, and partly ſubſidiary. See the article BOOKS.

Books are either kept *ſingle*, as among retail dealers, or *double*, as among great merchants: for the firſt, a *journal*, or *day-book*, and a *ledger*, or *poſt-book*, are ſufficient; for the ſecond, there are ſeveral others required.

All authors agree, that it was the Italians, particularly thoſe of Venice, Genoa, and Florence, who firſt introduced the method of *keeping books* double, or in two parts; hence, among us, it is called *The Italian method.*

In this, there are three books, generally held indiſpenſably neceſſary; *viz.* the *waſte-book*, *journal*, and *ledger*: beſides, there are others, to the number of thirteen, or more, called *ſubſervient*, or *auxiliary books*, uſed as occaſion requires; *viz. the caſh-book, debt-book, book of numero's, of invoices, of accompts current, of commiſſions, orders, or advices, of acceptances, of remittances, of expences, of copies of letters, of veſſels,* and *of workmen.*

Theſe *books* are kept the ſame, as to ſubſtance, in moſt trading cities in Europe; but not as to coin: each being regulated by that ſort of coin which has courſe in the ſtate where they are.

In England, *books* are kept in *pounds*, *ſhillings*, and *pence*; in France, in *livres*, *ſols*, and *deniers*; in Holland, in *florins*, *patars*, and *penings*; at Dantzick, in *rixdollars*; through moſt parts of Germany, in *florins*, *cruitzers*, and *pennings*; at Hambourg, in *marks*, *ſols*, and *deniers lubs*; at Liſbon, in *rees*; at Florence, in *gold crowns*, *ſols*, and *deniers*; in Spain, in *maravedis*; ſometimes in *rials*, or *pieces of eight*; at Meſſina, and through Sicily, in *ounces*, *taris*, *grains*, and *piccolis*; at Venice, in *ducats*; in Muſcovy, in *rupees*, *altins*, and *grives*: through all the ſtates of the Grand Signior, in *piaſters*, and *aſpers*.—*V.* Savar. *D. Comm. T.* 2. *p.* 578. *ſeq. voc.* LIVRE.

Book-keeping, though chiefly in uſe among merchants and great dealers, is yet applicable with advantage to perſons of all other conditions; as retailers, ſtewards, gentlemen of land-eſtates, *&c.* with this only difference, that the narrower their affairs and tranſactions are, the fewer *books* they need to keep, and *vice verſa*. The ſame ways of accounting, which in great and diffuſed trade prevent confuſion, by an artful and regular diſpoſing of things, if applied to mean and narrow dealings, will create confuſion, at leaſt will give more ado than needs; ſince a few things ſhew themſelves readily, and are examined by mere inſpection: ſuppoſing no other method but a waſte-book record; every corner whereof, in very ſmall dealings, the owner's eye is acquainted with, ſo that he can readily turn to what he wants: but this, in larger accounts, is impoſſible; which makes order, the ſtricteſt form, and much writing, abſolutely neceſſary.—Yet this one rule muſt be indiſpenſably obſerved in all caſes; *viz.* That a true and exact memorial of every thing belonging to the account be made, juſt as things occur;

and if buſineſs increaſe, ſo that a nearer approach to the perfection of accompting be neceſſary, this will ſerve as a ground-work, on which you may raiſe the accompt to what form you pleaſe. – But the leaſt a man can do, will be ſome part of the method explained under the article BOOKS. Of which all methods whatever are a part; as comprehending the greateſt ſimplicity in the waſte-book, and art in the ledger.

For a perſon in a ſingle ſtate, who has no buſineſs, but the receiving at certain times in the year a ſum of money, which he lays out again for his private and perſonal expences, a pocket-book is ſufficient.

For one in a married ſtate, whoſe fortune conſiſts alſo of money, as he has a greater variety of expences, he muſt be careful to keep an exact account of what caſh he receives, and pays; and to make this account more diſtinct and orderly, it will be beſt to keep the particulars of the payments in a ſeparate book, and to bring them into a caſh-book once a week, in totals, digeſted under ſuch denomination as he thinks fit, as *bread*, *beer*, *fleſh*, *coals*, *candles*, &c.—Things thus brought into the caſh-account, may be again drawn into an abſtract, ſhewing the total of each kind of expences for every month, by dividing a page into twelve columns, with the names of the twelve months; and then in ſo many articles on the margin ſetting the names of the ſeveral heads of expences, and, againſt each, under the reſpective month, the ſum of that kind of expences in that month; then will the ſum of the money in the columns under each month be the total expence of that month, and the aggregate of theſe ſums the year's expences.—For artificers, handicrafts-men, and the like, they may keep accompts of the expences of living, as above; but it will alſo be neceſſary to make a diſtinct accompt of the charges and profit of their buſineſs, which may eaſily be done, by an exact account of all they pay, or owe, for the materials and inſtruments of their work, with ſervants wages, and taxes upon their trade; and of all they receive, or is due, for their work. They may conveniently keep accompts for the materials of their work, to ſatisfy them of the diſpoſal thereof, and ſerve as a check on ſervants who have acceſs to thoſe things, and they muſt keep accounts for the perſons they deal with, both in buying and ſelling.—For petty traders, who deal in ſome hundreds of trifling wares, and make ſales to the value of a farthing or halfpeny, theſe cannot pretend to keep orderly accompts; the beſt they can do is, to be careful that ſervants do not wrong them; for they have no account of goods; and if you aſk what of any kind remains with them, they muſt go look, if their memory fail.—Theſe can only have a caſh-accompt, which they are to charge once a week with the money received, and diſcharge for what they give out; it is not convenient, that they ſhould touch the caſh-box, or till, oftener than once a week, when it is completed; but, if they do, they muſt keep a ſeparate accompt of what they take out, to know what was received. Beſides which, they ſhould have a kind of ledger for the perſons with whom they deal upon credit, in which they give every debtor or creditor an accompt, with a debt and credit both on one ſide, either with a double money-column, or conſtant deductions, as the debts and credits ſucceed one another.—They may alſo, for the ſake of thoſe, have a memorandum, or day-book, wherein all things of this nature are writ down, and then carried into the other.

For more conſiderable ſhop-keepers, who commonly deal in only a few different ſpecies of goods, as drapers, mercers, *&c.* they uſually keep a ledger for perſons and wares diſtinct, without any formal connexion, or reference of the accompts, in their ſeveral articles; whereby there can no regular balance be made. In the accompts of perſons, they uſe the formality of a debtor and creditor ſtile, which is mere ſhew, without the real value of a regular accompt; there being no oppoſite correſponding debtors and creditors to be found. For their ledger of wares, as they call it, contains nothing of this; and is but an imperfect contrivance, which they ſatisfy themſelves with, to know how much remains. But the worſt is, that in allotting ſpaces for the accompts of wares, they frequently allow no more than they ſuppoſe may ſerve for the retail of the quantity firſt entered on that ſpace; and when this is diſpoſed of, take a new ſpace for a new parcel; which in a quick trade is not only troubleſome, but confuſed, if there be any of the old parcels remaining; unleſs they carry it to the new account. In reality, dealers in retail, if conſiderable in their way, ought not to come ſhort of the utmoſt pitch of art: at leaſt, they ſhould keep three grand books, a *waſte*, *journal*, and *ledger*; unleſs they ſhall think fit to join the firſt two into one. The *waſte-book* to contain every thing done in the ſhop, both what is ſold on truſt, and for caſh.—This, and the *journal*, may be made in one, by marking the debtors and creditors on the margin, againſt every tranſaction of value.—For the *ledger-book*, becauſe there are commonly many articles of debt to one of credit, on mens accounts with whom they deal, and many articles of credit, for one of debt, upon account of wares, they may keep the debt and credit both on one ſide, by double money-columns; in the one of which let the debt, and in the other the credit, be ſet.

For gentlemen of landed eſtates, the books neceſſary to be kept are, 1°, A great *waſte-book*, containing a plain narrative of all things as they occur; as receipts, and payments; every thing given, and received; and, in ſhort, whatever is done relating to any thing or perſon they are concerned with: out of which are to be made up, 2°, A *caſh-book*, containing in a plain narrative ſtile, upon the debtor ſide, all receipts of money; and, upon the creditor ſide, all payments: and though there be ſeveral articles received or paid together, belonging to the ſame accompt, which are entered particularly in the waſte, yet they may be ſet down here in a total ſum: for example, there is paid 26*l.* for divers pieces of houſhold furniture, all particularly mentioned in the *waſte-book*; yet in the *caſh-book* there needs no more than to ſay, *paid for houſhold furniture*, &c. 3°, A book of accompts with tenants, where, in diſtinct places, every one's charge and diſcharge may be fairly written, without any great formality of ſtile; and if it have a ſhew of debtor and creditor ſide, it will be the more diſtinct. 4°, A book of petty accompts with ſervants and workmen, *&c.* 5°, A book of real accompts; containing an accompt of cattle, corn, and other ſtock or furniture, to know at all times what you have, and how it is diſpoſed of.—If a gentleman advance no nearer to the artificial part of accompting, he muſt keep an accompt with every perſon, with whom he has dealings; which may be done in the ſame book with his tenants accompts; only allotting diſtinct parts for them; the laſt will take no great room compared with the other: theſe books of accompts muſt have indexes.

For factors, or ſtewards, on land-eſtates, a general *waſte-book* will be neceſſary, to contain all matters tranſacted, relating to their maſter's concerns, under their management. Out of which let them make a *caſh-book*, in the manner above directed; alſo a *book* of real accompts, that they may know what real effects, beſides money, they have the charge of, and how it is diſpoſed of; particularly the corn-rents, which have been delivered by the tenants, and put in the granaries under their charge, to be diſpoſed and given out according to order.---*Vid.* Malc. *Treat. of book-keep. app. p.* 7.---30.

BOOKSELLER, a profeſſed trader in books; whether he print them himſelf, or procure them to be printed by others, for ſale.

Bookſellers, among us, are the ſame with *bibliopolæ* among the antients, whoſe office was diſtinct from that of *librarii.* Petty dealers, or venders of ſmall-ware, like our publiſhers, were more particularly denominated *libelliones*; whence Statius,--*de capſa miſeri libellionis.*--*Vid.* Stat. *Sylv. l.* 4. *Carm.* 9. *v.* 21. *Fabr. Theſ. p.* 1395.

Authors frequently complain of the arts of *bookſellers* [a]: lord Shafteſbury gives the proceſs of a literary controverſy blown up by *bookſellers* [b]. The publication of books depends much on the taſte and diſpoſition of *bookſellers*: among the German writers we find perpetual complaints of the difficulty of procuring *bookſellers*; many are forced to travel to the book-fairs at Frankfort, or Leipſic, to find *bookſellers* to undertake the impreſſion of their works: at Rome, the Argiletum was the mart of books, as Paul's Churchyard, or Fleetſtreet, have been among us: whence that of Martial [c],

Argiletanas mavis habitare tabernas,
Cum tibi, parve liber, ſcrinia noſtra vacent.

[a] *Vid.* Schoettg. *diſſ. de librar. & bibliop.* Saleng. *mem. de liter. T.* 1. *p.* 174. [b] *Charact. T.* 3. *p.* 10. *ſeqq. Item p.* 15. *ſeqq. Item p.* 27. [c] *Vid.* Martial. *Epig. l.* 1. *ep.* 4. *v.* 1.

The fairs of Frankfort and Leipſic are famous for the reſort of *bookſellers*, not only from all parts of the empire, but Holland, Flanders, *&c.* They have each their ſhop or warehouſe, over which is inſcribed the name of ſome celebrated *bookſeller* of former times; *officina Elzeviriana*, *Frobeniana*, *Morelliana*, *Janſoniana*, &c. A like conceit has taken ſome London *bookſellers*, to inſcribe over their door, *bibliopolium*, as if people could not know a ſhop to be a *bookſeller*'s without a Latin name. Even ſtall-men dignify their ſtands with *bibliopolium*; and Moorfields may probably, ere long, be ſurrounded with *bibliopolia*.

Formerly, the offices of *bookſellers* and printers were united in the ſame perſons [a]. Labbe [b] gives a liſt of learned *bookſellers*; moſt of whom were alſo authors.---Of late days, *bookſellers* have drawn their buſineſs into leſs compaſs; and, leaving the labour of compoſing books to one ſet of perſons, and that of printing them to another, content themſelves with the gainful part; thus miniſtring to the republic of letter not with the head, or the hand, but the purſe only. I which reſpect, not to mention ſome of our own *bookſellers*, the Vander Aa's at Leyden, Gleditſch's and Fritſch's at Leipſick Mortier's and Wetſtein's at Amſterdam, and Halma's a Utrecht [c], though much below the Stephens's, Aldus's, Vaſcoſans, Frobenius's, and Morels, have nevertheleſs acquire a juſt fame.--[a] *Vid.* Struv. *Introd. in notit. Rei Literar. c.* 11 §. 15. *p.* 930. Thurman. *Bibl. Acad. p.* 56. *ſeq.* [b] Labb *Biblioth. p.* 233. [c] Struv. *lib. cit.* § 38. *p.* 953.

The chief ſcience of *bookſellers*, is the βιβλιογνωσια, or knowlege of books; we mean of the titles, different editions, prices, and ſcarcity of them, without regard to their contents, or qualities, otherwiſe than as theſe affect the ſale of them. —*Vid.* Struv. *Introd. in notit. Rei Literar. c.* 1. § 1. *p.* 1. *ſeq.* Lang. *Inſt. Stud. Theol. c.* 1. *memb.* 2. *p.* 98. *ſeq.* See alſo the article Book.

An acquaintance with the *bookſellers* marks or ſigns, frequently expreſſed on the title-pages of their books, is of ſome uſe; by reaſon many books, eſpecially in the laſt century, have no other deſignation either of printer, *bookſeller*, or even city.—The *anchor* is the mark of Raphelengius at Leyden, and the ſame, with a *dolphin* twiſted round it, of the Manutii at Venice and Rome; the *Arion* denotes a book printed by Oporinus at Baſil; the *caduceus*, or *Pegaſus*, by the Wechelius's at Paris and Francfort; the *cranes*, by Cramoiſy; the *compaſs*, by Plantin at Antwerp: the *fountain*, by Vaſcoſan at Paris; the *ſphere* in a balance, by Janſon or Blaew, at Amſterdam; the *lily* by the Junta's at Venice, Florence, Lyons, and Rome; the *mulberry-tree*, by Morel at Paris; the *olive-tree*, by the Stephens's at Paris and Geneva, and the Elzevirs at Amſterdam and Leyden; the *bird between two ſerpents*, by the Frobenius's at Baſil; the *truth*, by the Commelins at Heidelberg and Paris; the *Saturn*, by Colinæus; the *printing-preſs*, by Badius Aſcenſius, *&c.*—*Vid.* Baill. *Jugem. des ſav. T.* 1. *P.* 2. *p.* 91. *ſeqq.*

Bookſellers are a kind of agents, or curators, in the republic of letters: in many places, they are ranked among the members of univerſities, and intitled to the privileges of ſtudents: as at Tubingen, Saltſburg, and Paris[a], where they have always been diſtinguiſhed from the vulgar and mechanical traders, and exempted from divers taxes and impoſitions laid on other companies[b].—[a] *Vid.* Fritſch. *diſſ. de bibliop. c.* 7. § 1. *ſeqq.* [b] Savar. *D. comm. T.* 2. *p.* 535. *ſeq. voc.* Libraire.

The traffick of books was antiently very inconſiderable; inſomuch that the book-merchants both in England, France, Spain, and other countries, were diſtinguiſhed by the appellation *ſtationers*, as having no ſhops, but only ſtands or ſtalls in the ſtreets, where they expoſed their wares to ſale.—*Vid.* Du Cang. *Gloſſ. Lat. T.* 4. *p.* 951. *voc.* Stationarii.

During this ſtate, the civil magiſtrate took little notice of the *bookſellers*; leaving the government of them wholly to the univerſities, to whom they were ſuppoſed more immediately retainers: who accordingly gave them laws and regulations, fixed prices on their books, examined their correctneſs, and puniſhed them at diſcretion.—But when, by the invention of printing, books and *bookſellers* began to multiply; it became a matter of more conſequence; and the ſovereigns took the direction of them into their own hands; giving them new ſtatutes, appointing officers to fix prices[a], and grant licences, privileges[b], *&c.*—[a] *Vid.* Fritſch. *diſſ. de bibliop. c.* 4. [b] *Id. ib. c.* 5. Thurman. *bibl. acad. p.* 10.

Chevillier ſhews, that the univerſity of Paris had formerly the ſole power of creating and appointing *bookſellers*, who were to take an oath to the univerſity; and were reputed part of the academical body, and as ſuch intitled to the exemptions of the other members thereof. They were to give ſecurity to the univerſity for their behaviour, and produce atteſtations of their capacity for the diſcharge of their office: the univerſity alſo depoſed and expelled them at diſcretion: they were obliged to appear at all aſſemblies of the univerſity, when ſummoned, and aſſiſt at the public proceſſions thereof: they were obliged to lend their books to be read, or even copied, by ſuch as were diſpoſed to borrow, on certain conditions, preſcribed by the univerſity. If they kept any books by them, which were not correct, the univerſity puniſhed them: they were not allowed to buy any book of a ſtudent without leave of the rector: nor were they allowed to gain above four deniers in a livre, by any copies ſold to the members of the univerſity. Every *bookſeller* was obliged to have a catalogue of all his books hung up in the ſhop, with the prices, as rated by the univerſity: no *bookſeller*, who had not taken the oaths to the univerſity, might ſell a book of above ten ſols value.—*Vid.* Chevill. *diſſ. de l'orig. de l'imprim. l.* 4. *Jour. des Scav. T.* 23. *p.* 240. Savar. *D. Com. T.* 2. *p.* 530. *ſeq. voc.* Libraire.

This ſtate laſted from the thirteenth century till the invention of printing, and even till the end of the fifteenth century; during which time there were only allowed twenty-four *bookſellers*, two binders, two illuminers, and two ſworn book-writers, or copiſts.—But from that time the kings of France began to take cognizance of them: Lewis XI. thought fit to preſcribe ſome new regulations in 1467. under Francis I. the *bookſellers* were brought wholly under the royal authority, and received ſtatutes from the king.—*Vid.* Savar. *lib. cit. p.* 531.

Ahaſ. Fritſch, chancellor of Jena, has a diſſertation expreſs concerning *bookſellers*, de *bibliopolis*; but it is a jejune piece, and beſides, half-filled with paſſages in High Dutch untranſlated: what we find in it any way curious is ſome queſtions and caſes, between *bookſellers* and authors, which he diſcuſſes on the principles of the Imperial and Saxon laws; as,—Whether any copy-money be due to an author, who has not been able to finiſh his book by reaſon of the difficulty of it? Whether a *bookſeller*, who printed the firſt edition, be intitled to the refuſal of the ſecond?—Whether new copy-money be due from the *bookſeller* to an author on a new edition of a book?—Whether a *bookſeller* may reprint a book without the knowlege and conſent of the author?—Whether a number of copies be due to the author over and above the copy-money? which he reſolves in the affirmative.—And whether a *bookſeller* may ſeize his books unpaid for, in a ſtudent's cloſet? which alſo he reſolves in the affirmative[a].—See further concerning *bookſellers*, in the writers on Books and Printers.—More eſpecially in Schoettgenius[b], de la Caille[c], Chevillier[d], and others[e], who have written expreſly on the ſubject.—[a] *Vid.* Fritſch. *tract. de Typogr. & Bibliopolis*, &c. Jen. 1675. 4°, *diſſ.* 2. *c.* 6. [b] Chriſt. Schoettgenii *diſſ. de Librariis & Bibliopolis antiquorum*, Lipſ. 1710. 4°. A notitia of it is given in Reimm. *Idea ſyſt. antiq. liter. p.* 60. [c] Jean de la Caille, *Hiſtoire de l'imprimerie & de la libraire, juſque an* 1689. Par. 1689. 4°. An extract of which is given in *Journ. des ſcav. T.* 17. *p.* 467. *ſeq.* [d] And. Chevillier *l'Origine de l'Imprimerie*, Par. 1695. 4°. An extract of it is given in *Jour. des ſcav. T.* 23. *p.* 223. *ſeqq. Item p.* 235. *ſeqq.* [e] Fabric. *Bibl. Antiq. c.* 19. §. 7. *p.* 607. & Thurm. *Bibl. Acad. p.* 10. *Item p.* 56.

BOOKING, among merchants, *&c.* the making an entry of any matter in the journal. See Book, Book-keeping, and Journal.

BOOM, in the ſea-language, a long pole, wherewith they ſpread out the clue of the ſtudding-ſail, ſometimes alſo that of the main-ſail and fore-ſail, to make them broader, and receive more wind.

A ſhip is ſaid to come *booming*, when ſhe makes all the ſail ſhe can.

Boom alſo denotes a pole with a buſh or baſket on the top, placed to direct ſhips how to ſteer into a chanel; otherwiſe called a *beacon*.

BOOT, *Brodequin*, a kind of torture for criminals; to extort a confeſſion, by means of a *boot*, ſtocking, or buſkin of parchment; which being put on the leg moiſt, and brought near the fire, in ſhrinking ſqueezes the leg violently, and occaſions intolerable pain.

There is alſo another kind of *boot*; conſiſting of four thick ſtrong boards bound round with cords: two of theſe are put between the criminal's legs, and the two others placed one on the outſide of one leg, and the other on the other; then, ſqueezing the legs againſt the boards by the cords, the criminal's bones are ſeverely pinched, or even broken, *&c.*

The *boot* is now diſuſed in England; but it ſubſiſts ſtill in ſome other countries, particularly Scotland.

Boot-*houſing*. See the article Housing.

BOOTES, in aſtronomy, a conſtellation of the northern hemiſphere, whoſe ſtars, in Ptolemy's catalogue, are 23; in Tycho's 28; in Bayer's 34: in Hevelius's 52; and in Mr. Flamſteed's catalogue 45. Their longitudes, latitudes, magnitudes, *&c.* are as follow:

Names and ſituations of the ſtars.	Sign.	Longitud.			Latitude. North.			Magn.
		°	′	″	°	′	″	
	♎	10	51	56	28	11	26	6
		9	43	34	30	32	0	6
		9	29	51	33	59	22	6
Middle of 3 in the fore leg		13	37	50	26	32	8	4
Southern		14	51	57	25	12	47	4
5								
		12	26	17	30	1	28	5 6
Laſt of the tail of urſa major	♍	22	34	24	54	24	0	3
	♎	14	10	50	27	31	38	7
North. of the leg.		14	59	00	28	6	41	3
		11	00	38	36	33	10	5
10								
Inform before the preced. thigh		14	27	1	31	28	30	7 6
		12	13	5	36	53	16	7 6
In the prec. thigh		15	43	4	35	41	3	5
	♍	27	9	24	56	34	48	7
	♎	22	8	42	24	51	0	6
15								
		23	26	33	22	15	30	6
Bright one betwixt thighs, Arcturus		19	53	52	30	57	0	1
Preced. in the north hand	♍	25	36	39	58	54	44	4
	♎	23	23	52	25	10	15	6
In the preced. arm		2	37	32	54	39	20	4
20								
		22	11	11	28	27	0	5
Middle one in the hand	♍	26	46	14	58	55	33	4
That following Arcturus	♎	22	38	00	31	45	14	6
Laſt of three in the hand	♍	28	14	00	60	10	4	4
Small one following the north. hand	♎	1	35	46	58	55	5	6 7
25								
Preced. againſt the girdle	♎	18	25	50	42	27	57	4
		22	49	58	35	6	13	7
In the preced. ſhoulder		13	18	18	49	33	0	3
Subſeq. againſt the ſhoulder		19	31	33	42	8	24	5
South. in the following leg		27	30	5	30	23	18	3 4
30								
In the poſterior heel		28	4	21	27	53	42	3
	♏	0	55	28	22	41	32	4 5
	♎	29	37	33	25	59	55	6
That following the preced. arm		9	58	2	55	27	39	6
		23	36	32	40	0	9	6
35								

Names and ſituation of the ſtars.	Sign.	Longitud.			Latitude North.			Magn.
		°	′	″	°	′	″	
North. in the hind leg		28	27	45	31	17	7	4 5
Againſt poſterior thigh, under the gird.		23	44	35	40	38	21	3
In the hind leg		29	10	33	33	47	28	4
Firſt of three over the head		11	2	48	57	54	1	6
		20	6	51	52	57	48	6 7
40								
In the poſterior hand		29	26	43	40	11	33	5
In the head		19	53	41	54	10	38	2
In the wriſt of the poſterior hand		29	10	20	42	11	40	5
In the extrem. of the ſtaff's handle	♏	0	54	38	40	29	15	5
Middle over the head	♎	13	28	53	60	33	37	6
45								
In the ſtaff, near the hand	♏	0	34	22	41	54	43	6
Poſterior over the head	♎	13	17	58	61	7	22	7
South of the middle one in the ſtaff	♏	0	51	10	45	4	7	5
In the hind ſhoulder	♎	28	48	8	49	0	10	3
	♏	0	55	3	49	9	16	6
50								
That follow the ſtaff towards the crown		2	44	45	46	49	30	5
North of the middle ones in the ſtaff	♎	28	11	44	53	26	56	4
South. in the extrem. of the ſtaff		28	21	36	57	6	25	5
More north.		28	24	27	57	14	40	5 4
Another following this	♏	0	46	9	57	14	46	6
55								

BORAMETZ. See ZOOPHYTE.

BORAX, a mineral ſalt, chiefly uſed in ſoldering, and fuſeing of metals; ſometimes alſo in medicine, as an emetic, and a promoter of delivery.

Borax is uſually ſuppoſed to have been known to the antients under the denomination *chryſocolla:* though M. Geoffroy gives good reaſons for believing the modern *borax* a different thing from the *chryſocolla* of the antients. *Vid. Mem. Acad. R. Scienc. an.* 1732. *p.* 549.

Pliny divides the antient *borax* or *chryſocolla* into *natural* and *artificial:* the *natural*, according to him, is only a ſlimy humour running in mines of gold, ſilver, copper, and even lead; which, being congealed and hardened by the winter's cold, becomes of the conſiſtence of pumice-ſtone. *Plin. Hiſt. Nat. l.* 33. *c.* 15.

For the *artificial*, it is made by letting water run in the veins of the mine, all the winter long, till June; and letting the mine dry the reſt of the year.—So that artificial *borax* is no more than the mineral putrified and corrupted.

The ſame naturaliſt diſtinguiſhes it into *black*, *green*, *yellow*, and *white*; which aſſume their ſeveral colours, as well as values, from the different mines wherein they are formed.

The moderns alſo diſtinguiſh two kinds of *borax*; *natural*, which is crude; and *artificial*, which is purified and refined.

Crude, or natural *borax*, *borace non rifatto*, is a mineral ſalt, dug out of the earth in ſeveral parts of Perſia; and found alſo at the bottom of a torrent, running in the mountains of Purbeth, near the frontiers of White Tartary: when taken up, it is expoſed to the air; where it acquires a rediſh fatneſs, which ſerves to feed it, and prevent its calcining. When in its perfection, it is ſent to Amadabat, in the territories of the Great Mogol, where the European merchants buy it.

There is alſo another kind of natural *borax*, drier, and of a greeniſh colour, like Engliſh copperas; only differing from the former, by its being longer expoſed to the air.

For *artificial* or *refined borax*, *borace rifatto*, it was the Venetians who firſt found out the art of preparing it; or rather, of purifying the natural: it is ſaid to be done by diſſolving it in water; then filtrating and cryſtallizing it; uſing, for that purpoſe, cotton matches; about which the *borax* cryſtallizes, like ſugar-candy and verdegris on wood.—The Dutch, after refining it, reduce it into little pieces, like tagged points; and it is thus commonly uſed.

Borax, refined, either in the Dutch or Venetian manner, ſhould be clear and tranſparent, almoſt inſipid to the taſte; and above all, care muſt be taken it have no mixture of Engliſh alum.

Borax is of ſome further uſe in medicine, as it enters the compoſition of the *unguentum citrinum*. It is alſo uſed in the preparation of a fucus for the ladies.

Agricola ſays, there is a foſſil nitre, as hard as that whereof the Venetians make *borax:* in which he has reaſon; this nitre being nothing but the Perſian *borax* above-mentioned.

What he adds, that the Venetian *borax* is made of the urine of young people who drink wine, beat in a brazen mortar to the conſiſtence of an unguent; then mixed with verdegris and nitre; is not only falſe, but is a miſrepreſentation of a paſſage in Pliny, *Hiſt. Nat. l.* 33. *c.* 5.

M. Lemery the younger has made a great number of experiments on *borax*, by which it appears—That *borax* unites with acids both mineral and vegetable; that it abſorbs them, and together with them forms new ſalts of different kinds according to the ſpecies of acid employed:—That theſe acids incorporate themſelves in the *borax*, as they do in alcaly ſalts:—In reality, the *borax* is itſelf a true native alcaly, which does not need any art or decompoſition to render it ſuch, as the common alcaly ſalts do.—That its action on acids is different from that of the common alcaly ſalts, in that it is peaceable, and raiſes no commotion with them, &c. *Vid. Mem. Acad. R. Scienc. an.* 1728. *item an.* 1729. *p.* 400. *ſeqq. item an.* 1732. *p.* 549. See Supplement, article BORAX.

BORDER, in heraldry. See the article BORDURE.

BORDERS, among floriſts, are ſuch leaves as ſtand about the middle thrum of a flower. See FLOWER.

BORD-FREE. See the article FREE.

BORD-HALFPENY, or BROD-HALFPENY, money paid in markets, and fairs, for ſetting up boards, tables, and ſtalls, for the ſale of wares.

BORD-LANDS, the demeſnes antiently kept by the lords in their hands, for the maintenance of their *board* or table.—This was alſo antiently called *bordage*.

BORD-SERVICE, called alſo BORDAGE, the tenure of lands, on condition of furniſhing proviſion for the lord's board or table. Spelm. *Gloſſ. p.* 85. *voc.* Bordarii.

Some lands in the manor of Fulham, and elſewhere, are ſtill held of the biſhop of London, by this ſervice, that the tenants pay ſix-pence per acre in lieu of finding proviſion for their lord's table.

BORDURE, or BORDER, in heraldry, a kind of addition on the limb of a ſhield, in form of a hem, or girdle, encompaſſing it all round, and ſerving as a difference.—See *Tab. Herald. fig.* 10. See alſo the article DIFFERENCE.

The *bordure* muſt be about one ſixth part of the breadth of the ſhield.

Simple bordure is that which is of the ſame colour or metal throughout; and is the firſt addition of younger brothers.—There are others, *componed*, *countered*, *ingrailed*, *indented*, and *charged* with other pieces; which make different additions for younger brothers, in ſeveral degrees.

If the line which conſtitutes the *bordure* be ſtrait, and the *bordure* plain, as they call it in blazoning, the colour of the *bordure* alone is named: as, he beareth gules, a *bordure* or.—If a *bordure* be charged with any parts of plants or flowers; they ſay, *verdoy* of trefoils. If it conſiſt of ermines, vairy, or any of the furs, the term is, *purflew* of ermines: if the *bordure* be charged with martlets, the word is, *charged* with an enaluron of martlets, &c.

BOREALIS *Aurora*. See AURORA *Borealis*.

BOREAS *, a Greek name, now in popular uſe, for the north wind.

* Etymologiſts uſually derive the word either from the Greek βοη, *clamor*, noiſe; or from βορα, *eſca*, food; becauſe, forſooth, it creates an appetite, or becauſe it is good for the fruits of the earth, which yield us food: others chooſe to deduce it from the Hebrew *birjah*, food; or from *beri*, calmneſs; *bor*, purity; or *bar*, corn.—The antients ſuppoſed *Boreas* only blew out of Thrace.

Pezron obſerves, that antiently, and with much greater propriety, *Boreas* ſignified the north-eaſt wind, blowing at the time of the ſummer ſolſtice: he adds, that the word comes from the Celtic *bore*, morning; in regard their principal light, in that ſeaſon, came from that quarter, whence alſo the winds then uſually blew.

BOREE, or BOUREE, a kind of dance, compoſed of three ſteps joined together by two motions; and begun with a crotchet, riſing. The firſt couplet contains twice four meaſures, and the ſecond twice eight. It conſiſts of a balance-ſtep and a coupee: it is ſuppoſed to come from Auvergne: others ſay from Biſcay.

BOROUGH, BURROUGH, BOROW, or BURGH, is frequently uſed for a town, or corporation which is not a city.

Borough, in its original Saxon *borge*, or *borgh*, is by ſome ſuppoſed to have been primarily meant of a company conſiſting of ten families, who were bound and combined together as each others pledge. Bracton *l.* 3. *tr.* 2. *c.* 19.

Afterwards, as Verſtegan has it, *borough* came to ſignify a town that had ſomething of a wall or incloſure about it: ſo that all places which among our anceſtors had the denomination *borough*, were one way or other fenced or fortified.

But, in later times, the ſame appellation was alſo beſtowed on ſeveral of the *villæ inſigniores*, or country towns of more than ordinary note, though not walled.

BOROUGH or *burgh* is now particularly appropriated to ſuch towns, and villages, as ſend burgeſſes or repreſentatives to parliament.

Boroughs are equally ſuch, whether they be incorporate or not; there being great numbers of our Engliſh *boroughs* not incorporated: and, on the contrary, ſeveral corporations that are not *boroughs*; *e. gr.* Kingſton, Deal, Kendal, &c.

Boroughs are diſtinguiſhed into thoſe by *charter*, or *ſtatute*; and thoſe by *preſcription*, or *cuſtom*.

The number of *boroughs* in England is 149; ſome whereof ſend one, ſome two repreſentatives.

Royal BOROUGHS, in Scotland, are corporations made for the advantage of trade, by charters granted by ſeveral of their kings; having the privilege of ſending commiſſioners to repreſent them in parliament, beſides other peculiar privileges.

Theſe form a body of themſelves, and ſend commiſſioners, each, to an annual convention at Edinburgh, to conſult the benefit of trade, and the general intereſt of the *boroughs*.

BOROUGH-*Engliſh*, denotes a cuſtomary deſcent of lands or tenements in certain places, whereby they come to the youngeſt, inſtead of the eldeſt ſon; or if the owner have no iſſue, to the youngeſt, inſtead of the eldeſt brother: for that the youngeſt is ſuppoſed, in law, the leaſt able to ſhift for himſelf.

BOROUGH-*Head*, or *Head*-BOROUGH, is the chief man of the decenna or hundred; choſen by the reſt to ſpeak and act in their behalf.

In many pariſhes, *head-borough* alſo ſignifies a kind of head conſtable, where there are ſeveral choſen as his aſſiſtants, to ſerve warrants, &c. See CONSTABLE.

BOSCAGE, denotes a place ſet with trees, a grove, or thicket.

In a law ſenſe, BOSCAGE, *Boſcagium*, ſignifies *maſt*, or ſuch ſuſtenance as woods and trees yield to cattle.

Among painters, BOSCAGE is ſaid to denote a picture or landſkip, repreſenting much wood and trees.

BOSCO. See ATTACHIAMENTA *de Boſco & Spinis*.

BOSPHORUS*, or BOSPORUS, in geography, a long and narrow ſea, which it is ſuppoſed a bullock may ſwim over.

* The word is Greek, βοσπορος, formed from βȣς, *bos*, and πορος, *paſſage*.

The name *Boſphorus*, is chiefly confined to two ſtreights, in the Mediterranean ſea, *viz.* the *Boſphorus of Thrace*, commonly called the *ſtreights of Conſtantinople*, or *chanel of the Black-ſea*; and the *Cimmerian* or *Scythian Boſphorus*, ſo called, it ſeems, from its reſemblance to the Thracian; now more commonly the *ſtreights of Kapha*, or *Kiderleri*, from two cities ſtanding on it.

The origin of the name is better agreed on, than the reaſon why it was firſt given to the Thracian *Boſphorus*: Nymphius tells us, on the authority of Accarion, that the Phrygians, deſiring to paſs the Thracian ſtreight, built a veſſel, on whoſe prow was the figure of a bullock; and which was hence called βȣς, *bullock*; and ſerved them for a ferry-boat.—Dionyſius, Val. Flaccus, Callimachus, Apollodorus, Marcellinus, &c. ſay, that Io, being transformed into a cow by Juno, paſſed this ſtreight ſwimming, which hence was called *Boſphorus*.—Arrian tells us, that the Phrygians were injoined by the oracle, to follow the route which a bullock ſhould mark out to them; and that, upon ſtirring one up, it jumped into the ſea to avoid their purſuit, and ſwam over this ſtreight. Others ſay, that an ox, tormented by a gad-fly, threw itſelf in, and ſwam over: and others, that antiently the inhabitants of theſe coaſts, when they would paſs over, joined little boats together, and had them drawn over by bullocks, &c.

BOSSAGE, a projecting ſtone in architecture, laid rough in a building, to be afterwards carved into mouldings, capitals, arms, or the like.

BOSSAGES alſo denote ſtones which ſeem to advance beyond the naked of a building, by reaſon of indentures, or chanels left in the joinings; uſed chiefly in the corners of buildings, and thence called *ruſtic quoins*.

The cavities or indentures are ſometimes round, ſometimes ſquare, ſometimes chamfrained, or beveled, ſometimes in the diamond form: ſometimes they are incloſed with a cavetto, ſometimes with a liſtel.

BOTANY*, the ſcience of plants; or that part of phyſiology, medicine, and agriculture, which treats of plants, their ſeveral kinds, forms, virtues, and uſes.

* The word comes from the Greek βοτανη, *herb*; and that from βοτος, of βοω, *I feed*; becauſe moſt animals feed on herbs. See PHYTOLOGY, &c.

The moſt eminent *botaniſts* among the antients, were Hippocrates, Theophraſtus, Dioſcorides, Pliny, Galen, &c.—In the ſixteenth century, the antient *botany*, which had been loſt a great many ages, was induſtriouſly revived; principally by Leonicenus, Braſavolus, Cordus, Fuchſius, Matthiolus, Dalechampius, &c.—In the ſame age a number of other hands were added to the oar; by whoſe induſtry, the art was firſt brought into a ſyſtem or body; as Geſner, Dodonæus, Cæſalpinus, Cluſius, Lobel, Columna, Proſper Alpinus, the two Bauhins, Plukenet, Bocconi, &c.—Others have come ſince, and contributed to bring them ſtill nearer perfection; *viz.* Morriſon, Malpighi, Hermannus, Ray, Magnol, Tournefort, Sloan, Sherrard, Linnæus, &c.

BOTARGO, a ſort of reliſhing meſs made of the roes of the mullet-fiſh; much uſed on the coaſts of the Mediterranean, as an incentive to drink. *Pancirol. Rer. Memor. P. 2. tit. ult. Shaw Trav. p.* 155.

The manner of preparing *botargo*, as practiced at Martegue in Provence, is deſcribed by Mr. Ray.—The mullets, *mugiles*, are taken in *burdigoes*, which are places in the ſhallows, incloſed with hedges of reeds. The male mullets are called *lletants*: the females *botar*, of the roes or ſpawn of which the *botargo* is made, thus:—

They firſt take out the ſpawn intire, and cover it round with ſalt for four or five hours: then they preſs it a little between two boards or ſtones; then they waſh it; and at laſt dry it in the ſun for thirteen or fourteen days, taking it in at night. *Ray. Trav. p.* 396. *ſeq.*

BOTE, BOTA, in our old law-books, ſignifies, *compenſation*, *recompence*, or *amends*, for an injury done.

Hrnce *Man-bote*, ſatisfaction due for a man ſlain.

Hence alſo *boteleſs*, where no judgment or favour will acquit a man; as *v. gr.* for ſacrilege, &c. And hence our common phraſe to *boot*, ſpeaking of ſomething given by way of compenſation.

Fire-BOTE. *Houſe*-BOTE.	See the articles	FIRE-*bote*. HOUSE-*bote*.

BOTTOM-*Nails*. See the article NAIL.

BOTTOMRY, in navigation and commerce, the act of borrowing money on a ſhip's *bottom*; that is, by engaging the veſſel for the repayment of it, ſo as that, if the ſhip miſcarry, the lender loſes the money advanced; but if it arrive ſafe at the end of the voyage, the borrower is to repay the money lent with a certain premium or intereſt agreed on: and this on pain of forfeiting the ſhip. See ASSURANCE.

BOTTONY, or BOTONE, is uſed in ſpeaking of a croſs, which terminates at each end in three knots or buttons; reſembling, in ſome meaſure, three-leaved graſs. See CROSS.

A *croſs bottony*, is the ſame with what Segoin terms *croix treſflée*; and Baron, *globoſa crux*: Gibbon, the better to explain the form, renders it, *Crux ad ſingulas ejus extremitates in tres gemmas, vel nodos, pro trifolii ſpecie terminata.*

He bears argent a croſs *bottony* ſable, by the name of *Winwood*.—*V. Tab. Herald. fig.* 11.

BOUCHE* *of court*, the privilege of having meat and drink at court ſcot-free.

* The word is alſo written *bowge*, *bouge*, and *budge*; it is mere French, where it ſignifies *mouth*.—The French ſtill uſe the phraſe, *Avoir bouche à la cour*, that is, to have table or diet at court.

This privilege is ſometimes only extended to bread, beer, and wine: it was a cuſtom antiently in uſe, as well in the houſes of noblemen, as in the king's court.

BOULDER-*Walls*, a kind of walls built of round flints or pebbles, laid in a ſtrong morter; uſed where the ſea has a beach caſt up, or where there are plenty of flints.

BOULTINE, or BOLTEL, in architecture, the workman's term for a convex moulding, whoſe periphery is juſt ¼ of a circle placed next below the plinth, in the Tuſcan and Doric capitals.—See *Tab. Archit. fig.* 5.

BOUND-*Maſonry*. *Hide*-BOUND. *Hoof*-BOUND.	See the articles	MASONRY. HIDE-*bound*. HOOF-*bound*.

BOUNDARY-*Column*. See the article COLUMN.

BOUNDS *of an eclipſe*. See ECLIPSE.

BOUNDS *of lands*. See ABUTTALS.

BOURGERMESTERS. See the articles BURGER-MASTERS.

BOURREE. See the article BOREE.

BOUTANT*, in architecture.—An *Arc*-BOUTANT is an arch or buttreſs, ſerving to ſuſtain a vault; and which is itſelf ſuſtained by ſome ſtrong wall, or maſſive pile.

* The word is French, and comes from the verb *bouter*, to but, or abut.

A pillar BOUTANT is a large chain or pile of ſtone, made to ſupport a wall, terrace, or vault. *Davil.*

BOUTS-*Rimez*, a popular term in the French poetry; ſignifying certain *rhymes*, diſpoſed in order, and given to a poet together with a ſubject, to be filled up with verſes ending in the ſame words, and the ſame order.

The invention of the *bouts-rimez* is owing to one Du Lot a poet, in the year 1649. In fixing the *bouts*, it is uſual to chooſe ſuch as ſeem the remoteſt, and have the leaſt connexion.

Some good authors fanſy, that theſe rhymes are of all others the eaſieſt, that they aſſiſt the invention, and furniſh the moſt new thoughts of all others. Sarraſin has a poem on the defeat of the *bouts-rimez*.

The academy of Lanterniſts at Tholouſe have contributed towards keeping in countenance the *bouts-rimez*; by propoſing each year a ſet of 14, to be filled up on the glories of the grand monarque: the victorious ſonnet to be rewarded with a fine medal.—An inſtance hereof may be given in the following one, filled up by P. Commire.

Tout eſt grand dans le roi, l'aſpect ſeul de ſon buſte
Rend nos fiers ennemis plus froids que des glaçons,
Et Guillaume n'attend que le tems des moiſſons,
Pour ſe voir ſoccomber ſous un bras ſi robuſte.
Qu'on ne nous vante plus les miracles d' Auguſte;
Louis de bien regner lui feroit des leçons:
Horace en vain l'egale aux dieux dans ſes chanſons;
Moins que mon heros il étoit ſage & juſte, &c.

BOW, *Arcus*, a weapon of offence made of wood' horn, or other elaſtic matter, which, after being ſtrongly bent, by means of a ſtring faſtened to its two ends, in returning to its natural ſtate, throws out an arrow with great force.

It is alſo called the *long-bow*; by way of diſtinction from the *croſs-bow*, or *arbalet*.

The *bow* is the moſt antient, and univerſal of all weapons.

It has been found to obtain among the moſt barbarous and remote people, and who had the leaſt communication with the reſt of mankind. The antients aſcribe its invention to Apollo.

The uſe of the *bow* and arrow was firſt aboliſhed in France under Lewis XI. in 1481. and in their place were introduced the Swiſs arms, that is, the halbard, pike, and broad-ſword. See Arms.

The *long-bow* was formerly in great vogue in England; and many laws were made to regulate, and encourage its uſe. The parliament under Henry VIII. complain, "of the diſuſe of "the *long-bow*, heretofore the ſafeguard and defence of this "kingdom, and the dread and terror of its enemies." 33 *H.* VIII. *c.* 6.

By 33 *H.* VIII. *c.* 9. for every *bow* of yew, the bowyers of London were obliged to make two of elm, witch-haſel, aſh, or other wood; and the country bowyers, three.—But this law was afterwards repealed, ſo far as related to London; and (by 8 *El. c.* 10.) every bowyer was obliged to have always by him fifty good and able *bows* of elm, witch-haſel, or aſh, well and ſubſtantially made, and wrought.—The *beſt ſort* of *bows* of outlandiſh yew not to be ſold for above 6*s.* 8*d.*—The *ſecond* ſort for 3*s.* 4*d.*—The *coarſe* ſort, called *livery-bows*, for 2*s.*—By 12 *Ed.* IV. *c.* 2. that *bows* might not be wanting, nor the price riſe too high, every merchant who imported goods from Venice, or other place, from which bow-ſtaves uſed to be brought, was for every tun of merchandize to import four bow-ſtaves; in pain of 6*s.* 8*d.* for every bow-ſtaff whereof default is ſo made. And (by 1 *R.* III. *c.* 11.) ten bow-ſtaves for every but of malmſey; in pain of 13*s.* 4*d.* for every ton.

Bow, among builders, denotes a beam of wood, or braſs, with three long ſcrews, that govern or direct a lath of wood or ſteel to any arch; chiefly uſed in drawing draughts of ſhips, and projections of the ſphere, or where-ever it is requiſite to draw large arches.

Bow is alſo the name of an inſtrument formerly uſed at ſea for taking the ſun's altitude; conſiſting of a large arch of 90 degrees graduated, three vanes, a ſhank or ſtaff, a ſhade-vane, a ſight-vane, and an horizon-vane.—But it is now out of uſe.

Bow *of a ſhip* is that part of her which is broadeſt before: it begins at the loof, and compaſſing about towards the ſtem, ends at the ſternmoſt part of the fore-caſtle.

If a ſhip have a broad round *bow*, they call it *a bold bow*; if ſhe have a narrow thin *bow*, they ſay ſhe has *a lean bow*.

The piece of ordnance that lies in this place is alſo called the *bow-piece*; and the anchors that hang there, are called her *great and little bower*. See Bower, and Anchor.

Rain-Bow. See the article Rain-Bow.

Bow-*Bearer*, an under-officer of the foreſt, who is to obſerve and take notice of all manner of treſpaſs againſt vert or veniſon; and to attach, or cauſe to be attached, the offenders, in the next court of attachment.

BOWER, an anchor carried at the bow of the ſhip. See Anchor.

There are uſually two *bowers*, called *firſt* and *ſecond*, or the *great* and *little bower*.

BOWL-*Waſſel*. See the article Wassel-Bowl.

BOWLING, or Bow-line, a rope faſtened to the leech, or middle part of the outſide of the ſail in a ſhip, ſerving to make the ſail ſtand ſharper or cloſer by a wind.

The *bowling* is faſtened by two, three, or four ropes, like a crow's foot, to as many parts of the ſail; only the mizen-*bowling* is faſtened to the lower end of the yard.

The *bowling* belongs to all ſails, except the ſprit-ſail, and ſprit-top-ſail; where it is omitted for want of room to hale it forwards by; and thence it is, that thoſe ſails cannot be uſed cloſe by a wind.

When they ſay, *Eaſe the bowling*, or *run up the bowling*; they mean, let it more ſlack.

Bowling-*Knot*, denotes a knot that will not ſlip, by which the bowling-bridle is faſtened to the crengles.

BOW-*Saw*. See the article Saw.

BOWSE, a ſea-term, ſignifying as much as *hale*, or *pull* together.

Thus, haling upon a tack is called *bowſing upon a tack*; and when they would have the men pull all together, they cry, *bowſe away*.

BOW-SPRIT, or Bolt-Sprit, a kind of maſt in a veſſel, ſtanding foremoſt on the prow; and reſting ſlopeways on the head of the main ſtern: its lower end is faſtened to the partners of the fore-maſt, and farther ſupported by the fore-ſtay: it ſerves to carry the ſprit-ſail, ſprit-top-ſail, and jack-ſtaff.—*Vid. Tab. Ship. fig.* 1. *n.* 124. *fig.* 2. *n.* 16. *See alſo the article* Mast.

The *bow-ſprit* ſhould be two thirds of the length of the main-maſt, and its thickneſs equal to the mizen-maſt: when it is twelve fathoms five feet long, its yard muſt be eight fathoms two feet long; and the top-maſt of the *bow-ſprit*, three fathoms one foot.

BOW-*Staves*. See Garbling of *Bow-ſtaves*.

BOYAR, or Boiar, a term uſed for a Ruſſian lord, or grandee.

According to Becman, *boyars* are what in other countries are called the upper nobility: he adds, that the Czar of Muſcovy, in his diplomas, names *boyars* before *waywodes*. See Waywode.

BOYAU, in fortification, a branch of the trenches; or a line or cut, which runs from the trenches to cover ſome ſpot of ground; being drawn parallel to the defence of the place, that it may not be enfiladed, that is, that the ſhot from the town may not ſcour along it.

BOYLE's *Lectures*, a courſe of ſermons or lectures, ſet on foot by the honourable Robert Boyle, Eſq; in 1691.; whoſe deſign, as expreſſed by the inſtitutor, is, to prove the truth of the Chriſtian religion againſt infidels, without deſcending to any controverſies among Chriſtians; and to anſwer new difficulties, ſcruples, *&c.*

For the ſupport of this lecture, he aſſigned the rent of his houſe in Crooked-lane, to ſome learned divine within the bills of mortality, to be elected for a term not exceeding three years, by the late archbiſhop Tenniſon, and others. But the fund proving precarious, the ſalary was ill-paid: to remedy which inconveniences, the ſaid archbiſhop procured a yearly ſtipend of 50 pounds, for ever, to be paid quarterly; charged on a farm in the pariſh of Brill, in the county of Bucks.

BOYLING. See the articles Boiling, and Ebullition.

BRACE is commonly taken for a couple, or pair; and in this ſenſe is applied by huntſmen to ſeveral beaſts of game; as a *brace* of bucks, foxes, hares, *&c.*—They alſo ſay, a *brace* of greyhounds.

Brace, in architecture, denotes a piece of timber framed in with bevil-joints; ſerving to keep the building from ſwerving either way.

When a *brace* is framed into a king-piece, or principal rafter, it is called by ſome a *ſtrut*.

Brace, Bracchio, or *Braſſe*, alſo denotes a foreign long meaſure, anſwering to our fathom. See Fathom.

BRACED, in heraldry, is uſed in ſpeaking of chevronels which are intermingled. He bears azure a chief or, and three chevronels *braced*, in the baſe of the eſcutcheon, by the name of *Fitz-hugh.*—*V. Tab. Herald. fig.* 17.

BRACES, in the ſea-language, are ropes belonging to all the yards of a ſhip, except the mizen, two to each yard: being reeved through blocks faſtened to pendants ſeized to the yard-arms.—*See Tab. Ship. fig.* 1. *n.* 11. 21. 50. 68. 89. 11. 130. 139.

The uſe of *braces* is, to *ſquare the yard*; that is, to ſet it ſquare.—Hence, *to brace the yard*, is to bring it to either ſide. *To traverſe the yard*, is to ſet it any way over-thwart.—*To right the yard*, is to bring it ſo as it may ſtand at right angles with the length of the ſhip.

All *braces* come aftward on; the main *brace* comes to the poop, the main-topſail *brace* to the mizen-top, and thence to the main-ſhrouds; the fore and fore-topſail *braces* come down by the main, and main-topſail ſtays, and ſo of the reſt.

The mizen-bowling ſerves for a *brace* to that yard; and the croſs-jack *braces* are brought forward to the main-ſhrouds, whenever a ſhip ſails cloſe by a wind.

BRACHIÆUS, or Brachialis, a name given to two muſcles of the arm, the one external, the other internal.

Brachiæus *Externus* ariſes about the middle and poſterior part of the humerus. It joins its fibres with the muſculus longus and brevis; and being externally tendinous, they, together, cover all the elbow, and are inſerted into the olecranum.—*See Tab. Anat.* (*Myol.*) *fig.* 7. *n.* 12.

Brachiæus *Internus* lies partly under the biceps; it riſes by a fleſhy beginning from the middle and internal part of the humerus; and is inſerted into the upper and fore-part of the cubitus, by a very ſhort, but ſtrong tendon: it ſerves to bend the arm.—*See Tab. Anat.* (*Myol.*) *fig.* 1. *n.* 25. *fig.* 2. *n.* 14. *fig.* 7. *n.* 11.

BRACHIAL *Nerves.* } See { Nerve.
Coraco-Brachialis. } { Coraco-Brachialis.

BRACHMANS, a branch of the antient gymnoſophiſts, or philoſophers of India, remarkable for the ſeverity of their lives and manners.

The Greeks uſually give them the name *gymnoſophiſts*; though Clemens, Porphyry, *&c.* make the *brachmans* only a branch of the gymnoſophiſts, whom they divide into two ſects, *Brachmanes*, and *Samanæi*.

There are ſome in the Indies who ſtill bear the name, and live in the ſame manner as the antient *brachmans*: the Portugueſe call them *bramanes*, or *bramenes*; we uſually, *bramins*.

Some ſay, they derive their name from the patriarch Abraham, whom, in their language, they call *Brachma*, or *Brama*. Others deduce it from the name of their God, *Brachma*; which ſome again take to be the ſame with Abraham: whence Poſtel calls them *abrachmanes*. F. Thomaſin fetches the word from the Hebrew, *barach*, to *fly or eſcape*; becauſe the *brachmans* retire into the country, and live in deſarts. The ſame author gives us another derivation, *viz.* from the Hebrew, *barach*, *benedicere*, *orare*, to bleſs, pray; in regard this is their principal occupation.

Porphyry obſerves, that the antient *brachmans* ſucceeded into the order, by right of family; whereas the Samanæans were elected into it: the former therefore were all of the ſame family, the latter of various.

The *Brachmans* were perfectly at liberty, paid no taxes, nor were under the command of any perſon: they lived on herbs, pulſe and fruits; abſtaining from all animals, and thinking it an impiety to touch them. The greateſt part of the day and night they ſpent in ſinging hymns in honour of the deity; praying and faſting continually. The greateſt part of them lived in ſolitude, without marrying, or poſſeſſing any eſtates. There was nothing they appeared to wiſh for ſo earneſtly for as death; looking on life as a burdenſome thing, and waiting with impatience for the ſeparation of their ſoul and body. This is the account Porphyry gives of them.

Kircher obſerves, that the *Brachmans* held the opinion of Pythagoras, relating to the ſoul and its tranſmigration; and led a life in all reſpects agreeable to his: or rather, it was from the *Brachmans*, that Pythagoras borrowed his opinions, his manner of living, *&c.*

The modern *Brachmans* are the ſucceſſors of the antient, and the prieſts or divines of the idolatrous Indians.

Rogers diſtinguiſhes ſix ſorts of them; the *Weiſtnowa*, the *Seivia*, the *Smaerta*, the *Schaerwaecka*, the *Paſenda*, and the *Tſchectea*.

Theſe are much converſant in aſtrology and aſtronomy.

They have ſo great a veneration for cows, that it is ſaid, they look on themſelves as bleſſed, if they can but die with the tail of one of them in their hand. They ſometimes make proceſſions of 400 leagues, drawing after them whole cities and towns; feeding the people, when ſtopped at the paſſages of rivers overflowed, in a manner which is ſaid to be miraculous; by giving them every thing they deſire, without making any proviſion.

M. Marſhall obſerves, that whenever they write any thing, they put a figure of one in the firſt place; to ſhew, as they ſay, that they acknowlege but one God. They account the world the body of God, the higheſt heavens his head, the fire his mouth, the air his breath, the water his ſeed, and the earth his legs and feet. They maintain a pre-exiſtent ſtate; and, from that, account for the tempers and manners of men in this: they alſo maintain the metempſychoſis, but in a groſſer ſenſe than Pythagoras; believing that the ſouls of ill men paſs into reptiles, inſects, and vegetables, for their puniſhment and purgation.—They compute the world to be about 3892850 years old; and ſeem to have ſome obſcure traditions of the Moſaic paradiſe, Adam, Eve, and the deluge. They have alſo a notion of God's being incarnate, and living ſome time among men.

Their religion conſiſts in leading a pure life, waſhing away their ſins in the river Ganges, muttering over divers prayers, and doing ſtrange and incredible penances.—They burn their dead with much ceremony; and ſtrewing the aſhes on the place where the deceaſed firſt lay after his death, they judge from ſome figure or impreſſions pretended to be made on it, into what body his ſoul is gone; *viz.* if the impreſſion of the foot of a dog or ox, *&c.* appear, they give out he is tranſmigrated into one of thoſe animals; if there be no impreſſion, he is then gone to the ſtarry region.

They have alſo abundance of cabbaliſtic notions; *v. gr.* ſay they, the numbers 28,35,2,7—6,3,32,31—34,29,8,1,—4,5,30,33, written in the ſame order in the ſquares of a ſquare figure, and your enemy's name written under it, while you wear it, he cannot hurt you, *&c.* See *Phil. Tranſ.* No 268. See Banians.

BRACHYGRAPHY (from βραχυς, *ſhort*, and γραφω, *ſcribo, I write)* denotes the art of ſhort-hand writing. See Tachygraphy.

BRADS, a ſlender kind of nails, uſed in building, having no ſpreading heads, as other nails have. See Nail.

Of theſe, ſome are called *joiners brads*, and are for hard wainſcot; others *batten-brads*, for ſoft wainſcot; and ſome *bill-brads* or *quarter-heads*, uſed when a floor is laid in haſte, or for ſhallow joiſts ſubject to warp.

BRAILS *in a ſhip*, ſmall ropes uſed in furling the ſails acroſs. The *Brails* are reeved through blocks, which are ſeized on either ſide the ties, a little diſtance off upon the yard, ſo that they come down before the ſails of a ſhip, and are faſtened at the ſkirt of the ſail to the crengles.—Their uſe is, when the ſail is furled acroſs, to hale up its bunt, that it may the more readily be taken up, or let fall. See *Tab. Ship. fig.* 5. *n.* 6.

Theſe *Brails* belong only to the two courſes and the mizen-ſail. They ſay, *hale up the Brails*, or which is all one, *brail up the ſails*; the meaning of which is, that the ſale is to be haled up, in order to be furled, or bound cloſe to the yard.

BRAIN, in a general ſenſe, is that large, ſoft, whitiſh maſs, incloſed in the cranium, or ſkull; wherein all the organs of ſenſe terminate, and the ſoul is ſuppoſed principally to reſide. —See *Tab. Anat. (Oſteol.) fig.* 4. *lit. a. a. a. d. d. d. fig.* 5. *lit. a. a. b. b.*

The *Brain* is encompaſſed with two meninges, or membranes, called *dura* and *pia mater*.

Its figure is the ſame with that of the bones that contain it, *viz.* roundiſh, oblong, and flat on the ſides: it is divided into three principal parts; *viz.* the *cerebrum*, or *Brain ſtrictly ſo called*, the *cerebellum*, and the *medulla oblongata*: the two latter of which ſee under their proper heads, Cerebellum, and Medulla.

Brain, in a more proper ſenſe, is that large globulous part which fills the fore and upper part of the ſkull.

It is divided by a duplicature of the dura mater, called from its figure *falx*, into two equal parts, called *right* and *left hemiſpheres*; the tho' figure of the *Brain* be pretty far from a ſphere. It is alſo ſeparated from the cerebellum by another duplicature of the ſame dura mater.

It conſiſts of two kinds of ſubſtance; the one cineritious, or aſh coloured, ſoft and moiſt; which, being the exterior, is alſo called the *cortex*, or *cortical* part of the *Brain*: the thickneſs of this is about half an inch, though by reaſon of the ſinus's and ſutures in the *Brain* it appears more.—The other, or inner ſubſtance, is white, more ſolid, as well as more dry than the cortex, and is called the *marrow* or *medullary*, and ſometimes the *fibrous* part, in contradiſtinction to the other, which is alſo called the *glandulous* part.

The cortex, according to Malpighi, is formed from the minute branches of the carotid and vertebral arteries; which, being woven together in the pia mater, ſend from each point thereof, as from a baſis, little branches, which, being twiſted together into the form of a gland, incloſe the medulla, ordinarily to the thickneſs of half an inch; but in ſome places make deeper ſinus's and furrows within it. Theſe branches make circumvolutions like the inteſtines; each of which may be reſolved into others, like, but leſs than, the firſt.

This part, therefore, moſt authors take to be glandulous; or an aſſemblage of innumerable minute glands, contiguous to each other, deſtined for the ſecretion of animal ſpirits from the blood, brought hither by the carotids, *&c.*—Theſe glandules, Malpighi obſerves, are of themſelves oval, but by their mutual compreſſure they become angular; and run waving within each other: ſeveral of theſe connected form others larger; and theſe again unite into others, from the aggregate whereof are formed tubes, of which the outer cortex is compoſed.—Theſe little glands conſiſt of the branches of the arteries which bring the blood; of the veins ariſing at their extremities, which carry it back again; of ſecretory tubes ſecerning the animal ſpirits, and of excretory ducts for diſcharging them into the medulla: though theſe are too minute to have ever been ſeen. See Cortical.

The inner, or medullary part of the *Brain*, conſiſts of a number of infinitely fine fibres, ariſing from the leaſt and minuteſt branches or filaments of the glands of the cortex; as is diſtinctly ſeen in the cerebellum, though ſcarce viſible in the cerebrum: theſe receive the fluid ſeparated and ſubtilized, from the glands of the cortex; and by means of the nerves, which are no more than productions of this part, diſtribute it all over the body.

Authors, here, however, are divided; the generality, with Malpighi, making the ſubſtance of the cortex glandulous, as above; others, with Ruyſch and Leewenhoeck, deny any thing like glands in it; and allow nothing but little cryptæ, or ſinks, opening laterally to the arteries; and thence receiving a juice already ſecerned from the blood, and tranſmitting it to the medulla.—This doctrine, it ſeems, is the reſult of anatomical injections, and microſcopical obſervations; but the other, appearing the moſt conſiſtent with the œconomy of nature in other things, is generally adhered to.

The cortex covers the whole medullary ſubſtance both of the *Brain* and cerebellum; ſo as where-ever the cortical ſubſtance ends, there the medullary commences; and this in the appendices, ventricles, interſtices, and ſinus's of the medulla, as well as in the external ſurface. Something medullary, therefore, ariſing from every point of the cortex; at its firſt riſe, it muſt needs be exceedingly fine and ſlender: but, being joined with other parts of the ſame kind, it gradually thickens, and at length becoming ſenſible, conſtitutes the medulla cerebri, the corpus calloſum, the medulla oblongata, and its crura, the thalami of the optic nerves, the medulla cerebelli, and its production into the medulla oblongata; which, with theſe additions, forms the corpora pyramidalia and olivaria, and is extended into the ſpinal marrow.—And from the ſame medullary ſubſtance, both in the cranium, and in the caſe formed by the union of the vertebræ, ariſe all the nerves. See Nerve; ſee alſo Corpus Pyramidale, *&c.*

Though the primary fibrillæ, or filaments, when united, ſeem to form one compact body or maſs; yet Boerhaave ſhews, they are really diſtinct and ſeparate from each other: that thus ariſing from each part of the cortex, and tending, as it were, to the centre of the ſphere, they firſt form the medulla; that others, reflected, hence and collected above, form the corpus calloſum and fornix; and below, form the corpus calloſum and legs, of the medulla oblongata; that the like fibrillæ, ariſing from the cerebellum, join with them: the reſult of which juncture is the medulla ſpinalis. And laſtly, that the like fibrillæ ariſing from the cortex, continued within the cavities of the medulla, join with them, and add freſh conſiſtence thereto.

Hence we ſee the reaſon of the bulk, figure, and poſition of the cortex of the *Brain*, as well as the uſe and neceſſity of the cavities called *ventricles* of the *Brain:* of theſe ventricles there are four; one in each hemiſphere, ſeparated by a thin tranſparent ſubſtance, running all along from the fornix under the corpus calloſum, and diſtinguiſhed by the name of the *ſeptum lucidum:* theſe two are called the *lateral ventricles*.

The third is under the fornix, and called *rima:* the fourth between the cerebellum and medulla oblongata.

From the whole, it appears paſt doubt, that the fibres of the *Brain* are exceedingly minute canals; that they receive an humour, infinitely the moſt ſubtile, fluid, and moveable, of any in the whole body; prepared and ſecreted by the artful ſtructure of the cortex, driven into theſe tubules by the force of the heart, and from every part hereof collected into the medulla oblongata.—And this is what ſome call *animal ſpirits*, others the *nervous juice*; the great inſtrument of ſenſation, muſcular motion, *&c.*

In the ſpace between the two hemiſpheres of the *brain*, under the falx, or rather under the longitudinal ſinus of the dura mater, is a white ſubſtance of a texture more compact than the reſt of the medulla of the *Brain*; and for that reaſon called *corpus calloſum*; which runs along the whole tract of the falx, and receives from each ſide the terminations of the medulla, interſperſed between the ſeveral windings of the cortex, and ſuppoſed by ſome to be a kind of baſe or ſupport to it.—The manner wherein this is formed is ſhewn above: we ſhall only add, that, on occaſion hereof, ſome authors, M. Aſtruc for inſtance, inſtead of two ſubſtances, *viz.* the cortex and medulla, divide the *Brain* into three; *viz.* the uppermoſt, or *cineritious*, which conſtitutes the cortex; the middle, which is whiter and denſer than the firſt, and therefore called the *callous*; and the loweſt or inmoſt, which, being intermixed with radii or ſtriæ of the white and cineritious ſubſtance, he calls the *ſtriated* part: Aſtruc adds, that the fluid ſecreted in the cortex is conveyed into innumerable minute hollow medullary fibrillæ, of the ſame nature with the callous ſubſtance, and contiguous thereto. This middle, or callous part, he obſerves, is not diſtinguiſhed by any appearance of fibres, but is uniform, homogeneous, elaſtic, and not unlike the pith of the elder-tree: for which reaſon, he thinks, it may be probably conjectured to conſiſt of innumerable cells, communicating with each other, divided by the interpoſition of membranaceous, flexible, elaſtic, vibrative parietes or columns; which being flowed over by the ſpirits, and continually expoſed to the ſhakings thereof, conſtitute the fibres of the *Brain*.

Now the ſecreted fluid flowing equally from each point of the cineritious ſubſtance into the callous, muſt equally fill and diſtend the cells thereof: and leſt any place ſhould want its ſhare, proviſion is made for a ſtrict communication; not only by the apertures of the cells into each other, but alſo by the ſtructure of the *Brain*; the upper part communicating with the under, by the ſeptum lucidum; the lateral with the lateral, by the lata commiſſura; laſtly, the fore-parts with the hind-parts, by the crura, brachia, and roots of the fornix. Theſe cells, he continues, being filled, the ſpirits will proceed to the contiguous ſtriæ of the medullary ſubſtance; which, ariſing from the cortex, compoſe the ſtriated part of the *Brain:* and theſe ſtriæ rendered narrower and ſlenderer, and paſſing without the ſurface of the *Brain*, conſtitute the firſt principles of the nerves, *&c.*

The other parts of the *Brain* are the fornix, a production of the medulla: which, at its extremity next the cerebellum, ſends out two proceſſes or legs, by whoſe juncture is formed a kind of arch, thence called *fornix*, which ſeparates the third ventricle from the two upper ones.—At the bottom of the fornix are two holes, by which the third ventricle has a communication with the others; that before is called *vulva*, and that behind *anus*.—The third ventricle, or rima, which is in the medulla oblongata, has likewiſe two apertures; the one the orifice of the *infundibulum*, or funnel, which is a canal reaching to the glandula pituitaria: the other is a duct, whereby the third ventricle communicates with the fourth in the medulla oblongata, under the cerebellum. That fourth ventricle is in the form of a quill, whence it is ſometimes called *calamus ſcriptorius*.

In the lateral ventricles are found the *plexus choroides*, which is an aſſemblage of minute veins and arteries; and four eminences, the firſt the *corpora ſtriata*, the others the *thalami nervorum opticorum*.

At the entrance of the canal reaching from the third ventricle to the fourth, is ſituated the *pineal gland*; ſo called from the figure of a pine-apple, which it reſembles: this gland Des Cartes ſuppoſes to be the ſeat of the ſoul. Behind the pineal gland are four eminences; two upper and greater, called *nates*; and two ſmaller and lower, called *teſtes*. See **MEDULLA** *Oblongata*, to which all theſe parts properly belong; ſee alſo each part under its proper head, **NATES**, **TESTES**, *&c.*

The veſſels of the *Brain* are nerves, arteries, and veins.—By turning up the *Brain*, the origins of the nerves proceeding from it are diſtinctly ſeen: theſe are in number ten pair, *viz.* the olfactory, optic, movers of the eyes, pathetic; the fifth pair, and ſixth pair, called alſo the guſtatorii, the auditory nerves, par vagum, and the ninth and tenth pair.

The blood-veſſels of the *Brain* are the two internal carotid, and the vertebral arteries.—The firſt, piercing the dura mater, communicate with the cervicals, and proceeding thence ſend a branch to the plexus choroides; till arriving at the pia mater, and making ſeveral turns and circumvolutions thereon, they terminate, at laſt, in the little glands that conſtitute the cortex.—The vertebral arteries, paſſing the dura mater, go along the under ſide of the medulla oblongata; till giving branches to the ſpinal arteries, they join in one branch called the cervical artery, which communicates with the carotides by two branches, as before. The veins of the *Brain* do not run along by the ſides of the arteries, as in other parts of the body, but riſe from their extremities in the cortex; whence they diſcharge themſelves into the ſinus of the dura mater.

For the great bulk of the *Brain*, this reaſon may be aſſigned; *viz.* that on account of the exceeding ſubtility and fineneſs of the animal ſpirits, and the ſlowneſs in which their ſecretion muſt be effected; together with the great quantity of them required in diſcharging the animal functions; there muſt of neceſſity be an infinite number of glands to ſeparate and prepare them.—From the ſame principle, we ſee why the *Brain* is much bigger in men than in other animals; and in other animals, why, *cæteris paribus*, it is generally biggeſt in thoſe which diſcover the greateſt ſhare of ſagacity, *v. gr.* in monkeys; by reaſon a conſiderable ſtock of animal ſpirits is to be employed in the affairs of cogitation, memory, *&c.* Accordingly, anatomiſts obſerve, that in fools the *Brain* is ſmaller *(cæteris paribus)* than in men of ſenſe: this ſome may account for, by ſuppoſing it the cauſe of the folly; a ſufficient ſtock of ſpirits being wanting to reaſon ſtrongly: and others from the œconomy of nature, which proportioned the ſtock of ſpirits to the expence that would be required.

From the texture, diſpoſition, and tone of the fibres of the *Brain*, philoſophers ordinarily account for the phænomena of ſenſation and imagination.—Dr. Aſtruc goes farther, and from the analogy between the fibres of the *Brain*, and thoſe of muſical inſtruments, ſolves the phænomena of judgment and reaſoning, and the defects and perfections of both.—He lays it down as an axiom, that every ſimple idea is produced by the oſcillation of one determinate fibre; and every compound idea from cotemporary vibrations of ſeveral fibres: that the greater or leſs degree of evidence follows the greater or leſs force where the fibre oſcillates. Hence he proceeds to ſhew, that the affirmation or negation of any propoſition conſiſts in the equal or unequal number of vibrations, which the moving fibres, repreſenting the two parts of the propoſition, make in the ſame time; *i. e.* if the vibrations of the fibre that gives the idea of the ſubject, and thoſe of the fibre which gives the idea of the attribute of a propoſition, be iſochronal, or make an equal number of vibrations in the ſame time, we are determined to the affirmation of the propoſition; if heterochronal, or the vibrations be unequal, the ſoul will be determined to a negation, *&c.* Hence reſult conſonant, diſſonant, and harmonical fibres, *&c.*—The evidence and certainty of a judgment, whether affirmative or negative, he deduces from the greater or leſs conſonance or diſſonance of the fibres of the ſubject and attribute; and a right or wrong judgment from the natural or depraved tone of the fibres of the *Brain*.

Hence he takes occaſion to obſerve, that the fibres of the *Brain*, from their natural analogy to thoſe of muſical inſtruments, may be perverted ſeveral ways; *viz.* by being rendered too dry, or too moiſt, too ſtiff, or too lax, *&c.* In a phrenſy, he thinks the fibres too dry, and too much diſtended by the heat of the blood, *&c.* In a mania, theſe fibres he thinks too rigid, as well as too dry and diſtended. In a lethargy, they are too much ſoftened by phlegm; in idiocy, or fooliſhneſs, they are ſometimes too ſoft, and ſometimes too hard. Laſtly, he thinks that in melancholy, by the repeated ſucceſſive vibrations which the attentive meditation of a thing induces, two or more fibres, which of themſelves exhibit diſſimilar and unequal ideas, are (the other parts remaining ſound) ſenſibly brought to an iſochroniſm: ſo as the ſoul, judging well in other reſpects, yet in this always makes a falſe judgment.

The *Brain* does not appear abſolutely neceſſary to animal life. We have ſeveral inſtances in authors, of children brought forth alive, and ſurviving their birth for ſome time, without any *Brain:* and there are ſome anatomical inſtances, of animals ſurviving the loſs of their *Brain*. Of the firſt kind, we have a hiſtory from Paris, of a child delivered at maturity, and living four days, not only without a *Brain*, but even a head; inſtead of both which, was a maſs of fleſh like liver found. M. Denys gives another inſtance, of a child born in 167 which, ſetting aſide the head, was well formed, but without any *Brain*, cerebellum, or medulla oblongata: it had not any cavity for a *Brain*, the ſkull, if ſuch it might be called, being ſolid: nor was this any way connected to the vertebræ; ſo that the marrow in the ſpine had no communication with the head: the optic nerves terminated in the ſolid bone. M. Le Duc gives a third inſtance, in 1695. where there was neither cerebrum, cerebellum, medulla oblongata, nor even ſpinal marrow; the cavity that ſhould contain them being extremely ſhallow, and full of a black livid ſubſtance, like congealed blood: he adds, this was the third ſubject of the kind he had met with. Dr. Preſton, indeed, tells us, that M. Du Verney found here a ſpinal marrow, though of much leſs conſiſtence than ordinary; in which, however, he could diſtinguiſh all the four tunics, and the two ſubſtances; *viz.* the cortical and fibrous part, as in the *Brain*. In a word, he takes this to be a *Brain* itſelf, as much as that in the ſkull; nay, more ſo, being more neceſſary to life, and more ſenſible, than either the *Brain*, or the cerebellum; a wound or compreſſion in the firſt being always mortal, not ſo in the latter: as appears from the experiments of M. Du Verney and M. Chirac; the firſt of whom took out the *Brain* and cerebellum of a pigeon; notwithſtanding which it lived, ſought food, had ſenſe, and performed the common functions of life: the latter took out the *Brain* from a dog, yet it lived; upon taking out the cerebellum it died; but by blowing into the lungs, he obſerves, he could keep the animal alive, an hour after the loſs of the cerebellum. Upon ſeparating the medulla oblongata of another dog from the ſpinal marrow, and removing it with the *Brain* and cerebellum, he kept the dog alive by blowing into the lungs.—To which may be added, many inſtances given by Mr. Boyle, not only of animals living a long time after the ſeparation of the head from the body, but even of the copulation and impregnation of ſome inſects under thoſe circumſtances: whence it appears, that the ſpinal marrow is ſufficient, on occaſion, for the buſineſs of ſenſation, motion, ſecretion of animal ſpirits, *&c.*

Traces of the BRAIN. See TRACE.

BRAN, the ſkins or huſks of corn, eſpecially wheat, ground, ſeparated from the farina or flour, by a ſieve or boulter.

Of *wheat-bran* it is that ſtarch-makers make their ſtarch; which is nothing elſe but the fæcula remaining at the bottom of the veſſels, wherein the *Bran* has been ſteeped in water.

BRANCH*, in botany, an arm of a tree, or a part which, ſprouting out from the trunk, helps to form the head, or crown hereof.

* The word, according to Salmaſius, comes from the Latin *branca*; in the lower Latin, they ſaid *barga*: others derive it from *brachium*, an arm; and others, from *branchia*, the gills of fiſhes.

The *Branches* of trees, ſome have obſerved almoſt conſtantly to ſhoot from the trunk at an angle of 45 degrees: the reaſon is, that the whole ſpreading being generally confined within an angle of 90 degrees, as the moſt becoming and uſeful diſpoſition; that ſpace could not be well filled up any other way, than by forming all the interſections which the ſhoots and *Branches* make, with angles of 45 degrees only. A ſtrong argument, that the plaſtic powers of matter are under the guidance of a wiſe being!

Branches are diſtinguiſhed into various kinds:

Wood BRANCH, according to Quintiny, is ſuch an one as, ſhooting out from a cut of the preceding year, is naturally of a conſiderable thickneſs.

Fruit BRANCH is that which ſhoots out, of a moderate length and breadth, from the ſame cut, or pruning.—*Fruit-branches*, he adds, have large eyes, and are very near each other.

BRANCH *Half-Wood* is that which, being too ſlender for a *wood-branch*, and too big for a *fruit-branch*, is cut off, at the length of two or three inches, to make it produce a better ſhoot, whether wood, or fruit.

Spurious Wood-BRANCHES are ſuch as come contrary to the order of nature; or otherwiſe than from cuts of the preceding year; or which, coming on ſuch cuts, are big in the place where they ſhould be ſmall.

To underſtand this order of nature, it muſt be obſerved, 1. That *Branches* ſhould never come, except on thoſe of the laſt cut; ſuch, therefore, as ſhoot from other parts, are ſpurious. 2. The order of the new *Branches* is, if there be more than one, that the extreme *Branch* be thicker and longer than that immediately under it; and this bigger and longer, again, than the third, *&c.* Hence, if any be big where it ſhould be ſmall, it is called *ſpurious*.

There are, however, ſome exceptions: in trees that are vigorous, and yet bear a handſome figure, there cannot well be too many *fruit-branches*, provided they make no confuſion; but for *wood-branches*, there ſhould not ordinarily be above one ſuffered to grow, of the ſeveral which ſhoot from each cut of the preceding year. See PRUNING.

ngrafting of BRANCHES. See the article ENGRAFTING.

RANCHES *of Ogives*, the reins or arches of Gothic vaults; which traverſing from one angle to another, diagonal-wiſe, form a croſs between the other arches which make the ſides of the ſquare, whereof thoſe arches are diagonals.

RANCHES *of a bridle*, in the manage, are two crooked pieces of iron which ſupport the mouth-bit, the chain, and the curb; and which are faſtened on one ſide to the head-ſtall, on the other to the reins; ſerving to keep the horſe's head under command.

What way ſoever the *Branches* of the bit incline, the horſe's mouth goes to the contrary. The duke of Newcaſtle is very particular on the head of *Branches*; explaining their ſeveral kinds, and their effects, which are reducible to thoſe of a lever.—The *Branch* is always to be accommodated to the deſign, either of bringing in, or raiſing a horſe's head, and to the neceſſary degree: accordingly, we have ſtrong and hardy *Branches*, gentle *Branches*, rude *Branches*, &c.

With regard to their form and ſtructure, *Branches* are either ſtrait, in form of a piſtol, for young horſes to form their mouth; or, after the conſtable of France's faſhion, for horſes that already carry the head well: others are in form of a gigot, or leg; others of a bent knee; others in the French faſhion, *&c.*

Theſe are laws in the manage: 1. That the farther the *Branch* is from the horſe's neck, the more effect it will have. 2. That ſhort *Branches*, *cæteris paribus*, are ruder, and their effects more ſudden, than thoſe of longer. 3. That the *Branch* is to be proportioned to the length of the horſe's neck.

BRANCHED *Velvet*. See the article VELVET.

BRANCHIA, βϱαγχια, a name given, by the antient naturaliſts, to the gills of fiſhes; which are parts compoſed of cartilages and membranes, in form of leaves; and ſerving inſtead of lungs to perſpire by.—See *Tab. Anat.* (Splanch.) *fig.* 14.

The *Branchia*, Galen obſerves, are full of little foramina, big enough to admit air and vapours, but too fine to give paſſage to water. Pliny held, that fiſhes reſpired by their gills; but he obſerves, that Ariſtotle was of another opinion: to whom we may add, among the moderns, Dr. Needham. See Supplement, article GILLS.

BRANDY properly denotes a proof-ſpirit, obtained by ſimple diſtillation from real wines, or fermented juices of grapes. The veſſels uſed herein, are uſually of copper; and diſtillers, to cool the liquor more readily, make the neck of the mattras, which is very long, and winding like a ſerpent, paſs through a veſſel of cold water.

To diſtil BRANDY, they fill the cucurbit half full of the liquor from which it is to be drawn; and raiſe it, with a little fire, till about one ſixth part be diſtilled, or till they perceive, that what falls into the receiver is not at all inflammable.

The liquor, thus diſtilled the firſt time, is called *Brandy*; which ſpirit, purified by another, or ſeveral more diſtillations, is what we call *ſpirit of wine rectified*.—The ſecond diſtillation is made in balneo mariæ, and in a glaſs cucurbit; and the liquor put therein is diſtilled to about one half the quantity; which half is further rectified, as long as the operator thinks fit.

To abridge theſe ſeveral diſtillations, which are long and troubleſome, they have invented a chymical inſtrument, whereby the rectification of ſpirit of wine is performed, at one ſingle diſtillation: the deſcription and figure of which inſtrument may be ſeen in Glaſer's *Chymiſtry*.

To try the goodneſs of rectified ſpirit of wine, it muſt be lighted into a blaze: if then it conſumes wholly, without leaving any impurity behind; or, which is ſurer ſtill, if after putting a little gunpowder in the bottom of the ſpirit, the gunpowder take fire when the ſpirit is conſumed; the liquor is good.

Thoſe who deal in *Brandy* (we ſpeak only of that made with wine), chooſe it white, clear, of a good taſte, and ſuch as will bear the teſt, or proof; *i. e.* ſuch as in pouring into a glaſs forms a-top of it a little white lather, which, as it diminiſhes, makes a circle, called by the French *Brandy* merchants the *chapelet*, by the Engliſh the *bead*, or *bubble*; there being no *Brandy* but that well deflegmated, and which retains no ſuperfluous humidity, wherein the bead will be intirely formed.

The chief uſe of *Brandy*, is as a drink, eſpecially in the cold northern countries; among the negroes in Guiney, who ſell one another for a few bottles of *Brandy*; and among the ſavages of Canada, and other parts of North America, who are infinitely fond of it. It is of ſome uſe too in medicine; being ſaid to ſtrengthen the nerves: and in dyeing, when raiſed into rectified ſpirit of wine; being one of the dyers non-colouring drugs.

The greateſt part of the *Brandies* in uſe, and thoſe too the beſt, are prepared in France: of the French *Brandies*, thoſe of Bourdeaux, Rochel, Cognac, Nants, and Poitou, are the moſt eſteemed; as being of a better taſte, finer and ſtronger, and enduring the bubble-proof longer, than any of the reſt: thoſe of Anjou, Touraine, and Orleans, claim the ſecond place. They are chiefly ſent to Paris and Flanders by the river Loire.

Brandy makes a very conſiderable article in the French commerce: the number of foreign veſſels, wherewith all their ports are full in time of peace, and which are loaden, in good meaſure, with *Brandy*, is incredible. Nants alone furniſhes 174000 gallons *per annum*, and Bourdeaux above twice as much; the other places in proportion. The Dutch take off their hands almoſt as much as all the reſt of Europe. Poland and Sweden are the only nations which are not their cuſtomers; theſe preferring the corn *Brandies* of their own countries, made of grains, to the wine *Brandies* of France.

Of *Brandy*, both plain and rectified, are prepared various kinds of ſtrong liquors, with the addition of other ingredients, ſugars, ſpices, flowers, fruits, &c. which are afterwards clarified, by paſſing them through a ſtraining-bag, or filtering them through brown paper.—Such are cinnamon waters, anniſeed waters, fennel waters, celery waters, citron waters, &c. A great part of theſe are brought from Montpelier; where they are ſuppoſed to be better prepared than any-where elſe. See Supplement, article BRANDY.

Cherry BRANDY. See the article CHERRY.

BRASIL. See the article BRAZIL.

BRASS, a factitious metal, compoſed of copper fuſed with lapis calaminaris, which gives it a hardneſs, and yellowneſs. The manner of making *Braſs* is ſaid to have been kept a ſecret in Germany for many ages.—The method of preparation among us is as follows. The lapis calaminaris being calcined, and ground as fine as flour, is mixed with ground charcoal; and incorporated, by means of water, into a maſs: thus prepared, about ſeven pounds of the calamine is put into a melting-pot of about a gallon; and over it, about five pounds of copper; which is let down into a wind-furnace eight foot deep, remaining there about eleven hours; in which time it is converted into *Braſs*.—After melting, it is caſt into plates, or lumps: forty-five pounds of crude calamine produce thirty pounds burnt, or calcined; and ſixty pounds of copper make, with calamine, an hundred pounds of braſs.

They ſometimes uſe *Braſs-ſhruff* inſtead of copper; but that is not always to be procured in quantities ſufficient; being no more than a collection of pieces of old *Braſs*.

Pure *Braſs* is not malleable unleſs hot; when cold, it breaks: after melting twice, it is no longer in a condition to bear the hammer at all. To work it, they put ſeven pounds of lead to an hundred of *Braſs*; which renders it more ſoft, and pliable. The beſt *Braſs* guns are made of malleable metal, not of pure copper and calamine alone; but it is neceſſary to add coarſer metals, to make it run cloſe and ſounder; ſuch as lead, and pot-metal.

The beſt proportion for gun-metal, it is ſaid, is, for eleven or twelve thouſand weight of metal, to uſe ten thouſand pounds of copper, nine hundred pounds of tin, and ſix hundred pounds of *Braſs*; but the proportion is variable, according to the quality and goodneſs of the copper.

Bell-metal is a compoſition of *Braſs* and tin; and pot-metal of *Braſs* and lead: twenty pounds of lead are uſually put into an hundred pounds of pot-metal.

Corinthian BRASS, *æs Corinthium*, has been famous in all antiquity: L. Mummius having ſacked and burnt the city of Corinth, 146 years before our Saviour's time, it is ſaid, this precious metal was formed from the immenſe quantities of gold, ſilver, and copper, wherewith that city abounded, thus melted and run together by the violence of the conflagration.—The ſtatues, veſſels, &c. formed of this metal, were ineſtimable: thoſe who ſpeak of it accurately, diſtinguiſh it into three kinds: in the firſt, gold was the prevailing metal; in the ſecond, ſilver; in the third, gold, ſilver, and copper, were equally blended.

BRASS *wire*. See the article WIRE.

BRAVA *Pareira*. See PAREIRA *brava*.

BRAZIL, or BRASIL, an American wood, commonly ſuppoſed to have been thus denominated, becauſe firſt brought from Brazil: though Huet ſhews, it had been known by that name many years before the diſcovery of that country. V. *Huetiana*, *p.* 268.

It is denominated variouſly, according to the places whence it is brought. Thus, we have *Brazil* from Fernambuc, *Brazil* of Japon, of Lamon, of St. Martha; and, laſtly, *Braziletto*, or Jamaica-wood, brought from the Antilles.

The *Brazil* tree ordinarily grows in dry barren places, and in the middle of rocks: it is very thick and large, uſually crooked, and knotty: its flowers, which are of a beautiful red, exhale a very agreeable ſmell, which ſtrengthens the brain. Though the tree be very thick, it is covered with ſo groſs a bark, that when the ſavages have taken it off the wood, or trunk, which before was the thickneſs of a man, it is ſcarce left equal to that of his leg.

Brazil wood is very heavy; dry, it crackles much in the fire, and ſcarce raiſes any ſmoke, by reaſon of its extreme drineſs. None of the ſeveral kinds have any pith, except that of Japon: that of Fernambuc is eſteemed the beſt. It muſt be choſen in thick pieces, cloſe, ſound, without any bark on it; and ſuch as, upon ſplitting, of pale becomes rediſh; and, when chewed, has a ſaccharine taſte.—It is much uſed in turned works, and takes a good poliſh; but its chief uſe is in dying, where it ſerves for a red colour: it is a ſpurious colour, however, that it gives; and eaſily evaporates, and fades: nor is the wood to be uſed without alum and tartar.

From the *Brazil* of Fernambuc is drawn a kind of carmine, by means of acids: there is alſo a liquid lacca made of it, for miniature.

BRAZING, the ſoldering or joining of two pieces of iron by means of thin plates of braſs, melted between the two pieces to be joined.

If the work be very fine, as when the two leaves of broken ſaws are to be joined, it is to be covered with beaten borax, moiſtened with water, that it may incorporate with the braſs-duſt which is here added; and the piece is expoſed to the fire without touching the coals, till the braſs be obſerved to run.

To *braze* with a ſtill greater degree of nicety, they uſe a ſolder made of braſs, with a tenth part of tin; or another, one third braſs, and two thirds ſilver; or borax and roſin: obſerving, in all theſe manners of *Brazing*, that the pieces be joined cloſe throughout; the ſolder only holding in thoſe places that touch.

The method of *Brazing*, among farriers, &c. is, by beating the two pieces, when hot, over one another: this is more properly called *welding*.

BREACH, in fortification, is a hole, gap, or aperture, made in any part of the works of a town, either by playing cannon, or ſpringing mines; in order to ſtorm the place, or take it by aſſault.

They ſay, make good the *Breach*; fortify the *Breach*; make a lodgment on the *Breach*: to clear the *Brerch*, is to remove the ruins, that it may be the better defended.

A practicable *Breach* is that where the men may mount, and make a lodgment.—A *Breach* ought to be 15 or 20 fathoms wide.—The aſſailants make their way to it, by covering themſelves with gabions, earth-bags, &c.

To batter in BREACH, battre en brêche. See BATTERING.

Mount the BREACH. See the article MOUNT.

BREAD. See the articles AMMUNITION, and MUNITION.

Corſned BREAD.	See the articles	CORSNED.
French BREAD.		FRENCH.
Ginger BREAD.		GINGER.

Leavened BREAD.	See BAKING.
Unleavened BREAD.	
Manchet-BREAD.	
Cheat BREAD.	

BREADTH. See the articles LATITUDE, DIMENSION, AREA, &c.

Hair's BREADTH.	See the articles	HAIR.
Finger's BREADTH.		FINGER.
Hand's BREADTH.		HAND.

BREAKING *bulk*, the beginning to take a ſhip's lading or cargo out of the hold.

BREAKING *ground*, in the military art, the beginning of works for carrying on the ſiege of a place; more eſpecially the beginning to dig trenches, or approaches. See SIEGE, TRENCH and FORTIFICATION.

BREAMING. See the article BROOMING.

BREAST, *mamma*, in anatomy, a prominent fleſhy part of th human body, on the outſide of the thorax, ſerving to ſepara the milk.

The *Breaſts* are much more perfect, more conſpicuous, an of more uſe, in women, than in men: their magnitude is various; always biggeſt in time of geſtation and lactation.

Their figure repreſents a large ſection of a globe, having the middle a prominence terminating in a blunt point, call the *papilla*, or nipple; in the extremity of which are perf rations, to which reach lacteal tubes.—About the nipple is pale browniſh circle, called the *areola*.

The internal ſubſtance of the *Breaſt* is compoſed of a gr number of glands, of various ſizes, and an oval figure, termixed with globules and veſſels of fat. Their excreto ducts, as they approach the nipple, join and unite togeth till at laſt they form ſeven, eight, or more, ſmall pipes, cal *tubuli lactiferi*, which have ſeveral croſs canals, by which th communicate with one another, to obviate the inconvenienc that might accrue from the caſual obſtruction of one or m of them.—Theſe tubes are not every-where of equal capac but in ſome places more, in others leſs, dilated; ſo as to fo cells, which ſeem contrived to hinder the ſpontaneous flux, and to create a neceſſity of ſucking, to fetch out contents.

Of the concurrence of theſe tubuli, or pipes, is the ſubſta of the papillæ, in great meaſure, formed; among which is terſperſed a glandulous ſubſtance, ſerving to keep them f preſſing too cloſe on each other: and with it are interm abundance of fibres derived from the external tegumen the papillæ; by means whereof, the lacteal tubes are c ſtringed, and the motion of the milk is modified.

Beſides theſe veſſels, are abundance of fatty globules, c *ductus adipoſi*, which ſome would have only to fill u interſtices of the glands: but Dr. Drake, after Malp thinks they contribute to the compoſition of the milk; w ſeems nothing elſe but water and oil artfully united. See M

In virgins, the tubes which compoſe the glands of the Br like ſphincter-muſcles, contract ſo cloſely, that no p the blood can enter them: but when the womb gro with a fœtus, and compreſſes the deſcending trunk o great artery, the blood flows in greater quantity, and with a greater force, through the arteries of the *breaſts*, and forces a paſſage into their glands; which, being at firſt narrow, admits only of a thin water; but growing wider by degrees, as the womb grows bigger, the glands receive a thicker ſerum; and after birth they run with a thick milk; becauſe that blood which before flowed to the fœtus, and for three or four days afterwards by the uterus, beginning then to ſtop, does more dilate the mamillary glands.

In men, the *breaſts* are very ſmall, and are chiefly for ornament; though phyſical hiſtories give inſtances of thoſe who have had milk in them.

BREATHING. See the article RESPIRATION.

BREEDING *of fiſh*. See the article FISH.

BREEZE, a ſhifting wind, blowing from the ſea and land alternately, during certain hours of the day or night; only ſenſible near the coaſts.

The *ſea-breeze*, Dampier obſerves, commonly riſes in the morning about nine, proceeding ſlowly in a fine ſmall black curl on the water towards the ſhore: it increaſes gradually till twelve, and dies about five.—Upon its ceaſing, the *land-breeze* commences, which increaſes till twelve; and is ſucceeded in the morning by the *ſea-breeze* again.

BREEZE, in brick-making, are ſmall aſhes and cinders ſometimes made uſe of, inſtead of coals, for the burning of bricks, But, as this does not ſo well anſwer the end, the uſe of it is prohibited by 12 *G.* I. *c.* 35.

BREGMA, in anatomy, the ſame with *ſinciput*. See SINCIPUT.

The *bregma* conſiſts chiefly of two bones, hence alſo called *bregma*, or *bregmatis oſſa*, which are two bones of the cranium, otherwiſe called *oſſa parietalia*.

BREST, or BREAST, in architecture, a term uſed by ſome, for that member of a column otherwiſe called the *Tore*.

REST-SUMMERS, or BRESSUMERS, in timber-buildings, are pieces in the outward parts, and in the middle floors, into which the girders are framed.

In the inner parts of a building the pieces into which the girders are framed are called *ſummers*. See SUMMER.

REVE, BREVIS, *ſhort*, in grammar.—Syllables are diſtinguiſhed into *longs* and *breves*, according as they are pronounced quicker or more ſlow: the time of a *breve* is half that of a *long*; or, as the grammarians expreſs it, a *breve* is one time, and a *long* two. See ACCENT.

REVE, in muſic, is a note or character of time, formed ſquare, without any tail; and equivalent to two meaſures, or ſemibreves. See SEMIBREVE, and CHARACTERS *of muſic*.

REVE *vas*. See the article VAS *breve*.

REVIARY, among eccleſiaſtical writers, denotes the office, or ſervice both for day and night, as performed in the Romiſh churches.

REVIARY is more frequently uſed for a church-book, containing the office of the *breviary*, that is, the prayers, and other parts of the ſervice, with the ſeveral variations to be made therein, according to the ſeveral days, canonical hours, feaſts, and the like.

D. Mege derives the name *breviary* from hence, that the antient monks in their journeys, &c. had little books, wherein were the pſalms and leſſons, read in the choir, collected out of large volumes: and F. Mabillon tells us, he has ſeen two ſuch books in the archives of Ciſteaux; they were not above three fingers broad: their letter was exceedingly ſmall, and conſiſted moſtly in abbreviations, expreſſing a whole period in a few ſyllables: whence they had a good title to the appellation of *breviaries*, q. d. *abridgments*.

The Roman *breviary* is general, and may be uſed in every place: but on the model of this have been built various others, peculiarly appropriated to each dioceſe, and each order of religious.

The *breviary* conſiſts of the ſervices of matins, lauds, prime, third, ſixth, nones, veſpers, and the complines, or poſt-communio; that is, of ſeven different hours: on account of that ſaying of David, *Septies in die laudem dixi tibi*. See HOURS.

The obligation of reciting the *breviary* every day, which was at firſt univerſal, by degrees was reduced to the beneficiary clergy alone, who are bound to do it on pain of mortal ſin, and of refunding their revenues, in proportion as they are delinquent herein.—In the fourteenth century, there was a particular reſervation in favour of biſhops, for paſſing, on occaſion, three days without rehearſing the *breviary*.

The inſtitution of the *breviary* not being very antient, the ves of the ſaints were inſerted in it, agreeable to the opinions of the times; *i. e.* full of ridiculous ill-atteſted facts; which ave a handle to ſeveral purgations, or reformations thereof y ſeveral councils, particularly thoſe of Trent and Cologne; y ſeveral popes, as Pius V. Clement VIII. and Urban VIII. alſo by ſeveral cardinals and biſhops, each of whom lopd off ſome of the extravagancies, and brought the work arer to the ſimplicity of the primitive offices; as acknowging, that in the antient church there was nothing read, t ſcripture itſelf.—Cardinal Quignon carried the reforman the fartheſt; leaving out the little office of the virgin, the verſes, reſponſes, and a great part of the lives of the ſaints.

The *breviaries* now in uſe, are almoſt innumerable: the difference between them conſiſts principally in the number and order of the pſalms, hymns, pater-noſters, ave-mary's, credo's, magnificats, cantemus's, benedictus's, canticamus's, nunc dimittis's, miſerere's, hallelujah's, gloria patri's, &c.

The moſt eminent, after the Roman *breviary*, are, that of the Benedictins, that of the Bernardins, of the Chartreux, of the Præmonſtratenſes, of the Dominicans, the Carmelites, the Franciſcans, and Jeſuits; alſo that of Cluny, of the church of Lyons, the church of Milan, and the Mozarabic *breviary*, uſed in Spain.—But in reality there is ſcarce a church in the communion of Rome, in France, Flanders, Spain, Germany, &c. but what has ſomething particular in the form and manner of its *breviary*: though the differences are generally inconſiderable. See GALLICAN, AMBROSIAN, &c.

The *breviary* of the Greeks, which they call ὡρολογιον, *horologium*, q. d. dial, is the ſame, to a trifle, in almoſt all the churches and monaſteries that follow the Greek rite. The Greeks divide the pſalter into twenty parts, καϑισματα; which are a kind of reſts, pauſes, or ſtations: and each pauſe is again ſubdivided into three parts.—In the general, the Greek *breviary* conſiſts of two parts; the one containing the office for the evening, called μεσονυκτιον; the other that for the morning, conſiſting of matins, lauds, prime, tierce, ſixth, none, veſpers, and complines.—The *breviary* of the Maronites contains ſome more conſiderable variations.

Among the people who ſpeak the Sclavonic language, or any of its dialects, the *breviary* is rehearſed in the vulgar tongue; as among the Maronites in Syriac, among the Armenians in Armenian, &c.—Thoſe who rehearſe the *breviary* in the Sclavonic, are divided as to the rite: ſome following the Roman or Latin rite, as the inhabitants of Dalmatia, and the neighbouring coaſts: whereas thoſe who live farther within the continent, as in Hungary, Boſnia, Sclavonia, &c. and in Poland, Lithania, and Muſcovy, follow the Greek rite.—The *breviaries* of the Cophts and Abyſſinians are much alike.

BREVIATOR, an officer under the eaſtern empire; whoſe buſineſs was to write and tranſcribe briefs.—At Rome, thoſe are ſtill called *breviators*, or *abbreviators*, who dictate, and draw up the pope's briefs.

BREVIS *cubiti*, in anatomy, one of the extenſor muſcles of the cubitus, ariſing from the external ſpine of the humerus.

BREVIS *radii*, one of the ſupinator muſcles of the radius, ariſing partly from the external condylus of the humerus, and partly from the upper and exterior part of the ulna; and inſerted into the ſuperior part of the radius, which it embraces wholly: and ſerves to turn the palm of the hand upwards.

BREVIS is alſo uſed by ſome for the third of the extenſors of the carpus, which, ariſing from the lower part of the humerus, and running along the radius, terminates in the bone of the carpus, which ſuſtains the middle finger.

ſome anatomiſts join this with the ſecond extenſor, and call them *bicornis*, or *radialis externus*: others chooſe to diſtinguiſh them, in regard they have different origins, and inſertions; and that their bellies are ſeparable. See EXTENSOR.

BREVIS *extenſor pollicis pedis*.	See	EXTENSOR.
BREVIS *flexor pollicis pedis*.		FLEXOR.
BREVIS *peronæus*.		PERONÆUS.
BREVIS *pronator radii*.		PERONATOR.
BREVIUM *cuſtos*.		CUSTOS.
BREVIUM *falſo retorno*.		FALSO.

BREWED *wine*. See the article WINE.

BREWING, the operation of preparing ale, or beer, from malt.

The uſual proceſs of *brewing* is as follows.—A quantity of water being boiled, is left to cool, till the height of the ſteam be over; when ſo much is poured to a quantity of malt in the maſhing-tub, as makes it of a conſiſtence, ſtiff enough to be juſt well rowed up: after ſtanding thus a quarter of an hour, a ſecond quantity of the water is added, and rowed up as before. Laſtly, the full quantity of water is added; and that in proportion as the liquor is intended to be ſtrong or weak.—This part of the operation is called *maſhing*. The whole now ſtands two or three hours, more or leſs, according to the ſtrength of the wort, or the difference of weather, and is then drawn off into a receiver; and the maſhing is repeated for a ſecond wort, in the ſame manner as for the firſt; only the water to be cooler than before, and not to ſtand above half the time.

The two worts are then to be mixed, the intended quantity of hops added, and the liquor cloſe covered up, gently boiled in a copper the ſpace of an hour or two; then let into the receiver, and the hops ſtrained from it into the coolers.—When cool, the barm or yeſt is applied; and it is left to work, or ferment, till it be fit to tun up.

For ſmall beer, there is a third maſhing, with the water near cold, and not left to ſtand above three quarters of an hour, to be hopped and boiled at diſcretion.—For double beer or ale, the two liquors reſulting from the two firſt maſhings, muſt be uſed as liquor for a third maſhing of freſh malt.—

For fine ale, the liquor thus *brewed*, is further prepared with moloſſes.

Inſtead of yeſt, ſome uſe Caſtile ſoap, others flour and eggs, others an eſſential oil of barley, others a quinteſſence of malt, others of wine, and others the ſal panariſtus.

For the properties of the liquors thus *brewed*, ſee MALT *liquor*.

BRIBERY, in common law, is when a perſon in judicial places takes a gift or reward of any perſon who has buſineſs before him, for doing his office, or by colour of his office, except the king only, unleſs it be meat and drink.

BRICK, a kind of factitious ſtone, of a reddiſh colour *, made of a fatty earth, formed into long ſquares, four inches in breadth, and eight or nine in length, by means of a wooden mould; and then baked and burnt in a kiln, to ſerve for the uſes of building.

* There are alſo bricks of a *whitiſh* colour. Wulpit, in Suffolk, is famed for this ſort.

Bricks appear to be of a very antient ſtanding; the tower of Babel, and the walls of Babylon being built thereof; as appears both from ſacred hiſtory, and from the remains thereof, ſtill ſaid to be in being. Under the firſt kings of Rome, they built with maſſive ſquared ſtones, which they learnt from the Tuſcans: towards the latter time of the republic, they began to uſe *brick*; borrowing the practice from the Greeks: and the greateſt, as well as the moſt durable buildings of the ſucceeding emperors, as the Pantheon, &c. were built therewith.—In the time of Gallienus the buildings were compoſed of a row of *brick*, and a row of ſoft gritty ſtone, alternately. After him, they laid aſide the uſe of *bricks*, and reſumed that of flints.

In the eaſt, they baked their *bricks* in the ſun: the Romans uſed them crude; only leaving them to dry in the air a long ſpace of time; *viz.* four or five years.

The *bricks* uſed by the Greeks were principally of three kinds: the firſt called *διδωρον*, *i. e.* of two palms; the ſecond *τετραδωρον*, of four palms; and the third *πενταδωρον*, of five palms.—They had other *bricks*, juſt half each of theſe, which they joined together to render their work more ſolid, as well as more agreeable to the eye, by the diverſity of figures and ſizes of the *bricks*.

Bricks, among us, acquire various names, according to their forms, dimenſions, uſes, method of making, place, &c. The principal are,—*Compaſs bricks*, of a circular form, uſed in ſteening of walls.—*Concave*, or *hollow bricks*, on one ſide flat, like a common *brick*, on the other hollowed: uſed for conveying water under-ground.—*Cogging bricks*, uſed for making the indented work, under the coping of walls built with great *bricks*.—*Coping bricks*, formed on purpoſe for coping of walls.—*Dutch* or *Flemiſh bricks*, uſed to pave yards and ſtables, and for ſoap-boilers vats, and ciſterns.—*Clinkers*, ſuch *bricks* as are glazed by the heat of the fire in making.—*Feather-edged bricks* are made like the common ſtatute *bricks*, only thinner on one edge than on the other, and uſed to pen up the brick pannels in timber buildings.—*Samel*, or *ſandal bricks*, are ſuch as lie outmoſt in a kiln or clamp, and conſequently are ſoft and uſeleſs; as not being thoroughly burnt.—*Great bricks*, are thoſe which are twelve inches long, ſix broad, and three thick: the weight of one being about fifteen pounds: ſo that 100 weigh 1500, and 1000 of them 15000 pounds: their uſe is to build fence walls; together with,—*Pilaſter*, or *buttreſs bricks*, which are of the ſame dimenſions with the great *bricks*, only they have a notch at one end, half the breadth of the *brick*: their uſe is to bind the work at the pilaſters of fence-walls, which are built of great *bricks*.—*Paving bricks*, or *tyles*, are of ſeveral ſizes in ſeveral counties and places. See TYLE, and PAVEMENT.—*Place-bricks*, ſuch as are made in a place prepared on purpoſe for them, near the building they are to be uſed in.—*Statute*, or *ſmall common bricks*, when burnt, ought to be nine inches long, four and a quarter broad, and two and a half thick *. 100 of theſe uſually weigh about 550 pounds, and 1000, 5500 pounds; about 407 in number, make a ton-weight. Theſe are commonly uſed in paving cellars, hearths, ſinks, &c. Thirty or thirty-two, if true meaſure, will pave a yard ſquare, and 330 will pave a ſquare of 100 feet laid flat; but if laid edgeways, there muſt be near double the number.—*Stock-bricks* are to be of the ſame dimenſions; only ⅛ of an inch thicker.

* By 3 *G.* II. *c.* 22. within 15 miles of London, they are to be 8¾ inches long, 4⅛ broad, and 2½ thick.

Barbaro, in his commentary on Vitruvius, recommends another form of *bricks*; viz. *triangular* ones, every ſide a foot long, and only an inch and half thick.—Theſe, he obſerves, would have many conveniences above others; as being more commodious in the management, of leſs expence, and of fairer ſhew; adding much beauty and ſtrength to the mural angles, where they fall gracefully into an indented work.—Sir H. Wotton wonders they have never been taken into uſe, being recommended by ſo great an authority.

The earth whereof *bricks* are made, muſt not be ſandy, which will render them both heavy and brittle; nor muſt it be too fat, which will make them crack in drying. They ſhould be made either in the ſpring, or autumnal ſeaſon; and when made, they muſt be ſheltered from the ſun, if it be too hot, and yet be expoſed to the air to dry.—If they be made in froſty weather, they are to be covered with ſand; if in hot weather, with wet ſtraw.—When they are well dried, they are to be burnt.

The burning of *bricks* is performed either in a kiln, or a clamp.—In the former, the *bricks* being ſet in, and the kiln covered with pieces of *bricks*, they put in wood, to dry them with a gentle fire; and this they continue till they are pretty dry, which is known by the ſmoke's turning from a whitiſh to a thin black ſmoke. They then ceaſe to put in wood, and proceed to burn with bruſh, furze, ſtraw, heath, brake, or fern faggots; having firſt dammed up the mouth of the kiln with a ſhinlog, *i. e.* pieces of *bricks* piled upon one another, and cloſed with wet *brick* earth, inſtead of morter: then they continue to put in more faggots, till the kiln and its arches look white, and the fire appear a-top of the kiln: upon which they ſlacken the fire for an hour, and let all cool by degrees. This they continue to do, alternately heating and ſlacking, till the ware be thoroughly burnt; which is uſually effected in 48 hours.

About London, they chiefly burn in clamps, built of the *bricks* themſelves, after the manner of arches in kilns; with a vacancy between each brick's breadth, for the fire to play through: but with this difference, that inſtead of arching, they truſs or ſpan it over, by making the bricks project one over another, on both ſides of the place, for the woods and coals to lie in, till they meet and are bounded by the *bricks* at the top, which cloſe all up. The place for the fuel is carried up ſtrait on both ſides, till about three feet high; then they fill it almoſt with wood, and over that lay a covering of ſea-coal; and then over-ſpan the arch: but they ſtrew ſea-coal alſo over the clamp, betwixt all the rows of *bricks*; laſtly, they kindle the wood, which gives fire to the coal: and when all is burnt out, they conclude the *bricks* ſufficiently burnt.

By 12 *G.* I. *c.* 35. earth or clay, deſigned for making *bricks* for ſale, ſhall be dug, and turned at leaſt once between the firſt of November, and the firſt of February, and not be made into *bricks* till after the firſt of March: and no *bricks* be made for ſale, but between the firſt of March and twenty-ninth of September.—And no ſpaniſh to be mixed with the earth, or breeze in the burning of *bricks*.—And all *bricks* are to be burnt either in kilns or diſtinct clamps, each ſort by itſelf.

By 3 *G.* II. *c.* 22. there may be mixed with the *brick* earth any quantity of ſea-coal aſhes, ſifted or ſcreened through a ſieve, or ſcreen half an inch wide, and not exceeding twenty loads, to the making one hundred thouſand *bricks*: each load not exceeding thirty-ſix buſhel.—And breeze may be mixed with coal in the burning of *bricks* in clamps for ſale, &c. Stock *bricks* and place *bricks*, may be burnt in one and the ſame clamp, ſo as the ſtock *bricks* be ſet in one diſtinct parcel, and not mixed or ſurrounded with place *bricks*.

For the more effectual ſecuring the obſervation of theſe laws, it was enacted, by 12 *G.* I. *c.* 35. for the better diſcovering of offenders, that the maſter and wardens of the company of tylers and brick layers ſhould have power to ſearch brick-kilns, &c. but they having permitted, and even encouraged divers perſons to make *bricks*, contrary to the directions in the ſaid act; by 2 *G.* II. *c.* 15. they are diveſted of that power; and any two, three, or more perſons, appointed by the juſtices of peace, are impowered, within fifteen miles of London, to go, in the day-time, into any grounds, ſheds, or places, where any clay or earth ſhall be digged, or digging, for *bricks* or pantiles; or any *bricks* or pantiles ſhall be makeing, or made for ſale; and there to view, ſearch, and inſpect the ſame, &c.—Offenders to forfeit twenty ſhillings for every thouſand of unſtatutable *bricks*, and 10 *s.* for every thouſand of ſuch tyles: one moiety to the uſe of the proſecutor, the other to the poor of the pariſh, where the offence ſhall be committed.

Goldman obſerves, that *bricks* will have double the ſtrength, if, after one burning, they be ſteeped in water, and burnt afreſh. If the *brick* earth be too fat, it muſt be tempered with ſand; and that trodden out again, firſt by cattle, then by men. *Bricks* made of common earth, melt, nay vitrify, by too much heat: for which reaſon, the kilns are made of ſtones, that will themſelves calcine, that the vehemence of the fire may be broken by them: beſides which, they uſually place other *bricks*, made of an argillous earth, which will melt, next the fire.

BRICK *Walls*. } See the articles { WALL.
Flemiſh BRICKS. } { FLEMISH.

Oil of BRICKS is oil of olive, imbibed by the ſubſtance of *bricks*, and afterwards diſtilled from it.—The pieces of *bricks*, being heated red-hot in live-coals, are extinguiſhed in a trough half filled with oil of olives: being then ſeparated, and the *brick* thus ſaturated with oil, and groſsly pounded, it is put into a retort, and placed in a reverberatory furnace; and thus is drawn an oil, which the apothecaries call *oleum de lateribus*, and ſome chymiſts *oil of the philoſophers*: it is uſed for reſolving tumours in the ſpleen, alſo againſt palſies, epilepſies, &c. See OIL.

BRICKLAYER. See TYLER.

BRIDGE, an edifice either of ſtone or timber, conſiſting of one or more arches erected over a river, canal, or the like, for the conveniency of croſſing, or paſſing over from one ſide to the other.

A *bridge* may be conſidered as a road over water. See ROAD.

Janus is made, by ſome learned men, the firſt inventor of *bridges*, as well as of ſhips, and crowns: their reaſon is, that in ſeveral antient Greek, Sicilian, and Italian coins, there are repreſented on one ſide a Janus, with two faces, and on the other, a *bridge*, or a crown, or a ſhip.

The parts of a *bridge* are the *piers*, or legs, *pilæ*; the *arches*; the *pavement*, or way over for cattle and carriages; the *foot-banks* on each ſide for foot-paſſengers; the *rail* or parapet, which incloſes the whole; and the *butments*, or ends of the *bridge* on the banks.

Bridges are a ſort of edifices very difficult to execute, on account of the inconvenience of laying foundations, and walling under water. The earlieſt rules and inſtructions relating to the building of *bridges* are given by Leon Baptiſta Alberti, *Archit. l.* 8. Others were afterwards laid down by Palladio, *l.* 3. Serlio, *l.* 3. *c.* 4. and Scammozzi, *l.* 5. all of which are collected by M. Blondel, *Cours d'Archit. P.* 5. *l.* 1. *p.* 629. *ſeq.* The beſt of them are alſo given by Goldman, *Baukunſt*, *l.* 4. *c.* 4. *p.* 134. and Hawkſmoor, *Hiſt. Lond. Bridg. p.* 26. *ſeq.* M. Gautier has a piece expreſs on *bridges*, antient and modern. *Trait. des Ponts*, Paris 1716. 12°.

The conditions required in *bridges* are, that they be well-deſigned, commodious, durable, and ſuitably decorated.—The piers of ſtone *bridges* are to be equal in number, that there may be one arch in the middle, where commonly the current is ſtrongeſt. Their thickneſs is not to be leſs than a ſixth part of the ſpan of the arch, nor more than a fourth. They are commonly guarded in front with an angular ſtarling, or ſpur, to break the force of the current; though this defence is ſometimes alſo turned ſemicircularly: in the antient *bridges*, it is always a right angle; which has the advantage of being ſtronger and more durable than acute ones. The ſtrongeſt arches are thoſe whoſe ſweep is a whole ſemicircle.—For the rails, the height, ornaments, and the like, they are left to diſcretion.—It is even complained, that no demonſtrative reaſons are given of the ſeveral proportions of the moſt eſſential parts of *bridges*: much of which is ſtill left to the diſcretion of the builder, to be regulated according to the circumſtances, deſign, place, magnitude, &c. of the deſigned edifice. M. Gautier wiſhes, that mathematical perſons would take the ſtructure and proportions of *bridges* into their conſideration, in order to bring things to more certainty and preciſion, founded on unvariable geometrical truth. Something of which kind has been attempted by M. de la Hire, in *Mem. Acad. R. Scienc. an.* 1712. *p.* 70. and the Marquis de l'Hopital, in *Act. Erud. Lipſ.* 1695. *p.* 56.

The breadth of a *bridge*, according to Baptiſta Alberti, ought to be the ſame as that of the highway which abuts on it: the breadth of the piers is to be one third of the aperture of the arches; the ſtarlings to be one half the breadth of the piers, and to riſe above the greateſt height, to which the water ever mounts.

In the *bridges* of Avignon, St. Eſprit, and Lyons, there is this remarkable, that they are not ſtrait, eſpecially the two former, but bent, having an angle, whoſe convexity is turned towards the ſtream, to break the force thereof: the pont St. Eſprit, Dr. Robinſon obſerves, is bowed in many places, making unequal angles, eſpecially in thoſe parts where the ſtream is ſtrongeſt. The great pier in the middle of London-*bridge*, as we are told, was intended to ſerve for a ſteadying to the whole machine, inſtead of making an angle, as in the above-mentioned *bridges*.

The famous *bridge* of Venice, called the *Rialto*, conſiſts but of a ſingle arch, and that a flat or low one; paſſing for a maſter-piece of art; being built in 1591. on the deſign of Michael Angelo: the ſpan of the arch is ninety-eight feet one half, and its height above the water only twenty-three feet. —Poulet alſo mentions a *bridge*, of a ſingle arch, in the city Munſter in Bothnia, much bolder than that of the Rialto at Venice. But thoſe are nothing to a *bridge* in China, built rom one mountain to another, conſiſting of one ſingle arch, 00 cubits long, and 500 cubits high, whence it is called the *ying bridge*: a figure of it is given in the *Philoſophical Tranſctions*. Kircher alſo ſpeaks of a *bridge* in the ſame country 60 perches long, without any arch; ſupported only by 300 illars.

To ſecure the piers of *bridges*, they ſometimes diminiſh the urrent of the river, either by lengthening its courſe, by aking it more winding (a method ſometimes uſed by the ntients, in rendering their rivers navigable), or by ſtopping e bottom of a rapid river, with rows of banks, ſtakes, or les, which break the current.

he piers of a *bridge* always diminiſh the bed of a river: ſupſe this diminution one fifth, it will follow, that in caſe of undations, the bed muſt be ſunk or hollowed one fifth more than before, ſince the waters gain in depth what they have loſt in breadth. Add, that as the quantity of the water remains ſtill the ſame, it will paſs with greater velocity by one fifth in the place where ſuch contraction is: all which conduces to waſh away the foundation. The ſtream, thus augmented in velocity, will carry away flints and ſtones, which before it could not ſtir.

The foundation, of *bridges* are to be laid at the ſeaſon of the year when the waters are loweſt, as in autumn; and if the ground be rocky, hard gravel, or ſtony, the firſt ſtones of the foundation may be laid on the ſurface, without digging deeper; but if the ſoil be ſoft ſand, or gravel, it will be neceſſary to turn off the water, and dig till you come at a firm bottom; at leaſt, if this cannot be done, part of the water muſt be carried off, and the reſt kept dry, and piled: that ſide of the river where you are to work, is to be incloſed with coffer-dams, and the current to have its liberty on the other ſide. Palladio's directions are, firſt, to make choice of that place in a river, which has the leaſt depth of water, and where the ground is even and firm, eſpecially rock or gravel ſtone; ſecondly, to avoid thoſe places where there are voragoes, or whirlpools, and where the bottom is ſoft ſand, or gravel, in regard ſuch matters are eaſily carried away by the violence of water, which in time alters the bed of a river, and ſaps the foundation of the piers; thirdly, to pitch on a ſtrait part of a river, ſince otherwiſe, the turns and winding being worn away in time, the *bridge* is in danger of being left inſulate; beſides being liable to be choaked up with the filth and other matters commonly gathered in the turns of rivers.

BRIDGES are either built of ſtone, or timber, according as there is a conveniency, or plenty of the one material, or the other in the place.

Stone BRIDGES are compoſe of piers, arches, and butments, made of hewn ſtone, ſometimes alſo intermixed with brick; as, the *bridge* of Tholouſe, the plinths whereof are of ſtone, as alſo the quoins of the arches, and ſome bonding courſes, and copings; but the reſt, as the arches, walls, and butments, of brick.

Wooden BRIDGES, called by the Latins, *pontes ſublicii*, conſiſt of beams and joiſts, ſuſtained by punchions, well cramped and bound together.

Sturminus has a diſſertation expreſs on the ſtructure of a wooden *bridge*: *Diſp. de Ponte Sublicio*, Francof. 1709.

Ruſhen BRIDGE, *point de jonc*, is made of large ſheaves of ruſhes growing in marſhy grounds, which they cover over with boards or planks. They ſerve for croſſing ground, that is boggy, miry, or rotten.

The Romans had alſo a ſort of ſubitaneous *bridges* made by the ſoldiers, of boats, or ſometimes of caſks, leathern bottles, or bags, or even of bullocks bladders blown up, and faſtened together, called *aſcogefri*. Pitiſc. *L. Ant. T.* 2. *p.* 464. *ſeq. voc. Pontes.* Du Cange *Gloſſ. Lat. T.* 1. *p.* 350. M. Couplet gives the ſtructure of a portable *bridge*, 200 feet long, eaſily taken aſunder and put together again, and which forty men may carry.—*Vid.* Du Hamel *Hiſt. Reg. Acad. Scien. l.* 3. *ſect.* 5. *c.* 4. *p.* 273.

Frezier ſpeaks of a wonderful kind of *bridge* at Apurima in Lima, made of ropes, formed of the bark of a tree. —*Vid.* Frez. *Voyag. South-Sea*, *p.* 184.

Pendent or *Hanging* BRIDGES, called alſo *Philoſophical* BRIDGES, are thoſe not ſupported either by poſts or pillars, but hung at large in the air, only ſuſtained at the two ends, or butments.—Inſtances of ſuch *bridges* are given by Palladio, and others. —*Vid.* Vogels *Modern. Bau-Kunſt. Tab.* 26. *ſeq.* Wolf. L. Math. *p.* 277. *voc.* Brucke. Kirch. *Mund. Subterr. l.* 1. *c.* 3. *T.* 1. *p.* 14.

Dr. Wallis gives the deſign of a timber-*bridge*, ſeventy feet long, without any pillars, which may be uſeful in ſome places where pillars cannot conveniently be erected. *Phil. Tranſ. N°* 163. *p.* 714. Dr. Plot aſſures us, that there was formerly a large *bridge* over the caſtle-ditch at Tutbury in Staffordſhire, made of pieces of timber none much above a yard long, and yet not ſupported underneath, either with pillars, or arch-work, or any other ſort of prop whatever. —*Vid.* Plot. *Nat. Hiſt. Stafford. c.* 9. § 88. *p.* 383.

Draw-BRIDGE, *Pons ſubductarius*, is ſuch an one as is made faſt only at one end, with hinges; ſo that the other end may be lifted up; in which caſe the *bridge* ſtands upright, to hinder the paſſage of a moat, or the like.

There are others made to draw back, to hinder the paſſage, and to thruſt over again to afford a paſſage. And others, which open in the middle; half of which turns away to one ſide, and the other half to the other; being joined again at pleaſure: but theſe have this inconvenience, that one half of them remains on the enemy's ſide.

The Marquis de l'Hopital has given the conſtruction of a curve, in which a weight will always be a counter-balance to a *draw-bridge*; which the younger Bernoulli has ſhewn to be no other than the cycloid.—*Vid. Act. Erud. Lipſ. an.* 1695. *p.* 56. *ſeq.*

Flying BRIDGE, *Pont volant*, or *Pons ductarius*, an appellation given to a *bridge* made of pontoons, leather boats, hollow beams, caſks, or the like, laid on a river, and covered with planks for the paſſage of an army.

Flying Bridge, *Pont volant*, more particularly denotes a *bridge* compoſed of one or two boats joined together, by a ſort of flooring, and ſurrounded with a rail or baluſtrade; having alſo one or more maſts, to which is faſtened a cable, ſupported at proper diſtances by boats, and extended to an anchor, to which the other end is faſtened, in the middle of the water. By which contrivance, the *bridge* becomes moveable, like a pendulum, from one ſide of the river to the other, without other help than the rudder. — Such *bridges* ſometimes alſo conſiſt of two ſtories, for the quicker paſſage of a great number of men; or that both infantry and cavalry may paſs at the ſame time.—Davil.

Flying, or *Floating* Bridge, is ordinarily made of two ſmall *bridges*, laid one over the other, in ſuch manner, as that the uppermoſt ſtretches and runs out, by the help of certain cords running through pullies placed along the ſides of the under-*bridge*, which puſh it forwards, till the end of it joins the place it is deſigned to be fixt on.

When theſe two *bridges* are ſtretched out at their full length, ſo that the two middle ends meet, they are not to be above four or five fathoms long, becauſe, if longer, they will break.

Their chief uſe is for ſurpriſing out-works, or poſts that have but narrow moats.

In the memoirs of the royal academy of ſciences, we find a new contrivance of a *floating bridge*, which lays itſelf on the other ſide of the river.—*Vid. Hiſt. Acad. R. Scienc. an.* 1713. *p.* 104.

Bridge *of Communication* is a bridge made over a river; by which two armies or forts, ſeparated by the river, have a free communication with one another.

Bridges *of Boats* are either made of copper, or wooden boats faſtened with ſtakes, or anchors; and laid over with planks.

One of the moſt notable exploits of Julius Cæſar, was the expeditious making a *bridge* of boats over the Rhine. Modern armies carry copper boats, called *pontoons*, to be in readineſs for the making *bridges*: ſeveral of theſe being joined ſide by ſide, till they reach acroſs the river, and planks laid over them, make all plain for the men to march on.

There are fine *bridges* of boats at Beaucaire, and Rouen, which riſe and fall with the water; and that at Seville is ſaid to exceed them both.

The *bridge* of boats at Rouen, built in lieu of the ſtately ſtone *bridge* erected there by the Romans, is repreſented by a modern writer, as the wonder of the preſent age; it always floats; and riſes and falls with the tide, or as land-waters fill the river; it is near 300 yards long, and is paved with ſtone, juſt as the ſtreets are: carriages with the greateſt burdens go over it with eaſe, and men and horſes with ſafety, though there are no rails on either hand. The boats are very firm, and well moored with ſtrong chains; and the whole well looked to, and conſtantly repaired, though now very old.

BRIDLE, of an horſe, is an aſſemblage of various members, or parts; as the *bit*, or *ſnaffle*; the *head-ſtall* or leathers, from the top of the head to the rings of the bit; the *fillet*, over the forehead, and under the foretop; *throat-band*, which buttons from the head-band under the throat; *reins*, the part held in the hand; *noſe-band*, going through loops at the back of the head-ſtall, and buckled under the cheeks: to which add the *trench*, the *cavezan*, *martingal*, and *chaff-halter*.

BRIEF, Breve, in common law, a writ whereby a man is ſummoned or attached to anſwer any action: or more largely, it is taken for a writing iſſued out of any of the king's courts of record at Weſtminſter, whereby ſomething is commanded to be done in order to juſtice, or the execution of the king's command.

It is called *brief*, *breve*, *quia breviter intentionem proferentis exponit*; becauſe couched in a few plain words, without preamble, *&c.*

Brief is alſo uſed for a letter patent, granting a licence to a ſubject, to make a collection for any public or private loſs.

Apoſtolical Briefs denote letters which the pope diſpatches to princes, and other magiſtrates, touching any public affair.

They are thus called, as being very conciſe, and written on paper, without preface or preamble; by which they are diſtinguiſhed from *bulls*, which are more ample, and always written on parchment, and ſealed with lead or green wax; whereas *briefs* are ſealed with red wax, and with the ſeal of the fiſherman, or St. Peter in a boat; a ſeal never applied but in the pope's preſence.

The *brief* is headed with the name of the pope, apart; and commences with *Dilecto filio ſalutem, & apoſtolicam benedictionem*, &c. after which he proceeds directly to the matter in hand, without further preamble.

Briefs are not ſubſcribed by the pope, nor with his name, but with that of his ſecretary. Pope Alexander VI. inſtituted a college of ſecretaries for *briefs*; ſince which time, they have been made much longer, and more ample than before. See Breviator.

Formerly *briefs* were only diſpatched about affairs of juſtice; but now they are likewiſe uſed in matters of benefices, expectative graces, and diſpenſations.

BRIGADE *, in the military art, a party or diviſion of a body of ſoldiers, whether horſe or foot, under the command of a brigadier.

* The word is French; ſome derive it from the Latin *briga*, a *brigue*, or ſecret intrigue: Du Cange fetches it from *brigand*, an ill-diſciplined ſoldier, who ſcours the country, and plunders it of every thing, without waiting for the enemy: as the armies of Arabs, Tartars, *&c.* The origin of *brigand* is again deduced from *brigandine*, a ſort of armour uſed in the army raiſed by the Pariſians, during the captivity of their king John in England, notorious for their robberies.

There are two ſorts of *brigades*, according to the French way of accounting: 1°, A *brigade of an army*, which is a body of horſe of ten or twelve ſquadrons: or of foot, of five or ſix battalions.—And in this way, an army is ſometimes divided into eight *brigades*; four of horſe, and four of foot.

2°, A *brigade of a troop* of guards, which is a third part thereof, when the troop conſiſts of fifty ſoldiers; but only a ſixth, when it conſiſts of 100; that is, in the former caſe, the troop is divided into three *brigades*; in the latter, into ſix.

Brigade-*Major*, or *Major of a* Brigade, is an officer appointed by the brigadier, to aſſiſt him in the management and ordering his *brigade*; in which he acts as a major-general does in an army. See Major.

BRIGADIER *General*, an officer that commands a brigade of horſe, or foot, in an army.

The *brigadier* is an officer of importance; being the next in order below a major-general, or, in the French army, to the mareſchal de camp.

BRIGANDINE, a coat of mail; a kind of antient defenſive armour, conſiſting of thin jointed ſcales or plates, pliant and eaſy to the body.

Some confound it with *habergeon*; and others with *brigantine*, a low long veſſel. See Habergeon.

BRIGANTINE, a ſmall, light, flat, open veſſel, which goes both with ſails and oars, and is either for fighting, or giving chace.

It has uſually twelve or fifteen benches on a ſide for the rowers, a man and an oar to each bench. *Brigantines* are principally uſed by the Corſairs, all the hands aboard being ſoldiers, and each having his muſquet ready under his oar.

BRILLIANT *diamonds*. See Diamond.

BRIMSTONE. See the article Sulphur.

Flower of Brimstone. See the article Flower.

BRINE, water replete with ſaline particles. See the article Salt.

By 1 *A. c.* 21. are prohibited—*Brine* taken out of brine-pits, or brine-pans, uſed by ſome for curing or pickling of fiſh, without boiling the ſame into ſalt:—and rock-ſalt, without refining it into white-ſalt.

BRINGERS-UP, in a battalion, are the whole laſt rank of men in it, or the hindmoſt man in every file. See File.

BROAD. See Piece.

BROCADE, in commerce, a ſort of ſtuff, or cloth of gold, ſilver, or ſilk, raiſed and enriched with flowers, foliages, or other figures, according to the fancy of the manufacturer.

Formerly, the term was reſtrained to cloths woven either wholly of gold, both woof and warp, or of ſilver, or of both together: but by degrees it came likewiſe to paſs for ſuch as had ſilk intermixed, to fill up, and terminate the flowers of gold and ſilver.

At preſent, any ſtuff of ſilk, ſatin, or even ſimple taffety when wrought, and enriched with flowers, *&c.* obtains the denomination of *brocade*.

BROKEN *numbers*. See Number, and Fraction.

BROKERS are of three kinds; *exchange-brokers*, *ſtock-brokers*, and *pawn-brokers*.

Exchange-Brokers are a ſort of negotiators, who contrive, make, and conclude bargains between merchants and tradesmen, in matters of money or merchandiſe, for which they have a fee, or premium. See Exchange.

Theſe, in our old law-books, are called *broggers*, and in Scotland, *broccarii*, *i. e.* according to Skene, mediators or interceſſors in any contract, *&c.* See Proxineta.

They make it their buſineſs to know the alteration of the courſe of exchange, to inform merchants how it goes, and to notify to thoſe who have money to receive or pay beyond ſea, who are proper perſons for negotiating the exchange with; and when the matter is accompliſhed, that is, when the money is paid, they have for brokage, two ſhillings per 100 pounds ſterling.

In France, till the middle of the ſeventeenth century, the *exchange-brokers* were called *courtiers de change*; but by arret of council in 1639. the name was changed for the more creditable one of *agent de change, banque, & finance*; and in the beginning of the eighteenth century, to render the office ſtill more honourable, the title of *king's counſellors* was added.

At Grand Cairo, and ſeveral places of the Levant, the Ar who do the office of *exchange-brokers*, are called *conſuls*: the manner of whoſe negociating with the European merchants has ſomething in it ſo very particular, that we have referred it to a diſtinct article.

The *exchange-brokers* at Amſterdam, called *makelaers*, are of two kinds; the one like the Engliſh, called *ſworn Brokers*, becauſe of the oath they take before the *burgomaſters*; but the others negotiate without any commiſſion, and are called *walking Brokers*.—The firſt are in number 395; whereof 375 are Chriſtians, and 20 Jews: the others are near double that number: ſo that in Amſterdam there are near 1000 *exchange-brokers*.—The difference between the two conſiſts in this; that the books and perſons of the former are allowed as evidence in the courts of juſtice; whereas, in caſe of diſpute, the latter are diſowned, and their bargains diſannulled.

The fee of the ſworn *exchange-brokers* of Amſterdam is fixed by two regulations, of 1613. and 1623. with regard to matters of exchange, to eighteen ſols for 100 livres de gros, or 600 florins; *i. e.* three ſols for 100 florins; payable, half by the drawer, and half by the perſon who pays the money. But cuſtom has made conſiderable alterations herein.

In the eaſt, all affairs are tranſacted by a ſort of *Brokers*, whom the Perſians call *delal*, *i. e.* great talkers. The manner of making their markets is very ſingular: after the *Brokers* have launched out into long, and uſually impertinent diſcourſes; coming towards a concluſion, they only converſe with their fingers. The buyer and ſeller's *Broker*, each take the other by the right hand, which they cover with their coat, or a handkerchief: the finger ſtretched out, ſtands for ſix; bent, for five; the tip of the finger for one; the whole hand for 100; and the hand clenched, for 1000. They will expreſs even pounds, ſhillings, and pence, by their hands. During all this myſtic commerce, the two *Brokers* appear as cold and compoſed, as if there were nothing paſſing between them.

Stock-BROKERS are thoſe employed to buy and ſell ſhares in the joint-ſtock of a company or corporation. See COMPANY, SUBSCRIPTION, and AGENT.

Pawn-BROKERS are perſons who keep ſhops, and let out money to neceſſitous people upon pledges, for the moſt part on uſurious conditions.

Theſe are more properly called *pawn-takers*, or *tally-men*, ſometimes *fripers*, or *friperers*.

Of theſe is to be underſtood the ſtatute of 1 *Jac.* I. *c.* 21. by which it is enacted, That the ſale of goods, wrongfully gotten, to any *Broker* in London, Weſtminſter, Southwark, or within two miles of London, ſhall not alter the property thereof.—If a *Broker*, having received ſuch goods, ſhall not, upon the requeſt of the right owner, truly diſcover them, how and when he came by them, and to whom they are conveyed; he ſhall forfeit the double value thereof to the ſaid owner.

In the cities of Italy, there are companies eſtabliſhed by authority for the letting out money in pawns; called *mounts of piety*: an honourable title, like that of *charitable corporation*, but little becoming ſuch inſtitutions; inaſmuch as the loan is not *gratis*.

In ſome parts of Italy, they have likewiſe *mounts of piety* of another kind, wherein they only receive ready money, and return it again, with intereſt, at ſo much per annum.—At Bologna they have ſeveral ſuch *mounts*; which are diſtinguiſhed into *frank* and *perpetual*: the intereſt of the former is only four per cent. in the latter, ſeven.

BRONCHIA *, in anatomy, the little tubes into which the trachea is branched, at its entrance into the lungs; and which are diſtributed through every part thereof, ſerving for the conveyance of the air in reſpiration.

* The word is Greek, βρογχια, where it ſignifies the ſame. See TRACHEA, LUNGS, and RESPIRATION.

The *Bronchia* conſiſt of cartilages like the trachea; only here the cartilages are perfectly circular, without any membranous hard part: they are joined together by the membranes that inveſt them, and are capable of being ſhot out lengthwiſe in inſpiration; and of being drawn into each other in expiration.

BRONCHIAL *artery* is an artery of the lungs, which ariſes from the deſcending trunk of the aorta, or intercoſtals; and, embracing the trachea, purſues the courſe of the bronchia, accompanying all the branches thereof through their whole progreſs. See *Tab. Anat.* (Angeiol.) *fig.* 1. *n.* 29.

BRONCHIAL *vein* ariſes from the intercoſtals, or the azygos, accompanies the artery, and divides into the ſame number of branches with it.

The artery brings blood to the bronchia, for the nutrition thereof, and of the veſicles of the lungs; and the vein carries it off again to the cava, where it ſoon terminates.

The *Bronchial* artery is ſometimes ſingle; but more frequently double; ſometimes triple.

BRONCHOCELE *, a pendent tumour, or poke, with a large round neck, riſing on the bronchial part of the trachea, very frequent in the Alps.

* The word is Greek, formed from βρογχος, *bronchus*, wind-pipe; and κηλη, ſwelling.

BRONCHOTOMY *, in chirurgery, the operation of cutting into the windpipe, to prevent ſuffocation in the quinſy; or an inciſion made in the *trachea* or wind-pipe between two of its *annuli* or rings, in order to give paſſage for the breath, when there is danger of ſuffocation, from an inflammation of the larynx, *&c.*

* The word comes from the Greek βρογχος, wind-pipe; and τεμνω, *ſeco*, I cut.

Bronchotomy, called alſo *Laryngotomy*, is thus performed.—The body of the patient being prepared, an inciſion is made between the third and fourth annuli, or rings of the aſpera arteria, an inch below the bottom of the larynx; the ſkin and integuments divided, and the muſcles removed; a ſilver tube is applied, and the cauſe of the diſeaſe removed; and the wound healed; nouriſhing clyſters being applied in the mean time, if deglutition be impracticable.

Dr. Muſgrave obſerves, that in all medicine there is not one method that works ſo great a change, for the better, in ſo ſhort a time.—However, it is ſeldom practiſed, in regard that gap which appears on the cutting a throat (the divided parts being then drawn towards their more fixed ends), together with the great efflux of blood when the jugulars and carotid arteries are alſo wounded, create in moſt men a dread of the operation, and make many believe all wounds of the *trachea* mortal.—The ſame author makes no ſcruple, however, to ſay it ought to be practiſed in quinſies, and other dangers of ſuffocation from cauſes of a like nature with them; from an extraordinary cure which he himſelf had wrought in this way.

BROOD *, the young of fiſh and fowls.

* The word is derived from the Saxon *bredan*, to breed; which alludes to βρυω, to be big with young.

BROOD of ſea-fiſh is ſpawned, and lies in ſtill waters, where it may have reſt to receive nouriſhment, and grow to perfection. And here it is often deſtroyed by weirs, draw-nets, and nets with canvas, or like engines in the bottoms of them; in harbours, havens, and creeks.—Every weir near the main ſea takes, in twelve hours, ſometimes five buſhes, ſometimes ten, ſometimes twenty or thirty.—None for the future to fiſh within five miles of the mouth of any harbour or creek, with any draw-net or drag-net, under three inches meaſh; *viz.* an inch and half from knot to knot, except for the taking of ſmoulds in Norfolk only.—3 *Jac.* I. *c.* 12.

For the preventing hereof, by 3 *Jac.* I. *c.* 12. it is alſo enacted, That none ſhall erect a weir, or weirs, along the ſea-ſhore, or in any haven, or creek, or within five miles of the mouth of any haven, or creek; or ſhall willingly deſtroy the ſpawn, or fry of fiſh; on pain of 10*l.* to be divided betwixt the king and the proſecutor. Neither ſhall any one fiſh in any of the ſaid places, with any net of a leſs meaſh than three inches and an half betwixt knot and knot (except for the taking ſmoulds in Norfolk only), or with a canvas net, or other engine, whereby the ſpawn or fry of fiſh may be deſtroyed; on pain to forfeit the ſaid engine or net, and 10 *s.* in money, to be divided betwixt the poor of the pariſh, and the proſecutor.

BROOMING, or BREAMING *of a ſhip*, the burning off the filth ſhe has contracted on her ſides, with ſtraw, reeds, broom, or the like, when ſhe is on a careen, or on the ground. See CAREENING.

BROTHER *, *Frater*, a term of relation between two male children, ſprung from the ſame father, or mother, or both.

* Scaliger and Voſſius derive *frater* from φρατηρ, for φρατωρ, which properly ſignifies a perſon who draws water in the ſame well; φρεαρ, in Greek, ſignifying *well*, and φρατρια, a company of people, who have a right to draw water out of the ſame well.—The word, it is ſaid, came originally from the city Argos, where there were only a few wells diſtributed in certain quarters of the city, to which thoſe of the ſame neighbourhood alone repaired.

The antients applied the term *Brother* indifferently to almoſt all who ſtood related in the collateral line, as uncles, and nephews, couſins-german, *&c.*—This we learn not only from a great many paſſages in the old teſtament *, but alſo from profane authors: Cicero, in his *Philippics*, ſays, "Antonia was "both wife and ſiſter of Mark Antony; becauſe ſhe was "daughter of his brother C. Antonius." And as to couſins, Tullus Hoſtilius, in Dionyſius Halicarnaſſeus, calls the Horatii and Curiatii, *brothers*; becauſe they were ſiſter's children.

* The language of the Jews, biſhop Pearſon obſerves, included in the name of *Brethren* not only the ſtrict relation of fraternity, but alſo the larger of conſanguinity. We are brethren, ſays Abraham to Lot, Gen. xiii. 8. whereas Lot was only his nephew.—So Jacob told Rachel that he was her father's *Brother*, Gen. xxix. 12. whereas he was only her father's nephew.—This conſideration has been urged with good advantage againſt the Antidicomarianites, who, from the mention made of the *brethren of Jeſus* (John ii. 12. Matth. xii. 46.) have impugned the perpetual virginity of the mother of Chriſt.

Among us, it is cuſtomary for kings to give the title *Brother* to each other; the unction in coronation being eſteemed to create a kind of *Brotherhood*. Nor is the cuſtom modern: Menander mentions a letter of Coſroes king of Perſia, to the emperor Juſtinian, beginning thus: Coſroes king of kings, *&c.* to the emperor Juſtinian *my brother*.

Kings now alſo give the ſame appellation to the electors of the empire; and the like was given, by the king of France, to the preſent king of Sardinia, while only duke of Savoy.

In the civil law, *Brothers*, *fratres*, in the plural, ſometimes comprehends ſiſters: as *Lucius & Titia*, *fratres*, l. 38. D. de famil. *Tres fratres*, *Titius*, *Mævius*, *& Seia*, l. 35. D. de pactis.

Brothers *German*, *fratres Germani*. See German.

Brother is more particularly uſed to denote the relation between monks of the ſame convent.

In which ſenſe they ſay, *Brother* Zachary, *Brother* Bonaventure, *&c.* In Engliſh, we more uſually ſay, *friar* Zachary, *&c.* from the French word *frere*, *Brother*.

This appellation is borrowed from the primitive Chriſtians, who all called each other *Brothers*: but it is principally uſed for ſuch of the religious as are not prieſts; thoſe in orders are generally honoured with the title of *fathers*, *patres*, *peres*; whereas the reſt are only ſimply *Brothers*.

The monks of St. Dominic are particularly called *preaching Brothers*, or *friars predicants*: thoſe of St. Francis, *minor Brothers*; thoſe of charity, *ignorant Brothers*, &c.

Lay-**Brothers**. See the article Lay.

In the military orders, the knights are alſo called *Brothers*.—In the order of Malta, there is a particular claſs, who are called *ſerving Brothers*; conſiſting of ſuch as cannot give proof of their nobility. In Latin they are denominated *fratres clientes*. See Malta.

Brothers *by adoption*. See the article Adoption.

Two *Brothers*, who have only the ſame father, are called *fratres conſanguinei*; and thoſe who are only deſcended from the ſame mother, *fratres uterini*.

Brothers *of the roſy-croſs*. See Rosicrucian.

Sworn **Brothers**, *fratres conjurati*. See Fratres.

BROTHERHOOD. See the article Fraternity.

BROWN *Sugar*. See the article Sugar.

BROWNISTS, a religious ſect, which ſprung out of the Puritans, towards the cloſe of the ſixteenth century; their leader, Robert Brown *.

* Robert Brown, who put himſelf at the head of this ſect, and wrote divers books in their behalf, was a man of good parts, and ſome learning. He was born of a good family in Rutlandſhire, and related to the lord treaſurer Burleigh. He had been educated at Cambridge; but firſt publiſhed his notions, and began to inveigh openly againſt the diſcipline and ceremonies of the church, at Norwich, in the year 1580. from which time he underwent divers perſecutions from the biſhops; inſomuch that he boaſted, he had been committed to no leſs than thirty-two priſons, in ſome of which he could not ſee his hand at noon-day. At length, with his congregation, he left the kingdom, and ſettled at Middleburgh in Zealand; where they obtained leave of the States to worſhip God in their own way, and form a church according to their own model: which they had not long done, ere this handful of men, juſt delivered from the ſeverities of the biſhops, began to differ among themſelves, and crumble into ſo many parties, that Brown, their paſtor, grew weary of his office; and, returning to England in 1589. renounced his principles of ſeparation; and was preferred to the rectory of a church in Northamptonſhire; and died in 1630.

The revolt of Brown was attended with the diſſolution of the church at Middleburgh; but the ſeeds of *Browniſm*, which he had ſown in England, were ſo far from being deſtroyed, that Sir Walter Ralegh, in a ſpeech in 1592. computes no leſs than twenty thouſand followers of it.

The occaſion of their ſeparation was not any fault they found with the faith, but only with the diſcipline and form of government of the other churches in England. They equally charged corruption on the epiſcopal form; and on that of the Preſbyterians, by conſiſtories, claſſes, and ſynods: nor would they join with any other reformed church; becauſe they were not aſſured of the ſanctity and regeneration of the members that compoſed it; on account of the toleration of ſinners, with whom they maintained it an impiety to communicate. They condemned the ſolemn celebration of marriages in the church; maintaining, that matrimony being a political contract, the confirmation thereof ought to come from the civil magiſtrate. They would not allow any children to be baptized of ſuch as were not members of the church, or of ſuch as did not take ſufficient care of thoſe baptized before. They rejected all forms of prayer; and held, that the Lord's prayer was not to be recited as a prayer; being only given for a rule, or model, whereon all our prayers are to be formed.

The form of church-government which they eſtabliſhed was democratical. When a church was to be gathered, ſuch as deſired to be members of it made a confeſſion of it; and ſigned a covenant, by which they obliged themſelves to walk together in the order of the goſpel. The whole power of admitting and excluding members, with the deciſion of all controverſies, was lodged in the brotherhood. Their church-officers were choſen from among themſelves, for preaching the word, and taking care of the poor, and ſeparated to their ſeveral offices by faſting, prayer, and impoſition of hands of ſome of the brethren. But they did not allow the prieſthood to be any diſtinct order, or to give any indelible character. As the vote of the brotherhood made a man a miniſter, and gave him authority to preach the word, and adminiſter the ſacraments among them; ſo the ſame power could diſcharge him from his office, and reduce him to a mere layman again. And as they maintained the bounds of a church to be no greater than what could meet together in one place, and join in one communion; ſo the power of theſe officers was preſcribed within the ſame limits. The miniſter or paſtor of one church could not adminiſter the Lord's ſupper to another, nor baptize the children of any but thoſe of his own ſociety. Any lay-brother was allowed the liberty of propheſying, or of giving a word of exhortation to the people; and it was uſual for ſome of them, after ſermon, to aſk queſtions, and reaſon upon the doctrines that had been preached. In a word, every church, on the *Browniſts* model, is a body-corporate; having full power to do every thing which the good of the ſociety requires, without being accountable to any claſſis, ſynod, convocation, or other juriſdiction, whatever. Moſt of their diſcipline has been adopted by the Independents, a party which afterwards aroſe from among the *Browniſts*.

The laws were executed with great ſeverity on the *Browniſts*; their books were prohibited by queen Elizabeth, and their perſons impriſoned, and many of them were hanged. The eccleſiaſtical commiſſion, and the ſtar-chamber, in fine, diſtreſſed them to ſuch a degree, that they reſolved to quit their country. Accordingly, many families retired, and ſettled at Amſterdam, where they formed a church, and choſe Mr. Johnſon their paſtor; and after him Mr. Aynſworth, author of the learned commentary on the Pentateuch. Their church flouriſhed near an hundred years. See *Neal. Hiſt. of New Eng. T.* 1. *c.* 2. *p.* 58.

BRUARIA *turbaria*. See the article Turbary.

BRUMALIA *, or **Bromalia**, a feaſt of Bacchus, celebrated among the antient Romans, during the ſpace of thirty days; commencing on the twenty-fourth of November, and ending the twenty-ſixth of December.

* The word comes from *bruma*, the day of the winter ſolſtice; in regard of the time when the feaſt was held: though others derive it from *brumus*, or *bromius*, names of Bacchus.

The *Brumalia* were inſtituted by Romulus, who uſed, during this time, to entertain the ſenate.

BRYONY, White, a medicinal root, antiently much uſed as a powerful purgative, eſpecially of ſeroſities; but now chiefly retained as a uterine detergent; in which quality it enters the compoſition of an officinal water, denominated, from it, *aqua bryoniæ*, generally preſcribed againſt hyſteric diſorders.

M. Boulduc found, by a chymical analyſis, that *Bryony* conſiſts only of ſaline principles, without any reſin: wherein it differs from *mechoacan*, which, in other reſpects, it much reſembles. He adds, that it has more virtue taken in ſubſtance than in any other manner; which is common to this, with moſt other purgatives. The *black Bryony* is a diuretic. See Supplement, article Bryonia.

BUBBLES, Bullæ, in phyſics, little round drops or veſicles of any fluid filled with air, and formed either on its ſurface, upon the addition of more of the fluid, as in raining; or in its ſubſtance, upon a vigorous inteſtine commotion of its parts.

Bubbles are dilatable, or compreſſible, *i. e.* they take up more or leſs room, as the included air is more or leſs heated, or more or leſs preſſed from without; and are round, becauſe the included aura acts equably from within all around. Their coat, or cover, is formed of the minute particles of the fluid, retained either by the velocity of the air, or by the briſk attraction between thoſe minute parts and the air.

It is theſe little *Bubbles*, riſing up from fluids, or hanging on their ſurface, which form the white ſkum atop; and it is theſe ſame *Bubbles* which form the ſteam, or vapour, flying up from liquors in boiling, *&c.* the manner of which ſee under Boiling, Vapour, *&c.*

Bubble, in commerce, is a cant-name, lately given to a ſort of projects, for the raiſing of money on imaginary grounds; very frequent in the years 1720—21.

The pretended deſign of theſe undertakings was, to raiſe a ſtock, for the retrieving, ſetting on foot, or carrying on, ſome promiſing and uſeful branch of trade, manufacture, machinery, or the like. In order to which, propoſals were given out, ſhewing the advantages of the deſign, and inviting perſons into it. The ſum neceſſary to carry on the affair, together with the profits expected from it, were divided into a certain number of ſhares, or ſubſcriptions, to be purchaſed by perſons diſpoſed to adventure therein.—The real deſign, in ſome, was, to raiſe a ſum for the private advantage of the projectors; to be laid out by them in South-ſea ſtock, *&c.* in hopes, by the riſe thereof, to be able to refund the ſubſcribers money, with profit to themſelves. In others, the deſign was abſolutely to defraud the adventurers of their ſubſcription-money, without any view to reſtitution.

There was a third kind ſomewhat different: the projectors of theſe, to proceed the more ſecurely, propoſed to have books opened, and ſubſcriptions taken at ſome time to come; and in the mean time took money, by way of premium, to intitle

title perſons to be admitted ſubſcribers, as ſoon as the affair ſhould be ripe for dividing into ſhares. Several thouſand ſhares were, thus, very frequently beſpoke in one day; and premiums, from one ſhilling to ſome pounds, paid thereupon, to the profits of the projectors.

The number of *Bubbles*, and their qualities, were very extraordinary; ſome of them, too, authorized by patents; and, in others, the projectors and their proprietors formed into corporations: ſome for fiſheries, ſome for inſurances, ſome for the digging of mines, *&c.* Poſterity, doubtleſs, will be ſurpriſed to hear of *Bubbles* for cleaning the ſtreets, others for furniſhing ſhoes, others for ſtockens, others for phyſic, others for the maintenance of baſtard children, others for the buying bad titles, others for the lending of money, *&c.*

BUBBLING-*Waters.* See the article WATER.

BUBO*, in medicine and ſurgery, denotes a tumour, ſometimes inflammatory, and ſometimes ſcirrhous, gathering chiefly in the glands of the inguen, or groin.

* The word comes from the Greek βȣϐων, *inguen*; the uſual place of ſuch tumours.

There are two kinds of *Bubo's*, the one called *benign*, or mild, the other *malignant.*—Malignant *Bubo's* are divided into *peſtilential* and *venereal:* the former ariſe in peſtilential fevers, *&c.* The latter are the product of impure embraces; and frequently the forerunner of the pox.—When a *Bubo* is encompaſſed with a circle of ſeveral colours, it is a ſign it is peſtilential; and it is generally mortal.

BUBONOCELE*, a tumor in the groin; occaſioned by the deſcent either of the epiploon, or the inteſtines, through the perforation of the muſculus obliquus deſcendens.

* The word comes from the Greek βȣϐων, *inguen*; and κηλη, *tumor*.

The *Bubonocele* is the ſame with what is otherwiſe alſo called *ramex*, and *hernia inguinalis.* See HERNIA.

It is a ſpecies of rupture; though chirurgeons call it an *incomplete* one; and is common to women, as well as men.

BUCCALES *Glandulæ* are ſmall glands diſperſed over the inner ſide of the cheeks and lips, which ſeparate a ſpittle uſeful in maſtication, and digeſtion.

BUCCANEERS, or BUCANEERS, a term frequent in the Weſt-Indies, properly uſed for a kind of ſavages, who prepare their meat on a grate, or hurdle made of Braſil-wood, placed in the ſmoke, at a good height from the fire, and called *buccan.*

Whence, alſo, the little lodges, raiſed for the preparation of their food, are called *buccans*; and the action of dreſſing it, *buccaning.*

Meat *buccaned*, is ſaid to have an excellent taſte, the vermil colour of a roſe, and a charming ſmell; all which it retains many months. Oexmelin, from whom we have this, adds, that the neighbouring people ſend their ſick hither; that, by eating their *buccaned* meat, they may be recovered.

The origin of the word is referred to the people of the Caribbee Iſlands, who uſed to cut their priſoners of war in pieces, and lay them on hurdles with fire underneath; which they called *buccaning*, i. e. roaſting and ſmoking together: hence our *Buccaneers* took both their name, and their cuſtom; with this difference, that what the former did to men, theſe did to animals caught in hunting.

The Spaniards, Savary tells us, call the *Buccaneers* in their territories *matadores*, that is, *killers*; and *monteros*, that is, *hunters:* the Engliſh call theirs, *cow-killers.*

The *Buccaneers* are of two diſtinct profeſſions: the one only hunt bulls, for their ſkins; the other beaſts, for their fleſh.

The art of *buccaning*, Oexmelin deſcribes thus: the beaſt being flaid, and the bones ſtripped out, the fleſh is cut into pieces of the length of the arm, and ſalted, and the next day laid on the buccan; which conſiſts of twenty or thirty bars laid acroſs, half a foot from each other: under this they raiſe a thick ſmoke, adding the ſkin and bones of the beaſt, to heighten it.

This is found vaſtly better than any ſimple fewel: in regard the volatile ſalts of thoſe parts are by this means communicated to the fleſh, and give it ſuch a reliſh, as that, after a little of this *buccaning*, the niceſt palate will eat it without further preparation.

UCCELLARII*, Βȣκελλάριοι, an order of ſoldiery under the Greek emperors, appointed to guard and diſtribute the ammunition-bread.

* The word is formed from *buccellus*, a kind of loaf, or cake of a circular figure.

The *Buccellarii* were alſo called, in reſpect of their country, *allogræci*, or *helenogalatæ*, q. d. Greeks of Galatia; ſomeimes *maryandini.*

Authors are much divided as to the office and quality of the *Buccellarii:* ſome give the denomination to paraſites in the ourts of princes and great men, maintained at their table nd expences. In reality, among the Viſigoths, *Buccellarius* as a general name for all clients, or vaſſals, who lived at e expence of their lords. Spelman rather ſuppoſes them to nſwer to what among us are called *tenants by military ſervice.* —Others repreſent the *Buccellarii* as ſtationary ſoldiers in the rovinces, who, when the emperor commanded, marched before and behind him as his body-guard.—According to others, they were men whom the emperors employed in putting perſons to death ſecretly.

BUCCINA*, an antient military, or rather muſical inſtrument, uſed in war; eſpecially for proclaiming the watches of the night, and giving notice to the ſoldiery when they were to mount, and when quit the guard.

* The word comes from *bucca*, mouth; and *cano*, I ſing; becauſe played on by the mouth: others ſuppoſe it formed from the Greek βȣκανη, or βυκανη, which ſignifies the ſame; formed from βȣς, bullock; and *cano*, I ſing; becauſe antiently made of bullocks horns: others from the Hebrew *buk*, a trumpet. Varro will have it to have been originally formed by onomatopœia; from *bou bou*, alluding to the ſound it gives. Others, with more probability, derive it from *buccinum*, the name of a ſhell-fiſh.

The *Buccina* is uſually conſidered as a ſpecies of tuba, or trumpet; from which, however, in propriety, it appears to have differed, not only in reſpect of figure, which in the tuba was ſtrait, and in the *Buccina* recurve, or crooked, but in ſound; that of the *Buccina* being ſharper, and audible to a greater diſtance than the trumpet-ſound.

The *Buccina* approached neareſt to the cornu, or horn: originally the two ſeem to have been the ſame; though in aftertimes a difference aroſe; the name *buccinum* being reſtrained to the leſſer ſorts, and the cornu to the larger.—Some alſo take the *Buccina* to have been leſs crooked than the cornu, which made a full ſemicircle.

Varro aſſures, that the *Buccinæ* were alſo called *cornua*, horns; becauſe originally made of the horns of cattle, as is ſtill done among ſome people. Servius intimates, as if they were at firſt made of goats or rams horns; and accordingly, in Scripture, the like inſtruments uſed both in war, and in the temple, are called *rams-horns*, *keren-jobel*, and *ſopherath haijobelim*, or *Buccinæ* of rams.

BUCCINATOR, in anatomy, a muſcle on each ſide the face, common to the lips and cheeks; making the inner ſubſtance of the latter.—Its fibres run from the proceſſus coronæ of the lower jaw, to the angle of the mouth, and adhere to the upper part of the gums of both jaws: through its middle paſs the upper ductus ſalivales. By this is contracted the cavity of the mouth, and the meat thruſt forward to the teeth in maſtication.

It has its name from *Buccina*, trumpet; becauſe, when ſwelled, it enlarges the cheeks, as in blowing a trumpet.—See *Tab. Anat.* (Myol.) *fig.* 1. *n.* 10.

BUCENTAUR*, the name of a large ſtate-veſſel, uſed by the Venetians in the ceremony of eſpouſing the ſea, performed each Aſcenſion-day with much pomp.

* The word comes from the Greek βȣκένταυρος; compoſed of β, a particle of augmentation, uſed to denote an enormous greatneſs; and κένταυρος, *centaur.* Juſtiniani adds two other etymologies: the firſt from *bis*, and *taurus*, or rather *centaurus*, the name of one of Æneas's veſſels in Virgil: the other from *bucentaurus*, for *ducentaurus*, a word forged to ſignify a veſſel capable of holding 200 men.

P. Juſtiniani gives a very preciſe deſcription of the *Bucentaur*; and adds, that its origin is carried up as high as the year of Chriſt 1311. though others trace it higher, to the year 1177. when the emperor Frederic Barbaroſa came to Venice, to make peace with the republic and the pope: at which time the pope, in conſideration of the ſervices the ſtate had done him, in ſheltering him in their city, when he had been driven out of his own, granted them ſeveral privileges; and made a preſent to the doge of a gold ring, which is the origin of that, yearly caſt by the doge, from the *Bucentaur*, into the ſea.

It is on Aſcenſion-day, that the doge, being advanced in the *Bucentaur* a little way into the gulph, throws a gold ring into the ſea, and ſays, 'We marry thee, O ſea, in token of that 'true and perpetual dominion which the republic has over 'thee.'

The archducheſs Maria Joſepha, married to the prince of Saxony, on the day of her entry into Dreſden, was received in a magnificent galley, finely rigged, and called a *Bucentaur*, becauſe built after the model of that of Venice. *Pollnitz Mem. T.* 4. *p.* 74. *ſeq.*

BUCEPHALUS, βȣκέφαλος. See the article HORSE.

BUCK. See the article HUNTING.

BUCKLER*, a piece of defenſive armour, uſed by the antients to ſkreen their bodies from the blows of their enemies.

* The word comes from the barbarous Latin *bucularium*; of *buccula*, the umbo or middle point of this weapon, which had uſually a head, or mouth, repreſented prominent thereon.

The *Buckler* of Achilles is deſcribed in Homer, that of Æneas in Virgil, that of Hercules in Heſiod: Ajax's *Buckler* was lined with ſeven bulls hides.

The ſhield ſucceeded the uſe of the *Buckler:* yet the Spaniards ſtill retain the *ſword* and *Buckler*, in their night-walks.

Bucklers, on medals, are either uſed to ſignify public *vows*, rendered to the gods for the ſafety of a prince; or that he is eſteemed the defender and protector of his people.—Theſe were particularly called *votive Bucklers*, and were hung at altars, *&c.*

BUCOLICS *, *Paſtorals* ; a kind of poems relating to ſhepherds, and their flocks.

* The word is derived from the Greek, βȣς, and κολον, *cibus*, meat ; hence βȣκολεῖν, *to feed cattle* ; and βȣκολος, *bubulus*, a herdſman.

Bucolic poetry is the moſt antient of all the kinds of poetry ; and is ſuppoſed to have had its origin in Sicily, amidſt the mirth and diverſions of the ſhepherds ; and to have been inſpired by love, and idleneſs : by degrees, their rural gallantries were brought under rules, and became an art. The concerns of the flocks, the beauties of nature, and the pleaſures of a country life, were their principal ſubjects. Moſchus, Bion, and Theocritus, were the moſt agreeable among the antient *bucolic* poets. See ECLOGUE, and IDYLLION.

Fontenelle obſerves, that Theocritus's ſtile is ſometimes a little too *bucolic*. Some authors attribute the invention of *bucolic poetry* to a ſhepherd called *Daphnis* ; and others to *Bucolius*, ſon of Laomedon : but this appears all fiction.

BUDS, among gardeners, denote the firſt tops of moſt ſallet-plants, *&c.* reputed preferable to all other leſs tender parts. See SALLET. Such are young aſhen keys, broom *Buds*, and the like.

BUD is uſed in the country language for a weaned calf of the firſt year ; ſo called, becauſe the horns are then in the *Bud*.

BUDGE. See the article BOUCHE.

BUFET, in building. See the article BEAUFET.

BUFF, in commerce, a ſort of leather prepared from the ſkin of the buffalo, or wild bull, a beaſt reſembling an ox, but longer and bigger ; having large thick horns, ſhort black hair, and a very ſmall head ; common enough in the Levant, particularly about Smyrna, and Conſtantinople ; where, as well as in Italy, it is frequently tamed, and wrought as we do oxen.

The ſkin of the buffalo being dreſſed in oil, after the manner of ſhammy, or chamois, makes what we call *buff-ſkin* ; antiently much uſed among the military men, for a kind of coats or doublets ; and ſtill retained by ſome of our grenadiers, as well as the French gend'armery, on account of its exceeding thickneſs and firmneſs. It is alſo uſed for waiſt-belts, pouches, *&c.*

Buff-ſkins, or *Buff-leather*, makes a very conſiderable article in the Engliſh, French, and Dutch commerce, at Conſtantinople, Smyrna, and along the coaſts of Africa.

The ſkins of elks, oxen, and other like animals, when dreſſed in oil, and prepared after the ſame manner as that of the buffalo, are likewiſe denominated *Buff* ; and uſed for the ſame purpoſes.—In France there are a good number of conſiderable manufactories employed in the preparation of ſuch ſkins ; particularly at Corbeil, Paris, and Rouen : their firſt eſtabliſhment is owing to the Sieur Jabac, a native of Cologne. The manner of preparation ſee under the article SHAMMY.

BUFFET. See the article BEAUFET.

BUFFOON, a droll, or mimic, who diverts the public by his pleaſantries, and follies.

Menage, after Salmaſius, derives the word from *buffo* ; a name given to thoſe who appeared on the Roman theatre with their cheeks blown up ; that, receiving blows thereon, they might make the greater noiſe, and ſet the people a laughing. Others, as Rhodiginus, makes the origin of *buffoonry* more venerable ; deriving it from a feaſt inſtituted in Attica, by K. Erechteus, on occaſion of a prieſt, called *Buphon* : who after having ſacrificed the firſt bullock on the altar of Jupiter Polion, or guardian of the city, fled haſtily away, without any apparent reaſon ; leaving the ax and other inſtruments on the ground, nor could he be ſtopped, or ever found afterwards. The inſtruments were hereupon delivered up to the judges, and ſolemnly tried ; the ax found guilty, and the reſt acquitted. This ſacrifice was kept up in the ſame manner the following years : the prieſt fled, as the firſt ; and the ax was condemned. As the whole ceremony was perfectly burleſque, the words *buffoons* and *buffoonries* have been ſince applied to all ridiculous mummeries and farces : this hiſtory is related by Rhodiginus.

BUGGERY, in our laws, ſignifies the crime of ſodomy.

Sir Edward Coke defines *buggery*, *carnalis copula contra naturam, & hoc vel per confuſionem ſpecierum* (*viz.* by a man's or woman's coupling with a brute beaſt) *vel ſexuum*, by a man's having to do with a man, or a woman with a woman. —Each of which is felony, without benefit of clergy : in antient times, ſuch offenders were burnt by the common law.

Buggery is uſually excepted out of a general pardon. The practice is ſaid to have been introduced into England by the Lombards ; by whom it is uſually ſuppoſed to have been borrowed from the *Bougres*, or *Bulgarians*.

The hereſy of the Bulgarians was antiently alſo called *Buggery, bougarie.*

BUILDING, a fabric, or place erected by art, of ſtone, or timber, either for ſhelter from the weather, or for ſecurity, magnificence, or devotion.

Regular BUILDING is that whoſe plan is ſquare, its oppoſite ſides equal, and the parts diſpoſed with ſymmetry.

Irregular BUILDING is that, on the contrary, whoſe plan is not contained within equal or parallel lines, either by the nature of its ſituation, or the artifice of the *Builder* ; and whoſe parts have not any juſt relation to one another in the elevation.

Inſulated BUILDING is that which is not attached, joined, or contiguous to any other ; but is encompaſſed with ſtreets, or ſome open ſquare, or the like ; as St. Paul's, the Monument, *&c.*

A BUILDING is ſaid to be *engaged*, when it is encompaſſed with others, and has no front towards any ſtreet or public place, nor any communication without, but by a back paſſage.

An Interred, or *Sunk* BUILDING, is that whoſe area is below the adjacent ſtreet, court, or garden, *&c.* and whoſe loweſt courſes of ſtone are hidden.

Felibien conſiders three kinds of *Buildings* in architecture ; *viz. Sacred Buildings* ; as the temples and groves of the antients, and our churches, chapels, *&c.*—*Public Buildings* ; as baſilics, or courts of juſtice, tombs, theatres, amphitheatres, triumphal arches, gates, bridges, aqueducts, *&c.* —*Domeſtic* or *private Buildings* ; as palaces and houſes. Each of which ſee under their proper heads, BASILICA, CHURCH, AMPHITHEATRE, *&c.*

BUILDING is alſo uſed for the art or act of conſtructing, or raiſing an edifice.—In which ſenſe it comprehends, as well the expences, as the invention and execution of the deſign thereof.

In *Building* there are three things chiefly in view, *viz.* conveniency, firmneſs, and delight.—To attain theſe ends, Sir Henry Wotton conſiders the whole ſubject under two heads, *viz.* the *ſeat* or *ſituation*, and the *work* or *ſtructure*.

For the Situation of a BUILDING, either that of the whole is to be conſidered, or that of its parts.—As to the *firſt*, regard is to be had to the quality, temperature, and ſalubrity of the air ; the conveniency of water, fuel, carriage, *&c.* and the agreeableneſs of the proſpect.

For the *ſecond*, the chief rooms, ſtudies, libraries, *&c.* are to lie towards the eaſt ; offices that require heat, as kitchens, diſtillatories, brew-houſes, *&c.* to the ſouth : thoſe that require a cool freſh air, as cellars, pantries, granaries, *&c.* to the north : as alſo galleries for painting, muſeums, *&c.* which require a ſteady light.—He adds, that the antient Greeks and Romans generally ſituated the front of their houſes to the ſouth : but that the modern Italians vary from this rule. —Indeed, in this matter, regard muſt ſtill be had to the country ; each being obliged to provide againſt its reſpective inconveniences : ſo that a good parlour in Egypt might make a good cellar in England.—The ſituation being fixed on, the next thing to be conſidered is the

Work or *Structure of the* BUILDING, under which come firſt the *principal* parts, then the *acceſſories*, or ornaments.—To the principals belong, firſt, the materials ; then the form, or diſpoſiiton.

The Materials of a BUILDING are either ſtone, as marble, free-ſtone, brick, for the walls, *&c.* or wood, as firr, cypreſs, cedar, for poſts and pillars of upright uſe ; oak for beams, ſummers, and for joining and connexion.

For the Form or Diſpoſition of a BUILDING, it muſt either be *ſimple* or *mixed*.—The ſimple forms are either *circular* or *angular* : and the circular ones either *complete*, as juſt ſpheres ; or deficient, as ovals.

The circular form is very commodious, of the greateſt capacity of any ; ſtrong, durable beyond the reſt, and very beautiful : but then it is found of all others the moſt chargeable ; much room is loſt in the bending of the walls, when it comes to be divided ; beſides an ill diſtribution of light, except from the centre of the roof : on theſe conſiderations it was, that the antients only uſed the circular form in temples and amphitheatres, which needed no compartition.—Oval forms have the ſame inconveniences, without the ſame conveniences ; being of leſs capacity.

For angular figures, Sir Henry Wotton obſerves, that *Building* neither loves many, nor few angles : the triangle, *v. gr.* is condemned above all others, as wanting capacity and firmneſs ; as alſo, becauſe irreſolvable into any other regular figure in the inward partitions, beſides its own.—For figures of five, ſix, ſeven, or more angles, they are fitter for fortifications than civil *Buildings*. There is, indeed, a celebrated *Building* of Vignola, at Caprarola, in form of a pentagon ; but the architect had prodigious difficulties to grapple with, in diſpoſing the lights, and ſaving the vacuities. Such *Buildings*, then, ſeem rather for curioſity than conveniency : and for this reaſon, rectangles are pitched on, as being a medium between the two extremes. But again, whether the rectangle is to be juſt a ſquare, or an oblong, is diſputed : Sir Henry Wotton prefers the latter, provided the length do not exceed the breadth by above one third.

Mixed figures, partly circular, and partly angular, may be judged of from the rules of the ſimple ones ; only they have this particular defect, that they offend againſt uniformity. Indeed uniformity and variety may ſeem to be oppoſite to each other : but Sir H. Wotton obſerves, they may be reconciled ; and an for inſtance, he mentions the ſtructure of the human body, where both meet.—Thus much for the firſt grand diviſion, *viz.* the whole of a *Building*.

The Parts of a Building, Baptiſta Alberti compriſes under five heads; *viz.* the *foundation*, *walls*, *apertures*, *compartition*, and *cover*.

For the foundation; to examine its firmneſs, Vitruvius orders the ground to be dug up; an apparent ſolidity not to be truſted to, unleſs the whole mould, cut through, be found ſolid: he does not indeed limit the depth of the digging; Palladio limits it to a ſixth part of the height of the *building*: this Sir Harry Wotton calls the *natural foundation*, whereon is to ſtand the ſubſtruction, or ground-work, to ſupport the walls, which he calls the *artificial foundation*: this then is to be its level; its loweſt edge, or row, of ſtone only, cloſe laid with morter, and the broader the better; at the leaſt, twice as broad as the wall: laſtly, ſome add, that the materials below ſhould be laid juſt as they grew in the quarry; as ſuppoſing them to have the greateſt ſtrength in their natural poſture. De Lorme enforces this, by obſerving, that the breaking or yielding of a ſtone in this part, but the breadth of the back of a knife, will make a cleft of above half a foot in the fabric above.—For pallification, or piling the ground-plot, ſo much commended by Vitruvius, we ſay nothing; that being required only in a moiſt marſhy ground, which ſhould never be choſen: nor, perhaps, are there any inſtances of this kind, where it was not neceſſity that drove them to it.

For the walls, they are either intire and continued, or intermitted; and the intermiſſions are either columns, or pilaſters. Intire, or continued walls, are variouſly diſtinguiſhed; by ſome, according to the quality of the materials, as they are either ſtone, brick, &c. others only conſider the poſition of the materials; as when brick, or ſquare ſtones, are laid in their lengths, with ſides and heads together, or the points conjoined, like a network, &c.

The great laws of muring are, that the walls ſtand perpendicular to the ground-work; the right angle being the cauſe of all ſtability: that the maſſieſt and heavieſt materials be loweſt, as fitter to bear than be borne; that the work diminiſh in thickneſs, as it riſes; both for eaſe of weight, and expence: that certain courſes, or ledges of more ſtrength than the reſt, be interlaid, like bones, to ſuſtain the fabric from total ruin, if the under parts chance to decay: and, laſtly, that the angles be firmly bound; theſe being the nerves of the whole fabric, and commonly fortified, by the Italians, on each ſide the corners, even in brick *buildings*, with ſquared ſtones; which add both beauty and ſtrength. See Wall.

The intermiſſions, as before obſerved, are either columns, or pilaſters: whereof there are five orders, *viz. Tuſcan*, *Doric*, *Ionic*, *Corinthian*, *Compoſite*; each of which ſee diſtinctly conſidered under its reſpective head, Tuscan, Doric, &c. See alſo Column, Pilaster, and Order.

Columns, and pilaſters, are frequently, both for beauty and majeſty, formed archwiſe; the doctrine of which ſee under Arch.

For the apertures; they are either doors, windows, ſtair-caſes, chimneys, or conduits for the ſuillage, &c. which ſee under their heads, Door, Window, &c.—Only, with regard to the laſt, it may be obſerved, that art ſhould imitate nature in theſe ignoble conveyances, and ſeparate them from ſight, where a running water is wanting, into the moſt remote, loweſt, and thickeſt part of the foundation; with ſecret vents, paſſing up through the walls like tunnels to the open air; which the Italians all commend for the diſcharge of noiſome vapours. See Sewers, &c.

For the compartition, or diſtribution of the ground-plot into apartments, &c. Sir H. Wotton lays down theſe preliminaries; that the architect never fix his fancy on a paper-draught, how exactly ſoever ſet off in perſpective; much leſs on a mere plan, without a model, or type of the whole ſtructure, and every part thereof, in paſtboard, or wood; that this model be as plain, and unadorned, as poſſible, to prevent the eye's being impoſed on; and that the bigger this model, the better.

In the compartition itſelf, there are two general views, *viz.* the *gracefulneſs*, and *uſefulneſs* of the diſtribution, for rooms of office, and entertainment; as far as the capacity thereof, and the nature of the country, will allow.—

The gracefulneſs will conſiſt in a double analogy, or correſpondency; firſt, between the parts and the whole, whereby a large fabric ſhould have large partitions, entrances, doors, columns, and, in brief, all the members large: the ſecond, between the parts themſelves, with regard to length, breadth, and height. The antients determined the length of their rooms, that were to be oblongs, by double their breadth; and the height by half their breadth, and length, added together. When the room was to be preciſely ſquare, they made the height half as much more as the breadth: which rules the moderns take occaſion to diſpenſe with; ſometimes ſquaring the breadth, and makeing the diagonal thereof the meaſure of the height; and ſometimes more. This deviating from the rules of the antients is aſcribed to M. Angelo.

The ſecond conſideration in the compartition is, the *uſefulneſs*; which conſiſts in the having a ſufficient number of rooms of all kinds, with their proper communications, and without diſtraction. Here the chief difficulty will lie in the lights, and ſtair-caſes: the antients were pretty eaſy on both theſe heads, having generally two cloiſtered open courts, one for the womens ſide, the other for the men: thus the reception of light into the body of the *building* was eaſy, which among us muſt be ſupplied, either by the open form of the *building*, or by graceful refuges or breaks, by terraſſing a ſtory in danger of darkneſs, and by abajours, or ſky-lights.—For caſting the ſtair-caſes, it may be obſerved, that the Italians frequently diſtribute the kitchen, bake-houſe, buttery, &c. under-ground, next above the foundation, and ſometimes level with the floor of the cellar; raiſing the firſt aſcent into the houſe fifteen feet or more: which, beſide the removing of annoyances out of the ſight, and gaining ſo much room above, does, by elevating the front, add a majeſty to the whole. Indeed, Sir H. Wotton obſerves, that, in England, the natural hoſpitality thereof will not allow the buttery to be ſo far out of ſight; beſides, that a more luminous kitchen, and a ſhorter diſtance between that and the dining-room is required, than that compartition will well bear.

In the diſtribution of lodging-rooms, it is a popular and antient fault, eſpecially among the Italians, to caſt the partitions ſo, as, when the doors are all open, a man may ſee through the whole houſe; this is grounded on the ambition of ſhewing a ſtranger all the furniture at once: an intolerable hardſhip on all the chambers, except the inmoſt, where none can arrive but through all the reſt, unleſs the walls be extreme thick for ſecret paſſages: nor will this ſerve the turn, without at leaſt three doors to each chamber; a thing inexcuſable, except in hot countries: beſides its being a weakening to the *building*, and the neceſſity it occaſions of making as many common great rooms as there are ſtories, which devours a great deal of room, better employed in places of retreat; and muſt likewiſe be dark, as running through the middle of the houſe.

In the compartition, the architect will have occaſion for frequent ſhifts; through many of which his own ſagacity, more than any rules, muſt conduct him. Thus, he will be frequently put to ſtruggle with ſcarcity of ground; ſometimes to damn one room for the benefit of the reſt, as to hide a buttery under a ſtaircaſe, &c. at other times, to make thoſe the moſt beautiful, which are moſt in ſight: and to leave the reſt, like a painter, in the ſhadow, &c.

For the covering of the *building*; this is the laſt in the execution, but the firſt in the intention: for who would *build*, but to ſhelter? In the covering, or roof, there are two extremes to be avoided, the making it too heavy, or too light: the firſt will preſs too much on the under-work; the latter has a more ſecret inconvenience; for the cover is not only a bare defence, but a band, or ligature, to the whole *building*; and as ſuch requires a reaſonable weight. Indeed, of the two extremes, a houſe top-heavy is the worſt. Care is likewiſe to be taken, that the preſſure be equal on each ſide; and Palladio wiſhes, that the whole burden might not be laid on the outward walls, but that the inner might likewiſe bear their ſhare.—The Italians are very curious in the proportion and gracefulneſs of the pent or ſlopeneſs of the roof; dividing the whole breadth into nine parts, whereof two ſerve for the height of the higheſt top, or ridge, from the loweſt: but, in this point, regard muſt be had to the quality of the region; for, as Palladio inſinuates, thoſe climates which fear the falling of much ſnow, ought to have more inclining pentices than others.

Thus much for the principal or eſſential parts of a *building*.

For the *acceſſories*, or *ornaments*; they are fetched from painting and ſculpture. The chief things to be regarded in the *firſt* are, that no room have too much, which will occaſion a ſurfeit; except in galleries, or the like: that the beſt pieces be placed where there are the feweſt lights: rooms with ſeveral windows are enemies to painters, nor can any pictures be ſeen in perfection, unleſs illuminated, like nature, with a ſingle light: that in the diſpoſition regard be had to the poſture of the painter in working, which is the moſt natural for the poſture of the ſpectator; and that they be accommodated to the intentions of the room they are uſed in.

For ſculpture, it muſt be obſerved, that it be not too abundant; eſpecially at the firſt approach of a *building*, or at the entrance, where a Doric ornament is much preferable to a Corinthian one: that the niches, if they contain figures of white ſtone, be not coloured in their concavity too black, but rather duſky; the ſight being diſpleaſed with too ſudden departures from one extreme to another: that fine ſculptures have the advantage of nearneſs, and coarſer of diſtance; and that in placing of figures aloft, they be reclined a little forwards: becauſe the viſual ray extended to the head of the figure is longer than that reaching to its feet, which will of neceſſity make that part appear farther off; ſo that to reduce it to an erect poſture, it muſt be made to ſtoop a little forwards. M. le Clerc, however, will not allow of this reſupination, but will have every part in its juſt perpendicular.

As to the ſtone and ſtucco, uſed in *buildings*, which are freſh and white at firſt, and are commonly ſuppoſed to be diſcoloured with the air, moiſture, ſmoke, *&c.* the true cauſe thereof is, that they become covered with a minute ſpecies of plants, which alter their colour. A ſort of lichens yellowiſh, browniſh, or greeniſh, which commonly grow on the barks of trees, do grow alſo on ſtones, morter, plaſter, and even on the ſlates of houſes, being propagated by little light ſeeds, diſperſed by the wind, rain, *&c.* The beſt preſervative, known, is lime.

To judge of a BUILDING, Sir H. Wotton lays down the following rules.—That before fixing any judgment, a perſon be informed of its age; ſince, if apparent decays be found to exceed the proportion of time, it may be concluded, without further inquiſition, either that the ſituation is naught, or the materials, or workmanſhip, too ſlight.—If it be found to bear its years well, let him run back, from the ornaments and things which ſtrike the eye firſt, to the more eſſential members; till he be able to form a concluſion, that the work is commodious, firm, and delightful; the three conditions, in a good *building*, laid down at firſt, and agreed on by all authors.—This, our author eſteems the ſcientifical way of judging.

Vaſſari propoſes another; *viz.* by paſſing a running examination over the whole edifice, compared to the ſtructure of a well-made man; as, whether the walls ſtand upright on a clean footing and foundation; whether the *building* be of a beautiful ſtature; whether, for the breadth, it appear well burniſhed; whether the principal entrance be on the middle line of the front, or face, like our mouths; the windows, as our eyes, ſet in equal number and diſtance on both ſides; the offices, like the veins, uſefully diſtributed, *&c.*

Vitruvius gives a third method of judging: ſumming up the whole art under theſe ſix heads: *ordination*, or ſettling the model and ſcale of the work; *diſpoſition*, the juſt expreſſion of the firſt deſign thereof (which two, Sir H. Wotton thinks, he might have ſpared, as belonging rather to the artificer, than the cenſurer); *eurythmy*, the agreeable harmony between the length, breadth, and height of the ſeveral rooms, *&c.* *ſymmetry*, or the agreement between the parts and the whole; *decor*, the due relation between the *building*, and the inhabitant; whence Palladio concludes, the principal entrance ought never to be limited by any rule, but the dignity and generoſity of the maſter. And laſtly, *diſtribution*, the uſeful caſting of the ſeveral rooms, for office, entertainment, or pleaſure.—Theſe laſt four are ever to be run over, ere a man paſs any determinate cenſure: and theſe alone, Sir Henry obſerves, are ſufficient to condemn or acquit any *building* whatever.

Dr. Fuller gives us two or three good aphoriſms in *building*; as,—1°, Let not the common rooms be ſeveral, nor the ſeveral rooms common; *i. e.* the common rooms not to be private or retired, as the hall, galleries, *&c.* which are to be open; and the chambers, *&c.* to be retired.—2°, A houſe had better be too little for a day, than too big for a year. Houſes therefore to be proportioned to ordinary occaſions, not extraordinary.—3°, Country-houſes muſt be ſubſtantives, able to ſtand of themſelves: not like city *buildings*, ſupported and ſheltered on each ſide by their neighbours.—4°, Let not the front look aſquint on a ſtranger; but accoſt him right, at his entrance.—5°, Let the offices keep their due diſtance from the manſion-houſe; thoſe are too familiar, which are of the ſame pile with it.

The method of *building*, both in Barbary and the Levant, ſeems to have continued the ſame from the earlieſt ages, without the leaſt alteration or improvement. *Shaw. Trav. p.* 273.

Section of a BUILDING. See the article SECTION.

BULAFO, a muſical inſtrument, much uſed by the Negroes of Guiney, *&c.*

It conſiſts of ſeveral pipes made of hard wood, ſet in order; which diminiſh by little and little in length, and are tied together with thongs of thin leather twiſted about ſmall round wands, put between each of the pipes, ſo as to form a ſmall interſtice. They play on it with ſticks, the ends of which are covered with leather, to make the ſound leſs harſh. *Froger Voyag. p.* 36. *ſeq.*

BULB, BULBUS, in botany, a thick root, nearly round, compoſed of ſeveral ſkins, or coats, laid one over another; ſending forth from its lower part a great number of fibres.—Such are the roots of the common onion, the daffodil, the hyacinth, *&c.*

The ſame denomination is ſometimes alſo given to tuberous roots, compoſed of one ſolid continuous ſubſtance, without any ſkins laid over one another.

Dr. Grew obſerves, that in *bulbous* plants, as well as many other perennial ones, the root is annually renewed, or repaired, out of the trunk or ſtalk itſelf: that is, the baſis of the ſtalk continually and inſenſibly deſcends below the ſurface of the earth; and hiding itſelf therein, is, both in nature, place, and office, changed into a true root. Thus, in brownwort, the baſe, ſinking by degrees, becomes the upper-part of the root; the next year the lower-part; and the next it rots away, a freſh ſupply coming.

BULIMY *, BULIMIA, or BULIMUS, an enormous appetite, attended with fainting, and coldneſs of the extremities.

* The word is Greek, *ϐȣλιμια*, or *ϐȣλιμος*, formed of ϐȣς, ox; and λιμος, hunger; as importing that the patient has the ſtomach of an ox; or, as others term it, ſufficient to eat up an ox; which, however, would be better ϐȣφαγια, than *βȣλιμια*. In reality, there needs not ſo much ſtraining to account for the origin of the word, which may be more eaſily and naturally accounted for after Varro and Suidas; from the particle ϐȣ, which is prefixed by the Greeks to divers words, only as an intenſive; and λιμος, hunger, *q. d.* a great hunger: much as they ſay ϐȣπαις, for a great boy; ϐȣσυκος, for a large fig.

In the Philoſophical Tranſactions, we have an account of a perſon affected with a *bulimy*, to ſuch a degree that he would eat up an ordinary leg of veal at a common meal, and would feed on ſowthiſtle, *&c.* he was cured by throwing up ſeveral worms, of the length and thickneſs of a tobacco-pipe. See HUNGER.

BULK *of a ſhip*, denotes her whole content in the hold for ſtowage of goods.

Breaking BULK. See the article BREAKING.

Bulk HEADS are partitions made acroſs a ſhip, with boards of timber, whereby one part is divided from another.—The *bulk-head afore* is the partition between the fore-caſtle and gratings in the head, and in which are the chaſe-ports.—See *Tab. Ship. fig.* 2. *n.* 11. 24. 48. 85. 95. 99. 102. 115.

BULL *, in eccleſiaſtical writers, denotes an inſtrument diſpatched out of the Roman chancery, ſealed with lead; anſwering to the edicts, letters patent, and proviſions, of ſecular princes.

* The word *bull* is derived from *bulla*, a ſeal; and that from *bulla*, a drop, or bubble; or, according to others, from the Greek, ϐȣλη, council; according to Pezron, from the Celtic *buil*, or *bul*, a bubble.

The *bull* is the third kind of apoſtolical reſcript, and th most in uſe, both in affairs of juſtice, and of grace. I is wrote on parchment; by which it is diſtinguiſhed from a *brief*, or ſimple *ſignature*, which is on paper. A *bull* i properly a ſignature inlarged: what the latter compre hends in a few words, the former dilates and amplifies. Yet the *bull* is not to take in more matter than the ſig nature; being only to amplify the ſtile in clauſes of ce remony.

If the *bulls* be letters of grace, the lead is hung on ſilke threads; if they be letters of juſtice, and executory, the lea is hung by a hempen cord.—They are all wrote in an o Roman Gothic letter.

The *bull*, in the form wherein it is to be diſpatched, is d vided into five parts; *viz.* the narrative of the fact; t conception; the clauſe; the date; and the ſalutation, i which the pope takes on himſelf the quality of *ſervant the ſervants of God, ſervus ſervorum Dei.*

Properly ſpeaking, it is the ſeal, or pendant lead alone that the *bull*: it being that which gives it both the title, and a thority. The ſeal preſents, on one ſide, the heads of S Peter and St. Paul; on the other, the name of the pope, a the year of his pontificate. See SEAL.

By *bulls*, jubilees are granted: without them no biſhop in the Romiſh church, are allowed to be conſecrated. Spain, *bulls* are required for all kinds of benefices; but France, *&c.* ſimple ſignatures are ſufficient; excepting biſhopricks, abbeys, dignities, and priories conventual. A cording to the laws of the Roman chancery, no benef exceeding twenty-four ducats per annum, ſhould be co ferred without *bulls*: but the French would never ſubm to this rule, except for ſuch benefices as are taxed the apoſtolical chamber: for the reſt, they reſerve right of diſſembling the value, expreſſing it in gene term terms: *Cujus & illi forſan annexorum fructus* 24 *ducatorum auri de camera, ſecundum communem æſtimationem, valorem annuum non excedunt.*

The *bulls* brought into France are limited and moderated by the laws and cuſtoms of the land, before they are regiſtred; nor is any thing admitted till it have been well examined, and found to contain nothing contrary to the liberties of the Gallican church: thoſe words, *proprio motu*, in a *bull*, are ſufficient to make the whole be rejected in France.

Nor do the Spaniards admit the papal *bulls* implicitly; but, having been examined by the king's council, if there appear any reaſon for not executing them, notice thereof is given to the pope by a ſupplication; and the *bull*, by this means, remains without effect: and the like method of proceeding with the court of Rome is obſerved by moſt of the reſt of the courts of Europe, in the papal communion.

To *fulminate bulls* is, to make publication thereof, by one of the three commiſſaries to whom they are directed; whether he be the biſhop or official. This publication is ſometimes oppoſed; but when it is, the fault is not charged on the pope who iſſued the *bull*; but an appeal is brought to him againſt the perſon who is ſuppoſed to make it: thus the fault is laid, where it is known not to be juſt, to evade affronting the pontiff.

The *bull in cœnaDomini* is a *bull* read every year on Maundy-thurſday, in the pope's preſence; containing various excommunications and execrations, againſt heretics, thoſe who diſobey the ſee, who diſturb or oppoſe the exerciſe of eccleſiaſtical juriſdiction, *&c.*

After the death of the pope, no *bulls* are diſpatched during the vacancy of the ſee, to prevent any abuſes; therefore, as ſoon as the pope is dead, the vice-chancellor of the Roman church takes the ſeal of the *bulls*; and in the preſence of ſeveral perſons, orders the name of the deceaſed pope to be eraſed; and covers the other ſide, on which are the heads of St. Peter and St. Paul, with a linen-cloth; ſealing it up with his own ſeal, and giving it, thus covered, to the chamberlain, to be preſerved, that no *bulls* may be ſealed with it in the mean time.

olden BULL * is a denomination peculiarly given to an ordinance, or ſtatute, made by the emperor Charles IV. in 1356. ſaid to have been drawn up by that celebrated lawyer, Bartoli, and ſtill reputed the *magna charta*, or fundamental law of the empire.

* It is thus called from a golden ſeal fixed to it, ſuch as were uſed by the emperors of Conſtantinople, annexed to their edicts. Spelman alſo ſpeaks of a *golden bull* uſed in a treaty of alliance between our Henry VIII. and Francis I. of France.

Till the publication of the *golden bull*, the form and ceremony of the election of an emperor were dubious, and undetermined; and the number of electors was not fixed. This ſolemn edict regulated the functions, rights, privileges, and pre-eminences of the electors.

The original, which is in Latin, on velom, is kept at Frankfort. On the backſide of it there are ſeveral knots of black and yellow ſilk; to which hangs a *bull*, or ſeal of gold.

This ordinance, containing thirty articles, was approved of by all the princes of the empire, and remains ſtill in force. —The election of the empire is by it declared to belong to ſeven electors; three of them eccleſiaſtics, *viz.* the archbiſhops of Mentz, Treves, and Cologne; and four ſeculars; *viz.* the king of Bohemia, prince Palatine, duke of Saxony, and marquis of Brandenburg.

ULL's *eye*, in aſtronomy. See ALDEBARAN.

ULLET *, an iron or leaden ball, or ſhot, wherewith fire-arms are loaded.

* Some derive the word from the Latin *botellus*, others from the Greek ϐαλλειν, to throw.

According to Merſenne, a *bullet*, ſhot out of a great gun, flies 92 fathom in a ſecond of time, which is equal to 589½ Engliſh feet; and, according to Huygens, it would be 25 years in paſſing from the earth to the ſun: but, according to ſome very accurate experiments of Mr. Derham, it flies, at its firſt diſcharge, 510 yards in five half-ſeconds; which is a mile in a little above ſeventeen half-ſeconds: allowing therefore the ſun's diſtance 86051398 Engliſh miles, a *bullet* would be 32 years and a half in its paſſage at the full ſpeed.

Bullets are of various kinds, *viz. red-hot bullets*, made hot in a forge; intended to ſet fire to places where combuſtible matters are found.

Hollow bullets, ſhells made cylindrical, with an aperture and a fuſee at one end, which giving fire to the inſide, when in the ground, it burſts, and has the ſame effect with a mine.

Chain-bullets, conſiſting of two balls, joined by a chain three or four feet apart.

Branch-bullets, two balls joined by a bar of iron five or ſix inches apart.

Two-headed bullets, called alſo *angels*, being two halves of a *bullet* joined by a bar, or chain: theſe are chiefly uſed at ſea, for cutting of cords, cables, ſails, *&c.*

Quarter BULLET. See the article QUARTER.

BULLET *moulds*. See the article MOULD.

BULLION, denotes gold or ſilver in the maſs, or billet.

Silver and gold, whether coined or uncoined (though uſed for a common meaſure of other things), are no leſs a commodity than wine, tobacco, or cloth; and may, in many caſes, be exported as much to national advantage, as any other commodity.—No nation can ever be conſiderable in trade, that prohibits the exportation of *bullion*.—And it is more for the public advantage to export gold or ſilver coined, than uncoined: ſince, in the former, we have the advantage of the manufacture.—See *Treat. on E. I. Trad.* 4°, 1681. *p.* 4. *Child on trade, p.* 73.

BULLION is alſo uſed for the place where the king's exchange is kept: or where gold and ſilver is brought in the lump to be tried, or exchanged.

BULLOCKS *eye*, in architecture. See the article EYE.

BULWARK, *propugnaculum*, in the antient fortification, amounts to much the ſame with *baſtion* in the modern.

BUMICILLI, a ſect of Mahometans in Africa, ſaid to be great ſorcerers: they fight againſt the devil, as they ſay; and frequently run about covered with blood and bruiſes, in a terrible fright: they ſometimes counterfeit combats with him at noon-day, and in the preſence of numbers of people, for the ſpace of two or three hours, with darts, javelins, ſcimiters, *&c.* laying deſperately about them, till they fall down on the ground oppreſſed with blows: after reſting a moment, they recover their ſpirits, and walk off.

What their rule is, is not well known; but they are ſaid to be an order of religious.

BUNT *of a ſail* is the middle part of it, purpoſely formed into a kind of bag, or pouch, that it may catch and receive the more wind.

The *bunt* is chiefly uſed in top-ſails; for courſes are for the moſt part cut ſquare, or at leaſt with a ſmall allowance for *bunt* or compaſs.—They ſay, *the bunt holds much leeward wind*; that is, it hangs too much to leeward.

BUNT-*lines* are ſmall lines made faſt to the bottom of the ſails, in the middle-part of the bolt-rope to a crengle; and ſo are reeved through a ſmall block, ſeized to the yard: their uſe is to trice up the *bunt* of the ſail, for the better furling it up.—See *Tab. Ship. fig.* 1. *n.* 48. 74. 91. 116.

BUOY, at ſea, a piece of wood, or cork, ſometimes an empty caſk well cloſed, ſwimming on the ſurface of the water, and faſtened by a chain, or cord, to a large ſtone, piece of broken cannon, or the like; ſerving to mark the dangerous places near a coaſt, as rocks, ſhoals, wrecks of veſſels, anchors, *&c.*

In lieu of *buoys*, are ſometimes placed pieces of wood, in form of maſts, in the conſpicuous places: ſometimes large trees are planted in a particular manner; in number, two at the leaſt, to be taken in a right line, the one hiding the other; ſo as the two may appear to the eye no more than one.

BUOY is alſo uſed for a piece of wood, or a barrel at ſea, faſtened ſo as to float directly over the anchor; that the men who go in the boat to weigh the anchor may certainly know where the anchor lies.

BURDEN *, or rather BURDON, in muſic, denotes the drone, or deepeſt ſound of an organ; being that produced by the thickeſt pipe.

* The word is French, *bourdon*; formed, according to ſome, from the law Saxon *burden*, *crepitum emittere*, to break wind backwards. Others will have *bourdon* originally to ſignify a buz, or hum, as that of bees; anſwering to the Latin, *bombus*; and formed by onomatopœia.

The modern *bourdon* anſwers to the note which the Greeks called προσλαμϐανομενος.

BURDEN alſo denotes the pipe *, or ſtring itſelf, by which ſuch ſound is given.

* Matth. Paris will have the name *burdon* to have been originally given this pipe, on account of its reſemblance to a pilgrim's ſtaff, antiently called alſo *burdo*.

BURDEN *of a ſhip* is its content, or number of tons of it will carry.

To determine the *burden* of a ſhip, multiply the length of the keel, taken within board, by the breadth of the ſhip, within board, taken from the midſhip beam from plank to plank, and the product by the depth of the hold, taken from the plank below the keelſon, to the under part of the upper deck plank; and divide the laſt product by 94, and the quotient is the content of the tonage required. See Freight, &c.

BURFORD *ſaddle.* See the article Saddle.

BURGAGE, a tenure proper to boroughs and towns, whereby the inhabitants hold their lands or tenements of the king, or other lord, at a certain yearly rate.

BURGESS, an inhabitant of a borough, or walled town; or one who poſſeſſes a tenement therein.

In other countries, *burgeſs* and citizen are confounded together; but with us they are diſtinguiſhed.

The word is alſo applied to the magiſtrates of ſome towns; as the bailiff, or *burgeſſes* of Leominſter.

Burgess is now ordinarily uſed for the repreſentative of a borough-town in parliament.

Filius vero burgenſis *ætatem habere tunc intelligitur, cum diſerte Sciverit denarios, numerare & pannos ulnare*, &c.

BURGGRAVE* properly denotes the hereditary governor of a caſtle, or fortified town, chiefly in Germany.

* The word is compounded of *bourg*, town, and *graf*, or *grave*, count.

BURGHERMASTERS*, **Bourgermesters**, or **Burgmesters**, chief magiſtrates in the cities of Germany, Holland, and Flanders; to whom belong the giving of orders for the government, adminiſtration of juſtice, policy, and finances of the place: though the authority and office is not every-where alike; each city having its particular laws and ſtatutes.

* The word is formed from the two Flemiſh words, *borger*, burgeſs, or citizen; and *meeſter*, maſter. Some expreſs it in Latin by *conſul*, others by *ſenator*.—M. Bruneau obſerves, that *burghermaſter*, in Holland, anſwers to what is called *alderman* and *ſheriff* in England; *attorney* at Compeigne, *capitoul* at Tholouſe, *conſul* in Languedoc, &c.

BURGLARY, an unlawful entering into another man's dwelling, wherein ſome perſon is, or into a church in the night-time; in order to commit ſome felony, or to kill ſome perſon, or to ſteal ſomething thence, or do ſome other felonious act: whether the ſame be executed, or not.

The like offence, by day, we call *houſe-breaking*, &c. It ſhall not have benefit of clergy.

BURGMESTERS. See the article Burgher-masters.

BURGMOTE, a borough-court; or court held for a town or borough. See Mote, and Court.

BURLESQUE, a jocoſe kind of poetry, chiefly uſed in the way of drollery, and ridicule, to deride perſons, and things.

The word, and the thing too, ſeem to be both modern: F. Vavaſſor maintains, in his book *de ludicra dictione*, that *burleſque* was abſolutely unknown to the antients; againſt the opinion of ſome others, that one Raintovius, in the time of Ptolemy Lagus, turned the ſerious ſubjects of tragedy into ridicule; which, perhaps, is a better plea for the antiquity of farce, than of *burleſque*.

The Italians ſeem to have the juſteſt claim to the invention of *burleſque*. The firſt author in this kind was Bernia; he was followed by Lalli, Caporali, &c. From Italy it paſſed into France, and became there ſo much the mode, that in 1649. appeared a book under the title of, *The paſſion of our Saviour in burleſque verſe.* Thence it came into England; but the good ſenſe of the Engliſh never adopted, or owned it, notwithſtanding one or two have excelled in it.

BURN, in a medicinal ſenſe, denotes a ſolution of the continuity of a part of the body, by the force of fire.

Of *burns*, phyſicians uſually make ſeveral degrees: the firſt, when there are only a few puſtules raiſed on the ſkin, with a redneſs, and a ſeparation of the epidermis from the genuine ſkin.—The ſecond, when the ſkin is burnt, dried, and ſhrunk, but without any cruſt, or ſcab.—The third is, when the fleſh, veins, nerves, &c. are ſhrunk, and form a ſcab.

Luſitanus recommends an unguent, made of the aſhes of laurel-leaves burnt, with hog's fat dropped on them, for a *burn*; or, on occaſion, the unguentum populeum, with vine-leaves laid over it.—Panarole obſerves, that clay laid on a burn abates the pain; and that the brewers in Holland uſe a decoction of ivy for the cure of *burns*.

Burns, however, are not only diſeaſes, but in ſome caſes remedies: M. Homberg obſerves, that in the iſle of Java the natives cure themſelves of a cholic, otherwiſe mortal, by burning the ſoles of their feet; and cure themſelves of a panaris, by dipping their finger in boiling water ſeveral times.

Travellers relate many other caſes of other diſeaſes cured by *burning*; and we ſee the effects of it ourſelves, in horſes, hounds, birds of prey, &c.

A kind of downy matter, brought from the Indies, has been likewiſe uſed for the gout; applied, by *burning* it on the part affected.

M. Homberg gives us inſtances of two women cured, the one of a violent diſeaſe in the head and eyes, and the other of a diſeaſe in the legs and thighs, by the accidental *burning* of thoſe parts. He adds, that *burning* may cure in three manners; either by putting the peccant humours into a greater motion, and making them take new routes; or by diſſolving and breaking their viſcidity; or by deſtroying the canals which brought them in too great quantities.

Heart-**burn.** See the article Heart.

BURNING, the action of fire on ſome pabulum, or fewel, whereby the minute parts thereof are torn from each other, put into a violent motion; and ſome of them, aſſuming the nature of fire themſelves, fly off *in orbem*, while the reſt are diſſipated in form of vapour, or reduced to aſhes. See Fire.

Burning, or **Brenning**, in our antient cuſtoms, denotes an infectious diſeaſe, got in the ſtews, by converſing with lewd women; ſuppoſed to be the ſame that we now call the *venereal diſeaſe*.—Whence that diſeaſe is argued to be much more antient than the common epocha of the ſiege of Naples.

The chief objection againſt *burning* being the ſame with the venereal diſeaſe is, that the remedies preſcribed againſt the former, would be ineffectual in the latter: but it is not to be expected, the meaſures of the antient phyſicians ſhould be calculated for the removing of any malignity in the maſs of blood or other juices, as in the modern practice; inaſmuch as they looked on the diſeaſe as merely local, and the whole of the cure to depend on the removal of the ſymptoms: beſides this, it is matter of frequent obſervation, that ſome diſeaſes grow more violent, and others more remiſs, in courſe of time: ſo that the remedies which might have availed for the antient *brenning*, may now fail as to the modern *pox*.

The proceſs for the cure, as delivered by J. Arden, chirurgeon to K. Henry IV. is thus:—*Contra* incendium *virgæ virilis interius ex calore & excoriatione, fiat talis ſyringa* (i. e. *injectio*) *lenitiva. Accipe lac mulieris maſculum nutrientis, & parum zacarium, oleum violæ & ptiſanæ: quibus commixtis per ſyringam infundatur.*

In an antient MS. written about the year 1300. is a receipt for *brenning of the pyntyl yat men clepe the apegalle*; *galle* being an old word for a running ſore. And in another MS. written fifty years after, is a receipt for *burning in that part by a woman*. Simon Fiſh, a zealous promoter of the reformation, in his *Supplication of beggars*, preſented to King Henry VIII. 1530. ſpeaking of the Romiſh prieſts, ſays, " They catch the pocks of one woman, and bare " them to another; they be burnt with one woman, " and bare it to another; they catch the lepry of one " woman, and bare it to another." And Boord, a prieſt and phyſician in the ſame reign, begins one of his chapters of his *Breviary of health*, thus: " The 19th chapter doth " ſhew of the *burning* of an harlot." The ſame author adds, that if a man be burnt with an harlot, and do meddle with another woman within a day, he ſhall burn the woman he ſhall meddle withal: and, as an immediate remedy againſt the *burning*, he recommends the waſhing the pudenda two or three times with white-wine, or elſe with ſack and water.—In another MS. of the vocation of John Bale to the biſhoprick of Oſſory, written by himſelf, he ſpeaks of Dr. Hugh Weſton (who was dean of Windſor in 1556. but deprived by cardinal Pole for adultery) thus: " At this day is leacherous Weſton, " who is more practiſed in the art of *breech-burning*, " than all the whores of the ſtews.—He not long ago " brent a beggar of St. Botolph's pariſh.——" See Stews.

Burning-*fever.* See the article Fever.

Burning-*glaſs*, or *burning-mirrour*, a machine whereby the ſun's rays are collected into a point; and by that means their force and effect extremely heightened, ſo as to burn objects placed therein.

Burning-glaſſes are of two kinds: the firſt convex, called *lentes cauſticæ*; which tranſmit the rays of light, and in their paſſage refract, or incline them towards the axis; having the property of lens's, and acting according to the laws of refraction.

The ſecond, which are the more uſual, are concave; very improperly called *burning-glaſſes*, being uſually made of metal: theſe reflect the rays of light, and, in that reflexion, incline them to a point in their axis; having the properties of ſpecula or mirrours; and acting according to the laws of reflexion: which ſee under Mirrour, and Reflection.

The firſt, or convex kind, authors ſuppoſe to have been unknown to the antients; but the latter they are generally allowed to have been acquainted with. Hiſtorians tell us, that Archimedes, by means hereof, burnt a whole fleet. And though the effect related be very improbable, yet does it ſufficiently prove ſuch things were then known. The machines then uſed, nobody doubts, were metallic and concave; and had their focus by reflexion: it being agreed, that the antients were unacquainted with the refracted foci of convex glaſſes. Yet, M. de la Hire has diſcovered even theſe, in the *Clouds* of Ariſtophanes; where Strepſiades tells Socrates of an expedient he had to pay his debts, by means of a round tranſparent ſtone or glaſs, uſed in lighting of fires; by which he intended to melt the bond: which in thoſe days was written on wax. The glaſs here uſed to light the fire, and melt the wax, M. de la Hire obſerves, could not be concave; ſince a reflected focus coming from below upwards, would have been exceedingly improper for that purpoſe: and the old ſcholiaſt of Ariſtophanes, confirms the ſentiment. Pliny makes mention of globes of glaſs and cryſtal, which being expoſed to the ſun, burnt the cloaths and fleſh on peoples backs; and Lactantius adds, that a glaſs ſphere, full of water, and held in the ſun, lighted the fire even in the coldeſt weather: which inconteſtably proves the effects of convex glaſſes.

Indeed, there is ſome difficulty in conceiving how they ſhould know ſuch glaſſes burnt, without knowing they magnified; which it is granted they did not, till towards the cloſe of the thirteenth century, when ſpectacles were firſt thought on. For as to thoſe paſſages in Plautus which ſeem to intimate the knowlege of ſpectacles, M. de la Hire obſerves, they do not prove any ſuch thing: and he ſolves this, by obſerving, that their *burning-glaſſes* being ſpheres, either ſolid, or full of water, their foci would be one fourth of their diameter diſtant from them: if then their diameter were ſuppoſed half a foot, which is the moſt we can allow, an object muſt be at an inch and a half's diſtance to perceive it magnified: thoſe at greater diſtances do not appear greater, but only more confuſed, through the glaſs than out of it. It is no wonder, therefore, the magnifying property of convex glaſſes was unknown, and their *burning* one known: it is more wonderful there ſhould be 300 years between the invention of ſpectacles and teleſcopes.

Every concave mirrour, or ſpeculum, collects the rays diſperſed through its whole concavity, after reflexion, into a point or focus; and is therefore a *burning* mirrour.

Hence, as the focus is there where the rays are the moſt cloſely contracted, if it be a ſegment of a large ſphere, its breadth muſt not ſubtend an arch above eighteen degrees: if it be a ſegment of a ſmaller ſphere, its breadth may be thirty degrees; which is verified by experiment.

As the ſurface of a mirrour, which is a ſegment of a larger ſphere, receives more rays than another of a leſs, if the latitude of each ſubtend an arch of eighteen degrees; or even more, or leſs, provided it be equal; the effects of the greater mirrour will be greater than thoſe of the leſs.

And, as the focus is contained between the fourth and fifth part of the diameter, mirrours that are ſegments of greater ſpheres *burn* at a greater diſtance than thoſe which are ſegments of a ſmaller.

Since, laſtly, the *burning* depends on the union of the rays; and the union of the rays on the concave ſpherical figure; it is no wonder, that even wooden mirrours, gilt, or thoſe prepared of alabaſter, *&c.* covered with gold; nay, even that thoſe made of paper, and covered with ſtraw; ſhould be found to *burn*.

Among the antients, the *burning* mirrours of Archimedes and Proclus are eminent; by one of which, the Roman ſhips beſieging Syracuſe, under the command of Marcellus, according to the relations of Zonaras, Tzetzes, Galen, Euſtathius, *&c.* and by the other, the navy of Vitalian beſieging Byzantium, according to the ſame Zonaras, were burnt to aſhes.

Among the moderns, the moſt remarkable *burning* mirrours, are thoſe of Settala, of Villette, and Tſchirnhauſen, and the new complex one of Mr. Buffon. Settala, canon of Padua, made a parabolical mirrour, which, according to Schottus, burnt pieces of wood, at the diſtance of fifteen or ſixteen paces.

M. Tſchirnhauſen's mirrour, at leaſt, equals the former, both in bigneſs and effect.—The following things are noted of it in the *Acta eruditorum.* 1. Green wood takes fire inſtantaneouſly, ſo as a ſtrong wind cannot extinguiſh it. 2. Water boils immediately, and eggs in it are preſently edible. 3. A mixture of tin and lead, three inches thick, drops preſently, and iron or ſteel-plate becomes red-hot preſently, and a little after burns into holes. 4. Things not capable of melting, as ſtones, bricks, *&c.* become ſoon red-hot, like iron. 5. Slate becomes firſt white, then a black glaſs. 6. Tiles are converted into a yellow glaſs, and ſhells into a blackiſh yellow one. 7. A pumice-ſtone emitted from a volcano, melts into white glaſs: and, 8. A piece of a crucible alſo vitrifies in eight minutes. 9. Bones are ſoon turned into an opake glaſs, and earth into a black one.—The breadth of this mirrour is near three Leipſic ells, its focus two ells diſtant from it: it is made of copper, and its ſubſtance is not above double the thickneſs of the back of a knife.

Villette, a French artiſt of Lyons, made a large mirrour, which was bought by Tavernier, and preſented to the king of Perſia; a ſecond, bought by the king of Denmark; a third preſented by the French king to the Royal Academy; a fourth has been in England, where it was publicly expoſed.—The effects hereof, as found by Dr. Harris and Dr. Deſaguliers, are, that a ſilver ſix-pence is melted in $7''$ and $\frac{1}{2}$; a king George's halfpeny in $16''$, and runs with a hole in 34. Tin melts in $3''$, caſt iron in $16''$, ſlate in $3''$; a foſſile ſhell calcines in $7''$; a piece of Pompey's pillar at Alexandria, vitrifies in the black part in $50''$, in the white $54''$; copper ore in $8''$: bone calcines in $4''$, vitrifies in 33. An emerald melts into a ſubſtance like a turquois ſtone; a diamond weighing four gr. loſes $\frac{7}{8}$ of its weight: the aſbeſtos vitrifies; as all other bodies will do, if kept long enough in the focus: but when once vitrified, the mirrour can go no further with them.—This mirrour is forty-ſeven inches wide; and is ground to a ſphere of ſeventy-ſix inches radius: ſo that its focus is about thirty-eight inches from the vertex. Its ſubſtance is a compoſition of tin, copper, and tin-glaſs.

Every lens, whether convex, plano-convex, or convexo-convex, collects the ſun's rays, diſperſed over its convexity, into a point by refraction; and is therefore a *burning-glaſs.* The moſt conſiderable of this kind known, is that made by M. de Tſchirnhauſen: the diameters of his lens's are three and four feet; the focus at the diſtance of twelve feet, and its diameter an inch and half. To make the focus the more vivid, it is collected a ſecond time by a ſecond lens parallel to the firſt; and placed in that place where the diameter of the cone of rays formed by the firſt lens, is equal to the diameter of the ſecond: ſo that it receives them all; and the focus from an inch and a half, is contracted into the ſpace of eight lines, and its force increaſed proportionably.

Its effects, among others, as related in the *Acta Erudit. Lipſiæ*, are, that it lights hard wood, even moiſtened with water, into a flame, inſtantly; that water, in a little veſſel, begins to boil preſently; all metals are melted; brick, pumice-ſtone, Delpht wares, and the aſbeſtos-ſtone, are turned into glaſs; ſulphur, pitch, *&c.* melted under water: the aſhes of vegetables, woods, and other matters, tranſmuted into glaſs. In a word, every thing applied to its focus, is either melted, turned into calx, or into ſmoke; and the colours of jewels, and all other bodies, metals alone excepted, are changed by it. He obſerves, that it ſucceeds beſt when the matter applied is laid on a hard charcoal well burnt.

Though the force of the ſolar rays be here found ſo ſtupendous; yet the rays of the full moon, collected by the ſame *burning-glaſs*, do not exhibit the leaſt increaſe of heat.

Further, as the effects of a *burning* lens depend wholly on its convexity, it is no wonder that even thoſe prepared of ice produce fire, *&c.* A lens of that kind is eaſily prepared, by putting a piece of ice into a ſkuttle, or hollow ſegment of a ſphere, and melting it over the fire, till it accommodate itſelf to the figure thereof.

Nor will thoſe ignorant of dioptrics be leſs ſurpriſed to ſee flame, and the effects thereof, produced by means of the refraction of light in a glaſs bubble with water. See Lens.

Wolfius tells us, that an artiſt of Dreſden made *burning mirrours* of wood, bigger than thoſe of M. Tſchirnhauſen or Villette, which had effects, at leaſt equal to any of them.—Traberus teaches how to make *burning mirrours* of leaf gold; *viz.* by turning a concave, laying its inſide equally with pitch, and covering that with ſquare pieces of the gold, two or three fingers broad, faſtening them on, if need be, by fire. He adds, that very large mirrours may be made, of thirty, forty, or more concave pieces, artfully joined in a turned wooden diſh or ſkuttle; the effects of which will not be much leſs, than if the ſurface was continuous.—Zahnius adds, further, that Newman, an engineer at Vienna, in 1699. made a mirrour of paſteboard, covered within-ſide with ſtraw glued to it; by which all kinds of metals, *&c.* were readily melted.

Burning *of land*, called alſo *burn-beating*, and vulgarly *denſhiring*, is a method of preparing and fertilizing lands barren, ſour, heathy, and ruſhy, for corn; by paring off the turf, and drying and *burning* it on the ground. —The ſame method alſo obtains for meadows and paſture-ground, moiſt, clayey, or ruſhy, to improve the hay.

Burning *Mountains*. See Volcano, Earthquake, Mountain, *&c.*

BURNISHER, a round poliſhed piece of ſteel, ſerving to ſmooth and give a luſtre to metals.

Of theſe there are various kinds, of various figures; ſtrait, crooked, *&c.*—Half *burniſhers* are uſed to ſolder ſilver, as well as to give a luſtre. See Soldering.

BURNISHING, the act or art of ſmoothing, and poliſhing a metalline body, by briſkly rubbing it with a *burniſher*.

Bookbinders *burniſh* the edges of their books by rubbing them with a dog's tooth. Gold and ſilver are *burniſhed* with a wolf's tooth, a dog's tooth, or the blood ſtone, or by tripoli, a piece of white wood, emery, and the like.

Deer are ſaid to Burnish *their heads*, when rubbing off a white downy ſkin from their horns againſt a tree, they thruſt them, as is ſaid, into a reddiſh earth, to give them a new colour and luſtre.

BURNT-*Allum*.	See the articles	Allum.
Burnt-*Lead*.		Lead.
Burnt-*Wine*.		Wine.
Burrough.		Borough.

BURR-PUMP, or Bildge-Pump, a kind of pump ſo called, becauſe it holds much water. See Pump.

BURSARS, in Scotland, are youths choſen, and ſent as exhibitioners to the univerſities, one each year, by each preſbytery; by whom they are to be ſubſiſted for the ſpace of four years, at the rate of 100 *l. per annum*, Scots.

BURYING. See Wool.

BUSHEL *, a meaſure of capacity for things dry; as grains, pulſe, dry fruits, *&c.* containing four pecks, or eight gallons, or one eighth of a quarter.

* Du Cange derives the word from *buſſellus*, *buſtellus*, or *biſſellus*, a diminutive of *buz*, or *buza*, uſed in the corrupt Latin for the ſame thing: others derive it from *buſſulus*, an urn, wherein lots were caſt; which ſeems to be a corruption from *buxulus*.

By 12 *H.* VII. *c.* 5. a *buſhel* is to contain eight gallons of wheat: the gallon eight pounds of wheat troy-weight: the pound twelve ounces troy-weight: the ounce twenty ſterlings: and the ſterling thirty-two grains, or corns of wheat growing in the midſt of the ear.

At Paris, the *buſhel* is divided into two half *buſhels*; the half *buſhel* into two quarts; the quart into two half quarts; the half quart into two litrons; and the litron into two half litrons. By a ſentence of the provoſt of the merchants of Paris, the *buſhel* is to be eight inches two lines and an half high, and ten inches in diameter; the quart four inches nine lines high, and ſix inches nine lines wide; the half quart four inches three lines high, and five inches diameter; the litron three inches and an half high, and three inches ten lines in diameter.—Three *buſhels* make a minot, ſix a mine, twelve a ſeptier, and an hundred forty-four a muid.

In other parts of France, the *buſhel* varies: fourteen one eighth *buſhels* of Amboiſe and Tours make the Paris ſeptier. Twenty *buſhels* of Avignon make three Paris ſeptiers. Twenty *buſhels* of Blois make one Paris ſeptier. Two *buſhels* of Bourdeaux make one Paris ſeptier. Thirty-two *buſhels* of Rochel make nineteen Paris ſeptiers.

Oats are meaſured in a double proportion to other grains; ſo that twenty four *buſhels* of oats make a ſeptier, and 248 a muid. The *buſhel* of oats is divided into four picotins, the picotin into two half quarts, or four litrons. For ſalt, four *buſhels* make one minot, and ſix a ſeptier. For coals, eight *buſhels* make one minot, ſixteen a mine, and 320 a muid. For lime, three *buſhels* make a minot, and forty-eight minots a muid.

BUSKIN, *Cothurnus*, a kind of garment, ſomewhat in manner of a boot, covering the foot and mid-leg, and tied beneath the knee: very rich and fine, and uſed principally on the ſtage by the actors in tragedy.

The *buſkin* is ſaid to have been firſt introduced by Æſchylus: it was of a quadrangular form, and might be worn indifferently on either leg. Its ſole was made ſo thick, as, by means hereof, men of ordinary ſtature might be raiſed to the pitch and elevation of the heroes they perſonated: in which it was diſtinguiſhed from the ſock, worn in comedy; which was a low, popular ſhoe.

Dempſter obſerves, that it was not actors alone who wore the *buſkin*, but girls likewiſe uſed it to raiſe their height; and travellers and hunters to defend themſelves from the mire, *&c.*

As the *buſkin* was the diſtinguiſhing mark of tragedy on the ſtage, we find it in claſſic authors frequently uſed to ſignify *tragedy itſelf*.

BUST, or Busto, in ſculpture, denotes the figure, or portrait of a perſon in relievo, ſhewing only the head, ſhoulders, and ſtomach: the arms being lopped off; ordinarily placed on a pedeſtal, or conſole.

In ſpeaking of an antique, we ſay the head is marble, and the *buſt* porphyry, or bronze, that is, the ſtomach and ſhoulders.—Felibien obſerves, that though in painting, one may ſay a figure appears in *buſto*; yet it is not properly called a *buſt*, that word being confined to things in relievo.

The *buſt* is the ſame with what the Latins called *herma*, from the *Greek Hermes*, Mercury; the image of that God being frequently repreſented in this manner among the Athenians.

Bust is alſo uſed, eſpecially by the Italians, for the trunk of an human body, from the neck to the hips.

BUSTIARII, a kind of gladiators, among the antient Romans, who fought about the buſtum, or pile of a deceaſed perſon, in the ceremony of his obſequies.

The practice at firſt was, to ſacrifice captives on the tomb, or at the buſtum, of their warriors: inſtances of which we have in Homer, at the obſequies of Patroclus, and among the Greek tragedians. Their blood was ſuppoſed to appeaſe the infernal Gods; and render them propitious to the manes of the deceaſed.

In after-ages, this cuſtom appeared too barbarous; and in lieu of theſe victims, they appointed gladiators to fight; whoſe blood, it was ſuppoſed, might have the ſame effect. —According to Valerius Maximus and Florus, Marcus and Decius, ſons of Brutus, were the firſt, at Rome, who honoured the funeral of their father with this kind of ſpectacle, in the year of Rome 489.—Some ſay, the Romans borrowed this cuſtom from the Hetrurians; and they from the Greeks.

BUSTUM, in antiquity, denotes a pyramid or pile of wood, whereon were antiently placed the bodies of the deceaſed, in order to be burnt.

The Romans borrowed the cuſtom of burning their dea from the Greeks. The deceaſed, crowned with flowers, and dreſſed in his richeſt habits, was laid on the *buſtum*. The neareſt relations lighted it with torches; turning their faces from it, to ſhew that it was wit reluctance they did this laſt office. After the *buſtu* was conſumed, the women appointed to collect the aſhe encloſed them in an urn, which was depoſited in th tomb.

Some authors ſay, it was only called *buſtum*, after th burning, *quaſi bene uſtum*: before the burning it was mor properly called *pyra*; during it, *rogus*; and afterwa *buſtum*.

BUTCHER *.—Among the antient Romans there we three kinds of eſtabliſhed *butchers*; *viz.* two colleges, o companies, compoſed each of a certain number of ci zens, whoſe office was to furniſh the city with the n ceſſary cattle, and to take care of preparing and ven ing their fleſh. One of theſe communities was at fi confined to the providing of hogs, whence they we called *ſuarii*; and the other were charged with cattl eſpecially oxen; whence they were called *pecuarii*, *boarii*. Under each of theſe was a ſubordinate cla whoſe office was to kill, prepare, *&c.* called *lanii*, a ſometimes *carnifices*.

* Menage, after Turnebus, derives the word from *bucc rius*, of *bucca*, mouth, becauſe the *butcher* kills meat the mouth: thus alſo we find him denominated *bec rius*, from *beccus*, a mouth. Lancelot derives it from word βȣϑυτης, *killer of cattle*; Labbe *a bovina*, or *bula carne*.

Briſſonius, Modius, and others, mention a pleaſant way of ſelling meat, uſed for ſome ages among this people: the buyer was to ſhut his eyes, and the ſeller to hold up ſome of his fingers; if the buyer gueſſed aright, how many it was the other held up, he was to fix the price; if he miſtook, the ſeller was to fix it. This cuſtom was aboliſhed by Apronius, prefect of Rome; who in lieu thereof introduced the method of ſelling by weight.

The French call a place ſet apart either for the ſlaughter of cattle, or expoſing their fleſh to ſale, a *butchery*, *boucherie*. The Engliſh diſtinguiſh; calling the latter a *fleſh-ſhamble*, or *market*, the former a *ſlaughter-houſe*.—Nero built a noble edifice of this kind at *Rome*; on which occaſion was ſtruck that medal, whoſe reverſe is a building ſupported by columns, and entered by a perron of four ſteps; the legend, MAC. AVG. S. C. *Macellum Auguſti Senatuſconſulto.*

By 1 *Jac.* I. *c.* 22. no *butcher* ſhall gaſh, ſlaughter, or cut any hide of any ox, bull, ſteer, or cow, in flaying thereof; or otherwiſe, whereby the ſame ſhall be impaired and hurt, on the penalty of 20 *d.* for each hide ſo cut.

No *butcher* ſhall water any hide, except in June, July, and Auguſt; or offer to ſale any hide which is putrified and rotten.

No *butcher* ſhall kill any calf, to ſell, being under five weeks old:—nor uſe the craft and myſtery of a tanner.

BUTLER. } See the articles { ARCH-*Butler*.
BUTLER's *Ale*. } { ALE.

BUTLERAGE *of Wines*, an impoſition on ſale wine, brought into the land; which the king's butler, by virtue of his office, may take of every ſhip; *viz.* two ſhillings of every ton imported by ſtrangers.

BUTMENTS *, in architecture, thoſe ſupporters, or props, on or againſt which the feet of arches reſt.

> * The word comes from the French *bouter*, to abut or terminate on any thing; or rather from *buter*, to prop.

The name *butment* is alſo given to little places taken out of the yard, or the ground-plot of an houſe, for butteries, ſculleries, &c.

UTT is uſed for a veſſel, or meaſure of wine, containing two hogſheads, or 126 gallons.—Otherwiſe called *pipe*.

A *butt* of currans is from fifteen to twenty-two hundred weight.

UTT, or BUTT-*End*, in the ſea-language, denotes the end of any plank, which joins to another on the outſide of a ſhip, under water.

Hence, when a plank is looſe at one end, they call it *ſpringing a butt*; to prevent which, ſhips are uſually bolted at the *butt-heads*, that is, at the plank's end.

UTTER *, a fat, unctuous ſubſtance, prepared, or ſeparated from milk, by heating or churning it.

> * The word is formed from the Greek, ϐȣτυρον, a compound of ϐȣς, *cow*, and τυρος, *cheeſe*; *q. d.* cows cheeſe.—Some authors, out of regard to this etymon, affect to write the word *buttyr*, and *butyr*.

The way of making *butter*, in Barbary, is by putting their milk or cream into a goat's ſkin; ſuſpended from one ſide of the tent to the other, and preſſing it to and fro n one uniform direction. This quickly occaſions the neceſ- ary ſeparation of the unctuous and wheyey parts. *Shaw. Trav. p.* 241.

t was late ere the Greeks appear to have had any no- on of *butter*: Homer, Theocritus, Euripides, and the ther poets, make no mention of it; and yet are fre- uently ſpeaking of milk and cheeſe: and Ariſtotle, who s collected abundance of curioſities relating to the ther two, is perfectly ſilent on this. Pliny tells us, at *butter* was a delicate diſh among the barbarous na- ons; and was that which diſtinguiſhed the rich from the oor.

he Romans uſed *butter* no otherwiſe than as a medicine, ever as a food. Schookius obſerves, that it is owing to e induſtry of the Dutch, that there is any ſuch thing *butter* in the Eaſt-Indies: that in Spain, *butter* is on- uſed medicinally, for ulcers; and adds, that the beſt piate for making the teeth white, is the rubbing them with tter.

. Alexandrinus obſerves, that the antient Chriſtians of gypt burnt *butter* in the lamps at their altars, inſtead oil; and the Abyſſinians, according to Godignus, ll retain a practice much like it: Clemens finds a re- gious myſtery in it.—In the Roman churches, it was antiently allowed, during Chriſtmas-time, to uſe *butter* inſtead of oil; by reaſon of the great conſumption thereof other ways.

Schookius has a juſt volume, *de butyro, & averſione caſei*; where the origin and phænomena of *butter* are handled in form: he inquires whether *butter* was known in Abraham's days, and whether it was the diſh he entertained the angels with: he examines how it was prepared among the Scythians; whence ariſe its different colours; teaches how to give it its natural colour; how to churn it, ſalt it, keep it, &c.

That part of Suffolk called High Suffolk, being a rich ſoil, is for a long track of ground wholly employed in dairies; and they again are famous for the beſt *butter*, and perhaps the worſt cheeſe, in England: the *butter* is barrelled, or often pickled up in ſmall caſks, and ſold, not in London only, but ſent even to the Weſt-Indies; from whence, we are told by the Britiſh traveller, he has known it to have been brought back to England again, perfectly good and ſweet, as at firſt.

By 13 & 14 *Car.* II. *c.* 26. no *butter* which is old or corrupt, ſhall be mixed or packed with that which is new and ſound.—Nor any whey-*butter* be mixed or packed with *butter* made of cream.—But each ſort ſhall be packed ſeparately.—No *butter* ſhall be ſalted or ſaved with any great ſalt, but all with ſmall ſalt.

BUTTER, *butyrum*, is alſo uſed to expreſs ſeveral chemical ſubſtances—as, *butter* of antimony, of arſenic, of wax, of ſaturn, &c. on account of their form of conſiſtence, reſembling thoſe of *butter*. See ANTIMONY, ARSENIC, WAX, &c.

BUTTING-*Pillar*. See the article PILLAR.

BUTTOCK *of a ſhip* is her full breadth right aſtern from the tuck upwards.—According as a ſhip is built, broad or narrow at the tranſom, ſhe is ſaid to have a *broad* or *narrow buttock*.

BUTTONS make an article in dreſs, whoſe form and uſe is too familiar to need a deſcription.—The matter whereof they are made is various; as metal, ſilk, mohair, &c.

Metal BUTTONS are various; both with regard to the matter and manner of making: beſides thoſe caſt in moulds, much in the manner of other ſmall works (ſee FOUNDERY), there are now made great quantities with thin plates, or leaves of gold, ſilver, and braſs; eſpecially of the two laſt.—The invention of theſe *buttons* being very late, as not having been ſet on foot before the beginning of the eighteenth century; and their ſtructure very ingenious, though but of indifferent uſe; we ſhall here ſubjoin it.

Manner of making plated BUTTONS. The metal to be uſed being reduced into thin plates, or leaves, of the thickneſs intended (either by the goldſmith or braſier), is cut into little round pieces, of a diameter proportionable to the wooden mould they are to cover: this cutting is performed with a ſharp punch, on a leaden block or table.—Each piece of metal thus cut, and taken off from the plate, is reduced to the form of a *button*, by beating it ſucceſſively in ſeveral ſpherical cavities, with a round piece of iron in form of a punchion; ſtill beginning with the flatteſt cavity, and proceeding to the more ſpherical, till the plate have got all the relievo required: and the better to manage ſo thin a plate, they form ten or twelve to the cavities at once; and alſo boil the metal to make it more ductile.

The inſide thus formed, they give an impreſſion to the outſide, by working it with the ſame iron punchion, in a kind of mould, like the minter's coins, engraven *en creux*, or indentedly; and faſtened to a block or bench. The cavity of this mould, wherein the impreſſion is to be made, is of a diameter and depth ſuitable to the ſort of *button* to be ſtruck in it; each kind requiring a particular mould. Between the punchion and the plate is placed ſome lead, which contributes to the better taking off all the ſtrokes of the graving; the lead, by reaſon of its ſoftneſs, eaſily giving way to the parts that have relievo; and as eaſily inſinuating itſelf into the trace, or engraving of the dentures.

The plate thus prepared, makes the upper part or ſhell of the button.—The lower part is formed of another plate, made after the ſame manner, but flatter, and without any impreſſion. To this laſt, is ſoldered a little eye made of wire of the ſame metal, for the *button* to be faſtened by.

The two plates are ſoldered together, with a wooden mould, covered with wax, or other cement, between; in order to render the *button* firm and ſolid: for the wax entering all the cavities formed by the relievo of the other ſide, ſuſtains it, prevents its flattening, and preſerves its boſſe or deſign.—Ordinarily, indeed, they content themſelves to cover the naked mould with the ſhell; and in this caſe, for the faſtening, they paſs a thread or gut acroſs through the middle of the mould.

BUTTRESS, a *butment*, or maſs of ſtone, or brick, ſerving to prop or ſupport the ſides of a building, wall, or the like, on the outſide; where it is either very high, or has any conſiderable load to ſuſtain on the other ſide, as a bank of earth, *&c.*

The theory and rules of *buttreſſes*, or props for eaſing walls, are ranked among the deſiderata of architecture.

See ARCH, and ARC-BOUTANT.

BUTTRESS, BUTTRICE, or **BUTTERIS**, likewiſe denotes a tool, uſed by farriers, to pierce the ſole of a horſe's foot, which is overgrown; to pare the hoof; to fit the ſhoe; and to cut off the ſkirts of the ſole, that overcaſt the ſhoe.

BY-LAWS *, **BYE-LAWS**, or **BI-LAWS**, private or peculiar orders, and regulations for the good government of a city, court, or other community, made by general conſent of the members thereof; being not repugnant to the general laws of the realm.

* The word is formed from the Saxon *by*, habitation, vill, and *Laʒa*, *q. d. lex villæ*, or town-law.—They are alſo called *birlaws*, *byrlaws*, and *burlaws*, *bilager*, and *bellagines*.

Such is the cuſtom in Kent of deciding controverſies among neighbours about boundaries, by the ſeneſchals, or bailiffs.

In Scotland, thoſe are called *laws of burlaw*, or *byrlaw*, which are made and determined by neighbours, elected by common conſent in burlaw-courts; wherein cognizance is taken of complaints betwixt neighbour and neighbour.—The men thus choſen as judges or arbitrators are called *burlaw-men*, or *byrlaw-men*.

BYZANT. See the article BEZANT.

BYZANTIA *blatta*. See the article BLATTA.

C.

C, The third letter, or ſecond conſonant of the alphabet. C, is formed, according to Scaliger, from the κ of the Greeks, by retrenching the ſtem or upright line; tho' others derive it from the ב of the Hebrews, which has in effect, the ſame form; allowing only for this, that the Hebrews, reading backwards, and the Latins, *&c.* forwards, each have turned the letter their own way. However, the *c* not being the ſame as to ſound with the Hebrew *Caph*; and it being certain the Romans did not borrow their letters immediately from the Hebrews, or other Orientals, but from the Greeks; the derivation from the Greek K is the more probable. Add, that F. Montfaucon, in his Palæographia, gives us ſome forms of the Greek K, which come very near that of our *C*; this, for inſtance, ⊏: and Suidas calls the *C*, the Roman Kappa. All grammarians agree, that the Romans pronounced their *q* like our *c*, and their *c* like our *k*. F. Mabillon adds, that Charles the Great was the firſt who wrote his name with a *C*; whereas all his predeceſſors of the ſame name wrote it with a *K*: and the ſame difference is obſerved in their coins.

C was alſo a numeral letter among the Romans, ſignifying an hundred: according to the verſe,

Non plus quam centum C *litera fertur habere.*

Some add, that a daſh over it, made it ſignify an hundred thouſand; but it would be hard to find an inſtance of this among the antients.

C is alſo an abbreviature. See ABBREVIATURE.

In proper names, *C.* was uſed for Caius; as, C. Cæſar, *&c.* Their lawyers uſed it ſingle for *Codice* or *Conſule*, and double, *CC*, for *Conſulibus*.

C was alſo uſed in their courts, as a letter of condemnation, and ſtood for *condemno*; in oppoſition to *A*, which ſignified *abſolvo*.

C (in muſic) denotes the higheſt part in a thorough baſs.

CABBALA *, a myſterious kind of ſcience, delivered by revelation to the antient Jews, and tranſmitted by oral tradition to thoſe of our times; ſerving for interpretation of the books both of nature, and ſcripture.

* The word is alſo written *Cabala*, *Caballa*, *Kabbala*, *Kabala*, *Cabala*, *Cabaliſtica*, *Ars Cabala*, and *Gaballa*—It is originally Hebrew, קבלה *Kabbalah*; and properly ſignifies reception; formed from the verb קבל *Kibel*, to receive by tradition, or from father to ſon, eſpecially in the Chaldee and Rabbinical Hebrew.

Cabbala, then, primarily denotes any ſentiment, opinion, uſage, or explication of ſcripture tranſmitted from father to ſon. In this ſenſe the word *Cabbala* is not only applied to the whole art; but alſo to each operation performed according to the rules of that art. Thus it is, R. Jac. ben Aſcher, ſurnamed Baal-Hatturim, is ſaid to have compiled moſt of the *Cabbala*'s invented on the books of Moſes before his time.

As to the origin of the *Cabbala*: the Jews believe, that God gave to Moſes on mount Sinai, not only the law, but alſo the explication of that law; and that Moſes, after his coming down, retiring to his tent, rehearſed to Aaron both the one and the other. When he had done, Aaron ſtanding on the right hand, his ſons, Eleazar and Ithamar, were introduced to a ſecond rehearſal: this over, the 70 elders that compoſe the ſanhedrim were admitted; and laſtly the people, as many as pleaſed: to all which, Moſes again repeated both the law and explication, as he received them from God. So that Aaron heard it four times, his ſons thrice, the elders twice, and the people once. Now, of the two things which Moſes taught them, the laws, and the explanation, only the firſt were committed to writing; which is what we have in Exodus, Leviticus, and Numbers: as to the ſecond, or the explication of thoſe laws, they were contented to impreſs it well in their memory, to teach it their children; they, to theirs, *&c.* Hence, the firſt part they call ſimply the law, or the written law; the ſecond, the oral law, or *Cabbala*. Such is the original notion of the *Cabbala*.

Some rabbins, however, pretend that their fathers received the *Cabbala* from the prophets, who received it from the angels. R. Abr. ben Dior ſays expreſly, that the angel Raziel was Adam's maſter, and taught him the *Cabbala*; that Japhiel was Shem's maſter; Tſedekiel, Abraham's; Raphael, Iſaac's; Peliel, Jacob's; Gabriel, Joſeph's; Meratron, Moſes's; Malathiel, Elias's, *&c.*

Among theſe explications of the law, which, in reality, are little elſe but the ſeveral interpretations and deciſions of the rabbins on the laws of Moſes, ſome are myſtical; conſiſting of odd abſtruſe ſignifications given to a word, or even to the letters whereof it is compoſed; whence, by different combinations, they draw meanings from ſcripture, very different from thoſe it ſeems naturally to import. The art of interpreting ſcripture after this manner, is called more particularly *Cabbala*: And 'tis in this laſt ſenſe the word is more ordinarily uſed among us.

This *Cabbala*, called alſo *Artificial Cabbala* (to diſtinguiſh it from the firſt kind, or ſimple tradition), is divided into three ſorts:—the firſt, called *Gematria*, conſiſts in taking letters as figures, or arithmetical numbers, and explaining each word by the arithmetical value of the letters whereof it is compoſed; which is done various ways.

The ſecond is called *Notaricon*; and conſiſts either in taking each letter of a word for an intire diction; *v. g.* בראשית the firſt word of Geneſis, for ברא־רקיע־ארץ שמים־ים תהומות that is, Bara-Rakia-Arez-Schamaim-Jam-Tehomoth; He created the firmament, the earth, the ſea, and the deep: or in making one intire diction out of the initial letters of many; as out of theſe, אתהגבורלעלםאדני: Atah-Gibbor-Leholam-Adonai; Thou art great for ever, O Lord! by only taking the initial letters, they form the *Cabbaliſtic* name of God, אגלא *Agla*. The third kind, called *Themurah*, q. d. changing, conſiſts in changing and tranſpoſing the letters of a word; which is done various ways: 1°, by ſeparating them; and thus, *v. g.* from *Bereſchit*, i. e. *in principio*, they make ברא שית i. e. *poſuit fundamentum*; juſt as in playing with words, we ſometimes ſeparate *Sum-mus*, *Ter-minus*, or *Sus-tinea-mus*. 2°, By tranſpoſing the letters, and ranging them in a different manner: thus: from the ſame word *Bereſchit*, they make *a betiſri*, the firſt of *Tizri*; and becauſe this is taken from the firſt word in the hiſtory of the creation of the world, they thence conclude, the world was created on the firſt day of the month *Tizri*. 3°, By taking one letter for another, with reſpect to the different relations they acquire in conſidering the alphabet different ways: thus, dividing the Hebrew alphabet of twenty-two letters into two parts, and taking the firſt of either of theſe moieties for the firſt of the other, the ſecond for the ſecond, *&c.* by this means of *Tabeel*, an unknown name mentioned in Iſaiah, they form *Remla*, the name of a king of Iſrael. Another manner of changing the letters, is by taking the alphabet two ways, firſt in the common way, then backwards, and changing mutually the two firſt letters, then the two ſecond, *&c.* By this means, of לב קמי *the hearts of thoſe who riſe againſt me*, they make בשדים *the Chaldeans*; and thence conclude, that thoſe God here ſpake of are Chaldeans. Theſe two laſt kinds are alſo called צירוף Aſſociation, and Combination.

The *Cabbala* hitherto ſpoken of, may be called *Speculative Cabbala*; in oppoſition to the following, which may be called *Practical Cabbala*.

CABBALA is alſo applied to the uſe, or rather abuſe, which viſionaries and enthuſiaſts make of the text of ſcripture, for diſcovering futurity, by the ſtudy and conſideration of the combination of certain words, letters, and numbers, in the ſacred writings. —All the words, terms, magic figures, numbers, letters, charms, *&c.* uſed in the Jewiſh magic, as alſo in the hermetical ſcience, are compriſed under this ſpecies of *Cabbala*. But 'tis only the Chriſtians that call it by this name, on account of the reſemblance this art bears to the explications of the Jewiſh *Cabbala*: for the Jews never uſe the word *Cabbala* in any ſuch ſenſe, but ever with the utmoſt reſpect and veneration. It is not, however, the magic of the Jews alone which we call *Cabbala*, but the word is alſo uſed for any kind of magic: in which ſenſe it is, that the Abbé de Villars applies it, in his *Comte de Gabalis*; where he expoſes the ridiculous ſecrets of the ſacred *Cabbala*, as the Roſicrucian *Cabbaliſts* call it. Theſe ſuppoſe there are elementary people, under the name of *Sylphs*, *Gnomes*, *Salamanders*, &c. and hold, that this ſcience introduces people into the ſanctuary of nature. They pretend, the Hebrews knew theſe aereal ſubſtances; that they borrowed their *Gabbaliſtic* knowlege from the Egyptians; and have not yet forgot the art of converſing with the inhabitants of the air.

CABBALISTS, a ſect among the Jews, who follow and practiſe the *Gabbala*, or interpret ſcripture according to the rules of the literal *Cabbala*, above laid down. See CABBALA.

The Jews are divided into two general ſects; the Karaites, who refuſe to receive either tradition, or the talmud, or anything but the pure text of ſcripture: and the Rabbiniſts or Talmudiſts, who, beſide this, receive the traditions of the antients, and follow the talmud.

Theſe latter are again divided into two other ſects; pure rabbiniſts, who explain the ſcripture in its natural ſenſe, by grammar, hiſtory, and tradition; and *Cabbaliſts*, who to diſcover hidden myſtical ſenſes, which they ſuppoſe God to have couched therein, make uſe of the *Cabbala*, and the myſtical rules and methods above-mentioned.

There are viſionaries among the Jews, who believe that Jeſus Chriſt wrought his miracles by virtue of the myſteries of the *Cabbala*. Some learned men are of opinion, that Pythagoras and Plato learned the *Cabbaliſtic* art of the Jews in Egypt; and fanſy they ſee evident footſteps thereof in their philoſophy: others, on the contrary, ſay, it was the philoſophy of Pythagoras and Plato, that firſt furniſhed the Jews with their *Cabbala*. Be this as it will, it is certain, that in the firſt ages of the church moſt of the heretics gave into the vain notions of the *Cabbala*: particularly the Gnoſtics, Valentinians, and Baſilidians. Hence aroſe the ΑΒΡΑΞΑΣ, and the multitude of taliſmans, wherewith the cabinets of the virtuoſi were ſtocked.

CABINET, or **Cabbinet**, the moſt retired place in the fineſt apartment of a building; ſet apart for writing, ſtudying, or preſerving any thing very precious.

A complete apartment conſiſts of an hall, antechamber, chamber, and *cabinet*; with a gallery on one ſide.

CABINS *, or **Cabbins**, in a ſhip, are ſmall cells, or apartments for the officers of the ſhip to lie in; very narrow, and in form of armories or preſſes; uſed in ſeveral parts of the ſhip, particularly on the quarter-deck, and on each ſide of the ſteerage.

* The word comes from the French *Cabane*, Spaniſh *Cabana*, or Italian *Capanna*, a little ſtraw hut; and that from the Greek καπανη, a ſtall or manger.

CABIRIA, ΚΑΒΕΙΡΙΑ, religious feaſts held by the antient Greeks of Lemnos and Thebes, in honour of the gods *Cabiri*.

Theſe feaſts were very antient, and prior even to the time of Jupiter; who is ſaid to have reſtored them: they were held by night. Children above a certain age were here conſecrated, which conſecration was ſuppoſed to be a preſervative againſt all dangers of the ſea, *&c.*

The ceremony of conſecration, called θρονωσις or θρονισμος, *q. d.* enthronizing, conſiſted in placing the initiated youth on a throne, the prieſts dancing round him: the badge of the initiated was a girdle or ſcarf.

When a perſon had committed any murder, the *Cabiria* gave him an aſylum.—Meurſius is very particular in the proof of each of theſe points.

CABLE *, a thick long three-ſtrand rope, ordinarily of hemp, ſerving to hold ſhips firm at anchor, and to tow veſſels in large rivers.

* The word *Cable* comes from the Hebrew word *Chebel*, cord. Du Cange derives it from the Arabic, *Habl*, cord, or *habala*, vincire. Menage, from *Capulum*, or *Cabulum*; and that from the Greek καμηλος, or the Latin, *Camelus*.

The term *Cable* is ſometimes alſo applied to the cordage uſed to raiſe maſſy loads, by means of cranes, wheels, and other like engines: though, in ſtrictneſs, *Cable* is not to be applied to ropes of leſs than three inches circumference. Every *Cable*, of whatever thickneſs it be, is compoſed of three ſtrands; each ſtrand of three twiſts; and each twiſt of a certain number of caburns, or threads of rope-yarn, more or leſs, as the *Cable* is to be thicker or ſmaller.

To make a *Cable*: after forming the ſtrands, they uſe ſtaves; which they firſt paſs between the ſtrands, that they may turn the better, and be intertwiſted the more regularly together. And to prevent any entangling, a weight is hung at the end of each ſtrand. The *Cable*, being twiſted as much as needs, is untwiſted again three or four turns, that the reſt may the better retain its ſtate.

The number of threads each kind of *Cable* is to be compoſed of, is always proportioned to its length and thickneſs; and it is by this number of threads, that its weight and value are aſcertained. A cable of three inches circumference, or one inch diameter, conſiſts of 48 ordinary threads, and weighs 192 pounds; one of 10 inches circumference, of 485 threads, and weighs 1940 pounds; a *Cable* of 20 inches, of 1943 threads, and weighs 7772 pounds. The ſeamen ſay, The *Cable is well laid*, when it is well wrought, or made.

Serve the Cable, or *plat the Cable*, i. e. bind it about with ropes, clouts, *&c.* to keep it from gauling the hauſe.

To *ſplice a Cable*, is to make two pieces faſt together, by working the ſeveral ſtrands of the rope one into another.

To *coil the Cable*, is to roll it up round in a ring; of which, the ſeveral rolls one upon another are called *Cable-tire*.

Pay more Cable, that is, let it more out from the ſhip, that the boat which carries the anchor may the more eaſily drop it into the ſea.

Pay cheap the Cable, that is, put or hand it out apace.

Veer more Cable, that is, let more out.

When two *Cables* are ſpliced together, it is called a *ſhot of a Cable*.

Every merchant-veſſel, how ſmall ſoever, has three *Cables*; viz. the main or maſter *Cable*, which is that of the chief anchor; the common *Cable*, and the ſmall one. The ordinary length of the great *Cable*, is 110 or 120 fathoms or braces. Hence, at ſea,

Cable, or **Cable's-Length**, is alſo uſed for a meaſure of 120 fathom.

CABLED *flutes*, in architecture, ſuch flutes as are filled up with raiſed or ſwelling pieces in form of *Cables*. See Fluting.

Cabled, in heraldry, is applied to a croſs formed of the two ends of a ſhip's *Cable*—Sometimes alſo to a croſs covered over with rounds of rope; more properly called a croſs corded.

CABOCHED, **Caboshed**, or **Cabossed**, in heraldry, is where the head of a beaſt is cut off behind the ears, by a ſection parallel to the face; or by a perpendicular ſection: in contradiſtinction to couped; which is done by a horizontal line; beſides that it is farther from the ears than *Caboſſing*.

CACAO, or **Cocoa**, in natural hiſtory and commerce, a kind of nut, about the ſize of a moderate almond; the ſeed or fruit of a tree of the ſame name, growing in ſeveral parts of the *Weſt-Indies*; chiefly in the provinces of Guatimala and Nicaragua; and in the Caribbee iſlands.

The native Mexicans call the *Cacao* tree, *Cucuhua Guabuitl*; and the Spaniards, *Cacaotal*.—It reſembles our cherry-tree; but is ſo very delicate, and the ſoil it grows in ſo hot, that to guard it from the ſun, they always plant it in the ſhade of another tree, called mother of *Cacao*.

The fruit is incloſed in a kind of pod, of the ſize and figure of a cucumber; except that it begins and ends in a point. Within the pod, which is half a finger thick, is formed a plexus of white fibres, very ſucculent, a little acid, and good to appeaſe thirſt. In the middle of theſe fibres are contained 10, ſometimes 12, and ſometimes more, as far as forty ſeeds, of a violet colour, and dry as acorns. Each ſeed, which is covered with a little bark or rind, when ſtripped thereof, ſeparates into five or ſix unequal pieces, in the middle whereof is a kernel having a tender bud, very difficult to preſerve.

Of this ſeed, with the addition of Vanilla, and ſome other ingredients, the Spaniards, and, after their example, the reſt of Europe, prepare a kind of conſerve, or cake; which, diluted in hot water, makes that delicious, wholſome drink, called chocolate: for the preparation, *&c.* whereof, ſee Chocolate.

This precious fruit the Spaniards make ſo conſiderable a trade of, that there are ſome who make 5000 *l.* ſterling, *per annum*, from a ſingle garden of *Cacao*'s. There are two kinds of *Cacao*'s; the moſt common, which is likewiſe the beſt, is of a dark colour, bordering on red, and round: the other is called *Patlaxe*, which is white, larger, thicker, and flatter; its quality is deſiccative. Some druggiſts, however, ſell four kinds; *viz.* the great and little *Caracca*, and the great and little *Cacao* of the iſlands: theſe, however, may be probably reduced to the two kinds above-mentioned; it being only the greatneſs and ſmalneſs that multiplies the name and kinds.

The *Cacao* nuts, are eſteemed by the Mexicans as anodyne; and uſed, eaten raw, to aſſwage pains of the bowels. They alſo procure a kind of butter or oil from them, as ſweet as that of almonds, and drawn in the ſame manner; which is excellent for burns.

In ſome parts of America, the *Cacao* ſeeds are uſed by the Indians as money: twelve or fourteen are eſteemed equivalent to a Spaniſh Real, or ſix-pence three-farthings ſterling.

CACHEXY *, Καχεξια, in medicine, an ill ſtate or diſpoſition of body: wherein, the nutrition is depraved throughout the whole habit: accompanied with a ſwelling, or bloating of the fleſhy parts; and a paleneſs and lividneſs of complexion.

* The word is Greek; formed from κακος, ill, and ἑξις, habit or diſpoſition.

It ordinarily ariſes from a debility, or foulneſs of the ſtomach or viſcera; ſometimes from an ulcer in the reins, in perſons that have the ſtone, and other the like cauſes. The external cauſes are unwholſome food, frequent drunkenneſs, exceſſive ſtudy, much waking, ſuppreſſion of the menſes, immoderate loſs of blood, chronic fevers, obſtructions, *&c.*

According to Boerhaave, *Cachexies* may ariſe either from a vitiated ſtate of the nutritious juice, from ſome diſorder of the veſſels that are to receive it, or from a defect in the faculty that ſhould apply it. The juices, he obſerves, may be depraved, either from the quality of the food; as if it be farinaceous, leguminous, fat, fibrous, ſharp, aqueous, or viſcous; from the want of motion; from the organs being vitiated by too much weakneſs, or too much ſtrength: and theſe, again may be occaſioned by immoderate ſecretions, and evacuations of any kind, the ſcirrhoſity of ſome of the viſcera, or the retention of ſomething that ſhould be ſecreted: and hence a diminution of the ſolids, or a repletion of the liquids with things that cannot paſs: whence ariſe two notable ill effects of this evil; *viz.* a leucophlegmatia, and an anaſarcous dropſy.

According to the various colour, quantity, tenacity, acrimony and fluidity of the nutritious liquor, ariſe alſo various diſorders as the effects of the *Cachexia*; *v. g.* paleneſs, yellowneſs, li vidneſs, greenneſs, blackneſs, or redneſs of the ſkin; he vineſs, windineſs, palpitation of the heart and arteries i creaſed with the leaſt motion; crude thin urine; ſpontaneo watry ſweats; and, at length, a leucophlegmatia and drop

For the veſſels that receive the nutritious juice, there can well be aſſigned any univerſal fault; unleſs their too gr laxity, and the diſorders accruing from them, may be admitt as ſuch. Laſtly, nutrition is impeded and perverted, by defect in the faculty that ſhould apply it; as when the c culating force is either too languid or too violent.

CACHU, **Cachou**, or **Catechu**. See the article Catech

CACOCHYMIA *, Κακοχυμια, a vicious ſtate of the vital humours, eſpecially of the maſs of blood; ariſing either from a diſorder of the ſecretions, or excretions, or from external contagion.

> * The word is Greek; compounded of κακος, ill, and χυμος, juice.

Gorræus gives the name *Cacochymia* to the abundance, or exceſs of any ill humour; whether it be bile, pituita, or whatever; provided there be only one that thus offends in quantity: and *Plethora* he calls the abundance or exceſs of all the humours together.

CACOPHONIA *, Κακοφωνια, in grammar and rhetoric, the meeting of two letters, or ſyllables, which yield an uncouth, and diſagreeable ſound.

> * The word is Greek; compounded of κακος, evil, and φωνη, voice.

CADARI, or **KADARI**, a ſect in Mahometaniſm, who aſſert free-will, attribute the actions of men to men alone, not to any ſecret power determining the will; and deny all abſolute decrees, and predeſtination.

The author of this ſect was Mabed ben Kaled-Al Gihoni, who ſuffered martyrdom for it. The word comes from the Arabic, קדר, *Kadara*, power. *Ben Aun* calls the *Cadarians*, the Magi, or Manichees of the Muſſulmen.

CADE, a ca , caſk, or barrel; uſed in the book of rates for a determinate number of ſome ſorts of fiſh.—Thus a cade of herrings is a veſſel containing the quantity of 500 herrings, and of ſprats 1000.

CADENCE, in muſic, denotes a kind of cloſe, or reſt, either at the end of a ſong, or of ſome of its parts, into which it is divided as into members, or periods.

The word ſeems a metaphor, drawn from the dancing-ſchool, where it properly ſignifies a pauſe, or fall from motion to reſt.

A *Cadence* is properly when the parts fall, and terminate on a chord, or note, the ear ſeeming naturally to expect it. Regularly it is to be made on the final or dominant, though ſometimes alſo on the mediant, or middle chord of a mode.

Cadences in ſinging anſwer nearly to points, or ſtops in diſcourſe. They are reſts contrived to favour the weakneſs of the performers, as well as the hearers, of a muſical compoſition. Men are not able to ſuſtain their attention, or their voice, beyond the ſpace of two meaſures; even in this ſhort interval we perceive the ſong to fall, and tend rapidly to a pauſe, or reſt: the notes which introduce theſe pauſes, are called *Cadences*, in the proper conducting and expreſſing of which a great part of the muſicians ſkill depends. The chief *Cadence* or cloſe is the key itſelf, in which the baſs muſt always conclude; the next in dignity is the fifth above, and the next to that the third. Or if the baſs be ſharp, the fourth or ſecond above the key.

In modulation, *Cadences* are made on ſeveral keys, though ſtill with ſome relation to the principal one; the harmony muſt always return to the key appropriated to the piece, and often terminate there by middle as well as final *Cadences*.

Cadences uſually occur in every two meaſures, and always in the note which begins the meaſure they happen in. It requires a nice taſte to diſtinguiſh the tonic note on which the *Cadences* eſſentially fall; for that they uſually ſeem to fall on another note preſented in the ſong. It is by the natural progreſſion of the fundamental baſs that we are enabled to make the diſcovery. As often as this baſs falls a fifth, or riſes a fourth, there is a *Cadence*. In reality, this diſpoſition imitates a cloſe ſo well, that when we come to the firſt ſound of this *Cadence*, we find ourſelves as it were forced to fall on the other, ſo that it requires an extraordinary effort of the voice to ſuſtain itſelf on the firſt, or only to fall a third. Hence it is that the firſt ſound which makes its fifth of the tonic is called its dominant, being in reality the top, or higheſt part of the harmonical ſyſtem, and that fartheſt from the fundamental ſound: thus *ſol* is the dominant of *ut*; and *re*, of *ſol*. In making a *Cadence*, the baſs muſt always fall a fifth, or riſe a fourth.

ADENCE, in the antient muſic, denotes a ſeries or ſucceſſion of muſical notes, in certain intervals, which ſtrike the ear agreeably; and eſpecially at the cloſe of a ſong, couplet, or ſtanza. In which ſenſe, *Cadence* amounts to much the ſame with *Rhythmus*.

Some muſicians call a ſhake, a *Cadence*; but that is to confound terms.

ADENCE, in oratory and poetry, denotes the running of verſe, or proſe; otherwiſe called the numbers, and by the antients the Ῥυθμος. See **RHYTHMUS**.

ADENCE, in the modern dancing, is when the ſeveral ſteps and motions follow, or correſpond to, the notes or meaſures of the muſic.

ADETS, the younger brothers of a family: a term naturalized in our language from the French.

At Paris, among the citizens, the *cadets* have an equal portion with the eldeſt: in other places, the eldeſt has all. According to the cuſtom of *Spain*, one of the *Cadets*, in great families, takes the mother's name.

ADET alſo denotes a young gentleman ſoldier, who, to attain to ſome knowlege in the art of war, and in expectation of preferment, chooſes to carry arms as a private man in a company of foot.

adet differs from volunteer, as the former takes pay, though only that of a private man, whereas the latter ſerves without pay.

Formerly there were only allowed two *Cadets* in each company. In 1682. the king of France eſtabliſhed companies of *Cadets*, wherein the young gentry were trained up to war, and taught the arts and excrciſes belonging thereto, as riding, fencing, mathematics, *&c.*

CADI *, among the Turks and Saracens, denotes an ordinary judge, who decides in all civil controverſies within the diſtrict of a town, or city, though ſubject to appeals to ſuperior judges.

> * The word is Arabic קדי or קאדי, *q. d.* judge, formed of קדי to judge. D'Herbelot writes it Cadhi.

The term *Cadi*, uſed abſolutely, denotes the judge of a ſmaller town or village; thoſe of cities being called *Mollas*, or *Moulas*, ſometimes *Mouli-Cadis*, or *great Cadis*.

CADILESCHER, or **CADI-LESKER** *, a capital officer of juſtice among the Turks, anſwering to a chief-juſtice among us.

> * The word comes from the Arabic *Kadi*, judge, the particle *Al*, and *Aſchar*, army; as being at their firſt inſtitution, chiefly judges of the ſoldiery: of whoſe cauſes they have ſtill the ſole cognizance. D'Herbelot writes the name *Cadhi-leſker*, or *Cadhi-asker*.

Each *Cadileſcher* has his particular diſtrict: D'Herbelot makes two *Cadileſchers* in the empire; Rycaut adds a third: with him the *Cadileſcher* of Europe, or Romania, is the firſt; that of Aſia, or Anatolia, the ſecond; and that of Egypt the third.

CADIZADELITES, a ſect among the Muſſulmen. The *Cadizadelites* are a kind of ſtoics, who avoid all feaſting and diverſion, and affect an uncommon gravity in all they do or ſay.

Thoſe of them who inhabit the frontiers of Hungary, *&c.* agree in many things with the Chriſtians; and drink wine, even in the faſt of the Ramazan.

They read the Sclavonic tranſlation of the Bible, as well as the Alcoran. Mahomet, according to them, is the Holy Ghoſt, which deſcended on the apoſtles at the feaſt of penteeoſt.

CADMIA, in pharmacy, a mineral ſubſtance, whereof there are two kinds, *natural* and *artificial*.

The *natural Cadmia*, again, is of two ſorts; the one containing arſenic, and called cobalt; the other containing zink, called calamine, or lapis calaminaris.

The *artificial cadmia* is prepared from copper, in furnaces: of this there are five kinds; the firſt called *botryitis*, as being in form of a bunch of grapes: the ſecond, *oſtracitis*, as reſembling a ſea-ſhell; the third, *placitis*, becauſe reſembling a cruſt; the fourth, *capnitis*, duſty; and the fifth, *calamitis*: this laſt hangs round certain iron rods, wherewith the matter of the copper is ſtirred in the furnace, which being ſhaken off, bears the figure of a quill, called in Latin *calamus*.

The *Cadmia botryitis* is found in the middle of the furnace; the *oſtracitis* at the bottom; the *placitis* at the top; and the *capnitis* at the mouth of the furnace.

This *Cadmia* is deſiccative and deterſive: it is generally uſed in ſtinking ulcers; which by means hereof are brought to cicatrize.

The *botryitis*, and *placitis*, are alſo good in diſeaſes of the eyes. See Supplement, articles **CALAMINARIS**, and **COBALT**.

CADRITES, a kind of religious among the Mahometans; whoſe founder was Abdul Cadri, a great philoſopher and lawyer; whence they fetch their name, *Cadrites*.

They live in common, and in a kind of monaſteries; which, however, they are allowed to quit, if they requeſt it, and to marry; on condition of their wearing black buttons on their garments, to diſtinguiſh them from the reſt of the people.

In their monaſteries, each Friday, they paſs the greateſt part of the night in running round, holding each other's hand, and crying inceſſantly *hhai*, living, one of the names of God: one of their number plays all the time on a flute, to animate them in this extravagant dance.

CADUCEUS, or **CADUCEUM**, Mercury's rod, or ſceptre; a wand entwiſted with two ſerpents, borne by that deity as the enſign of his quality and office.

The poets attribute wondrous virtues to the *Caduceus*; as that of throwing people into a ſleep, raiſing the dead, *&c.* It was alſo uſed by the antients as a ſymbol of peace and concord: the Romans ſent the Carthaginians a javelin, and a *Caduceus*, offering them their choice, whether of war, or peace.

Among that people, thoſe who denounced war were called *feciales*, and thoſe who went to demand peace, *Caduceatores*; becauſe they bore a *Caduceus* in their hand.

The *Caduceus* found on medals, is a common ſymbol, ſignifying good conduct, peace, and proſperity. The rod expreſſes power, the two ſerpents prudence, and the two wings diligence.

CADUCUS *morbus*, in medicine; ſee the article **EPILEPSY**.

CÆCUM, in anatomy. See the article **COECUM**.

CÆMENT, in a general ſenſe, any compoſition of a glutinous, or tenacious nature, proper to bind, unite, or keep things in coheſion.

The word is alſo written *Cement*, and even *Ciment*. It is formed from the Latin *cæmentum*, of *cædo*, I beat.—Tho' M. Felibien obſerves, what the antient architects called *Cæmentum*, was a very different thing from our *Cæment*. The name *Cæment*, with them, ſtood for a kind of maſonry, or manner of laying the ſtones; and even for the quality of the ſtones; as when the walls were built of rude, unequal ſtones. In reality, the ſtones were cut for ſuch work, but not ſquared nor uniform: ſo that *Cæmenta* ſtood oppoſed to *quadrati lapides*.

Morter, ſolder, glue, *&c.* are *Cæments*. The bitumen brought from the Levant is ſaid to have been the *Cæment* uſed in the walls of Babylon. See BITUMEN.

Equal quantities of powder'd glaſs, ſea-ſalt, and iron filings, mixed with loam, make one of the hardeſt and moſt durable *Cæments* that is known. The juice of garlick, M. Perrault aſſures us, is a *Cæment* for broken glaſs and china-ware.

CÆMENT is particularly uſed, in architecture, for a ſtrong binding ſort of morter, uſed to bind, or unite bricks or ſtones together, for ſome kinds of mouldings; or to make a block of bricks, for the carving of ſcrolls, capitals, *&c.*

It is of two ſorts: the *hot Cæment*, which is the moſt common, is made of reſin, bees-wax, brickduſt, and chalk, boiled together. The bricks to be *cemented* are heated, and rubbed one upon another, with *Cæment* between.

The *cold Cæment* is leſs uſed; it is made of Cheſhire cheeſe, milk, quick-lime, and whites of eggs.

CÆMENT is alſo uſed among goldſmiths, engravers, jewellers, *&c.* for a compoſition of fine brickduſt, well ſifted, reſin, and bees-wax; in uſe among thoſe artificers to keep the metals to be engraven, or wrought on, firm to the block, *&c.* as alſo to fill up what is to be chiſſeled.

CÆMENT, in chemiſtry, is a compound maſs, or ſaline powder, uſed for the purifying of gold, and conſuming the impurer metals mixed therewith.

CÆMENTS are prepared of ſuch ſalts, and other ingredients, as by their acrimony corrode and ſeparate the ſilver, copper, or other matters, from the body of gold. Some authors make but two kinds of *Cæments*, *common* and *royal*. The firſt made of brickduſt, nitre, and verdegris; the ſecond of ſal gemmæ and armoniac, each one part; two parts of common ſalt, and four of bole; the whole reduced into a paſte with urine. But many other compoſitions are given by le Mort, le Febure, and others. Paracelſus has a book expreſs on the ſeveral kinds of *Cæments*. See Supplement, article CEMENT.

CÆMENTATION, a manner of purifying gold from other metals, by means of *Cæment*.

It is performed thus: Thin plates, or laminæ, are ſtratified in a crucible with the royal cæment; the crucible is covered up, and encompaſſed with fire for 10 or 12 hours, till being thus calcined, the ſalts have imbibed and conſumed the impurities of the gold. This method of refining is much inferior to that by means of antimony; in regard, the ſalts, if not ſufficiently corroſive, leave other metals remaining with the gold; and if too corroſive and acrimonious, they frequently eat away the gold itſelf. See REFINING.

CÆSAR, among the Romans, was a long time uſed for the heir intended, or preſumptive, of the empire; as king of the Romans is now uſed for that the German empire.

Thus Conſtantius Chlorus, and Galerius, were proclaimed *Cæſars* by Diocleſian and Maximian; Licinius by Galerius; Conſtantine the Great, by Conſtantius; Conſtantine the younger, Conſtantius, and Conſtans, by their father Conſtantine; and Junius Gallus, and Julian, by Conſtantius.

The *Cæſars* were a kind of adjuncts or aſſociates of the empire, *Participes imperii*. They wore the imperial mantle, purple, and diadem, and walked with other marks of the ſovereign dignity: they were created like the emperors, by putting on the purple robe.

The dignity of *Cæſar* remained the ſecond of the empire, till Alexius Comnenus having erected Nicephorus Meliſſenus *Cæſar* by contract, and it being neceſſary to confer ſome higher dignity on his own brother Iſaacius, he created him Sebaſtocrator, with the precedency over Meliſſenus, ordering that in all acclamations, *&c.* Iſaacius Sebaſtocrator ſhould be named the ſecond, and Meliſſenus *Cæſar* the third.

The title took its riſe from the cognomen, or ſurname of the firſt emperor, C. Julius *Cæſar*, which by a decree of the ſenate all the ſucceeding emperors were to bear. Under his ſucceſſor, the appellation Auguſtus being appropriated to the emperors, in compliment to that prince, the title *Cæſar* was given to the ſecond perſon in the empire, though it ſtill continued alſo to the given to the firſt: and hence the difference between *Cæſar* uſed ſimply, and *Cæſar* with the addition of Imperator Auguſtus.

Authors are divided as to the origin of the word *Cæſar*, the cognomen of the Gens Julia. Some, after Servius, derive it from *Cæſaries*, head of hair; urging that the firſt who bore it, was diſtinguiſhed by his fine head of hair, which occaſioned the title. The more common opinion is, that the word *Cæſar à cæſo matris utero*; becauſe his mother's womb was cut open to give him birth.

Others derive it from hence, that the firſt who bore the name, killed an elephant in battle, *à cæſo elephante*, which in the Mauritian tongue is called *Cæſar*. This opinion Bircherodius ſupports on the credit of an antient medal, whereon is ſeen an elephant with the word CÆSAR.

CÆSARIAN *Section*, the operation of extracting the fœtus from the mother, whether living or dead, by an inciſion through the abdomen into the uterus. See DELIVERY, *&c.*

This is ſometimes alſo denominated the *Cæſarian* birth, Partus *Cæſareus*; by the Greeks, ὑϛεροτομοτοκια, or γαϛροραφια.

It appears from experience, that wounds in the muſcles of the epigaſtrium, or peritonæum, and thoſe in the matrix, are not mortal; ſo that the belly of the mother may be ſometimes opened to give paſſage for the child: but then it is not without great danger; on which account, this operation is very rarely practiſed, except on women newly dead. Thoſe brought into the world in this manner, are called *Cæſares*, and *Cæſones*, *à cæſo matris utero*; as were C. Julius Cæſar, Scipio Africanus, Manlius, and our Edward VI.

CÆSTUS*, a large leathern gantlet, loaded with lead, uſed in the combats, or exerciſes, of the antient athletæ.

* It was called *Cæſtus*, *à cædendo*, from *cædo* to ſtrike, or beat.

Calepine ſays it was a kind of a club with leaden balls hanging from it, ſuſpended by leathern thongs: but he was miſtaken, it being only a leathern thong ſtudded with nails of lead or iron; part of it was twiſted round the hand and arm, to prevent their being broken or diſlocated.

CÆSURA, in the antient poetry, is when, in the ſcanning of a verſe, a word is divided, ſo as one part ſeems cut off, and goes to a different foot from the reſt; *e. gr.*

Menti | ri no | li; nun | quam men | dacia proſunt.

Where the Syllables *ri*, *li*, *quam*, and *men* are *Cæſures*.

CÆSURA, more properly denotes a certain and agreeable diviſion of the words, between the feet of a verſe; whereby the laſt ſyllable of a word becomes the firſt of a foot.

As in— *Arma virumq;* cano, *Trojæ qui primus ab oris.*

Where the ſyllables *no* and *jæ* are *Cæſures*.

CÆSURE, in the modern poetry, denotes a reſt or pauſe towards the middle of a long Alexandrine verſe; by which the voice and pronunciation are aided, and the verſe as it were divided into two hemiſtichs.

In Alexandrine verſes, of 12 or 13 ſyllables, the *Cæſure* muſt always be on the ſixth; in verſes of 10, on the fourth; and in thoſe of 12, on the ſixth: verſes of eight ſyllables muſt not have any *Cæſure*.

CÆTERIS *Paribus*, a Latin term, in frequent uſe among mathematical, and phyſical writers.

The words literally ſignify, *the reſt, or the other things, being alike, or equal*; which expreſſes pretty nearly their meaning as a term.

Thus, we ſay, the heavier the bullet, *cæteris paribus*, the greater the range; *i. e.* by how much the bullet is heavier, if the length and diameter of the piece, and the quantity and ſtrength of the powder, be the ſame, by ſo much will the utmoſt range or diſtance of a piece of ordnance be greater.

Thus alſo, in a phyſical way, we ſay, the velocity and quantity of blood circulating in a given time, through any ſection of an artery, will, *cæteris paribus*, be according to its diameter, and nearneſs to, or diſtance from the heart.

CAIMACAN*, or CAIMACAM, a dignity in the Ottoman empire anſwering to that of lieutenant, or vicar among us.

* The word is compoſed of the two Arabic words, *Caim mechum*, *q. d.* he who holds the place, or diſcharges the function, of another.

There are uſually two *Caimacans*: one reſides at Conſtantinople, who is the governor thereof: the other attending the grand vizir, in quality of his lieutenant.—Sometimes there are thre *Caimacans*; one conſtantly attending the grand ſignior, anothe the grand vizir, and a third conſtantly at Conſtantinople; wh examines affairs of policy, and regulates them in great meaſure. The *Caimacan* that attends the vizir, only officiates when at diſtance from the grand ſignior; his function ceaſing, when th vizir is with the ſultan. The *Caicaman* of the vizir is hi ſecretary of ſtate, and the firſt miniſter of his council.

CAINITES, or CAINIANS, a ſect of antient heretics, who pa extraordinary honours to thoſe perſons repreſented in ſcriptu as the worſt of mankind; ſo called from Cain, whom th eſteemed their patriarch, and the chief object of their vene tion.

The *Cainites* were a branch of the gnoſtics: they held, th Cain and Eſau, Lot, and thoſe of Sodom, were born of a mo eminent celeſtial virtue; that Abel, on the contrary, was bo of a virtue much leſs eminent: to Cain, and others of the ſa order, who, according to them, had a mighty knowlege of things, they aſſociated Judas, whom they held in ſo mu eſteem, that they had a book among them called the go of Judas. S. Epiphanius relates, and at the ſame time refu their errors.

CALAMINARIS *Lapis*, CALAMIN *Stone*, a kind of foſſil ſome uſe in medicine, but of more in foundery; being uſe make copper yellow, *i. e.* to convert it into braſs. It is either brownish colour, as that of Germany, and England; or re as that about Liege, and in ſome parts of France; whi accounted the beſt, becauſe turning yellow by calcination. is dug out of mines, uſually in ſmall pieces; having al eyes, ſometimes veins, of lead in it; though it be not al found in lead-mines.—We have mines of *Calamin* at Wri in Somerſetſhire, and elſewhere. It is generally dug in b rocky ground; its courſes running, uſually, at 6 o'clock, as call it, *i. e.* from eaſt to weſt; ſometimes at 9, and ſometimes at 12; or perpendicular, which is accounted the beſt.

When dug, it is waſhed, or buddled, as they call it, in a running water, which carries off the impure and earthy parts; leaving the lead, *calamine*, and ſparry parts, at bottom: they then put it in a ſieve, and, ſhaking it well in water, the lead mixed with it ſinks to the bottom, the ſparry parts get to the top, and the *calamine* lies in the middle: thus prepared, they bake it in an oven four or five hours; the flame being ſo contrived, as to paſs over, and ſo to heat and bake the *calamine*; ſtirring and turning it all the while with iron rakes: this done, they beat it to powder, and ſift it; picking out of it what ſtones they find. And thus it is fit for uſe.

For the manner of applying calamine *in the preparation of braſs*, ſee BRASS.

Beſides the two natural *calamines*, this and cobalt, there are two artificial ones: the beſt is that called *pompholyx*, the other *tutty*.

Calamine is of ſome medicinal virtue; being aſtringent, deſiccative, and deterſive; and is much uſed for taking off films from the eyes of horſes, &c. See Supplement, article CALAMINARIS.

CALAMITA, in pharmacy, a term ſometimes uſed for ſtyrax; becauſe antiently put up in canes, *calami*, to preſerve it. See Supplement, article CALAMITA.

CALAMUS *Aromaticus*, in pharmacy, a ſpicy, bitteriſh root, produced by a peculiar kind of water-plant growing in the Levant, and even in ſeveral parts of England. It is about the thickneſs of a gooſe-quill, and is much uſed as a cephalic, and ſtomachic; eſpecially againſt complaints ariſing from a cold weak ſtomach.

The *calamus aromaticus* is the ſame with what is otherwiſe denominated *acorus*.

It is alſo called *calamus odoratus*, and *calamus amarus*; ſometimes *calamus verus*, or *officinalis*, to diſtinguiſh it from another ſort called *adulterinus*: in Engliſh it is called the *ſweet cane*, or *ſweet-ſmelling flag*.

The beſt is that which is greyiſh without, and rediſh within; its pulp white, and taſte ſomewhat bitter; but its leaves, as well as roots, ſweet-ſcented.

CALAMUS *Scriptorius*, in anatomy, is a dilatation of the fourth ventricle of the brain; ſo called from its figure, which reſembles that of a quill. See BRAIN.

CALATRAVA, a military order, inſtituted in 1158, by Sancho III. king of Caſtile, on the following occaſion: The Moors going to attack the little city *Calatrava*, and the templars, who held it, ſurrendering it up to the king, on a ſuſpicion of their inability to defend it; Diego Velaſquez, a Ciſtercian monk, but a man of quality, perſuaded Raimond abbot of Fitero, a monaſtery of Ciſtercians, to beg *Calatrava* of the king. He obtained it; and Raimond and Diego put themſelves in it; being followed by a great number of people who joined them out of zeal, for the defence of *Calatrava*. The Moors abandoning the enterprize, many of thoſe, who came to the defence of the city, entered the order of the Ciſtercians; and that under a habit more fit for military than monaſtic exerciſes. Accordingly, they began to make excurſions on the Moors; and this was the riſe of the order of *calatrava*.

The firſt grand maſter was Garcias; under whoſe government the order was confirmed by Alexander III. in 1164. In 1489. Ferdinand and Iſabella, with the conſent of pope Innocent VIII. reunited the grand maſterſhip of *calatrava* to the Spaniſh crown: ſo that the kings of Spain are now become perpetual adminiſtrators thereof.

The knights bear a croſs gules, fleury with green, &c. Their rule and habit was originally that of the Ciſtercians, but their dreſs was a little ſhortened, on account of their exerciſes: and in proceſs of time they were permitted a ſecular habit.

CALCANEUM, or CALCANEUS, in anatomy, the ſame as calx, os calcis, calcar, or the heel-bone.

It lies under the aſtragalus, to which it is articulated by ginglimus; behind it is a large protuberance, which makes the heel, and into which the tendo Achillis is inſerted.

CALCANTHUM, in minerology. See the article CHALCANTHUM.

CALCEDONY *, *Lapis* CALCEDONIUS, one of the loweſt-prized among precious ſtones; diverſified with various colours, partly tranſparent, and partly opake.

* Salmaſius derives the word, by corruption, from *carchedonius*; taking the modern *calcedony* to be the ſame with the lapis carchedonius of the antients.

The *calcedony*, or calcidony, nearly reſembles the common agate, and is reputed a ſpecies thereof: its colour is a miſty grey, clouded with blue, yellow, or purple. It is ſuppoſed to be the white agate of the antients; though we ſometimes find pieces of it blackiſh.

It is very fit for the graver; and much uſed, either to engrave arms, &c. upon; as being harder and preferable to cryſtal, if good; or to paint them on the backſide. In ſome parts, vaſes, cups, religious beads, &c. are made thereof. The cleareſt and beſt is that with a pale caſt of blue.

Bellorius ſays, it is ſo common among the Turks, that it ſerves them for threſhing their corn; but he ſeems to be miſtaken.

Neri ſhews how to make artificial *calcedonies* of the colour of agate, and oriental jaſpers. See Supplement, article CHALCEDONY.

CALCEDONIUS is alſo a term uſed by the jewellers for a defect in ſome precious ſtones; when, in turning them, they find white ſpots, or ſtains, like thoſe of the calcedony.

This defect is frequent in granates and rubies. The lapidaries uſually remedy it by hollowing the bottom of the ſtone.

CALCINATION, the act of calcining any matter; *i. e.* of reducing it into a calx, or very ſubtil white powder, by fire.

Calcination, ſometimes alſo called *chemical pulverization*, is the next degree of the power of fire beyond that of fuſion: for when fuſion is longer continued, not only the more ſubtil particles of the body itſelf fly off, but the particles of fire do likewiſe inſinuate themſelves in ſuch multitudes, and are ſo diſperſed and blended throughout its whole ſubſtance, that the fluidity which was firſt cauſed by the fire, can no longer ſubſiſt. From this union ariſes a third kind of body, which being very porous and brittle, is eaſily reduced to powder. For the fire having penetrated every-where into the pores of the body, the particles are both hindered from mutual contact, and divided into minute atoms; ſo that they are eaſily reducible into the fineſt powder.

CALCINATION, in a more extenſive ſenſe, includes alſo the ſolution of metalline bodies by corroſive matters.

In this ſenſe, *calcination* is divided into *actual*, and *potential*.

Actual **CALCINATION** is that effected by actual fire, of wood, coals, or other fuel, raiſed to a certain heat, according to the nature of the ſubſtance to be calcined.

Actual *calcination* is ſubdivided into *incineration*, and *reverberation*: to this head alſo belongs the *extinction* of things ignited.

Potential **CALCINATION** is that procured by potential fire; *viz.* by ſalts, ſulphurs, and other drugs, which have, as it were, the force of fire; as ſtrong waters, corroſive ſpirits, &c.

Gold is calcined by a reverberatory fire, with mercury, and ſal armoniac; ſilver with common ſalt, and alcali ſalt; copper with ſalt, and ſulphur; iron with ſal armoniac, and vinegar; tin with antimony, lead, and ſulphur; mercury with aqua fortis: this laſt, alſo, as well as moſt other minerals, calcines with fire alone, without any other ingredient. See Supplement, article CALCINATION.

CALCULATION, the act of computing ſeveral ſums, by adding, ſubtracting, multiplying, or dividing. See ARITHMETIC.

An error in *calculation* is never protected, or ſecured, by any ſentence, decree, &c. In ſtating accounts, there is always underſtood, *ſalvo errore calculi*.

The word *calculus* is uſed in this ſenſe, in alluſion to the practice of the antients, who uſed *calculi*, or little ſtones, in making computations, in taking ſuffrages, and in keeping accompts, &c. as we now uſe counters, figures, &c.

CALCULATION is more particularly uſed to ſignify the computations in aſtronomy and geometry, for making tables of logarithms, ephemerides, finding the times of eclipſes, &c.

CALCULATION *of Clock and Watch-work*. See CLOCK, and WATCH-WORK.

CALCULUS *, in medicine, the diſeaſe of the ſtone in the bladder, or kidneys.

* The term is pure Latin; and ſignifies, literally, a *little pebble*.

The *calculus* in the bladder is called *lithiaſis*; and in the kidneys, *nephritis*.

CALCULUS *Literalis*, or *Literal* CALCULUS, is the ſame with ſpecious arithmetic; ſo called, from its uſing the letters of the alphabet: in contradiſtinction to numeral arithmetic, which uſes figures.

In the literal *calculus*, given quantities are expreſſed by the firſt letters, *a b c d*; and quantities ſought, by the laſt, *z*, *y*, *x*, &c. Equal quantities are denoted by the ſame letters.

CALCULUS *Differentialis* is a method of differencing quantities, or of finding an infinitely ſmall quantity, which, being taken infinite times, ſhall be equal to a given quantity: or, it is the arithmetic of the infinitely ſmall differences of variable quantities.

The foundation of this *calculus* is an infinitely ſmall quantity, or an infiniteſimal, which is a portion of a quantity incomparable to that quantity, or that is leſs than any aſſignable one; and therefore accounted as nothing; the error accruing by omitting it being leſs than any aſſignable one, *i. e.* leſs than nothing. Hence two quantities, only differing by an infiniteſimal, are reputed equal.

The better to conceive the nature of an infiniteſimal, ſuppoſe, that in meaſuring the height of a mountain, while you are looking through the ſights, the wind blows off the ſmalleſt grain of duſt; the height of the mountain is, then, leſs by the diameter of the duſt than before: but as the mountain is ſtill found of the ſame height, whether the duſt be there or not, its diameter has nothing to do in the preſent caſe; and paſſes for nothing, *i. e.* is infinitely ſmall. Thus, in aſtronomy, the diameter of the earth is an infiniteſimal, in reſpect of the diſtance of the fixed ſtars; and the ſame holds in abſtract quantities.

tities. The name infiniteſimal, therefore, is merely reſpective, and involves a relation to another quantity; and does not denote any real ens, or being.

Now infiniteſimals are called *differentials*, or differential quantities, when they are conſidered as the differences of two quantities. Sir Iſaac Newton calls them *moments*; conſidering them as the momentary increments of quantities; *v. g.* of a line generated by the flux of a point; or of a ſurface by the flux of a line.

The *differential calculus*, therefore, and the doctrine of fluxions, are the ſame thing, under different names; the former given by M. Leibnitz, and the latter by Sir Iſaac Newton: each of whom lay claim to the diſcovery.

There is, indeed, a difference in the manner of expreſſing the quantities reſulting from the different views wherein the two authors conſider the infiniteſimals; the one as moments, the other as differences: Leibnitz, and moſt foreigners, expreſs the differentials of quantities by the ſame letters as variable ones, only prefixing the letter *d*: thus the differential of x is called dx; and that of y, dy: now dx is a poſitive quantity, if x continually increaſe; negative, if it decreaſe.

The Engliſh, with Sir Iſaac Newton, inſtead of dx, write $\dot{x}$ (with a dot over it); for dy, $\dot{y}$, &c. which foreigners object againſt, on account of that confuſion of points, which they imagine ariſes, when differentials are again differenced; beſides, that the printers are more apt to overlook a point, than a letter.

Stable quantities being always expreſſed by the firſt letters of the alphabet $da = o$, $db = o$, $dc = o$; wherefore $d(x + y - a) = dx + dy$, and $d(x - y + a)\, dx - dy$. So that the differencing of quantities is eaſily performed, by the addition or ſubtraction of their compounds.

To difference quantities that multiply each other; the rule is, firſt, multiply the differential of one factor into the other factor, the ſum of the two factors is the differential ſought: thus, the quantities being xy, the differential will be $x\,dy + y\,dx$; i. e. $d(xy) = x\,dy + y\,dx$. Secondly, if there be three quantities mutually multiplying each other; the factum of the two muſt then be multiplied into the differential of the third: thus, ſuppoſe vxy, let $vx = t$, then $vxy = ty$; conſequently $d(vxy) = t\,dy + y\,dt$: but $dt = v\,dx + x\,dv$. Theſe values, therefore, being ſubſtituted in the antecedent differential, $t\,dy + y\,dt$, the reſult is $d(vxy) = vx\,dy + vy\,dx + xy\,dv$. Hence it is eaſy to apprehend how to proceed, where the quantities are more than three.

If one variable quantity increaſe, while the other y decreaſes, it is evident $y\,dx - x\,dy$ will be the differential of xy.

To difference quantities that mutually divide each other: the rule is, firſt, multiply the differential of the diviſor into the dividend; and, on the contrary, the differential of the dividend into the diviſor; ſubtract the laſt product from the firſt, and divide the remainder by the ſquare of the diviſor; the quotient is the differential of the quantities mutually dividing each other. See Fluxions.

Calculus *Integralis*, or *Summatorius*, is a method of integrating, or ſumming up moments, or differential quantities; *i. e.* from a differential quantity given, to find the quantity from whoſe differencing the given differential reſults.

The *integral calculus*, therefore, is the inverſe of the differential one: whence the Engliſh, who uſually call the differential method, *fluxions*, give this *calculus*, which aſcends from the fluxions, to the flowing or variable quantities; or, as foreigners expreſs it, from the differences to the ſums; by the name of the *inverſe method of fluxions*. See Fluxions.

Hence, the integration is known to be juſtly performed, if the quantity found, according to the rules of the *differential calculus*, being differenced, produce that propoſed to be ſummed. See Summatory *Calculus*.

Suppoſe $\int$ the ſign of the ſum, or integral quantity; then $\int y\,dx$ will denote the ſum, or integral of the differential $y\,dx$. *To integrate, or ſum up a differential quantity*: It is demonſtrated, firſt, that $\int dx = x$: ſecondly, $\int (dx + dy) = \overline{x + y}$: thirdly, $\int (x\,dy + y\,dx) = xy$: fourthly, $\int (m x^{m-1}\,dx = x^{m}) = xm$: fifthly, $\int (n:m)\, x\, (n-m) : m\,dx = x^{n} : {}^{m}$: ſixthly, $\int (y\,dx - x\,dy) : y^{2} = x.y$. Of theſe, the fourth and fifth caſes are the moſt frequent; wherein the differential quantity is integrated, by adding a variable unity to the exponent, and dividing the ſum by the new exponent multiplied into the differential of the root; *v. g.* the fourth caſe, by $m - (1 + 1)\,dx$, i. e. by $m\,dx$.

If the differential quantity to be integrated, do not come under any of theſe formula's, it muſt either be reduced to an integrable finite, or an infinite ſeries, each of whoſe terms may be ſummed.

It may be here obſerved, that, as in the analyſis of finites, any quantity may be raiſed to any degree of power; but *vice verſa*, the root cannot be extracted out of any number required: ſo in the analyſis of infinites, any variable or flowing quantity may be differenced; but, *vice verſa*, any differential cannot be integrated. And as, in the analyſis of finites, we are not yet arrived at a method of extracting the roots of all equations; ſo neither has the *integral calculus* arrived at its perfection; and as in the former we are obliged to have recourſe to approximation; ſo in the latter we have recourſe to infinite ſeries, where we cannot attain to a perfect integration. See Series.

Calculus *Exponentialis* is a method of differencing exponential quantities, or of finding and ſumming up the differentials, or moments of exponential quantities; or, at leaſt, bringing them to geometrical conſtructions.

By exponential quantity is here underſtood a power, whoſe exponent is variable; *v. g.* $x^{x}\ a^{x}\ x^{y}$, where the exponent x does not denote the ſame in all the points of a curve, but in ſome ſtands for 2, in others for 3, in others for 5, &c.

To difference an exponential quantity; there is nothing required but to reduce the exponential quantities to logarithmic ones; which done, the differencing is managed as in logarithmic quantities.—Thus, ſuppoſe the differential of the exponential quantity xy required: let

$$x^{y} = z$$

Then will $y\,lx = lz$

$$lx\,dy + y\,dx : x = dz : z$$

$$zlx\,dy + zy\,dx : x = dz$$

$$y-1$$

That is, $x^{y}\,lx\,dy + y\,x^{y-1}\,dx = dz$.

CALEFACTION, a ſchool-term for the action of fire in heating a body; or the impulſe which the particles of a hot body impreſs on other bodies around.

The word is particularly uſed in pharmacy; where *calefaction* is diſtinguiſhed from coction: the firſt being applied, where the thing is only heated, without boiling.

CALENDAR *, Calendarium, a diſtribution of time, accommodated to the uſes of life; or a table, or almanack, containing the order of days, weeks, months, feaſts, &c. happening throughout the year. See Time, Year, Month, Feast, &c.

* It is called *calendar* from the word *calendæ*, antiently wrote in large characters at the head of each month. See Calends.

The Roman Calendar, which continues ſtill in uſe, owes its origin to Romulus; but it has undergone various reformations ſince his time. That legiſlator diſtributed time into ſeveral periods, for the uſe of the people under his command: but as he was much better verſed in matters of war, than of aſtronomy; he only divided the year into ten months; making it begin in the ſpring, on the firſt of March: imagining the ſun made his courſe through all the ſeaſons in three hundred and four days.

Romulus's *calendar* was reformed by Numa, who added two more months, January and February; placing them before March: ſo that his year conſiſted of three hundred fifty-five days, and began on the firſt of January. He choſe, however, in imitation of the Greeks, to make an intercalation of forty-five days, which he divided into two parts; intercalating a month of twenty-two days at the end of each two years; and at the end of each two years more, another month of twenty-three days; which month, thus interpoſed, he called *Marcedonius*, or the intercalary February.

But theſe intercalations being ill obſerved by the pontiffs, to whom Numa committed the care of them, occaſioned great diſorders in the conſtitution of the year; which Cæſar, as ſovereign pontiff, endeavoured to remedy: to this end, he made choice of Soſigenes, a celebrated aſtronomer of thoſe times; who found, that the diſpenſation of time in the *calendar* could never be ſettled on any ſure footing, without having regard to the annual courſe of the ſun. Accordingly, as the ſun's yearly courſe is performed in three hundred ſixty-five days ſix hours, he reduced the year to the ſame number of days: the year of this correction of the *calendar*, was a year of confuſion; they being obliged, in order to ſwallow up the ſixty-five days that had been imprudently added, and which occaſioned the confuſion, to add two months beſides the Marcedonius, which chanced to fall out that year; ſo that this year conſiſted of fifteen months, or four hundred forty-five days. This reformation was made in the year of Rome 708. forty-two or forty-three years before Chriſt.

The *Roman*, called alſo *Julian calendar*, from its reformer Julius, is diſpoſed into quadriennial periods; whereof the three firſt years, which he called *communes*, conſiſt of three hundred ſixty-five days; and the fourth, *biſſextile*, of three hundred ſixty-ſix; by reaſon of the ſix hours, which in four years make a day, or ſomewhat leſs; for in one hundred thirty-four years an intercalary day is to be retrenched. On this account it was, that pope Gregory XIII. with the advice of Clavius and Ciaconius, appointed, that the hundredth year of each century ſhould have no biſſextile, excepting each fourth century: that is, a ſubtraction is made of three biſſextile days in the ſpace of four centuries; by reaſon of the eleven minutes wanting in the ſix hours whereof the biſſextile conſiſts. See Bissextile.

This reformation of the *calendar*, or the new ſtile, as we call it, commenced on the fourth of October 1582, when ten days were thrown out at once; ſo many having crept into the computation ſince the time of the council of Nice, in 325. by the defect of eleven minutes.

Julian Chriſtian CALENDAR is that wherein the days of the week are determined by the letters A, B, C, D, E, F, G, by means of the ſolar cycle; and the new and full moons, eſpecially the paſchal full moon, with the feaſt of Eaſter, and the other moveable feaſts depending thereon, by means of golden numbers, rightly diſpoſed through the Julian year. See GOLDEN NUMBER.

In this *calendar*, the vernal equinox is ſuppoſed to be fixed to the 21ſt day of March; and the cycle of 19 years, or the golden numbers, conſtantly to indicate the places of the new and full moons: yet both are erroneous. And hence aroſe a very great irregularity in the time of Eaſter. To ſhew this error the more apparently, let us apply it to the year 1715. in this year, then, the vernal equinox falls on the 10th of March; and therefore comes too early by 11 days. The paſchal full moon falls on the 7th of April; and therefore too late, with regard to the cycle, by three days. Eaſter, therefore, which ſhould have been on the 10th of April, was that year on the 17th. The error, here, lies only in the metemptoſis, or poſt-poſition of the moon, through the defect of the lunar cycle. If the full moon had fell on the 11th of March, Eaſter would have fallen on the 13th of March; and therefore the error, ariſing from the anticipation of the equinox, would have exceedingly augmented that ariſing from the poſt-poſition. Theſe errors, in courſe of time, were ſo multiplied, that the *calendar* no longer exhibited any regular Eaſter. Pope Gregory XIII. therefore, by the advice of Aloyſius Lilius, in 1582. threw 10 days out of the month of October, to reſtore the equiuox to its place, *viz.* the 21ſt of March; and thus introduced the form of the Gregorian year, with ſuch a proviſion, as that the equinox ſhould be conſtantly kept to the 21ſt of March. The new moons and full moons, by advice of the ſame Lilius, were not to be indicated by golden numbers, but by epacts. The *calendar*, however, is ſtill retained in England, without this correction: whence there is a difference of 11 days between our time and that of our neighbours.

Gregorian CALENDAR is that which, by means of epacts, rightly diſpoſed through the ſeveral months, determines the new and full moons, and the time of Eaſter, with the moveable feaſts depending thereon, in the Gregorian year.

The Gregorian *calendar*, therefore, differs from the Julian, both in the form of the year, and in that epacts are ſubſtituted in lieu of golden numbers: for the uſe and diſpoſition whereof, ſee EPACT.

Though the Gregorian *calendar* be preferable to the Julian, yet is it not without its defects (perhaps, as Tycho Brahe and Caſſini imagine, it is impoſſible ever to bring the thing to a perfect juſtneſs). For, firſt, the Gregorian intercalation does not hinder, but that the equinox ſometimes lags behind the 21ſt of March, as far as the 23d; and ſometimes anticipates it, falling on the 19th: and the full moon, which falls on the 20th of March, is ſometimes the paſchal; yet not ſo accounted by the Gregorians. On the other hand, the Gregorians account the full moon of the 22d of March, the paſchal; which yet, falling before the equinox, is not paſchal. In the firſt caſe, therefore, Eaſter is celebrated in an irregular month; in the latter, there are two Eaſters in the ſame eccleſiaſtical year. In like manner, the cyclical computation being founded on mean full moons, which yet may precede or follow the true ones by ſome hours; the paſchal full moon may fall on Saturday, which is yet referred by the cycle to Sunday; whence, in the firſt caſe, Eaſter is celebrated eight days later than it ſhould be; in the other it is celebrated on the very day of the full moon, with the Jews and Quartodeciman hereticks; contrary to the decree of the council of Nice. Scaliger and Calviſius ſhew other faults in the Gregorian *calendar*, ariſing from the negligence and inadvertency of the authors: yet is this *calendar* adhered to by the Romaniſts, throughout Europe, *&c.* and uſed wherever the Roman breviary is uſed.

Reformed, or *Corrected* CALENDAR, that which, ſetting aſide all apparatus of golden numbers, epacts, and dominical letters, determines the equinox, with the paſchal full moon, and the moveable feaſts depending thereon, by aſtronomical computation, according to the Rudolphine tables.

This *calendar* was introduced among the Proteſtant ſtates of Germany, in the year 1700. when 11 days were at once thrown out of the month of February; ſo that in 1700. February had but 18 days: by this means, the corrected ſtile agrees with the Gregorian. This alteration, in the form of the year, they admitted for a time; in expectation that, the real quantity of the tropical year being at length more accurately determined by obſervation, the Romaniſts would agree with them, on ſome more convenient intercalation.

Conſtruction of a CALENDAR, or *Almanack.* 1°, Compute the ſun's and moon's place for each day of the year; or take them from ephemerides. 2°, Find the dominical letter, and, by means thereof, diſtribute the *calendar* into weeks. 3°, Compute the time of Eaſter, and thence fix the other moveable feaſts. 4°, Add the immoveable feaſts, with the names of the martyrs. 5°, To every day add the ſun's and moon's place, with the riſing and ſetting of each luminary; the length of day and night; the crepuſcula, and the aſpects of the planets. 6°, Add, in the proper places, the chief phaſes of the moon, and the ſun's entrance into the cardinal points; *i. e.* the ſolſtices and equinoxes; together with the riſing and the ſetting, eſpecially heliacal, of the planets, and chief fixed ſtars: means for each whereof, will be found under the proper heads.

The duration of the crepuſcula, or the end of the evening, and beginning of the morning twilight; together with the ſun's riſing and ſetting, and the length of days; may be transferred from the *calendars* of one year, into thoſe of another; the differences in the ſeveral years being too ſmall to be of any conſideration in civil life.

Hence it appears, that the conſtruction of a *calendar* has nothing in it of myſtery, or difficulty; if tables of the heavenly motions be but at hand.

Gelalean CALENDAR is a correction of the Perſian *calendar*, made by order of ſultan Gelaleddan, in the 467th year of the Hegira; of Chriſt 1389.

CALENDAR is alſo uſed for the catalogue, or faſti, antiently kept in each church, of the ſaints, both univerſal, and thoſe particularly honoured in each church; with their biſhops, martyrs, *&c.* *Calendars* are not to be confounded with martyrologies, for each church had its peculiar *calendar*; whereas the martyrologies regarded the whole church in general: containing the martyrs and confeſſors of all the churches. From all the ſeveral *calendars* was formed one martyrology: ſo that martyrologies are poſterior to *calendars.* See MARTYROLOGY.

There are ſtill ſome of theſe *calendars* extant; particularly a very antient one of the church of Rome, made about the middle of the IVth century: comprehending, alſo, the feſtivals both of the Heathens and Chriſtians, which were then very few in number. F. Mabillon has alſo printed the *calendar* of the church of Carthage, made about the year 483. The *calendar* of the church of Ethiopia, and that of the Cophtæ, publiſhed by Ludolphus, ſeem to have been made after the year 760. The *calendar* of the Syrians, printed by Genebrard, is very imperfect; that of the Muſcovites, publiſhed by F. Papebroch, in moſt reſpects agrees with that of the Greeks, publiſhed by Genebrard. The *calendar* publiſhed by Dom. D'Achery, under the title of *The ſolar year*, is no more than the *calendar* of the church of Arras. The *calendar* publiſhed in 1687. at Augſbourg, by Beckius, is apparently that of the antient church of Augſbourg, or rather Straſbourg, wrote towards the cloſe of the 10th century. The Moſarabic *calendar*, ſtill uſed in the five churches of Toledo, the Ambroſian of Milan, and thoſe of England, before the reformation, have nothing in them but what is found in thoſe of the other weſtern churches; *viz.* the ſaints honoured throughout, and thoſe peculiar to the church where they are uſed.

CALENDER *, a machine uſed, in the manufactories, for preſſing certain ſtuffs, ſilks, and even linens; to make them ſmooth, even, and gloſſy: it is alſo uſed for watering, or giving the waves to tabbies and mohairs.

* The word is formed from the French *calandre*, or Spaniſh *calandra*, which ſignify the ſame; and which ſome derive further from the Latin *cylindrus:* in regard the whole effect of the machine depends upon a cylinder. Borel derives the name from that of a little bird, of the ſwallow kind; in regard of the agreement between the feathers of the bird, and the impreſſion of the machine.

The *calender* conſiſts of two large wooden rollers, round which the pieces of ſtuff are wound: theſe are put between two large cloſe poliſhed planks of wood, the lower ſerving as a fixed baſe, and the upper moveable, by means of a ſkrew like that of a crane; with a rope, faſtened to a ſpindle which makes its axis: this upper part is of a prodigious weight, ſometimes fifty or ſixty thouſand pounds. It is this weight that gives the poliſh, and makes the waves on the ſtuffs about the rollers, by means of a ſhallow indenture, or engraving, cut in it. The rollers are taken off, and put on again, by inclining the machine.

CALENDS*, CALENDÆ, Καλανδαι, in the Roman chronology, the firſt day of every month.

* The word is formed from the Latin *calo*, or, rather, Greek καλω, I call, or proclaim; by reaſon, before the publication of the Roman Faſti, it was one of the offices of the pontifices to watch the appearance of the new moon, and give notice thereof to the Rex Sacrificulus; upon which a ſacrifice being offered, the pontiff ſummoned the people together in the capitol, and there, with a loud voice, proclaimed the number of *calends*, or the day whereon the nones would be; which he did by repeating this formula, as often as there were days of *calends*; *Calo Juno Novella.* Whence the name *calendæ* was given thereto, from *calo, calare.* This is the account given by Varro. Plutarch, and after him Gaza, derive the word from *clam*; *Quia luna calendis clam ſit:* but this is far-fetched. Others derive the appellation hence: that the people being convened on this day, the pontifex called, or proclaimed the ſeveral feaſts or holy days in the month; a cuſtom which continued no longer than the year of Rome 450. when C. Flavius, the curule ædile, ordered the faſti, or calendar, to be ſet up in public places, that every body might know the difference of times, and the return of the feſtivals.

The *calends* were reckoned backwards, or in a retrograde order: thus, *v. g.* the firſt of May being the *calends* of May; the laſt, or thirtieth of April, was the *pridie calendarum*, or ſecond of the *calends* of May; the twenty-ninth of April, the third of the *calends*, or before the *calends*: and ſo back to the thirteenth, where the ides commence; which are, likewiſe, numbered invertedly to the fifth, where the nones begin; which are numbered after the ſame manner to the firſt day of the month, which is the *calends* of April. See NONES, and IDES.

The rules of computation by *calends*, are included in the following verſes:

> *Prima dies menſis cujuſque eſt dicta* calendæ:
> *Sex Maius nonas, October, Julius, & Mars;*
> *Quatuor at reliqui: habet Idus quilibet octo.*
> *Inde dies reliquos omnes dic eſſe* calendas;
> *Quas retro numerans dices a menſe ſequente.*

To find the day of the *calends* anſwering to any day of the month we are in; ſee how many days there are yet remaining of the month, and to that number add two: for example; ſuppoſe it the twenty-ſecond of April; it is then the tenth of the *calends* of May. For April contains thirty days; and twenty-two taken from thirty, there remains eight; to which two being added, the ſum is ten.

The Roman writers themſelves are at a loſs for the reaſon of this abſurd and whimſical manner of computing the days of the month: yet is it ſtill kept up in the Roman chancery; and by ſome authors, out of a vain affectation of learning, preferred to the common, more natural, and eaſy manner.

CALENTURE, an inflammatory fever, frequent at ſea, attended with a delirium; wherein the patients imagine the ſea to be green fields; and, if not prevented, will leap overboard: which way they are frequently loſt. See Supplement, article CALENTURE.

CALIBER, or CALIPER, in a general ſenſe, notes the extent of any round thing in thickneſs, or diameter.

In which ſenſe we ſay, a column is of the ſame *caliber* as another, when they are both of the ſame diameter.

CALIBER more particularly denotes the bore, or width of a piece of ordnance, or other fire-arms; or the diameter of the mouth thereof; or of the ball it carries.

The *caliber* is the rule by which all the parts of a cannon, or a mortar, as well as of its carriage, are proportioned.

CALIBER-*Compaſſes*, a ſort of *compaſſes* made with arched legs, to take the diameter of round, or ſwelling bodies.

Caliber-compaſſes are chiefly uſed, by gunners, for taking the diameters of the ſeveral parts of a piece of ordnance, or of bombs, bullets, &c. Their legs are therefore circular, and move on an arch of braſs, whereon are marked the inches, and half-inches; to ſhew how far the points of the *compaſſes* are opened aſunder.

Some are alſo made for taking the diameter of the bore of a gun, or mortar.

The gaugers alſo ſometimes uſe *calibers*, to embrace the two heads of any caſk, in order to find its length.

The *caliber*, uſed by carpenters and joiners, is a piece of board notched triangular-wiſe in the middle, for the taking of meaſure.

CALIBER, or CALIBER-*Rule*, is an inſtrument, wherein a right line is ſo divided, as that the firſt part being equal to the diameter of an iron or leaden ball of one pound weight, the other parts are to the firſt, as the diameters of balls of two, three four, &c. pounds, are to the diameter of a ball of one pound.

The *caliber* is uſed by engineers, from the weight of the bal given, to determine its diameter, or *caliber*; or *vice verſa*.

The *caliber* (*Tab. Fortification, fig.* 2.) conſiſts of two thin pieces of braſs, ſix inches long; joined by a rivet, ſo as to move quite round each other: the head, or one end of the piece, is cut circular; and one half of its circumference is divided into every ſecond degree: on the other half are diviſions from one to ten; each, again, ſubdivided into four: the uſe of which diviſions and ſubdiviſions is, that when the diameter of a bullet, &c. not exceeding ten inches, is taken, the diameter of the ſemicircle will, among the diviſions, give the length of that diameter taken between the points of the *calibers*, in inches and fourth parts.

The degrees on the head ſerve to take the quantity of an angle; the method of which is obvious. If the angle be inward, apply the outward edges to the planes that form the angle; the degree cut by the diameter of the ſemicircle, ſhews the quantity of the angle ſought: for an outward angle, open the branches till the points be outwards, and applying the ſtrait edges to the planes that form the angle, the degrees cut by the diameter of the ſemicircle ſhew the angle required; reckoning from 180, towards the right-hand.

On one branch of the *calibers*, on the ſame ſide, are, firſt, ſix inches; and each of theſe ſubdivided into ten parts: ſecondly, a ſcale of unequal diviſions, beginning at two, and ending at ten; each ſubdivided into four parts: thirdly, two other ſcales of lines, ſhewing, when the diameter of the bore of a piece is taken with the points of the *calibers* outwards, the name of the piece, whether iron or braſs, *i. e.* the weight of the bullet it carries; or that it is ſuch or ſuch a pounder, from one to forty-two pounds.

On the other branch of the *calibers*, on the ſame ſide, is a line of cords to about three inches radius; and a line of lines on both branches, as on the ſector; with a table of the names of the ſeveral pieces of ordnance: on the ſame face is a hand graved, and a right line drawn from the finger towards the centre of the rivet; ſhewing, by its cutting certain diviſions made on the circle, the weight of iron ſhot, when the diameter is taken with the points of the *calibers*: laſtly, on the circle, or head, on the ſame ſide, are graved ſeveral geometrical figures inſcribed in each other, with numbers; as a cube, whoſe ſide is ſuppoſed one foot; a pyramid on the ſame baſe and altitude, and the proportions of their weight, &c. a ſphere, inſcribed in a cube; a cylinder, cone, circle, ſquare, &c.

CALIDUCTS, a kind of pipes, or canals, diſpoſed along the walls of houſes and apartments; uſed by the antients for the conveyance of heat to ſeveral remote parts of the houſe, from one common furnace.

CALIDUM *Innatum*, &c. See the article HEAT.

CALIPH, CALIF, KALIPH*, in oriental affairs, denotes a ſucceſſor of Mahomet, in the ſpiritual as well as temporal empire erected by that legiſlator. See the article MAHOMETAN.

> * The word is originally Arabick, *khalifah*; which properly denotes a ſucceſſor, or heir.—Some pretend, that it comes from a verb which ſignifies not only to ſucceed, but alſo to be in the place of another, not only as his heir, but as his vicar; in which ſenſe it was, according to Erpenius, that the Saracen emperors and high-prieſts were called *caliphs*, as being God's vicars, or lieutenants. But the more receiv'd opinion is, that they took this title as being Mahomet's ſucceſſors.

After the death of Mahomet, Abubeker having been elected by the muſſulmans to ſupply his place, he would take no other title but that of *khalifah reſſoul allah*, i. e. vicar of the prophet, or meſſenger of God. Omar, coming afterwards to ſucceed Abubeker, repreſented to the Mahometan chiefs, that if he took the quality of vicar, or ſucceſſor of Abubeker, the vicar or ſucceſſor of the prophet; the word vicar would, in courſe of time, come to be repeated and multiplied without end: upon which, at the motion of Mogairah, Omar took the title of *emir moumenin*, that is, lord, or prince of the believers; an appellation accepted and borne by all the legitimate *caliphs*, or ſucceſſors of Mahomet, from that time: not but they ſtill retained the title *caliph*, without other addition.

The *caliphs* in the Mahometan, bear a near affinity to the popes in the Chriſtian religion.

Vattier obſerves, they called themſelves *vicars of God*; and that the Mahometan ſultans and kings fell down before them, and kiſſed their feet: for which reaſon, V. De Beauvais ſcruples not to call them the Mahometan popes.

CALIPPIC *Period*, in chronology, a ſeries of ſeventy-ſix years, returning perpetually round; which elapſed, the middle of the new and full moons, as its inventor Calippus, an Athenian, imagined, return to the ſame day of the ſolar year.

Meton, an hundred years before, had invented the *period*, or cycle, of nineteen years (ſee METONIC CYCLE); aſſuming the quantity of the ſolar year, $365\,d.\ 6\,h.\ 18'\ 56''\ 50^{3}\ 31^{4}\ 34^{5}$; and the lunar month, $29\,d.\ 12\,h.\ 45'\ 47''\ 26^{3}\ 48^{4}\ 30^{5}$: but Calippus, conſidering that the Metonic quantity of the ſolar year was not exact, multiplied Meton's *period* by 4, and thence aroſe a *period* of 76 years, called the *Calippic*. The *Calippic period*, therefore, contains 27759 days: and ſince the lunar cycle contains 235 lunations, and the *Calippic period* is quadruple of this, it contains 940 lunations.

It is demonſtrated, however, that the *Calippic period* itſelf is not accurate; that it does not bring the new and full moons preciſely to their places; but brings them too late, by a whole day, in 553 years.

CALIX, or CALYX. See the articles CALIX, and CHALICE.

CALIXTINS, a name given to thoſe, among the Lutherans, who follow the ſentiments of George Calixtus, a celebrated divine, towards the middle of the ſixteenth century; who oppoſed the opinion of St. Auguſtine, on predeſtination, grace, and free-will.

The *Calixtins* are eſteem'd a kind of Semi-Pelagians. Calixtus maintained, that there is in all men a certain power of underſtanding and willing; with natural knowlege ſufficient: and that, a good uſe being made of theſe, God will give us all the means neceſſary to arrive at the perfection to which revelation directs them.

CALIXTINS alſo denote a ſect in Bohemia, about the middle of the fifteenth century, who aſſerted the uſe of the cup, as eſſential to the euchariſt*.

> * And hence their name: which is formed from the Latin *calix*, of καλυξ, a cup. See CALYX.

CALKING, or CAULKING, in the ſea-language, &c. See the article CAUKING.

CALL, in hunting, a leſſon blown upon the horn, to comfort the hounds.

Amongſt fowlers, *Calls* are a ſort of artificial pipes, made to catch ſeveral ſorts of birds, by imitating their notes, to allure them to the net. See Supplement, article CALLS.

CALLENDER, in the manufactures. See CALENDER.

CALLIBER, or CALIPER. See the article CALIBER.

CALLIGRAPHUS * antiently denoted a copiſt, or ſcrivener, who tranſcribed fair, and at length, what the notaries had taken down in notes, or minutes; which comes pretty near to what we call *Ingroſſing*.

* The work is Greek, Καλλιγραφος; compounded of καλλος, *beauty*, and γραφω, *I write*; q. d. καλλος γραφειν, *ob ſcribendi elegantiam*.

The minutes of acts, &c. were always taken in a kind of cypher, or ſhort-hand; ſuch as the notes of Tyro in Gruter: by which means the notaries, as the Latins called them, or the Σημειογραφοι and Ταχυγραφοι, as the Greeks called them, were enabled to keep pace with a ſpeaker, or perſon who dictated. Theſe notes, being underſtood by few, were copied over fair, and at length, by perſons who had a good hand, for ſale, &c. and theſe were called *Calligraphi*; a name frequently met with in the antient writers.

CALLUS, or CALLOSITY, in a general ſenſe, denotes any cutaneous hardneſs, whether fleſhy, or bony, and whether natural or preternatural.

In which ſenſe, *Clavi*, or corns, are a ſpecies of *Callus*. See CLAVUS.

CALLUS is alſo frequently uſed for a kind of node, which joins the extremities of a fractured bone.

The formation of a *Callus* ſeems to be as follows: The juice that feeds the bone, running along its fibres, becomes extravaſated in the place where thoſe fibres are broken: ſo that ſtopping, and gathering together round the extremities of the fracture, it there dries, knits, and hardens, to a conſiſtence like a ſtrong glue; leaving only a little inequality in the place where it is formed.

Callus's frequently grow ſo firm as to ſupply the place of whole bones. In the *Phil. Tranſact.* we have an inſtance of a *Callus* ſupplying the place of the os humeri, taken out upon its being carious, by Mr. Fowler; and another of a *Callus* ſupplying the place of the os femoris, and the perſon as ſtrong as ever, and walking without any lameneſs, by Mr. Sherman.

CALLUS is alſo a hard, denſe, inſenſible knob, or ſubſtance, riſing on the hands, feet, &c. by much friction, and preſſure againſt hard bodies.

CALOGERI, Καλογεροι, or CALOYERS, monks, or religious, in Greece, both male and female; inhabiting, particularly, mount Athos, but diſſeminated alſo throughout all the churches of the eaſt. They follow the rule of St. Baſil, and make vows like the weſtern religious. There has never been any reform among them, but they ſtill retain their original inſtitution, keep their former habit, &c. to a tittle. Tavernier obſerves, they live a very retired auſtere life, eating no fleſh; and keeping four lents, beſides a great number of faſts, with great ſtrictneſs. They eat no bread till they have earned it by the labour of their hands. During their lents, ſome do not eat above once in three days, others but twice in ſeven. Moſt of the night they ſpend in weeping and praying.

Some authors obſerve, that the word *Calogerus* is applied particularly to ſuch, among their religious, as are become venerable by age, and the auſterity of their life. It may be added, that though *Caloyers*, among us, be a general name, and comprehend all the Greek monks; yet, in Greece itſelf, their prieſts, or regulars, are called *Hieromonachi*, Ἱερομοναχοι. The Turks alſo uſe the word *Caloyers* for their derviſes, or religious Muſſulmen. See DERVIS.

CALOMEL, in pharmacy, a name given to *Mercurius dulcis*, further ſublimated to a fourth time, or upwards. The denomination *Calomel* rather ſeems to have firſt belonged to the Æthiops mineral; from καλος, *pulcher*, fair; and μελας, *niger*, black: for that white or pale bodies, rubbed herewith, become black.

Some will have it firſt given to Mercurius dulcis, by a whimſical chymiſt, who employed a black in his laboratory; whoſe complexion, as well as that of the mercury, he alluded to in the term: the medicine being fair, and the operator black.

CALOTTE, a cap, or coif of hair, ſatin, or other ſtuff; uſed firſt for neceſſity, but now become an eccleſiaſtical ornament, in France, &c.

It was firſt worn by cardinal Richelieu: the red *Calotte* is a badge of a cardinal. See the article CAP.

CALOTTE, in architecture, a round cavity, or depreſſure, in form of a cup, or cap, lathed, and plaſtered, uſed to diminiſh the riſe, or elevation of a chapel, cabinet, alcove, &c. which, without ſuch an expedient, would be too high for other parts of the pile.

CALQUING, or CALKING, a term in painting, &c. uſed where the back-ſide of any deſign is covered with black-lead, or red chalk; and the ſtrokes or lines traced through on a waxed plate, wall, or other matter; by paſſing lightly over each ſtroke of the deſign with a point, which leaves an impreſſion of the colour on the plate or wall.

CALTROP, or CALTHROP, an inſtrument with four iron points, diſpoſed triangular-wiſe; ſo as there are always three points bearing on the earth, the fourth being in the air. Several of theſe, fixed in the ground where the cavalry is to paſs, ſtick into the horſes feet, and embarraſs them. Hence *Caltrop* is alſo made the name of a plant, whoſe fruit reſembles this machine.

CALVARIA, or CALVA, the ſcalp, or upper part of the head; ſo called from its growing bald firſt. See HEAD, and CALVITIES.

CALVARY *, a term uſed in catholic countries for a kind of chapel of devotion, raiſed on a hillock near a city; in memory of the place where Jeſus Chriſt was crucified near Jeruſalem.

* The word comes from the Latin, *Calvarium*, and that from *Calvus*, bald; in regard the top of that hillock was bare, and deſtitute of verdure: which is alſo ſignified by the Hebrew word *Golgotha*.

Such is the *Calvary* of St. Valerian, near Paris; which is accompanied with ſeveral little chapels, in each whereof is repreſented in ſculpture one of the myſteries of the paſſion.

CALVINISM, the doctrine and ſentiments of *Calvin*, and his followers, with regard to matters of religion.

Calviniſm ſubſiſts in its greateſt purity in the city of Geneva; and from thence it was firſt propagated over France, the United Provinces, and England. In France it was aboliſhed by the revocation of the edict of Nantz, in 1685. It has been the prevailing religion in the United Provinces, ever ſince the year 1572. In England it has dwindled ſince the time of queen Elizabeth; and is now chiefly confined among the diſſenters: though it ſtill ſubſiſts, a little allayed, in the articles of the eſtabliſhed church; and in its rigour in Scotland. Of the thirteen Swiſs Cantons, there are ſix who profeſs *Calviniſm*; which likewiſe obtains in the Palatinate; except that of late popery is there becoming the reigning religion.

The diſtinguiſhing tenets of *Calviniſm* are, *1ſt*, That predeſtination and reprobation are prior to the preſcience of good or evil works. *2dly*, That predeſtination and reprobation depend on the mere will of God; without any regard to the merits or demerits of mankind. *3dly*, That God gives to thoſe whom he has predeſtinated, a faith which they cannot loſe; a neceſſitating grace, which takes away the freedom of the will; and that he imputes no ſin to them. *4thly*, That the reprobates cannot do any good work, by reaſon of original ſin, which cleaves to them. *5thly*, That men are juſtified by faith only.—The modern *Calviniſts* reject or palliate ſome of theſe articles.

In France the *Calviniſts* are diſtinguiſhed by the name of *Huguenots*; and, among the common people, by that of *Parpaillots*. In Germany they are confounded with the Lutherans, under the general title *Proteſtants*; only ſometimes diſtinguiſhed by the name *Reformed*.

F. Gaultier finds an hundred hereſies in *Calviniſm*; but F. Francis Feu-Ardent improves vaſtly on the liſt; making the hereſies no leſs than one thouſand four hundred.

CALVITIES, or CALVITIUM, in medicine, baldneſs, or a falling off of the hair, eſpecially of that of the ſinciput, without being able to grow again; the moiſture of the head, which ſhould feed it, being dried up by ſome diſeaſe, old age, or the immoderate uſe of powder, &c.

CALX literally ſignifies, lime; a ſort of ſtone burnt or calcined in a kiln for that purpoſe, to be uſed in the making of morter, &c.

CALX, in chemiſtry, is a kind of aſhes, or fine friable impalpable powder, which remains of metals, minerals, &c. after they have undergone the violence of a fire for a long time; and by that means have loſt all their humid parts. See CALCINATION.

Gold and ſilver, after they have been reduced to a *Calx*, may always be again recovered to their former form and nature.

Calx of tin is called *Putty*; and is of conſiderable uſe in poliſhing ſteel, mirrors, &c. See PUTTY.

Calx of braſs is called *Æs uſtum*. See ÆS USTUM.

Calx of lead is denominated *Ceruſs*. See CERUSS.

For *Calx of antimony*, ſee ANTIMONIUM *Diaphoreticum*.

CALX, in anatomy. See the article CALCANEUS.

CALYX, or CALIX, in a general ſenſe, denotes a cup. See CUP, and CHALICE.

CALYX, in botany, is ſometimes applied to a flower whoſe body, or even a part of it, is formed in manner of a cup or *Chalice*: ſuch is that of a tulip, &c. See FLOWER.

Pliny defines the *Calyx* the cavity in the middle of a flower, wherein the ſtamina and apices are contained. Auſonius calls it *Calathus*.

CALYX is more particularly uſed for that outward greeniſh cover, which encompaſſes and defends the petals and other parts of a flower; ſerving alſo as a baſis or ſupport to the whole. In which ſenſe *Calyx* is the ſame with what is otherwiſe called *Perianthium*, and by Dr. Grew the *Empalement*.

The *Calyx* is that ſet of leaves which involves the petala, as the petala do the immediate organ of generation.

Miller deſcribes the *Calyx*, as the cup of a flower before it opens; or the ſoft huſks or ſkin in which a flower firſt, and often afterwards the ſeed of herbs, and fruit of trees, are covered.

The *Calyx* is in ſome plants of one intire piece; as in pinks, &c. and in ſome is divided into ſeveral; as in roſes, &c. Saffron has no *Calyx*; its flower comes out of the earth before its leaves.

CAMAIEU *, or **Camayeu**, a word uſed to expreſs a peculiar ſort of onyx: alſo by ſome to expreſs a ſtone, whereon are found various figures, and repreſentations of landſkips, *&c.* formed by a kind of luſus naturæ; ſo as to exhibit pictures without painting.

* The word comes from *Camebuia*, a name the orientals give to the onyx, when they find, in preparing it, another colour; as who ſhould ſay, *a ſecond ſtone*.

Camaieu is alſo applied by others to thoſe precious ſtones, as onyx's, cornelians, and agats, whereon the lapidaries employ their art to aid nature, and perfect thoſe repreſentations.

Camaieu is alſo uſed for a painting, wherein there is only one colour; and where the lights and ſhadows are of gold, wrought on a golden, or azure ground.

When the ground is yellow, the French call it *Cirage*; when grey, *Griſſaile*. This kind of work is chiefly uſed to repreſent baſſo relievo's: the Greeks call pieces of this ſort Μονοχρωματα. See Supplement, article Camæa.

CAMALDULIANS, or **Camaldunians**, an order of religious, founded by St. Romuald, in 1009. or, according to others, in 960. in the horrible deſart of Camaldoli, ſituate in the ſtate of Florence, on the Apennines.

Their rule is that of St. Benedict; and their houſes by the ſtatutes, are never to be leſs than five leagues from cities.

The *Camaldulians* have not borne that title from the beginning of the order; till the cloſe of the XIth century they were called *Romualdins*, from the name of their founder. Till that time, *Camaldulian* was a particular name for thoſe of the deſart *Camaldoli*, and D. Grandi obſerves, was not given to the whole order, in regard it was in this monaſtery that the order commenced; but becauſe the regulation was beſt maintained here.

CAMBER-*Beam*, in building, a piece of timber cut archwiſe, or with an obtuſe angle in the middle, commonly uſed in platforms; as church-leads, and on other occaſions, where long and ſtrong beams are required.—A *Camber-beam* is much ſtronger than another of the ſame ſize; ſince being laid with the hollow ſide downwards, as they uſually are, it repreſents a kind of arch.

CAMBLET *, or **Chamlet**, a ſtuff ſometimes of wool, ſometimes ſilk, and ſometimes hair, eſpecially that of goats, with wool or ſilk: in ſome, the warp is ſilk and wool twiſted together, and the woof hair.

* Menage derives the French word *camelot* (whence our *camblet*) from *rambelotto*, a Levantine term for ſtuffs made with a fine hair of a Turkiſh goat: whence the word *cymatilis* for *Turkiſh camelot*. Others call it *capellota*, from *capella*, ſhe-goat. Bochart makes *zambelot*, a corruption of the Arabic *giamal*, a *camel*. Others fetch *camblet* from the bare Latin *camelus*: on which footing *camblet* ſhould properly ſignify, a ſtuff made of camel's hair.

England, France, Holland, and Flanders, are the chief places of this manufacture: Bruxelles exceeds them all in the beauty and quality of its *camblets*: thoſe of England are reputed the ſecond.

Figured **Camblets**, are thoſe of one colour, whereon are ſtamped various figures, flowers, foliages, *&c.* by means of hot irons, which are a kind of moulds, paſſed, together with the ſtuff, under a preſs. Theſe are chiefly brought from Amiens and Flanders: the commerce of theſe was antiently much more conſiderable than at preſent.

Water **Camblets**, thoſe which, after weaving, receive a certain preparation with water; and are afterwards paſſed under a hot-preſs, which gives them a ſmoothneſs and luſtre.

Waved **Camblets**, are thoſe whereon waves are impreſſed, as on tabbies; by means of a calender, under which they are paſſed and repaſſed ſeveral times.

The manufacturers, *&c.* of *Camblets*, are to take care they do not acquire any falſe and needleſs plaits; it being almoſt impoſſible to get them out again: this is notorious, even to a proverb: we ſay, a perſon is like *camblet*, he has taken his plait.

CAMBRING, or **Cambaring**.—The ſeamen ſay, *a deck lies cambring*, when it doth not lie level, but higher in the middle than at either end.—Alſo, if the ſhip's keel be bent in the middle upwards (which may happen from her lying aground on a place, where neither her aft nor fore-part touch it, and from many other reaſons taken from her make), they ſay, *She is camber-keeled*.

CAMELEON, **Chamæleon**, in natural hiſtory, a little animal, famous among antient and modern writers, for a faculty it is ſuppoſed to have, of changing its colour, and aſſuming thoſe of the objects near it.

The *cameleon*, or *chamæleon*, is of the lizard kind; only its head is ſomewhat bigger than that of the common lizard. It has four feet, and a long flat tail; whereby it can hang to the branches of trees, as well as with its feet. In Egypt there are ſome a foot long, including the tail; but thoſe of Arabia do not much exceed half that length. Its ſnout is long, its back ſharp; its ſkin, from the head to the laſt joint of the tail, plaited, and rough, ſay ſome, like a ſaw: Dr. Goddard ſays, 'tis grained, like a ſhagreen; the biggeſt grains, or globular inequalities, being about the head; the next on the ridge of the back. Its head is without any neck, as in fiſhes: it has two little apertures in the head, that ſerve for noſtrils; it has no ears, nor does it either make or receive any ſound. Its eyes are big, and verſatile this or that way, without moving the head; and, ordinarily, it turns one of them quite the contrary way to the other. The tongue is half the length of the animal; conſiſting of a white fleſh, round as far as the tip, which is flat and hollow; ſomewhat like an elephant's proboſcis, or trunk; and accordingly, ſome call it *a trunk*. This it can dart out very nimbly, and draw back again, over a bone which reaches from the root, half its length; much as a ſilk ſtocking is drawn off and on the leg.

It is a common tradition, that the *cameleon* lives on air; but experience ſhews the contrary. The great uſe of its tongue is to catch flies, by ſhooting it briſkly upon them, and entangling them in its proboſcis. Some ſay, the tongue is tipped with a glutinous matter, which the flies ſtick to; and at the R. Academy of Sciences, they frequently obſerved one to catch and ſwallow flies; they found alſo the ſigns of them in its excrements; and, when it was diſſected, the ſtomach and inteſtines were found full of them.

M. Perrault aſſures us, that when at reſt, and in the ſhade, the colour of the *cameleon* is ſomewhat various: that at Paris, was of a blueiſh grey; but, when expoſed to the ſun, this grey changed into a browner or darker grey; and its leſs illumined parts into divers colours; forming ſpots, half the bigneſs of a finger's end, ſome of them of an Iſabella colour: the grains of the ſkin, not illumined at all, reſembled a cloth, mixed of divers colours. That at London, deſcribed in the *Philoſophical Tranſactions*, by Dr. Goddard, was mixed of ſeveral colours, like a mottled cloth: the colours diſcernible, were a green, a ſandy yellow, and a deeper yellow, or liver colour; but one might eaſily imagine ſome mixture of moſt, or all colours. He adds, that upon excitation, or warming, it ſuddenly became full of black ſpots, of the bigneſs of a great pin's head, equally diſperſed on the ſides, *&c.* all which afterwards would vaniſh. M. Perrault obſerves ſomewhat like this of the Paris *cameleon*; viz. that upon handling or ſtirring it, it would appear ſpeckled, or ſtained with dark ſpots, bordering on green. He adds, that wrapping it up in a linen cloth, for two or three minutes, it would ſometimes be taken out whitiſh; tho' not conſtantly ſo: nor did it take the colour of any other ſtuff it was wrapped in. So that what Theophraſtus and Plutarch write, that it aſſumes all the colours it comes near, excepting white, is exactly contrary to experience. Monconys aſſures us, that the *cameleon*, when placed in the ſun, appears green, though in a place where there is no graſs, or other green object; that by the candle it appears black, though placed on white paper; and that, when ſhut up in a box, it becomes yellow and green: and he aſſerts, it never takes any other than theſe colours.

Naturaliſts are very little agreed, as to the reaſon or manner of this change of colour: ſome, as Seneca, maintain it done by ſuffuſion; others, as Solinus, by reflexion; others, as the Carteſians, by the different diſpoſition of the parts that compoſe the ſkin, which give a different modification to the rays of light: others, as Dr. Goddard, aſcribe the change to the grains of the ſkin; which, in the ſeveral poſtures, he thinks, may ſhew ſeveral colours; and, when the creature is in full vigour, may have, as he terms it, *rationem ſpeculi*; that is, the effect of mirrors, and reflect the colours of bodies adjacent.

Theſe hypotheſes are all deficient enough, and there is ſtill room for a new one. The *cameleon*, then, is repreſented to us as an exceeding lean ſkinny animal; inſomuch that the Italians call it a *living ſkin*. M. Perrault obſerves, of that which he diſſected in the king's library, that one hour it appeared to be a mere ſkin, and nothing elſe; and yet the next it would appear fat and plump. Hence we gather, that it muſt have an extraordinary command over the ſkin, as to tenſion or laxneſs; ſince by ſwelling its bulk its ſkin will be filled, the fibres thereof ſtretched, and the pores leſſened: and again, by withdrawing its groſſneſs, the ſkin will be left lank and ſhriveled, one part wrapping over another: which is confirmed by what we have already obſerved, that its ſkin is uſually ſeen to be full of rugæ, or little plaits. Now the animal having it in its power to fill the ſkin more or leſs, has it in its power not only to alter the tone and texture of the fibres, upon which their reflexi quality, in a great meaſure, depends; but alſo to bring pa into ſight which before lay concealed, or to conceal ſuch before lay open: and it is more than probable, that the pa which are ordinarily covered, are of a ſomewhat different co lour from thoſe conſtantly open to the air.

On theſe principles, probably, all the phænomena in th *cameleon*'s colour may be ſolved. The animal, it is evide has a power to reflect different-coloured rays from the fa parts; alſo to make certain parts reflect, and to preve others reflecting: and hence that variety, that medley, colours.

Matthiolus relates ſeveral ſuperſtitious notions of the anti touching the *cameleon*; as, that its tongue torn out, while al helped the bearer to gain his law-ſuit; that burning its head a throat with oaken wood, or roaſting its liver on a red tyle, m thunder and rain; that its right eye, torn out while livi and ſteeped in goat's milk, took away pearls in the eye; that tongue tied about a woman with child, made her delivery that its right jaw removed all fear; and that its tail ſtopped the courſe of rivers. Pliny aſſures us, that Democritus had compoſed a whole book of ſuch follies.

CAMELEON, CHAMÆLEON, in aſtronomy, one of the conſtellations of the ſouthern hemiſphere, near the pole, and inviſible to us.

CAMERA *obſcura*, in optics, a machine, or apparatus, repreſenting an artificial eye; whereon the images of external objects, received through a double convex glaſs, are exhibited diſtinctly, and in their native colours, on a white matter placed within the machine, in the focus of the glaſs.

The firſt invention of the *camera obſcura* is aſcribed to Baptiſta Porta.

The uſe of the CAMERA *obſcura* is manifold: it ſerves to very good purpoſes in explaining the nature of viſion; and hence it is that ſome call it *the artificial eye*. It affords very diverting ſpectacles; both by exhibiting images perfectly like their objects, and each cloathed with their native colours; and by expreſſing, at the ſame time, all their motions: which latter, no other art can imitate. By means of this inſtrument, eſpecially by the third contrivance under-mentioned, a perſon unacquainted with deſigning, will be able to delineate objects to the laſt accuracy and juſtneſs; and another well verſed in painting, will find many things herein to perfect his art.

he theory of the CAMERA OBSCURA is contained in the following propoſition.

If an object A B (Tab. *Optics*, Fig. 16.) radiate through a ſmall aperture C, upon a white wall oppoſite thereto; and the place of radiation behind the aperture *b*C*a* be dark; the image of the object will be painted on the wall, in an inverted ſituation.

For, the aperture C being very ſmall, the rays iſſuing from the point B will fall on *b*; thoſe from the points A and D will fall on *a* and *d*: wherefore ſince the rays iſſuing from the ſeveral points are not confounded; when reflected from the wall, they will carry with them a certain ſpecies of the object, and exhibit its appearance on the wall. But ſince the rays AC and BC interſect each other in the aperture, and the rays from the loweſt points fall on the higheſt; the ſituation of the object will of neceſſity be inverted.

Hence, ſince the angles at D and *d* are right, and the vertical ones at C are equal; H and *b*, and A and *a*, will be alſo equal; conſequently, if the wall, where the object is delineated, be parallel to it, $ab : AB :: dC : DC$. That is, the height of the image will be to the height of the object, as the diſtance of the object from the aperture is to the diſtance of the image from the ſame.

nſtruction of a CAMERA OBSCURA, wherein the images of external objects ſhall be repreſented diſtinctly, and in their genuine colours, either in an inverted, or an erect ſituation. 1. Darken a chamber, one of whoſe windows looks into a place ſet with various objects; leaving only a little aperture open in the one ſhutter. 2. In this aperture fit a lens, either plano-convex, or convex on both ſides; to be a portion of a large ſphere. 3. At a due diſtance, to be determined by experience, ſpread a paper, or a white cloth, unleſs there be a white wall for the purpoſe; for on this the images of the deſired objects will be delineated invertedly. 4. If it be rather deſired to have them appear erect, it is done either by means of a concave lens placed between the centre and the focus of the firſt lens; or by receiving the image on a plane ſpeculum inclined to the horizon under an angle of 45°; or by means of two lens's included in a draw-tube, in lieu of one.—Note, if the aperture do not exceed the bigneſs of a pea, the objects will be repreſented, even though there be no lens at all uſed.

To render the images clear and diſtinct, it is neceſſary the objects be illumined by the ſun's light: they will be ſtill brighter, if the ſpectator firſt ſtay a quarter of an hour in the dark. Care muſt likewiſe be taken, that no light eſcape through any chinks; and that the wall be not too much illumined. Farther, the greater diſtance there is between the perture and the wall, the larger and more diſtinct will the mages be; but the rays becoming, thus, too much dilated, he brightneſs of the image is weakened, till at length it become inviſible.

ſtruction of a portable CAMERA OBSCURA. 1. Provide a ittle cheſt, or box of dry wood (Tab. *Optics*, Fig. 17.), of he figure of a parallelepiped; its breadth about ten inches, nd its length two or more feet; according to the different agnitude of the diameter of the lens's. 2. In the plane D fit a ſliding tube E F with two lens's; or, to ſet the mage at a leſs diſtance from the tube, with three lens's conex on both ſides: the diameter of the two outer, or forarder, to be $\frac{60}{100}$ of a foot; that of the inner leſs, *v. g.* 8. 3. Within the cheſt, at a proper diſtance from the be, ſet up an oiled paper, perpendicularly, GH, ſo as ages thrown upon it may be ſeen through. Laſtly, in I ake a round hole, ſo as a perſon may look conveniently ro' it with both eyes.

then the tube be turned towards the objects (the lens's ing at their proper diſtance, to be determined by experint), the objects will be delineated on the paper G H, erect before.

Another portable CAMERA may be thus made. 1. In the middle of a ciſtula, or cheſt (Tab. *Optics*, Fig. 18.), raiſe a little turret, either round or ſquare HI, open towards the object AB 2. Behind the aperture, incline a little plain mirror *ab*, to an angle of 45°, which may reflect the rays, A*a* and B*b*, upon a lens convex on both ſides G, included in a tube GL. 3. At the diſtance of the focus thereof, place a table covered with a white paper EF, to receive the image *αβ*. Laſtly, in NM make an oblong aperture to look through.

CAMISADE *, in the art of war, an attack by ſurprize, in the night, or at the point of day; when the enemy are ſuppoſed abed.

* The word is ſaid to have taken its riſe from an attack of this kind; wherein, as a badge, or ſignal to know one another by, they bore a ſhift, in French called *chemiſe*, or *camiſe*, over their arms.

CAMISARDS *, or CAMISARS, an appellation given by the French to the Calviniſts of the Cevennes, who formed a league, and took up arms, in their own defence, in the year 1688.

* The reaſon of the name is diſputed. Some derive it from *camiſade*, in regard of the ſuddenneſs of their attacks and incurſions from their mountains; others from *camiſe*, which in that country ſignifies a ſhift; either by reaſon they wanted, or plundered linen for ſhifts; or wore cloaths that reſembled ſhifts. Others, with more probability, from *camis*, a high or beaten road; by reaſon the roads were infeſted by the *Camiſards*.

CAMP, a ſpacious poſt, or ſpot of ground, where an army reſts, intrenches itſelf, or plants a piquet-watch, to lodge ſecure either in tents, or barracks.

The *camp* is ſometimes covered by an intrenchment; ſometimes only by the advantage of its poſt: ſometimes it is incloſed with *chevaux de friſe* laid acroſs each other; the ordinary practice of the old prince of Orange.

The chief ſkill of a general lies in the art of encamping well: this the Romans were unacquainted with, till the war with Pyrrhus; from whoſe *camp* they learned to model their own. Till then, they knew not how to poſt themſelves to advantage, nor with any order in their *camp*.

An *encampment*, or *ſtanding camp*, is always to have the advantage of water, forage, or fuel; with the means of covering and retrenching itſelf.

Rhoe, deſcribing the great Mogul's *camp*, ſays, it is twenty Engliſh miles round, and contains more ſpace than the largeſt city in Europe; that it is compoſed of 800000 men, and 40000 elephants; and what increaſes the miracle is, that all theſe tents are pitched in four hours time.

Flying CAMP is a ſtrong body of horſe or dragoons, to which are ſometimes added foot; commanded uſually by a lieutenant-general.

This always keeps the field, making frequent motions both to cover the gariſons in poſſeſſion, and to inſult and keep the adverſary in continual alarm, and oblige him to make diverſions.

CAMPAIGN, a military term, ſignifying the ſpace of time during which armies are maintained, yearly, in the field.

The Germans begin their *campaign* very late; uſually waiting for harveſt: the French are always early, and begin ſometimes in winter, by which they have reaped great advantages.

CAMPANULOUS, or CAMPANIFORMIS, an appellation given to thoſe plants whoſe flowers reſemble the ſhape of a bell.

CAMPECHE WOOD, a kind of wood brought from Yucatan, a province in America, and uſed in dyeing.

The heart of the tree, which alone is uſed, is at firſt red; after it has been felled ſome time, it becomes black; and, if ſteeped in water, gives a black tincture, ſuch as may be writ withal. It is very heavy, and burns admirably, and gives a clear laſting flame.

CAMPHOR, or CAMPHIRE *, a white, ſhining, tranſparent, friable, inflammable, odoriferous, volatile gum, or reſin, of a bitteriſh taſte, and very hot in the mouth; flowing from a tree of the ſame name, frequent in the iſlands of Borneo, and Ceylon, and the neighbouring mountainous coaſts of India; reſembling a walnut-tree.

* The word comes from the Arabic *capur*, or *caphur*; which ſignify the ſame thing.

Camphor diſtils from the tree in manner of a gum; and, as is ſaid, moſt plentifully in the time of earthquakes and ſtorms. M. Lemery ſays, the *camphor* is found at the foot of the tree; where it thickens into little grains of different figures and ſizes; very dry, friable, light, and of a bitteriſh taſte. Theſe little grains, falling on one another, adhere lightly together, and form maſſes; which, being ſqueezed a little by the fingers, granulate again into ſmall corpuſcles, like ſalt.

Some authors make two different kinds of *camphor*, according to the different parts of the tree where they are found: That in the veins of the wood is ſaid to be different from that which ouſes out upon breaking the bark.

The *camphor*, it is ſaid, being at firſt duſkiſh, is whitened either by the ſun, or the fire. In effect, we have but little of the raw natural *camphor* among us; the Dutch take care that it come all refined by ſublimation, and prepared to our hands.

Manner of refining crude CAMPHOR. The method is to ſet it to ſublime in ſubliming pots; when the veſſel is half full, it is ſtopped,

ped, and placed over a gentle fire; where only the pureſt part riſes at firſt; but, by degrees, the whole is ſublimed, except a caput mortuum, or earthy matter ſticking at bottom: they then melt it with a gentle heat, and run it into moulds to give it what figure they pleaſe.—It is ſo volatile, and apt to evaporate in ſmoke, that the merchants ordinarily incloſe it in line-ſeed, that the viſcoſity of that grain may keep its particles together.

Camphor has various uſes; as in fire-works, in making varniſh, *&c.* In the courts of the eaſtern princes, it is burnt, together with wax, to illumine the night. It is exceedingly inflammable, ſo as to burn and preſerve its flame in water; and in burning it conſumes wholly, leaving no ſcoria behind: but its principal uſe is in medicine.

Camphor is the moſt efficacious diaphoretic known; its great ſubtilty diffuſing itſelf thro' the ſubſtance of the parts, almoſt as ſoon as the warmth of the ſtomach has ſet it in motion. It is uſed alſo in caries's of the bones, as a detergent in wounds, to reſiſt gangrenes, *&c.* When mixed with the ſubtile parts of cantharides, it prevents their injuring the bladder; its exquiſite fineneſs enabling it to follow them into all the meanders of the veſſels, and to ſheath their aſperities.

Dr. Quincy obſerves, that *camphor* begins to be mixed, and that to good purpoſe, with mercurials, to guard againſt their ſtimulating properties, and to ſend them into the fineſt paſſages, to operate by fuſion, and the force of impulſe. For not only Mercurius dulcis, or calomel, may be hereby reſtrained from manifeſt operation in the glands about the mouth; but alſo the mineral turbith, which of itſelf acts very ſtrongly by ſtool and vomit, when mixed with *camphor*, will be much leſs felt in thoſe reſpects; and will go into the fartheſt circuit of motion, and promote the cutaneous diſcharge, in a more efficacious manner than any medicine of leſs ſpecific gravity.

M. Lemery endeavoured at a chymical analyſis of *camphor*, but in vain; either its parts were too fine and volatile to be carried to any greater degree of purity or ſubtilty by any chymical proceſs; or it was owing to the cloſe union of its principles, which in all appearance muſt be an oil, and a volatile ſalt, that they could not be ſeparated.

Camphor, he obſerves, does not diſſolve in aqueous or phlegmatic liquors; but in ſulphureous ones it does; not in alcalines, nor even in ſome acids: but in ſpirit of nitre it diſſolves perfectly; and is the ſole reſin that does ſo. This diſſolution is ordinarily called *oil of camphor*; and it is to this the medicinal virtue of *camphor* in wounds, gangrenes, and caries's, is aſcribed. They do not take it internally, for fear of its ſharpneſs and corroſiveneſs; tho' M. Lemery has found good effects from two or three drops by the mouth, in obſtructions and fits of the mother: in theſe caſes, indeed, he generally mixed it with as much oil of amber.

There is a common verſe to the diſcredit of *camphor*, as if its ſmell emaſculated:

Camphora *per nares caſtrat odore mares.*

But the proverb, according to Scaliger and Tulpius, is falſe. *Camphor*, being boiled in aqua vitæ, in a cloſe place, till the whole be evaporated; if a lighted torch or candle be introduced, the air in the whole place will immediately catch fire, and appear in a flame, without doing any damage to the place or the ſpectators.

It has been found in Ceylon, that the root of the tree which yields cinnamon, yields, by inciſion, a matter that has a ſtrong ſmell of *camphor*, and many of its virtues; whence naturaliſts, by miſtake, have ſuppoſed that all *camphor* came from that tree.—There is alſo a ſmell of *camphor* in ſeveral other plants, as in camphorata, abrotanum, roſmary, *&c.*

What is called *artificial* CAMPHOR, is prepared with gum ſandarach, and white vinegar diſtilled, kept twenty days in horſe-dung, and afterwards expoſed a month to the ſun to dry; at the end of which, the *camphor* is found, in form of the cruſt of a white loaf.—This is alſo called *juniper gum*, *white varniſh*, and *maſtic.*

CAMPUS *Maii*, in antient cuſtoms, an anniverſary aſſembly of our anceſtors, held on May-day; where they confederated together for defence of the kingdom againſt all its enemies.

CAMUS, a perſon with a low, flat noſe, hollowed or ſunk in the middle.

The Tartars are great admirers of *camus* beauties. Rubruquis obſerves, that the wife of the great Ienghis Kan, a celebrated beauty, had only two holes for a noſe.

CANAL, CANALIS, in anatomy, a duct, or paſſage, through which any of the juices or fluids of the body flow.

CANAL *of the larmier*, the hollowed platfond or ſoffito of a cornice; which makes the pendant mouchette. See LARMIER, and SOFFITO.

CANAL *of the volute*, in the Ionic capital, is the face of the circumvolutions, incloſed by a liſtel.

CANALES *ſemicirculares*, in anatomy, are three *canals* in the labyrinth of the ear; which open by as many orifices into the veſtibulum.

They are of three different ſizes, *major*, *minor*, and *minimus.* In different ſubjects, they are frequently different; but are always alike in the ſame: the reaſon, Valſalva ingeniouſly conjectures to be, that as a part of the tender auditory nerve is lodged in theſe *canals*, ſo they are of three ſeveral ſizes, the better to ſuit all the variety of tones; ſome of the *canals* ſuiting ſome tones, and others others. And though there be ſome difference in the form and ſize of theſe *canals* in different perſons; yet leſt there ſhould be any diſcord in the auditory organs, theſe *canals* are always in exact conformity to one another, in the ſame man.

CANALIS, or CANALICULUS *arterioſus*, in anatomy, a veſſel, obſerved in fœtus's, but which, after delivery, grows uſeleſs, and diſappears. It is a little tube, which, joining the pulmonary artery and aorta, ſerves to convey the blood out of one into the other, without paſſing through the lungs. See FOETUS.

CANCELIER, in falconry, is when a light flown hawk, in her ſtooping, turns two or three times upon the wing, to recover herſelf bfore ſhe ſeizes.

CANCELLING *, in the civil law, an act whereby a perſon conſents, that ſome former deed be rendered null, and void. —This is otherwiſe called *Reſciſſion.*

* The word comes from the Latin *cancellare*, to encompaſs, or pale a thing.

In the proper ſenſe of the word, *to cancel*, is to deface an obligation, by paſſing the pen from top to bottom, or acroſs it; which makes a kind of chequer lattice, which the Latins call *cancelli.*

CANCER, in aſtronomy, one of the twelve ſigns of the zodiac; ordinarily repreſented on the globe in form of a crab, and in aſtronomical books denoted by a figure much reſembling that of the number of ſixty-nine.

The ſtars in the ſign *Cancer*, Ptolemy makes 13; Tycho 15; Bayer and Hevelius 29; Mr. Flamſtead no leſs than 71.—Their order, names, places, longitude, latitude, magnitude, *&c.* in the *Britannick catalogue*, are as follows:

Names and Situations of the Stars.	Signs.	Longitude.			Latitude.			Magni.
		°	'	"	°	'	"	
In extremity of preced. north foot	♋	23	49	13	4	52	46A	6
		22	49	38	4	43	11B	6
Subſequent, and more ſouthern		24	24	46	3	12	35A	6
		23	4	11	4	27	15B	6
5		24	45	22	4	0	29A	7
		24	10	40	1	35	13B	8
In the preced. and more ſoutherly foot		26	18	34	7	5	30A	5
		24	36	38	2	16	12B	7
In the preced. north foot, ſouth		25	9	26	1	19	13B	5
10		27	1	42	6	24	35A	7
In the ſecond north foot, upper		24	47	23	5	36	4B	6
under		24	54	49	5	18	44B	4
		27	22	31	5	19	31A	6
Againſt the tail, Ptolem. 25th. II.		27	0	22	2	17	52A	5
15		27	48	15	5	42	25A	7
		28	30	17	6	41	26A	7
Agſt. the extrem. of the 2d ſo. foot		29	56	19	10	19	6A	4
The north of the 3d north foot		26	38	3	7	27	32B	6
In the origin of the 3d north foot		27	29	33	4	20	33B	6
In the back, behind the tail 20		29	27	6	1	2	39A	6
	♌	1	22	2	8	30	57A	7
The firſt in the 4th north foot	♋	27	52	13	8	25	40B	6
The ſecond		28	10	35	7	30	00B	6
In the orig. of preced. northern claw		28	44	18	5	10	36B	7
Subſequent, and more ſoutherly 25	♌	0	20	20	2	7	51A	7
The laſt of three	♋	28	7	9	8	27	31B	6
	♌	1	34	58	6	22	16A	6
The ſecond	♋	29	15	40	4	53	44B	6
	♌	1	39	24	4	45	26A	7
The third 30	♋	29	55	16	4	59	48B	6
The preced. ſo. of □ of the breaſt	♌	1	24	42	0	47	46A	6
Fourth and ſubſequent		0	15	14	5	5	16B	7
Preced. north in the □ of the breaſt		1	5	29	1	32	33B	6
		3	38	01	8	31	50A	
35		1	53	21	0	51	52B	
The preced. in the 3d ſouthern foot		4	48	42	8	39	1A	
The ſubſequent		5	4	30	8	40	4A	
Nebulous ſtars in the middle of the breaſt, called *Præſepe.*		2	50	50	1	18	18B	
		3	05	25	1	6	22B	
40		3	05	9	1	18	37B	
Subſeq. no. in the □ called *N. Aſellus*		3	13	0	3	9	41B	
Preced. in the 4th ſouth foot		5	29	18	5	20	41A	
		1	11	49	12	10	46B	
Southern ſtar in □ called *So. Aſellus*		4	23	40	0	3	46B	
In the north claw 45		2	0	53	10	23	40B	
In the extrem. of the 4th ſo. foot		6	32	22	7	44	58A	
Subſequent in the ſouthern foot		6	31	15	5	39	1A	
Firſt over the northern claw		2	12	44	14	18	33B	
Firſt of thoſe following the n. claw		3	23	2	10	15	12B	
		6	37	13	2	16	16A	

Names and ſituations of the ſtars.	Signs.	Longitud. °	′	″	Latitude. °	′	″	Magnit.
50 Second	♌	3	26	1	10	21	47B	6
Third		3	41	1	10	24	34B	6
Preced. in the middle of the n. claw		3	6	12	12	35	34B	5 6
Fourth		4	10	51	10	8	24B	6 5
Second		2	59	35	14	59	41B	5 6
55 That preced. the ſouthern claw		8	46	33	5	30	32A	7
2d and ſubſ. in middle of the claw		3	59	42	12	29	1B	7
Firſt in the orig. of the ſouth claw		8	2	56	1	53	16A	6
Second and ſouthern		8	3	51	1	36	45A	6
Third		3	41	0	14	40	46B	6
60 In the ſouthern claw		9	18	40	5	6	27A	4 3
The laſt of four		4	7	20	14	37	42B	6
Fifth of thoſe following the n. claw		5	30	37	10	30	5B	6 7
In the northern eye		6	42	57	7	15	3B	6
Laſt of thoſe following the n. claw		6	0	44	10	38	38B	6 7
65 In the extr. of the apert of n. claw		6	18	14	12	34	6B	6 7
		7	23	58	9	46	2B	6 7
Subſequent in the ſouthern claw		11	50	44	5	36	8A	4 5
In the ſouthern eye		8	52	45	5	23	24B	5 6
		9	7	14	5	24	49B	8
70 In the aperture of the ſouth. claw		11	41	7	1	8	31A	7
		12	19	48	0	58	45A	6

Tropic of CANCER, in aſtronomy, a leſſer circle of the ſphere parallel to the equator; and paſſing through the beginning of the ſign *Cancer*.

CANCER, in medicine, a roundiſh, hard, ragged, immoveable tumour, of an aſh, or livid colour; encompaſſed round with branched turgid veins, full of black foul blood; ſituate chiefly in the glandulous parts: ſo called, as ſome will have it, from the reſemblance it bears in figure to the crab-fiſh, or, as others ſay, becauſe, like that fiſh, when once it has got hold, it is ſcarce poſſible to drive it away.

It begins without any pain, and appears, at firſt, like a chich-pea; but grows apace, and ſoon becomes very painful.

The *Cancer* ariſes principally on the lax glandulous parts, as the breaſts and emunctories: it is moſt frequent in women, eſpecially ſuch, ſays Stolterfoth, as are barren, or live in celibacy. The reaſon of its appearing in the breaſts more than other parts, is, that being full of glands, with lymphatics and blood-veſſels among them, the ſmalleſt contuſion, compreſſion, or punction, extravaſates thoſe liquors; which growing, by degrees, acrimonious, form the *Cancer*. Hence, the maſters of the art ſay, that a *Cancer* is that in the glands, which a caries is in the bones, and a gangrene in the fleſhy parts. The *Cancer*, however, is ſometimes found in other ſoft, ſpongy parts of the body; and there have been ſome found in the gums, belly, neck of the matrix, ureter, lips, noſe, cheeks, abdomen, thighs, and even the ſhoulders.

A *Cancer* ariſing on the legs, is called a *Lupus*; on the face, or noſe, a *Noli me tangere*.

Cancers are divided, according to their ſeveral ſtages, into occult, and open or ulcerated.

Occult CANCERS are thoſe not arrived at their ſtate, or not yet burſt.

lcerated CANCERS are known by their roughneſs and fulneſs of holes, through which ouſes a filthy, ſtinking, glutinous matter, frequently yellowiſh; by their pungent pain, which reſembles the pricking with a thouſand pins; and by their blackneſs; the ſwelling of the lips of the ulcer; and the veins about it, which are blackiſh, tumid, and varicous.

Sometimes the extremities of the blood-veſſels are gnawed off, and the blood iſſues out. In a *Cancer* of the breaſt, the adjacent fleſh is ſometimes ſo conſumed, that one may ſee into the cavity of the thorax. It occaſions a ſlow fever, a loathing, oftentimes faintings, ſometimes a dropſy, and laſtly death.

The immediate cauſe of a *Cancer* ſeems to be a too corroſive volatile ſalt, approaching to the nature of arſenic, formed by the ſtagnation of the humours. Stolterfoth obſerves, that it has been frequently cured by mercury and ſalivation. Some take the ulcerous *Cancer* to be nothing elſe but an infinite number of little worms, which devour the fleſh by degrees. The *Cancer* is allowed the moſt terrible evil that befalls the body: it is uſually cured while yet a ſmall tumour, of the bigneſs of a nut, or at moſt of a ſmall egg, by extirpation: when it ſeizes the breaſt, or is burſt into an ulcer, amputation takes place.

ANDIDATE *, a perſon who ſtands for ſome poſt or place, either of honour or profit.

* The word is Latin, *Candidatus*, formed of *Candidus*, white, by reaſon of a white ſhining garment, *Toga Candida*, wherein thoſe who aſpired to preferments in antient Rome, were habited at the time of their appearing for the ſame, eſpecially at the public aſſemblies, in order to diſtinguiſh them from the croud.

ANDIDATI *milites*, were an order of ſoldiers of tall ſtature, who ſerved as the emperor's body guards, to defend him in fight. They were thus denominated, becauſe cloathed in white, either that they might be the more conſpicuous, and their actions more taken notice of, or becauſe they were conſidered as in the way to higher preferments. Cedrenus obſerves, that it was the younger Gordian who inſtituted the *Candidati*, as alſo the *Protectores* and *Scholares*. The *Scholares* were choſen out of the troops, and conſiſted of perſons who beſt underſtood the art of war: and out of theſe *Scholares* were choſen the *Candidati*, who were ſuch as were talleſt and ſtrongeſt, and had moſt of the martial air; and were proper to inſpire terror, ſays the chronicon of Alexandria. The *Protectores* were a middle order.

CANDLE *, a cotton or linen wick, looſly twiſted, and covered with tallow, wax, or ſperma-ceti, in a cylindrical figure; which being lighted at the end, ſerves to illumine a place in the abſence of the ſun.

* The word *Candle* comes from the Latin *Candela*, and that from *Candor*, of *Candeo*, I burn; whence alſo the middle-age Greek κανδηλα.

A Tallow Candle, to be good, muſt be half ſheep's tallow, half bullock's; the fat of hogs making them gutter, give an ill ſmell, and a thick black ſmoke.

Tallow Candles are of two kinds; the one *dipped*, the other *moulded*: the firſt, which are thoſe in ordinary uſe, are of an old ſtanding; the latter are ſaid to be the invention of the Sieur le Brez, at Paris. The manufacture of the two kinds is very different, excepting in what relates to melting of the tallow, and making the wick, which is the ſame in both.

Method of making CANDLES. The tallows, being weighed and mixed in their due proportion, are cut or hacked into pieces, to facilitate their melting, and thrown into a pot or boiler, having a cavity of ſome depth running round the top, to prevent its boiling over. Being, thus, perfectly melted, and ſkimmed, a certain quantity of water is thrown in, proportioned to the quantity of tallow; this ſerves to precipitate the impurities of the tallow, which had eſcaped the ſkimmer, to the bottom of the veſſel. The tallow, however, intended for the three firſt dips, muſt have no water; in regard, the dry wick, imbibing the water readily, makes the *Candles* ſpit and crackle in the burning. The melted tallow is now emptied through a fierce into a tub, having a tap for letting it out, as occaſion requires. The tallow thus prepared, may be uſed after having ſtood three hours; and will continue fit for uſe twenty-four hours in ſummer, and fifteen in winter.

For the wicks, they are made of ſpun cotton, which the chandlers buy in ſkeins; and wind off three or four together, according to the intended thickneſs of the wick, into bottoms, or clues, whence they are cut out with an inſtrument contrived for that purpoſe, into pieces of the length of the *Candle* required; then put on the ſticks, or broches, or elſe placed in the moulds, as the *Candles* are intended to be either dipped or moulded.

Making of dipped CANDLES. The liquid tallow is drawn off, from the tub above-mentioned, into a veſſel called the mould, ſink, or, abyſs, of an angular form, perfectly like a priſm, except that it is not equilateral; the ſide on which it opens being only ten inches high; and the others, which make its depth, fifteen. On the angle, formed by the two great ſides, it is ſupported by two feet, and is placed on a kind of bench, in form of a trough, to catch the droppings, as the *Candles* are taken out each dip. At a convenient diſtance from this, is ſeated the workman, who takes two ſticks, or broches, at a time, ſtrung with the proper number of wicks; *viz.* ſixteen, if the *Candles* are to be of eight in the pound; twelve, if of ſix in the pound, *&c.* and holding them equidiſtant, by means of the ſecond and third finger of each hand, which he puts between them, he immerges the wicks two or three times for their firſt lay, and, holding them ſome time over the opening of the veſſel to let them drain, hangs them on a rack, where they continue to drain and grow hard. When cooled, they are dipped a ſecond time, then a third, as before; only for the third lay they are but immerged twice, in all the reſt thrice. The operation is repeated more or leſs times, according to the intended thickneſs of the *Candle*. With the laſt dip they neck them; *i. e.* plunge them below that part of the wick where the other lays ended.

It muſt be obſerved, that during the operation, the tallow is ſtirred from time to time, and the ſtock ſupplied with freſh tallow. When the *Candles* are finiſhed, their peaked ends, or bottoms, are taken off; not with any cutting inſtrument, but by paſſing them over a kind of flat brazen plate, heated to a proper pitch by a fire underneath; which melts down as much as is requiſite.

Method of making Mould CANDLES. Theſe *Candles* are made in moulds of different matters: braſs, tin, and lead, are the moſt ordinary. Tin is the beſt, and lead is the worſt. Each *Candle* has its mould, conſiſting of three pieces, the neck, ſhaft, and foot: the *ſhaft* is a hollow metal cylinder, of the diameter and length of the *Candle* propoſed: at the extremity of this is the *neck*; which is a little metallic cavity, in form of a dome; having a molding within-ſide, and pierced in the middle with a hole big enough for the wick to paſs through. At the other extremity is the *foot*, in form of a little tunnel, through which the liquid tallow runs into the mould. The neck is ſoldered to the ſhaft, but the foot is moveable, being applied when the wick is is to be put in, and taken off again when the *candle* is cold. A little beneath the place where the foot is applied to the ſhaft, is a kind of ſtring of metal, which ſerves to ſupport that part of the mould, and to prevent the ſhaft from entering too deep in the table to be mentioned hereafter. Laſtly, in the hook of the foot, is a leaf of the ſame metal, ſoldered within-ſide, which advancing into the centre, ſerves to keep up the wick; which is here hooked on, preciſely in the middle of the mould. The wick is introduced into the ſhaft of the mould, by a piece of wire, which being thruſt through the aperture of the hook, till it come out at the neck, the wick is tied to it; ſo that in drawing it back, the wick comes along with it, leaving only enough a-top for the neck; the other end is faſtened to the hook, which thus keeps it perpendicular. The moulds, in this condition, are diſpoſed in a table pierced full of holes, the diameter of each being about an inch: theſe holes receive the moulds inverted, as far as the ſtring in the foot. Being thus placed perpendicularly, they are filled with melted tallow (prepared as before) drawn out of the tap into a tin pot; and thence poured into the foot. After the moulds have ſtood long enough to cool, for the tallow to have arrived at its conſiſtence, the *Candle* is taken out, by taking off the foot, which brings the *Candle* along with it. Thoſe who aim at perfection in their work, bleach or whiten their *Candles*, by faſtening them on rods or broches, and hanging them out to the dew, and earlieſt rays of the ſun, for eight or ten days: care being taken to ſcreen them in the day-time from the too intenſe heat of the ſun; and in the night from rain, by waxed cloths.

Wax-CANDLES are made of a cotton or flaxen wick, ſlightly twiſted, and covered with white or yellow wax.—Of theſe there are ſeveral kinds; ſome called *Tapers*, uſed to illumine churches, and in proceſſions, funeral ceremonies, *&c.* and others uſed on ordinary occaſions.

For the firſt kind, their figure is conical, ſtill diminiſhing from the bottom, which has a hole to receive the point in the candleſtick, to the top, which ends in a point: the latter kind are cylindrical. The firſt are either made *with a ladle*, or *with the hand.*

Manner of making Wax-CANDLES *with the Ladle.* The wicks being twiſted, and cut off at the proper length, a dozen of them are tied by the neck, at equal diſtances, round an iron circle, ſuſpended directly over a large baſon of copper tinned, and full of melted wax: a large ladle full of this wax, is poured gently, by inclination, on the tops of the wicks, one after another; ſo that running down, the whole wick is thus covered: the ſurplus returning into the baſon; where it is kept warm by a pan of coals underneath it. They thus continue to pour on the wax, till the *Candle* arrive at its deſtined bigneſs: ſtill obſerving, that the three firſt ladles be poured on at the top of the wick, the four that the height of $\frac{3}{4}$, the fifth at $\frac{1}{2}$, and the ſixth at $\frac{1}{4}$; by which means the *Candle* arrives at its pyramidal form. The *Candles* are then taken down hot, and laid aſide of each other, in a feather-bed folded in two, to preſerve their warmth, and keep the wax ſoft: they are then taken and rolled, one by one, on an even table, uſually of walnut-tree, with a long ſquare inſtrument of box, ſmooth at the bottom. The *Candle* being thus rolled and ſmoothed, its big end is cut off, and a conical hole is made in it.

Manner of making Wax-CANDLES *by the Hand.* The wick being diſpoſed, as in the former, they begin to ſoften the wax, by working it ſeveral times in hot water, contained in a braſs caldron, tinned, very narrow and deep. A piece of the wax is then taken out, and diſpoſed, by little and little, around the wick, which is hung on a hook in the wall, by the extremity oppoſite to the neck; ſo that they begin with the big end, diminiſhing ſtill, as they deſcend towards the neck. In other reſpects, the method is the ſame here, as in the former caſe; only that they are not laid in the bed, but are rolled on the table, juſt as they are formed. It muſt be obſerved, however, that in the former caſe, water is always uſed to moiſten the ſeveral inſtruments, to prevent the wax from ſticking; and in the latter, lard, or oil of olives, for the hands, table, *&c.*

Cylindrical Wax CANDLES, are either *for the Table*, or *Drawn.* The firſt kind are made of ſeveral threads of cotton, looſely ſpun, and twiſted togther, covered with the ladle, and rolled, as the conical ones, but not pierced.

Wax CANDLES *drawn*, are ſo called, becauſe actually drawn, in the manner of wire, by means of two large rollers, or cylinders of wood, turned by a handle, which turning backwards and forwards ſeveral times, paſs the wick through melted wax, contained in a braſs baſon; and at the ſame time through the holes of an inſtrument, like that uſed for drawing wire, faſtened at one ſide of the baſon: ſo that, by little and little, the *Candle* acquires any bulk, at pleaſure, according to the different holes of the inſtrument through which it paſſes: by this method, may four or five hundred ells length be drawn, running. The invention of this was brought from Venice by Pierre Bleſimare, of Paris, about the middle of the laſt century.

Sale, or *Auction by Inch of* CANDLE; is, when a piece of *Candle* being lighted, people are allowed to bid while it burns, but as ſoon as extinct, the commodity is adjudged to the laſt bidder.

There is alſo a kind of *Excommunication by Inch of* CANDLE; wherein, the time a lighted *Candle* continues burning, is allowed the ſinner to come to repentance; but after which, he remains excommunicated to all intents and purpoſes.

CANDLEMAS *, a feaſt of the church, held on the ſecond of February, in honour of the purification of the bleſſed virgin.

* It takes its name either from the number of lighted candles uſed by the Romiſh church, in the proceſſions of this day: or becauſe, before *maſs*, the church conſecrated *Candles* for the whole year.

Candlemas is alſo called, in antient writers, *Hypapante*; and among moderns, the *Purification.*

Some will have this feaſt to have been inſtituted by pope Gelaſius, in lieu of the heathen lupercalia; and that proceſſion was thereon made with lighted *Candles* round the fields and grounds, by way of exorciſm. Hence Bede ſays, "It is happy for the "church to have changed the luſtrations of the heathens, held "in the month of February, around the fields, for the proceſ"ſions with hallowed *Candles*, in remembrance of that divine "light wherewith Chriſt illuminated the world, whence he "was ſtiled by Simeon, *a light to lighten the Gentiles.*" Others aſcribe the origin of *Candlemas* to pope Vigilius, in the year 536. and ſuppoſe it ſubſtituted for the feaſt of Proſerpine, held with burning tapers by the heathens in the beginning of February.

CANDY, in ſpeaking of ſugar, denotes a preparation of that ſubſtance, made by melting, and cryſtallizing ſix or ſeven times over to render it hard, and tranſparent. See SUGAR.

CANDYING, makes an operation in pharmacy, as well as confectionary; thoſe ſimples which are preſerved in ſubſtance by boiling in ſugar being ſaid to be *Candied:* though the performance hereof is now turned over to the confectioner from the apothecary, to whom originally it belonged.

CANE, CANNA, a long meaſure, frequent in Italy, Spain, and the ſouth parts of France; of greater or leſs length, according to the places where it is uſed.

At *Naples*, the *Canna* is equal to ſeven feet $3\frac{1}{2}$ inches, Engliſh meaſure: the *Canna* of Tholouſe, and the upper Languedoc, is equal to the vara of Arragon, and contains five feet $8\frac{2}{3}$ inches; at Montpellier, in Provence, Dauphiné, and the lower Languedoc, to ſix Engliſh feet $5\frac{1}{4}$ inches.

CANEPHORÆ, Κανηφοροι, in antiquity, were two virgins of quality at Athens, kept in Minerva's temple in the Acropolis, who at the feaſt of the Panathenæa, carried baſkets on their heads with ſomething ſecret or myſterious therein, delivered to them by the prieſteſs.

The baſkets were uſually crowned with flowers, myrtles, *&c.*—The *Canephoræ*, in theſe ceremonies, always marched the firſt; the philoſopher or prieſt next, and the choir of muſic followed.

CANEPHORIA was a ceremony, which made part of a feaſt celebrated by the Athenian virgins on the eve of their marriage-day. The *Canephoria*, as practiſed at Athens, conſiſted in this; that the maid, conducted by her father and mother, went to the temple of Minerva; carrying with her a baſket full of preſents, to engage the goddeſs to make the marriage happy; or rather, as the ſcholiaſt of Theocritus has it, the baſket was intended as a kind of honourable amends made to that goddeſs, the protectreſs of virginity, for abandoning her party; or it was a ceremony to appeaſe her wrath.

CANICULA, is a name given to one of the ſtars of the conſtellation Canis major; called alſo ſimply the *Dog-ſtar*; by the Greeks, σειριος, *Sirius.*

Pliny and Galen alſo give the appellation Procyon to the *Canicula*; though, in propriety, Procyon is the name of another ſtar, in the leſſer Dog. See PROCYON.

Canicula is the tenth in order in the Britannic catalogue; in Tycho's and Ptolemy's it is the ſecond. It is ſituate in the mouth of the conſtellation; and is of the firſt magnitude; being the largeſt, and brighteſt, of all the ſtars in the heavens. Its longitude, latitude, *&c.* ſee among thoſe of the other ſtars of CANIS *major.*

From the riſing of this ſtar, not coſmically, or with the ſun, but heliacally, that is, its emerſion from the ſun's rays, which now happens about the fifteenth day of Auguſt, the antients reckoned their dies caniculares, or dog-days. See CANICULAR.

The Egyptians and Ethiopians begin their year at the riſing of *Canicula*; reckoning to its riſe again the next year, which is called the *Annus Canarius.*

CANICULAR *Days*, *Dies* CANICULARES, properly denote a certain number of days, preceding and enſuing the heliacal riſing of *Canicula*, or the dog-ſtar, in the morning.

Some authors tell us from Hippocrates and Pliny, that the day the *Canicula* riſes, the ſea boils, wine turns ſour, dogs begin to grow mad, the bile increaſes and irritates, and all animals grow languid; and that the diſeaſes ordinarily occaſioned in men by it, are burning fevers, dyſenteries, and phrenſies.

The Romans ſacrificed a brown dog every year to *Canicula* at its riſing, to appeaſe its rage. They ſuppoſed *Canicula* to be the occaſion of the ſultry weather, uſually felt in the dog-days; but by miſtake: in five or ſix thouſand years more, *Canicula* may chance to be charged with bringing froſt and ſnow; for it will riſe in November or December.

CANINE *Appetite*, an inordinate hunger, to the degree of a diſeaſe. See BULIMIA.

CANINE *Teeth*, CANINI *Dentes*, in anatomy, are two ſharp, edged teeth in each jaw; one on each ſide, placed between the inciſores and molares.

They are pretty thick and round, and end in a ſharp point; they have each uſually but one root, which is longer than the roots of the inciſores. Their proper uſe is to pierce the aliment.—Becauſe the fore-teeth are not only apt to be pulled outwards by the things we hold and break with them, but are likewiſe more ſubject to blows than the molares: therefore above two thirds of them are buried in their alveoli, or ſockets; by which their reſiſtance of all lateral preſſures is much greater than that of the molares. Keill.

CANINUS *Muſculus*, the ſame as Elevator labii ſuperioris. See ELEVATOR.

CANIS *Major*, *the great Dog*; in aſtronomy, a conſtellation of the ſouthern hemiſphere, below Orion's feet, though ſomewhat to the weſtward of him: whoſe ſtars Ptolemy makes 18; Tycho obſerved only 13; in the Britannic catalogue they are 32. Their order, names, places, longitude, magnitude, &c. are as follow.

Names and ſituations of the ſtars.	Signs	Longitud. °	′	″	Latitude. °	′	″	Magnit.
Preced. } of the bright informes	♊	17	51	51	57	24	15	2
Subſ. } before poſt. feet of the dog		22	7	5	59	14	20	2
In the preced. poſterior foot		3	6	8	53	24	57	2 3
In the extrem. of the anterior foot	♋	2	52	58	41	17	47	2
Inform. under the poſterior foot		4	12	39	56	44	8	5
5								
Preced. of two in the lower knee		6	20	54	46	36	17	5
Subſeq. and ſouth of the ſame		7	21	25	46	5	36	5
		7	16	48	41	46	23	7
South. in the upper knee		7	25	41	42	21	25	5
North. in the ſame knee		7	41	57	41	19	24	5
10								
Exceeding bright one in mouth,		9	49	1	39	32	8	1
Sirius)		9	59	38	37	19	38	5
South. and preced. in the breaſt		10	58	50	43	53	11	6
In the lower leg.		14	3	13	55	11	25	4
In the north ear.		11	52	53	34	44	34	5
15								
Preced. of the contig. in the breaſt		12	55	56	42	54	49	6
Preced. of two in the ſhoulder		13	50	34	46	48	52	5
South. of the contig. in the breaſt		13	26	56	43	2	18	7
In the head		12	44	29	36	41	50	4
Third of thoſe following in breaſt		13	34	59	42	45	40	6
20								
South. in the neck		12	32	8	39	39	32	4
Bright one under belly, between		16	24	46	51	23	57	2 3
thighs)		17	12	31	50	16	0	4
North. of two in the neck		15	17	41	38	1	50	3
Subſeq. of two in the ſhoulder		16	41	25	46	10	13	5 4
25								
Bright one in the middle of the body		19	3	30	48	29	37	2 3
		20	12	26	47	53	49	7
		20	59	52	48	12	38	6
		21	18	34	48	36	51	5
		21	56	10	46	15	37	6
30								
		22	3	25	46	38	30	5
Bright one in the tail	♋	25	12	16	50	38	56	2 3

ANIS *Minor*, the *little Dog*, in aſtronomy, a conſtellation of the nothern hemiſphere; called alſo by the Greeks, *Procyon*, and by the Latins *Antecanis*, and *Canicula*.

The ſtars in the conſtellation *Canis minor*, are in Ptolemy's catalogue 17. Their order, names, places, longitude, latitude, magnitude, &c. are as follow.

Names and ſituations of the ſtars.	Sign.	Longitud. °	′	″	Latitude. °	′	″	Magnit.
the head	♋	16	48	34	10	16	12	6
orth. in the neck		17	19	58	12	36	42	6
uth. in the neck		17	51	52	13	31	30	3
nder theſe as in the ſhoulder		18	1	23	12	51	51	6
		18	18	14	14	49	14	6
5								
formis, over the neck		17	56	31	9	45	18	6
orth. againſt preced. poſter. foot		20	10	40	19	37	58	6
Middle		20	14	7	18	31	51	7
South.		20	28	33	18	6	22	6
the thigh, Procyon		21	30	21	15	57	55	1 2
10								
formis, towards the tail		22	11	5	10	17	57	6 5
the hind leg		25	19	47	18	53	0	5
		26	57	30	18	6	10	6
ced. in the Δ of inf. fol. } north.		28	39	12	23	47	56	5
wing this to the ſou. } north.		28	30	1	21	29	56	5
15								
tter in the ſaid Δ		27	56	51	17	47	51	5
	♌	0	49	33	22	37	35	4

NKER, ſometimes denotes a ſpeck made by a ſharp humour, hich gnaws the fleſh almoſt like a cauſtic; very common to hildren, in their mouth eſpecially.

CANKER is alſo a diſeaſe incident to trees; which makes the bark rot and fall. See BARK, and DISEASES *of plants*.

CANNON *, in war, a military engine, or fire-arm for throwing iron, lead, or ſtone bullets, by force of gunpowder, to a place directly oppoſite to the axis of the cylinder whereof it conſiſts.

* The word ſeems derived from the Italian *Cannone*, an augmentation of *Canna*, cane; in regard a *Cannon* is long, ſtrait, and hollow, like a cane.

The firſt *Cannons* were called *Bombardæ*, from *Bombus*; by reaſon of their noiſe.

The parts and proportions of a *Cannon* about eleven feet long, are its barrel, or cavity, nine feet; its fulcrum, or ſupport, fourteen; and its axis ſeven; the bore, or diameter of the mouth ſix inches, and two lines the play of the ball: the diameter of the ball therefore ſix inches; and it weight thirty-three pounds ⅓. The metal thick about the mouth, two inches; and at the breech ſix. It weighs about five thouſand ſix hundred pounds: its charge is from eighteen to twenty pounds. It carries, point-blank, ſix hundred paces; and loads ten times in an hour, ſometimes fifteen; in a day one hundred and twenty times. Its bed fifteen feet broad, and twenty long, for the rebound. It requires twenty horſes to draw it.

Larrey makes braſs *Cannon* the invention of J. Owen; and ſays, the firſt known in England, were in 1535. *Cannons*, however, he owns, were known before; and obſerves, that at the battle of Creſſi, in 1346. there were five pieces of *Cannon* in the Engliſh army; which were the firſt that had been ſeen in France: Mezeray alſo ſays, that king Edward ſtruck terror into the French army, by five or ſix pieces of *Cannon*; it being the firſt time they had ſeen ſuch thundering machines.

Cannons are made cylindrical, that the motion of the ball may not be retarded in its paſſage; and that the powder, when on fire, may not ſlip between the ball and the ſurface of the *Cannon*, which would hinder its effect. Wolfius would have the *Cannon* always decreaſe, towards the mouth or orifice: in regard, the force of the powder always decreaſes, in proportion to the ſpace through which it is expanded. The new *Cannons*, after the Spaniſh manner, have a cavity, or chamber, at bottom of the barrel, which helps their effects. A *Cannon* is found to recoil two or three paces after exploſion; which ſome account for from the air's ruſhing violently into the cavity, as ſoon as it is diſcharged of the ball: but the real cauſe is, the powder's acting equally on the breech of the *Cannon*, and the ball.

For a battering-piece, whoſe ball is thirty-ſix pounds, there muſt be two cannoneers, three chargers, and thirty pioneers.

Cannons are diſtinguiſhed from the diameters of the balls they carry; but this diſtinction is different in different nations. The proportion of their length to their diameter, depends rather on experience, than any reaſoning *à priori*; and has been accordingly various, in various times and places: the rule is, that the gun be of ſuch a length, as that the whole charge of powder be on fire ere the ball quit the piece. If it be made too long, the quantity of air to be driven out before the ball, will give too much reſiſtance to the impulſe; and that impulſe ceaſing, the friction of the ball againſt the ſurface of the piece will take off ſome of its motion. Formerly, *Cannons* were made much longer than at preſent; till ſome made by chance 2¼ feet ſhorter than ordinary, taught them that the ball moves with a greater impetus through a leſs ſpace than a larger. This Guſtavus king of Sweden proved by experience in 1624. when an iron ball, forty-eight pounds weight, was found to go farther from a new ſhort *Cannon*, than another ball of ninety ſix pounds out of an old, longer piece: whereas, in other reſpects, it is certain the larger the bore and ball, the greater the range.

The names of the ſeveral *Cannons*, their length, their weight, and that of their balls, as they obtain among us, are as in the following table.

NAMES of CANNON.	Weight of an iron ball.		Weight of the *Cannon.*	Length of the *Cannon.*
Cannon Royal	48 *lib.*		8000 *lb.*	12 *Feet.*
Demi-Cannon large	36		6000	12
Demi-Cannon ordinary	32		5600	12
Demi-Cannon leaſt	30		5400	11
Culverin largeſt	20		4800	12
Culverin ordinary	17 *lib.*	5 *oz.*	4500	12
Culverin leaſt	15		4000	11
Demi-Culverin ordinary	10	11	2700	11
Demi-Culverin leaſt	9		2000	10
Saker ordinary	6		1500	10
Saker leaſt	4	12	1400	8
Minion largeſt	3	12	1000	8
Minion ordinary	3	4	800	7
Falcon	2	8	750	7
Falconet	1	5	400	6
Rabinet		8	300	5.6 *Dig.*
Baſe.		5	200	4.6

The greateſt range of a *Cannon* is ordinarily fixed at an elevation of 45°. Dr. Halley ſhews it to be at $44\frac{1}{2}$.

M. S. Julian adjuſts the ranges of the ſeveral pieces of *Cannon*, from the weight of the ball they bear the charge of gunpowder being always ſuppoſed in a ſubduple ratio of the weight of the ball: thus,

Weight of a leaden ball.	Horizontal range.	Greateſt range.	Weight of a leaden ball.	Horizontal range.	Greateſt range.
33 *lib.*	600 *Paces.*	6000	12	450	5000
24	700	6000	8	400	1500
16	800	8000	2	150	1500

The ſame author adds, that a ball thrown to the diſtance of ſix hundred paces, ſinks nine, ten, eleven, twelve, nay, thirteen feet within ground. For the *Methods of caſting Cannons*, ſee Foundry.

For the metal of *Cannons*, it is either iron, or which is more uſual, a mixture of copper, tin, and braſs: the tin is added to the copper, to make the metal more denſe and compact: ſo that the better or heavier the copper is, the leſs tin is required. Some to a hundred pounds of copper, add ten of tin, and eight of braſs: others, ten of tin, five of braſs, and ten of lead. Braudius deſcribes a method of making *Cannon* of leather, on occaſion: and it is certain the Swedes made uſe of ſuch in the long war of the laſt century; but theſe burſt too eaſily to have much effect. It is found by experience, that of two *Cannons* of equal bore, but different lengths; the longer requires a greater charge of powder than the ſhorter, in order to reach the ſame range. The ordinary charge of a *Cannon*, is for the weight of its gunpowder to be half that of its ball. After each thirty diſcharges, the *Cannon* is to be cooled, with two pints of vinegar, mixed with four of water, poured into the barrel; the touch-hole being firſt ſtopped.

CANNULA, or Canula, in chirurgery, a little tube, or pipe, which the chirurgeons leave in wounds and ulcers, that they dare not, or chooſe not, to heal up; becauſe ſtill ſuppurating.

The *Cannula* is to be made of gold, ſilver, or lead; and is perforated, that the pus, entering within it, may fall upon a ſponge, dipped in ſpirit of wine, and placed at the orifice, to keep the ulcer warm, and to prevent the external air from entering: ſome of theſe *Cannulæ* have rings, whereby to keep them faſt in the wound; and others have holes with ribbands through them, to bind them down. Some are round, others oval, others crooked.

There is a particular kind of *Cannula*, formed taper-wiſe, with a ſcrew ſaſtened to one end, in manner of a cock: its uſe is, for the diſcharge of the water out of the abdomen, after tapping, in an aſcites, or dropſy. To this end it is inſerted into the body, through a hole made near the navel; with a pointed inſtrument, and ſometimes a punch; and is faſtened into its place by a bandage, and guarded from any injury of the cloaths, &c. by a caſe or cover. It has this advantage over the common tapping; that by means thereof, the water is drawn out when, and in what meaſure, the patient pleaſes. See Paracentesis.

There are likewiſe a kind of copper, or iron *Cannulæ*, made for the more convenient application of actual cauteries: they are made very ſhallow, and are, in effect, little more than hoops; through the aperture whereof, the actual cautery is conveyed; which, by this means, is kept from damaging the adjacent parts.

CANOE, a denomination given to the little boats uſed by the ſavages in both Indies, as well as by the negroes in Guiney, made chiefly of the trunks of trees dug hollow; ſometimes of pieces of bark faſtened together.

CANON, a perſon who poſſeſſes a prebend, or revenue allotted for the performance of divine ſervice, in a cathedral, or collegiate church.

Canons are of no great antiquity: Paſchier obſerves, that the name *Canon* was not known before Charlemaign; at leaſt, the firſt we hear of, are in Gregory de Tours, who mentions a college of *Canons*, inſtituted by Baldwin XVI. archbiſhop of that city, in the time of Clotharius I.

Original *Canons* were only prieſts, or inferior eccleſiaſtics, who lived in community; reſiding by the cathedral church, to aſſiſt the biſhop; depending intirely on his will; ſupported by the revenues of the biſhoprick; and living in the ſame houſe, as his domeſtics, or counſellors, &c. They even inherited his moveables, till the year 816. when this was prohibited by the council of Aix la Chapelle. By degrees, theſe communities of prieſts, ſhaking off their dependence, formed ſeparate bodies; whereof the biſhops, however, were ſtill heads. In the Xth century, there were communities or congregations of the ſame kind, eſtabliſhed even in cities where there were no biſhops: theſe were called *Collegiates*; in regard, they uſed the terms *Congregation* and *College* indifferently: the name *Chapter*, now given to theſe bodies, being much more modern. Under the ſecond race of the French kings, the *Canonical*, or collegiate life, had ſpread itſelf all over the country; and each cathedral had its chapter, diſtinct from the reſt of the clergy. But they were not yet deſtined to a life ſo eaſy as now-a-days.

They had the name *Canon*, from the Greek, κανων, which ſignifies three different things, *a rule*, *a penſion* or *fixed revenue to live on*, and *a catalogue* or *matricula*. Hence, ſome ſay, they were called *Canons*, by reaſon of the penſion or prebend (whence they are ſometimes alſo denominated *Sportulantes Fratres*): others hold, they were called *Canons*, becauſe obliged to live according to the canonical rules and inſtitutions, which were given them, and others; as M. de Marca, becauſe their names were inſerted in the matricula, or catalogue of the cathedral.

In time, the *Canons* freed themſelves from their rules, the obſervance relaxed, and, at length, they ceaſed to live in community: yet they ſtill formed bodies; pretending to other functions beſides the celebration of the common office in the church; yet aſſuming the rights of the reſt of the clergy; making themſelves a neceſſary council of the biſhop; taking upon them the adminiſtration of a ſee during a vacancy, and the election of a biſhop to ſupply it. There are even ſome chapters exempt from the juriſdiction of the biſhop, and owning no head but their dean. After the example of cathedral chapters, collegiate ones alſo continued to form bodies, after they had abandoned living in community.

Canons are of various kinds; as,

Cardinal Canons, which are thoſe attached, and, as the Latins call it, *incardinati* to a church, as a prieſt is to a pariſh.

Domicellary Canons were young *Canons*, who, not being in orders, had no right in any particular chapters.

Expectative Canons were ſuch as, without having any revenue or prebend, had the title and dignities of *Canons*, a voice in the chapter, and a place in the choir; till ſuch time as a prebend ſhould fall.

Foreign Canons were ſuch as did not officiate in the *Canonries* to which they belonged.—To theſe were oppoſed *Manſionary Canons*, or *Canons Reſidentiary*.

In a manuſcript ordinary, at Rouen, mention is made of *Canons of thirteen marks*; which, perhaps, was the revenue of their *Canonicate*.

In the church, at London, were *Canons minor*, or *little Canons*, who officiated for the great ones. At Lucca there are *Mitred Canons*. There were alſo *Canons of poverty*; and *Canons ad ſuccurrendum*, who were made *Canons* at the point of death, to partake of the prayers of the chapter.

Lay or *Honorary* Canons, are ſuch among the laity, as have been admitted, out of honour and reſpect, into ſome chapter of *Canons*.

Such as are the counts of Anjou, in the church of St. Martin de Tours; the kings of France, of St. Hilary in Poictiers, &c. the emperor, of St. Peter's, &c.

Canons *Regular*, are *Canons* that ſtill live in community; and who, like religious, have, in proceſs of time, to the practice of their rules, added the ſolemn profeſſion of vows.

They are called *Regulars*, to diſtinguiſh them from thoſe *Canons* who abandon living in community, and at the ſame time, the obſervance of the *Canons* made as the rule of the clergy, for the maintenance of the antient diſcipline.

The *Canons* ſubſiſted in their ſimplicity till the XIth, others ſay the XIIth century, when ſome of them, ſeparating from the community, took with them the name of *Canons*, or *acephalous Prieſts*, becauſe they declined to live in community with the biſhop; and thoſe who were left, thenceforth acquired the denomination of *Canons Regular*, and adopted moſt of the profeſſions of the rule of St. Auguſtine.

It is diſputed to which claſs the *Canons Regular* belong, whether to the clergy, or the religious; both the cleric and monaſtic ſtate being united in them. The point of priority and precedency is hotly conteſted alſo, both between the *Regular Canons* and the prieſts; and the *Regular Canons*, and ſimple monks: the double capacity of the *Canons* is the foundation of this controverſy.

Tertiary Canons, thoſe who had only the third part of the revenues of the *Canonicate*.

Charlemaign ordained, that thoſe who were admitted into the clerical, that is, the *Canonical* life, ſhould be obliged to live canonically, and according to the rule preſcribed them; obeying their biſhops as monks do their abbot: by this means it was, that the ſpirit of monachiſm became introduced into cathedrals; for the clerks, being tied to certain rules, became half monks; and inſtead of applying themſelves to the function of the prieſthood, ſhut themſelves up in cloiſters: whence the houſes where they reſided took the name of monaſteries, and were to be kept incloſed; as appears by the ſynodical ſtatutes of Hincmar, in 874. So that there were two kinds of monaſteries, the one for monks, the other for *Canons*.

Singing, in a little time, became the chief employ of *Canons*, and is now almoſt the whole buſineſs they have left.

In the VIIIth century, S. Chrodegand made a rule for the *Canons*, which was received by them all, and is ſtill extant in thirty-four articles, drawn chiefly from that of St. Benedict, but accommodated to the clerical life. In this are preſcribed their penances, habits, &c. There was a ſecond rule made in 816 at the requeſt of Charlemaign, by the biſhops then convened at Aix la Chapelle, on account of the Roman indiction; compoſed of extracts from the fathers and councils.

CANON, in an eccleſiaſtical ſenſe, is a law or rule, either of doctrine or diſcipline, enacted eſpecially by a council, and confirmed by the authority of the ſovereign. See LAW.

Canons are properly deciſions of matters of religion; or regulations of the polity and diſcipline of a church, made by councils, either general, national, or provincial.

Such are the *canons* of the council of Nice, of Trent, *&c.* See COUNCIL, and CANON *Law*.

There have been various collections of the *canons* of the eaſtern councils; but four principal ones, each ampler than the preceding. The firſt, according to Uſher, *A. D.* 380. containing only thoſe of the firſt oecumenical council, and the five provincial ones: they were but 164 in number. To theſe, Dionyſius Exiguus, in the year 520. added the 50 *canons* of the apoſtles, and thoſe of the other general councils. The Greek *canons*, in this ſecond collection, end with thoſe of the council of Calcedon; to which are ſubjoined thoſe of the council of Sardica, and the African councils. The fourth and laſt collection comes down as low as the ſecond council of Nice; and it is on this that Balſamon and Zonaras have commented.

There is a great diſpute about the apoſtolical *canons*, uſually aſcribed to St. Clement. Bellarmin, Baronius, *&c.* will have them to be genuine *canons* of the Apoſtles: Hincmar, De Marca, Beveridge, *&c.* take them to be framed by the biſhops who were the apoſtles diſciples in the ſecond or third century; but Daille, *&c.* maintain them to have been forged by ſome heretic in the ſixth century. The Greek church allow eighty-five of them, and the Latins only fifty; though there are eighty-four in the edition given of them in the *Corpus Juris Canonici*.

CANON is alſo uſed for the authorized catalogue of the ſacred writings. See BIBLE.

The antient *canon*, or catalogue of the books of the Old Teſtament, was made by the Jews, and is ordinarily attributed to Eſdras. This is the *canon* allowed to have been followed by the primitive church, till the council of Carthage; and, according to St. Jerom, this conſiſted of no more than twenty-two books; but that council enlarged the *canon* very conſiderably, taking into it the books which we call apocryphal; which the council of Trent has further enforced; injoining all theſe to be received as books of Holy Scripture, upon pain of anathema, and being attainted of hereſy.

The Romaniſts, in defence of this *canon*, ſay, that it is the ſame with that of the council of Hippo, held in 393. and with that of the third council of Carthage, at which were preſent forty-ſeven biſhops, and among the reſt, St. Auguſtine; who declared that they received it from their fathers.

Some of the fathers diſtinguiſh the inſpired writings into three claſſes, *Proto-Canonical*, *Deutero-Canonical*, and *Apocryphal*. See DEUTERO-CANONICAL.

Paſchal CANON, a table of the moveable feaſts, ſhewing the day of Eaſter, and the other feaſts depending on it, for a cycle of nineteen years.

The *paſchal canon* is ſuppoſed to be the calculation of Euſebius of Cæſarea, and to have been done by order of the council of Nice. See EASTER.

CANON, in monaſtic orders, a book wherein the religious of every convent have a fair tranſcript of the rules of their order, frequently read among them as their local ſtatutes.

This is alſo called *Regula*, as containing the rule and inſtitution of their order.

The *canon* differs from the *Miſſale*, *Martyrologium*, and *Necrologium*. See MISSAL.

CANON, again, is uſed for the catalogue of ſaints acknowleged and canonized in the Romiſh church.

CANON is alſo uſed, by way of excellence, in the Romiſh church, for the ſecret words of the maſs, from the preface to the *Pater*; in the middle of which the prieſt conſecrates the hoſt.

The common opinion is, that the *canon* of the maſs commences with *Te igitur*, &c. The people are to be on their knees, hearing the *canon*; and are to rehearſe it to themſelves, ſo as not to be heard.

The *canon* is by ſome pretended to have been put into its preſent form by St. Jerom, by order of pope Siricius. Others aſcribe it to pope Siricius himſelf, who lived towards the cloſe of the fourth century. The council of Trent declare the *canon of the maſs* to have been framed by the church; and to be compoſed of the words of Jeſus Chriſt, his apoſtles, and the firſt popes.

CANON, in the antient muſic, is a rule or method of determining the intervals of notes.

Ptolemy, rejecting the Ariſtoxenian way of meaſuring the intervals in muſic, by the magnitude of a tone (which was ſuppoſed to be formed by the difference between a diapente and a diateſſaron), thought that muſical intervals ſhould be diſtinguiſhed, according to the ratio's or proportions which the ſounds terminating thoſe intervals bear to one another, when conſidered according to their degree of acuteneſs or gravity; which, before Ariſtoxenus, was the old Pythagorean way. He therefore made the diapaſon conſiſt in a double ratio; the diapente, in a ſeſquialterate; the diateſſaron, in a ſeſquitertian; and the tone itſelf, in a ſeſquioctave; and all the other intervals, according to the proportion of the ſounds that terminate them: wherefore, taking the *canon* (as it is called) for a determinate line of any length, he ſhews how this *canon* is to be cut accordingly, ſo that it may repreſent the reſpective intervals: and this method anſwers exactly to experiment, in the different lengths of muſical chords.—From this *canon*, Ptolemy and his followers have been called *Canonici*; as thoſe of Ariſtoxenus were called *Muſici*.

CANON, in geometry and algebra, a general rule for the ſolution of all caſes of a like nature with the preſent inquiry.

Thus every laſt ſtep of an equation is a *canon*; and, if turned into words, becomes a rule to ſolve all queſtions of the ſame nature with that propoſed.

Natural CANON of *Triangles* is a table of ſines, tangents, and ſecants together: ſo called, becauſe ſerving principally for the ſolution of triangles.

Artificial CANON *of Triangles* is a table wherein the logarithms of ſines and tangents are laid down. See SINE.

CANON *Law*, a collection of eccleſiaſtical conſtitutions, deciſions, and maxims, taken partly from ſcripture, partly from the antient councils, and partly from the decrees of popes, and the reports and ſayings of the primitive fathers, whereby all matters of polity in the Romiſh church are regulated.

The *canon law* that obtained throughout the weſt, till the twelfth century, was the collection of *canons* made by Dionyſius Exiguus in 520. the capitularies of Charlemaign, and the decrees of the popes, from Siricius to Anaſtaſius.—No regard was had to any thing not compriſed in theſe; and the French ſtill maintain the rights of the Gallican church to conſiſt in their not being obliged to admit any thing elſe, but to be at liberty to reject all innovations made in the canonical juriſprudence ſince that compilation, as well as all papal decrees before Siricius.

Indeed, between the eighth and eleventh centuries, the *canon law* was mixed and confounded with the papal decrees, from St. Clement to Siricius; which till then had been unknown: this gave occaſion to a new reform, or body of the *canon law*; which is the collection ſtill extant, under the title of *The concordance of the diſcording Canons*, made in 1151. by Gratian, a Benedictin monk, from texts of ſcripture, councils, and ſentiments of the fathers, in the ſeveral points of eccleſiaſtical polity.

This work he divided according to the order of matters, not of times and councils, as had been done before: ſo that upon the appearance of this, all the antient collections immediately ſunk. It is divided into three parts: the firſt into an hundred and eight diſtinctions; the ſecond into thirty-ſix cauſes, and the third into five diſtinct parts: the ſecond part of the *canon law* conſiſts of the decrees of the popes, from 1150. to pope Gregory IX. in 1229.

In 1297. pope Boniface continued the papal decrees as far as his time: this part the French make particular exception to, by reaſon of that pope's differences with their king Philip the Fair. To theſe, pope John XXII. added the *Clementines*, or the five books of the conſtitutions of his predeceſſor Clement V. And to all theſe were after added twenty conſtitutions of the ſaid pope John, called the *Extravagantes*; and ſome other conſtitutions of his ſucceſſors.

All theſe compoſe the body, or *Corpus*, *of the Canon Law*; which, including the *Comments*, makes three volumes in folio; the rule and meaſure of church government: indeed, with us, ſince the reformation, the *canon law* has been much abridged and reſtrained; only ſo much of it obtaining, as is conſiſtent with the common and ſtatute laws of the realm, and the doctrine of the eſtabliſhed church.

CANONESS, in the Romiſh church, a woman who enjoys a prebend, affixed, by the foundation, to maids; without their being obliged to renounce the world, or make any vows.

There are few of theſe, except in Flanders and Germany: they are rather looked upon as a ſeminary and retreat of girls for marriage, than an engagement for the ſervice of God.

CANONESSES *of St. Auguſtine*, or *Regular* CANONESSES, are a kind of religious, who follow the rules of St. Auguſtine; of which there are various congregations.

CANONIZATION *, a declaration of the pope, whereby, after a great deal of ſolemnity, he enters into the liſt of ſaints ſome perſon who has lived an exemplary life, and wrought miracles.

Mabillon diſtinguiſhes two kinds of *canonization*; a *general*, and

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* The word *canonization* ſeems to be of later origin than the thing; there being no inſtance of the uſe of the word before the twelfth century, whereas St. Uldaricus was *canonized* in the tenth. The term is formed from *canon*; in regard the primitive *canonizations* were only orders of the popes, or biſhops, whereby perſons eminent for piety, *&c.* were inſerted in the *canon* of the maſs, that they might be commemorated in the ſervice: for that, in thoſe days, the uſe of martyrologies was unknown in the church.

particular, the firſt made by a general council, or a pope; the ſecond, by a biſhop, a particular church, or a provincial council.

There are inſtances likewiſe of *canonizations*, or at leaſt of ſomething very like them, by abbots.

At firſt, only martyrs were *canonized*; but by degrees they came to confeſſors, &c. It is diſputed whether martyrdom do not ſupply the want of miracles.

Canonization antiently conſiſted in inſerting the ſaint's name in the ſacred diptychs, or *canon* of ſaints; in appointing a proper office for invoking him, and erecting churches under his invocation, with altars for maſs to be celebrated on; taking up the body from the place of its firſt burial, and the like ceremonies: by degrees, other formalities were added; and proceſſions were made with the ſaint's image in triumph; the day of his death is declared a feaſt; and to render the thing ſtill more ſolemn, Honorius III. in 1225. added ſeveral days indulgence to a *canonization*.

It is a great diſpute among the learned, when the right of *canonization*, which it is owned was antiently common to ordinaries, eſpecially metropolitans and princes, with the pope, became firſt peculiar to the pope. Some ſay, Alexander III. made this reſerve to the holy ſee. The Jeſuits of Antwerp in their Propylæum aſſert, it was not eſtabliſhed till two or three ages ago; and then by a mere cuſtom, which paſſed tacitly into a law; which appears not to have been generally received in the tenth and eleventh centuries. This, however, is pretty certain, that it was generally allowed before pope Alexander III. the archbiſhop of Vienne in France, and his ſuffragans, acknowlege it in an authentic manner in the year 1231. by a letter written to Gregory IX. deſiring him to *canonize* Stephen, biſhop of Die, who died in 1208. *Quia nemo*, ſay they, *quantalibet meritorum prærogativa polleat, ab eccleſia Dei pro ſancto habendus, aut venerandus eſt, niſi prius per ſedem apoſtolicam ejus ſanctitas fuerit approbata.*

CANONRY, or **CANONICATE**, the benefice filled by a *Canon*.

Canonicate is diſtinguiſhed from prebend, in that the prebend may ſubſiſt without the *canonicate*, whereas the *canonicate* is inſeparable from the prebend. It is to the *canonicate*, not to the prebend, that the right of ſuffrages, and other privileges, are annexed. See PREBEND.

CANTALIVERS, in building, pieces of wood framed into the front, or ſides of a houſe, to ſuſtain the mouldings and eves over it.

Cantalivers are the ſame with modillions, except that the former are plain, and the latter carved. They are both a kind of cartouſes ſet at equal diſtances under the corona of the cornice of a building.

CANTALIVER-CORNICE, is a cornice with *cantalivers* or modillions under it.

CANTATA, in muſic, a ſort of ſong, or compoſition, intermixed with recitativoes, airs, and variety of motions: ordinarily intended for a ſingle voice, with a thorough baſs; ſometimes for two, three, or more voices, with one or more violins, or other inſtruments.

The *cantata* paſſed from Italy into France, and thence to us: it has ſomething in it extremely fantaſtical and capricious, and ſeems only to pleaſe by its variety. The word is Italian, where it ſignifies the ſame thing.

CANTHARIDES *, Κανθαριδες, in medicine, a kind of poiſonous inſects, with wings and feet like beetles; much uſed as an epiſpaſtic for the raiſing of bliſters.

* The word is formed from *cantharus*, the name of a ſort of beetle, and called alſo *ſcarabæus venenoſus*; the *Cantharides* are properly a ſpecies of the beetle or ſcarab kind.

Cantharides, called alſo *Spaniſh-flies*, though they ought rather to be denominated *Spaniſh-beetles*, are produced from a kind of little worms, hatched on wheat, the leaves of the poplar, &c. There are various kinds of *cantharides*, but all of a greeniſh and golden hue; the beſt are thoſe which appear with different colours, having yellow lines running acroſs their wings; thick, and freſh. They are killed by expoſing them over a very ſtrong vinegar, which is made to boil for that purpoſe; after which they are dried, and may be preſerved a year or two.

Cantharides are very ſharp and corroſive, abounding with a ſubtile, cauſtic, volatile ſalt; whereby they become exceedingly injurious to the bladder, ſo as to ulcerate it, even when applied externally, if ſuffered to lie on too long. They are much commended in fevers, as they raiſe and ſtrengthen a low trembling pulſe, give relief in delirious ravings, ſoporiferous ſtupors, loſs of reaſon, &c. (the common ſymptoms of high and dangerous fevers): they often alſo reduce continual fevers to regular and diſtinct remiſſions; and ſo make way for the bark: cleanſe and open the obſtructed glands, and lymphatics; bring on critical ſweats, &c.

Dr. Morgan accounts for theſe effects of *cantharides* thus: "The ſubtile and volatile pungent parts, of which the *cantharides* conſiſt, being carried into the blood, and paſſing "with the lymph or ſerum into the glandular pipes, act there "by diſſolving, attenuating, and rarefying, the viſcid coheſions of the lymph; and by ſtimulating the nervous coats "of the veſſels, they throw off their ſtagnant viſcidities, and "thus reſtore the circulation and free drain of lymph from "the arteries to the veins; cleanſe the expurgatory glands, "and bring on critical ſweats, and urines. Thus, the extremely ſubtile, active, and pungent volatile ſalts, derived "from the *cantharides*, purge the glands and lymphatics univerſally; much after the ſame manner as common cathartics do the guts." *Philoſoph. princip. of medicine*, p. 304.

Cantharides are ſeldom uſed internally: in the *Philoſoph. Tranſ.* indeed, we have inſtances of their internal uſe, and that with ſucceſs, by Mr. Yonge, in dropſical and other caſes; ſometimes mixed with camphor, and ſometimes without; only well waſhed down with large draughts of poſſet, ptiſan, emulſions, or the like. The form wherein he tells us he uſes to adminiſter this fiery inſect, is that of a ſoft pill, or bolus, compoſed of *three Cantharides præpar. Troch. e Myrrha* ʒſs. *Sem. Amei*. gr. vi. *Rob. Cynosb*. q. ſ. This, in ſtubborn ſuppreſſions of the menſes and lochia, in difficult childbirth, and retention of the ſecundines, he finds does wonders: he adds, that the heat or pain it occaſions in the neck of the bladder, is much ſhort of what he has an hundred times ſeen, and ſometimes felt, from the application of an epiſpaſtic to the back.

Their principal uſe, however, is in veſicatories, to raiſe bliſters on the ſkin; and by that means to turn off and diſcharge ſome flux of ill humours.

Cantharides are ſometimes applied to the temples for the toothach: the farriers uſe them in ſeveral diſeaſes of horſes. They muſt be choſen new, dry, and whole: they will not keep above two years, without ſpoiling or mouldering into a duſt, which is of no uſe.

CANTHUS, in anatomy, the corner, or angle of the eye; formed by the commiſſure or joining of the upper and lower eyelids. See EYE.

That corner next the noſe, is called the *great*, *inner*, and *domeſtic canthus*; and by ſome phyſicians the *fountain*.—The other, towards the temples, is called the *little*, or *external canthus*.

CANTHUS, in chemiſtry, the lip of a veſſel; or that part of the mouth of a veſſel, which is a little hollowed, or depreſſed, for the eaſy pouring off a liquor.

Hence, to pour by decantation, is to pour through that place.

CANTON *, a quarter of a city, conſidered as ſeparated and detach'd from the reſt.

* The word ſeems formed from the Italian *cantone*, a ſquare ſtone, or corner ſtone.

CANTON is alſo more frequently uſed for a ſmall country, or diſtrict, under its ſeparate government.

Such are the thirteen Swiſs *Cantons*; each of which forms a republic apart; but all are leagued together; and conſtitute what is called the Helvetic body, or commonwealth of the Swiſſes.

CANTON, in heraldry, is one of the nine honourable ordinaries: being a ſquare portion of the eſcutcheon parted from the reſt.

It has not any fixed proportion; though regularly it ſhould be leſs than a quarter: it is often only a ninth-part, and uſed as an addition, or difference, frequently to expreſs baſtardy.

The *canton* is ſometimes placed at the right corner, and ſometimes at the left; in which latter caſe, it is called a *Canton ſiniſter*. Its form is expreſſed in *Tab. Herald. fig.* 12.—He bears ermin, a *Canton* argent, charged with a chevron gules.

CANTON is alſo uſed for the ſpaces left between the branches of a croſs or ſaltier.

CANTONED, a word uſed in architecture, when the corner of a building is adorned with a pilaſter, an angular column, ruſtic quoins, or any thing that projects beyond the naked of the wall.

CANTONED, **CANTONNE'**, or **CANTONIZED**, in heraldry, is when the four *cantons*, or ſpaces round a croſs, or ſaltier, are filled up with any pieces.—He bears gules, a croſs argent, *cantoned* with four ſcallop-ſhells.

The word is alſo uſed when there are little pieces in the *cantons*, or ſpaces of any principal figure of an eſcutcheon. Thus the ſaltier of Lenox is *cantoned* with four roſes.

CANVAS, or **CANVASS**, a coarſe ſort of linen cloth, uſually woven open, and regularly, in little ſquares; ſerving for divers domeſtic purpoſes; and eſpecially for the ground of tapeſtry-work, and painting.

CANVAS is alſo uſed, among the French, for the model, or firſt words, whereon an air, or piece of muſic, is compoſed, and given to a poet to regulate and finiſh. The *canvas* of a ſong, is certain notes of the compoſer, which ſhew the poet the meaſure of the verſes he is to make. Thus, Du Lot ſays, he has *canvas* for ten ſonnets againſt the muſes.

CAP, a garment ſerving to cover the head, and made nearly of the figure thereof.

The æra of *caps* and hats is referred to the year 1449. the firſt ſeen in theſe parts of the world being at the entry of Charles VII. into Rouen; from that time they began, by little and little, to take place of the hoods, or chaperoons, that had been uſed till then. M. le Gendre, indeed, goes further back; they began, ſays he, under Charles V. to let fall the angles of the hood upon the ſhoulders, and to cover the head with a cap, or bonnet: when this cap was of velvet, they called it *mortier*; when of wool, ſimply *bonnet:* the firſt was laced, the latter had no ornament, beſides two horns, raiſed a moderate height, one of which ſerved in covering and uncovering. None but kings, princes, and knights, were allowed the uſe of the mortier.

The *cap* was the head-dreſs of the clergy, and graduates. Paſquier ſays, that it was antiently a part of the hood worn by the people of the robe; the ſkirts whereof being cut off, as an incumbrance, left the round *cap* an eaſy commodious cover for the head; which round *cap* being afterwards aſſumed by the people, thoſe of the gown changed it for a ſquare one, firſt invented by a Frenchman, called Patrouillet: he adds, that the giving of the *cap* to the ſtudents in the univerſities, was to denote, that they had acquired full liberty, and were no longer ſubject to the rod of their ſuperiors; in imitation of the antient Romans, who gave a *pileus*, or *cap*, to their ſlaves, in the ceremony of making them free: whence the proverb, *Vocare ſervos ad pileum.* Hence, alſo, on medals, the *cap* is the ſymbol of liberty, whom they repreſent holding a *cap* in her right hand, by the point.

The Chineſe have not the uſe of the hat, like us; but wear a *cap* of a peculiar ſtructure, which the laws of civility will not allow them to put off; it is different for the different ſeaſons of the year: that uſed in ſummer, is in form of a cone, ending at top in a point. It is made of a very beautiful kind of mat, much valued in that country, and lined with ſatin: to this is added, at top, a large lock of red ſilk, which falls all around as low as the bottom; ſo that, in walking, the ſilk fluctuating regularly on all ſides, makes a graceful appearance: ſometimes, inſtead of ſilk, they uſe a kind of bright red hair, the luſtre whereof no weather effaces. In winter they wear a pluſh *cap*, bordered with martlet's, or fox's ſkin; as to the reſt, like thoſe for the ſummer. Nothing can be neater than theſe *caps*; they are frequently ſold for eight or ten crowns; but they are ſo ſhort, that the ears are expoſed.

Square **Cap.**—The *cap*, or *bonnet*, is a mark, or ornament of certain characters: thus churchmen, and the members of univerſities, ſtudents in law, phyſic, *&c.* as well as graduates, wear *ſquare caps.* In moſt univerſities, doctors are diſtinguiſhed by peculiar *caps*, given them in aſſuming the doctorate. Wickliff calls the canons of his time *Bifurcati*, from their *caps.* Paſquier obſerves, that, in his time, the *caps* worn by the churchmen, *&c.* were called *ſquare caps*; though, in effect, they were round, yellow *caps.*

The *cap* is ſometimes alſo uſed as a mark of infamy: in Italy, the Jews are diſtinguiſhed by a *yellow cap*; at Lucca by an *orange* one. In France, thoſe who had been bankrupts were obliged ever after to wear a *green cap*, to prevent people from being impoſed on in any future commerce. By ſeveral arrets in 1584. 1622. 1628. 1688. it was decreed, that if they were at any time found without their *green cap*, their protection ſhould be null, and their creditors impowered to caſt them into priſon: but the thing is not now executed.

Cap, in a ſhip, is a ſquare piece of timber, put over the head, or upper-end of a maſt, having a round hole to receive the maſt. By theſe *caps*, the top-maſts, and top-gallant-maſts, are kept ſteady and firm in the treſſel-trees, where their feet ſtand; as thoſe of the lower-maſts do in the ſteps. See *Tab. Ship. fig.* 1. *n.* 31. 58. 76. 101. 113. 143. and *fig.* 1. *n.* 15.

Prieſt's **Cap**, in fortification. See Bonnet *à Prêtre.*

CAPACITY, in a general ſenſe, an aptitude, or diſpoſition to retain, or hold any thing.

Our law allows the king two *capacities*, a natural, and a political: in the firſt he may purchaſe land to him, and his heirs; in the latter, to him, and his ſucceſſors.--The clergy have the like.

CAPARASON *, or **Caparison**, the covering, or cloathing laid over an horſe; eſpecially a ſumpter, or horſe of ſtate.

* The word is Spaniſh, being an augmentative of *cape, caput*, head.

Antiently, the *caparaſons* were a kind of iron armour, wherewith horſes were covered in battle.

CAPE, in geography, a *head-land*; or a piece of land running out beyond the reſt, into the ſea.

Sicily was called by the antients *Trinacria*, by reaſon of its three *capes*, or promontories, repreſented on medals, by three mens legs joined together at the top of the thigh, and bent in the knee; which pretty nearly reſembles the triangular figure of that iſland.

Cape, in law, a writ touching plea of lands and tenements; ſo termed, from the word which carries the chief intention or end of it.

Cape is of two kinds, the *magnum* and *parvum*; which in their effect are alike, as to the taking hold of things immoveable; though in certain circumſtances they differ: 1°, In that the *cape magnum*, or *grand cape*, lies before; and the *cape parvum*, or *petit cape*, after appearance. 2°, *Cape magnum* ſummons the defendant to anſwer the default; and beſides to the demandant: *cape parvum* only to the default. It is called *petit cape*, not becauſe of its ſmall force; but becauſe contained in few words.

Cape *magnum* is thus defined in the old *Nat. brev.* " Where a " man hath brought a *Præcipe quod reddat* of a thing that " touches plea of land, and the tenant makes default of the day " to him given in the original writ; then this writ ſhall be for " the king to take the land into his hands: and if the tenant " come not at the day given him by the writ, he loſes his " land."

Cape *parvum*, or *petit cape*, is thus defined, *ibid.* " Where the " tenant is ſummoned in plea of land, and comes at the ſum- " mons, and his appearance is recorded; and at the day given " him, prays the view; and having it granted, makes default; " then ſhall this writ iſſue for the king, *&c.*"

Cape *ad valentiam*, a ſpecies of *cape magnum*, ſo called from the end to which it tends: it is thus deſcribed, " Where I " am impleaded of lands, and I vouch to warrant another, " againſt whom the ſummons *ad warrantandum* hath been " awarded, and the ſheriff comes not at the day given; then, " if the defendant recover againſt me, I ſhall have a writ " againſt the vouchee; and ſhall recover ſo much in value of " the lands of the vouchee, if he has ſo much: otherwiſe, I " ſhall have execution of ſuch lands and tenements as de- " ſcend to him in fee; or, if he purchaſe afterwards, I ſhall " have a re-ſummons againſt him: and if he can ſay nothing, " I ſhall recover the value."

CAPELLA, in aſtronomy, a bright ſtar of the firſt magnitude, in the left or preceding ſhoulder of the conſtellation Auriga.

In Ptolemy's and Tycho's catalogues, it is the third in order of that conſtellation. In the Britannic catalogue, the fourteenth: its longitude is $17^{\circ}, 31', 41''$; its latitude $22^{\circ}, 51', 47''$.

CAPER, **Capparis**, the bud, or bloſſom, of a ſhrub of the ſame name, gathered green, ere it expand into a flower; dried in a ſhady place, till withered; then infuſed in vinegar; to which, at laſt, ſalt is added: after which it is put up in barrels to be uſed as a pickle, chiefly in ſawces; and ſometimes alſo in medicine, as being very aperitive, and entering certain compoſitions for diſeaſes of the ſpleen.

All the *capers* ſold throughout Europe, are brought from about Toulon, in France; except ſome ſmall ſalt *capers* from Majorca, and a few flat ones from about Lyons.

The bark of the *caper*-tree, when dried, is much preſcribed by the French phyſicians in oppilations of the ſpleen.

CAPHAR, a toll, or duty, impoſed by the Turks on the Chriſtian merchants, who carry or ſend merchandiſes from Aleppo to Jeruſalem.

The *caphar* was firſt ſettled by the Chriſtians themſelves, when maſters of the Holy Land, for the ſupport of troops and forces poſted in the more difficult paſſes, to watch the Arabs, and prevent their pillages. But the Turks, who have continued, and even raiſed the toll, abuſe it; exacting arbitrary ſums of the Chriſtian merchants and travellers, on pretence of guarding them from the Arabs; with whom they yet frequently keep an underſtanding, and even favour their robberies.

CAPHURA, Καφυρα, the ſame with *camphor.* See the article Camphor.

CAPI-AGA, or **Capi-agassi**, a Turkiſh officer, who is governor of the gates of the Seraglio; or grand maſter of the Seraglio.

The *capi-aga* is the firſt dignity among the white eunuchs: he is always near the perſon of the grand ſignior: he introduces embaſſadors to their audience: nobody enters, or goes out of, the grand ſignior's apartment, but by his means. His office gives him the privilege of wearing the turban in the Seraglio, and of going every-where on horſeback. He accompanies the grand ſignior to the apartment of the ſultana's, but ſtops at the door without entering. His appointment is very moderate; the grand ſignior bears the expence of his table, and allows him at the rate of about ſixty French livres *per* day; but his office brings him in abundance of preſents; no affair of conſequence coming to the emperor's knowlege, without paſſing through his hand. The *capi-aga* cannot be baſhaw when he quits his poſt.

CAPIAS, a writ, or proceſs, which is of two ſorts; one before judgment, called *capias ad reſpondendum*; granted in an action perſonal, when the ſheriff, upon the firſt writ of diſtreſs, returns, *Nihil habet in balliva noſtra.*

The other is a writ of execution after judgment, which is alſo of various kinds; as, *Capias ad ſatisfaciendum*, *Capias pro Fine*, *Capias Utlagatum*, &c.

Capias *ad ſatisfaciendum*, is a writ of execution after judgment; lying where a man recovers in an action perſonal, as for debt, damage, *&c.* in which caſes, this writ iſſues to the ſheriff, commanding him to take the body of him againſt whom the debt is recovered; who is to be kept in priſon till he make ſatisfaction.

Capias *conductos ad proficiſcendum*, an original writ, which lies, by the common law, againſt any ſoldier who has covenanted to ſerve the king in war, and appears not at the time and place appointed. It is directed to two of the king's ſerjeants at arms; to arreſt and take him where-ever he may be found; and to bring him *coram concilio noſtro*, with a clauſe of aſſiſtance.

Capias *pro Fine*, is where one being by judgment fined to the king, upon ſome offence againſt a ſtatute, does not diſcharge it according to the judgment: by this writ, therefore, his body is to be taken, and committed to priſon till he pay the fine.

Capias *Utlagatum*, a writ which lies againſt one outlawed upon any action, perſonal or criminal; by which the ſheriff is ordered to apprehend the party outlawed, for not appearing on the exigent, and keep him in ſafe cuſtody till the day of return; when he is to preſent him to the court, to be there further ordered for his contempt.

CAPIGI, a porter, or doorkeeper of the Turkiſh Seraglio.

There are about five hundred *capigis*, or porters in the Seraglio, divided into two companies; one conſiſting of three hundred, under a chief called *Capigi-Baſſa*: who has a ſtipend of three ducats *per* day: the other conſiſts of two hundred, diſtinguiſhed by the name of *Cuccicapigi*; and their chief *Cuccicapigi-Baſſa*, who has two ducats. The *capigis* have from ſeven to fifteen aſpers *per* day; ſome more, others leſs. Their buſineſs is to aſſiſt the Janizaries in the guard of the firſt and ſecond gates of the Seraglio; ſometimes all together; as when the Turk holds a general council, receives an embaſſador, or goes to the moſque; and ſometimes only in part; being ranged on either ſide, to prevent people entering with arms, any tumults being made, *&c.* The word, in its original, ſignifies gate.

CAPILLAMENT, literally ſignifies *hair*; being formed of the Latin *capillus*, of *caput*; q. d. *Hair of the head.* Hence the word is figuratively applied to ſeveral things, which, on account of their length, or their fineneſs, reſemble hairs: as,

Capillaments *of the Nerves*, the fine fibres, or filaments, whereof the nerves are compoſed.

" Is not viſion performed chiefly by the vibrations of this me-
" dium, excited in the bottom of the eye by the rays of light;
" and propagated through the ſolid, pellucid, and uniform
" *capillaments* of the optic nerves, to the ſenſorium? Newt.
Opt. p. 328.

Capillaments, in botany, more uſually called *ſtamina*, are thoſe ſmall threads, or hairs, which grow up in the middle of flowers; and are headed with little knobs, called *Apices*. See Stamina, and Apices.

CAPILLARY, of the Latin *capillus*, a hair, is applied to ſeveral things, to intimate their exceeding ſmalneſs, or fineneſs, reſembling that of a hair.

Capillary *Veſſels*, in anatomy, are the leaſt, minuteſt, inſenſible ramifications of the veins and arteries; which, when cut, or broken, yield but very little blood.

The *capillary* veſſels ſhould be conceived as vaſtly finer than hairs: they are beſt compared to the threads of cobwebs, and are ſometimes called *evaneſcent* veſſels.

Capillary, or **Capillaceous** *Plants*, a ſpecies of plants, thus denominated from their form, and manner of growth, as having no principal ſtalk, or ſtem, with branches, *&c.* ſhooting out of the ſame; but growing from the ground, like hairs from the head: and bearing their ſeed in little tufts, or prominencies, on the backſide of their leaves.

The principal of theſe is, the *capillu Veneris*, or *adianthum*; from which the reſt take their name.

The *capillaries* are diſtinguiſhed into thoſe with an undivided leaf, as the hemionitis, and the phyllitis: thoſe with a ſingly divided leaf, and which have the leaf either cut, or jagged in, but not divided into pinnæ, clear home to the main rib; as, polypodium, lonchitis, ſcolopendria, adiantum, and acroſtichon. Or elſe the leaf divided quite home to the rib, and hanging like pinnæ; as the chamafelix marina, and the trichomanes: thoſe which have the leaf doubly divided, or at leaſt once ſubdivided, the firſt diviſion being into branches, and the ſecond into pinnæ; as the hemionitis multifida, the filix mas, filix paluſtris, and filix ſaxatilis. Laſtly, thoſe which have the leaf trebly divided, or thrice ſubdivided; firſt into branches, then into little twigs, and after this into pinnæ; ſuch are, the filix ſcandens of Braſil, the filix florida, or oſmunda regalis; the filix mas ramoſa, the filix fœmina vulgaris, the adiantum album floridum, and the dryopteris nigra.

All the *capillaries* are reputed of uſe in medicine, eſpecially in the making of pectoral ſyrups; to which, wonderful virtues are attributed. But, in effect, only the *capillary* of Montpellier, adiantum album Monſpelienſe, and that of Canada, adiantum album Canadenſe, are regularly uſed for that purpoſe: the reſt only ſerve to counterfeit them.

The antients thought, that the *capillaries* were all without ſeed; and ſome of the moderns, particularly Dodonæus, have given into the opinion. But Bauhine, and other of the more accurate obſervers, maintain they have all their ſeed. Cæſius ſays, he has ſeen them with a microſcope: ſince him, Mr. W. Cole, and others, have obſerved them with ſtill more curioſity; the capſulæ, or ſeed-veſſels, are in ſome leſs by half than a ſmall grain of common ſand, in others much leſs; yet ſome of them contain about one hundred ſeeds.

Capillary *Tubes*, in phyſics, are little pipes, whoſe canals are the narroweſt poſſible; not ſuch, whoſe diameters do not exceed that of a common hair; for none ſuch can be made: the uſual diameter of *capillary* tubes, is a half, third, or fourth of a line: though Dr. Hook aſſures us he drew tubes in the flame of a lamp much ſmaller, as fine almoſt as a thread of a cobweb. See Tube.

The Aſcent of Water, &c. *in* **Capillary** *Tubes*, is a famous phænomenon which has long embarraſſed the philoſophers: let one end of a ſmall tube, open at both ends, be immerged in water, and the liquor within the tube will riſe to ſome ſenſible height above the external ſurface: or, immerge two or more tubes in the ſame fluid, one of them a *capillary* one, and the other conſiderably larger; the water will aſcend conſiderably higher in the *capillary* tube than the other; and this in the reciprocal ratio of the diameters of the tubes.

This effect authors have commonly imputed to the unequal preſſure of the air in unequal tubes: the air, ſay they, conſiſts of ramoſe, ſpongy parts, intermingled and embarraſſed among each other: now a column of ſuch air being ſuppoſed perpendicularly incumbent on the canal of a ſmall *capillary* tube; part of the preſſure of the column will be ſpent on the ſides, or ſurface of the tube; ſo that the column will not act with its whole weight on the ſubjacent fluid; but will loſe a greater or leſs proportion of its weight, as the diameter of the tube is the ſmaller. But this ſolution is deſtroyed, by the experiment's ſucceeding *in vacuo*, as well as in open air.

Others, as Mr. Hauksbee, *&c.* have recourſe to the attraction of the annuli of the concave ſurface of the tube; to which opinion Dr. Morgan ſubſcribes: " Part of the gravity
" of the water in the tube, ſays that author, being taken off,
" by the attractive power of the internal concave ſurface of
" the glaſs; the fluid within the tube, by the external greater
" weight or preſſure, muſt aſcend ſo far, as to compenſate
" for this diminution of gravity by the attraction of the glaſs.
" He adds, that as the power of attraction in tubes is in a
" reciprocal ratio of the diameters; by leſſening the ſaid dia-
" meter, or by ſuppoſing the tubes ſtill ſmaller and ſmaller,
" water, or any other fluid, may be thus raiſed to any aſſign-
" able height." *Phil. princ. of medicine*, *p.* 88, *&c.*

But this author is ſomewhat overſeen; for ſince in every *capillary tube*, the height to which the water will ſpontaneouſly aſcend, is reciprocally as the diameter of the tube; it follows, that the ſurface, containing the ſuſpended water, is always a given quantity. But the column of water ſuſpended in every tube, is as the diameter of the tube: therefore, if the attraction of the containing ſurface be the cauſe of the water's ſuſpenſion; it will follow, that equal cauſes produce unequal effects; which is abſurd. And, again, not only his ſolution, but his phænomenon alſo, is ſtretched too far: for it is not in all fluids that the phænomenon obtains; but in mercury the very contrary is found: that fluid in a tube not riſing ſo high as the level of that in the veſſel; and the defect being found the greater, as the tube is ſmaller.

We muſt, therefore, recur to Dr. Jurin's ſolution of this phænomenon, which is well ſupported by experiments: " The ſuſpenſion of the water (on that gentleman's ſyſtem)
" is owing to the attraction of the periphery of the concave
" ſurface of the tube, to which the upper ſurface of the
" water is contiguous, and adheres;" this being the only part of the tube, from which the water muſt recede upon its ſubſiding; and conſequently the only one which, by the force of its coheſion and attraction, oppoſes the deſcent of the water. This he ſhews to be a cauſe proportional to the effect; in regard, the periphery, and the ſuſpended column, are both in the ſame proportion as the diameter of the tube. The ſuſpenſion thus accounted for, the ſeemingly ſpontaneous aſcent will eaſily be ſolved: for ſince the water that enters a *capillary* tube, as ſoon as its orifice is dipped therein, has its gravity taken off by the attraction of the periphery, with which its upper ſurface is in contact, it muſt neceſſarily riſe higher; partly by the preſſure of the ſtagnant water, and partly by the attraction of the periphery, immediately above that which is already contiguous to it.

Capillary *Fracture*. See the article Capillation.

CAPILLATION, or **Capillary** *Fracture*, according to ſome writers, is a fracture in the ſkull, ſo ſmall that it can ſcarce be perceived; but yet it often proves mortal. See Fracture.

CAPISTRUM, in ſurgery, a *head-ſtall*, or bandage uſed in caſe of injuries of the head, eſpecially fractures of the jaw.

CAPITAL, of the Latin *caput*, is uſed on various occaſions, to expreſs the relation of a head, chief, or principal: thus,

Capital *City*, intimates the principal city of a kingdom, province, or ſtate: as, London is the *capital*, or *capital city* of England; Moſcow of Ruſſia; Conſtantinople of the Ottoman empire; Rouen of Normandy, *&c.* See Metropolis, and City.

CAPITAL, or CAPITAL *Stock*, in commerce, is the fund, or ſtock, of a trading company, or corporation; or the ſum of money which they jointly furniſh, or contribute, to be employed in trade.

The *capital* of the Eaſt-India company, at its firſt erection, was 369891 *l.* ſterling, which was afterwards doubled; and is now computed at upwards of 1703422 *l.* 500 pounds in the *capital ſtock* of this company, intitles the perſon to a vote in the general courts thereof.

The power given by parliament to the South-Sea company, to increaſe their *capital*, was the ſource of all the miſchief which enſued in the year 1720.

CAPITAL *Crime* is that which ſubjects the criminal to a *capital* puniſhment; *i. e.* to the loſs of life, either natural, or civil.

CAPITAL *Lees* are the ſtrong lees made by the ſoap-boilers from pot-aſhes.

They are alſo uſed, in ſurgery, as a cauſtic; and to make the lapis infernalis.

CAPITAL *Letters*. See the article CAPITALS.

CAPITAL *Medicines*, in pharmacy, are the great, or principal preparations of the ſhops: theſe are remarkable for the number of their ingredients, and their extraordinary virtues; ſuch as Venice-treacle, Mithridate, *&c.*

CAPITAL, in architecture, the uppermoſt part of a column, or pilaſter, ſerving as the head, or crowning thereof; placed immediately over the ſhaft, and under the entablature.

CAPITAL *of a Column*, properly, is that whoſe plan is round.

Whereas the CAPITAL *of a Pilaſter* is that whoſe plan is ſquare, or at leaſt rectilinear.

The *capital* is a principal and eſſential part of an order of column, or pilaſter: it is made different, in the different orders; and is that which chiefly diſtinguiſhes and characterizes the orders themſelves.

Tuſcan CAPITAL is the moſt ſimple and unadorned: its members, or parts, are but three; *viz.* an abacus; under this an ovolo, or quarter-round; and under that, a gorge, or colarino. The gorge, or neck, terminates in an aſtragal, or fillet belonging to the fuſt, or ſhaft.—See *Tab. Archit. fig.* 24.

The character of this *capital*, whereby it is diſtinguiſhed from the Doric, *&c.* is, that the abacus is ſquare, and quite plain, and has no ogee, or other moulding; and that there are no annulets under the ovolo.

Indeed, authors vary a little as to the character of the Tuſcan *capital*. Vignola gives the abacus a fillet, in lieu of an ovolo; Vitruvius and Scamozzi add an aſtragal and fillet, between the ovolo and neck; Serlio only a fillet; Philander rounds the corners of the abacus. In the Trajan column there is no neck; but the aſtragal of the ſhaft is confounded with that of the *capital*.

The height of this *capital* is the ſame with that of the baſe, *viz.* one module, or ſemidiameter. Its projecture is equal to that of the cincture at the bottom of the column; *viz.* $\frac{8}{5}$ of the module.

Doric CAPITAL: beſide an abacus, an ovolo, and a gorge, in common with the Tuſcan, this has three annulets, or little ſquare members, underneath the ovolo, in lieu of the aſtragal in the Tuſcan; and a talon, cima, or ogee, with a fillet over the abacus.

Authors vary, too, as to the characters of this *capital*: Palladio, Vignola, *&c.* put roſes under the corners of the abacus, and in the neck of the *capital*.

The height of this *capital*, Vitruvius, *&c.* make one module; and its projecture 37 minutes and an half.—See *Tab. Archit. fig.* 28.

Ionic CAPITAL is compoſed of three parts: an abacus, conſiſting of an ogee, and a fillet; under this a rind, which produces the volutes, or ſcrolls, the moſt eſſential part of this *capital*; and, at the bottom, an ovolo, or quarter-round: the aſtragal, under the ovolo, belongs to the ſhaft. The middle-part is called a *rind*, or bark, from its ſuppoſed reſemblance to the bark of a tree laid on a vaſe, whoſe brim is repreſented by the ovolo, and ſeeming to have been ſhrunk up in drying, and to have twiſted into the volutes.

The ovolo is adorned with eggs, as they are ſometimes called, from their oval form: the Greeks call it the *echinos*.

The height of this *capital*, M. Perrault makes eighteen minutes; its projecture one module, ſeven tenths.—See *Tab. Archit. fig.* 32.

The differences in the character of this *capital*, flow moſtly from the different management of the volutes; and conſiſt in this: that in the antique, and ſome of the modern, the eye of the volute anſwers not the aſtragal of the top of the ſhaft, as Vitruvius, and moſt of the moderns, make it: that the face of the volutes, which uſually make a flat, is ſometimes curved and convexed, ſo as the circumvolutions go advancing outwards; as is frequent in the antique: that the border, or rim of the ſcroll in the volute, is ſometimes not only a plain ſweep, as ordinarily; but the ſweep is accompanied with a fillet: that the leaves, which inveſt the balluſter, are ſometimes long and narrow; ſometimes larger and broader; that the two faces of the volutes are ſometimes joined at the outer corner; the balluſters meeting in the inner, to make a regularity between the faces on front and back of the building, with thoſe of the ſides: that among the moderns, ſince Scamozzi, the *Ionic capital* has been altered, and the four faces made alike, by taking away the balluſter, and hollowing all the faces of the volutes inwards, as in the compoſite: that Scamozzi, and ſome others, make the volutes to ſpring out from the ovolo, as from a vaſe, after the manner of the modern compoſite; whereas in the antique the bark paſſes between the ovolo and abacus quite ſtrait, only twiſting at its extremities, to form the volute. And, laſtly, that of late years the ſculptors have added a kind of little feſtoons, ſpringing from the flower whoſe ſtalk lies on the firſt circumvolution of the volute; and ſuppoſed to repreſent the locks of hair hanging down on both ſides of the face. See IONIC.

Corinthian CAPITAL is much the richeſt: it has no ovolo; and its abacus is very different from thoſe of the Tuſcan, Doric, or Ionic; as having its faces circular, and hollowed inward, with a roſe in the middle of each ſweep: inſtead of an ovolo, and annulets, here is only a brim of a vaſe; and the neck is much lengthened and inriched with a double row of eight leaves in each, bending their heads downwards; and between them, ſmall ſtalks ariſing: whence ſpring the volutes; which do not reſemble thoſe of the Ionic *capital*; and which, inſtead of the four in the Ionic, are here ſixteen: four on each ſide, under the four horns of the abacus, where the volutes meet in a ſmall leaf, which turns back towards the corner of the abacus. The leaves are divided, each making three ranges of leſſer leaves, whereof they are compoſed: each leſſer leaf is, again, generally parted into five, called *olive-leaves*; ſometimes into three, and called *laurel-leaves*: the middle leaf, which bends down, is parted into eleven. In the middle, over the leaves, is a flower, ſhooting out between the ſtems and volutes, like the roſe in the abacus. The height of this *capital* is two modules $\frac{1}{3}$, and its projecture one $\frac{7}{3}$.

The differences in the character of this *capital* are, that in Vitruvius, *&c.* the leaves are in form of the acanthus; whereas, in the antique, they are more ordinarily olive-leaves: that their leaves are uſually unequal, the undermoſt being made commonly talleſt, ſometimes the ſhorteſt; though ſometimes they are all equal. Sometimes the leaves are ruffled; ſometimes quite plain: the firſt row generally belly out towards the bottom, but are ſometimes ſtrait; ſometimes the horns of the abacus are ſharp at the corners, which ſeems agreeable to the rules of Vitruvius; but they are more commonly cut off. There is ſome difference, too, in the form and ſize of the roſe: again, the volutes are ſometimes joined to each other; ſometimes wholly ſeparate: ſometimes the ſpires of the volutes continue twiſting even to the end of the ſame courſe; and ſometimes they turn back again near the centre, in the form of an S.—See *Tab. Archit. fig.* 21. and 26.

Compoſite CAPITAL is ſo called, becauſe compoſed of members borrowed from the *capitals* of the other columns. It takes a quarter-round, or ovolo, from the Doric; an aſtragal under this; together with volutes, or ſcrolls, from the Ionic; and a double row of leaves from the Corinthian, which it reſembles in moſt other things; conſiſting, generally, of the ſame members, and the ſame proportions. In the middle of the abacus is a flower; and under the thorns, leaves which return upward, as in the Corinthian: indeed, inſtead of ſtalks in the Corinthian, the *Compoſite* has ſmall flowers, lying cloſe to the vaſe, or bell; twiſting round towards the middle of the face of the *capital*, and terminating in the roſe.

The height of the *Compoſite capital* is two modules $\frac{1}{3}$, and its projecture one module $\frac{2}{3}$, as in the Corinthian.—See *Tab. Archit. fig.* 30.

The differences of the character of this *capital* conſiſt in this; that the volutes, which ordinarily deſcend, and touch the leaves, are, in ſome works of the antique, ſeparate from them: that the leaves, which are generally unequal in height, the lower rank being talleſt, are ſometimes equal: that the volutes of the moderns generally ſpring out of the vaſe; whereas, in the antique, they ordinarily run ſtrait the length of the abacus, over the ovolo, without ſtriking into the vaſe: that the volutes, whoſe thickneſs is contracted in the middle, and enlarged above and below in the antique, have their ſides parallel in the works of the moderns: and, laſtly, that the volutes, which have been hitherto, both by the antients and moderns, made as if ſolid, are now much lighter, and more airy; the folds ſtanding hollow, and at a diſtance from each other.

For the proportions of the ſeveral members of the CAPITALS *of columns*, ſee COLUMN. See alſo *each member* under its proper head; as ABACUS, ACANTHUS, VOLUTE, *&c.*

Some architects diſtinguiſh the *Tuſcan* and *Doric capitals*, which have no ornaments, by the title of *capitals of mouldings*; and the three others, which have leaves and ornaments, they call *capitals of ſculpture*.

Angular Capital is that which bears the return of an entablature, at the corner of the projecture of a frontiſpiece.

Capital *of a Balluſter* is that part which crowns the balluſter; which ſometimes bears a reſemblance to the *capitals* of ſome columns, particularly the Ionic.

Capital *of a Niche* is a kind of little canopy over a ſhallow niche, covering or crowning a ſtatue.

Capital *of a Triglyph* is the plat-band over the triglyph; called, by Vitruvius, *tænia*. It is ſometimes alſo a triglyph which does the office of a *capital* to a Doric pilaſter.

Capital *of a Baſtion*, in fortification, is a line drawn from the angle of the polygon to the point of the baſtion.

The *capitals* of baſtions are from thirty-five to forty fathoms long, from the point of the baſtion to the point where the two demigorges meet. See Bastion.

CAPITALS, in printing, large, or initial letters, wherein titles, *&c.* are compoſed, and with which all periods, verſes, *&c.* commence.

All proper names of men, countries, kingdoms, terms of arts, ſciences, and dignities, uſually begin with *capitals*.

The Engliſh printers have carried *capitals* to a pitch of extravagance; making it a rule, to begin almoſt every ſubſtantive with a *capital*; which is a manifeſt perverſion of the deſign of *capitals*, as well as an offence againſt beauty and diſtinctneſs. Some of them begin now to retrench their ſuperfluous *capitals*, and to fall into the meaſures of the printers of other nations. See Letter.

CAPITATÆ *Plantæ*, in botany, are thoſe plants whoſe flowers are fiſtular, compoſed of many edged and hollow little flowers. They were thus called by Mr. Ray, becauſe their ſcaly calyx (or cup of the flower) moſt uſually ſwells out into a large and round head, containing within it the pappous ſeed: as in the carduus, centaury, knap-weed, cinara, cirſium, lappa major, cyanus, *&c.*

CAPITATION, a tax, or impoſition, raiſed on each perſon, in conſideration of his labour, induſtry, office, rank, *&c.* This kind of tribute is very antient, and anſwers to what the Greeks called επικεφαλαιον; the Latins *capita*, *capitatio*, and *tributum*, or *tributum capitis*, or *capitulare*: by this term taxes on the perſon are diſtinguiſhed from taxes on merchandize, which were called *vectigalia, quia vehebantur*.

Capitation alſo denotes a certain ſum of money impoſed *per* head, in exigencies of ſtate.

CAPITE, in law, an antient tenure, whereby a perſon held of the king immediately, as of his crown, either by knight's-ſervice, or ſoccage.

By a ſtatute, 12 Car. II. all ſuch tenures by knight's-ſervice of the king, or of any other perſon, knight's ſervices *in capite*, or ſoccage, with all rights, *&c.* are annulled. See Soccage.

CAPITOL*, Capitolium, in antiquity, a famous fort, or caſtle, on the *Mons Capitolinus* at Rome, wherein was a temple dedicated to Jupiter, thence alſo denominated *Capitolinus*. in which the ſenate antiently aſſembled; and which ſtill ſerves as the city-hall, or town-houſe, for the meeting of the conſervators of the Roman people.

> * It had its name, *capitol*, from *caput*, a man's head; ſaid to have been found freſh, and yet bleeding, upon digging the foundation of the temple, built in honour of Jupiter. Arnobius adds, that the man's name was *Tolus*; whence *caputtolium*.

The firſt foundations of the *capitol* were laid by Tarquin the Elder, in the year of Rome 139. his ſucceſſor, Servius, raiſed the walls; and Tarquin the Proud finiſhed it, in the year 221. but it was not conſecrated till the third year after the expulſion of the kings, and eſtabliſhment of the conſulate. The ceremony of the dedication of the temple was performed by the conſul Horatius, in 246.

The *capitol* conſiſted of three parts: a nave, ſacred to Jupiter; and two wings, or iſles, to Juno and Minerva. It was aſcended to by ſtairs; Lipſius reckons one hundred in number, by reaſon there were ſo many in the aſcent of the Tarpeian rock. The frontiſpiece and ſides were incompaſſed with galleries, wherein thoſe, who had the honour of a triumph, entertained the ſenate at a magnificent banquet, after the performance of ſacrifice to the gods. Both inſide and outſide were inriched with infinite ornaments; the ſtatue of Jupiter, with his golden thunderbolt, his ſceptre, and crown, were the moſt diſtinguiſhed.

In the ſame *capitol* there were, likewiſe, a temple to Jupiter the Guardian, and another to Juno; with the mint: and on the deſcent of the hill was the temple of Concord. The *capitol* was burnt under Vitellius, and rebuilt under Veſpaſian: it was burnt a ſecond time by lightning, under Titus; and was again reſtored by Domitian.

Antiently, the name *capitol* was likewiſe applied to all the principal temples, in moſt of the colonies throughout the Roman empire: as, at Conſtantinople, Jeruſalem, Carthage, Ravenna, Capua, *&c.*—That of Tholouſe has given the name of *capitouls* to its echevins, or ſheriffs.

CAPITOLINE *Games*, *Ludi* Capitolini, were annual games, or combats, inſtituted by Camillus, in honour of Jupiter Capitolinus; and in commemoration of the capitol's not being ſurpriſed by the Gauls.

Plutarch tells us, that a part of the ceremony conſiſted in the public cryer's putting up the Hetrurians to ſale by auction; they alſo took an old man, tying a golden bulla to his neck, ſuch as were worn by their children, and expoſed him to the public deriſion. Feſtus ſays, they dreſſed him in a prætexta, hung a bulla at his neck; not as accounting him a child, but becauſe this was an ornament of the kings of Hetruria.

There was alſo another kind of *capitoline* games, called *agones capitolini*, inſtituted by Domitian, and celebrated each five years; wherein there were rewards and crowns beſtowed on the victorious poets, and put on their heads by the emperor himſelf. Theſe games became ſo celebrated, that the manner of accounting time by luſtres, which had obtained till then, was changed; and they began to count by *capitoline* games, as the Greeks by olympiads. The feaſt was not for poets alone, but alſo for athletæ, orators, hiſtorians, comedians, muſicians, *&c.*

CAPITULAR, or Capitulary, denotes an act paſſed in a chapter, either of knights, canons, or religious.

The *capitularia*, or *capitulars* of Charlemaign, Charles the Bald, *&c.* are the laws, both eccleſiaſtical and civil, made by thoſe emperors in the general councils, or aſſemblies of the people: which was the way the conſtitutions of moſt of the antient princes were made; each perſon preſent, though a plebeian, ſetting his hand to them.

Some diſtinguiſh theſe from laws; and ſay, they were only ſupplements to laws.—They had their name, *capitulars*, becauſe divided into *capitula*, chapters, or ſections.

In theſe *capitulars* did the whole French juriſprudence antiently conſiſt.—In proceſs of time, the name was changed for that of *ordonnances*.

Some diſtinguiſh three kinds of *capitulars*, according to the difference of their ſubject-matter: thoſe on eccleſiaſtical affairs, are real canons, extracted from councils; thoſe on ſecular affairs, real laws; thoſe relating to particular perſons, or occaſions, private regulations.

CAPITULATION, a treaty made with the garriſon, or inhabitants of a place beſieged; whereby they ſurrender themſelves up, on certain articles and conditions ſtipulated with the beſiegers.

Capitulation denotes alſo a kind of treaty, pacta conventa, or original contract, drawn up by the electors, before the election of an emperor; which the emperor is to ratify before his coronation, and to obſerve inviolably in the courſe of his reign.

Theſe imperial *capitulations* have only been obtained ſince the time of Charles V. They were occaſioned by the jealouſy the German princes had entertained of the too great power of the emperor. Frederic, duke of Saxony, ſurnamed the *Wiſe*, paſſes for the author of the imperial *capitulations*; he declining the empire, which was offered him after the death of Maximilian, and adviſing the electors to chooſe Charles V. under ſuch conditions as might ſecure the liberty of the empire.

CAPITULUM, in botany, the head, or compound flower, of any plant; being compoſed of many leaves and threads, or ſtamina, cloſely connected in a globous, circular, or diſcous figure: as the flowers of bluebottles, ſcabious, carduus, *&c.*

CAPIVI. See Copivi.

CAPNOMANCY*, Καπνομαντεια, a kind of divination by means of ſmoke, uſed by the antients in their ſacrifices.

> * The word comes from the Greek καπνος, ſmoke; and μαντεια, divination.

The general rule was; when the ſmoke was thin, and light, and roſe ſtrait up, it was a good omen: if the contrary, it was an ill one.

There was alſo another ſpecies of *capnomancy*, conſiſting in the obſervation of the ſmoke riſing from poppy and jeſſamin-ſeed, caſt upon lighted coals.

CAPONIERE, or Caponniere, in fortification, a covered lodgment, ſunk four or five foot into the ground, incompaſſed with a little parapet about two foot high, ſerving to ſupport ſeveral planks covered with earth.

The *caponiere* is large enough to contain fifteen or twenty ſoldiers; and is uſually placed in the glacis on the extremity of the counterſcarp, and in dry moats; having little embraſures for the ſoldiers to fire through.

CAPRA*, in aſtronomy, a denomination given to the ſtar *Capella*; and ſometimes alſo to the conſtellation *Capricorn*. See Capella, and Capricorn.

> * Some repreſent *Capra*, or the ſhe-goat, as a conſtellation in the northern hemiſphere, conſiſting of three ſtars, comprized between the 45th and 55th degree of latitude. The poets ſay, it is Amalthea's goat, which ſuckled Jupiter in his infancy. Horace, making mention of it, calls it, *Inſana ſidera Capræ*.

CAPRA *Saltans*, or Capræ *Saltantes*, in meteorology, a fiery meteor, or exhalation, which ſometimes appears in the atmoſphere, and is not fired in a ſtrait line, but with inflexions, and windings in and out, reſembling the caperings of a goat.

CAPREOLUS, in botany, the claſper, or tendril, by which vines, peas, and ſuch-like creeping plants, faſten themſelves to thoſe things which ſtand near, or are deſigned to ſupport them.

CAPREOLATÆ *Plantæ*, are ſuch as turn, wind, and climb along the ſurface of the earth, and ſticks or trees, by means of their *Capreoli*, or tendrils; as gourds, melons, cucumbers, *&c.*

CAPRICORN, in aſtronomy, the tenth ſign of the zodiac; from which alſo the tenth part of the ecliptic takes the ſame denomination.

The character whereby *Capricorn* is repreſented in aſtronomical writings is, ♑.

The antients accounted *Capricorn* the tenth ſign, and when the ſun arrived thereat, it made the winter ſolſtice, with regard to our hemiſphere: but the ſtars having advanced a whole ſign towards the eaſt, *Capricorn* is now rather the eleventh ſign; and it is at the ſun's entry into ſagittary, that the ſolſtice happens: though the antient manner of ſpeaking is ſtill retained.

This ſign is repreſented on antient monuments, medals, *&c.* as having the fore-part of a goat, and the hind-part of a fiſh; which is the form of an Ægipan; and ſometimes, ſimply under the form of a goat.

The ſtars in the Conſtellation of *Capricorn*, in Ptolemy's and Tycho's catalogue, are twenty-eight; in that of Hevelius twenty-nine: though it is to be obſerved, one of thoſe in the tail, of the ſixth magnitude, marked in Tycho's book the twenty-ſeventh, was loſt in Hevelius's time. Mr. Flamſtead, in the Britannic catalogue, gives fifty-one ſtars in *Capricorn.*—The order, names, longitudes, latitudes, magnitudes, *&c.* whereof, are as follow:

Names and Situations of of the Stars.	Signs.	Longitude.			Latitude.			Magnit.
		°	′	″	°	′	″	
	♑	28	6	58	7	27	4 B	7
In the extrem. of the preced. horn		28	10	28	7	13	18 B	6
		29	11	41	7	15	34 B	6
		27	26	1	2	3	23 A	6
The preced. ſtar in the ſubſeq. horn		29	27	19	7	1	31 B	4
5								
The laſt of the contiguous ſtars		29	32	21	6	58	6 B	3
That under the eye		28	21	44	0	29	29 B	6
The middle ſtar in the ſubſeq. horn	♒	0	6	56	6	35	52 B	6
Moſt ſouth of 3 in the ſubſeq. horn	♑	29	43	57	4	37	27 B	3
Foremoſt of three in the noſe	♒	0	23	55	0	56	6 B	6
10								
North of theſe		0	51	9	1	14	17 B	6
South of thoſe in the noſe		0	54	10	0	26	9 B	5 6
		3	28	57	3	19	30 B	6
North of two in the neck		3	58	44	3	23	26 B	6
More ſouth		3	20	53	0	15	46 B	6
15								
That under the upper knee		2	50	11	6	58	23 A	5
		3	50	59	3	22	34 A	6
In the lower and bent knee		3	37	5	8	55	5 A	6
		6	47	24	0	28	9 A	6 7
		7	34	16	1	51	10 A	6 7
20								
		8	17	2	0	29	38 A	6
Preced. and nor. of 3 in mid. of body		8	25	55	2	57	43 A	5
Preced. of 2 in the back		9	31	40	0	33	0 A	5
That in the ſhoulder		7	30	46	8	3	38 A	6
South. in the middle of the body		8	57	52	4	31	8 A	6
25								
Second in the middle of the body		9	24	57	3	36	46 A	6
Subſequent		9	22	7	3	58	9 A	6
Laſt of 3 in the middle of the body		10	42	44	4	29	50 A	6
		12	10	39	0	43	40 B	6
		12	2	31	2	7	23 A	6
30								
		12	16	0	1	39	3 A	7
Subſeq. of 2 in the back		13	21	50	1	20	13 A	5
		12	33	35	5	17	26 A	6
aſt of contiguous ones under belly		12	36	49	6	57	36 A	5
		13	8	8	5	50	27 A	6
35								
Subſeq. of the ſame		13	15	20	6	31	45 A	6
		15	10	57	5	22	15 A	6
		15	8	37	5	31	19 A	6
Preced. in ſouth fin		15	52	52	4	56	56 A	4
Preced. in root of the tail		17	27	42	2	31	18 A	4 3
40								
		15	42	16	8	53	38 A	6
		18	40	49	0	9	13 A	6
Subſeq. in ſouth fin		17	19	5	4	48	36 A	5
Preced. in north part of the tail		18	53	46	0	37	44 A	6
Subſequent		19	0	0	1	1	54 A	6
45								
North in extrem. of the tail		21	5	31	4	13	51 B	6
Another, ſubſequent		21	19	31	3	56	38 B	6
Middle in north. part of the tail		20	41	4	1	57	24 B	5
Subſeq. in root of the tail		19	13	14	2	32	19 A	3
		20	36	58	1	38	24 B	6
50								
Subſeq. in north part of the tail		21	29	12	0	39	10 A	5

Tropic of CAPRICORN, a leſſer circle of the ſphere, parallel to the equator; paſſing through the beginning of *Capricorn.* See TROPIC.

CAPRIOLES *, in horſemanſhip, are leaps which a horſe makes in one and the ſame place, without advancing forwards; and that in ſuch manner, that when he is in the air, at the height of his leap, he yerks or ſtrikes out with his hind legs as near and even together, and as far out as he can ſtretch them; in which action, he clacks, or makes a noiſe with them.

> * The word comes from *Capreolus*, a diminutive of *Caper*, goat.

The *Capriole* is the moſt difficult of all the high-raiſed airs: there are ſeveral kinds of *Cuprioles*; as a *right Capriole, back Capriole, ſide Capriole, broken Capriole*, the *open Capriole*, &c.

CAPSQUARES, in gunnery, ſtrong plates of iron which come over the trunnions of a gun, and keep it in the carriage.

Theſe are faſtened by hinges to the prize-plate, that they may liſt up and down. They form a part of an arch in the middle, to receive a third part of the thickneſs of the trunnions; for two thirds of them are let into the carriage, and the other end is faſtened by two iron wedges, which are called the *fore locks* and *keys*.

CAPSTAN, a large cylinder, or barrel placed perpendicularly on the deck of a ſhip, and turned by four levers, or bars which croſs it; ſerving, by means of a cable which winds round the cylinder, to draw up vaſt burdens faſtened to the end of the cable.

By the *Capſtan* it is, that veſſels are drawn aſhore, and hoiſted up to be refitted; the heavieſt goods are unloaded, anchors weighed, and ſails hoiſted, *&c.*

There are two *Capſtans* in a veſſel: the *main Capſtan* placed behind the mainmaſt, ſtanding on the firſt deck, and reaching four or five feet above the ſecond: this is alſo called *double Capſtan*, becauſe ſerving two decks for drawing of anchors: and becauſe its force may be doubled by applying hands on each deck. It has bars, whelps, a panel, *&c.* for turning and ſtopping it.—See Tab. *Ship.* Fig. 2. n. 112.

And the *jeer Capſtan*, or *little Capſtan*: this ſtands on the ſecond deck, between the mainmaſt and the mizzen: its uſe is, chiefly, to heave upon the jeer rope, or to heave upon the viol, to hold off by when the anchor is weighing; and on other occaſions where a leſs force is required, than to weigh the anchors, *&c.* See *n.* 71.

The French call that an *Engliſh Capſtan* where there are only half-bars uſed; and which, for that reaſon, is only half perforated: this is thicker than the others.

There is alſo a *flying Capſtan*, which may be moved from place to place.

The terms belonging to the uſe of the *Capſtans*, are,

Come up Capſtan, that is, ſlacken the cable which you heave by; in a like ſenſe they alſo ſay, *Launch out the Capſtan*.

Pawl out the Capſtan, ſignifies, ſtop it from going back.

CAPSULA *, or CAPSELLA, denotes a bag, pouch, or receptacle of divers kinds of things.

> * The word is a diminutive of the Latin *Capſa*, literally ſignifying, a little box, or caſe; particularly a bag, or ſachel, wherein boys carry their books, *&c.* to ſchool.

CAPSULA, among botaniſts, denotes the ſeed-veſſel of a plant. Thoſe plants whoſe ſeeds are incloſed in *Capſulæ*, are denominated *Angioſpermous*; and thoſe whoſe ſeeds have no *Capſules, Gymnoſpermous.*

CAPSULA *Communis*, or *of the Porta*, is a membrane ariſing from the peritonæum, and incloſing the trunk of the vena porta after its entrance into the liver, as a caſe, or cover; dividing itſelf into the ſame number of branches, and accompanying all, even its ſmalleſt ramifications.

The ſame *Capſula*, or membrane, likewiſe incloſes the porus bilarius, and other veſſels of the liver; whence it takes the name of *Capſula Communis.*

CAPSULA *Cordis*, a membrane inveſting the heart: more uſually called the *Pericardium.*

CAPSULÆ *Atrabilariæ*, in anatomy, called alſo *Renes ſuccenturiati*, and *Glandulæ Renales*, are two glands ſituate near the kidneys: called *Atrabilares*, from a black liquor found in their cavity, and *Succenturiati* and *Renales*, from their poſition.

They are about the bigneſs of a nux vomica; their figures are ſomewhat various; in ſome bodies round, in others triangular, ſquare, *&c.* The membrane wherewith they are covered is very fine: their cavity is pretty large for their bulk. Their uſe is very obſcure; probably it is to ſecrete the black humour found in their cavity, which, being afterwards diſcharged by their duct into the emulgent, mixes with the blood; and ſerves, according to ſome, as a ferment; according to others, only to dilute its thickneſs: in a fœtus they are almoſt as big as the kidneys.

CAPSULÆ *Seminales*, are the ſame with *Veſiculæ Seminales.* See VESICULÆ *Seminales.*

CAPSULA, in chymiſtry, is an earthen veſſel, in form of a pan; wherein things are frequently placed, that are to undergo very violent operations of the fire.

CAPSULATE *Plants*, CAPSULATÆ *Plantæ*, are ſuch as have a tetrapetalous regular flower, conſiſting of four diſtinct petala in each flower, and which bear their ſeeds in ſhort *Capſulæ*: by which they are diſtinguiſhed from the *Siliquoſæ*, which have their ſeed in long caſes, or pods. Theſe are more uſually called *Plantæ Siliculoſæ.*

Angular Capital is that which bears the return of an entablature, at the corner of the projecture of a frontiſpiece.

Capital *of a Balluſter* is that part which crowns the balluſter; which ſometimes bears a reſemblance to the *capitals* of ſome columns, particularly the Ionic.

Capital *of a Niche* is a kind of little canopy over a ſhallow niche, covering or crowning a ſtatue.

Capital *of a Triglyph* is the plat-band over the triglyph; called, by Vitruvius, *tænia*. It is ſometimes alſo a triglyph which does the office of a *capital* to a Doric pilaſter.

Capital *of a Baſtion*, in fortification, is a line drawn from the angle of the polygon to the point of the baſtion.

The *capitals* of baſtions are from thirty-five to forty fathoms long, from the point of the baſtion to the point where the two demigorges meet. See Bastion.

CAPITALS, in printing, large, or initial letters, wherein titles, *&c.* are compoſed, and with which all periods, verſes, *&c.* commence.

All proper names of men, countries, kingdoms, terms of arts, ſciences, and dignities, uſually begin with *capitals*.

The Engliſh printers have carried *capitals* to a pitch of extravagance; making it a rule, to begin almoſt every ſubſtantive with a *capital*; which is a manifeſt perverſion of the deſign of *capitals*, as well as an offence againſt beauty and diſtinctneſs. Some of them begin now to retrench their ſuperfluous *capitals*, and to fall into the meaſures of the printers of other nations. See Letter.

CAPITATÆ *Plantæ*, in botany, are thoſe plants whoſe flowers are fiſtular, compoſed of many edged and hollow little flowers. They were thus called by Mr. Ray, becauſe their ſcaly calyx (or cup of the flower) moſt uſually ſwells out into a large and round head, containing within it the pappous ſeed: as in the carduus, centaury, knap-weed, cinara, cirſium, lappa major, cyanus, *&c.*

CAPITATION, a tax, or impoſition, raiſed on each perſon, in conſideration of his labour, induſtry, office, rank, *&c.* This kind of tribute is very antient, and anſwers to what the Greeks called επικεφαλαιον; the Latins *capita*, *capitatio*, and *tributum*, or *tributum capitis*, or *capitulare*: by this term taxes on the perſon are diſtinguiſhed from taxes on merchandize, which were called *vectigalia, quia vehebantur*.

Capitation alſo denotes a certain ſum of money impoſed *per* head, in exigencies of ſtate.

CAPITE, in law, an antient tenure, whereby a perſon held of the king immediately, as of his crown, either by knight's-ſervice, or ſoccage.

By a ſtatute, 12 Car. II. all ſuch tenures by knight's-ſervice of the king, or of any other perſon, knight's ſervices *in capite*, or ſoccage, with all rights, *&c.* are annulled. See Soccage.

CAPITOL*, Capitolium, in antiquity, a famous fort, or caſtle, on the *Mons Capitolinus* at Rome, wherein was a temple dedicated to Jupiter, thence alſo denominated *Capitolinus*, in which the ſenate antiently aſſembled; and which ſtill ſerves as the city-hall, or town-houſe, for the meeting of the conſervators of the Roman people.

* It had its name, *capitol*, from *caput*, a man's head; ſaid to have been found freſh, and yet bleeding, upon digging the foundation of the temple, built in honour of Jupiter. Arnobius adds, that the man's name was *Tolus*; whence *caput-tolium*.

The firſt foundations of the *capitol* were laid by Tarquin the Elder, in the year of Rome 139. his ſucceſſor, Servius, raiſed the walls; and Tarquin the Proud finiſhed it, in the year 221. but it was not conſecrated till the third year after the expulſion of the kings, and eſtabliſhment of the conſulate. The ceremony of the dedication of the temple was performed by the conſul Horatius, in 246.

The *capitol* conſiſted of three parts: a nave, ſacred to Jupiter; and two wings, or iſles, to Juno and Minerva. It was aſcended to by ſtairs; Lipſius reckons one hundred in number, by reaſon there were ſo many in the aſcent of the Tarpeian rock. The frontiſpiece and ſides were incompaſſed with galleries, wherein thoſe, who had the honour of a triumph, entertained the ſenate at a magnificent banquet, after the performance of ſacrifice to the gods. Both inſide and outſide were inriched with infinite ornaments; the ſtatue of Jupiter, with his golden thunderbolt, his ſceptre, and crown, were the moſt diſtinguiſhed.

In the ſame *capitol* there were, likewiſe, a temple to Jupite the Guardian, and another to Juno; with the mint: and on the deſcent of the hill was the temple of Concord. The *capitol* was burnt under Vitellius, and rebuilt under Veſpaſian: it was burnt a ſecond time by lightning, under Titus; and was again reſtored by Domitian.

Antiently, the name *capitol* was likewiſe applied to all the principal temples, in moſt of the colonies throughout the Roman empire: as, at Conſtantinople, Jeruſalem, Carthage, Ravenna, Capua, *&c.*—That of Tholouſe has given the name of *capitouls* to its echevins, or ſheriffs.

CAPITOLINE *Games*, *Ludi* Capitolini, were annual games, or combats, inſtituted by Camillus, in honour of Jupiter Capitolinus; and in commemoration of the capitol's not being ſurpriſed by the Gauls. Plutarch tells us, that a part of the ceremony conſiſted in the public cryer's putting up the Hetrurians to ſale by auction: they alſo took an old man, tying a golden bulla to his neck, ſuch as were worn by their children, and expoſed him to the public deriſion. Feſtus ſays, they dreſſed him in a prætexta, hung a bulla at his neck; not as accounting him a child, but becauſe this was an ornament of the kings of Hetruria.

There was alſo another kind of *capitoline* games, called *agones capitolini*, inſtituted by Domitian, and celebrated each five years; wherein there were rewards and crowns beſtowed on the victorious poets, and put on their heads by the emperor himſelf. Theſe games became ſo celebrated, that the manner of accounting time by luſtres, which had obtained till then, was changed; and they began to count by *capitoline* games, as the Greeks by olympiads. The feaſt was not for poets alone, but alſo for athletæ, orators, hiſtorians, comedians, muſicians, *&c.*

CAPITULAR, or Capitulary, denotes an act paſſed in a chapter, either of knights, canons, or religious.

The *capitularia*, or *capitulars* of Charlemaign, Charles the Bald, *&c.* are the laws, both eccleſiaſtical and civil, made by thoſe emperors in the general councils, or aſſemblies of the people: which was the way the conſtitutions of moſt of the antient princes were made; each perſon preſent, though a plebeian, ſetting his hand to them.

Some diſtinguiſh theſe from laws; and ſay, they were only ſupplements to laws.—They had their name, *capitulars*, becauſe divided into *capitula*, chapters, or ſections.

In theſe *capitulars* did the whole French juriſprudence antiently conſiſt.—In proceſs of time, the name was changed for that of *ordonnances*.

Some diſtinguiſh three kinds of *capitulars*, according to the difference of their ſubject-matter: thoſe on eccleſiaſtical affairs, are real canons, extracted from councils; thoſe on ſecular affairs, real laws; thoſe relating to particular perſons, or occaſions, private regulations.

CAPITULATION, a treaty made with the garriſon, or inhabitants of a place beſieged; whereby they ſurrender themſelves up, on certain articles and conditions ſtipulated with the beſiegers.

Capitulation denotes alſo a kind of treaty, pacta conventa, or original contract, drawn up by the electors, before the election of an emperor; which the emperor is to ratify before his coronation, and to obſerve inviolably in the courſe of his reign.

Theſe imperial *capitulations* have only been obtained ſince the time of Charles V. They were occaſioned by the jealouſy the German princes had entertained of the too great power of the emperor. Frederic, duke of Saxony, ſurnamed *the Wiſe*, paſſes for the author of the imperial *capitulations*; he declining the empire, which was offered him after the death of Maximilian, and adviſing the electors to chooſe Charles V. under ſuch conditions as might ſecure the liberty of the empire.

CAPITULUM, in botany, the head, or compound flower, of any plant; being compoſed of many leaves and threads, or ſtamina, cloſely connected in a globous, circular, or diſcous figure: as the flowers of bluebottles, ſcabious, carduus, *&c.*

CAPIVI. See Copivi.

CAPNOMANCY*, Καπνομαντεια, a kind of divination by means of ſmoke, uſed by the antients in their ſacrifices.

* The word comes from the Greek καπνος, ſmoke; and μαντεια, divination.

The general rule was; when the ſmoke was thin, and light, and roſe ſtrait up, it was a good omen: if the contrary, it was an ill one.

There was alſo another ſpecies of *capnomancy*, conſiſting in the obſervation of the ſmoke riſing from poppy and jeſſamin-ſeed, caſt upon lighted coals.

CAPONIERE, or Caponniere, in fortification, a covered lodgment, ſunk four or five foot into the ground, incompaſſed with a little parapet about two foot high, ſerving to ſupport ſeveral planks covered with earth.

The *caponiere* is large enough to contain fifteen or twenty ſoldiers; and is uſually placed in the glacis on the extremity of the counterſcarp, and in dry moats; having little embraſures for the ſoldiers to fire through.

CAPRA*, in aſtronomy, a denomination given to the ſtar *Capella*; and ſometimes alſo to the conſtellation *Capricorn*. See Capella, and Capricorn.

* Some repreſent *Capra*, or the ſhe-goat, as a conſtellation in the northern hemiſphere, conſiſting of three ſtars, comprized between the 45th and 55th degree of latitude. The poets ſay, it is Amalthea's goat, which ſuckled Jupiter in his infancy. Horace, making mention of it, calls it, *Inſana ſidera Capræ*.

CAPRA *Saltans*, or Capræ *Saltantes*, in meteorology, a fiery meteor, or exhalation, which ſometimes appears in the atmoſphere, and is not fired in a ſtrait line, but with inflexions, and windings in and out, reſembling the caperings of a goat.

CAPREOLUS, in botany, the claſper, or tendril, by which vines, peas, and ſuch-like creeping plants, faſten themſe to thoſe things which ſtand near, or are deſigned to ſupport them.

Capreolatæ *Plantæ*, are ſuch as turn, wind, and climb along the ſurface of the earth, and ſticks or trees, by means of their *Capreoli*, or tendrils; as gourds, melons, cucumbers, *&c.*

CAPRICORN, in aſtronomy, the tenth ſign of the zodiac; from which alſo the tenth part of the ecliptic takes the ſame denomination.

The character whereby *Capricorn* is repreſented in aſtronomical writings is, ♑.

The antients accounted *Capricorn* the tenth ſign, and when the ſun arrived thereat, it made the winter ſolſtice, with regard to our hemiſphere: but the ſtars having advanced a whole ſign towards the eaſt, *Capricorn* is now rather the eleventh ſign; and it is at the ſun's entry into ſagittary, that the ſolſtice happens: though the antient manner of ſpeaking is ſtill retained.

This ſign is repreſented on antient monuments, medals, *&c.* as having the fore-part of a goat, and the hind-part of a fiſh; which is the form of an Ægipan; and ſometimes, ſimply under the form of a goat.

The ſtars in the Conſtellation of *Capricorn*, in Ptolemy's and Tycho's catalogue, are twenty-eight; in that of Hevelius twenty-nine: though it is to be obſerved, one of thoſe in the tail, of the ſixth magnitude, marked in Tycho's book the twenty-ſeventh, was loſt in Hevelius's time. Mr. Flamſtead, in the Britannic catalogue, gives fifty-one ſtars in *Capricorn.* —The order, names, longitudes, latitudes, magnitudes, *&c.* whereof, are as follow:

Names and Situations of of the Stars.	Signs.	Longitude.			Latitude.			Magnit.
		°	′	″	°	′	″	
	♑	28	6	58	7	27	4 B	7
In the extrem. of the preced. horn		28	10	28	7	13	18 B	6
		29	11	41	7	15	34 B	6
		27	26	1	2	3	23 A	6
The preced. ſtar in the ſubſeq. horn		29	27	19	7	1	31 B	4
5								
The laſt of the contiguous ſtars		29	32	21	6	58	6 B	3
That under the eye		28	21	44	0	29	29 B	6
The middle ſtar in the ſubſeq. horn	♒	0	6	56	6	35	52 B	6
Moſt ſouth of 3 in the ſubſeq. horn	♑	29	43	57	4	37	27 B	3
Foremoſt of three in the noſe	♒	0	23	55	0	56	6 B	6
10								
North of theſe		0	51	9	1	14	17 B	6
South of thoſe in the noſe		0	54	10	0	26	9 B	5 6
		3	28	57	3	19	30 B	6
North of two in the neck		3	58	44	3	23	26 B	6
More ſouth		3	20	53	0	15	46 B	6
15								
That under the upper knee		2	50	11	6	58	23 A	5
		3	50	59	3	22	34 A	6
In the lower and bent knee		3	37	5	8	55	5 A	6
		6	47	24	0	28	9 A	6 7
		7	34	16	1	51	10 A	6 7
20								
		8	17	2	0	29	38 A	6
Preced. and nor. of 3 in mid. of body		8	25	55	2	57	43 A	5
Preced. of 2 in the back		9	31	40	0	33	0 A	5
That in the ſhoulder		7	30	46	8	3	38 A	6
South. in the middle of the body		8	57	52	4	31	8 A	6
25								
Second in the middle of the body		9	24	57	3	36	46 A	6
Subſequent		9	22	7	3	58	9 A	6
Laſt of 3 in the middle of the body		10	42	44	4	29	50 A	6
		12	10	39	0	43	40 B	6
		12	2	31	2	7	23 A	6
30								
		12	16	0	1	39	3 A	7
Subſeq. of 2 in the back		13	21	50	1	20	13 A	5
		12	33	35	5	17	26 A	6
1ſt of contiguous ones under belly		12	36	49	6	57	36 A	5
		13	8	8	5	50	27 A	6
35								
Subſeq. of the ſame		13	15	20	6	31	45 A	6
		15	10	57	5	22	15 A	6
		15	8	37	5	31	19 A	6
Preced. in ſouth fin		15	52	52	4	56	56 A	4
Preced. in root of the tail		17	27	42	2	31	18 A	4 3
40								
		15	42	16	8	53	38 A	6
		18	40	49	0	9	13 A	6
Subſeq. in ſouth fin		17	19	5	4	48	36 A	5
Preced. in north part of the tail		18	53	46	0	37	44 A	6
Subſequent		19	0	0	1	1	54 A	6
45								
North in extrem. of the tail		21	5	31	4	13	51 B	6
Another, ſubſequent		21	19	31	3	56	38 B	6
Middle in north. part of the tail		20	41	4	1	57	24 B	5
Subſeq. in root of the tail		19	13	14	2	32	19 A	3
		20	36	58	1	38	24 B	6
50								
Subſeq. in north part of the tail		21	29	12	0	39	10 A	5

Tropic of **Capricorn**, a leſſer circle of the ſphere, parallel to the equator; paſſing through the beginning of *Capricorn.* See Tropic.

CAPRIOLES *, in horſemanſhip, are leaps which a horſe makes in one and the ſame place, without advancing forwards; and that in ſuch manner, that when he is in the air, at the height of his leap, he yerks or ſtrikes out with his hind legs as near and even together, and as far out as he can ſtretch them; in which action, he clacks, or makes a noiſe with them.

* The word comes from *Capreolus*, a diminutive of *Caper*, goat.

The *Capriole* is the moſt difficult of all the high-raiſed airs: there are ſeveral kinds of *Caprioles*; as a *right Capriole, back Capriole, ſide Capriole, broken Capriole*, the *open Capriole*, &c.

CAPSQUARES, in gunnery, ſtrong plates of iron which come over the trunnions of a gun, and keep it in the carriage.

Theſe are faſtened by hinges to the prize-plate, that they may lift up and down. They form a part of an arch in the middle, to receive a third part of the thickneſs of the trunnions; for two thirds of them are let into the carriage, and the other end is faſtened by two iron wedges, which are called the *fore locks* and *keys*.

CAPSTAN, a large cylinder, or barrel placed perpendicularly on the deck of a ſhip, and turned by four levers, or bars which croſs it; ſerving, by means of a cable which winds round the cylinder, to draw up vaſt burdens faſtened to the end of the cable.

By the *Capſtan* it is, that veſſels are drawn aſhore, and hoiſted up to be refitted; the heavieſt goods are unloaded, anchors weighed, and ſails hoiſted, *&c.*

There are two *Capſtans* in a veſſel: the *main Capſtan* placed behind the mainmaſt, ſtanding on the firſt deck, and reaching four or five feet above the ſecond: this is alſo called *double Capſtan*, becauſe ſerving two decks for drawing of anchors: and becauſe its force may be doubled by applying hands on each deck. It has bars, whelps, a panel, *&c.* for turning and ſtopping it.—See Tab. *Ship.* Fig. 2. n. 112.

And the *jeer Capſtan*, or *little Capſtan*: this ſtands on the ſecond deck, between the mainmaſt and the mizzen: its uſe is, chiefly, to heave upon the jeer rope, or to heave upon the viol, to hold off by when the anchor is weighing; and on other occaſions where a leſs force is required, than to weigh the anchors, *&c.* See *n.* [illegible]1.

The French call that an *Engliſh Capſtan* where there are only half-bars uſed; and which, for that reaſon, is only half perforated: this is thicker than the others.

There is alſo a *flying Capſtan*, which may be moved from place to place.

The terms belonging to the uſe of the *Capſtans*, are,

Come up Capſtan, that is, ſlacken the cable which you heave by; in a like ſenſe they alſo ſay, *Launch out the Capſtan.*

Pawl out the Capſtan, ſignifies, ſtop it from going back.

CAPSULA *, or **Capsella**, denotes a bag, pouch, or receptacle of divers kinds of things.

* The word is a diminutive of the Latin *Capſa*, literally ſignifying, a little box, or caſe; particularly a bag, or ſachel, wherein boys carry their books, *&c.* to ſchool.

Capsula, among botaniſts, denotes the ſeed-veſſel of a plant. Thoſe plants whoſe ſeeds are incloſed in *Capſulæ*, are denominated *Angioſpermous*; and thoſe whoſe ſeeds have no *Capſules*, *Gymnoſpermous.*

Capsula *Communis*, or *of the Porta*, is a membrane ariſing from the peritonæum, and incloſing the trunk of the vena porta after its entrance into the liver, as a caſe, or cover; dividing itſelf into the ſame number of branches, and accompanying all, even its ſmalleſt ramifications.

The ſame *Capſula*, or membrane, likewiſe incloſes the porus bilarius, and other veſſels of the liver; whence it takes the name of *Capſula Communis.*

Capsula *Cordis*, a membrane inveſting the heart: more uſually called the *Pericardium.*

Capsulæ *Atrabilariæ*, in anatomy, called alſo *Renes ſuccenturiati*, and *Glandulæ Renales*, are two glands ſituate near the kidneys: called *Atrabilares*, from a black liquor found in their cavity, and *Succenturiati* and *Renales*, from their poſition.

They are about the bigneſs of a nux vomica; their figures are ſomewhat various; in ſome bodies round, in others triangular, ſquare, *&c.* The membrane wherewith they are covered is very fine: their cavity is pretty large for their bulk. Their uſe is very obſcure; probably it is to ſecrete the black humour found in their cavity, which, being afterwards diſcharged by their duct into the emulgent, mixes with the blood; and ſerves, according to ſome, as a ferment; according to others, only to dilute its thickneſs: in a fœtus they are almoſt as big as the kidneys.

Capsulæ *Seminales*, are the ſame with *Veſiculæ Seminales.* See Vesiculæ *Seminales.*

Capsula, in chymiſtry, is an earthen veſſel, in form of a pan; wherein things are frequently placed, that are to undergo very violent operations of the fire.

CAPSULATE *Plants*, **Capsulatæ** *Plantæ*, are ſuch as have a tetrapetalous regular flower, conſiſting of four diſtinct petala in each flower, and which bear their ſeeds in ſhort *Capſulæ*: by which they are diſtinguiſhed from the *Siliquoſæ*, which have their ſeed in long caſes, or pods. Theſe are more uſually called *Plantæ Siliculoſæ.*

CAPTAIN, a military officer, whereof there are various kinds, and degrees, diſtinguiſhed by their commands: as,

Captain *of a company*, or *troop*, is an inferior officer, who commands a company of foot, or troop of horſe, under the colonel.

In the like ſenſe, we ſay, *a captain* of dragoons, of grenadiers, of marines, of invalids, *&c.*

In the horſe and foot guards, the *captains* are ſtiled *colonels*; being uſually perſons of rank, and general officers of the army.

In the colonel's company of a regiment, *i. e.* the firſt company, or that whereof he himſelf is *captain*, the commanding officer is called *captain-lieutenant*.

Lieutenant-**Captain**, is the *captain*'s ſecond; or the officer who commands the company under the *captain*, and in his abſence. See Lieutenant. In ſome companies, *&c.* he is alſo called *captain-lieutenant*.

Captain-*lieutenant*, is he who commands a troop, or company, in the name and place of ſome other perſon, who has the commiſſion, with the title, honour, and pay thereof; but is diſpenſed withal, on account of his quality, from performing the functions of his poſt.

Thus, the colonel, being uſually likewiſe *captain* of the firſt company of his regiment; that company is commanded by his deputy, under the title of *captain-lieutenant*.

So in England, France, *&c.* the king, prince, dauphin, *&c.* have uſually the titles, dignities, *&c. of captains of the guards, gens d' armes*, &c. the real duty of which offices is performed by *captains-lieutenant*.

Reformed **Captain**, is one, who, upon a reduction of the forces, has his commiſſion and company ſuppreſſed; yet is continued *captain*, either as ſecond to another, or without any poſt or command at all.

Captain-*general*, of an army, is the general, or commander in chief.

Captain *of militia*, is he who commands a company of trained-bands, or a troop of light-horſe.

Captain-*baſhaw*, ſignifies the Turkiſh high-admiral. See Bashaw.

Captain *of a ſhip* is a ſea officer whereof we make two kinds; the one of a ſhip of war, the other of a trading veſſel: though, in propriety, the title *captain* belongs only to the commander of ſhips of war.

Captain *of a ſhip of war*, is the commanding officer of a ſhip, gally, fire-ſhip, or the like.

Captain *of a merchant-ſhip*, is the maſter thereof; or he who has the command or direction of the ſhip, her crew, lading, *&c.* This officer is more uſually called the *maſter*; eſpecially in ordinary voyages.

On the Mediterranean he is called the *patron*, or *patroon*; and in long voyages, as to the Eaſt-Indies, South-Sea, *&c.* the *captain*.

The proprietor of the veſſel appoints the *captain*, or maſter; and the *captain* is to form the crew, and chooſe and hire the pilots, mates, ſeamen, *&c.* though when the proprietor and maſter reſide on the ſame ſpot, this is uſually done in concert with the proprietor.

CAPTION, in law, is when a commiſſion is executed, and the commiſſioners names ſubſcribed to a certificate, declaring when and where ſuch commiſſion was executed.

The *caption* uſually commences with theſe words, *Virtute iſtius commiſſionis nos*, &c. or *Executio iſtius commiſſionis patet in quadam ſchedula annexata, &c.* or, *Capt. & cogn. die, &c.* or *Capt. fuit hæc reſponſ.*

CAPTIVE, a ſlave, or perſon taken by the enemy in war, or by a pirate or corſair. See Slave, Pirate, *&c.*

CAPTURE, a prize, or prey; particularly that of a ſhip taken at ſea.

Thus we ſay the French *captures*, to the number of twenty-five, were brought into port.

Capture alſo denotes an arreſt, or ſeizure of a criminal, debtor, *&c.* at land.

CAPUCHINS*, religious of the order of St. Francis, in its ſtricteſt obſervance.

> * The *capuchins*, are thus called, from *capuce*, or *capuchon*, a ſtuff cap, or cowl, wherewith they cover their heads.

They are cloathed with brown, or grey; are always bare-footed; and never to go in a coach, nor ever ſhave the beard.

The *capuchins* are a reform made from the order of minors, commonly called *cordeliers*, ſet on foot in the ſixteenth century by Matthew Baſchi, a religious obſervant of the monaſtery of Monteſiaſcone; who, being at Rome, ſaid he was advertiſed ſeveral times from Heaven, to practiſe the rule of St. Francis to the letter. Upon this he made application to pope Clement in 1525. who gave him permiſſion to retire into a ſolitude; and not only him, but as many others as would embrace the ſtrict obſervance: which ſome did accordingly. In 1528. they obtained the poe's bull. In 1529. the order was brought into complete form; Matthew was elected general, and the chapter made conſtitutions. In 1543. the right of preaching was taken from the *capuchins* by the pope: but in 1545. it was reſtored to them again with honour. In 1578. there were ſeventeen general chapters in the order of *capuchins*.

CAPUT *baroniæ*, the head of the barony, in antient cuſtoms, denotes the antient or chief ſeat, or caſtle of a nobleman, where he made his uſual reſidence, and held his court; ſometimes alſo called *caput honoris*, or the head of the honour.

The *caput baroniæ* could not be ſettled in dowry; nor could it be divided among the daughters, in caſe there were no ſon to inherit; but was to deſcend intire to the eldeſt daughter, *cæteris filiabus aliunde ſatisfactis.* See Barony.

Caput *draconis*, or the *dragon's head*, in aſtronomy, the name of the moon's aſcending node. See Node.

Caput *Gallinaginis*, or *Galli Gallinacei*, cock's head, is a kind of ſeptum, or ſpongious border, at the extremities or apertures of each of the veſiculæ ſeminales; ſerving to prevent the ſeed coming from one ſide, from ruſhing upon, and ſo ſtopping, the diſcharge of the other.

Some will have its uſe to be, to prevent the impulſe of the ſeed from dilating the orifices of the veſiculæ, and ſo ouſing out, except when aſſiſted by the compreſſion of the ſurrounding parts; as in copulation: but this, according to Dr. Drake, is rather the office of a diſtinct caruncle placed at each orifice, and acting as a valve.—See *Tab. Anat.* (Splanch.) *fig.* 8. *lit.* 9.

Caput *mortuum*, in chymiſtry, the fæces remaining of any body, after all the volatile and humid parts, as the phlegm, ſpirit, ſalt, *&c.* have been extracted therefrom, by force of fire.

What remains after diſtillation is properly called *fæces*. This, ere it be *caput mortuum*, muſt likewiſe have paſſed the retort, or open fire.

The *caput mortuum*, called alſo *terra damnata*, is found in form of a friable, porous matter, without taſte or ſmell: it is ranked among the chymical elements; and ſuppoſed to conſtitute the dry, fixed, earthy, and ſolid part of all mixed bodies. As an element, it is more commonly expreſſed by the name *earth*.

It is what the chymiſts call a *paſſive element*, or *principle*; ſerving as the baſis or ſupport of the active ones.

The term is ſometimes more immediately reſtrained to the remains of vitriol, after diſtillation; otherwiſe called *colcothar vitrioli*.

The *caput mortuum* is never pure, but there is ſtill ſome active principle remaining in it, and particularly a fixed ſalt. See Salt.

Thus the *colcothar vitrioli*, expoſed to the air, is reconverted into vitriol.

CAR, or **Carr**. See the article Carr.

CARABE, or **Karabe**, denotes yellow amber. See Amber.

CARABINE, a ſmall ſort of fire arm, ſhorter than a fuſil, and carrying a ball of twenty-four in the pound; borne by the light horſe, hanging at a belt over the left ſhoulder.

The *carabine* is a kind of medium between the piſtol and the muſquet; and bears a near affinity to the harquebuſs, only that its bore is ſmaller.

It was formerly made with a match-lock, but of late only with a flint-lock.

The barrel is two feet and a half long, and is ſometimes furrowed ſpirally within, which is ſaid to add to the range of the piece.

CARABINEERS, a ſort of light horſe, carrying longer *carabines* than the reſt; and uſed ſometimes on foot. See Carabine.

The French, of late days, have formed intire corps of theſe *carabineers*, which cannot but have good effect; this being a ſort of ſoldiery choſen out of the whole cavalry, and better paid than the reſt.—There are but few of them in the Engliſh army.

CARACOL*, in the menage, a motion which a cavalier makes half round; or a half turn from left to right; changing hands; that his enemy may be uncertain on which ſide he intends to attack: whether in front, or flank.

> * The word comes from the Arabic *garagol*, and that from the Hebrew, *carac, involvere*: but we have it immediately from the Spaniſh; where *caracol* ſignifies properly *a ſnail*, and figuratively the evolution deſcribed above.

Caracol is alſo the half turn each horſeman in an army makes, after his diſcharge, to paſs from the front of the ſquadron to the rear.

Caracol is ſometimes alſo uſed in architecture, for a ſtaircaſe in a helical, or ſpiral form.

CARACT*, or **Carat**, a denomination given to the weight, which expreſſes the degree of goodneſs, fineneſs, and perfection, or imperfection of gold. See Gold.

> * The word is alſo written *carract*, *carrat*, *karract*, and *karrat*. Its original is conteſted: Menage, after Alciat, derives *caract* from the Greek κερατιον, which was a kind of ſmall weight: Savot, with more probability, from χαρατζιον, a tribute-peny, or ſmall coin ſtruck for that purpoſe; urging, that as the fineneſs of ſilver is denominated from a coin called *a peny*; ſo it is moſt likely the fineneſs of gold ſhould be eſtimated from a gold coin, in former days called *carat* from *charatzion*. Others derive the word ſimply from *character*; but we chooſe rather to follow Kennet, who derives it from *caretta*, a term which this author obſerves antiently denoted any weight, and came not till of later days to be appropriated to that which expreſſes the fineneſs of gold, and the gravity of diamonds.

The mint-men fix the higheſt purity and perfection of gold at twenty-ty-four *Caracts*; and the ſeveral degrees are eſtimated from the diviſions hereof, which are called *Grains*: but it is to be obſerved, that what care ſoever is taken in purifying gold, to clear it from droſs, it can never be brought to twenty-four *Caracts*; but ſtill comes ſhort, at leaſt ¼ of a *Caract*, or a grain: this grain they call a *ſixteenth*; and this ſixteenth they ſubdivide into two eighths; and each of thoſe eighths into two ſixteenths: on which calculation, they ſay, gold may be purified as far as the firſt ſixteenth of the ſecond eighth, but no further.

Gold of twenty-two *Caracts*, is that which has twenty-two parts of fine gold, and two of ſilver, or other metal; or that which, in refining, loſes two parts in twenty-four of its weight. The goldſmiths generally work in gold of twenty-two *Caracts*; by the laws of France, they are prohibited from working in gold below twenty-three *Caracts*.

Caract fine, as above, is the twenty-fourth part of the goodneſs of a piece of pure gold.

Caract price is the twenty-fourth part of the value of an ounce or mark of gold.—They alſo ſometimes ſay, the *Caract weight*, which is the twenty-fourth part of the weight of the ounce or mark. Two troy grains make a *Caract* grain.

CARACT * is alſo the weight uſed in weighing diamonds, pearls, and precious ſtones; where it conſiſts of four grains.

* In this ſenſe, the word is by ſome ſuppoſed to be derived from the Greek κερατιον, a fruit which the Latins call *Siliqua*, and we *Carob bean*; each of which may weigh about four grains of wheat: whence the Latin *ſiliqua* has alſo been uſed for a weight of four grains.

CARAITES, a ſect among the antient Jews; whereof there are ſtill ſome ſubſiſting in Poland, Ruſſia, Conſtantinople, Cairo, and other places of the Levant; whoſe diſtinguiſhing tenet and practice it is, to adhere cloſely to the words and letter of the ſcripture, excluſive of allegories, traditions, and the like.

Leo of Modena, a rabbin of Venice, obſerves, that of all the hereſies among that people, before the deſtruction of the temple, there is none now left but that of the *Carraim*, a name derived from *micra*, which ſignifies the pure text of the bible; becauſe of their keeping to the Pentateuch, obſerving it to the letter, and rejecting all interpretations, paraphraſes, and conſtitutions of the rabbins.

Aben Ezra, and ſome other rabbins, treat the *Caraites* as Sadducees; but Leo de Juda calls them, more accurately, *Sadducees reformed*; in regard they believe the immortality of the ſoul, paradiſe, hell, reſurrection, &c. which the antient Sadducees denied. He adds, however, that they were doubtleſs originally real Sadducees, and ſprung from among them.

M. Simon, with more probability, ſuppoſes them to have riſen hence, That the more knowing among the Jews oppoſing the dreams and reveries of the rabbins, and uſing the pure text of ſcripture to refute their groundleſs traditions, they had the name *Carraim* given them; which ſignifies as much as the barbarous latin, *ſcripturarii*; i. e. people attached to the text of ſcripture. The other Jews give them the odious name *Sadducees*, from their agreement with thoſe ſectaries on the head of traditions.

Scaliger, Voſſius, and Spanheim, rank the *Caraites* among the Sabeans, Magi, Manichees, and Muſſulmen, but by miſtake: Wolfgang, Fabricius, &c. ſay, the Sadducees and Eſſeni were called *Caraites*, in oppoſition to the Phariſees: others take them for the doctors of the law ſo often mentioned in the goſpel: but theſe are all conjectures. Joſephus and Philo make no mention of them; which ſhews them to be more modern than either of thoſe authors. In all probability, this ſect was not formed till after the collection of the ſecond part of the Talmud, or the Gemara; perhaps not till after the compiling of the Miſchna in the third century.—The *Caraites* themſelves pretend to be the remains of the ten tribes led captive by Salmanaſſar.

Wolfius, from the *Memoirs of Mardocheus*, a *Caraite*, refers their origin to a maſſacre among the Jewiſh doctors, under Alexander Jannæus, their king, about one hundred years before Chriſt: for that Simeon, ſon of Schetach, and the queen's brother, making his eſcape into Egypt, there forged his pretended traditions; and, at his return to Jeruſalem, publiſhed his viſions; interpolating the law after his own fancy, and ſupporting his novelties on the notices which God, he ſaid, had communicated by the mouth of Moſes, whoſe depoſitary he was: he gained many followers; and was oppoſed by others, who maintained, that all which God had revealed to Moſes was written. Hence the Jews became divided into two ſects, the *Caraites*, and *Traditionaries*: among the firſt, Juda, ſon of Tabbai, diſtinguiſhed himſelf; among the latter, Hillel. Wolfius reckons not only the Sadducees, but alſo the Scribes, in the number of *Caraites*. But the addreſs of the Phariſees prevailed againſt them all; and the number of *Caraites* decreaſed: Anan indeed, in the eighth century, retrieved their credit a little; and rabbi Schalomon in the ninth. Matters went pretty well with them till the fourteenth, but ſince that time they have been on the declining hand.

The *Caraites* are but little known; their works coming only into very few hands, even among the greateſt Hebraiſts. Buxtorf never ſaw more than one; Selden two; but M. Trigland ſays, he has recovered enough to ſpeak of them with aſſurance. He aſſerts, that ſoon after the prophets had ceaſed, the Jews became divided on the ſubject of works, and ſupererogation: ſome maintaining their neceſſity from tradition; whilſt others, keeping cloſe to the written law, ſet them aſide; and it was from theſe laſt that *Caraitiſm* commenced. He adds, that after the return from the Babyloniſh captivity, the obſervation of the law being to be re-eſtabliſhed, there were ſeveral practices found proper for that end; and theſe, once introduced, were looked upon as eſſential, and appointed by Moſes; which was the origin of Phariſaiſm; as a contrary party, continuing to keep cloſe to the letter, founded *Caraitiſm*.

The modern *Caraites*, Leo of Modena obſerves, have their ſynagogues, and ceremonies; they pretend to be the ſole proper Jews, or obſervers of the laws of Moſes; calling the reſt by the term *Rabbanim*, or *followers of the Rabbins*: theſe hate the *Caraites* mortally; refuſing to ally, or even to converſe with them, and treating them as *mamzerim*, or baſtards; becauſe of their rejecting the conſtitutions of the rabbins relating to marriages, repudiations, purifications of women, &c. This averſion is ſo great, that if a *Caraite* would become a rabbiniſt, he ſhould never be received by the other Jews.

The *Caraites*, however, do not abſolutely reject all kind of traditions; but only ſuch as do not appear well grounded. Selden, who is very expreſs on this point, in his *Uxor Hebraica*, obſerves, that beſides the mere text, they have certain interpretations, which they call *hereditary*, and which are proper traditions. Their theology only ſeems to differ from that of the other Jews, in that it is purer, and clearer of ſuperſtition: they give no credit to the explications of the Cabbaliſts, chimerical allegories, nor to any conſtitutions of the Talmud, but what are conformable to the ſcripture, and may be drawn from it by juſt and neceſſary conſequences: of theſe we ſhall give three notable inſtances.

The firſt relating to the *Mezouzot*, or parchments which the Jews tie at all the gates through which they uſe to paſs. The ſecond regarding the *Thephillin* or phylacteries, mentioned in the new teſtament: and the third, the prohibition of eating milk, with fleſh. The two firſt, the Jews pretend, are formally ordained in Deuteronomy, where it is ſaid, "Thou ſhalt bind "them as a ſign on thy hands, and they ſhall ſerve thee as "frontlets (headſtalls) between thy eyes; thou ſhalt write them "on the poſts of thy houſe." The *Caraite* Aaron, in his comment on theſe words, maintains, they are not to be taken literally, as the rabbins do, but figuratively; as intimating, that the Jews, whether entering or going out, ſhould be always mindful of them. For the Thephillin, the *Caraites* railly the rabbiniſts on their praying with their phylacteries, or thongs of leather faſtened to their forehead; comparing them to bridled aſſes. This paſſage the *Caraites* interpret figuratively; and in their interpretation agree with St. Jerom, who takes notice of the deluſion of the Phariſees, "in writing the decalogue on "parchment, rolling it up, and tying it to their forehead with "thongs, to have it always before their eyes." For the third point, the rabbins ſay, it is commanded in that text. "Thou "ſhalt not ſeeth a kid in his mother's milk;" but the *Caraites* get clear of it, by explaining the paſſage by another, "Thou "ſhalt not kill the mother when with young," which is natural.—Nor have the Jews any thing to object in behalf of their interpretation, but its being that of their doctors. Thus the *Caraites* exempt themſelves from an infinite number of ceremonies and ſuperſtitions, which the rabbins have eſtabliſhed among the other Jews.

Yet, in many things, they retain all the ſuperſtition of the rabbins. Schupart, in his treatiſe *de ſecta Karræorum*, treating of their dogmata, obſerves, that they are in all reſpects as preciſe and ceremonious as the moſt rigid traditionary, in what relates to the obſervation of the ſabbath, paſſover, feaſt of atonement, of tabernacle, &c. That they obſerve prayers and faſtings; and wear the *zitzit*, or pieces of fringe, on the corners of their garments. They hold, that all ſin is effaced by repentance; in which they differ from the rabbins, who hold, that ſome are only effaced by death. As for circumciſion, they do not believe it neceſſary, with the traditionaries, that there be blood ſhed: add, that when a child dies before it be eight days old, the rabbiniſts circumciſe it after it is dead, that it may not appear uncircumciſed at the reſurrection; whereas the *Caraites*, when they perceive the child in danger, chooſe rather to circumciſe it before the eighth day. In matters of divorce, the *Caraites* agree with the other Jews; and obſerve the ſame rules and reſtrictions in the killing and dreſſing of beaſts; but they differ from them in the kinds of legal impurities and pollutions.

Peringer obſerves of the *Caraites* in Lithuania, that they are very different, both in aſpect, language, and manners, from the rabbiniſts, wherewith that country abounds. Their mother tongue is the Turkiſh; and this they uſe in their ſchools and ſynagogues. In viſage they reſemble the Mahometan Tartars. Their ſynagogues are poſited north and ſouth; and the reaſon they give for it, is, that Salmanaſſar brought them northward: ſo that, in praying, to look to Jeruſalem, they muſt turn to the ſouth. He adds, that they admit all the books of the old teſtament; contrary to the opinion of many of the learned, who hold that they reject all but the Pentateuch.

Caleb, a *Caraite*, reduces the difference between them and the rabbiniſts to three points: 1ſt, In that they deny the oral law to come from Moſes, and reject the cabbala. 2d, In that they abhor the talmud. 3d, In that they obſerve the feaſts, as the ſabbaths, *&c.* much more rigorouſly than the rabbins do. To this may be added, that they extend the degrees of affinity, wherein marriage is prohibited, almoſt to infinity.

CARANNA, a hard, brittle, reſinous gum, brought from ſome parts of the Weſt-Indies, as Carthagena and New Spain; of an aromatic flavour; and ſometimes uſed in medicine as a cephalic.

CART, CARRAT, or CARACT. See the article CARACT.

CARAVAN *, or CARAVANNE, in the eaſt, a troop or company of travellers, merchants, and pilgrims, who for their greater ſecurity march in a body through the deſarts, and other dangerous places, infeſted with Arabs and robbers.

> * The word comes from the Arabic *Cairawan*, or *Cairoan*; and that from the Perſian *Kervan*, or *Cârvân*, *negotiator*, a trader or dealer. V. Peritſ. Itin. Mund. ed. Hyde, p. 61.

There is a chief, or aga, who commands each *Caravan*, and has under him a number of janizaries, or other forces, ſufficient for their defence. The *caravans* encamp every night near wells, or rivulets known to the guides; and obſerve a diſcipline as regular as in war. They chiefly uſe camels for their vehicles, by reaſon of their enduring a world of fatigue, eating little, and paſſing three or four days without drinking.

The grand ſignior gives one fourth part of the revenues of Egypt, to defray the expence of the *Caravan* that goes yearly to Mecca, to viſit Mahomet's tomb: the devotees, in this *Caravan*, are from forty thouſand to ſeventy thouſand; accompanied with ſoldiers to protect them from the pillage of the Arabs, and followed with eight or nine thouſand camels, laden with all neceſſary proviſions for ſo long a paſſage acroſs deſarts.

Days journeys are diſtinguiſhed in the eaſt, into journeys of *horſe-Caravans*, and *Caravans of camels*: thoſe of horſes are equal to two of camels. There are ſeveral *Caravans* which go yearly from Alepdo, Cairo, and other places, to Perſia, Mecca, Thebes, *&c.* There are alſo *ſea Caravans* eſtabliſhed on the ſame footing, and for the ſame purpoſes: ſuch is the *Caravan of veſſels*, from Conſtantinople to Alexandria.

CARAVAN is alſo an appellation given to the voyages, or campaigns, which the knights of Malta are obliged to make at ſea, againſt the Turks and Corſairs; in order to arrive at the commandries and dignities of the order.—They are thus called, becauſe the knights have frequently ſeized the *Caravan* going from Alexandria to Conſtantinople.

CARAVANSERA *, a large public building, or inn, deſtined to receive and lodge the *Caravans*.

> * The word comes from the Arabic *Cairawan*, or Perſian *Karwan* or *Cârvân*, a *Caravan*, and *Serai*, a large houſe.

Of theſe *Caravanſera*'s, or, as Chardin calls them, *Caravanſerai*, there are a great number throughout the eaſt; erected out of the charity and magnificence of the princes, *&c.* of the ſeveral countries.

Thoſe of Schiras and Caſbin, in Perſia, are ſaid to have coſt ſixty thouſand crowns each. They are open to people of all religions and countries, without any queſtions aſked, or any money required.

The *Caravanſarai* are uſually huge ſquare buildings, with a ſpacious court in the middle thereof. They are encompaſſed with galleries and arches, under which runs a kind of banquette, or elevation, ſome feet high, where travellers reſt themſelves, and make their lodgings as well as they can; their baggage, and the beaſts that carry them, being faſtened to the foot of the banquette. Over the gate, there are frequently a ſort of little chambers; which the *Caravanſeraſkier* lets out, at a very dear rate, to ſuch as have a mind to be to themſelves.

Though the *Caravanſera*'s ſerve in lieu of inns; yet there is this eſſential difference between them and our inns, that the traveller finds nothing at all in the *Caravanſera*, neither for himſelf, nor his cattle; but muſt carry all his proviſions and neceſſaries with him. They are chiefly built in dry, barren, deſart places; and are generally furniſhed with water from a great diſtance, and at a vaſt expence; there being no *Caravanſera* without its well of water. There are ſeveral of them in cities: where they ſerve not only as inns, but as ſhops, warehouſes, and even exchanges.

There are few cities in the eaſt without their *Caravanſerai*; eſpecially within the dominions of Turky, Perſia, and the great Mogul. Thoſe of Conſtantinople, Iſpahan, and Agra, the capitals of three empires, are diſtinguiſhed for their magnificence and commodiouſneſs.

In Turky, none but the grand ſignior's mother and ſiſter, with the viſiers and baſhaws, who have been in three battles againſt Chriſtians, are allowed to build a *Caravanſera*.

CARAVANSERASKIER, the director, ſteward, or intendant of a *Caravanſera*.

At Iſpahan, there are *Caravanſera*'s in manner of halls, or exchanges, where goods are laid up, and expoſed to view; for which the *Caravanſeraſkier* is accountable, in conſideration of a certain fee.

CARAWAY, or CARUI, a medicinal ſeed, produced from a plant of the ſame name, by botaniſts called *Carui Officinarum*, or *Cuminum Pratenſe*.

The ſeed of the carui, or *Caraway*, is narrow, longiſh, furrowed on the back, and of a briſk aromatic taſte.

It is one of the greater hot ſeeds, and is eſteemed ſtomachic, and diuretic; it diſpels wind, and ſtrengthens digeſtion, *&c.* The Engliſh and Germans make great uſe of it; particularly in biſcuits, comfits, ſeed-cakes, and other foods, and confections.

CARBUNCLE, * among antient naturaliſts, is a ſort of ſtone, whereof Pliny and Theophraſtus relate many fabulous wonders.

> * The name is formed of the Latin *Carbunculus*, q. d. a burning-coal: the Greeks alſo call it ανθραξ, coal. Pliny, treating of the *Carbuncle*, diſtinguiſhes twelve ſorts of it.

Many of the antients, and ſome of the moderns after them, have ſuppoſed the *Carbuncle* to be taken from the dragon's head; and we read of many a cavalier, who went to combat with dragons, on purpoſe to gain this invaluable jewel.—Vartoman aſſures us, that the king of Pegu uſed no other light in the night-time, but that of his *Carbuncle*, which caſt a blaze like that of the ſun.

CARBUNCLE, among modern lapidaries, is a ſtone of the ruby kind, very rare, and of a rich glowing blood-red colour.

Some ſay it is not intitled to the appellation, unleſs it exceed twenty caracts weight: otherwiſe it is only a ruby. See Supplement, article CARBUNCULUS.

CARBUNCLE, in medicine, is a malignant tumour, ariſing ſometimes on one part, and ſometimes on another; accompanied with a painful heat, mortification, lividneſs, and at laſt a blackneſs of the part. See ANTHRAX.

The Greeks call it *Anthrax*, the Latins *Carbunculus*, ſometimes alſo, *Carbo*; and the French *Charbon*; all importing coal, from the reſemblance of its ſcab to a coal of fire. It is ſometimes peſtilential, and ſometimes not.—When it ariſes without puſtles, it is properly called *Pruna*; when with, *Ignis Perſicus*.

It uſually begins with one or more puſtles, under which is formed a putrid ulcer; ſometimes with a ſcab, without any puſtle; the ulcer being formed under the ſcab. Within the tumour is a kernel, very painful; ſometimes red, and ſometimes livid, or blackiſh.

The *Carbuncle* is owing to a ſharp, cauſtic, malignant, ſaline humour, which gnaws and corrupts the part whereon it is diſcharged.

CARBUNCLE, in heraldry, a charge, or bearing, conſiſting of eight radii, or ſpokes; four whereof make a common croſs, and the other four a ſaltier. See *Tab. Herald.* Fig. 13.

Some call theſe radii *Battons*, or *Staves*; becauſe round, and enriched with buttons, or pearled, like pilgrims ſtaves; and frequently tipped, or terminated with flower-de-luces. Others blazon them, royal ſceptres, placed in ſaltier, pale and feſſe.

CARBUNCULATION, the blaſting, or ſcorching of the new-ſprouted buds of trees, or plants, either by exceſſive heat, or exceſſive cold.

CARCASE, the corpſe, or body of a dead animal. Thus, we ſay, The *Carcaſes* of the ſoldiers, horſes, *&c.* were ſeen long afterwards on the field of battle.

The *Carcaſe* of a fowl, capon, partridge, leveret, rabbet, *&c.* is what remains thereof, after the four members, or limbs, have been cut off, *viz.* the legs and wings.

CARCASE, in architecture, is the ſhell, or ribs of a houſe; containing the partitions, floors, rafters, *&c.* made by the carpenter, *&c.* The *Carcaſe* is otherwiſe called the *Framing*; ſee FRAMING.

CARCASSE *, or CARCUSS, in war, a kind of bomb, uſually oblong, or oval, rarely circular; conſiſting of a ſhell, or caſe, ſometimes of iron, with holes; but more commonly of a coarſe ſtrong canvas, pitched over, and girt with iron hoops; filled with combuſtible matters, as hand-granadoes, ends of muſquets, loaden piſtols, and preparations of gunpowder, *&c.* Its uſe is to be thrown out of a mortar, to ſet houſes on fire, and do other execution.

> * It has the name *Carcaſſe*, becauſe the circles which paſs from one ring, or plate, to the other, ſeem to repreſent the ribs of a human *Carcaſe*.

CARCINOMA, * Καρκινωμα, in medicine, a tumuor more uſually called a *Cancer*. See CANCER.

> * The word comes from καρκινος, *Cancer*, and νεμω, *depaſco*, feed upon.

CARCUSS, in war, the ſame as *Carcaſſe*; ſee CARCASSE.

CARDAMOMUM, or CARDAMOM, a medicinal ſeed, of the aromatic kind, contained in capſulæ, or pods, brought from the Eaſt-Indies; and uſed in the compoſition of Venice-treacle, and many other medicines.

This ſeed is diſtinguiſhed into three kinds, according to the ſeveral ſizes of the pods; *viz. majus*, *minus*, and *maximum*, or greater, leſſer, and greateſt: but the taſte, ſmell, colour, and form of the grain, is the ſame in all; being of a purple colour, angular, a ſharp biting taſte, and a ſtrong penetrating ſmell.—The la kind is alſo called *grains of paradiſe*; but the firſt excels the re bo both in ſmell, taſte, and virtue: it is this that enters the compoſition of the theriaca.

The *Cardamoms* warm, and deterge: they ſtrengthen the nobler parts, diſſipate wind, and help digeſtion; and are uſed in diſeaſes of the brain, ſtomach, and womb.

CARDIACS, * **Cardiaca**, in a general ſenſe, comprehend all medicines beneficial to the heart; whether internally, or externally applied.

* The word comes from the Greek καρδια, *Cor*; the heart being reputed the immediate ſeat of their operation.

Cardiacs, in a more particular ſenſe, denote medicines which raiſe the ſpirits, and give preſent ſtrength and chearfulneſs.

Theſe amount to the ſame with what are popularly called *Cordials*.

Cardiacs are remedies antiently ſuppoſed to exert themſelves immediately in comforting and ſtrengthening the heart: but the modern phyſicians rather ſuppoſe them to produce their effect, by putting the blood into a gentle fermentation, whereby the ſprings, before decayed, are repaired and invigorated; and the tone and elaſticity of the fibres of the veſſels reſtored: the conſequence of which is a more eaſy and briſk circulation.

CARDIACUS *Plexus*, in anatomy, a plexus, or piece of network, formed of a ramification of the par vagum, or eighth pair of nerves.

CARDIALGIA, * **Cardialgy**, in medicine, a violent ſenſation of heat, or acrimony, felt towards the upper or left orifice of the ſtomach, though ſeemingly at the heart; ſometimes accompanied with palpitations of the heart, fainting, and a propenſion to vomit: better known by the name of *cardiac paſſion*, or *heart-burn*.

* The word is compounded of the Greek καρδια, which denotes either the heart, or the left orifice of the ſtomach, and αλγος, pain.

It is ſuppoſed to be occaſioned by ſome ſharp humour, or acrimonious aura, which pricks and vellicates that orifice, and the adjoining parts.

Blancard makes the diſeaſe conſiſt in a gnawing and contraction of the par vagum, and the intercoſtal nerves implanted in the ſtomach; proceeding from a pungent vellicating matter in the ſtomach itſelf: which, by means of the conſent of parts, affects the heart; ſtreightening and contracting it ſo, as ſometimes to occaſion ſwooning.

CARDINAL, * a term ſerving to expreſs the relation, or quality, of prime, principal, or moſt conſiderable.

* The word is formed of the Latin *Cardo*, a hinge; it being on theſe fundamental points, that all the reſt of the ſame kind are ſuppoſed to turn.

Thus juſtice, prudence, temperance, and fortitude, are called the four *Cardinal Virtues*, as being the baſis of all the reſt.

Cardinal *Points*, in coſmography, are the four interſections of the horizon with the meridian, and the prime vertical circle. See Point.

Of theſe, two; *viz.* the interſections of the horizon and meridian; are called *North* and *South*, with regard to the poles they are directed to.

To determine the places of theſe points, ſee Meridian *Line.*

The other two; *viz.* the interſections of the horizon, and firſt vertical; are called *Eaſt* and *Weſt*.

The *Cardinal Points*, therefore, coincide with the four *Cardinal* regions of the heavens; and are 90° diſtant from each other. The intermediate points are called *Collateral Points*.

Cardinal *Points of the Heaven*, or, *of a Nativity*, are the riſing, and ſetting of the ſun, the zenith, and nadir.

Cardinal *Winds*, are thoſe that blow from the *Cardinal* points.

Cardinal *Numbers*, in grammar, are the numbers one, two, three, &c. which are indeclinable; in oppoſition to the ordinal numbers, firſt, ſecond, third, fourth, &c. See Number.

Cardinal *, is more particularly uſed for an eccleſiaſtic prince, one who has a voice, both active and paſſive, in the Roman conclave, at the election of a pope.

* Some ſay, the *Cardinals* were ſo called from the Latin *Incardinatio*, which ſignifies the adoption any church made of a prieſt of a foreign church, driven thence by misfortune; and add, that the uſe of the word commenced at Rome and Ravenna; the revenues of the churches of which cities being very great, they became the common refuge of the unhappy prieſts of all other churches.

The *Cardinals* compoſe the pope's council, or ſenate: in the Vatican is a conſtitution of pope John, which regulates the rights and titles of the *Cardinals*; and which declares, that as the pope repreſents Moſes, ſo the *Cardinals* repreſent the ſeventy diſciples, who, under the pontifical authority, decide private and particular differences.

Cardinals, in their firſt inſtitution, were only the principal prieſts, or incumbents of the pariſhes of Rome. In the primitive church, the chief prieſt of a pariſh, who immediately followed the biſhop, was called *Preſbyter Cardinalis*; to diſtinguiſh him from the other petty prieſts, who had no church, nor preferment: the term was firſt applied to them in the year 150. others ſay, under pope Silveſter, in the year 300. Theſe *Cardinal* prieſts were alone allowed to baptize, and adminiſter the euchariſt. When the *Cardinal* prieſts became biſhops, their *Cardinalate* became vacant; they being then ſuppoſed to be raiſed to a higher dignity.—Under pope Gregory, *Cardinal* prieſts, and *Cardinal* deacons, were only ſuch prieſts or deacons, as had a church or chapel under their particular care: and this was the original uſe of the word. Leo IV. in the council of Rome, held in 853. calls them *Preſbyteros ſui Cardinalis*; and their churches, *Parochias Cardinales*.

The *Cardinals* continued on this footing till the eleventh century: but as the grandeur and ſtate of his holineſs became then exceedingly augmented, he would have his council of *Cardinals* make a better figure than the antient prieſts had done. It is true, they ſtill preſerved their antient title; but the thing expreſſed by it was no more. It was a good while, however, ere they had the precedence over biſhops, or got the election of the pope into their hands: but when they were once poſſeſſed of thoſe privileges, they ſoon had the red hat and purple; and growing ſtill in authority, they became at length ſuperior to the biſhops, by the ſole quality of being *Cardinals*.

Du Cange obſerves, that originally there were three kinds of churches: the firſt or genuine churches were properly called *Pariſhes*; the ſecond *Deaconries*, which were chapels joined to hoſpitals, and ſerved by deacons; the third were ſimple *Oratories*, where private maſſes were ſaid, and were diſcharged by local and reſident chaplains. He adds, that to diſtinguiſh the principal, or pariſh-churches from the chapels, and oratories, the name *Cardinales* was given them. Accordingly pariſh-churches gave titles to *Cardinal* prieſts; and ſome chapels alſo, at length, gave the title of *Cardinal Deacons*.

Others obſerve, that the term *Cardinal* was given not only to prieſts, but alſo to biſhops and deacons who were attached to certain churches; to diſtinguiſh them from thoſe who only ſerved them *en paſſant*, and by commiſſion. Titular churches, or benefices, were a kind of pariſhes, *i. e.* churches aſſigned each to a *Cardinal* prieſt; with ſome ſtated diſtrict depending on it, and a font for adminiſtring of baptiſm, in caſes where the biſhop himſelf could not adminiſter it.—Theſe *Cardinals* were ſubordinate to the biſhops; and accordingly, in councils, particularly that held at Rome in 868. ſubſcribed after them.

It was not, however, only at Rome, that prieſts bore this name; for we find there were *Cardinal* prieſts in France: thus, the curate of the pariſh of St. John de Vignes is called, in old charters, the *Cardinal* prieſt of that pariſh.

The title of *Cardinal* is alſo given to ſome biſhops, *quatenus* biſhops; *e. g.* to thoſe of Mentz and Milan: the archbiſhop of Bourges is alſo, in antient writings, called *Cardinal*; and the church of Bourges a *cardinal church*. The abbot of Vendome calls himſelf *Cardinalis natus*.

The *Cardinals* are divided into three claſſes, or orders; containing ſix biſhops, fifty prieſts, and fourteen deacons; making in all, 70: which conſtitute what they call the *Sacred College*.

The *Cardinal* biſhops, who are, as it were, the pope's vicars, bear the titles of the biſhopricks aſſigned to them; the reſt take ſuch titles as are given them: the number of *Cardinal* biſhops has been fixed; but that of *Cardinal* prieſts and deacons, and conſequently the ſacred college itſelf, is always fluctuating. Till the year 1125. the college only conſiſted of fifty-two, or fifty-three: the council of Conſtance reduced them to twenty-four; but Sixtus IV. without any regard to that reſtriction, raiſed them again to ſixty-three, and Leo to ſixty-five. Thus, as the number of *Cardinal* prieſts was antiently fixed to twenty-eight, new titles were to be eſtabliſhed, in proportion as new *Cardinals* were created.—For the *Cardinal* deacons, they were originally no more than ſeven, for the fourteen quarters of Rome; but they were afterwards increaſed to nineteen, and after that were again diminiſhed.

According to Onuphrius, it was pope Pius IV. who firſt enacted, in 1562. that the pope ſhould be choſen only by the ſenate of *Cardinals*: whereas, till that time, the election was by all the clergy of Rome. Some ſay, the election of the pope reſted in the *Cardinals*, excluſive of the clergy, in the time of Alexander III. in 1160. Others go higher ſtill, and ſay, that Nicolas II. having been elected at Sienna, in 1058. by the *Cardinals* alone, occaſioned the right of election to be taken from the clergy, and people of Rome; only leaving them that of confirming him by their conſent; which was at length, however, taken from them. P. Papebroch conjectures, that it was Honorius IV. who firſt introduced biſhops into the ſacred college; by admitting the biſhops ſuffragans of the pope, to whom, of right, it belonged to name him; and of theſe conſtituting the firſt claſs of *Cardinals*.

The *Cardinals* began to wear the red hat at the council of Lyons, in 1243. The decree of pope Urban VII. whereby it is appointed, that the *Cardinals* be addreſſed under the title of *Eminence*, is of the year 1630. till then they were called *Illuſtriſſimi*.

Cardinal has alſo been applied to ſecular officers, Thus, the prime miniſters in the court of the emperor Theodoſius are called *Cardinales.* Caſſiodorus, L. VII. *Formul.* makes mention of the *Cardinal* prince of the city of Rome; and in the liſt of officers of the duke of Bretagne, in 1447. we meet with one Raoul de Thorel, *Cardinal* of Quillart, chancellor, and ſervant of the viſcount de Rohan: which ſhews it to have been an inferior quality.

CARDING, in the manufactures, a preparation of wool, cotton, hair, or flax, by paſſing it between the iron points, or teeth, of two inſtruments, called *Cards*, to comb, diſentangle, and range the hairs or fibres thereof; and to diſpoſe it for ſpinning, *&c.*

Before the wool be *carded*, it is oiled, or greaſed with oil; whereof, one fourth of the weight of the wool is required, for wool deſtined for the woof of ſtuffs; and one eighth for that of the warp. See Cloth.

CARDO, in anatomy, the ſecond vertebra of the neck; ſo called, becauſe the head turns upon it.

CARDS,—*Playing* Cards, are little pieces of fine thin paſtboard, whereon are printed divers points and figures; a certain number, or aſſemblage of which, ſerve for the performance of divers games: as baſſet, ombre, picquet, whiſk, *&c.*

The method of making playing *Cards* ſeems to have given the firſt hint to the invention of printing; as appears from the firſt ſpecimens of printing at Haerlem, and thoſe in the Bodleian library.

Making of Cards.—The cutting of the moulds, or blocks, for theſe *Cards*, is preciſely the ſame as that uſed for the firſt books; and a ſheet of wet or moiſt paper is laid on the form or block, which is firſt lightly bruſhed over with an ink, made of lamp-black mixed with ſtarch and water; and then rubbed off with a round liſt, in the hand. The Court-*Cards* they colour by help of ſeveral patterns, called *Staneſiles*; conſiſting of papers cut through with a penknife; within the apertures, or inciſions of which, the ſeveral colours, as red, *&c.* are ſeverally applied (for at the firſt printing, the *Card* has only a mere outline). Theſe patterns are painted with oil-colours, to keep them from wearing out by the bruſhes: being laid on the paſtboard, they ſlide a bruſh full of colour looſe over the pattern; which, leaving the colour within the apertures, forms the face or figure of the *Card.*

This, very probably, was the way of their firſt printing at Haerlem; as might have been diſcovered long ago, if it had been conſidered, that the great letters, in our old manuſcripts of nine hundred years ago, are apparently done by the illuminers, after this method of *Card-making.*

Cards, in commerce, and the manufactures; ſee Carding.

CARDUUS, in natural hiſtory and botany, a name common to divers ſpecies of plants, in Engliſh called *Thiſtles.*

The plants of this claſs moſt in uſe, are the *Carduus Benedictus*, and *Carduus Fullonum.* See Supplement, article Carduus.

Carduus *Benedictus* is a medicinal plant, of the thiſtle kind, chiefly uſed in infuſion, as a gentle emetic, in fevers, and certain nauſeas.

Antiently it was much in vogue, as a cardiac, ſudorific, and alexipharmic; and in thoſe qualities, it was preſcribed in many caſes: but it is now ſucceeded by other medicines leſs nauſeous, and more effectual; though ſtill retained in ſome of the official compoſitions, with thoſe intentions.

Some diſtil a water from it, which they uſe in cordial and ſudorific potions.

Carduus *Fullonum* is alſo called the *Fullers Weed*, or *Teazle.* See Teazle.

CAREENING *, a term, in the ſea-language, uſed for the laying a veſſel on one ſide, to caulk, ſtop up leaks, and refit or trim the other ſide.

* The word comes from the French *Carener*, which ſignifies the ſame, formed of the Latin *Carina*, the keel of a ſhip.

A ſhip is ſaid to be brought to a *Careen*, when the greateſt part of her lading, *&c.* being taken out, and a pontoon, or another veſſel lower than herſelf, laid by her ſide, ſhe is haled down to it as low as occaſion requires, *v. g.* a fourth or fifth ſtrake; and there kept, by the weight of ballaſt, ordnance, *&c.* as well as by ropes, leſt it ſhould ſtrain her maſts too much.

This is done with deſign to trim her ſides, or bottom, to caulk her ſeams, or to mend any fault ſhe has under the water.

Hence, when a ſhip lies on one ſide in ſailing, ſhe is ſaid to *ſail on the Careen.*

Ships of war are generally *careened* every three years.

The *Half Careen* is when they can only *careen* half the ſhip; not being able to reach ſo low as the bottom of the keel.

CAREER, or Carier, in the manage, a place incloſed with a barrier, wherein they run the ring.

The word is alſo uſed for the race, or courſe of the horſe itſelf, provided it do not exceed two hundred paces.

In the antient circus, the *Career* was the ſpace the bigæ, or quadrigæ, were to run at full ſpeed, to gain the prize. See Circus.

Career, in falconry, is a flight or tour of the bird, about one hundred and twenty yards. If ſhe mount more, it is called a *double Career*; if leſs, a *ſemi-Career.*

CARET, in grammar, a character of this form (^) denoting that there is ſomething inſerted, or interlined, which ſhould regularly have come in where the character is placed.

CARGO, the lading or freight of a ſhip. See Freight.

The *Cargo* of this veſſel is of ſuch or ſuch a commodity. This is the proper ſeaſon for a *Cargo* of codfiſh, of wines, *&c.*

Cargo is ſometimes alſo uſed for an invoice of the goods wherewith a ſhip is laden. See Invoice.

CARIATIDES, or Cariates, in architecture; ſee Caryatides.

CARICOUS *, or Carycous *Tumor*, a ſwelling reſembling the figure of a fig; ſuch as are frequently found in the piles.

* The word comes from *Carica*, a kind of fig; which is from *Caria*, a country where they are frequent, and from whence they are ſometimes brought.

CARIES, in medicine, a ſolution of continuity in a bone, attended with a waſte of its ſubſtance, occaſioned by ſome acrimonious matter corroding the ſame.

The *Caries* is a kind of rottenneſs, or putrefaction peculiar to the hard, or bony parts of the body; anſwering to a gangrene or mortification in the ſoft, or fleſhy part: or, according to others, to an abſceſs, or ulcer therein.

Caries's ariſe either from a conſtant afflux of vicious humours, or from their extreme acrimony; or from a bruiſe, compound fracture, luxation, ulcer, venereal diſorder, corroſive medicines, or from their being ſtripped or laid bare of their fleſh, and long expoſed to the air, *&c.*

The uſual medicine, in a *Caries* are tinctures of euphorbium, myrrh, and aloes; or powders of the ſame, with the addition of iris, birthwort of either kind, gentian, *&c.* and particularly the powder of diapente. After uſing the tinctures, the powders are applied on lint, in form of a pledget. An actual cautery, applied to the carious part through a cannula, *&c.* is frequently found ſucceſsful.

Anatomiſts, in diſſecting of bodies, frequently find *carious* bones; particularly thoſe of the jaws, legs, *&c.* where nothing of that kind was ſuſpected during the perſon's life-time; nor any diſorder felt therefrom: Mr. Cheſelden conjectures, that the cure of a *carious* bone might be directly attempted, without waiting, as our chirurgeons uſually do, for an exfoliation.

CARINA, a Latin term, properly ſignifying the keel of a ſhip; or that long piece of timber running along the bottom of the ſhip, from head to ſtern; upon which the whole ſtructure is built, or framed. See Keel.

Carina is alſo frequently uſed for the whole capacity or bulk of a ſhip; containing the hull, or all the ſpace below the deck.

Hence, the word is alſo ſometimes uſed, by a figure, for the whole ſhip.

Carina is alſo uſed in the antient architecture.—The Romans gave the name *Carina* to all buildings in form of a ſhip, as we ſtill give the name *Nave* to the middle or principal vault of our Gothic churches; becauſe it has that figure.

Carina, among anatomiſts, is uſed for the fibrous rudiments, or embryo of a chick, appearing in an incubated egg.

The *Carina* conſiſts of the intire vertebræ, as they appear after ten or twelve days incubation.

It is thus called, becauſe crooked, in form of the keel of a ſhip. Botaniſts alſo, for the like reaſon, uſe the word *Carina*, to expreſs the lower petalum of a papilionaceous flower.

Carinæ were alſo weepers: or women hired, among the antient Romans, to weep at funerals: they were thus called from *Caria*, the country whence moſt of them came. See Funeral.

CARIPI *, a kind of cavalry in the Turkiſh army. The *Caripi*, to the number of about one thouſand, are not ſlaves, nor bred up in ſeraglios or ſeminaries, like the reſt; but are generally Moors, or renegado Chriſtians, who, having followed adventures, and being poor, and having their fortune to ſeek, by their dexterity and courage have arrived at the rank of horſe-guards to the grand ſignior. They march with the Ulufagi on the left hand, behind him; their pay is twelve aſpers *per* day.

* The word *Caripi* ſignifies poor, and ſtranger; an appellation ſaid by Chalcondylas to have been given them, becauſe chiefly brought out of Egypt, Africa, *&c.*

CARISTIA, or Charistia. See the article Charistia.

CARLINA, or Carolina, a plant, of the thiſtle-kind, ſaid to have been diſcovered by an angel to Charlemain, to cure his army of the plague: whence its denomination.

Its root is of ſervice as a diuretic and ſudorific, in all peſtilential diſorders. Botaniſts more uſually call it *Chamæleon albus.* See Supplement, article Carlina.

CARLINGS, or Carlines, in a ſhip, two pieces of timber lying fore and aft, along from one beam to another, directly over the keel; ſerving as a foundation for the whole body of the ſhip.

On theſe the ledges reſt, whereon the planks of the deck, and other matters of carpentry, are made faſt. The *carlings* have their ends let into the beams called *culver-tail-wiſe*.—See *Tab. Ship. Fig.* 2. n. 29. 37. 60. and 92.

Carling *Knees* are timbers going athwart the ſhip, from the ſides to the hatch-way, ſerving to ſuſtain the deck on both ſides.

CARMELITES, an order of religious, making one of the four tribes of mendicants, or begging friers; and taking both the name and origin from *Carmel*, a mountain of Syria, formerly inhabited by the prophets Elias and Eliſha, and by the children of the prophets; from whom this order pretends to deſcend in an uninterrupted ſucceſſion.

The manner in which they make out their antiquity, has ſomething in it too ridiculous to be rehearſed. Some among them pretend they are deſcendants of J. C. Others go further, and make Pythagoras a *Carmelite*, and the antient Druids regular branches of their order.

Phocas, a Greek monk, ſpeaks the moſt reaſonably; he ſays, that in his time, *viz.* in 1185. Elias's cave was ſtill extant on the mountain; near which were the remains of a building, which intimated there had been antiently a monaſtery; that ſome years before, an old monk, a prieſt of Calabria, by revelation, as he pretended, from the prophet Elias, fixed there, and aſſembled ten brothers. In 1209. Albert, patriarch of Jeruſalem, gave the ſolitaries a rigid rule; which Papebroch has ſince printed. In 1217. or, according to others, 1226. pope Honorius III. approved and confirmed it; though it was afterwards mitigated by Innocent IV. S. Louis brought ſome of theſe *Carmelites* with him from the Holy Land into France. Many of the popes give them the title of *Brothers of the bleſſed Virgin*.

This order is eminent for the devotion of the ſcapulary, for its miſſions, and for the great number of ſaints it has ſtocked the Romiſh church withal. In the laſt century, there were four canonizations in this order, *viz.* of S. Thereſa, S. Andrew Corſin, S. Mag. de Pazzi, and S. J. de la Croix.

The order of the *Carmelites* is divided into two branches, *viz. Carmelites of the antient obſervance*, called the *mitigated*, or *moderate*; and thoſe of the *ſtrict obſervance*, called *Bare-footed Carmelites*.

The *antient obſervance* has only one general, under whom are forty provinces; and the congregation of Mantua, which has a vicar-general.

The *ſtrict obſervance* has two generals; one in Spain, having ſix provinces under his command; and another in Italy, with twelve in ſeveral parts of Europe.

Bare-footed Carmelites are a reform of the antient *Carmelites*, ſet on foot in 1540. by S. Thereſa; ſo called from their going bare-footed.

She began with the convents of nuns, whom ſhe reſtored to the primitive auſterity of the order, which had been mitigated by Innocent IV. in 1245. and at length carried the ſame reform among the friers. Pius V. approved the deſign, and Gregory III. confirmed the reform in 1580.

There are two congregations of bare-footed *Carmelites*, which have each their general, and their ſeveral conſtitutions: the one *the congregation of Spain*, divided into ſix provinces; the other called *the congregation of Italy*, comprehending all the reſt, not depending on Spain.

nights of Mount Carmel are a military order of knights hoſpitallers, inſtituted in 1607. by Henry IV. of France, under the title, habit, and rule of *our lady of mount Carmel*; and in conſequence of a bull of pope Paul V. in 1608. united to the order of St. Lazarus of Jeruſalem, with all its commendaries, priories, and other goods for its endowment.

The founder propoſed it to conſiſt of one hundred French gentlemen, who ſhould be obliged, in times of war, to march cloſe to the kings of France, as their guard.

Authors are much divided, whether to call this a new inſtitution, or a reſtauration of that of S. Lazarus; though it is generally carried for the former. See Lazarus.

ARMEN *, an antient term among the Latins, uſed, in a general ſenſe, to ſignify a verſe; but in a more peculiar ſenſe to ſignify a ſpell, charm, form of expiation, execration, &c. couched in a few words, placed in a myſtic order, on which its efficacy depended.

* Pezron derives *carmen* from the Celtic *carm*, the ſhout of joy, or the verſes which the antient bards ſung, to encourage the ſoldiers before the combat; adding that the Greek χαρμη, ſignifies combat and joy: which is true; but then it does not come from the Celtic *carm*, but from χαιρω, I rejoice.

Some fetch the origin of the poetical *carmina*, or verſes, hence; and ſay, they took that name from their reſemblance to theſe ſpells: others, on the contrary, ſay, that the ſpells had their origin from the poetical verſes, and took their name from their reſemblance thereto: it is at leaſt certain, that many of the antient charms, wherewith diſeaſes were ſuppoſed to be cured, were metrical verſes, to which, in thoſe ages, greater efficacy was aſcribed than to mere words or proſe.

Vigenere, again, derives *carmen* from *Carmenta*, becauſe that propheteſs couched her predictions in verſes, or ſhort periods: but others ſay, the propheteſs took the name *Carmenta* from *carmen*, on the ſame account.

CARMENTALIA, a feaſt among the old Romans, celebrated annually on the 11th of January, in honour of *Carmenta*, or *Carmentis*, a propheteſs of Arcadia, mother of Evander, with whom ſhe came into Italy ſixty years before the Trojan war.

The ſolemnity was alſo repeated on the 15th of January, which is marked in the old calendar by *Carmentalia relata*.

This feaſt was eſtabliſhed on occaſion of a great fecundity among the Roman dames, after a general reconciliation with their huſbands, with whom they had been at variance, in regard of the uſe of coaches being prohibited them by an edict of the ſenate.

It was the women who celebrated this feaſt: he who offered the ſacrifices, was called *Sacerdos Carmentalis*.

Authors are divided about the origin of the word *carmenta*: Vigenere ſays, the propheteſs was ſo called *quaſi carens mente*, out of her ſenſes, or out of herſelf; by reaſon of the enthuſiaſm ſhe frequently fell into. Others ſay, ſhe took her name from *carmen*, verſe; becauſe her prophecies were couched in verſes: but Vigenere, as before noted, maintains *carmen* to be derived from *Carmenta*.

CARMINATIVES *, in medicine, are remedies, whether ſimple or compound, uſed in colics, and other flatulent diſtempers, to diſpel the wind. See Wind.

* The word comes from the Latin *carminare*, to card, or teaze wool, and figuratively to attenuate and diſcuſs wind, or vapours, and promote their diſcharge by perſpiration: though Dr. Quincy makes its origin more myſterious: he ſays, it comes from the word *carmen*, taking it in the ſenſe of an invocation, or charm; and makes it to have been a general name for all medicines which operated like charms, *i. e.* in an extraordinary manner. Hence, as the moſt violent pains are frequently thoſe ariſing from pent-up wind, which immediately ceaſed upon diſperſion; the term *carminative* became in a peculiar ſenſe applied to medicines which gave relief in windy caſes, as if they cured by inchantment. But this derivation appears a little too much ſtrained.

The four *carminative* flowers, are thoſe of camomile, melilot, motherwort, and dill.

CARMINE, a bright red or crimſon colour, bordering ſomewhat on purple, uſed by painters in miniature; and ſometimes by painters in oil, though rarely, by reaſon of its exceſſive price. *Carmine* is the moſt valuable product of the cochineel meſtique: it is a fecula or ſediment, ſubſiding to the bottom of the water, wherein are ſteeped cochineel couan, and autour: ſome add rocou, but this gives the *carmine* too much of the orange caſt. To be good, it muſt be almoſt an impalpable powder.

Some make *carmine* with Braſil wood, fernambouc, and gold leaf, beat in a mortar, and ſteeped in white-wine vinegar; the ſcum ariſing from this mixture, upon boiling, when dried, makes a ſort of *carmine*: but this kind is much inferior to the former.

CARNATION, *Fleſh-colour*, in painting, is underſtood of all the parts of a picture in general which repreſent fleſh; or thoſe parts of human figures which are naked, and without drapery.

Titian and Corregio, in Italy, and Rubens and Van Dyke in Flanders, excelled in *carnations*.

It may be here obſerved, that the word *carnation* is not properly uſed for any particular part of the perſon painted, but for the whole nudity of the piece. See Colouring.

CARNEL.—The building of ſhips firſt with their timber and beams, and after bringing on their planks, is called *Carnel-work*, to diſtinguiſh it from clinch-work.

Veſſels alſo which go with mizzen-ſails inſtead of main-ſails, are by ſome called *carnels*.

CARNIVAL *, or Carnaval, a ſeaſon of mirth and rejoicing, obſerved with great ſolemnity by the Italians, and particularly at Venice.

* The word is formed of the Italian *carnavale*; which Mr. Du Cange derives from *carn-a-val*, by reaſon the fleſh then goes to pot, to make amends for the ſeaſon of abſtinence enſuing. Accordingly, in the corrupt Latin, he obſerves, it was called *carnelevamen*, and *carniſprivium*; as the Spaniards ſtill denominate it, *carnes tollendas*.

The *carnival* time commences from twelfth-day, and holds till lent.—Feaſts, balls, operas, concerts of muſic, intrigues, marriages, &c. are chiefly held in *carnival* time.

CARNIVOROUS, Carnivorus, an epithet applied to thoſe animals which naturally ſeek, and feed on fleſh.

It is a diſpute among naturaliſts, whether or no man be naturally *carnivorous*? Some contend that the fruits of the earth were intended as his ſole food; and that it was neceſſity in ſome places, and luxury in others, that firſt prompted them to feed upon their fellow-animals. Pythagoras and his followers looked on it as a great impiety; and ſtrictly abſtained from all fleſh, from the notion of a metempſychoſis: and their ſucceſſors, the Bramins, continue the ſame to this day.

The conſideration Gaſſendus chiefly inſiſts on, why man ſhould not be *carnivorous*, is the ſtructure and conformation of our teeth; the moſt of them being either inciſores or molitores; not ſuch as *carnivorous* animals are furniſhed with, proper to tear fleſh; except the four *canini*: as if nature had rather prepared us for cutting herbs, roots, *&c.* than for eating meat.

To which may be added, that when we do feed on fleſh, it is not without a preparatory coction, by boiling, roaſting, *&c.* And even then, as Dr. Drake obſerves, it is the hardeſt of digeſtion of all other foods, and is prohibited in fevers, and many other diſtempers: and laſtly, that children are rather averſe to all animal foods, till their palates become vitiated by cuſtom; and the breeding of worms in them is generally aſcribed to the too haſty eating of fleſh.

To theſe arguments, Dr. Wallis ſubjoins another; which is, all quadrupeds which feed on herbs or plants, have a long colon, with a cœcum at the upper end of it, or ſomewhat equivalent, which conveys the food, by a long and large progreſs, from the ſtomach downwards, in order to its ſlower paſſage and longer ſtay in the inteſtines; but that in *carnivorous* animals ſuch cœcum is wanting, and inſtead thereof there is a more ſhort and ſlender gut, and quicker paſſage through the inteſtines.—Now, in man, the cœcum is very viſible: a ſtrong preſumption, that nature, who is ſtill conſiſtent with herſelf, did not intend him for a *carnivorous* animal.—It is true, the cœcum is but ſmall in adults, and ſeems of little or no uſe; but in a fœtus, it is much larger in proportion: and it is probable, our cuſtomary change of diet, as we grow up, may occaſion this ſhrinking.

CARNOSA *Membrana*, } in anatomy; ſee PANNICULUS
CARNOSUS *Panniculus*, } *Carnoſus*, and MEMBRANE.

CARNOSITY is uſed by ſome authors for a little fleſhy excreſcence, tubercle, or wen, formed in the urethra, the neck of the bladder, or yard, which ſtops the paſſage of the urine.

Carnoſities are very difficult of cure: they are not eaſily known, but by introducing a probe into the paſſage, which there meets with reſiſtance. They uſually ariſe from ſome venereal malady ill managed.

CARO, in anatomy, *&c.* See the article FLESH.

CARO *muſculoſa quadrata*, in anatomy, a muſcle ſo called by Fallopius and Spigelius, but more popularly *palmaris brevis.* See PALMARIS.

CAROLINE, an epithet given to the four books compoſed by order of Charlemaign, to refute the ſecond council of Nice, with regard to the worſhip of images.

The *Caroline* books contain one hundred and twenty heads of accuſation againſt that council, and are couched in very harſh, reproachful terms. Some authors doubt of the antiquity and genuineneſs of theſe books: they are attributed by ſome to Angelran, biſhop of Metz; by others to Alcuin: but others, with more reaſon, aſcribe them to the biſhops of France; alleging, that pope Adrian having ſent Charlemaign the acts of the council in 790. he gave them to be examined by the French biſhops; and that the *Caroline* books were the anſwer they returned.

They were ſent to the pope about the time of the council of Frankfort; and were firſt printed in 1549. by M. Du Tillet, biſhop of Meaux, under the name of Elia Phylira.

CAROLUS, an antient Engliſh broad piece of gold, ſtruck under K. Charles I. whoſe image and name it bears. Its value of late has been eſtimated at twenty-three ſhillings ſterling; tho' at the time when it was coined, it is ſaid to have only been rated at twenty ſhillings.

CAROTIDS, Καρωτιδες, in anatomy, two arteries of the neck, on each ſide, ſerving to convey the blood from the aorta, to the brain.—See *Tab. Anat.* (*angeiol.*) *fig.* 1. n. 5. 5. 13. 13. (*oſteol.*) *fig.* 5. 1. 1. 2. 3. 3. *lit.* xx. yy. (*ſplanch.*) *fig.* 12. *lit.* p.

The *right carotid* ariſes from the ſubclavian, juſt where that ſprings out of the porta; but the left immediately out of the aorta. They both lie pretty deep, and being defended by the aſpera arteria, paſs free from any compreſſure, and without ſending out almoſt any branches, ſtrait to the cranium. Juſt before their arrival there, they ſend forth the external *carotid*; and paſſing the os petroſum, proceed on with ſome circumvolutions, till laying aſide their muſcular membrane, and giving branches to the dura mater, they paſs along the cranium, defended by the ſides of the ſella turcica, and dura mater: and ſending branches to the outer parts of the pia mater, and the nerves, they at laſt reach the cerebrum; where dividing into infinite ramifications, they are loſt in the cortical part; or perhaps proceed even into the medullary part thereof.

Hippocrates and the antients placed the ſeat of drowſineſs in theſe arteries, whence they had the name *carotids*, *i. e.* ſoporariæ, from καρος, drowſineſs.—For the ſame reaſon they were alſo called *lethargicæ* and *apoplecticæ*.

CARP-*Fiſhing.* See the article *Carp*-FISHING.

CARPÆA, from Καρπαια, a kind of dance, or military exerciſe, in uſe among the Athenians and Magneſians, performed by two perſons; the one acting a labourer, the other a robber.

The labourer, laying by his arms, goes to ſowing and plowing; ſtill looking warily about him, as if afraid of being ſurpriſed: the robber at length appears, and the labourer, quitting his plough, betakes himſelf to his arms, and fights in defence of his oxen. The whole was performed to the ſound of flutes, and in cadence.

Sometimes the robber was overcome, and ſometimes the labourer; the victor's reward being the oxen and plough.

The deſign of the exerciſe was, to teach and accuſtom the peaſants, to defend themſelves againſt the attack of ruffians.

CARPENTERS *Work*, in a building, includes the framing, flooring, roofing; the foundation, carcaſs, doors, windows, *&c.*

CARPENTER's *Joint-rule.* See the article RULE.

CARPENTRY *, the art of cutting, framing, and joining, large pieces of wood, for the uſes of building. See BUILDING.

* The word is derived from the Latin *carpentum*, a car, or cart.

Carpentry is one of the arts ſubſervient to architecture, and is divided into two branches, *Houſe-Carpentry*, and *Ship-Carpentry*; the firſt employed in raiſing, framing, roofing, flooring, *&c.* of houſes, *&c.*

The ſecond is the conſtruction of veſſels for ſea; as ſhips, barks, barges, boats, *&c.*

The rules and practices in *carpentry*, as to planing, ſawing, morteſſing, tenanting, ſcribing, paring, moulding, *&c.* are much the ſame as thoſe in joinery: ſo likewiſe are the tools, or inſtruments, and the ſtuff is the ſame in both; all the difference between the two arts conſiſting in this, that joinery is uſed in the ſmaller and more curious works. And *carpentry* in the larger, ſtronger, and coarſer.

Fr. Pyrard aſſures us, that the art of *carpentry* is in its greateſt perfection in the Maldives iſlands: their works, there, he obſerves, are ſo artfully managed, that they will hold tight and firm without either nails or pins. He adds, they are ſo curiouſly put together, that nobody can take them aſunder, but thoſe acquainted with the myſtery.

CARPET, a ſort of covering, worked either with the needle, or on a loom; to be ſpread on a table, trunk, an eſtrade, or even a paſſage, or floor.

Perſian and Turky *carpets* are thoſe moſt prized; eſpecially the former: *carpets* that had a hair or ſhag on one ſide only, were called by the antients *tapetes*; ſuch as had a ſhag on both ſides, were called *amphitapetes*.

Among jockeys, to *ſhave the carpet*, is to gallop very cloſe, or near the ground; a fault foreigners charge on Engliſh horſes. See GALLOP.

Figuratively, an affair, propoſal, *&c.* are ſaid to be brought on the *carpet*, when they are under conſideration, *&c.*

CARPOBALSAM, or CARPOBALSAMUM *, the fruit of the tree which yields the true oriental balm, or balſam; very much reſembling, both in figure, ſize, and colour, that of turpentine.

* The word comes from the Greek Καρπος, fruit; and Βαλσαμος, balſam.

The *carpobalſamum* is an oblong fruit with a ſhort footſtalk, a brown wrinkled rind, marked with four ribs; of a grateful taſte and ſmell.

It is ſeldom found in ſhops; ſome ſubſtituting Jamaica pepper, and others cubebs, in its place.

CARPOCRATIANS, a branch of the antient gnoſtics, ſo called from *Carpocrates*, who in the ſecond century revived, and improved upon, the errors of Simon Magus, Menander, Saturninus, and other gnoſtics.

He owned, with them, one ſole principle and father of all things, whoſe name, as well as nature, was unknown. The world, he taught, was created by angels, vaſtly inferior to the firſt principle. He oppoſed the divinity of Jeſus Chriſt; making him a mere man, begotten carnally on the body of Mary by Joſeph, though poſſeſſed of uncommon gifts, which ſet him above other creatures. He inculcated a community of women; and taught, that the ſoul could not be purified, till it had committed all kinds of abominations; making that a neceſſary condition of perfection. See GNOSTICS.

CARPUS, καρπος, in anatomy, the wriſt; or that part between the palm of the hand, and the arm.—See *Tab. Anat.* (*oſteol.*) *fig.* n. 9. and 7. n. 12.

The *carpus*, called alſo *brachiale*, conſiſts, according to ſome, of ſeven, according to others, of eight bones of different figures and bulks, placed in two ranks, four in each: the firſt rank is articulated with the two focils; the ſecond with the bones of the metacarpus. They are ſtrongly tied together by the ligaments which come from the radius, and by the annular ligament thro' which the tendons which move the fingers paſs; although this ligament be thought but one, yet it gives a particular caſe to every tendon which paſſes through it.

The Arabians call it *raſceta*; the Latins ſometimes *carpiſmus*.

CARRAT, CARAT, or CARACT. See the article CARACT.

CARR *, **Carrus**, a kind of rolling throne, uſed in triumphs, and at the ſplendid entries of princes.

* The word is from the antient Gauliſh, or Celtic, *Carr*; mentioned by Cæſar, in his commentaries, under the name *Carrus*.

Plutarch relates, that Camillus having entered Rome in triumph, mounted on a *Carr* drawn by four white horſes, it was looked on as too haughty an innovation. See Triumph.

Carr, is alſo uſed for a kind of light, open chariot. Pontanus obſerves, that Erichthonius was the firſt that harneſſed horſes, and joined them in a *Carr*, or chariot.

The *Carr*, on medals, drawn either by horſes, lions, or elephants, uſually ſignifies, either a triumph, or an apotheoſis: ſometimes a proceſſion of the images of the gods, at a ſolemn ſupplication; and ſometimes of thoſe of ſome illuſtrious family at a funeral.—The *Carr* covered, and drawn by mules, only ſignifies a *Conſecration*, and the honour done any one of having his image carried at the games of the Circus.

The *Carr* uſed by the ladies, was called *Pilentum*, *Carpentum*, and *Baſterna*.

CARRIAGE, a vehicle for the conveyance of perſons, goods, *&c.* from place to place.

Carriage *of a Cannon*, is the frame, or timber-work, whereon it is mounted; ſerving to point and direct it for ſhooting, and to convey it from place to place.

The **Carriage** *of a field-piece* conſiſts of two wheels, which carry long and ſtrong wooden beams, or cheeks, between which the cannon is as it were framed, moving on its trunnions as on a centre: when it is required to move them, they add a vant-train, compoſed of two ſmaller wheels.

The ordinary proportion is, for the *Carriage* to have $1\frac{1}{2}$ of the length of the gun; the wheels to be half the length of the piece in height: four times the diameter, or calliber, gives the depth of the planks at the fore-end; in the middle $3\frac{1}{2}$.

The **Carriage** *of a ſhip gun* conſiſts of two wheels, without ſpokes.

Carriage, in agriculture, denotes a ſort of furrow, cut for the conveyance of water, to overflow, or improve the ground.

CARRIERE. See the article Career.

CARROUSAL *, or **Carrowsal**, properly a courſe, or conteſt of chariots and horſes: or a magnificent entertainment, on occaſion of ſome public rejoicing; conſiſting in a cavalcade of ſeveral perſons, richly dreſſed, and equipped after the manner of the antient cavaliers, divided into ſquadrons, meeting in ſome public place, and practiſing juſts, tournaments, and other noble exerciſes. The word is ſince become of more general uſe, and given to any merry meetings.

* The word comes from the Italian *Caroſello*, a diminutive of *Carro*, chariot. Tertullian aſcribes the invention of *Carrouſals* to *Circe*; and will have them inſtituted in honour of the ſun, her father: whence ſome derive the word from *Carrus*, or *Currus Solis*.

The Moors introduced cyphers, liveries, and other ornaments of their arms, with trappings, *&c.* for their horſes. The Goths added creſts, plumes, *&c.*

CARR-TAKERS, are officers of the king's houſhold, who, when the court travels, have charge to provide waggons, carts, *&c.* to tranſport the king's furniture and baggage.

CARTE BLANCHE, a French term, ſeldom uſed but in this phraſe, To give, or ſend any one the *Carte blanche*; i. e. to ſend him a blank paper, ſigned, for him to fill up with what conditions he pleaſes.

CARTEL, a letter of defiance, or a challenge to ſingle combat; much in uſe when thoſe combats were practiſed, for the deciding of difficult, and not otherwiſe to be determined, controverſies at law. See Duel.

CARTESIAN *Philoſophy*, or **Cartesianism**, the ſyſtem of philoſophy advanced by Des Cartes, and maintained by his followers, the *Carteſians*.

The *Carteſian Philoſophy* is founded on two great principles, the one metaphyſical, the other phyſical. The metaphyſical principle is this, *I think, therefore I am.* This principle has been attacked and defended, with a world of ſpirit, and a world of zeal and partiality, on both ſides: for, though it be true, that we are as ſure by an inward perception or conſciouſneſs, that we exiſt, as that we think; yet it is true, too, that the concluſion of this reaſoning *I am*, is drawn from the antecedent *I think*: ſince *to think*, ſuppoſes *to be*, or *exiſt*; and the mind ſees clearly the neceſſary connexion between thinking and being.

But this principle Des Cartes ſhould not have propoſed as a new diſcovery: the world knew ere he taught it, that in order to think, it is required to be; and that he who actually thinks, actually exiſts.

The phyſical principle of *Carteſianiſm* is this, that *nothing exiſts but ſubſtances*: which appears a dangerous principle to the divines; and is accordingly controverted every day in the ſchools of the catholics; who undertake to prove, that there are abſolute accidents.

Subſtance he makes of two kinds; the one a ſubſtance that thinks; the other, a ſubſtance extended. Actual thought, therefore, and actual extenſion, are the eſſence of ſubſtance: ſo that the thinking ſubſtance cannot be without ſome actual thought; nor can any thing be retrenched from the extenſion of a thing, without taking away ſo much of its ſubſtance.

The firſt article of this is refuted by Mr. Locke, who ſhews, that thinking is not eſſential to the ſoul, or that its eſſence does not conſiſt in thought; but that there are various occaſions wherein it does not think at all. The latter is ſtiffly oppoſed by the Jeſuits, *&c.* as inconſiſtent with the doctrine of tranſubſtantiation; but is much better confuted by the modern writers, from the principle of the Newtonian philoſophy.

The eſſence of matter being thus fixed in extenſion, Des Cartes naturally concludes there is no vacuum, nor any poſſibility thereof in nature; but that the world is abſolutely full: for mere ſpace is precluded, by his principle: in regard, extenſion being implied in the idea of ſpace, matter is ſo too. If there were any ſuch thing as a vacuum, ſays he, it might be meaſured: the vacuum, therefore, is extended, and of conſequence is matter; every thing extended being matter.

Theſe principles of phyſics once ſuppoſed, Des Cartes explains mechanically, and according to the laws of motion, how the world was formed; and whence the preſent appearances of nature do ariſe. He ſuppoſes, that God created matter of an indefinite extenſion; that he divided this matter into little ſquare portions, or maſſes full of angles; that he impreſſed two motions on this matter; one, whereby each part revolved round its centre; another, whereby an aſſemblage, or ſyſtem of them, turned round a common centre: whence aroſe as many different vortices, or eddies, as there were different maſſes of matter, thus moving round common centres.

Theſe things thus ſet a-going, the conſequences, according to Des Cartes, in each vortex, will be as follows: the parts of matter could not move and revolve among each other, without having their angles gradually broken; and this continual friction of parts and angles muſt produce three elements: the firſt, an infinitely fine duſt, formed of the angles broken off; the ſecond, the ſpheres remaining, after all the angular irregularities are thus removed: theſe two make the matter of his firſt and ſecond element. And thoſe particles not yet rendered ſmooth and ſpherical, and which ſtill retain ſome of their angles, and hamous parts, make the third element.

Now the firſt, or ſubtileſt element, according to the laws of motion, muſt take up the centre of each ſyſtem, or vortex, by reaſon of the ſmalneſs of its parts: and this is the matter which conſtitutes the ſun, and the fixed ſtars above, and the fire below. The ſecond element, compoſed of ſpheres, makes the atmoſphere, and all the matter between the earth and the fixed ſtars; in ſuch manner, as that the largeſt ſpheres are always next the circumference of the vortex, and the ſmalleſt next its centre. The third element, or the hooked particles, is the matter that compoſes the earth, all terreſtrial bodies, comets, ſpots in the ſun, *&c.*

This ſyſtem, though very artfully concerted, yet carries with it more of the air of a romance, than of a juſt philoſophy. Accordingly, both divines and philoſophers cry out on it: the firſt, that it leads to atheiſm, by furniſhing the maintainers of an eternal matter, with means how, from the laws of motion, to account for the production of the world: though, it is certain, Des Cartes ſuppoſed a Deity; and ſo muſt all who admit his philoſophy; elſe whence will they derive that motion of matter, which of itſelf is deſtitute of any ſuch principle?

But the philoſophers have much better pleas againſt it; and the elements, ſubtile matter, hooked atoms, vortices, and other machines, are now nearly on the ſame footing with the occult qualities of the antient peripatetics.

Indeed, Des Cartes, by introducing geometry into phyſics, and accounting for natural phænomena from the laws of mechanics, did infinite ſervice to philoſophy; and contributed, both by his practice and example, to purge it from that venerable ruſt, which in a long ſucceſſion of ages it had contracted: accordingly, to him, in ſome meaſure, is owing the preſent ſyſtem of mechanical, and even the Newtonian philoſophy.

Carteſianiſm was once ready to be prohibited by an arret of the parliament of Paris; and had been ſo, in effect, but for a burleſque addreſs preſented to the firſt preſident.

CARTESIANS, a ſect of philoſophers, who hold or aſſert the *Carteſian* principles.

René des Cartes, the noble founder of this ſect, was of Bretagne, born in the year 1596. His monument informs us,
“ That having maſtered all the learning of the ſchools, which
“ proved ſhort of his expectation, he betook himſelf to the ar-
“ my, in Germany and Hungary; and there ſpent his vacant
“ winter hours, in comparing the myſteries and phænomena of
“ nature, with the laws of mathematics; daring to hope, that
“ theſe might unlock the other. Quitting, therefore, all other
“ purſuits, he retired to a little village near Egmond, in Hol-
“ land; where ſpending twenty-five years in continual reading
“ and meditation, he effected his deſign.”

He was a perſon of great genius and penetration, both as to the invention, and orderly ranging and diſpoſing of things. He began a new method of philoſophy, and finiſhed it, on his own foundation. His reputation in foreign nations appears on his monument; which conſiſts of four faces, inſcribed with ſo many encomiums. It was erected at Stockholm, where he died, in the year 1650. by Monſieur Chanut, the king of France's reſident in that court. But his bones were afterwards removed to Paris, at the charge of M. d'Alibret, who alſo erected a handſome monument over them, in the church of St. Genevieve.

CARTHUSIANS, an order of religious, inſtituted by S. Bruno, about the year 1086. remarkable for the auſterity of their rule, which obliges them to a perpetual ſolitude; a total abſtinence from fleſh, even at the peril of their lives; and abſolute ſilence, except at certain ſtated times.

Their houſes were uſually built in deſarts, their fare coarſe, and their diſcipline ſevere. It is obſerved, that the monaſtical piety is ſtill better preſerved in this, than in any of the other orders. M. l'Abbé de la Trappe, however, endeavours to ſhew, that the *Carthuſians* do not live up to the auſterity injoined by the antient ſtatutes of Guigues, their fifth general. M. Maſſon, at preſent general of the order, anſwers the abbat; and ſhews that what he calls the ſtatutes, or conſtitutions of Guigues, are, in reality, only cuſtoms compiled by father Guigues; and that they did not become laws till long aſter.

CARTILAGE, in anatomy, a ſmooth, ſolid, uniform, flexible, elaſtic part of an animal; ſofter than a bone, but harder than any other part.

Cartilages ſeem to be nearly of the ſame nature with bones, and only to differ as more or leſs hard. There are ſome very hard, and which even become bony with time; as thoſe, *v. g.* which form the ſternum. Others are ſofter, and ſerve to compoſe intire parts; as thoſe of the noſe, ears, *&c.* where an eaſy gentle motion is required; their natural elaſticity ſerving them in the place of antagoniſt muſcles.

There are others ſofter ſtill, partaking of the nature of ligaments, and thence called *Ligamentous Cartilages.*

There are *Cartilages* of various figures, acquiring various names from the things they reſemble: one is called *Annularis*, becauſe it reſembles a ring; another *Xiphoides*, from its reſembling the point of a dagger; a third *Scutiformis*, becauſe made like a buckler; and ſo of the reſt. See each under its proper head.

Cartilages have no cavities for marrow; nor any membranes, or nerves, for ſenſation. Their uſes are to prevent the bones from being damaged or wounded by a continual friction; to join them together by a ſynchondroſis; and to contribute, in great meaſure, to the well forming of ſeveral parts; as the noſe, ears, trachea, eyelids, *&c.*

CARTON *, or, as we pronounce it, CARTOON, in painting, a deſign, made on ſtrong paper, to be afterwards calqued through, and transferred on the freſh plaſter of a wall, to be painted in freſco. See DESIGN.

* The word, in the original French, ſignifies *thick paper*, or *paſtboard.*

CARTON is alſo uſed for a deſign coloured, for working in moſaic, tapeſtry, *&c.* The *Cartoons* preſerved at Hampton-court, are deſigns of Raphael Urbin; intended for tapeſtry. See Richardſon in his Eſſay on Painting, where he ſpends a great part of a chapter on the colouring of the *Cartoons.*

CARTOUCH *, a wooden caſe about three inches thick, girt round with marlin, and loaden with two, three, or four hundred muſquet-balls, beſides ſix or eight balls of iron of a pound weight; to be fired out of a hobit, or ſmall ſort of mortar, chiefly for the defence of a paſs, or the like.

* The *Cartouch* is alſo called by the French *Gargouge*, *Gargouche*, or *Gargouſſe.*

In cannon of caſemates, or other poſts, which defend the paſſage of the ditch, or the like, *Cartouches* have a terrible effect: ſince, burſting aſunder, they ſpread the ſhot they are loaden with far and wide. There are divers other forms and compoſitions of *Cartouches*, and ſome made for guns.

CARTOUCH is alſo uſed for what is more frequently called a *Cartridge.* See the article CARTRIDGE.

CARTOUCH * alſo denotes an ornament in architecture, ſculpture, *&c.* repreſenting a ſcroll of paper; being uſually in form of a table, or flat member, with wavings; whereon is ſome inſcription, or device, ornament of armory, cypher, or the like.

* The word is French, formed from the Italian *Cartoccio*, which ſignifies the ſame.

Cartouches are ſometimes drawn on paper, as in the titles of maps, *&c.* and are ſometimes made of ſtone, brick, plaſter, wood, *&c.* for buildings.

CARTRIDGE *, in the military art, the charge or load of a fire-arm, wrapped up in a thick paper, paſtboard, or parchment; to be the more readily charged, or conveyed into the piece.

* *Cartridges* are the ſame with what the French call *Cartouches*; from which word Skinner ſcruples not to derive *Cartridge.*

Thoſe of cannon and mortars are uſually in caſes of paſtboard, or tin, ſometimes of wood, half a foot long; taking up the place of the bullet in the piece, to whoſe calliber the diameter is proportioned. Thoſe of muſquets, piſtols, and ſmall arms, only contain the charge of powder, with a ball wrapped up in thick paper.

CARVING. See the article SCULPTURE.

CARUNCULA, CARUNCLE, a term in anatomy, properly ſignifying a little piece of fleſh, being a diminutive of the Latin *Caro*, fleſh.

The name *Caruncula*, is applied to ſeveral parts of the body: as,

CARUNCULÆ *Cuticulares Alæ*, a name which ſome anatomiſts give the nymphæ. See NYMPHÆ.

CARUNCULÆ *Lachrymales*, are two little eminences, one in each great canthus, or corner of the eye; ſeparating the two puncta lachrymalia.

Some reſtrain the appellation *Lachrymalis* to the *Carunculæ* in the greater, or inner canthus; calling that in the leſſer canthus *Innominata.*

Bartholin, and ſome other anatomiſts, miſtake the *Carunculæ* for lachrymal glands; which they ſuppoſe placed on the punctum lachrymale, to prevent the continual ſhedding of tears. But Dionis ſhews the miſtake, and maintains them to be no glands, but only duplicatures of the inner membrane of the eyelids. Some anatomiſts ſay, they help to keep the two puncta open, when the eyes are ſhut. See EYE.

CARUNCULÆ *Myrtiformes*, in anatomy, are four little *Caruncles*, or fleſhy knobs, about the ſize of myrtle-berries, whence their name; found adjoining to, or rather in the place of the hymen, in the parts of generation in women.

Some ſuppoſe them to be largeſt in maids, and to grow leſs and leſs by the uſe of venery; but others, with more probability, make them the conſequences of venery in the firſt copulation; deriving them from the broken membrane of the hymen, whoſe fragments ſhrunk up they appear to be. See HYMEN.

CARUNCULÆ *Papillares*, or *Mamillares*, are little protuberances on the inſide of the pelvis of the kidneys, made by the extremities of the tubes which bring the ſerum from the glands in the exterior parts, to the pelvis.

They were firſt diſcovered by Carpus; and thus called, from their reſembling a little teat or pap. They are in form of acorns heads, and are leſs red than the fleſh, as well as harder than the ſame. They are about the bigneſs of a pea, but larger at top than at bottom; ending, as it were, in a point, in the place where they are perforated to let the urine fall into the pelvis. See KIDNEYS.

CARUS, Καρος, in medicine, a ſpecies of lethargic diſeaſe, conſiſting in a profound ſleep, with a ſudden deprivation of ſenſation, and motion, and an acute fever.

The *Carus* differs from a coma in this, that the patient, in the latter, anſwers when interrogated; but not in the former; from a lethargy it is diſtinguiſhed by the fever which attends it, which the lethargy is free from; and by the return of ſenſation, which the lethargic perſon finds when agitated or pricked: from a proper apoplexy, by the freedom of reſpiration, which is always hurt in an apoplexy: from an epilepſy, in that there is no motion or froth at the mouth in the *Carus:* from a ſyncope, by the pulſe, which is high, and the face ruddy; whereas the pulſe is low, and the face cadaverous, in the ſyncope: from an hyſteric ſuffocation, in that the patient hears and remembers things in the latter, not in the former. See Supplement, article CARUS.

CARYATIDES, or CARIATES, in architecture, a kind of order of columns, or pilaſters, under the figures of women, dreſſed in long robes, ſerving to ſupport entablatures.—See *Tab. Archit. fig.* 38.

The origin of the *Caryatides* is related by Vitruvius: the Greeks, he obſerves, having taken the city *Carya*, led away their women captives; and to perpetuate their ſervitude, repreſented them in their buildings, as charged with burdens, ſuch as thoſe ſupported by columns.

The *Caryatides*, M. le Clerc obſerves, are not now repreſented as among the antients, *viz.* as ſymbols of ſlavery, with hands tied before and behind; thoſe characters being ſuppoſed injurious to the fair ſex. Among us, they are repreſented as images of juſtice, prudence, temperance, *&c.* Their legs are always to be cloſe to each other, and even acroſs; their arms are laid flat to the body, or to the head, or at leaſt as little ſpread as poſſible; that as they do the office of columns, they muſt have, as near as poſſible, the figure thereof. Sometimes their arms are cut off, for the greater delicacy; as in the hall of the Swiſs guards in the Louvre: but M. le Clerc does not approve ſuch mutilations.

When inſulated, they ſhould never have any great weight to ſupport; and their entablature and pedeſtal are ordinarily to be Ionic.—When they join to a wall, *&c.* it is adviſeable to put a conſole over them, which may appear to ſuſtain the weight of their entablature; otherwiſe, as they repreſent women, they do not ſeem ſo proper to ſuſtain great loads.—When they are made in form of angels, the ſame author would have them ſupport the entablature, which in that caſe is to be Corinthian, with their hands.

The antients made the *Caryatides* frequently to ſupport baſkets, or corbels of flowers; and theſe they called *Caneforæ*, or *Ciſtiferæ*. See Canephoræ.

CASCADE*, a ſteep fall of water, from a higher into a lower place.

* The word is French, formed of the Italian *caſcata*, which ſignifies the ſame; of *caſcare*, to fall; and that from the Latin *cadere*.

Caſcades are either natural, as that of Tivoli, *&c.* or artificial, as thoſe of Verſailles, *&c.* and either falling with a gentle deſcent, as thoſe of the Sceaux; in form of a buffet, as at Trianon; or down ſteps, in form of a perron, as at St. Clou; or from baſon to baſon, *&c.*

CASCANS, or Cascanes, in fortification, are holes and cavities in form of wells, made in the terreplein, near a rampart; from whence a gallery, dug in like manner under ground, is conveyed, to give air to the enemies mine.

CASE (in grammar) is underſtood of the different inflexions or terminations of nouns; ſerving to expreſs the different ſtates or relations they bear to each other, and to the things they repreſent.

There is a great diverſity among grammarians, with regard to the nature and number of *Caſes*: they generally find ſix *Caſes* even in moſt of the modern languages, which they call the *Nominative*, *Genitive*, *Dative*, *Accuſative*, *Vocative*, and *Ablative*: but this ſeems only in compliance with their own ideas, which are formed on the Greek or Latin, and which they transfer to other languages.

The truth is, if, by *Caſe*, be only meant an occaſional change in the termination of a noun, or name, which ſeems to be the juſt idea of *Caſe* (regard being had either to the reaſon of the thing, or the ſound of the word *Caſus*, from *cadere*, to fall); there will in this ſenſe be juſt as many *Caſes* as there are different terminations of nouns in the ſame number, *i. e.* in ſome languages more, in others leſs, and in others none at all.

Indeed, the generality of authors either have not any preciſe notion of *Caſes* at all; or they wander ſtrangely from that notion: for they always reckon five *Caſes* of nouns in the Greek, and ſix in the Latin: though ſeveral of theſe *Caſes* be frequently alike, as the Genitive and Dative ſingular, of the firſt declenſion of the Latin; the Dative and Ablative plural of the ſecond, *&c.* the Genitive and Dative dual of the Greek, *&c.*—So that the termination is not the ſole criterion of the *Caſe*.

It ſeems, however, much more agreeable to the principles of grammar, which only conſiders words materially, to make as many different *Caſes*, as there are changes in the terminations of a name; which would free the Engliſh, and other modern tongues from the embarraſs of *Caſes*; moſt of them expreſſing the various relations, not by changes in termination, as the antients, but by the appoſition of articles and prepoſitions. On this footing it is certainly wrong to ſay, *v. g.* that *of a father*, is the genitive *Caſe* of father; and *to a father*, the dative; for *of* and *to* are no part of the name *father*; they are no cloſes or terminations, but articles or modificatives, which ſhew the different relation of the word *father*. And the ſame may be ſaid of the *Caſes* of nouns, in the French, Italian, Spaniſh, Portugueſe tongues, *&c.*

But the caſe is otherwiſe in the Greek name πατρὸς, or the Latin *patris*; which are real *Caſes* of the words πατηρ, and *pater*, and different from thoſe words: and ſomewhat like this may be ſaid of the Hebrew, Arabic, Armenian, Poliſh, and German languages; which in the ſame number admit of changes, in the terminations of words: and yet in theſe languages, *Caſes* are pretty different from what they are in the Greek and Latin. The Hebrew names, for inſtance, are not properly declined by *Caſes*: the relation expreſſed by the genitive *Caſe*, it is true, occaſions an alteration in them; but then this alteration, inſtead of being in the noun governed, as in the Latin, in the Hebrew is in that which governs; as ובר שקר *verbum falſitatis*; where the change is not in שקר *falſitas*, but in ובר for דבר *verbum*.

F. Galanus makes ten *Caſes* in the Arminian; obſerving, that beſides the ſix ordinary *Caſes*, there is one which ſerves to expreſs the inſtrument wherewith any thing is done; another for narration to expreſs the ſubject; a third to ſhew that one thing is in another; and a fourth to ſhew a relation between one thing and another.—Authors make but three *Caſes* in the Arabic, as having only three terminations, *on*, *in*, and *an*.

It muſt be obſerved, however, that though many of the languages have not properly any *Caſes* of nouns; yet moſt, if not all of them, have a kind of *Caſes* in their pronouns, without which it would be hard to conceive the connexion, or ſyntax, of a diſcourſe; and which, therefore, make a neceſſary part of grammar. See the relations expreſſed by each *Caſe* under its proper head, Nominative, Genitive, Dative, *&c.*

Case, in printing, a large flat oblong frame, placed aſlope, divided into ſeveral compartments, or little ſquare cells; in each of which are lodged a number of types, or letters of the ſame kind; whence the compoſitor takes them out, each as he needs it, to compoſe, and make a page, or form. They ſay, *a Caſe*, or rather *pair of Caſes*, of Greek, of Hebrew, of Pica, *&c.*

CASE-HARDENING, a method of preparing iron, ſo as to render its outer ſurface hard, and capable of reſiſting the file, or any edged tool. It is uſed by file-cutters for coarſe files; by gunſmiths, to harden the barrels of guns; and by others, on other occaſions.

The proceſs of *caſe-hardening* is thus: they take hoofs, or horns of oxen or cows, dry them in an oven, and powder them; then put an equal quantity of bay-ſalt to this, and mingle both together with ſtale urine, or white-wine vinegar: ſome of this mixture they lay upon loam, and wrap it about the iron, putting alſo more loam over all. Then they lay it on the hearth of a forge to dry and harden; and when it is dry and hard, they put it into the fire, and blow till they give the lump a blood-red heat, but no greater: then it is taken out and quenched, and the *caſe-hardened* iron is taken out of the *caſe*.

CASEMATE, or Casement, in architecture, denotes a hollow moulding, which ſome architects make $\frac{1}{6}$ of a circle; and others $\frac{1}{4}$. See Moulding.

Casemate, or Cazemate, in fortification. See the article Cazemate.

CASERNS, or Cazerns, in fortification, little rooms, or huts, erected between the ramparts, and the houſes of fortified towns, or even on the ramparts themſelves: to ſerve as lodgings for the ſoldiers of the gariſon, to eaſe the gariſon.

There are uſually two beds, in each *caſern*, for ſix ſoldiers to lie, who mount the guard alternately; the third part being always on duty.

CASES *Reſerved*, in the Romiſh polity, are conſiderable ſins, the abſolution of which is *reſerved* by the ſuperiors to themſelves, or their vicars.

There are ſome *caſes reſerved* by the pope, and others by the biſhops: in convents ſome are *reſerved* by the chapter, *&c.* None but theſe, or their vicars, can abſolve in ſuch *caſes*; except at the article of death, when all *reſerved caſes* are abſolvable, by the ordinary.

CASE-SHOT, are muſquet-bullets, ſtones, old pieces of iron, or the like, put up into *caſes*, and ſo ſhot out of great guns.

Caſe-ſhot is chiefly uſed at ſea, to clear the enemies decks when they are full of men.

CASH, in commerce, the ſtock or ready money, which a merchant, or other perſon, has in his preſent diſpoſal, to negotiate; ſo called from the French term *caiſſe*, i. e. cheſt, or coffer, for the keeping of money.

M. Savary ſhews, that the management of the *caſh* of a company, is the moſt conſiderable article; and that whereon its good or ill ſucceſs chiefly depends.

CASHIER, the *caſh-keeper*; he who is charged with the receiving and paying the debts of a ſociety.

In the generality of foundations, the *caſhier* is called *treaſurer*.

CASING *of Timber-work*, is the plaſtering a wooden houſe all over on the outſide with morter; and ſtriking it, yet wet, by a ruler, with the corner of a trowel, or the like inſtrument, to make it reſemble the joints of free-ſtone; by which means, the whole houſe appears as if built thereof.

CASK*, a peice of defenſive armour, wherewith to cover the head, and neck; otherwiſe called *helmet*, and *head-piece*.

* The word is French, *caſque*, formed from *caſſicum*, or *caſſicus*, a diminutive of *caſſis*, a helmet.

Le Gendre obſerves, that antiently, in France, the gens d'armes all wore *caſks*. The king wore a *caſk* gilt; the dukes and counts, ſilvered; gentlemen of extraction wore them of poliſhed ſteel; and the reſt of plain iron.

The *caſk* is frequently ſeen on antient medals; where we may obſerve great varieties in the form and faſhion thereof; as the Greek faſhion; the Roman faſhion, *&c.* F. Joubert makes it the moſt antient of all coverings of the head, as well as the moſt univerſal: kings, emperors, and even gods themſelves, are figured therewith. That which covers the head of Rome, has uſually two wings, like thoſe of Mercury: and that of ſome kings is furniſhed with horns, like thoſe of Jupiter Ammon; and ſometimes barely bulls or rams, horns to expreſs uncommon force.

Cask, in heraldry, the ſame with helmet.

Cask is alſo uſed as a common name for veſſels of divers kinds; in contradiſtinction from the liquor, or other matter contained therein. See Vessel.

Thus a hogſhead of ſpirits, *&c.* is ſaid to weigh 4 *C.* $\frac{1}{2}$ and 22 *L.* *caſk* and liquor; a punchion, 6 *C.* $\frac{1}{4}$ and 2 *L.* *caſk* and liquor. See Tun, *&c.*

A Cask *of Sugar* is a barrel of that commodity, containing eight to eleven hundred weight.—A *caſk* of almonds is about three hundred weight.

CASSATION*, in the civil law, the act of abrogating, or annulling any act or procedure. See Annulling, *&c.*

* The word comes from the Latin *quaſſare*, to quaſh, or ſhake down.

The occaſions of *Caſſation* are, 1ſt, when a decree is directly contrary to another decree; and both againſt the ſame party. 2dly, When decrees are directly contrary to the expreſs deciſion of ſtatutes, or cuſtoms. 3dly, When the formalities preſcribed by the laws have not been obſerved.

CASSIA, Κασσια, in medicine and pharmacy, a purgative fruit, brought from the eaſt, being the produce of a tree of the ſame name, called in Engliſh the *pudding-pipe-tree*.

This is ſometimes more particularly denominated *Caſſia fiſtula*, κασσια συριγξ, by way of diſtinction from another drug called *Caſſia Lignea*. See Cassia *Lignea*.

There are four kinds of *Caſſia*, alike in properties, and nearly in figure; being all in long black pods: but very different, if conſidered with regard to the trees that produce them. Theſe are, the *Caſſia of the Levant*, that *of Egypt*, that *of Braſil*, and that *of the Antilles iſlands*.

Cassia *of the Levant*, is the fruit of a very high tree, whoſe bark is aſh-coloured, its wood very firm, and its grain cloſe; towards the centre, its wood is of an ebony black, towards the circumference yellowiſh: its flowers are yellowiſh, and produce a fruit in form of a long pod, rounded and maſſive; of a rediſh colour, bordering on black. When ripe, it is full of a black, ſweetiſh pulp, divided by little woody cells: in this pulp are found little hard grains, in manner of ſtones, ſhaped like hearts, which are the ſeeds of the tree. This *Caſſia* muſt be choſen new, in large pods, heavy, and of a tan colour; the bark, when broken, fine and white within, full of a black ſoft pulp of a ſweetiſh taſte.

Cassia *of Egypt*, is like that of the Levant, except that the tree is higher, and the leaves narrower; the fruit ſmaller, and the bark ſofter.

Cassia *of Braſil*, is the largeſt of all: ſome of the pods are found four or five inches in circumference. This kind is not very common in the ſhops.

Cassia *of the iſlands*, is that now chiefly uſed; though heretofore the popular *Caſſia* was the Levantine. It is ſent from the Antilles; where it is produced in ſuch abundance, that the veſſels, in their home voyages, uſe it as ballaſt; whence it is, that we find it ſo often foul and dirty: the tree that yields it reſembles a peach-tree. Its flowers, which are yellow, grow in cluſters; and, as they decay, leave behind them a fruit or pod an inch thick, and a foot (ſometimes two) long. The fruit, while in its growth, is green; when ripe, it becomes of a dark violet colour. 'Tis choſen in the ſame manner as that of the Levant.

When the pod is intire, and the pulp not yet taken out, it is moſt properly called *Caſſia fiſtula*, or *Caſſia in the cane*. For uſe, the pulp is taken out, and driven through a hair-ſieve. The apothecaries have little of the better kind, but what is old, and boiled up with ſugar to make it keep.

Caſſia, when green, as alſo the flowers of the *Caſſia* tree, are candy'd in the Levant, and the iſlands; and have almoſt the ſame effects with the common *Caſſia*, which is the baſis of moſt of the purgative electuaries.

The *Tincture of* **Cassia**, is a ſlight infuſion of the pulp with the ſeed.

The *Extract of* **Cassia**, is nothing but the pulp ſeparated from the ſhell and the ſeeds; with the addition of a certain quantity of ſugar, to preſerve it from turning ſour.

Cassia *Lignea*, or **Xylocassia**, is the bark of a tree much like that which bears the cinnamon; growing promiſcuouſly with it in the iſland of Ceylon.

The two barks are gathered and dried in the ſame manner; in ſmell and taſte are nearly alike; they are equally ſweet, poignant, and agreeable; and their colour, form, and thickneſs, ſcarce differ at all. But the *Caſſia* is the fatter, and more mucilaginous; and in chewing diſſolves in the mouth, without leaving any thing woody behind; whereas the woody part of cinnamon ſtill remains, though ever ſo well chewed.—Some authors will have the tree which bears cinnamon bear the *Caſſia* too; and make the only difference between them to conſiſt in this, that the firſt comes from Ceylon, and the latter from the coaſt of Coromandel. See Cinnamon.

CASSIOPEIA, in aſtronomy, one of the conſtellations of the northern hemiſphere, ſituate next to Cepheus.

In 1572. there appeared a new ſtar in this conſtellation, which at firſt ſurpaſſed in magnitude and brightneſs Jupiter himſelf; but it diminiſhed by degrees, and at laſt diſappeared, at the end of eighteen months. It alarmed all the aſtronomers of that age, many of whom wrote diſſertations on it; among the reſt Tycho Brahe, Kepler, Maurolycus, Lycetus, Gramineus, &c. Beza, the landgrave of Heſſe, Roſa, &c. wrote to prove it a comet, and the ſame which appeared to the Magi, at the birth of Jeſus Chriſt, and that it came to declare his ſecond coming: they were anſwered on this ſubject by Tycho.

The ſtars in the conſtellation *Caſſiopeia*, in Ptolemy's catalogue, are thirteen; in Tycho's twenty-eight; but in the Britannic catalogue, Mr. Flamſteed makes them fifty-ſix. The order, names, longitudes, latitudes, magnitudes, &c. whereof are as follow:

Names and ſituations of the ſtars.	Signs.	Longitud.			Latitude.			Magn.
		°	′	″	°	′	″	
	♈	21	6	44	56	46	0	6
		21	28	46	56	26	16	6
		27	43	32	57	10	23	5
		23	53	29	54	3	47	5 6
North, in the top of the chair back		26	40	31	52	39	52	7
5								
	♉	1	9	41	55	7	46	6
South. in the top of the chair back	♈	26	46	25	51	9	16	6
In the preced. arm of the chair		25	52	31	49	22	51	6
	♉	3	21	57	53	57	9	6
		6	4	6	55	10	10	6
10								
In the middle of the chair back, the lucida cathedræ)		0	48	7	51	13	50	3 2
		5	59	21	52	1	25	7
		12	9	23	55	1	42	7
A ſmall one againſt the hair		0	22	24	45	38	49	6
In the bottom of the chair back, over the ſeat)		8	20	18	52	14	40	4
15								
		12	47	48	54	59	49	6 7
In the head		0	47	7	44	41	44	4
In the breaſt, Schedir.		3	30	21	46	35	54	3 2
Preced. of the north. in the rod	♈	29	9	55	41	25	41	6
South. in the rod		27	6	12	38	18	52	6
20								
	♉	25	15	51	59	53	44	6
Middle in the rod	♈	28	10	27	39	17	45	6
	♉	25	14	26	59	41	9	6
In the girdle		5	52	56	47	4	17	4
In the rod, the laſt of the north.		0	41	51	41	16	2	5
25								
Preced. againſt the navel		7	52	45	47	29	25	6
Over the ſeat of the chair		9	38	44	48	47	35	3
Laſt of contig. ones againſt the navel		8	19	23	47	32	19	5 6
In the hind arm		6	36	54	43	23	18	5
Preced. in ſouth. part of the frame		19	31	31	54	13	8	5 6
30								
		14	57	40	50	36	12	6
		15	46	12	51	13	51	6
That under the hind arm		7	28	30	43	5	16	4
That preced. the knee to the ſouth.		11	13	15	45	4	6	6
Prec. of the midd. in ſ. part of ſeat		20	39	40	52	49	54	6
35								
That againſt the knee		13	37	15	46	23	46	3
Preced. in north. part of the frame		23	28	45	54	11	22	6
That following the knee		14	8	14	44	58	53	6
North. in the frame		27	23	40	55	58	20	6 5
Midd. in north. part of the frame		25	12	29	53	52	38	5 6
40								
Laſt of the midd. in ſ. part of frame		22	34	51	51	50	16	6 5
		16	31	53	45	30	18	6 5
That in the leg		20	26	48	47	31	50	3
Laſt of 4 in ſouth part of the frame		24	51	16	51	38	41	6 5
	♊	4	49	8	58	6	57	6 5
45								
South. of the following, in north. part of the frame)	♉	27	37	23	53	11	18	4 5
	♊	3	28	14	57	11	9	5
North of the ſame	♉	29	15	46	54	21	3	4 5
	♊	1	51	14	55	56	47	6
	♉	22	13	42	47	44	14	6
50								
		22	36	18	48	5	2	7
		29	0	45	53	24	16	7
		25	21	29	48	53	9	6
In the extremity of the foot		27	53	53	48	57	31	4
	♊	3	23	39	53	12	19	6
55								
		8	4	50	53	28	17	5 6

CASSOCK*, a kind of ſurtout, or long upper garment, worn over the reſt of the habit; particularly by the clergy, and antiently likewiſe by the laity.

* The word comes from the French *Caſaque*, a horſeman's coat: ſome derive them again, by corruption, from a garment of the *Coſſacks*: Covarruvias from the Hebrew *Caſab*, to cover; whence the Latin *Caſa*, cottage; and *Caſſula*, a diminutive of *Caſa*, another name of the *Caſſock*. Laſtly, others derive the name *Caſſock*, as well as the thing, from the antient *Caracalla*, a ſort of upper garment which hung to the heels.

CASTALDUS, }
CASTALDY, } See the article Gastaldus.

CASTANETS, Castagnettes, or Castanettas, a kind of muſical inſtrument, wherewith the Moors, Spaniards, and Bohemians, accompany their dances, ſarabands, and guittars. It conſiſts of two little round pieces of wood dried, and hollowed in manner of a ſpoon, the concavities whereof are placed on one another, faſtened to the thumb, and beat from time to time with the middle finger, to direct their motion and cadences. The *Caſtagnets* may be beat eight or nine times in the ſpace of one meaſure, or ſecond of a minute.

CASTELLAN, the name of a dignity or office in Poland. The *Caſtellans* are ſenators of the kingdom, but ſenators of the lower claſs; and in diets ſit on low ſeats behind the palatines, or great ſenators. They are a kind of lieutenants of provinces, and command a part of a palatinate under the palatine. See Palatine.

CASTING, in foundery, is the running of a melted metal into a mold prepared for that purpoſe.

Casting *of Candles*, is the filling the molds with tallow.

Casting *of Gold, Silver*, or *Copper* in plates. See Coining.

Casting *of Lead* on cloth, is the uſing a frame or mold covered with woollen-cloth and linen over it, to caſt the lead into very fine ſheets.

Casting *of Metals, of Letters, Bells, Figures*, &c. See Foundery.

Casting *in Sand* or *Earth*, is the running of a metal between two frames or molds filled with ſand or earth, wherein the figure the metal is to take, has been impreſſed, *in creux*, by means of the pattern.

The goldſmiths alſo uſe the bone of the cuttle-fiſh, to mould and caſt their leſſer works of gold and ſilver; that bone, when dried, being reducible to a kind of a fine pumice, very ſuſceptible of all impreſſions. See Cuttle-Bone.

Casting *in Stuc* or *Plaſter*, is the filling with fine liquid plaſter, a mold that had been taken in pieces from off a ſtatue, or other piece of ſculpture, and run together again. There are two things to be obſerved with regard to the mold: the firſt, that it be well ſoaked with oil before the plaſter be run, to prevent its ſticking: the ſecond, that each piece whereof it conſiſts, have a packthread, to draw it off the more eaſily when the work is dry.

Casting, in falconry, is any thing given an hawk to purge and cleanſe his gorge.

Of theſe there are two kinds, *viz.* plumage, *i. e.* feathers; and cotton: the latter whereof is generally in pellets about the bigneſs of hazel-nuts, made of ſoft fine cotton, and conveyed into her gorge after ſupper. In the morning ſhe will have *caſt* them out; at which time they are to be obſerved, and from the colour and condition they are found in, the ſtate of her body is conjectured. If they be *caſt* out round, white, and not ſtinking, nor very moiſt, it is an indication all is well; if otherwiſe, particularly if black, green, ſlimy, or the like, ſhe is diſtempered. The *caſting* of plumage is obſerved after the ſame manner as that of cotton.

asting, in joinery, &c.—Wood is ſaid to *caſt* or warp, when, either by its drought or moiſture, or the drought or moiſture of the air, or other accident, it ſhoots or ſhrinks; in prejudice to its flatneſs or ſtraitneſs.

ASTLE, in a modern ſenſe, is a place fortified by nature, or art, either in a city or country, to keep the people in their duty, or to reſiſt an enemy.

A *Caſtle* is a ſort of little *Cittadel*. See Cittadel.

astle, in the ſea-language, denotes an elevation on the deck of a veſſel; or a part of the deck, fore and aft, raiſed above the reſt.

re-Castle, *Caſtello di prora*, &c. See Fore-*Caſtle.*

ind-Castle, *Caſtello di poppa*. See Poop.

astle-Ward, or Castle-Guard, Castelgardum, or *Wardum Caſtri*, an impoſition laid on ſuch as dwell within a certain compaſs about any *Caſtle*, towards the maintenance of thoſe who watch and ward the *Caſtle*.

The word is alſo ſometimes uſed for the circuit itſelf, inhabited by ſuch as are ſubject to this ſervice.

ASTOR, in aſtronomy, a moiety of the conſtellation Gemini; called alſo *Apollo*. See Gemini.

stor *and Pollux*, in meteorology, a fiery meteor, which at ea appears ſometimes ſticking to a part of the ſhip, in form of one, two, or even three or four fire-balls: when one is ſeen lone, it is more properly called *Helena*; two are denominated *aſtor and Pollux*, and ſometimes *Tyndaridæ*.

aſtor and Pollux are commonly judged to portend a ceſſation f the ſtorm, and a future calm; being rarely ſeen till the tempeſt is nigh ſpent. *Helena* alone portends ill, and witneſſes the evereſt part of the ſtorm yet behind.

STOREUM, or Astorium, in pharmacy, a medicinal atter incloſed in bags or purſes near the anus of the caſtor, or eaver; falſly taken for the teſticles of that animal.

he bags in which the *Caſtoreum* is contained, are about the igneſs of a gooſe-egg, and found indifferently in males and feales; the liquor incloſed, ſerves to give the caſtor an appetite, eing preſſed out of its receptacles, on occaſion, by the foot: hen taken off, the matter dries and condenſes, ſo that it may e reduced to a powder; by hanging in the chimney it ſoon beomes of the conſiſtence of wax. It is oily, of a ſharp, tter taſte, and a ſtrong diſagreeable ſmell. It is uſed to rtify the head and nervous parts: it raiſes the languiſhing irits, reſiſts poiſons, and provokes the menſes in women. is uſed in lethargies, apoplexies, vertigo's, tremblings, ffocations of women, and on other occaſions. Bartholine, d other authors, aſcribe to it a wonderful property of preitating things to the bottom of the water.

r the choice of *Caſtoreum*, the beſt is that of Ruſſia; that Canada is much inferior; the largeſt bags, and thoſe t ſmell ſtrongeſt, are the moſt eſteemed, eſpecially when vy, and well fleſhed. Care is to be taken, that it have not n adulterated with honey, or other drugs, to increaſe its ight, which is known by ſqueezing it; the ſophiſticated be ſoftiſh, and yielding a liquid, ſtinking honey; and the naal, hard and heavy, of a briſk ſmell, and full of filaments. *ſtoreum* is uſed in the compoſition of Venice treacle and Mithridate, beſides various other hyſteric and cephalic medicines. They draw an oil from it called *Oil of Caſtor*; and it is alſo uſed abroad while in its liquid ſtate, to make ſeveral kinds of unguents.

The Ruſſian way of curing *Caſtoreum* is deſcribed in the *Philoſophical Tranſactions* thus: "To prepare the matter of the bea-
"ver's ſtones (the bags it ſhould be), boil a proper quantity of
"water, with half a ſhovel full of wood-aſhes, tie the bags in
"couples, and put them in the boiling water for half a quarter
"of an hour. Lay birch-bark on the fire, and ſmoke the bags
"well over it for an hour, till they be well dried; hang them
"up for a week or more, till perfectly dry and hard; they
"may then be packed up for uſe or exportation."

Castor *Skin*, the fur or ſkin of an amphibious animal called the *Caſtor*, or beaver, ſometimes found in France, Germany, and Poland, but moſt abundantly in the province of Canada in North America: formerly it appears alſo to have been found in England. But there is no ſuch animal known among us now. V. Ray's Synopſ. An. Quad. p. 213.

Its chief uſe is in the compoſition of hats, furs, &c. Beſides this, in 1699. an attempt was made to employ it in other merchandizes; accordingly a manufactory was ſettled in the Fauxbourg S. Antoine near Paris, where they made cloths, flannels, ſtockings, &c. of *Caſtor*, with a mixture of wool. The manufacture flouriſhed for a while, but ſoon decayed; it being found by experience, that the ſtuffs loſt their dye, when wet; and that, when dry again, they were hard, and ſtiff as felts.

The merchants diſtinguiſh three kinds of *Caſtor*, though all equally the ſkins of the ſame animal; theſe are *New Caſtor, Dry Caſtor*, and *Fat Caſtor*: *New Caſtor*, called alſo *Winter Caſtor*, and *Muſcovite Caſtor*, becauſe ordinarily reſerved to ſend into Muſcovy, this is that taken in the winter huntings. This is the beſt, and moſt eſteemed for rich furs, as having loſt none of its hair by moulting. Dry *Caſtor*, or lean *Caſtor*, is the reſult of the ſummer-huntings; when the beaſt is moulted, and has loſt part of its hair: this, being much inferior to the former, is little uſed in furs; but moſtly in hats. Fat *Caſtor*, uſually called *Old-coat*, is that which has contracted a certain fat, unctuous humour, by ſweat exhaled from the bodies of the ſavages, who have worn it for ſome time: this, though better than the dry, it yet only uſed for hats.

After the hair is cut off the ſkin to be uſed in hats, the pelt or ſkin itſelf is uſed in various works, *viz.* for the covering of mails and trunks, in ſlippers, &c.

CASTRAMETATION *, the art, or act of encamping, *i. e.* of placing and diſpoſing an army in camp. See Camp.

* The word is more uſed in ſpeaking of the incampments of the antients, than thoſe of the moderns. It comes from the Latin *Caſtrum*, camp; and *Metari*, to meaſure, or lay out.

CASTRATION, in chirurgery, the operation of gelding, *i. e.* of cutting off the teſticle, and putting a male animal out of a capacity of generation.

Caſtration is much in uſe in Aſia, eſpecially among the Turks, who practiſe it on their ſlaves, to prevent any commerce with their women. The Turks *caſtrate* to the purpoſe, making a general amputation both of teſticles and yard. *Caſtration* alſo obtains in Italy, where it is uſed with a view to preſerve the voice for ſinging. See Eunuch.

Caſtration is ſometimes found neceſſary on medicinal conſiderations, as in mortifications and ſome other diſeaſes of the teſticles, eſpecially the ſarocele and varicocele. Some have alſo uſed it in maniac caſes.

Castration is alſo in ſome ſort practiſed on women: Athenæus mentions, that king Andramytes was the firſt who *caſtrated* women. Heſychius and Suidas ſay Gyges did the ſame thing. Galen obſerves, that women cannot be *caſtrated* without danger of life: and Dalechampius, on the forementioned paſſage of Athenæus, holds, that it is only to be underſtood of ſimple padlocking.

CASU *conſimili*, a writ of entry, where a tenant by courteſy, or for life, aliens in fee or in tail, or for another's life: it takes its name hence, that authority being given by ſtat. Weſt. 2. to the clerks in chancery, to make new forms, as often as any new caſe ſhould ariſe, not under any of the old forms; they framed this writ to the likeneſs of the other called *Caſu proviſo*.

Casu *Proviſo*, a writ of entry, given by the ſtatute of Glocester, in caſe where a tenant in dower aliens in fee, or for term of life, in tail: and lies for him in reverſion againſt the alienee.

CATABAPTIST *, a perſon averſe from baptiſm; particularly from that of infants.

* The word is compounded of the prepoſition κατα, which, in compoſition, ſignifies againſt, contrary; and βαπτω, I waſh.

CATABIBAZON, in aſtronomy, the moon's deſcending node; called alſo *Dragon's Tail.*

CATACAUSTIC *Curves*, in the higher geometry, the ſpecies of cauſtic curves formed by reflexion. See Caustic *curve.*

CATACHRESIS *, Καταχρησις, a figure in rhetoric, whereby an improper word is uſed inſtead of a proper one.

* The word is formed from the Greek καταχραομαι, *abutor*, I abuſe;

I abuſe; of κατα, againſt, or contrary to; and χραομαι, I uſe.

The *Catachreſis* is, when, for want of a word proper to expreſs a thought, we uſe, or rather abuſe, a word that comes ſomewhat near it: as when we call a perſon who has killed his mother, maſter, or prince, *Parricide*; which word, in propriety, is only applicable to him who has murdered his father.

Thus, *Vir gregis ipſe caper*, to build a horſe, or ride on a ſwitch, are *Catachreſes*.

CATACLYSMUS, Κατακλυσμος, a Greek name for a deluge, or inundation of waters.

CATACOMBS *, or CATACUMBS, CATACUMBÆ, denote grottoes, or ſubterraneous cavities, for the burial of the dead.

* Some derive the word *Catacomb* from the places where ſhips are laid up, which the modern Latins and Greeks call *Cumbæ*. Others ſay, that *Cata* was uſed for *ad*, and *Catacumbas* for *adtumbas*: accordingly, Dadin ſays, they antiently wrote *Catatumbas*. Others derive the word from the Greek κατα, and κυμβος, a hollow, cavity, or the like.

Catacombs are alſo denominated *Cryptæ*, and *Cæmeteria*.

Antiently, the word *Catacomb* was only underſtood of the tombs of St. Peter and St. Paul; and M. Chaſtelain obſerves, that among the more knowing of the people of Rome, the word *Catacomb* is never applied to the ſubterraneous burying-places hereafter to be mentioned, but only to a chapel in St. Sebaſtian, one of the ſeven ſtational churches; where the antient Roman calendars ſay, the body of St. Peter was depoſited, under the conſulate of Tuſcus and Baſſus, in 258.

CATACOMB is more particularly uſed, in Italy, for a vaſt aſſemblage of ſubterraneous ſepulchres about Rome, chiefly at about three miles from that city in the Via Appia; ſuppoſed to be the ſepulchres of the martyrs; and which are viſited accordingly, out of devotion; and reliques thence taken, and diſperſed throughout the catholic countries; after having been firſt baptized by the pope, under the name of ſome ſaint.

Theſe *Catacombs* are ſaid by many to be caves, or cells, wherein the primitive Chriſtians hid, and aſſembled themſelves together; and where they interred ſuch among them as were martyred. Each *Catacomb* is three feet broad, and eight or ten high; running in form of an alley, or gallery, and communicating with others: in many places, they extend within a league of Rome. There is no maſonry or vaulting therein, but each ſupports itſelf: the two ſides, which we may look on as the parietes, or walls, were the places where the dead were depoſited; which were laid lengthwiſe, three or four rows over one another, in the ſame *Catacomb*, parallel to the alley. They were commonly cloſed with large thick tyles, and ſometimes pieces of marble, cemented in a manner inimitable by the moderns. Sometimes, though very rarely, the name of ſome of the deceaſed is found on the tyle: frequently, a palm is ſeen, painted, or engraven; or the cypher Xp, which is commonly read *pro Chriſto*.

The opinion held by many proteſtant authors is, that the *Catacombs* are heathen ſepulchres, and the ſame with the puticuli mentioned by Feſtus Pompeius; maintaining, that whereas it was the practice of the antient Romans to burn their dead, the cuſtom was, to avoid expence, to throw the bodies of their ſlaves to rot in holes of the ground: and that the Roman Chriſtians, obſerving, at length, the great veneration paid to relics, reſolved to have a ſtock of their own: entering, therefore, the *Catacombs*, they added what cyphers and inſcriptions they pleaſed, and then ſhut them up again, to be opened on a favourable occaſion. Thoſe in the ſecret, add they, dying, or removing, the contrivance was forgot, till chance opened them at laſt. But this opinion has even leſs of probability than the former.

Mr. Monro, in the *Philoſophical Tranſactions*, takes a medium between the two extremes. He ſuppoſes the *Catacombs* to have been originally the common ſepulchres of the firſt Romans, and dug in conſequence of theſe two opinions; that ſhades hate the light; and they love to hover about the places where the bodies are laid.

Laying up the bodies in caves, is certainly the original way of diſpoſing of the dead; and appears to have been propagated by the Phœnicians, throughout the countries to which they ſent colonies: the interring as we now do, in the open air, or in temples, was firſt introduced by the Chriſtians. When an antient hero died, or was killed in a foreign expedition, as his body was liable to corruption, and for that reaſon unfit to be tranſported intire, they fell on the expedient of burning, in order to bring home the aſhes, to oblige the manes to follow; that ſo his country might not be deſtitute of the benefit of his tutelage. It was thus burning ſeems to have had its original; and by degrees it became common to all who could bear the expences of it, and took place of the antient burying: thus *Catacombs* became diſuſed among the Romans, after they had borrowed the manner of burning from the Greeks; and now, none but ſlaves were laid in the ground.

Places thus prepared, might afford convenient reſortments for the primitive Chriſtians; but could never be built by them. When the empire became Chriſtian, they were again diſuſed; till the reading of I know not what author, who mentions them, occaſioned them to be again looked into.—As to the famed cypher Xp, it is obſerved to have been in uſe among the antients, long before Chriſtianity aroſe. The abbot Bencini ſays, it was compoſed of the Greek letters XP, under which ſomething myſtical was comprehended; but no author gives any account what that myſtery was.

CATACOUSTICS, called alſo CATAPHONICS, the ſcience of reflected ſounds; or that part of acouſtics, which conſiders the properties of echoes.

CATADUPA *, a cataract, or water-fall. See CATARACT.

* The word comes from the Greek καταδουπεω, of κατα, downwards; and δουπος, a noiſe.

CATADUPI, Καταδουποι, an appellation given by the antients, to the inhabitants about the cataracts of the Nile.—See CATARACT.

The *Catadupi* are repreſented as all deaf; being made ſo by the continual din of the falling waters.

CATAFALCO, an Italian term, literally ſignifying *Scaffold*. It is chiefly uſed for a decoration of architecture, ſculpture, and painting; raiſed on a timber ſcaffold, to ſhew a coffin, or tomb, in a funeral ſolemnity.

CATAGMATICS, medicines proper to ſolder, and unite broken bones; by promoting the formation of a callus.

* The word comes from the Greek καταγμα, fracture, formed of κατα, againſt, and αγνω, or αγνυμι, I break.

The principal *Catagmatics*, are the Armenian bole, gum tragacanth, oſteocolla, Cyprus nuts, frankincenſe, aloes, and acacia. See CONSOLIDATION.

CATALECTIC *, a term in poetry.—The antients called *Catalectic Verſes*, thoſe which wanted either feet or ſyllables; in oppoſition to *Acatalectics*, which are complete verſes, wanting nothing.

* The word comes from the Greek κατα, and ληγω, *deſino*, I end.

CATALEPSIS, Καταληψις, or CATALEPSY, in medicine, a kind of apoplexy; or a drowſy diſeaſe, wherein the patien is taken ſpeechleſs, ſenſeleſs, and fixed in the ſame poſture wherein the diſeaſe firſt ſeized him; and his eyes open, without ſeeing, or underſtanding.

This diſeaſe is very rare, nor is its cauſe eaſy to aſſign. Boerhaave takes the immediate cauſe to be an immobility of th common ſenſory, in the ſituation of the firſt acceſs; whence comes an abſolute ſtagnation of the blood in the brain, and a ceſſation of all the functions of the brain, as well as thoſe depending thereon; the muſcles alone remaining in their firſ tenſion; and reſpiration, and the pulſe, preſerved, thoug generally weak.

It is uſually preceded by a long intermitting fever, a melancholic dry temperature, a ſuppreſſion of the menſes, or hæmorrhoids, great frights, and intenſe, continued meditation o one object.

Upon diſſection, the arteries and veins of the cerebrum ar found very turgid, and the blood cloſe rammed in them: it i ſometimes cured by copious hæmorrhages of the noſe; ſternutatories, vomitives, and veſicatories, are likewiſe applie to good purpoſe.

It ſeldom paſſes into any other diſeaſe; tho' ſometimes into a epilepſy, convulſions, madneſs, or atrophy; but it common ends in death.

CATALOGUE, Καταλογος, a liſt, or enumeration of th names of ſeveral books, men, or other things; diſpoſed according to a certain order.

The jeſuits of Antwerp have given us a *Catalogue* of the popes which makes what they call their *Propylæum*.

CATALOGUE *of the Stars*, is a liſt of the fixed ſtars, diſpoſed i their ſeveral conſtellations; with the longitudes, latitude &c. of each.

The firſt who undertook to reduce the fixed ſtars into a *Catalogue*, was Hipparchus Rhodius, about one hundred and twent years before Chriſt; in which he made uſe of the obſervatio of Timochares and Ariſtillus, for about one hundred and eigh years before him. Ptolemy retained Hipparchus's *Catalog* though he himſelf made abundance of obſervations, with a vi to a new *Catalogue*, about the year of Chriſt 880. Albateg a Syrian, brought down the ſame to his time. Anno 14 Ulugh Beigh, king of Parthia and India, made a new *Catalogue* of the fixed ſtars; ſince tranſlated out of Perſian into L tin, by Dr. Hyde. The third who made a *Catalogue* from own obſervations, was Tycho Brahe; who determined the pl of ſeven hundred and ſeventy-ſeven ſtars, for the year 16 which Kepler, from other obſervations of Tycho, afterwa increaſed to the number of one thouſand, in the Rudolp tables. At the ſame time, William landgrave of Heſſe, w his mathematicians, Chriſtopher Rothmannus, and Juſtus B gius, determined the places of four hundred fixed ſtars, by own obſervations; which Hevelius prefers to thoſe of Tych Ricciol

Ricciolus, in his *Aſtronomia reformata*, determined the places of one hundred and one ſtars, for the year 1700. from his own obſervations: for the reſt he followed Tycho's *catalogue*; altering it where he thought fit. Anno 1667. Dr. Halley, in the iſland of St. Helena, obſerved three hundred and fifty ſouthern ſtars, not viſible in our horizon. The ſame labour was repeated by F. Noel, in 1710. who publiſhed a new *catalogue* of the ſame ſtars conſtructed for the year 1687. The next was J. Hevelius, who made a *catalogue* of 1888 fixed ſtars: whereof nine hundred and fifty had likewiſe been obſerved by the antients; three hundred and fifty-five by Dr. Halley; and only ſix hundred and three by himſelf.

The laſt, and greateſt, is the Britannic *catalogue*, compiled from the obſervations of the accurate Mr. Flamſteed; who for a long ſeries of years devoted himſelf wholly thereto. As there was nothing wanting either in the obſerver, or apparatus, we may look on this as a perfect work, ſo far as it goes. It is pity the impreſſion had not paſſed through his own hands: that now extant, was publiſhed by authority, but without the author's conſent: it contains two thouſand ſeven hundred and thirty-four ſtars. There was another publiſhed in 1725. purſuant to his teſtament.

ATAMITE, CATAMITUS, a *Ganymede*, or boy kept for ſodomy. See SODOMY.

ATAPAN, or CATIPAN, a name the later Greeks, about the twelfth century, gave the governor of their dominions in Italy.

Ughellus, and others, ſay, *catapan* was the ſame with *capitaneus*; formed therefrom by metatheſis, or tranſpoſition: others derive it from κατα, *juxta*, and παν, *omne*; in which ſenſe, *catapan* was a governor-general, or magiſtrate, who had the direction of all: others will have it derived from κατα παντοκρατορα, that is, *next after the emperor*. In which ſenſe, *catapan* was a ſecond maſter, *ſecundus dominus*. Du Cange derives it from κατεπανω, captain; which the Greeks applied to every governor, and even every man of quality.

ATAPASM*, Καταπασμα, a dry medicine, compoſed of a mixture of powders to be ſprinkled on the body.

* The word comes from the Greek κατα, in; and πασσω, I ſprinkle.

There are *catapaſms* of divers kinds: ſome odoriferous, uſed in the way of perfume; others fortifying, applied to the ſtomach, heart, or head; and others eſcharotic, for eating off dead fleſh.

ATAPELTA, an inſtrument of puniſhment, in uſe among the antients. It conſiſted in a kind of preſs, compoſed of planks, between which the criminal was cruſhed to death.

ATAPHORA*, Καταφορα, a kind of lethargic, or drowſy diſeaſe; the ſame with what is otherwiſe called *coma*. See the article COMA.

* The word is compounded of κατα, or κατω, downwards; and φερω, to bear.

ATAPHRYGIANS, antient heretics; ſo called, as being of the country of Phrygia.

They were orthodox in every thing, ſetting aſide this, that they took Montanus for a prophet, and Priſcilla and Maximilla for true propheteſſes, to be conſulted in every thing relating to religion; as ſuppoſing the Holy Spirit had abandoned the church. See MONTANIST.

ATAPLASM*, Καταπλασμα, popularly called *Poultice*, an external medicine, in form of a pulp; of a ſoft conſiſtence, like an unguent, or cerat; compoſed of various liquors, parts of plants, oils, unguents, &c. according to the variety of intentions.

* The word comes from the Greek καταπλασσω, *illino*, I ſmear, or apply outwardly.

Its ordinary uſes are, to aſſwage pain, and ſoften, reſolve, dif-ſuſs, or ſuppurate, matter collected in the external parts of the body.

The common *cataplaſm* for theſe intentions, is compoſed of white-bread, milk, yolks of eggs, ſaffron, and oil of roſes.

ATAPULTA*, a military machine, uſed among the antients, for throwing huge ſtones, and ſometimes large darts, and jave-ins, twelve or fifteen feet long, on the enemy.

* The word is originally Greek, καταπελτης, formed απο της πελτης. See PELTA.

The *catapulta* is ſaid to be the invention of the Syrians. ome authors make it the ſame with the *Balliſta*; others ifferent.

TAPUTIA, a medicinal plant, commonly called the *leſſer purge*. It purges with ſuch a violence, both upwards and ownwards, that few phyſicians now venture to preſcribe it. ee Supplement, article CATAPUTIA.

TARACT *of Water*, a fall, or precipice, in the chanel, or ed of a river; cauſed by rocks, or other obſtacles, ſtopping e courſe of its ſtream: from whence the water falls with a oiſe and impetuoſity.

* The word comes from the Greek καταῤῥασσω, *cum impetu decido*, I tumble down with violence; compounded of κατα, down; and ρασσω, *dejicio*, I throw down.

Such are the *cataracts* of the Nile, the Danube, Rhine, &c. Strabo calls that a *cataract*, which we call a *caſcade*; and what we call a *cataract*, the antients uſually called a *catadupa*. Herminius has an expreſs diſſertation, *De admirandis mundi Cataractis ſupra & ſubterraneis*; where he uſes the word in a new ſenſe; ſignifying, by *cataract*, any violent motion of the elements.

CATARACT, in medicine, a ſuffuſion of ſight, ariſing from a little film, or pellicle, which, ſwimming in the aqueous humour of the eye, and getting before the pupil, intercepts the rays of light.

The *cataract* is ſuppoſed to be formed by a condenſation of the more viſcous parts of the aqueous humour, between the uvea and the cryſtalline: though ſome take it to be a pellicle, detached from the cryſtalline itſelf; which is only an aſſemblage of ſeveral little pellicles, laid over one another.

There are two kinds of *cataracts*, the *genuine* and *ſpurious*; the firſt owing to a humour amaſſed in the eye, coagulated and fixed therein, and deſtroying its uſe: the latter ariſing from fumes or vapours thrown upon the eye by ſome accident; as in a fever, &c.—The genuine *cataract* has ſeveral degrees, and ſeveral names: at firſt the patient ſees, as it were, clouds, moats, flies, &c. diffuſed over the objects in view: thus far the *cataract* is called *Imaginary*; there being nothing yet appearing to the eye of another perſon. As the ſuffuſion increaſes, the pupil begins to appear of a ſea-green colour; ſometimes like the air full of clouds; and then the *cataract* is called *Water*, or *water-fallen*: when the evil is arrived at its height, and the matter is ſufficiently coagulated, the patient loſes all ſight; the pupil ceaſes to be tranſparent, and becomes white, or brown, or of ſome other colour: this laſt ſtate is what we properly denominate a *cataract*.

Couching of CATARACTS. For the cure of a *cataract*, recourſe is had to the operation of couching; which is performed by running a ſteel needle into the eye, through the adnata, by the edge of the cornea, on the ſide of the little canthus, till it arrive at the middle of the *cataract*; then turning the needle round, they twiſt the *cataract* about its point, till being thus reduced into a little compaſs, it is brought down beneath the pupil, and *couched*, or lodged in the bottom of the eye, and there left: thus the impediment being removed, the light gets admiſſion.—To render the operation effectual, care muſt be taken, that the pellicle, or *cataract*, be ripe, or arrived at its conſiſtence, ſo as it may be eaſily rolled up; that its parts be not cruſhed, or broken, in rolling up, and lodged ſo ſecure, as not to riſe up again by its elaſticity; and perhaps alſo, that it may diſſolve and conſume at the bottom of the eye.

This is the popular theory of *cataracts*, which ſome modern phyſicians and ſurgeons, as Heiſter, Briſſeau, Maitre Jan, &c. oppoſe, and ſubſtitute a new one in its place: their opinion is, that inſtead of couching, or laying a little membrane, or pellicle, it is the cryſtalline itſelf that is thus couched, and lodged in the bottom of the vitreous humour. This they ſuppoſe to have been condenſed, and to have loſt its tranſparence; whence, inſtead of being an inſtrument of viſion, it proves an obſtacle to it, by ſhutting out the rays from the retina. This alteration of its tranſparence, they ſay, is accompanied with a change of colour; it ſometimes becomes greeniſh; and, on this account, is called by the Greeks *glaucoma*.--The claucoma and *cataract* therefore, in their opinion, are the ſame thing: though in the other hypotheſis they are very different; the firſt being reputed incurable, but not the latter.

The chief reaſon urged in behalf of this latter hypotheſis, in the royal academy of ſciences, where it was propoſed, is, that after the operation of couching, the perſon cannot ſee without a convex lens.—Now if no more were done, than the taking away the pellicle from before the cryſtalline, it would be in the ſame condition as before, and would make the ſame refractions; nor would any lens be neceſſary: whereas, ſuppoſing the cryſtalline couched, it is evident the lens will be required to ſupply its place.—To which is anſwered, that there have been inſtances of perſons who have ſeen, after couching, without any lens; at leaſt, it is granted, that immediately after the operation, ſeveral perſons have ſeen very diſtinctly: and though lens's ſoon become neceſſary, yet the firſt moment wherein they ſaw without, ſeems to be a proof, that the cryſtalline was not couched.

M. de la Hire, in confirmation of the antient ſyſtem, aſſigns this reaſon for the neceſſity of a lens, after the operation, &c. that the vice which produced the *cataract* is ſtill ſubſiſting in the aqueous humour; which being too thick and muddy, lets too few rays paſs: a falling to be repaired by a lens, which throws a greater quantity of rays on the retina.--He adds ſome experiments made on the eyes of oxen; the reſult of which was, that the cryſtalline could never be laid perfectly on the bottom of the eye, but ſtill ſtuck up in part, ſo as to ſtop up part of the paſſage of the rays; partly on account of its bulk, and partly on that of its being ſuſtained by the aqueous and vitreous humour: he adds, that in the operation of couching, the needle is apt to ſcratch the anterior ſurface of the cryſtalline, and open the membrane wherewith it is inveloped; the conſequence of which will be wrinkles, which will render the refractions irregular, and change the direction of the rays which ſhould all meet in the ſame point; ſo as to ſpoil the repreſentation of objects. Laſtly, it is inſiſted, that if the cryſtalline be couched, the patient would not ſee at all, for want of the neceſſary refractions.

M. Antoine, on the other hand, relates, that upon opening a perſon whom he had couched on both eyes, he found the two cryſtallines actually couched, and lodged at the bottom, between the vitreous humour and the uvea, where they were left by the needle; and yet the perſon ſaw without either: which ſhews, both that the operation of couching the cryſtalline is practicable, and that viſion may be performed without it. In effect, the vitreous and aqueous humour, upon removing the cryſtalline, may be ſuppoſed to run into the cavity, to aſſume the figure of its mould, and to perform the refractions and offices of the cryſtalline; it being found, by experiment, that the refraction is the ſame in both humours.

To ſhew, however, that there are *cataracts* diſtinct from glaucomas, M. Littere produced before the ſociety an eye of a man blind twenty-two years; wherein was a diſtinct *cataract*, or pellicle, which cloſed the aperture of the pupil.

CATARRH *, in medicine, a preternatural diſtillation, or defluxion of a ſharp, ſerous humour, from the glands, eſpecially about the head and throat, upon the parts ſubjacent.

> * The word is Greek, *καταρρος*, formed from *καταρρεω*, *deſluo*, I flow down.

Catarrhs are, generally, occaſioned by a diminution of inſenſible perſpiration on taking cold; the effect whereof is, that the lymph, that ſhould paſs by the ſkin, ouſes out upon thoſe glands; and being thus extravaſated, occaſions irritations, coughs, and all the uſual ſymptoms. See COUGH. Degory deduces all diſeaſes from *catarrhs*; which he looks upon as the ſeminary of moſt diſorders of the body.

Etmuller diſtinguiſhes a *hot* and a *cold catarrh*; the firſt attended with an unnatural heat and pain, and a phlogoſis of the whole body; the excreted lymph being exceeding thin, and ſharp: in the cold kind, all the ſymptoms are more remiſs.

There is alſo a *ſuffocative catarrh*, ſeated in the larynx, and epiglottis, which it conſtringes; and thus obſtructing reſpiration, endangers ſtrangling.

Catarrhs are cured by ſoftening the ſerous humours, and augmenting tranſpiration, by means of diaphoretics, narcotic medicines, and diuretics.—Smoking of tobacco is recommended as excellent in all *catarrhal* affections: in obſtinate *catarrhs*, recourſe is ſometimes had to iſſues and bliſters.

Catarrhs do not ariſe from the head only, but ſometimes alſo from other parts of the body; the lymphatic veſſels, wherein the ſeroſities are contained, as well as the glands that ſeparate them, being diſtributed all over the body.

CATASTASIS *, in poetry, the third part of the antient drama; being that wherein the intrigue, or action ſet on foot in the epitaſis, is ſupported, carried on, and heightened, till it be ripe for the unravelling in the cataſtrophe.

> * The word comes from the Greek *καταστασις*, *conſtitution*, this being, as it were, the mean, tenor, ſtate, or conſtitution, of the piece.

CATASTROPHE, in poetry, the change or revolution of a dramatic poem; or the turn which unravels the intrigue, and terminates the piece.

The *cataſtrophe* made the fourth and laſt part in the antient drama; or that immediately ſucceeding the cataſtaſis.

The *cataſtrophe* is either *ſimple*, or *implex*; whence alſo the fable and action are denominated.

In the firſt there is no change in the ſtate of the principal perſons, nor any diſcovery, or unravelling; the plot being only a mere paſſage out of agitation, to quiet and repoſe. This *cataſtrophe* is rather accommodated to the nature of the epopea, than of tragedy. Indeed we meet with it in ſome of the antients, but it is out of doors among the moderns.--In the ſecond, the principal perſon undergoes a change of fortune; ſometimes by means of a diſcovery, and ſometimes without.

The qualifications of this change, or peripetia, are, that it be probable, and neceſſary: in order to be probable, it is required to be the natural reſult or effect of the foregoing actions; *i.e.* it muſt ſpring from the ſubject itſelf, or take its riſe from the incidents; and not be introduced merely to ſerve a turn. The diſcovery in the *cataſtrophe*, muſt have the ſame qualifications as the *cataſtrophe* itſelf, whereof it is a principal part: it muſt be both probable and neceſſary. To be probable, it muſt ſpring out of the ſubject itſelf; not be effected by means of marks, or tokens, rings, bracelets, or by a mere recollection, as is frequently done, both by the antients and moderns. To be neceſſary, it muſt never leave the perſons it concerns in the ſame ſentiments they had before, but always produce either love or hatred. Sometimes the change conſiſts in the diſcovery; ſometimes it follows at a diſtance; and ſometimes reſults immediately from it, which laſt is the moſt beautiful kind: and thus it is in Œdipus.

Mr. Dryden thinks a *cataſtrophe* reſulting from a mere change in the ſentiments and reſolutions of a perſon, without any further machinery, may be ſo managed as to become exceedingly beautiful, nay preferable to any other.—It is a diſpute among the critics, whether the *cataſtrophe* ſhould always fall out happily, and favourably on the ſide of virtue, or not? *i. e.* whether virtue is always to be rewarded, and vice puniſhed, in the *cataſtrophe*? but the reaſons on the negative ſide ſeem the ſtrongeſt. Ariſtotle prefers a ſhocking *cataſtrophe*, to a happy one; in regard the moving of terror and pity, which is the aim of tragedy, is better effected by the former than the latter.

Boſſu divides the *cataſtrophe*, at leaſt, with regard to the epopea, into the unravelling, or *denouement*, and the *achevement*, or finiſhing; the laſt of which he makes the reſult of the firſt, and to conſiſt in the hero's paſſage out of a ſtate of trouble and agitation, to reſt and quiet. This period is but a point without extent, or duration; in which it differs from the firſt, which comprehends every thing after the knot, or plot laid. He adds, that there are ſeveral unravellings in the piece; in regard there are ſeveral knots, which beget one another: the finiſhing, is the end of the laſt unravelling.

CATCH-LAND, ſuch land, particularly in Norfolk, which is not certainly known to what pariſh it belongs; ſo that the parſon who firſt gets the tythes there, enjoys it for that year, by right of preoccupation.

CATCH-POLE, or CATCH-POLLE, a term now uſed, by way of reproach, for a bailiff's follower, or aſſiſtant. See BAILIFFE.

Antiently, it was a term of credit, applied to thoſe we now call *Serjeants of the Mace*, *Bailiffs*, or any other that uſe to arreſt men on any action.

CATECHU, a medicinal aromatic ſubſtance brought from the Eaſt-Indies; called alſo *Cachew*, and *Japan Earth*, and when prepared, ranked in the number of perfumes. See JAPAN *Earth*.

Notwithſtanding the great uſe of *catechu*, before that of coffee and tea, and its being ſtill frequently uſed by many people, eſpecially in France, its nature and origin was long, but little known, even among the ableſt phyſicians: ſome, from its being called *Japan Earth*, ranked it among the medicinal earths, and pretend it is found on the tops of mountains, covered with the roots of cedars, whoſe food they ſaid it was: and that being waſhed in the rivers, and dried in the ſun, it was formed into a kind of paſte; which, brought into Europe, ſerved as the baſis of ſeveral paſtels, or lozenges, called *cachew*. Others, with more probability, rank it among the gums; and maintain it to be formed of the inſpiſſated decoction of a tree in the Eaſt-Indies, called *Cachous*; growing chiefly in the kingdom of Cochinchina. Laſtly, others took it to be a factitious compoſition of ſeveral other drugs; eſpecially of the juice of areca, extract of liquorice, and calamus aromaticus, and the bark of a tree called by the Indians *Catechu*.

Cachew, or *catechu*, is of much eſteem in medicine: among other effects attributed to it, it is ſuppoſed to ſtop a cough, and fortify the ſtomach: beſides its ſweetening and perfuming the breath, when taken in an impalpable powder, mixed with gum tragacanth. See Supplement, article CATECHU.

CATECHUMEN *, Κατηχυμενος, a candidate of baptiſm; or a perſon who prepares himſelf for the receiving thereof.

> * The word comes from the Greek κατηχεω, I hear any thing ſpoken or delivered by word of mouth; compounded of κατα, and ηχεω, *I ſound*.

The *catechumens* were diſtinguiſhed from the *fideles*, not only by name, but alſo by their place in the church: they were diſpoſed, with the penitents, in the portico, or gallery, at the extremity of the church, oppoſite to the choir. They were not allowed to aſſiſt at the celebration of the euchariſt; but after ſermon, the deacon diſmiſſed them with this formula, proclaimed three times, *Ite*, *Catechumeni*; *miſſa eſt*.

There were divers orders or degrees of *catechumens*, in thoſe churches and ages where the term of catechizing for two or three years was obſerved: but what the preciſe number and appellations of theſe orders were, is not agreed on. The Greek expoſitors of the antient canons uſually make but two ſorts, viz. the *imperfect catechumens*, and the *perfect*, *i. e.* the beginners, or thoſe juſt admitted into the claſs, and the proficients, who were prepared for baptiſm.—Cave follows the ſame diviſion, with this difference, that he makes the imperfect to be thoſe who were yet reputed heathens.--Beveridge likewiſe makes two ſorts of *catechumens*, though he denominates them differently, viz. the *Audientes*, or hearers, who only ſtaid in the church to hear the ſermon, and ſcriptures read; and the *Genuflectentes*, or kneelers, called alſo *Subſtratores*, who ſtaid to receive the miniſter's prayer, and benediction alſo.--Suicer, and Baſnage, make much the ſame diviſion of the *catechumens*, viz. into *Audientes* and *Competentes*; the latter of whom were properly ſuch as were candidates or petitioners for baptiſm.--Maldonat adds to theſe a third claſs, called *Pœnitentes*; comprehending ſuch *catechumens* as were under the diſcipline and cenſures of the church.

Cardinal Bona augments the number to four kinds, *viz.* the *Audientes*, *Genuflectentes*, *Competentes*, and *Electi*.

Bingham alſo diſtinguiſhes four kinds of *catechumens*, though in a manner ſomewhat different from Bona; making the *competentes* and *electi* to be but one and the ſame order: but advancing another order antecedent to all theſe, and not mentioned by any of the former writers, *viz.* *Catechumens* inſtructed privately, and without doors, before they were allowed to enter the church.

CATEGOREMA, Κατηγορημα, properly denotes the name whereby a *category*, or claſs of beings, is repreſented. See CATEGORY.

CATEGORY *, Κατηγορια, in logic, a ſyſtem, or aſſemblage, of all the beings contained under any genus, or kind; ranged in order.

* The word *category* was borrowed by the ſchools from the forum, or courts of juſtice: for as, in a tryal, the plaintiff, or proſecutor, in accuſing the criminal, or priſoner, muſt charge him expreſſly, or affirm that he did this or that, in poſitive terms: whence the word *category*, viz. from κατηγορειν, to aver, or declare a charge of accuſation: ſo in the doctrine of *categories*, every higher may be expreſly, and abſolutely predicated, or affirmed, of every lower.

The ſchool philoſophers diſtribute all beings, all the objects of our thoughts or ideas, into certain genera, or claſſes, in order to get a more diſtinct and preciſe notion thereof; which claſſes the Greeks call *Categories*, and the Latins *Predicaments*.

The antients, after Ariſtotle, generally make ten *categories*: under the firſt, all ſubſtances are compriſed; and all accidents under the nine laſt; *viz.* quantity, quality, relation, action, paſſion, time, place, ſituation, and habit; which are uſually expreſſed, or ſignified, by the following technical diſtich.

Arbor, *ſex*, *ſervos*, *ardore*, *refrigerat*, *uſtos*,
Ruri, *cras*, *ſtabo*, *nec tunicatus ero.*

Theſe ten *categories* of Ariſtotle, which logicians make ſuch myſteries of, are now almoſt out of doors; and, in effect, are of little uſe: the leſs, as being things purely arbitrary, without any foundation, but in the imagination of a man, who had no authority to preſcribe laws for ranging the objects of other peoples ideas. Accordingly, ſome philoſophers think all nature may be better conſidered under theſe ſeven things, ſpirit, matter, quantity, ſubſtance, figure, motion, and reſt: and others make but two *categories*, ſubſtance and accident.

CATENA, in anatomy, a muſcle, otherwiſe called *Tibialis anticus*. See TIBIALIS.

CATENARIA, in the higher geometry, a curve line, which a chain, or rope, forms itſelf into, by its own weight, when hung freely, between two points of ſuſpenſion, whether thoſe points be horizontal or not.

To conceive the general nature or character of this curve, ſuppoſe a line heavy and flexible (See *Tab. Geom. fig.* 25.), the two extremes of which, F and D, are firmly fixed in thoſe points; by its weight it is bent into a certain curve FAD, which is called the *Catenaria*.

Let BD and *bd* be parallel to the horizon, AB perpendicular to BD, and Dδ parallel to AB; and the points B*b* infinitely near to each other. From the laws of mechanics, any three powers in equilibrio, are to one another, as the lines parallel to the lines of their direction (or inclined in any given angle), and terminated by their mutual concourſes: hence, if D*d* expreſs the abſolute gravity of the particle D*d* (as it will, if we allow the chain to be every way uniform), then Dδ will expreſs that part of the gravity, that acts perpendicularly upon D*d*; and by the means of which, this particle endeavours to reduce itſelf to a vertical poſition: ſo that if this lineola *d*δ be conſtant, the perpendicular action of gravity upon the parts of the chain will be conſtant too; and may therefore be expreſſed by any given right line *a*.

Farther, the lineola Dδ, will expreſs the force which acts againſt that conatus of the particle D*d*, by which it endeavours to reſtore itſelf into a poſition perpendicular to the horizon; and hinders it from doing ſo. This force proceeds from the ponderous line DA, drawing according to the direction D*d*; and is, *cæteris paribus*, proportional to the line DA, which is the cauſe of it. Suppoſing the curve FAD, therefore, as before, whoſe vertex (the loweſt point of the *catena*) is A, axis AB, ordinate BD; fluxion of the axis Dδ = B*b*; fluxion of the ordinate *d*δ; the relation of theſe two fluxions is thus, *viz.* $d\delta : Dd :: a : DA$ curve; which is the fundamental property of the curve, and may be thus expreſſed (putting $AB = x$, and $BD = y$, and $AD = c$) $\dot{y} = \frac{a\dot{x}}{c}$

ATERER. See the article PURVEYOR.

ATHARI. See ALBIGENSES.

ATHÆRETICS *, or CATHÆRETIC *Medicines*, are ſuch as ſerve to conſume, and eat off, fungous or proud fleſh growing in wounds, ulcers, and the like.

* The word is Greek, καθαιρετικο formed from καθαιρω, ſometimes uſed for *depaſcor*, or *conſumo*, *abſumo*, I eat, conſume, &c. of κατα, and αιρεω, I take away.

Cathæretics are otherwiſe denominated *Sarcophagous Medicines*, q. d. fleſh-eaters. See SARCOPHAGUS, &c.

Such are red precipitate, burnt alum, æs uſtum, blue vitriol, &c.

CATHARINE, *Knights of St.* CATHARINE *of M. Sinai*, an antient military order, erected for the aſſiſtance and protection of pilgrims going to pay their devotions to the body of St. *Catharine*, a virgin of Alexandria, diſtinguiſhed for her learning, and ſaid to have ſuffered martyrdom under Maximin.

The body of the martyr having been diſcovered on mount Sinai, cauſed a great concourſe of pilgrims; and travelling being very dangerous by reaſon of the Arabs, an order of knighthood was erected in 1063. on the model of that of the holy ſepulchre, and under the patronage of St. *Catharine*: the knights of which obliged themſelves by oath to guard the body of the ſaint, keep the roads ſecure, obſerve the rule of St. Baſil, and obey their grand maſter. Their habit was white, and on it were repreſented the inſtruments of martyrdom whereby the ſaint had ſuffered; *viz.* a half-wheel armed with ſpikes, and traverſed with a ſword ſtained with blood.

CATHARTICS, or CATHARTIC *Medicines*, are remedies which promote evacuation by ſtool.

Cathartics are the ſame with what we otherwiſe denominate *Purgatives*.

Cathartics are of three principal kinds, *mild*, *moderate*, and *violent*: the firſt purge gently, as Caſſia, Manna, Tamarinds, Rhubarb, Sena, &c. the ſecond pretty briſkly, as Jallop, Scammony, &c. the third ſeverely, as Colocynth, Hellebore, Laureola, &c. See each under its proper article.

Cathartics are likewiſe divided by ſome into Cholagogues, Phlegmagogues, Melanagogues, and Hydragogues; the firſt ſuppoſed to purge bile, the ſecond pituita, the third melancholy, and the fourth ſeroſities.

For the theory of *cathartics*, and the manner wherein they operate, ſee PURGATIVES.

CATHEDRAL *, a church wherein is a biſhop's ſee, or ſeat.

* The word comes from the Greek καθεδρα, chair, of καθεζομαι, *ſedeo*, I ſit.

The denomination *cathedral* ſeems to have taken its riſe from the manner of ſitting in the antient churches, or aſſemblies of primitive chriſtians: in theſe, the council, *i. e.* the elders and prieſts, was called *preſbyterium*; at their head was the biſhop, who held the place of chairman, *cathedralis*, or *cathedraticus*; and the preſbyters, who ſat on either ſide, were alſo called by the antient fathers, *aſſeſſores epiſcoporum*. The epiſcopal authority did not reſide in the biſhop alone, but in all the preſbyters, whereof the biſhop was preſident.

A *cathedral* therefore, originally, was different from what it is now; the Chriſtians, till the time of Conſtantine, having no liberty to build any temple: by their churches they only meant their aſſemblies; and by *cathedrals*, nothing more than conſiſtories.—Whence appears the vanity of ſome authors, eſpecially the Spaniards, who pretend their *cathedrals* to have been built in the times of the apoſtles.

CATHERETIC. See the article CATHÆRETIC.

CATHERINE. See the article CATHARINE.

CATHETER *, Καθετηρ, among chirurgeons, a hollow probe, or inſtrument, uſually of ſilver, ſomewhat crooked; to thruſt up the yard, into the bladder; in order to aſſiſt in making urine, when the paſſage is ſtopped by the ſtone, gravel, caruncles, &c.

* The word is formed from καθιημι, *immitto*, in regard this inſtrument is uſed to be impelled into the bladder.

CATHETUS, in geometry, a perpendicular; or a line, or radius, falling perpendicularly on another line, or ſurface.

Thus, the *Catheti of a rectangled triangle*, are the two ſides that include the right angle.

CATHETUS *of Incidence*, in catoptrics, is a right line drawn from a radiant point, perpendicular to the reflecting line, or the plane of the ſpeculum, or mirror.

CATHETUS *of Reflexion*, or *of the Eye*, a right line drawn from the eye, or from any point of a reflected ray, perpendicular to the plane of reflexion, or of the ſpeculum. See REFLEXION.

CATHETUS, in architecture, is a perpendicular line, ſuppoſed to paſs through the middle of a cylindrical body, as a column.—See *Tab. Archit. fig.* 41. *lit. a.*

CATHOLIC, Καθολικος, denotes a thing that is univerſal, or general.

Theodoſius the Great, firſt introduced the term *catholic* into the church; appointing by an edict, that the title ſhould be applied, by way of pre-eminence, to thoſe churches who adhered to the council of Nice, in excluſion of the Arians, &c.—*Catholiciſm*, however, ſoon changed hands; for under the emperor Conſtantius, Arianiſm became ſo predominant, that the Arians were called the *catholics*.

CATHOLIC *King*, is a title which has been hereditary to the king of Spain, ever ſince the time of Ferdinand and Iſabella. Colombiere ſays, it was given them on occaſion of the expulſion of the Moors. The Bollandiſts pretend, it had been borne by their predeceſſors, the Viſigoth kings of Spain; and that Alexander VI. only renewed it to Ferdinand and Iſabella. Others ſay, that Philip de Valois firſt bore the title; which was given him after his death, by the eccleſiaſtics, on account of his favouring their intereſts.

In ſome epiſtles of the antient popes, the title *catholic* is given to the kings of France, and of Jeruſalem, as well as to ſeveral patriarchs and primates.

Catholic *Furnace*, is a little furnace, ſo contrived, as to be fit for all kinds of operations, which do not require an intenſe fire.

CATHOLICON, in pharmacy, a kind of ſoft purgative electuary; ſo called, as being ſuppoſed univerſal; or a purger of all humours.

Different authors give different recipes for it: that called *Catholicon Nicolai* was long in uſe; it conſiſts of ſixteen ingredients, the chief whereof are tamarinds, caſſia, ſena, and rhubarb. It was called the double *Catholicon*, when there was a double portion of ſena and rhubarb.

The **Catholicon** *for Clyſters*, only differs from this, in that it had no rhubarb, and that honey was uſed in it inſtead of ſugar. See Clyster.

CATKINS, or **Catlings**, in phytology, an aſſemblage of ſummets, hanging down from certain trees in manner of a rope, or cat's-tail; ſerving as the male bloſſoms, or flowers of the trees, by which they are produced.

CATLIN, among ſurgeons, is a diſmembring knife, for cutting off any corrupted part of a body.

CATOPSIS, in medicine, a diſorder of the ſight; more uſually called *Myopia*. See Myopia.

CATOPTRICS *, the ſcience of reflex viſion; or that branch of optics, which delivers the laws of light, reflected from mirrours, or ſpecula. See Optics. Under which head, the doctrine and laws of *catoptrics* are laid down.

* The word comes from the Greek κατοπτρον, *Speculum*; of κατα, and οπτομαι, *video*, I ſee.

Catoptrical *Dial*, a dial which exhibits objects by reflected rays. See Reflecting *Dial*.

Catoptric *Teleſcope*, a teleſcope that exhibits objects by reflexion. See Reflecting *Teleſcope*.

Catoptric *Ciſtula*, a machine, or apparatus, whereby little bodies are repreſented extremely large; and near ones extremely wide, and diffuſed through a vaſt ſpace; with other agreeable phænomena: by means of mirrours, diſpoſed by the laws of *catoptrics*, in the concavity of a kind of cheſt.

Of theſe there are various kinds, accommodated to the various intentions of the artificer: ſome multiply the objects; ſome deform them; ſome magnify, &c.--The ſtructure of one or two of them will ſuffice to ſhew how infinite more may be made.

To make a **Catoptric** *Ciſtula to repreſent ſeveral different ſcenes of objects, when looked in at different foramina, or holes.*

Provide a polygonous ciſtula, or cheſt, of the figure of the multilateral priſm ABCDEF (*Plate Optics, fig.* 19.), and divide its cavity by diagonal planes EB, FC, DA, interſecting each other in the centre, into as many triangular locules, or cells, as the cheſt has ſides. Line the diagonal planes with plain mirrours: in the lateral planes make round holes, thro' which the eye may peep within the locules of the cheſt. The holes are to be covered with plain glaſſes, ground within-ſide, but not poliſhed, to prevent the objects, in the locules, from appearing too diſtinctly. In each locule are to be placed the different objects, whoſe images are to be exhibited; then covering up the top of the cheſt with a thin tranſparent membrane, or parchment, to admit the light; the machine is complete.

For, from the laws of reflexion, it follows, that the images of objects, placed within the angles of mirrours, are multiplied, and appear ſome more remote than others; whence the objects in one locule will appear to take up more room than is contained in the whole cheſt. By looking, therefore, through one hole only, the objects in one locule will be ſeen, but thoſe multiplied, and diffuſed through a ſpace much larger than the whole cheſt: thus every new hole will afford a new ſcene: according to the different angles the mirrours make with each other, the repreſentations will be different; if they be at an angle greater than a right one, the images will be monſtrous, &c.

The parchment that covers the machine, may be made pellucid, by waſhing it ſeveral times in a very clear lye, then in fair water, and bracing it tight, and expoſing it to the air to dry. If it be deſired to throw any colour on the objects, it may be done by colouring the parchment. Zahnius recommends verdegriſe ground in vinegar, for green; decoction of Braſil wood, for red, &c. He adds, that it ought to be varniſhed, to make it more pellucid.

To make a **Catoptric** *Ciſtula to repreſent the objects within it prodigiouſly multiplied, and diffuſed through a vaſt ſpace.*

Make a polygonous ciſtula, or cheſt, as before, but without dividing the inner cavity into any apartments, or locules (*Plate Optics, fig.* 19.); line the lateral planes CBHI, BHLA, ALMF, &c. with plane mirrours, and at the foramina, or apertures, pare off the tin and quickſilver, that the eye may ſee through; place any objects in the bottom MI, *v. g.* a bird in a cage, &c.

Here, the eye looking through the aperture *b i*, will ſee each object placed at bottom, vaſtly multiplied, and the images removed at equal diſtances from one another. Hence, were a large multangular room, in a prince's palace, lined with large mirrours, over which were plain pellucid glaſſes to admit the light; it is evident the effects would be very ſurpriſing and magnificent.

CATOPTROMANCY *, Κατοπτρομαντεια, a kind of divination, among the antients; ſo called, becauſe conſiſting in the application of a mirrour. See Mirror.

* The word is formed from κατοπτρον, *Speculum*, and μαντεια, *Divinatio*.

Pauſanias ſays, it was in uſe among the Achaians; where thoſe who were ſick, and in danger of death, let down a mirrour, or looking-glaſs, faſtened by a thread, into a fountain before the temple of Ceres; then, looking in the glaſs, if they ſaw a ghaſtly disfigured face, they took it as a ſure ſign of death: on the contrary, if the face appeared freſh and healthy, it was a token of recovery.—Sometimes glaſſes were uſed without water, and the images of things future, they ſay, were repreſented in them.

CATROPITÆ. See Agonistici.

CAVA, in anatomy, the name of a vein, the largeſt in the body, terminating in the right ventricle of the heart; where it opens with a large mouth, to convey to it the blood brought from all the parts of the body, by the branches of the other veins, which all terminate in the *cava*.—See *Tab. Anat.* (Splanch.) *fig.* 1. *lit.* o. 12. *lit. ee.* (Angeiol.) *fig.* 6. *lit. b.* and *cc.*

At its entrance into the right ventricle, it has three membranous valves, called *Tricuſpides*, or *Triglochines*, from their triangular figure; ſo accommodated, as to allow the blood's paſſage from the *cava* to the heart, and to prevent its return.

The *cava* is divided into the *aſcending* and *deſcending* parts: the *aſcending cava*, is that which ariſes from the lower parts; ſo called, becauſe the blood hereby conveyed to the heart, mounts, or aſcends.—The *deſcending cava* comes from the upper parts; and is ſo called, becauſe the blood hereby brought from the head, and other parts, deſcends.

CAVALCADE, a formal, pompous march, or proceſſion of horſemen, equipages, &c. by way of parade, or ceremony, as to grace a triumph, public entry, or the like.

CAVALIER, or **Cavaleer**, a horſeman, or perſon mounted on horſeback: eſpecially if he be armed withal, and have a military appearance.

Antiently, the word was reſtrained to a knight, or *miles*. See Knight. The French ſtill uſe *chevalier* in the ſame ſenſe. See Chevalier.

Cavalier, in fortification, a mount, or elevation of earth, either round, or oblong; having a platform on the top, bordered with a parapet, to cover the cannon placed on it, and cut with embraſures to fire through; ſerving to overlook and command all around the place.

Cavaliers are raiſed in ſieges on the baſtions and curtins of ramparts, in order to fire on the eminences around, and oblige them to get farther off, as well as to ſcour the trenches. But the gorge of the baſtion is the place where *cavaliers* are moſt properly erected; thoſe raiſed on the curtin being rather called *Platforms*.

Cavaliers, or **Cavaleers**, conſidered as a faction. See Tory.

CAVALRY *, a body of ſoldiers, who fight, or march on horſeback.

* The word comes from the French *Cavaliere*, and that from the corrupt Latin *Caballus*, a horſe; whence *Caballarius*, and *Cavallarius*, in the later Latin, and καβαλλαριος, in the Greek.

The *cavalry* is uſually divided into horſe and dragoons. The horſe are either regimental, or independent troops; to which latter ſort belong the horſe-guards; and in France, the gendarmes and muſketeers who ſerve on horſeback.--The dragoons and regimental horſe form what they call the *Light Cavalry*: the troopers the *Heavy Cavalry*.

When an army is ranged in order of battle, the *cavalry* is poſted on the wings.

Bodies of *cavalry*, ranged in form of battle, are called *Squadrons*.

The Romans, in their firſt wars, were unacquainted with the uſe of *cavalry*, and made their whole force conſiſt in infantry; inſomuch that, even in the engagement, they made their horſe diſmount, and fight on foot; never reſuming their horſes, but to purſue the enemy the better when routed. It was the *cavalry* of Pyrrhus, that firſt occaſioned them to alter their ſentiments; but eſpecially that of Hannibal, which ſtruck them with ſuch a terror, that the invincible Roman legions durſt not atttack them on even ground.

CAUDA *Draconis*, the dragon's-tail, in aſtronomy, the name of the moon's ſouthern, or deſcending node. See Node.

CAVEAR, **Cavia**, or **Kavia**, a kind of food, or pickle, in mighty uſe and repute throughout Muſcovy; and lately introduced upon the Engliſh table.

The *cavia*, or *cavear*, is the roe, or ſpawn of the ſturgeon, taken out, ſalted, and dried in the ſun, or by the fire. The Italian merchants ſettled at Moſcow, drive an incredible trade with *cavear*; the fiſh being caught in prodigious quantities at the mouth of the Volga, and other rivers which empty themſelves into the Caſpian Sea. They cure or prepare the roes on the ſpot, and thence ſend them in this form of *cavear* up the Volga to Moſcow, to be there diſtributed throughout that vaſt empire; where it is of wonderful ſervice to the people, on account of the three lents there obſerved with great ſeverity.

The Engliſh import conſiderable quantities of this commodity from Archangel; though not ſo much for home conſumption, as to ſupply the French and Italians. To be good, it ſhould be of a rediſh brown colour, and very dry. It is eat with oil and lemon; ſometimes with vinegar: ſome eat it alone with bread; and others only as a ſawce, or pickle, like anchovies.

CAVEAT, in law, a bill entered in the eccleſiaſtical court, to ſtop the proceeding of one who would prove a will to the prejudice of another. See Probate.

CAVERN, Caverna. See the article Grotto.

CAVERNOSA *Corpora*, in anatomy, called alſo *corpora nervoſa*, and *ſpongioſa*, are two cavernous bodies, of an indeterminate length and thickneſs, whereof the penis is principally compoſed.—See Tab. *Anat.* (ſplanch.) fig. 8. lit. aa. bb. and tt.

Their internal ſubſtance is rare, and ſpongy; and when filled with blood and ſpirits, it dilates and ſwells: in which the tenſion or erection of the yard conſiſts.

They have two diſtinct beginnings from the lower ſide of the oſſa pubis; whence they increaſe in bulk, till their meeting with the corpus cavernoſum urethræ, where they join into one, and are retained by means of a ſeptum compoſed of their outer tunics: their other extremities are capped with the glans.

Cavernosum *Corpus Urethræ*, a third ſpongious body of the penis; ſo called, becauſe the urethra, or urinary paſſage of the penis, is incloſed by it.

Its figure, contrary to that of the two corpora cavernoſa, is largeſt at its extremities, and leaſt in the middle; its upper part is in the perinæum, and is called its *bulb*, from its figure. Its external membrane is thin, and divided lengthwiſe by a ſeptum. The middle part of this *corpus* is nearly cylindrical; but the paſſage for the urine is not along the centre, but inclines to its upper part, next the body of the penis; its lower extremity, dilating itſelf, forms the glans.

Cavernosa *Corpora of the Clitoris*, are two nervous or ſpongy bodies, like thoſe of the penis; they have their origin from the lower part of the os pubis, on each ſide; and uniting together, conſtitute the body of the clitoris, as thoſe do that of the penis. See Clitoris.

Indeed, they have no perforation analogous to that of the penis; but they have a ſeptum, or membranous partition, running all along between them, and dividing them from the glans, to its divarication at the os pubis, where they are called *crura clitoridis*.

Cavernosum *Corpus of the Pudendum*. See Reticulare *Corpus*.

CAVESON*, in the menage, a kind of muſroll, put on a horſe's noſe, which binds or locks him in, and ſerves in breaking, managing, and tutoring him.

* The word comes from the Spaniſh *caveça*, or *cabeça*, head.

The *caveſons* for breaking young horſes are uſually of iron, made ſemicircularly, of two or three pieces turning on joints; others are twiſted, others flat, others hollow in the middle, and indented like ſaws, called *mordants*: though theſe laſt are now baniſhed the academies.—The rope and leathern *caveſons* ſerve for paſſing the horſe between two pillars.

CAVETTO*, in architecture, a hollow member, or moulding, containing a quadrant of a circle, and having an effect juſt contrary to that of a quarter-round: it is uſed as an ornament in cornices.—See Tab. *Archit*. fig. 6.

* The word is Italian, and is no more than a diminutive of *cavus*, hollow.

M. Felibien obſerves, that the workmen confound the *cavetto* with a ſcotia, but improperly; the *cavetto* being in effect only half a ſcotia: yet he himſelf is chargeable with the ſame overſight. See Scotia.

When in its natural ſituation, the workmen frequently call it *gula*, or *gueule*; and when inverted, *gorge*.

CAVIA, or Caviac. See the article Cavear.

CAVIN, in the military art, a natural hollow fit to cover a body of troops, and hereby facilitate their approach to a place.

A *cavin* near a place beſieged is of great advantage to the beſiegers; as by help hereof they can open trenches, make places of arms, keep guards of horſe, and the like, without being expoſed to the enemies ſhot.

CAUKING*, or Calking *of a ſhip*, implies the driving in oakam, or ſomewhat of that kind, into the ſeams, or commiſſures of the planks, to prevent the ſhip's leaking.

* Kennet derives the word from the barbarous Latin *Calciatura*, ſhoeing.

CAUL, in anatomy, a membrane in the abdomen, covering the greateſt part of the guts; called, from its ſtructure, *reticulum*, but moſt frequently *omentum*. See Omentum.

Caul is likewiſe a little membrane, found on ſome children, encompaſſing the head, when born.

Drelincourt takes this *caul* to be only a fragment of the membranes of the fœtus; which ordinarily break at the birth of the child.

Lampridius tells us, that the midwives ſold this *caul* at a good price to the advocates, and pleaders of his time; it being an opinion, that while they had this about them, they ſhould carry with them a force of perſuaſion which no judge could withſtand: the canons at one time forbid the uſe of it; becauſe ſome witches and ſorcerers, it ſeems, had abuſed it.

CAULICOLES*, Cauliculi, in architecture, denote thoſe eight leſſer branches, or ſtalks, in the Corinthian capital, which ſpring out from the four greater, or principal caules, or ſtalks.—See Tab. *Archit.* fig. 26. lit. FF.

* The word comes from the Latin *caulis*, the ſtalk, or ſtem of a plant.

The volutes of this order are ſuſtained by four caules, or primary branches of leaves; from which ariſe theſe *caulicoles*, or leſſer foliages.

Some authors confound the *caulicoles* with the volutes themſelves; ſome with the helices in the middle, and ſome with the principal ſtalks whence they ariſe.

CAULIFEROUS *herbs*, are ſuch as have a true *caulis*, ſtalk, or trunk, which a great many have not; as the capillaries, *&c.*

CAUSALITY, in metaphyſics, the power, or action of a cauſe in producing its effect. See Cause.

It is a diſpute, among the ſchool-philoſophers, whether, and how, the *cauſality* is diſtinguiſhed from the cauſe and effect? Some hold it a mode, or modal entity, ſuperadded to the cauſe, *&c.* others contend for its being the cauſe itſelf, only conſidered *principiativè* and *terminativè*, &c.

CAUSE, Causa, that which contributes to the production of an effect; or that by virtue whereof a thing is done, or from which it proceeds.—In which ſenſe, *cauſe* ſtands eſſentially related to effect.

Firſt Cause, is that which acts of itſelf, and from its own proper power, or virtue.—In this ſenſe, God is the only *Firſt Cauſe*.

Second Causes, are thoſe which derive the power and faculty of acting, from a firſt *cauſe*.—Such *cauſes* do not properly act at all; but are acted on: and therefore are improperly called *cauſes*: of which kind are all thoſe that we call *natural cauſes*.

F. Malebranche denies ſecond, or natural *cauſes*, to have any force, power, or efficacy to produce any effect; and thinks the notion in itſelf inconceivable. It is certain the philoſophers are ſtrangely puzzled, and divided about the manner of their agency: ſome maintain them to act by their matter, figure, and motion; others by a ſubſtantial form; many by accidents, or qualities; ſome by matter and form; and others by certain faculties different from all theſe.

Some maintain, that the ſubſtantial form produces forms; and the accidental, accidents; others, that forms produce other forms and accidents; others, laſtly, that accidents alone are capable of producing accidents, and even forms.—Again, thoſe, for inſtance, who ſay that accidents may produce forms, by the virtue they have received from the form to which they are joined, do not all mean the ſame thing: ſome will have it, that theſe accidents are only the force or virtue of the ſubſtantial form; others, that they receive the influence of the form, and only act by virtue thereof: others, laſtly, that they are only inſtrumental *cauſes*.

Again, the philoſophers are divided as to the action whereby *ſecond cauſes* produce their effects: ſome maintain, that the cauſality cannot be produced, ſince it is that which produces: others will have them to act truly by their action; but they are ſtill at a loſs about that action.

Such variety is there in the ſentiments even of modern philoſophers; and thoſe too our neighbours; nor are the antients, and thoſe at a diſtance from us, better agreed: Avicenna, *v.g.* does not allow, that corporeal ſubſtances can produce any thing but accidents. His ſyſtem, according to Ruvio, is this: God produces, immediately, a moſt perfect ſpiritual ſubſtance; this produces another leſs perfect; that a third: and thus to the laſt; which laſt produces all the corporeal ſubſtances; and thoſe corporeal ſubſtances accidents. But Avicenna, not being able to conceive how corporeal ſubſtances, which cannot penetrate one another, ſhould be capable of altering one another, will have it, that only ſpirits are capable of acting on bodies; becauſe nothing elſe can penetrate them.

Causes, in the ſchool of philoſophy, are diſtinguiſhed into,

Efficient Causes, which are the agents that produce any thing.

Material CAUSES, the ſubjects whereon the agent works, or whereof the thing is formed: thus, marble is the matter, or *material cauſe*, of the ſtatue.

And *Final* CAUSES are the motives which induce a man to act; or the end for which the thing is done: thus, victory and peace are the *final cauſes* of war.

Some add the *Exemplary* CAUSE, which is the model the agent forms, or propoſes, and by which he conducts himſelf in the action: but this is not properly any *cauſe* at all.

Formal CAUSE, the change reſulting from the action; or that which determines a thing to be this, and diſtinguiſhes it from every thing elſe: thus, the ſoul is held the form, or *formal cauſe*, of man, *&c.*

CAUSES, again, are diſtinguiſhed into *Phyſical*, or *Natural*, and *Moral*.

A *Phyſical* CAUSE is that which produces a ſenſible corporeal effect: thus, the ſun is the *phyſical cauſe* of heat.

A *Moral* CAUSE is that which produces a real effect, but in things immaterial: thus, repentance is the *cauſe* of forgiveneſs.

Others define a *phyſical cauſe* to be that which produces its effect by a phyſical virtue; and a *moral cauſe*, that which determines the *phyſical cauſe*, though not neceſſarily, to produce the effect: in which ſenſe, it is alſo called a *diſpoſitive*, *excitative*, and *imputative cauſe*.

Thus, the ſun is the *phyſical cauſe* of light; a ſtone, that breaks the ſkull, is a *phyſical cauſe* of death: and thus the advice, intreaty, commands, or menaces, which determine us, though not neceſſarily, to do, or not to do, any thing, are *moral cauſes*.

In this ſenſe, a *moral cauſe* is only applicable to a free intelligent agent: and it is this notion of a *moral* and *phyſical cauſe* that is the moſt juſt, clear, and diſtinct.

CAUSES, again, are conſidered, either as *univerſal*, or *particular*; *principal*, or *inſtrumental*; *total*, or *partial*; *univocal*, *equivocal*, &c.

An *Equivocal* CAUSE is that which is of a different kind and denomination from its effect: thus, it is the ſun is ſaid to be the *cauſe* of the animals it produces.

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Cauſtics amount to the ſame with what are otherwiſe denominated *Pyrotics*, and *Eſcharotics*. They are alſo uſually confounded with cauteries, though ſome diſtinguiſh them; reſtraining *cauſtics* to thoſe medicines which do not burn through the part, nor leave an eſchar; and cauteries to thoſe which do.

Cauſtics are uſed to eat off proud fungous fleſh; they alſo penetrate within hard callous bodies, and liquify the humours; and are particularly applied, in abſceſſes and impoſthumations, to eat through to the ſuppurated matter, and give it vent: ſometimes, alſo, to make iſſues in parts where cutting is difficult, or inconvenient.

The principal medicines of this claſs are, burnt alum, ſponge, cantharides, and other veſicatories; as alſo orpiment, calx viva, vitriol, aſhes of the fig-tree, the aſh, and wine-lees; the ſalt of the lixivium whereof ſoap is made; ſublimate mercury, red precipitate, *&c.* See each deſcribed under its proper article.

Cryſtals of luna, and lapis infernalis made of ſilver and ſpirit of nitre, become *cauſtics* by that mixture.

CAUSTIC *Curve*, in the higher geometry, a curve formed by the concourſe, or coincidence of the rays of light reflected or refracted from ſome other curve.

Every curve has its twofold *cauſtic*: accordingly, *cauſtics* are divided into *catacauſtics*, and *diacauſtics*; the one formed by reflexion, the other by refraction.

Cauſtic curves are uſually ſuppoſed to be the invention of M. Tſchirnhauſen, who firſt propoſed them to the Academy of Sciences, in 1682.—They have this remarkable property, that when the curves that produce them are geometrical, they are equal to known right lines.

Thus, the *cauſtic* formed by reflected rays from a quadrant of a circle, which came at firſt parallel to the diameter, is equal to $\frac{1}{4}$ of the diameter: which is a ſort of rectification of curves that preceded the invention of the new doctrine of infinites, on which moſt of our rectifications are built.

The academy appointed a committee to examine the new curves; *viz.* Meſſ. Caſſini, Mariotte, and De la Hire; which laſt doubted much of the deſcription, or generation, M. De Tſchirnhauſen gave of the *cauſtic* by reflexion from a quadrant of a circle. The author refuſed to diſcover all his method; and M. De la Hire perſiſted in holding the generation ſuſpicious: M. Tſchirnhauſen, however, was ſo confident of it, that he ſent it to the Leipſic journaliſts, though without any demonſtration.

CAUSTIC-*Glaſſes*. See the article BURNING-*Glaſſes*.

CAUTERY*, CAUTERIUM, a medicine wherewith to burn, ſear, eat through, or corrode, ſome ſolid part of the body.

* The word is originally Greek; καυτηρ, or καυτηριον; formed from καιω, I burn.

Cauteries are of two kinds; *actual*, and *potential*.

Actual CAUTERIES are thoſe which produce an inſtantaneous effect; as fire, or a red-hot iron: theſe are applied in the fiſtula lachrymalis, after extirpations of cancers, amputations of legs, or arms, *&c.* in order to ſtop the hæmorrhages, and produce a laudable ſuppuration. They are ſometimes, alſo, applied to carious bones, abſceſſes, and malignant ulcers; in order to open a paſſage for the diſcharge of the peccant humours. The irons uſed, on theſe occaſions, are ſometimes crooked at the extremity, and that variouſly, according to the various occaſions: whence ſome are called *cultellary*, others *punctual*, others *olivary*, &c.—M. Homberg aſſures us, that a great part of the medicine of the people of Java, and other parts of the Eaſt-Indies, conſiſts in burning, or the application of *actual cauteries*; and that there is ſcarce any diſeaſe but they will happily cure thereby.

The *actual cautery*, or hot iron, is frequently applied fo the making of iſſues, in parts where cutting is difficult, o inconvenient. It makes a little round hole, which is to b filled up with a pea, or an ivy-berry, to keep it open f the humours to paſs through. Pareus deſcribes a method o making *velvet*, or *ſilken cauteries* (*cauteria ſerica vel h loſerica*); ſo called, either becauſe they give no pain, or b cauſe he purchaſed the ſecret at a dear rate from a certa chymiſt.

The *cautery* deſcribed by Galen is a brazen tube, throu which a little red-hot iron is thruſt to the part.

Cauteries are chiefly applied to the nape of the neck, between the firſt and ſecond vertebra, the exterior part of the arm, *&c.*

Potential CAUTERIES are compoſitions of *cauſtic* medicines, uſually of quick-lime, ſoap, and the like. See CAUSTICS.

CAUSWAY. See the article CAUSEWAY.

CAXA, a little coin, made of lead, mixed with ſcoria of copper; ſtruck in China, but current chiefly at Bantam, in the reſt of the iſland of Java, and in ſome of the neighbouring iſlands. See COIN.

It is ſomewhat ſmaller than the French double, and has a ſquare hole through the middle; by means whereof, ſeveral of them are hung on the ſame ſtring: this ſtring, which they call *ſanta*, uſually contains two hundred *caxas*, equivalent to nine French deniers, or ſomewhat leſs than three farthings ſterling. Five ſantas tied together, *i. e.* a thouſand *caxas*, make a ſapaeou.—Nothing can exceed the brittleneſs of the *caxa*; a ſtring never falls to the ground without breaking at leaſt ten or twelve pieces. Leaving them a night ſteeped in ſalt water, they cling ſo firm to one another, that they are not to be ſeparated without breaking one half of them. The Malais call them *cas*, and the Javeſe, *pitis*.

The *caxas* are of two kinds; *great*, and *ſmall*: the *ſmall* are thoſe we have been ſpeaking of; three hundred thouſand whereof are equal to fifty-ſix livres five ſols, Dutch money. The *large* are old *caxas*; ſix thouſand whereof are equal to the piece of eight, or four ſhillings ſixpence ſterling. Theſe are nearly the ſame with the caches of China, and the caſſies of Japan.

CAZEMATE*, in fortification, a kind of vault, or arch, of ſtone-work, in that part of the flank of a baſtion next the curtin; ſomewhat retired, or drawn back, towards the capital of the baſtion; ſerving as a battery, to defend the face of the oppoſite baſtion, and the moat, or ditch. See BASTION.

* The name comes from a vault, formerly made to ſeparate the platforms of the upper and lower batteries; each of which was called, in Italian, *caſa armata*; and, in the Spaniſh, *caſamata*: though others derive the word from *caſa à matti*, houſe of fools; Covarruvias from *caſa* and *mata*, low houſe.

The *cazemate*, ſometimes, conſiſts of three platforms, one above another; the higheſt being on the rampart: but they commonly content themſelves to withdraw the laſt within the baſtion.

The *cazemate* is alſo called the *low place*, and *low flank*; as being at the bottom of the wall next the ditch: ſometimes the *retired flank*; as being that part of the flank neareſt the curtin, and the centre of the baſtion. It was formerly covered with an epaulement, or a maſſive body, either round or ſquare, which prevented thoſe without from ſeeing within the batteries; whence it was alſo called *covered flank*.

It is now rarely uſed, by reaſon the enemy's batteries are apt to bury the artillery of the *cazemate* in the ruins of the vault: beſides, that the terrible ſmoke, made by the diſcharge of the cannon, renders it intolerable to the men.—Hence, inſtead of the antient *covered cazemates*, later engineers have contrived open ones, only guarded by a parapet, *&c.*

CAZEMATE is alſo uſed for a well with ſeveral ſubterraneous branches, dug in the paſſage of the baſtion, till the miner is heard at work, and air given to the mine.

CEILING*, in architecture, the top, or roof, of a lower room; or a covering of plaſter, over laths nailed on the bottom of the joiſts that bear the floor of the upper room; or where there is no upper room, on joiſts for the purpoſe: hence called *ceiling joiſts*.

* The word *ceiling* anſwers pretty accurately to the Latin *lacunar*, every thing over head.

Plaſtered *ceilings* are much uſed in England, more than in any other country: nor are they without their advantages, as they make the room lightſome; are good in caſe of fire; ſtop the paſſage of the duſt; leſſen the noiſe over head; and, in ſummer, make the air cooler.

CELARENT, among logicians, a mode of ſyllogiſm, wherein the major and concluſion are univerſal negative propoſitions, and the minor an univerſal affirmative.

E. gr. *c E* None whoſe underſtanding is limited can be omniſcient.
l A Every man's underſtanding is limited;
r Ent Therefore no man is omniſcient.

CELEBATE*, or CELEBACY, the ſtate of a perſon who lives out of marriage. See MARRIAGE.

* Scaliger derives the word from the Greek κοίτη, bed; and λειπω, *linquo*, I leave: others ſay, it is formed from *cæli beatitudo*, *q. d.* the bleſſedneſs of heaven.

The *celebate* of the clergy, which is ſtill rigorouſly kept up among the Romaniſts, is of a pretty antient ſtanding. It was firſt propoſed by the council of Nice, but without paſſing; it was, however, in ſome meaſure, admitted by the weſtern councils of Elvira, Arles, Tours, *&c.* though not abſolutely enjoined. Such among the prieſts as piqued themſelves on the faculty of continence, took the hint; inſomuch as, towards the cloſe of the fourth century, there were few but made a profeſſion of a voluntary *celebate*. In 441. the council of Orange ordered thoſe to be depoſed who did not abſtain from their wives; but it was Gregory VII. who firſt brought eccleſiaſtics to admit the *celebate* as a law. In the council of Trent it was propoſed to ſet the clergy at liberty again from the yoke of *celebate*; and this was even made an article of the Interim of Charles V. but the pope could not be brought into it.

St. Jerom and Epiphanius obſerve, that in their time none were admitted into the prieſthood, but thoſe who were unmarried, or who abſtained from their wives.

CELERES*, in antiquity, a body, or regiment, of guards of the antient Roman kings, eſtabliſhed by Romulus; conſiſting of three hundred youths choſen from the beſt families of Rome, and approved by the ſuffrages of the curiæ of the people, each of which furniſhed ten.

* The name comes from *celer*, quick, ready; and was given them, becauſe of their promptneſs to obey the king; or, as ſome will have it, from the name of their firſt tribune: others ſay, from one *Celer*, a comrade of Romulus, who aſſiſted him in the combat with his brother Remus, and is ſaid to have ſlain that prince.—Some ſay, the *celeres* were the ſame with thoſe afterwards called *troſſuli*, on account of their taking the city Troſſulum in Hetruria, alone, without the aſſiſtance of any infantry.

The *celeres* always attended near the king's perſon, to guard him, and to be ready to carry his orders, and to execute them. In war, they made the vant-guard in the engagement, which they always began firſt; in retreats, they made the rear-guard.

Though the *celeres* were a body of horſe, yet they uſually diſmounted, and fought on foot: their commander was called *tribune*, or *prefect of the celeres*. They were divided into three troops, of one hundred each, commanded by a captain called *centurio*: their tribune was the ſecond perſon in the kingdom. See TRIBUNE, CAVALRY, *&c.*

Plutarch ſays, Numa broke the *celeres*: if this be true, they were ſoon re-eſtabliſhed; for we find them under moſt of the ſucceeding kings: witneſs the great Brutus, who expelled the Tarquins, and who was tribune of the *celeres*.

CELERITY, in mechanics, is the velocity of a moving body; or that affection of a body in motion, whereby it is enabled to paſs over a certain ſpace, in a certain time. See VELOCITY; ſee alſo MOTION.

CELESTINS, an order of religious, reformed from the Bernardines, in 1224. by pope Celeſtin V. then only Peter De Mourchon, or Morron, of Iſernia in Naples; and eſtabliſhed in 1264. by pope Urban IV. and confirmed by Gregory X. in 1274.

They were introduced into France by Philip the Fair, who requeſted a dozen of them from the general of their order, by his ambaſſador at Naples, in 1300.—It is a kind of proverb with them, *Voila un plaiſant celeſtin*.

CELIAC, or COELIAC *Paſſion*. See the article COELIAC.

CELLITES, CELLITÆ, an order of religious, founded by Alexius, a Roman. In Italy they are called *Alexians*; but in Germany, and the Low-countries, where they have monaſteries, *cellites*, *i. e.* people inhabiting in cells.

CELLS*, CELLÆ, CELLULÆ, are little houſes, apartments, or chambers; particularly thoſe wherein the antient monks, ſolitaries, and hermits, lived in retirement.

* Some derive the word from the Hebrew כלא, *i. e.* a priſon, or place where any thing is ſhut up.

The ſame name is ſtill retained in divers monaſteries. The dormitory is frequently divided into ſo many *cells*, or lodges. The Carthuſians have each a ſeveral houſe, which ſerves them as a *cell*.

The hall wherein the Roman conclave is held, is divided, by partitions, into divers *cells*, for the ſeveral cardinals to lodge in.

CELLS, in anatomy, are little bags, or bladders, where fluids, or other matters, are lodged; called alſo *loculi*, *cellulæ*, &c.

The name is alſo given, by botaniſts, to the partitions in the huſks, or pods, where the ſeeds of plants lie.

CELLS are alſo the little diviſions, or apartments, in honey-combs, where the honey, young bees, *&c.* are diſtributed: theſe are always regular hexagons.

CELLULÆ *Adipoſæ*, in anatomy, the *loculi*, or little *cells*, wherein the fat of bodies in good habit is contained. See ADEPS, and ADIPOSE.

Theſe are co-extended with the ſkin itſelf, except on the forehead, the eyelids, penis, and ſcrotum. In emaciated bodies theſe *cells*, being unfurniſhed of their fat, appear like a kind of flaccid, tranſparent membrane.

CEMENT, or CÆMENT. See the article CÆMENT.

CEMENTATION, or CÆMENTATION. See CÆMENTATION.

CENOBITE, or COENOBITE. See COENOBITE.

CENOTAPH*, Κενοταφιον, an empty tomb, or a monument without a body under it; erected only by way of honour to the deceaſed.

* The word is originally Greek; compounded of κενος, empty; and ταφος, tomb.

CENSER. See the articel ALTAR.

Material CAUSES, the ſubjects whereon the agent works, or whereof the thing is formed: thus, marble is the matter, or *material cauſe*, of the ſtatue.

And *Final* CAUSES are the motives which induce a man to act; or the end for which the thing is done: thus, victory and peace are the *final cauſes* of war.

Some add the *Exemplary* CAUSE, which is the model the agent forms, or propoſes, and by which he conducts himſelf in the action: but this is not properly any *cauſe* at all.

Formal CAUSE, the change reſulting from the action; or that which determines a thing to be this, and diſtinguiſhes it from every thing elſe: thus, the ſoul is held the form, or *formal cauſe*, of man, *&c.*

CAUSES, again, are diſtinguiſhed into *Phyſical*, or *Natural*, and *Moral*.

A *Phyſical* CAUSE is that which produces a ſenſible corporeal effect: thus, the ſun is the *phyſical cauſe* of heat.

A *Moral* CAUSE is that which produces a real effect, but in things immaterial: thus, repentance is the *cauſe* of forgiveneſs.

Others define a *phyſical canſe* to be that which produces its effect by a phyſical virtue; and a *moral cauſe*, that which determines the *phyſical cauſe*, though not neceſſarily, to produce the effect: in which ſenſe, it is alſo called a *diſpoſitive*, *excitative*, and *imputative cauſe*.

Thus, the ſun is the *phyſical cauſe* of light; a ſtone, that breaks the ſkull, is a *phyſical cauſe* of death: and thus the advice, intreaty, commands, or menaces, which determine us, though not neceſſarily, to do, or not to do, any thing, are *moral cauſes*.

In this ſenſe, a *moral cauſe* is only applicable to a free intelligent agent: and it is this notion of a *moral* and *phyſical cauſe* that is the moſt juſt, clear, and diſtinct.

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CAUSTICS, in phyſic, thoſe medicines which, by their violent activity, and the heat thence occaſioned, deſtroy the texture of the parts to which they are applied.

Cauſtics amount to the ſame with what are otherwiſe denominated *Pyrotics*, and *Eſcharotics*. They are alſo uſually confounded with cauteries, though ſome diſtinguiſh them; reſtraining *cauſtics* to thoſe medicines which do not burn through the part, nor leave an eſchar; and cauteries to thoſe which do.

Cauſtics are uſed to eat off proud fungous fleſh; they alſo penetrate within hard callous bodies, and liquify the humours; and are particularly applied, in abſceſſes and impoſthumations, to eat through to the ſuppurated matter, and give it vent: ſometimes, alſo, to make iſſues in parts where cutting is difficult, or inconvenient.

The principal medicines of this claſs are, burnt alum, ſponge, cantharides, and other veſicatories; as alſo orpiment, calx viva, vitriol, aſhes of the fig-tree, the aſh, and wine-lees; the ſalt of the lixivium whereof ſoap is made; ſublimate mercury, red precipitate, *&c.* See each deſcribed under its proper article.

Cryſtals of luna, and lapis infernalis made of ſilver and ſpirit of nitre, become *cauſtics* by that mixture.

CAUSTIC *Curve*, in the higher geometry, a curve formed by the concourſe, or coincidence of the rays of light reflected or refracted from ſome other curve.

Every curve has its twofold *cauſtic*: accordingly, *cauſtics* are divided into *catacauſtics*, and *diacauſtics*; the one formed by reflexion, the other by refraction.

Cauſtic curves are uſually ſuppoſed to be the invention of M. Tſchirnhauſen, who firſt propoſed them to the Academy of Sciences, in 1682.—They have this remarkable property, that when the curves that produce them are geometrical, they are equal to known right lines.

Thus, the *cauſtic* formed by reflected rays from a quadrant of a circle, which came at firſt parallel to the diameter, is equal to ¼ of the diameter: which is a ſort of rectification of curves that preceded the invention of the new doctrine of infinites, on which moſt of our rectifications are built.

The academy appointed a committee to examine the new curves; *viz.* Meſſ. Caſſini, Mariotte, and De la Hire; which laſt doubted much of the deſcription, or generation, M. De Tſchirnhauſen gave of the *cauſtic* by reflexion from a quadrant of a circle. The author refuſed to diſcover all his method; and M. De la Hire perſiſted in holding the generation ſuſpicious: M. Tſchirnhauſen, however, was ſo confident of it, that he ſent it to the Leipſic journaliſts, though without any demonſtration.

CAUSTIC-*Glaſſes*. See the article BURNING-*Glaſſes*.

CAUTERY*, CAUTERIUM, a medicine wherewith to burn, ſear, eat through, or corrode, ſome ſolid part of the body.

* The word is originally Greek; καυτηρ, or καυτηριον; formed from καιω, I burn.

Cauteries are of two kinds; *actual*, and *potential*.

Actual CAUTERIES are thoſe which produce an inſtantaneous effect; as fire, or a red-hot iron: theſe are applied in the fiſtula lachrymalis, after extirpations of cancers, amputations of legs, or arms, *&c.* in order to ſtop the hæmorrhages, and produce a laudable ſuppuration. They are ſometimes, alſo, applied to carious bones, abſceſſes, and malignant ulcers; in order to open a paſſage for the diſcharge of the peccant humours. The irons uſed, on theſe occaſions, are ſometimes crooked at the extremity, and that variouſly, according to the various occaſions: whence ſome are called *cultellary*, others *punctual*, others *olivary*, &c.—M. Homberg aſſures us, that a great part of the medicine of the people of Java, and other parts of the Eaſt-Indies, conſiſts in burning, or the application of *actual cauteries*; and that there is ſcarce any diſeaſe but they will happily cure thereby.

The *actual cautery*, or hot iron, is frequently applied for the making of iſſues, in parts where cutting is difficult, or inconvenient. It makes a little round hole, which is to be filled up with a pea, or an ivy-berry, to keep it open for the humours to paſs through. Pareus deſcribes a method of making *velvet*, or *ſilken cauteries* (*cauteria ſerica vel holoſerica*); ſo called, either becauſe they give no pain, or becauſe he purchaſed the ſecret at a dear rate from a certain chymiſt.

The *cautery* deſcribed by Galen is a brazen tube, through which a little red-hot iron is thruſt to the part.

Cauteries are chiefly applied to the nape of the neck, between the firſt and ſecond vertebra, the exterior part of the arm, *&c.*

Potential CAUTERIES are compoſitions of *cauſtic* medicines, uſually of quick-lime, ſoap, and the like. See CAUSTICS.

CAUSWAY. See the article CAUSEWAY.

CAXA, a little coin, made of lead, mixed with ſcoria of copper; ſtruck in China, but current chiefly at Bantam, in the reſt of the iſland of Java, and in ſome of the neighbouring iſlands. See COIN.

It is ſomewhat ſmaller than the French double, and has a ſquare hole through the middle; by means whereof, ſeveral of them are hung on the ſame ſtring: this ſtring, which they call *ſanta*, uſually contains two hundred *caxas*, equivalent to nine French deniers, or ſomewhat leſs than three farthings ſterling. Five ſantas tied together, *i. e.* a thouſand *caxas*, make a ſapaeou.—Nothing can exceed the brittleneſs of the *caxa*; a ſtring never falls to the ground without breaking at leaſt ten or twelve pieces. Leaving them a night ſteeped in ſalt water, they cling ſo firm to one another, that they are not to be ſeparated without breaking one half of them. The Malais call them *cas*, and the Javeſe, *pitis.*

The *caxas* are of two kinds; *great*, and *ſmall*: the *ſmall* are thoſe we have been ſpeaking of; three hundred thouſand whereof are equal to fifty-ſix livres five ſols, Dutch money. The *large* are old *caxas*; ſix thouſand whereof are equal to the piece of eight, or four ſhillings ſixpence ſterling. Theſe are nearly the ſame with the caches of China, and the caſſies of Japan.

CAZEMATE*, in fortification, a kind of vault, or arch, of ſtone-work, in that part of the flank of a baſtion next the curtin; ſomewhat retired, or drawn back, towards the capital of the baſtion; ſerving as a battery, to defend the face of the oppoſite baſtion, and the moat, or ditch. See BASTION.

* The name comes from a vault, formerly made to ſeparate the platforms of the upper and lower batteries; each of which was called, in Italian, *caſa armata*; and, in the Spaniſh, *caſamata*: though others derive the word from *caſa à matti*, houſe of fools; Covarruvias from *caſa* and *mata*, low houſe.

The *cazemate*, ſometimes, conſiſts of three platforms, one above another; the higheſt being on the rampart: but they commonly content themſelves to withdraw the laſt within the baſtion.

The *cazemate* is alſo called the *low place*, and *low flank*; as being at the bottom of the wall next the ditch: ſometimes the *retired flank*; as being that part of the flank neareſt the curtin, and the centre of the baſtion. It was formerly covered with an epaulement, or a maſſive body, either round or ſquare, which prevented thoſe without from ſeeing within the batteries; whence it was alſo called *covered flank*.

It is now rarely uſed, by reaſon the enemy's batteries are apt to bury the artillery of the *cazemate* in the ruins of the vault: beſides, that the terrible ſmoke, made by the diſcharge of the cannon, renders it intolerable to the men.—Hence, inſtead of the antient *covered cazemates*, later engineers have contrived open ones, only guarded by a parapet, *&c.*

CAZEMATE is alſo uſed for a well with ſeveral ſubterraneous branches, dug in the paſſage of the baſtion, till the miner is heard at work, and air given to the mine.

CEILING*, in architecture, the top, or roof, of a lower room; or a covering of plaſter, over laths nailed on the bottom of the joiſts that bear the floor of the upper room; or where there is no upper room, on joiſts for the purpoſe: hence called *ceiling joiſts*.

* The word *ceiling* anſwers pretty accurately to the Latin *lacunar*, every thing over head.

Plaſtered *ceilings* are much uſed in England, more than in any other country: nor are they without their advantages, as they make the room lightſome; are good in caſe of fire; ſtop the paſſage of the duſt; leſſen the noiſe over head; and, in ſummer, make the air cooler.

CELARENT, among logicians, a mode of ſyllogiſm, wherein the major and concluſion are univerſal negative propoſitions, and the minor an univerſal affirmative.

E. gr. cE None whoſe underſtanding is limited can be omniſcient.
lA Every man's underſtanding is limited;
rEnt Therefore no man is omniſcient.

CELEBATE*, or CELEBACY, the ſtate of a perſon who lives out of marriage. See MARRIAGE.

* Scaliger derives the word from the Greek κοιτη, bed; and λειπω, *linquo*, I leave: others ſay, it is formed from *cœli beatitudo*, *q. d.* the bleſſedneſs of heaven.

The *celebate* of the clergy, which is ſtill rigorouſly kept up among the Romaniſts, is of a pretty antient ſtanding. It was firſt propoſed by the council of Nice, but without paſſing; it was, however, in ſome meaſure, admitted by the weſtern councils of Elvira, Arles, Tours, *&c.* though not abſolutely enjoined. Such among the prieſts as piqued themſelves on the faculty of continence, took the hint; inſomuch as, towards the cloſe of the fourth century, there were few but made a profeſſion of a voluntary *celebate*. In 441. the council of Orange ordered thoſe to be depoſed who did not abſtain from their wives; but it was Gregory VII. who firſt brought eccleſiaſtics to admit the *celebate* as a law. In the council of Trent it was propoſed to ſet the clergy at liberty again from the yoke of *celebate*; and this was even made an article of the Interim of Charles V. but the pope could not be brought into it.

St. Jerom and Epiphanius obſerve, that in their time none were admitted into the prieſthood, but thoſe who were unmarried, or who abſtained from their wives.

CELERES*, in antiquity, a body, or regiment, of guards of the antient Roman kings, eſtabliſhed by Romulus; conſiſting of three hundred youths choſen from the beſt families of Rome, and approved by the ſuffrages of the curiæ of the people, each of which furniſhed ten.

* The name comes from *celer*, quick, ready; and was given them, becauſe of their promptneſs to obey the king; or, as ſome will have it, from the name of their firſt tribune: others ſay, from one *Celer*, a comrade of Romulus, who aſſiſted him in the combat with his brother Remus, and is ſaid to have ſlain that prince.—Some ſay, the *celeres* were the ſame with thoſe afterwards called *troſſuli*, on account of their taking the city Troſſulum in Hetruria, alone, without the aſſiſtance of any infantry.

The *celeres* always attended near the king's perſon, to guard him, and to be ready to carry his orders, and to execute them. In war, they made the vant-guard in the engagement, which they always began firſt; in retreats, they made the rear-guard.

Though the *celeres* were a body of horſe, yet they uſually diſmounted, and fought on foot: their commander was called *tribune*, or *prefect of the celeres*. They were divided into three troops, of one hundred each, commanded by a captain called *centurio*: their tribune was the ſecond perſon in the kingdom. See TRIBUNE, CAVALRY, *&c.*

Plutarch ſays, Numa broke the *celeres*: if this be true, they were ſoon re-eſtabliſhed; for we find them under moſt of the ſucceeding kings: witneſs the great Brutus, who expelled the Tarquins, and who was tribune of the *celeres*.

CELERITY, in mechanics, is the velocity of a moving body; or that affection of a body in motion, whereby it is enabled to paſs over a certain ſpace, in a certain time. See VELOCITY; ſee alſo MOTION.

CELESTINS, an order of religious, reformed from the Bernardines, in 1224. by pope Celeſtin V. then only Peter De Mourchon, or Morron, of Iſernia in Naples; and eſtabliſhed in 1264. by pope Urban IV. and confirmed by Gregory X. in 1274.

They were introduced into France by Philip the Fair, who requeſted a dozen of them from the general of their order, by his ambaſſador at Naples, in 1300.—It is a kind of proverb with them, *Voila un plaiſant celeſtin.*

CELIAC, or COELIAC *Paſſion*. See the article COELIAC.

CELLITES, CELLITÆ, an order of religious, founded by Alexius, a Roman. In Italy they are called *Alexians*; but in Germany, and the Low-countries, where they have monaſteries, *cellites*, *i. e.* people inhabiting in cells.

CELLS*, CELLÆ, CELLULÆ, are little houſes, apartments, or chambers; particularly thoſe wherein the antient monks, ſolitaries, and hermits, lived in retirement.

* Some derive the word from the Hebrew כלא, *i. e.* a priſon, or place where any thing is ſhut up.

The ſame name is ſtill retained in divers monaſteries. The dormitory is frequently divided into ſo many *cells*, or lodges.

The Carthuſians have each a ſeveral houſe, which ſerves them as a *cell.*

The hall wherein the Roman conclave is held, is divided, by partitions, into divers *cells*, for the ſeveral cardinals to lodge in.

CELLS, in anatomy, are little bags, or bladders, where fluids, or other matters, are lodged; called alſo *loculi*, *cellulæ*, &c.

The name is alſo given, by botaniſts, to the partitions in the huſks, or pods, where the ſeeds of plants lie.

CELLS are alſo the little diviſions, or apartments, in honeycombs, where the honey, young bees, *&c.* are diſtributed: theſe are always regular hexagons.

CELLULÆ *Adipoſæ*, in anatomy, the *loculi*, or little *cells*, wherein the fat of bodies in good habit is contained. See ADEPS, and ADIPOSE.

Theſe are co-extended with the ſkin itſelf, except on the forehead, the eyelids, penis, and ſcrotum. In emaciated bodies theſe *cells*, being unfurniſhed of their fat, appear like a kind of flaccid, tranſparent membrane.

CEMENT, or CÆMENT. See the article CÆMENT.

CEMENTATION, or CÆMENTATION. See CÆMENTATION.

CENOBITE, or COENOBITE. See COENOBITE.

CENOTAPH*, Κενοταφιον, an empty tomb, or a monument without a body under it; erected only by way of honour to the deceaſed.

* The word is originally Greek; compounded of κενος, empty; and ταφος, tomb.

CENSER. See the articel ALTAR.

CENSOR *, in antiquity, one of the prime magiſtrates in antient Rome; whoſe buſineſs was to ſurvey and rate the people, and to inſpect and correct their manners.

> * The word is derived from *cenſere*; becauſe he aſſeſſed and valued every man's eſtate; regiſtering their names, and placing them in a proper century, that the Romans might know their own ſtrength: though others ſay, the *cenſors* were ſo called on account of their other office; *viz.* as being comptrollers, or correctors of manners and policy.

There were two *cenſors* firſt created in the year of Rome 311. upon the ſenate's obſerving, that the conſuls were too much taken up with matters of war, to be at leiſure for looking near enough into private affairs. The two firſt were Papirius and Sempronius: their authority extended over every perſon; and they had a right to reprehend the higheſt. At firſt they were taken out of the ſenate; but after the plebeians had got the conſulate open to them, they ſoon arrived at the *cenſorſhip.* M. Rutilius was the firſt; who, having been twice conſul, and dictator, in the year 402. demanded the office of *cenſor.*—The cuſtom was, to elect two; the one of a patrician family, the other a plebeian: and upon the death of either, the other was diſcharged from his office, and two new ones elected; but not till the next luſtrum.—In the year 414. a law was made, appointing one of the *cenſors* to be always elected out of the plebeians; which held in force till the year 622. when both *cenſors* were choſen from among the people; after which time, it was ſhared between the ſenate and people.

This office was ſo conſiderable, that none aſpired to it till they had paſſed all the reſt: ſo that it was looked on as ſurpriſing, that Craſſus ſhould be admitted *cenſor,* without having been either conſul, or pretor.—The term of this office was at firſt eſtabliſhed for five years; but that inſtitution only laſted nine: Mamertinus the dictator, in the year 420. made a law, reſtraining the *cenſure* to a year and an half; which was afterwards obſerved very ſtrictly.

The buſineſs of the *cenſors* was, to regiſter the effects, *&c.* of the Roman citizens; and to impoſe taxes, in proportion to what each perſon poſſeſſed. Cicero reduces their functions to the numbering of the people; the correction and reformation of manners; the eſtimating the effects of each citizen; the proportioning of taxes; the ſuperintendence of tribute; the excluſion from the temples, and the care of the public places. They had alſo a right, *ſenatu ejicere,* to expel from the ſenate ſuch of the members as they judged unworthy of the dignity; as well as to break and caſhier the knights who failed in their duty, by taking from them the public horſe, *equum adimere.*

The republic of Venice has at this day a *cenſor* of the manners of their people, whoſe office laſts ſix months.

Censors *of books* are a body of doctors, or other officers, eſtabliſhed, in divers countries, to examine and give their judgment of all books, ere they go to the preſs; and to ſee they contain nothing contrary to the faith, and good manners.—In England we had formerly an officer of this kind, under the title of *licenſer of the preſs*; but, ſince the revolution, the preſs has been open.

M. Bayle compares authors ſoliciting the approbation of *cenſors,* or licenſers, to the ſhades wandering on the banks of Styx, and waiting with impatience for a paſſage to the other ſhore. He applies to them theſe two verſes of Virgil:

Tendenteſque manus, ripæ ulterioris amore:
Navita ſed triſtis nunc hos, nunc accipit illos.

At Paris, the *faculty of theology* claim the privilege of *cenſors,* as granted to them by the pope; and it is certain they had been in poſſeſſion of it for many ages: but in the year 1624. a new commiſſion of four doctors were created, by letters patent, the ſole public, or royal *cenſors,* and examiners of all books; and anſwerable for every thing contained therein. The faculty, however, ſtill maintain their claim, by taking occaſion, now-and-then, to give their approbations to books.

CENSURE, Censura, is popularly uſed for a judgment, whereby ſome book, perſon, or action, is blamed, or condemned; more particularly for a reprimand made by a ſuperior, or perſon in authority.

Eccleſiaſtical **Censures** are the public menaces which the church makes, or pains and penalties incurred by diſobeying what ſhe enjoins; or rather, the pains and puniſhments themſelves: as interdiction, excommunication, *&c.*

Till the time of the reformation, the kings of England were ſubject to the *cenſures* of the church of Rome; but the kings of France have always maintained themſelves exempt from them. In effect, there is no inſtance of excommunication of any of their firſt race of kings, till Lotharius's excommunication by pope Nicholas I. for putting away his wife Tetberge; which is reckoned the firſt breach of the liberties of the Gallican church: yet the pope durſt not hazard his excommunication on his own authority, but took care to have it confirmed by the aſſembly of the biſhops of France; and the ſame precaution was afterwards obſerved by the other popes. But in after-times the French kings aſſerted their rights to better purpoſe; for pope Benedict XIII. having *cenſured* Charles VI. laid the nation under an interdict: upon which the parliament of Paris, by an arret in 1408. ordered the bull to be torn; and Julius II. having excommunicated Louis XII. the aſſembly-general at Tours *cenſured* the pope's *cenſure.*

The canoniſts diſtinguiſh two kinds of *cenſures*; the one *de jure,* the other *de facto,* or by ſentence.

Censure is alſo a cuſtom, in ſeveral manors in Cornwal and Devon, whereby all the reſiants above the age of ſixteen are called to ſwear fealty to the lord, to pay two-pence *per* poll, and a penny *per annum,* ever after, as cert-money, or common fine. See Cert-Money.

CENSUS, among the Romans, was an authentic declaration made by the ſeveral ſubjects of the empire, of their reſpective names, and places of abode, before proper magiſtrates, in the city of Rome, called *cenſors*; and in the provinces *cenſitors,* by whom the ſame were regiſtered.

This declaration was accompanied with a catalogue, or enumeration, in writing, of all the eſtates, lands, and inheritances, they poſſeſſed; their quantity, quality, place, wives, children, tenants, domeſtics, ſlaves, *&c.*

The *cenſus* was inſtituted by king Servius; and was held every five years. It went through all the ranks of people, though under different names: that of the common people was called *cenſus,* or *luſtrum*; that of the knights, *cenſus, recenſio, recognitio*; that of the ſenators, *lectio, relectio.*

Hence, alſo, Census came to ſignify a perſon who had made ſuch a declaration: in which ſenſe it was oppoſed to *incenſus,* a perſon who had not given in his eſtate, or name, to be regiſtered.

In the Voconian law, Census is alſo uſed for a man whoſe eſtate, in the *cenſor*'s books, is valued at 100000 ſeſterces.

CENTAUR *, Centaurus, in aſtronomy, a part or moiety of a ſouthern conſtellation, in form, half man, half horſe; uſually joined with the wolf.

> * The word comes from the Greek κενταυρος; formed of κεντεω, *pungo*; and ταυρος, bull; *q. d.* bull-pricker.

CENTAURUS *cum Lupo*, Centaur *with the Wolf*, in aſtronomy, a conſtellation of the ſouthern hemiſphere; whoſe ſtars, in Ptolemy's catalogue, are nineteen; in Tycho's, four; in the Britannic catalogue, thirteen: the order, names, longitudes, latitudes, magnitudes, *&c.* whereof, are as follow.

Names and Situations of the Stars.	Signs.	Longitude.			Latitude.			Magni.
		°	′	″	°	′	″	
Inform. before the head	♎	25	42	40	21	33	13	5
Preced. in the head of the Centaur	♏	2	22	1	20	33	3	4 5
South. in the head.		3	41	36	21	34	24	4 5
Middle		3	35	20	20	2	20	4 5
Subſeq. and north. in the head		3	26	53	18	56	15	4 5
5								
In hind ſhoulder of the Centaur		8	0	18	21	59	0	2 3
South. of 2 in anterior foot of wolf		20	21	34	12	57	45	5 6
Subſeq. and north. of the ſame		20	39	49	11	28	1	5
Prec. of cont. before neck of lupus		23	10	26	17	6	56	4
Subſequent		23	37	3	17	37	52	6
10								
Preced. of 2 in the wolf's noſe		26	21	24	14	25	38	5 6
Contiguous to that		27	2	37	14	34	8	5 6
Subſeq. in the noſe	♏	28	30	10	13	7	23	5

CENTAURY *the Leſſer*, Centaurium *Minus*, is a ſmall and low plant, with leaves growing by pairs, and a flower conſiſting of a purple petal, cut into five ſegments, and a tubulous calyx divided in like manner.—Its leaves are eſteemed a good bitter, and very ſerviceable to the ſtomach, either in the compoſitions of that kind, or *per ſe,* in decoction or infuſion, which is beſt made in wine. It diſcuſſes and abſterges viſcid humours; is good againſt worms, and by ſome alſo is extolled as an alexipharmic, febrifuge, *&c.*

CENTER *, or Centre, in a general ſenſe, denotes a point equally remote from the extremes of a line, figure, or body; or the middle of a line, or plane, by which a figure or body is divided into two equal parts.

> * The word is Greek, κεντρον; which primarily ſignifies a point; being formed from the verb κεντειν, *pungere,* to prick.

Center *of a Baſtion* is a point in the middle of the gorge of the baſtion, whence the capital line commences; and which is ordinarily at the angle of the inner polygon of the figure. See Bastion, *&c.*

Center *of a Battalion*, the middle of a battalion; where is uſually left a large ſquare ſpace, for lodging the cloaths and baggage.

Center *of a Circle* is a point in the middle of a circle, or circular figure, from which all lines drawn to the circumference are equal.

Euclid demonſtrates, that the angle at the *center* is double to that at the circumference; *i. e.* the angle made by two lines drawn from the extremes of an arch to the *center,* is double that made by two lines drawn from thoſe extremes to a point in the circumference.

Center *of a Conic Section* is the point wherein all the diameters concur.

This point, in the ellipſis, is within the figure; and, in the hyperbola, without.

CENTER *of a Curve*, of the higher kind, is the point where two diameters concur.

Where all the diameters concur in the ſame point, Sir Iſaac Newton calls it, the *general Center*.

CENTER *of a Dial*, is that point where its gnomon or ſtile, which is placed parallel to the axis of the earth, interſects the plane of the dial; and from thence, in thoſe dials which have *Centers*, all the hour-lines are drawn. If the plane of the dial be parallel to the axis of the earth, it can have no *Center* at all; but all the hour-lines will be parallel to the ſtile, and to one another.

CENTER *of an Ellipſis*, is that point where the two diameters, the tranſverſe and the conjugate, interſect each other.

CENTER *of Gravitation*, or *Attraction*, in phyſics, is that point to which a revolving planet, or comet, is impelled, or attracted by the force or impetus of gravity.

CENTER *of Gravity*, in mechanics, is a point within a body, through which if a plane paſs, the ſegments on each ſide will be equal, and equiponderate, *i. e.* neither of them can move the other.

Hence, if the deſcent of the *Center* of gravity be prevented, or if the body be ſuſpended by its *Center* of gravity, it will continue at reſt.

The whole gravity of a body may be conceived united in its *Center*; and therefore, in demonſtrations, it is uſual for the body to ſubſtitute the *Center*.

Through the *Center* of gravity paſſes a right line, called *the Diameter of Gravity:* the interſection, therefore, of two ſuch diameters determines the *Center*.

The plane whereon the *Center* of gravity is placed, is called *the Plane of Gravity:* ſo that the common interſection of two ſuch planes determines the diameter of gravity.

In homogeneal bodies, which may be divided lengthwiſe into ſimilar and equal parts, the *Center* of gravity is the ſame with the *Center* of magnitude. If, therefore, a line be biſected, the point of ſection will be the *Center* of gravity.

ommon CENTER *of gravity of two bodies*, is a point ſo ſituated, in the right line joining the *Centers* of the two bodies, as that, if the point be ſuſpended, the two bodies will equiponderate, and reſt in any ſituation.—Thus, the point of ſuſpenſion in a common balance, or in a Roman ſtilyard, where the two weights equiponderate, is the common *Center* of gravity of the two weights.

ows of the CENTER *of gravity.*—1. *If the* Centers *of gravity of two bodies* A *and* B (Tab. Mechan. fig. 13. nº 2.) *be joined by the right line* A B, *the diſtances* B C *and* C A *of the common* Center *of gravity* C, *from the particular* Centers *of gravity* B *and* A, *are reciprocally as the weights* A *and* B: ſee this demonſtrated under BALANCE.

Hence, if the gravities of the Bodies A and B be equal, the common *Center* of gravity C will be in the middle of the right line A B. Again, ſince A : B :: BC : AC; it follows that A. AC : B. BC; whence it appears, that the powers of equiponderating bodies are to be eſtimated by the factum of the maſs, multiplied into the diſtance from the *Center* of gravity; which factum is uſually called the *Momentum* of the weights.

Further, ſince A : B :: BC : AC, A+B : A :: BC+AC : BC. The common *Center* of gravity, therefore, C, of two bodies, will be found, if the factum of one weight A, into the diſtance of the ſeparate *Centers* of gravity A B, be divided by the ſum of the weights A and B. Suppoſe, *v. g.* A=12, B=4, AB=24; therefore, BC=24. 12 : 16=18. If the weight A be given, and the diſtance of the particular *Centers* of gravity A B, together with the common *Center* of gravity C; the weight of B will be found = to A. AC : BC; that is, dividing the moment of the given weight, by the diſtance of the weight required from the common center of gravity. Suppoſe, A=12, BC=18, AC=6; then B=6, 12 : 18=12 : 3=4.

2. *To determine the common* Center *of gravity of ſeveral given bodies* a, b, c, d (fig. 13.), in the right line A B. Find the common *Center* of gravity of the two bodies a and b, which ſuppoſe in F; conceive a weight $a+b$, applied in F; and in the line F E, find the common *Center* of the weights $a+b$ and c; which ſuppoſe in G. Laſtly, in B G, ſuppoſe a weight $a+b+c$ applied, equal to the two $a+b$ and c; and find the common *Center* of gravity between this and the weight d, which ſuppoſe in H; this H will be the common *Center* of gravity of the bodies a, b, c, d. And in the ſame manner might the common *Center* of gravity of any greater number of bodies be found.

Two weights D *and* E (fig. 14.) *being ſuſpended without heir common* Center *of gravity in* C, *to determine which of em preponderates, and how much.* Multiply each into its iſtance from the *Center* of ſuſpenſion; that ſide on which e factum is greateſt, will preponderate; and the difference etween the two will be the quantity wherewith it preonderates.

ence, the momenta of the weights D and E, ſuſpended without the *Center* of gravity, are in a ratio compounded of the eights D and E, and the diſtances from the point of ſuſpenſion. Hence alſo the momentum of a weight ſuſpended in the very point C, will have no effect at all in reſpect of the reſt D E.

4. *To determine the preponderation where ſeveral bodies* a, b, c, d (fig. 15.), *are ſuſpended without the common* Center *of gravity in* C. Multiply the weights c and d into their diſtances from the point of ſuſpenſion C E and E B; the ſum will be the momentum of their weights, or their ponderation towards the right: then multiply the weights a and b into their diſtances A C and C D, the ſum will be the ponderation towards the left: ſubtracting, therefore, the one from the other, the remainder will be the preponderation required.

5. *Any number of weights*, a, b, c, d, *being ſuſpended without the common* Center *of gravity in* C, *and preponderating towards the right; to determine the point* F, *from whence the ſum of all the weights being ſuſpended, the ponderation ſhall continue the ſame as in their former ſituation.*

Find the momentum wherewith the weights c and d preponderate towards the right; ſince the momentum of the ſum of the weights to be ſuſpended in F is to be equal to it, the momentum now found will be the factum of C F into the ſum of the weights: this, therefore, being divided by the ſum of the weights, the quotient will be the diſtance CF, at which the ſum of the weights is to be ſuſpended, that the preponderation may continue the ſame as before.

6. *To find the* Center *of gravity in a parallelogram and parallelepiped.* Draw the diagonals A D and E G (*Fig.* 16.); likewiſe C B and H F; ſince each diagonal, A D and C B, divides the parallelogram A C D B into two equal parts, each paſſes through the *Center* of gravity; conſequently, the point of interſection I muſt be the *Center* of gravity of the parallelogram. In like manner, ſince both the plane CBFH, and ADGE, divide the parallelepiped into two equal parts, each paſſes through its *Centre* of gravity; ſo that the common interſection I K is the diameter of gravity, the middle whereof is the *Center*.

After the ſame manner may the *Center* of gravity be found in priſms and cylinders; it being the middle point of the right line that joins the *Center* of gravity of their oppoſite baſes.

7. In regular polygons, the *Center* of gravity is the ſame with the *Center* of the circumſcribed parallelogram.

8. *To find the* Center *of gravity of a cone, and a pyramid.* The *Center* of gravity of a cone is in its axis A C (*Fig.* 17.). If then $AP=x$, $Pp=dx$, the weight in the ſame cone is $prx\,dx : 2a^2$; and therefore its momentum $prx^3\,dx . 2a^2$. Hence the ſum of the momenta $prx^4 : 8a^2$; which divided by the ſum of the weights $prx^3 : 6a^2$, gives the diſtance of the *Center* of gravity of the portion A M N, from the vertex $A=6a^2prx^4 : 8a^2prx^3=\frac{3}{4}x=\frac{3}{4}AP$: wherefore, the *Center* of gravity of the intire cone is diſtant from the vertex, $\frac{3}{4}$ of A C. And in the ſame manner is found the diſtance of the *Center* of gravity from the vertex of the pyramid $\frac{3}{4}$ A C.

9. *To determine the* Center *of gravity in a triangle* B A C (*Fig.* 18.) Draw the right line A D, biſecting the baſe B C in D; ſince △ BAD = △ DAC, each may be divided into the ſame number of little weights, applied in the ſame manner on each ſide to the common axis A D: ſo that the *Center* of gravity of the △ B A C, will be in A D. To determine the preciſe point in that, let $AD=a$, $BC=b$, $P=x$, $MN=y$; then will

$$AP : MN :: AD : BC$$
$$x : \quad y :: \; a \; : b$$

Hence, $y=bx : a$. Draw $AE=c$ perpendicular to B C; then AD : AE :: AP : AQ; and therefore, $AQ=cx : a$, and $Qq=cdx : a$. Whence, the momentum $yxdx=cbx^2dx : a^2$, and $\int yxdx=cbx^3 : 3a^2$; which ſum divided by the area of the triangle $AMN=cbx^2 : 2a^2$, gives the diſtance of the *Center* of gravity from the $\text{vertex}=2abx^3 : 3abx^2=\frac{2}{3}x$. If then for x, be ſubſtituted a, the diſtance of the *Center* of gravity of the △ from the vertex, will be found $\frac{2}{3}a$.

10. *For the* Center *of gravity in a parabola* (Fig. 19.). Its diſtance from the vertex A is found the ſpace A F. In a cubical paraboloid, the diſtance of the *Center* from the vertex is $=\frac{4}{5}$ AP. In a biquadratic paraboloid, $\frac{5}{9}$ A P. In a ſurdeſolid paraboloid, $\frac{6}{11}$ A P. In the exterior parabola A S T, the *Center* of gravity is at the diſtance A L. In the cubical paraboloid, $\frac{4}{5}$ A Q. In a biquadratic paraboloid, $\frac{5}{6}$ A Q. In a ſurdeſolidal paraboloid, $\frac{6}{7}$ A Q.

11. *The* Center *of gravity in the arch of a circle* is diſtant from the *Center* of the arch by a line, which is a third proportional to the quadrant and the radius.—In a ſector of a circle, the diſtance of the *Center* of gravity from the *Center* of the circle, is to the diſtance of the *Center* of gravity of the arch, as two to three.

For the Center *of gravity of ſegments, lines, parabolic conoids, ſpheroids, truncated cones*, &c. as being caſes more operoſe, and at the ſame time more out of the way; we refer to Wolfius and others.

12. *To determine the* Center *of gravity in any body mechanically.* Lay the given body HI (*Fig.* 20.) on an extended rope, or on the edge of a triangular priſm F G, bringing it this and that way, till the parts on either ſide are in æquilibrio; the plane, whoſe ſide is KL, paſſes through the *Center* of gravity. Ba-

lance it again on the ſame, only changing its ſituation: then will the cord or the ſide M N, paſs through the *Centre* of gravity; ſo that the interſection of the two lines M N and K L determines the point O in the ſurface of the body required.

The ſame may be done by laying the body on a horizontal table (as near the edge as is poſſible, without its falling) in two poſitions, lengthwiſe and breadthwiſe: the common interſection of the two lines contiguous to the edge, will be its *Center* of gravity. Or, it may be done by placing the body on the point of a ſtile, &c. till it reſt in æquilibrio. It was by this method, Borelli found the *Center* of gravity in an human body, to be between the nates and pubis; ſo that the whole gravity of the body is there collected, where nature has placed the genitals: an inſtance of the wiſdom of the Creator, in placing the membrum virile in that place, which of all others is the moſt convenient for the affair of copulation.

13. "Every figure, whether ſuperficial or ſolid, generated by "the motion of a line, or figure, is equal to the factum of the "generating magnitude, multiplied into the way of its *Center* "of gravity, or the line its *Center* of gravity deſcribes." See the demonſtration hereof, under the article CENTRO-BARYC *Method*.

The preceding elegant theorem is looked on as one of the nobleſt geometrical diſcoveries made in the laſt age; and is the foundation of the methodus centro-baryca. Pappus, indeed, gave the firſt hint long ago; but it was the jeſuit Guldinus that brought it to maturity. Leibnitz ſhews it will hold, if the axis, or *Center*, be continually changed during the generating motion: the corollaries are too numerous to be here detailed.

CENTER *of an Hyperbola*, is a point in the middle of the determinate or tranſverſe axis.

CENTER *of Motion*, is a point round which one or more heavy bodies, that have one common *Center* of gravity, revolve; *v. gr.* If the weights P and Q (*Tab. Mechanics*, *Fig.* 21.) revolve about the point N, ſo as when P deſcends, Q aſcends, N is ſaid to be the *Center of motion*.

It is demonſtrated in mechanics, that the diſtance I N, of the *Center* of gravity of any particular weight, from the common *Center* of gravity, or the *Center* of motion N, is perpendicular to the line of direction I *p*.

CENTER *of Oſcillation*, a point wherein, if the whole gravity of a compound pendulum be collected, the ſeveral oſcillations will be performed in the ſame time as before.

Hence, its diſtance from the point of ſuſpenſion is equal to the length of a ſimple pendulum, whoſe oſcillations are iſochronal with thoſe of the compound one.

Laws of the CENTER *of Oſcillation*. 1. *If ſeveral weights* D F H B (Tab. Mechanics, Fig. 22.), *whoſe gravity is ſuppoſed collected in the points* D F H B, *conſtantly retain the ſame diſtance between themſelves and the point of ſuſpenſion* A; *and the pendulum thus compounded, performs its oſcillations about* A; *the diſtance of the* Center *of oſcillation* O, *from the point of ſuſpenſion* O A, *will be had by multiplying the ſeveral weights into the ſquares of the diſtances, and dividing the aggregate by the ſum of the momenta of their weight.*

2. *To determine the* Center *of oſcillation in a right line* A B (Fig. 23.). Let $AB = a$, $AD = x$, then will the infinitely ſmall particle $DP = dx$, be the momentum of its weight $x\,dx$; conſequently the diſtance of the *Center* of oſcillation in the part A D, from the point of ſuſpenſion $A = \int x\,dx : \int x\,dx = \frac{1}{3}x : \frac{1}{2}x^2 = \frac{2}{3}x$. If then for x be ſubſtituted a, the diſtance of the *Center* of oſcillation in the right line $AB = \frac{2}{3}a$.

In this manner is found the *Center* of oſcillation of a wire, oſcillating about one of its extremities.

3. *To determine the* Center *of oſcillation of the rectangle* R I H S (Fig. 19.), *ſuſpended in the middle point* A *of the ſide* R I, *and oſcillating about its axis* R I, Let $RI = SH = a$, $AP = x$; then will $Pp = dx$, and the element of the area; conſequently one weight $= a\,dx$, and its momentum $a\,x\,dx$. Wherefore, $\int a\,x^2\,dx : \int a\,x\,dx = \frac{1}{3}a\,x^3 : \frac{1}{2}a\,x^2 = \frac{2}{3}x$, indefinitely expreſſes the diſtance of the *Center* of oſcillation, from the axis of oſcillation in the ſegment R C D I. If then for x be ſubſtituted the altitude of the whole rectangle $RS = b$, we ſhall have the diſtance of the *Center* of oſcillation from the axis $= \frac{2}{3}b$.

For the Center *of oſcillation in an equicrural triangle*, A S H, oſcillating about its axis R I, parallel to its baſe S H; its diſtance from the vertex A is found $= \frac{3}{4}$ of A E the altitude of the triangle.

Of an equicrural triangle S A H oſcillating about its baſe S H, its diſtance from the vertex A is found $= \frac{1}{2}$ A E the altitude of the triangle.

For the Center *of oſcillation in an equicrural triangle* S A H, *ſuſpended by an inflexible thread* void of gravity, A *b*, and oſcillating about its axis parallel to its baſe S H; its diſtance from the vertex is found $= \frac{1}{2}$ the altitude of the triangle.

For the Centers *of oſcillation of parabolas, and curves of the like kind*, oſcillating about their axis, parallel to their baſes, they are found to be as follows.

In the Apollonian parabola, the diſtance of the *Center* from the axis, $= \frac{5}{7}$ A E.

In a cubical paraboloid, the diſtance of the *Center* of oſcillation from the axis $= \frac{7}{10}$ A E.

In a biquadratic paraboloid, the diſtance of the *Center* from the axis, $= \frac{9}{13}$ A E.

In ſolid and plane figures agitated laterally, *i. e.* about the axis of oſcillation, perpendicular to the plane of the figure, the inveſtigation of the *Center* of oſcillation is ſomewhat difficult; in regard all the parts of the weight, by reaſon of their unequal diſtance from the point of ſuſpenſion, do not move with the ſame velocity; as is ſhewn by Huygens, in his *Horol. Oſcill.* He found, in this caſe, the diſtance of the *Center* of oſcillation, from the axis in a circle, to be $\frac{3}{4}$ of the diameter: in a rectangle, ſuſpended by one of its angles, $\frac{2}{3}$ of the diagonal: in a parabola, ſuſpended by its vertex, $\frac{5}{7}$ of its axis, and $\frac{1}{3}$ of the parameter; ſuſpended from a point in the middle of the baſis, $\frac{4}{7}$ of the axis, and $\frac{1}{2}$ the parameter; in the ſector of a circle, $\frac{3}{4}$ of a right line which is to the radius as the arch to the ſubtenſe: in a cone, $\frac{4}{5}$ of the axis, and $\frac{1}{5}$ of the third proportional to the axis, and a ſemidiameter of the baſe: in a ſphere (as is uſually the caſe in pendulums), $\frac{2}{5}$ of a third proportional to two quantities compoſed of the ſemidiameter and length of the thread, and the ſemidiameter itſelf: in a cylinder, $\frac{2}{3}$ of the altitude, and $\frac{1}{2}$ a right line, which is to the ſemidiameter of the baſe, as that is to the altitude.

CENTER *of Percuſſion*, in a moving body, is that point wherein the percuſſion is the greateſt, wherein the whole percutient force of the body is ſuppoſed to be collected: or about which the impetus of the parts is balanced on every ſide. See PERCUSSION.

Laws of the CENTER *of Percuſſion.*—1. The *Center of Percuſſion is the ſame with the Center of Oſcillation*, where the percutient body revolves round a fixed point; and is determined in the ſame manner; *viz.* by conſidering the impetus of the parts, as ſo many weights applied to an inflexible right line, void of gravity; *i. e.* by dividing the ſum of the factums of the impetus's of the parts, multiplied by their diſtances from the point of ſuſpenſion, by the ſum of the impetus's. What, therefore, has been above ſhewn of the *Center of Oſcillation*, will hold of the *Center of Percuſſion*, where the percutient body moves round a fixed point. See CENTER *of Oſcillation*.

2. *The* Center *of Percuſſion is the ſame with the* Center *of Gravity*, if all the parts of the percutient body be carried with a parallel motion, or with the ſame celerity: for the momenta are the facta of the weights into the celerities. Wherefore, to multiply equiponderating bodies by the ſame velocity, is the ſame thing as to take equimultiples; but the equimultiples of equiponderating bodies, themſelves equiponderate; therefore, equivalent momenta are diſpoſed about the *Center* of gravity: conſequently the *Center* of percuſſion in this caſe, coincides with that of gravity; and what is ſhewn of the one, will hold of the other.

CENTER *of Converſion*, in mechanics, a term firſt uſed by M. Parent. Its ſignification is thus conceived: if a ſtick be laid on a ſtagnant water, and drawn by a thread faſtened to it, ſo that the thread always makes the ſame angle with the ſtick; always, *v. g.* a right angle; the ſtick will be found to turn on one of its points, which will be immoveable; which point is termed the *Center of Converſion*. For the greater eaſe, the thread may be conceived faſtened to one end of the ſtick.

This effect ariſes from the reſiſtance of the fluid, and the manner wherein it divides: for, imagine the firſt moment of traction; it is certain, here, the reſiſtance of the parts of the fluid to be diſplaced, tends to turn the ſtick around the point to which the thread is faſtened, as on a *Center*: ſo that in the preſent inſtance, the ſtaff would deſcribe preciſely the quadrant of a circle: after which, the fluid would no longer bear the ſtick lengthwiſe; but in a particular motion, in ſuch manner, as that the free end of the ſtick, and the parts neareſt it, would deſcribe larger arches of circles than the reſt, and have a greater velocity. The reſiſtance therefore of the fluid, which tends to impreſs a circular motion on the ſtick, around the point to which the thread is faſtened, tends to impreſs a greater velocity on the parts next the other extremity; or, which is the ſame thing, thoſe parts require a greater velocity to ſurmount the reſiſtance of the fluid: ſo that the ſtick will not have that circular motion around the point to which the thread is faſtened; or, the reſiſtance of the fluid is greater towards the free extreme of the ſtick, and ſti lleſſens towards the other extreme. Now, all the columns, or threads of water, which reſiſt the ſtick, muſt be ſuppoſed of the ſame length, or the ſame maſs. One may therefore find on the ſtick ſuch a point, as that taking a great number of thoſe threads on that ſide which reſiſts the leaſt, and a le number on that ſide where they reſiſt the moſt; there wi be an exact compenſation, and the forces be equal on ea ſide: it is this point is the *Center of Converſion*. And as th ſame reaſoning has place in all motions of traction made i the ſame manner, this *Center* is always the ſame point.

The grand queſtion here ariſing is, to know preciſely in wh point the *Center* of converſion is found: this M. Parent h determined by an infinite deal of calculation. If the ſti drawn by one extremity be a ſtrait line divided into twen parts, reckoning from the thread, the *Center* of converſi he finds, will be nearly on the 13th. If it be not a li but a ſurface, or a ſolid, there will be ſome change in th ſituation of the *Center* of converſion, according to the ſu face, or the ſolid.

If in lieu of a body ſwimming in a fluid, we ſuppoſe it laid on a rough uneven plane; the reſiſtance of this plane to the motion of the body will always be divided in the ſame manner, and determine the ſame *center* of converſion. This reſiſtance is, preciſely, what we call *friction*, ſo prejudicial to the effects of machines.

Center *of a parallelogram*, or *polygon*, the point wherein its diagonals interſect.

Center *of a ſphere* is a point from which all the lines drawn to the ſurface, are equal.

The *center of the ſemicircle*, by whoſe revolution the ſphere is generated, is alſo that of the ſphere.

Hermes Triſmegiſtus defines God an intellectual ſphere, whoſe *center* is every-where, and circumference no-where.

CENTO[*], in poetry, a work wholly compoſed of verſes, or paſſages promiſcuouſly taken from other authors; only diſpoſed in a new form, or order: ſo as to compoſe a new work, and make a new meaning.

[*] The word is Latin, *cento*, which primarily ſignifies a cloak made of patches; and that from the Greek κεντρων. The Roman ſoldiers uſed theſe *centos*, or pieces of old ſtuff patched over each other, to guard themſelves from the ſtrokes of their enemies: though others ſay, that *centos* were properly the patches of leather, &c. wherewith their galleries or ſcreens, called *vineæ*, were covered; under which the beſiegers made their approaches towards any place.

Auſonius has laid down the rules to be obſerved in compoſing *centos*. The pieces, he ſays, may be taken either from the ſame poet, or from ſeveral; and the verſes may be either intire, or divided into two; one half to be connected with another half taken elſewhere: but two verſes are never to be taken running, nor is much leſs than half a verſe to be taken Agreeably to theſe rules, he has made a pleaſant nuptial *cento* from Virgil.

Proba Falconia has written the life of Jeſus Chriſt, in *centos* taken from Virgil: the like is done by Alex. Roſs, in his *Chriſtiados*; and by Stephen de Pleurre, canon regular of St. Victor at Paris; an inſtance of whoſe *centos* on the adoration of the Magi, is as follows.

Adoratio Magorum, *Matt.* 2.

6, Æn. 255. *Ecce autem primi ſub lumine ſolis, & ortus,*
2, Æ. 694. *Stella facem ducens multa cum luce cucurrit:*
5, Æ. 526. *Signavitque viam * cœli in regione ſerena.* 8, Æ. 528.
8, Æ. 530. *Tum reges * (credo quia ſit divinitus illis* 1, G. 415.
, G. 416. *Ingenium, & rerum fato prudentia major)*
7, Æ. 98. *Externi veniunt, * quæ cuique eſt copia lati* 5, Æ. 100.
11, Æ. 333. *Munera portantes: * molles ſua thura Sabæi,* 1, G. 57.
, Æ. 464. *Dona dehinc auro gravia, * myrrhaque madentes* 12, Æ. 100.
. Æ. 659. *Agnovere deum regem, * regumque parentem.* 6, Æ. 548.
, G. 418. *Mutavere vias, * perfectis ordine votis:* 10, Æ. 548.
, Æ. 16. *Inſuetum per iter, * ſpatia in ſua quiſq; receſſit.* 12, Æ. 126.

CENTRAL, ſomething relating to a *center*. See Center. Thus we ſay *central eclipſe*, *central fire*, *central forces*, *central rule*, &c.

Central *forces*, the vires, or powers, whereby a moving body either tends towards the center of motion, or recedes from it. *Central forces* are divided into two kinds, with regard to their different relations to the center, *viz.* the *centripetal*, and the *centrifugal*.

aws of Central *forces*. 1. The following rule, for which we are obliged to the Marquis de l'Hôpital, opens at once all the myſteries of *central forces*: ſuppoſe a body of any determinate weight to move uniformly round a center with any certain velocity; find from what height it muſt have fallen to acquire that velocity: then, as the radius of the circle it deſcribes is to double that height, ſo is its weight to its centrifugal force. Hence it is eaſy to infer, that,

2. If two bodies, equal in weight, deſcribe peripheries of unequal circles in equal times, their *central forces* are as their diameters AB, and HL (Tab. *Mechanics*, *Fig.* 25.). And hence, if the *central forces* of two bodies, deſcribing peripheries of two unequal circles, be as their diameters, they paſs over the ſame in equal times.

3. The *central force* of a body moving in the periphery of a circle, is as the ſquare of the infinitely ſmall arch AE, divided by the diameter AB. Since then a body, by an equable motion, in equal times deſcribes equal arches AE; the *central force*, wherewith the body is impelled in the periphery of the circle, is conſtantly the ſame.

. If two bodies deſcribe different peripheries by an equable motion, their *central forces* are in a ratio, compounded of the duplicate ratio of their celerities, and the reciprocal one of their diameters. Hence, if the celerities be equal, the *central forces* will be reciprocally as their diameters; and if the diameters AB and HL be equal, *i. e.* if each moveable proceed in the ſame periphery, but with unequal celerities, the *central forces* will be in a duplicate ratio of the velocities. If the *central forces* of the two bodies moving in different peripheries be equal, the diameters of the circles AB and HL will be in a duplicate ratio of the celerities.

5. If two bodies, moving in unequal peripheries, be acted on by the ſame *central force*, the time in the larger is to that in the ſmaller, in a ſubduplicate ratio of the greater diameter AB, to the leſs HL; wherefore, $T^2 : t^2 :: D : d$, that is, the diameters of the circles in whoſe peripheries thoſe bodies are acted on by the ſame *central force*, are in a duplicate ratio of the times. Hence alſo the times wherein ſimilar peripheries or arches are run over by bodies impelled by the ſame *central force*, are in proportion to their velocities.

The *central forces* are in a ratio compounded of the direct ratio of the diameters, and the reciprocal one of the ſquares of the times, by the intire peripheries.

6. If the times wherein the bodies are carried thro' the ſame intire peripheries, or ſimilar arches, be as the diameters of the circles, the *central forces* are reciprocally as the ſame diameters.

7. If a body move uniformly in the periphery of a circle, with the velocity it acquires by falling the height AL; the *central force* will be to the gravity, as double the altitude AL to the radius CA.—If therefore the gravity of the body be called G, the centrifugal force will be $2AL. G : CA$.

8. If a heavy body move equably in the periphery of a circle, and with the velocity which it acquires by falling the height AL, equal to half the radius; the *central force* will be equal to the gravity.—And again, if the *central force* be equal to the gravity, it moves in the periphery of the circle, with the ſame gravity which it acquires in falling a height equal to half the radius.

9. If the *central force* be equal to the gravity, the time it takes up in the intire periphery, is to the time of its fall through half the radius, as the periphery to the radius.

10. If two bodies move in unequal peripheries, and with an unequal velocity, the which is reciprocally in a ſubduplicate ratio of the diameters; the *central forces* are in a duplicate ratio of the diſtances from the center of the forces, taken reciprocally.

11. If two bodies move in unequal peripheries, with celerities which are reciprocally as the diameters; their *central forces* will be reciprocally as the cubes of their diſtances from the center of their forces.

12. If the velocities of two bodies moving in unequal peripheries, be reciprocally in a ſubduplicate ratio of the diameters; the times wherein they paſs the whole periphery, or ſimilar arches, are reciprocally in a triplicate ratio of the diſtances from the center of the forces: wherefore, if the *central forces* be reciprocally in a duplicate ratio of the diſtances from the center, the times wherein the intire peripheries, or ſimilar arches, are paſſed over, are reciprocally in a triplicate ratio of the diſtances.

13. If a body move in a curve line, in ſuch manner as that the radius CB, *Fig.* 25. nº 2, drawn from it to the fixed point C, placed in the ſame plane, deſcribes areas BAC, BCE, &c. proportional to the times, or equal in any given time, it is ſolicited towards the point C, by a centripetal force.

14. If a body proceed according to the direction of the right line AD, and be ſolicited by a centripetal force towards a fixed point C, placed in the ſame plane; it deſcribes a curve, whoſe cavity is towards C, and whoſe ſeveral areæ, comprehended between two radii AB and CB, are proportional to the times.

15. However the *central forces* differ from one another, they may be compared together; for they are always in a ratio compounded of the ratio of the quantities of matter in the revolving bodies, and the ratio of the diſtances from the center; and alſo in an inverſe ratio of the ſquares of the periodical times. If then you multiply the quantity of matter in each body by its diſtance from the center, and divide the product by the ſquare of the periodical time, the quotients of the diviſion will be to one another in the ſaid compound ratio, that is, as the *central forces*.

16. When the quantities of matter are equal, the diſtances themſelves muſt be divided by the ſquare of the periodical times, to determine the proportion of the *central forces*: in that caſe, if the ſquares of the periodical times be to one another as the cubes of the diſtances, the quotients of the diviſions, as well as the *central forces*, will be in an inverſe ratio of the ſquares of the diſtances.

17. When the force by which a body ſolicited towards a point is not every-where the ſame, but is either increaſed or diminiſhed in proportion to the diſtance from the center; ſeveral curves will thence ariſe in a certain proportion. If the force decreaſes in an inverſe ratio of the ſquares of the diſtances from that point, the body will deſcribe an ellipſis, which is an oval curve, in which there are two points called *foci*, and the point towards which the force is directed falls upon one of them: ſo that in every revolution the body once approaches to, and once recedes from it. The circle alſo belongs to that ſort of curves, and ſo in that caſe the body may alſo deſcribe a circle. The body may alſo (by ſuppoſing a greater celerity in it) deſcribe the two remaining conic ſections, *viz.* the parabola and hyperbola-curves, which do not return into themſelves: on the contrary, if the force increaſes with the diſtance, and that in a

ratio of the diſtance itſelf, the body will again deſcribe an ellipſis; but the point to which the force is directed is the center of the ellipſe; and the body, in each revolution, will twice approach to, and again twice recede from that point. In this caſe alſo a body may move in a circle, for the reaſon above-mentioned.

CENTRAL *Rule* is a rule or method diſcovered by our countryman Thomas Baker, rector of Nympton in Devon, whereby to find the center of a circle deſigned to cut the parabola in as many points, as an equation to be conſtructed hath real roots.

Its principal uſe is in the conſtruction of equations; and he has applied it with good ſucceſs as far as biquadratics.

The *central rule* is chiefly founded on this property of the parabola: that if a line be inſcribed in that curve perpendicular to any diameter, a rectangle formed of the ſegments of the inſcript is equal to a rectangle made of the intercepted diameter and parameter of the axis.

The *central rule* has the advantage over Cartes's and De Latteres's methods of conſtructing equations, in that both theſe are ſubject to the trouble of preparing the equation by taking away the ſecond term. This we are freed from in Baker's method, which ſhews us how to conſtruct all equations not exceeding the fourth power by the interſection of a circle and parabola, without the omiſſion or change of any terms. See *Phil. Tranſ.* N° 157.

CENTRIFUGAL *force* is that whereby a body revolving round a center, endeavours to recede from it.

It is one of the eſtabliſhed laws of nature, that all motion is of itſelf rectilinear; and that the moving body never recedes from its firſt right line, till ſome new impulſe be ſuperadded in a different direction: after that new impulſe, the motion becomes compounded, but it continues ſtill rectilinear; tho' the direction of the line be altered. To move in a curve, it muſt receive a new impulſe, and that in a different direction, every moment; a curve not being reducible to right lines, unleſs infinitely ſmall ones. If then a body continually drawn towards a center, be projected in a line that does not go thro' that center, it will deſcribe a curve; in each point whereof, A (Tab. *Mechanics*, *Fig.* 25.) it will endeavour to recede from the curve, and proceed in the tangent AD: and, if nothing hindered, it would actually proceed; ſo as in the ſame time wherein it deſcribes the arch AE, it would recede the length of the line DE, perpendicular to AD, by its *centrifugal force*. The *centrifugal force*, therefore, is as the right line DE, perpendicular to AD; ſuppoſing the arch AE infinitely ſmall.

The effect of the *centrifugal force* is ſuch, that a body, obliged to deſcribe a circle, always deſcribes the largeſt it poſſibly can: a greater circle being, as it were, leſs circular, and leſs diſtant from a right line, than a ſmall one. A body therefore ſuffers more violence, and exerts its *centrifugal force* more, when it deſcribes a little circle, than when a large one: that is, the *centrifugal force* is always proportional to the circumference of the curve in which the revolving body is carried round.

It is the ſame in other curves as in circles; for a curve, whatever it be, may be eſteemed as compoſed of an infinity of arches of infinitely ſmall circles, all deſcribed on different radii; ſo as that it is at thoſe places where the curve has the greateſt curvity, that the little arches are moſt circular: thus, in the ſame curve, the *centrifugal force* of the body that deſcribes it, varies according to the ſeveral points wherein it is found.

CENTRIPETAL *force* is that power whereby a moveable body, impelled in the right line AG (*Fig.* 25.), is perpetually drawn out of its rectilinear motion, and ſolicited to proceed in a curve. The *centripetal force*, therefore, is as the right line DE to AB; ſuppoſing the arch AE infinitely ſmall. Hence, the *centripetal* and *centrifugal forces* are equal.

CENTRO-BARYC *method*, in mechanics, is a method of meaſuring or determining the quantity of a ſurface, or a ſolid, by conſidering it as formed by motion, and multiplying it into the way of its center of gravity.

The doctrine is compriſed in the following theorem, with its corollaries.

Every figure, whether ſuperficial or ſolid, generated by the motion of a line or figure, is equal to the factum of the generateing magnitude into the way of its center of gravity, or the line which its center of gravity deſcribes.

Demonſt. For ſuppoſe the weight of the whole generating magnitude collected in the center of gravity; the whole weight produced by its motion will be equal to the factum of the weight moved into the center of gravity. But when lines and figures are conſidered like homogeneous heavy bodies, their weights are as their bulks: and therefore the weight moved is the generating magnitude; and the weight produced, that generated. The figure generated, therefore, is equal to the factum of the magnitude into the way of its center of gravity. Q. E. D.

Corol. 1. Since a parallelogram ABCD (Tab. *Mechanics*, *Fig.* 26.) is deſcribed, if the right line AB proceed according to the direction of another AC, with a motion ſtill parallel to itſelf; and the way of the center of gravity E is equal to the right line EF, perpendicular to CD, that is, to the altitude of the parallelogram: its area is equal to the factum of the baſe CD, or the deſcribent line into the altitude EF.

Corol. 2. In the ſame manner it appears, that the ſolidity of all bodies, deſcribed by a plane deſcending according to the direction of any right line AC, is had by multiplying the deſcribing plane by the altitude.

Corol. 3. Since a circle is deſcribed, if the radius CL (*Fig.* 27.) revolve round a center C, and the center of gravity of the radius CL be in the middle F; the way of the center of gravity is a periphery of a circle X, deſcribed by a ſubduple radius: conſequently the area of the circle is equal to the factum of the radius CL, into the periphery deſcribed by the ſubduple radius CF.

Corol. 4. If a rectangle ABCD (*Tab. Mechanics*, *Fig.* 28.) revolve about its axis AD; the rectangle will deſcribe a cylinder, and the ſide BC the ſuperficies of a cylinder. But the center of gravity of the right line BC is in the middle F; and the center of gravity of the generating plane in the middle G of the right line EF. The way of this latter, therefore, is the periphery of a circle deſcribed by the radius EG; that of the former, the periphery of a circle deſcribed by the radius EF. Wherefore, the ſuperficies of the cylinder is the factum of the altitude BC into the periphery of a circle deſcribed by the radius EF, or the baſe. And the ſolidity of the cylinder is the factum of the generating rectangle ABCD into the periphery of a circle deſcribed by the radius EG, which is ſubduple of EF, or of the ſemidiameter of the cylinder.

Suppoſe, *v. gr.* the altitude of the deſcribing plane, and therefore of the cylinder $BC=a$; the ſemidiameter of the baſe $DC=r$; then will $EG=\frac{1}{2}r$: and ſuppoſing the ratio of the ſemidiameter to the periphery $=1:m$, the periphery deſcribed by the radius $\frac{1}{2}r=\frac{1}{2}mar$. Therefore, multiplying $\frac{1}{2}mr$ by the area of the rectangle $AC=ar$; the ſolidity of the cylinder will be $=\frac{1}{2}mar$. But $\frac{1}{2}mar^2=\frac{1}{2}r.mr.a$ the area of the circle deſcribed by the radius DG. It is evident, therefore, the cylinder is equal to the factum of the baſe into the altitude.

Corol. 5. In like manner, ſince the center of gravity of the right line AB (*Tab. Mechanics*, *Fig.* 17.) is in the middle M, and the ſurface of a cone is deſcribed, if the triangle ABC revolve about its axis; if $PM=\frac{1}{2}C$; the ſuperficies of the cone will be equal to the factum of its ſide AB, into the periphery deſcribed by the radius PM, or the ſubduple of the ſemidiameter of the baſe BC.

Suppoſe, *v. gr.* $BC=r$, $AB=a$; the ratio of the radius to the periphery $1:m$; then will $PM=\frac{1}{2}r$, and the periphery deſcribed by this radius $=\frac{1}{2}mr$. Therefore, multiplying $\frac{1}{2}mr$ into the ſide of the cone AB, the product is the ſuperficies of $\frac{1}{2}amr$. But $\frac{1}{2}amr$ is alſo the factum of $\frac{1}{2}a$ and mr: therefore, the ſurface of the cone is the product of the periphery into half the ſide.

Corol. 6. If the triangle ACB (*Tab. Mechanics*, *Fig.* 29.) revolve about an axis, it deſcribes a cone; but if CB be biſected in D, and the right line AD be drawn, and $AO=\frac{2}{3}AD$; the center of gravity will be in O. The ſolidity of the cone, therefore, is equal to the factum of the triangle CAB into the periphery deſcribed by the radius PO; but $AD:AO::BD:OP$; and $AO=\frac{2}{3}AD$, and $DB=\frac{1}{2}CB$. Therefore, $OP=\frac{2}{3}BD=\frac{1}{3}CB$.

Suppoſe, *v. gr.* $BC=r$, $AB=a$; the ratio of the radius to the periphery $=1:m$. Then will $OP=\frac{1}{3}r$ the periphery deſcribed by this radius $\frac{1}{3}mr$; the triangle $ACB=\frac{1}{2}r$; and therefore, the ſolidity of the cone $\frac{1}{3}mr\ \frac{1}{2}ar=\frac{1}{6}amr^2$. But $\frac{1}{6}amr^2=\frac{1}{2}r.\ mr\ \frac{1}{3}a$. Or, the factum of the baſe of the cone into the third part of the altitude. See TRIANGLE.

This elegant theorem, which may be ranked among the chief inventions in geometry of the laſt age, was taken notice of long ago by Pappus; but the jeſuit Guldinus was the firſt who ſet it in its full light, and exhibited its uſe in a variety of examples. Several other geometers, after Guldinus and Pappus, have alſo uſed it in meaſuring ſolids, and ſurfaces generated by a rotation round a fixed axis; eſpecially before the late invention of the integral calculus; and it may ſtill take place in ſome caſes, where the integral calculus would be more difficult. M. Leibnitz has obſerved, that the method will hold, though the axis or center be continually changed during the generative motion.

CENTRUM in geometry, mechanics, &c. See CENTE

CENTRUM *phonicum*, in acouſtics, is the place where the ſpeaker ſtands in polyſyllabical and articulate echoes.

CENTRUM *phonocampticum* is the place, or object, that returns the voice in an echo.

CENTRUM *tendinoſum*, in anatomy, a point, or center, wherein the tails of the muſcles of the diaphragm meet.

This center is perforated towards the right ſide, for the vena cava; towards the left, backward: its fleſhy part gives way to the gula. The deſcending trunk of the great artery, the thoracic duct, and vena azygos, paſs between its two inferior proceſſes. See DIAPHRAGM.

CENTRY *Box*, a wooden cell, or lodge, made to ſhelter the centinel, or ſentry, from the injuries of the weather.

In a fortification, ſuch lodges are uſually placed on the flanked angles of the baſtions, on thoſe of the ſhoulder, and ſometimes in the middle of the curtin.

CENTUMVIRATE, among the Romans, a court compoſed of one hundred magiſtrates, or judges, appointed to decide private differences betwen the people.

CENTURION, CENTURIO, among the Romans, an officer in the infantry, who commanded a *Century*, or an hundred men.

The firſt *Centurion* of the firſt cohort of each legion, was called *Primipilus*, *Primopilus*, or *Primipili Centurio*, ſometimes *Primus Centurio*; he was not under the command of any tribune, as all the reſt were; and had four *Centuries* under his direction. He guarded the ſtandard, and the eagle of the legion.

CENTURY, a thing divided, or ranged into an hundred parts.

At the time when the Roman people were aſſembled for creating of magiſtrates, eſtabliſhing of laws, or deliberating of public affairs, they were divided into *Centuries*; and to the end their ſuffrages might be more eaſily collected, they voted by *Centuries*: this was done in the Campus Maritus; and theſe aſſemblies weres, hence called *Comitia Centuriata*.

The Roman cohorts were diſtributed into decuries, commanded by decurions; and *Centuries* by centurions. Each cohort conſiſted of ſix *Centuries*, and a legion of ſixty. See COHORT.

CENTURY, in chronology, is the ſpace of one hundred years.

Church-hiſtory is computed chiefly by *Centuries*, commencing from our Saviour's incarnation,.

In this ſenſe, we ſay, the firſt *Century*; the fathers of the ſecond *Century*; the councils of the third *Century*, &c.

CENTURIES *of Magdeburg*, a celebrated eccleſiaſtical hiſtory divided into thirteen *Centuries*, containing thirteen hundred years, ending at 1298. compiled by ſeveral learned proteſtants of Magdeburg.

The chief of the *Centuriators* was Matthias Flacius Illyricus. It is ſaid, that Baronius undertook his annals, purely to oppoſe the Magdeburg *Centuriators*,

CEPHALÆA. See CEPHALALGIA.

CEPHALIC *, in medicine, is applied to any thing belonging to the head, or its parts. See HEAD.

* The word is Greek *κεφαλικος*, formed of *κεφαλη*, *caput*, head.

EPHALICS, or CEPHALIC *Medicines*, are ſuch as are proper for diſorders of the head.

Theſe are generally of a volatile, ſpirituous, or aromatic nature, or at leaſt they are joined with ſuch; and are ſupppoſed to be of ſervice, by the volatility of their particles inſinuating into the nerves, and mixing with the animal ſpirits directly, as well as by the common circulation. Fixed bodies can only become *Cephalic* by accident.

Thus, ſpirit of lavender is ſuppoſed directly to act upon the nerves of the palate, &c. upon which account, it is frequently taken dropped on ſugar, or bread: and ſal volatile, by ſmelling to, is ſuppoſed to be aſſiſtant to the head, by its volatile particles entering the olfactory nerves. As to aromatic *Cephalics*, as the ſpecies of diambra, powder de gutteta, nutmeg, &c. they act chiefly by their aromatic parts warming the nervous ſyſtem, and increaſing their vibrations, by which the nervous fluid circulates more freely.

EPHALIC *Vein*, in anatomy, is a vein of the arm between the ſkin and the muſcles, divided into two branches, *External* and *Internal*. The external goes down to the wriſt, where it joins the baſilica, and turns up to the back of the hand: the internal branch, together with a ſprig of the baſilica, makes the mediana.—See *Tab. Anat.* (angeiol.) fig. 6. lit. n.

It is thus called, in regard the antients uſed to open it in diſorders of the head; from a miſtaken notion, that it had a nearer concern with the head than any of the other veins.

EPHALALGIA, in medicine, is underſtood, in the general, of any head-ach; but properly ſignifies, only a freſh one.—When it becomes inveterate, it is called *Cephalæa*; and, when it only poſſeſſes half the head, *Hemicrania*.

PHALOPHARYNGÆI, in anatomy, two muſcles of the rifice of the œſophagus called the *Pharynx*.

They have their origin in the articulation of the head with the irſt vertebra, and are inſerted into the upper part of the pha- ynx: they ſerve to draw it upwards and backwards.

PHEUS, in aſtronomy, a conſtellation of the northern hemiſphere; whoſe ſtars in Ptolemy's catalogue are thirteen; in Tycho's eleven; in Hevelius's forty; in the Britannic cata- gue thirty-five. The order, names, longitudes, latitudes, magnitudes, &c. whereof are as follow.

Names and Situations of the Stars.	Signs	Longitude.			Latitude.			Magnit.
		°	′	″	°	′	″	
In the preced. foot	♉	28	50	35	75	27	46	4 5
In the preced. arm	♈	0	39	5	73	56	57	4 5
In the bend of the preced. arm		0	14	30	71	45	45	4
		14	58	25	74	5	20	6
In the preced. ſhoulder		8	31	3	68	56	8	3
5								
		14	18	55	69	59	15	6
		20	30	19	70	2	57	6
		1	18	35	71	8	15	3
In the girdle, againſt the preced.	♉	10	42	11	66	47	28	6
ſide)	♈	10	5	8	65	29	2	5
10	♉	4	14	37	70	15	33	5
	♈	9	35	24	65	2	27	7
	♉	7	16	41	70	22	40	6
	♈	4	7	6	61	39	14	6
That preced. the tiara.		7	41	48	61	52	51	6
15								
In Cepheus's neck.		10	58	16	62	54	22	7
	♉	10	17	45	69	22	27	5 6
In the breaſt	♈	19	55	16	65	45	41	5
		15	33	22	64	18	27	6
		16	29	2	64	36	41	6
20								
Middle of 3 in the tiara		9	40	7	61	9	27	4 5
North. and ſmall. of the ſame		11	41	33	61	54	25	6
South in the tiara		8	42	5	59	58	31	4
	♉	8	40	54	68	25	29	5
	♈	18	32	2	63	24	27	7
25								
		24	5	28	63	57	16	6
That following the tiara		13	20	14	59	32	50	4 5
	♉	26	30	10	68	31	58	6
Between the feet, double		26	37	31	68	23	7	5 6
	♈	22	54	40	62	2	10	6
30								
	♉	13	24	51	66	59	34	6
Preced. in the following arm	♈	28	58	46	62	36	40	4
In the following leg	♉	19	16	3	65	31	44	5
Latter in the hind arm		5	42	36	61	23	20	5
In the hind foot	♉	25	48	15	64	36	47	3
35								

CEPI *Corpus*, in law, a return made by the ſheriff, upon a capias, or other proceſs to the like purpoſe; ſignifying, that he hath taken the body of the party.

CERATE *, CERATUM, in medicine, a kind of ſtiff unguent, or liniment, made of oil and wax, with other ingredients; uſed externally in ſeveral diſeaſes, eſpecially thoſe of the ſkin.

* It takes its name from its capital ingredient, wax, called in Latin *Cera*.

Its conſiſtence is thicker than that of a liniment; the laſt having uſually two ounces of wax to two of oil; but the *Cerate*, four of wax to two of oil: yet it is thinner than a plaiſter.

There are *Cerates* of various kinds, *refrigerative*, *ſtomachic*, &c. *Cerate of Sulphur*, *of Saunders*, *reſtringent Cerate of Bricks*, *Divine Cerate*, &c.

There is a particular one, called the *Refrigerative Cerate of Galen*, made of white wax and oleum roſat. omphacin.

CERATION, CERATIO, in chymiſtry, the operation of waxing.

CERATOGLOSSUM *, Κερατογλωσσον, in anatomy, a pair of muſcles of the tongue, thus deſcribed by Mr. Cowper: "The "*Ceratogloſſum* has a broad fleſhy origination, at the ſuperior "part of the os hyoides, laterally; whence it aſcends to its "inſertion, at the root of the tongue. This, with its partner, "acting, draws the tongue into the mouth directly: if only "one of them act, it moves the tongue on one ſide."

* The word is derived from the Greek *κερας*, horn, and *γλωσσα*, tongue; its form bearing ſome reſemblance to a horn.

CERCELE, in heraldry. A *Croſs* CERCELE, is a croſs, which, opening at the ends, turns round both ways, like a ram's horns. See CROSS.

CERDONIANS, antient heretics, who maintained moſt of the errors of Simon Magus, Saturninus, and the Manichees.

They took their name from their leader *Cerdon*, a Syrian, who came to Rome in the time of pope Hyginus; and there abjured his errors: but he did this in appearance only; for he was afterwards convicted of perſiſting in them, and accordingly was caſt out of the church again.

Cerdon aſſerted two principles, the one good, and the other evil; this laſt, according to him, was creator of the world, and the God that appeared under the old law. The firſt, whom he called *unknown*, was the father of Jeſus Chriſt; who, he taught, was only incarnate in appearance, and was not born of a virgin; nor did he ſuffer death, but in appearance. He denied the reſurrection, and rejected all the books of the Old Teſtament, as coming from an evil principle. Marcion, his diſciple, ſucceeded him in his errors. Whence the Marcionites.

CEREALIA, in antiquity, feaſts of Ceres, inſtituted by Triptolemus, ſon of Celeus king of Eleuſine in Attica, in gratitude for his having been inſtructed by Ceres, who was ſuppoſed to have been his nurſe, in the art of cultivating corn, and makeing bread.

There were two feaſts of this kind at Athens; the one called *Eleuſinia*, the other *Theſmophoria*.

What both agreed in, and was common to all the *Cerealia*, was, that they were celebrated with a great deal of religion and purity; ſo that it was eſteemed a great pollution to meddle, on thoſe days, in conjugal matters.

It was not Ceres alone that was honoured here, but alſo Bacchus. The victims offered were hogs, by reaſon of the waſte they make in the products of the earth: whether there was any wine offered, or not, is matter of much debate among the critics. Plautus and Macrobius ſeem to countenance the negative ſide; Cato and Virgil the poſitive. Macrobius ſays, indeed, they did not offer wine to Ceres; but mulſum, which was a compoſition of wine and honey boiled up together: and that the ſacrifice made on the 21ſt of December to that goddeſs and Hercules, was a pregnant ſow, together with cakes and mulſum: and that this is what Virgil means by *Miti Baccho. Vide* Salmaſium, Lambin. *&c.*

The *Cerealia* paſſed from the Greeks to the Romans, who held them for eight days ſucceſſively; commencing, as generally held, on the fifth of the ides of April. It was the women alone who were concerned in the celebration, all dreſſed in white: the men, likewiſe in white, were only ſpectators. They eat nothing till after ſun-ſet; in memory of Ceres, who in her ſearch after her daughter took no repaſt but in the evening.

After the battle of Cannæ, the deſolation was ſo great at Rome, that there were no women to celebrate this feaſt, by reaſon they were all in mourning; ſo that it was omitted that year.

CEREBELLUM, or CEREBEL, in anatomy, the hinder part of the brain.—See Tab. *Anat.* (oſteol.) fig. 5. litt. cc.

The *Cerebellum* is eſteemed a kind of little brain by itſelf, as the word imports, which is a diminutive of *Cerebrum*.

It is placed in the hinder and lower part of the ſkull, underneath the hind-part of the brain, or cerebrum: it lies open to the cerebrum at bottom; but at top it is ſeparated from it by a duplicature of the dura mater. Its figure ſomewhat reſembles a flat bowl, broader than it is long.

Its ſubſtance is harder, drier, and more ſolid, than that of the brain, but of the ſame nature and kind; being compoſed, like it, of a cortical, or glandulous, and a medullary part: the branches of which laſt, when opened, reſemble thoſe of a tree, meeting in the middle, and forming a kind of ſtem, which runs quite through it. Its colour is yellowiſh, that of the brain being whiter.

Its ſurface is unequal, and furrowed, but not ſo much as that of the cerebrum; appearing rather as if laminated, like ſome ſhell; the middle circles being the largeſt and deepeſt: between the laminæ are duplicatures of the pia mater. The fore and hind parts of the *Cerebellum* are terminated by apophyſes; called *Vermiformes*, from the reſemblance they bear to worms: it is joined to the medulla oblongata by two proceſſes. called by Willis, *Pedunculi*.

Beſides theſe, there are two or three other medullary proceſſes, which paſſing acroſs the medulla oblongata, form an arch; from the diſcoverer called *Pons Varoli*.

The blood-veſſels of the *Cerebellum* are the ſame with thoſe of the cerebrum; and the uſe the ſame; *viz.* to ſeparate the nervous juice from the blood, and convey it through the ſeveral parts of the body.

Dr. Willis, however, diſtinguiſhes between the functions of the *Cerebrum*, and *Cerebellum*; making the firſt the principle of voluntary motions, and actions; and the laſt the principle of involuntary ones; *viz.* that of reſpiration, the motion of the heart, *&c.*

It is commonly aſſerted, that a wound either in the cortex, or medulla of the *Cerebellum*, is mortal; which it is not in the brain, from which there have been intire parts taken away without harm. The truth is, we have inſtances of people living ſome time, not only without any cerebrum, but alſo without any *Cerebellum*

CEREBRUM, in anatomy, the brain, properly ſo called; in contradiſtinction from the *Cerebellum*. See BRAIN.

CEREMONY *, an aſſemblage of ſeveral actions, forms, and circumſtances, ſerving to render a thing more magnificent and ſolemn.

CERINTHIANS, antient heretics, who denied the deity of Jeſus Chriſt.—They took their name from Cerinthus, one of the firſt hereſiarchs in the church, being cotemporary with St. John.

Cerinthus was a zealous defender of the circumciſion, as well as the Nazarenes and Ebionites. St. Epiphanius ſays, he was the head of a faction which roſe at Jeruſalem againſt St. Peter, on account of ſome uncircumciſed perſons with whom that apoſtle had eat. He believed that Jeſus Chriſt was a mere man, born of Joſeph and Mary; but that, in his baptiſm, a celeſtial virtue deſcended on him in form of a dove; by means whereof he was conſecrated by the Holy Spirit, and made Chriſt. It was by means of this celeſtial virtue, therefore, that he wrought ſo many miracles; which, as he received it from heaven, quitted him after his paſſion, and returned to the place whence it came: ſo that Jeſus, whom he called *pure man*, really died and roſe again; but that Chriſt, who was diſtinguiſhed from Jeſus, did not ſuffer at all.

Some authors aſcribe the book of the *Apocalypſe* to Cerinthus; adding, that he put it off under the name of St. John, the better to authorize his reveries touching Chriſt's reign in the fleſh: and it is even certain he publiſhed ſome works of this kind, under the title of *Apocalypſes*.

St. Epiphanius obſerves, that when a *Cerinthian* died without baptiſm, another perſon was baptized in his ſtead.

They received the goſpel of St. Matthew, to countenance their doctrine of circumciſion, from Chriſt's being circumciſed; but they omitted the genealogy. And they diſcarded the epiſtles of St. Paul, becauſe that apoſtle held circumciſion aboliſhed.

CEROMA, originally denoted a mixture of oil and wax, with which the antient wreſtlers rubbed themſelves, not only to make their limbs more ſleek, and leſs capable of being laid hold of, but more pliable, and fit for exerciſe.

CERTIFICATE, a teſtimony given in writing, to aſſure and notify the truth of any thing to a court of juſtice, or the like. See TESTIMONIAL.

CERTITUDE, is properly a quality of the judgment, importing an adheſion of the mind to the propoſition we affirm, or the ſtrength wherewith we adhere to it.

Certitude is of the ſame nature with the evidence that produces it: the evidence is in the things that the mind ſees and conſiders, *i. e.* in the ideas: *Certitude* is in the judgment the mind makes of thoſe ideas.

The ſchoolmen diſtinguiſh two kinds of *Certitude*: the one of *Speculation*, ariſing from the evidence of the thing; the other of *Adheſion*, which ariſes from the importance thereof: this laſt they apply to matters of faith.

Further, the ſchools diſtinguiſh three other kinds of *Certitude*, with regard to the three different kinds of evidence whence they ariſe.

Metaphyſical CERTITUDE, is that ariſing from a metaphyſical evidence: ſuch is that a geometrician has of the truth of this propoſition, "That the three angles of a triangle are equal to "two right ones."

Phyſical CERTITUDE, is that ariſing from phyſical evidence: ſuch is that a man has, that there is fire on his hand, when he ſees it blaze, and feels it burn.

Moral CERTITUDE, is that founded on moral evidence: ſuch is that a perſon has, that he has got, or loſt a cauſe, when his attorney and friends ſend him an expreſs notice of it, or a copy of the judgment, *&c.*

Moral Certitude is frequently equivalent to metaphyſical *Certitude*. Thus, a criminal who hears the ſentence read, frequently makes no doubt either of his condemnation or execution; and yet has nothing, here, beyond a moral *Certitude*; for, metaphyſical *Certitude* he has none: neither has he any phyſical *Certitude*, except as to what relates to the reading of the ſentence, and the action of the executioner, when he takes him into his poſſeſſion.

In the *Philoſophical Tranſactions*, we have an algebraic calculation of the degrees of moral *certitude*, ariſing from human teſtimony in all its caſes; whether immediate, mediate, concurring, oral, or written.

The author thereof ſhews, that if the report paſs through ſeveral reporters hands ere it arrive, each conveying $\frac{5}{6}$ of *Certitude*, after 12 tranſmiſſions, it will only be an equal lay, whether it be true or not: if the proportion of *Certitude* be fixed at $\frac{100}{101}$, it will come to half from the 70th hand; if at [illegible], from the 695th hand.

For concurring evidences, if two reporters have each $\frac{5}{6}$ of certainty, they will both give an aſſurance of $\frac{35}{36}$, or of 35 to 1; of three, of $\frac{215}{216}$: and the co-atteſtation of 10 would give [illegible] of certainty; that of a 20th, [illegible]. He ſhews, farther, that if there be ſix particulars in a narrative, all equally remarkable, and that he to whom the report is given has $\frac{5}{6}$ of *Certitude* for the whole; there is 35 to 1 againſt the failure in any one certain particular.

He proceeds to compute the certainty of tradition, both oral and written, in whole and part; ſucceſſively tranſmitted, and alſo co-atteſted by ſeveral ſucceſſors of tranſmittents.

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* The word comes from the Latin *Cæremonia*, quaſi *Cereris munia*, on account of the great number of ceremonies uſed in making the offerings to Ceres; or by reaſon the firſt religious ceremonies were thoſe of Ceres: hence Cicero calls *Cererem antiquiſſimam, religioſiſſimam principem omnium ſacrorum, quæ apud omnes gentes fiunt.* Valerius Maximus derives it from *Cære* and *Munia*: *Cære* was a little town near Rome, where the Romans made offerings to the gods, with uncommon ardor and officiouſneſs, on occaſion of the fear they were in of the Gauls, who then lay before Rome Others deduce it from *Cerus*, in antient Latin word, which ſignifies holy or ſacred: ſome from the Greek, χαιρειν, *to rejoice.*

ERT-MONEY, *Head-money*, a common fine, paid yearly by the reſiants of ſeveral manors to the lords thereof; and ſometimes to the hundred, *pro certo letæ*, for the certain keeping of the leet.—This, in antient records, is called *Certum Letæ.*

ERVICAL * *Nerves*, are ſeven pair of nerves, ſo called, as having their origin in the *Cervix*, or neck.—See Tab. *Anat.* (oſteol.) fig. 6. lit. dd.

* They are thus called from the Latin *Cervix*, neck.

The firſt pair ariſes between the firſt and ſecond vertebræ of the neck; and, contrary to the reſt, comes out before and behind: whereas the other ſix pair come out laterally from the junctures of the vertebræ, through particular perforations: this firſt pair goes to the muſcles of the head and ear. The ſecond pair, according to Dr. Willis, contributes the main branch towards the formation of the diaphragmatic nerves; which, according to Vieuſſens, ſpring only from the fourth and ſixth pair. The three laſt pair, joining with the two firſt of the dorſum, orthorax, make the brachial nerves. All the *Cervical Nerves* ſend innumerable branches to the muſcles, and other parts of the head, neck, and ſhoulders.

Ervical *Veſſels*, among anatomiſts, denote the arteries, veins, &c. which paſs through the vertebræ and muſcles of the neck, up to the ſkull.

ERVICALES *Deſcendentes*, a pair of muſcles antagoniſts to the ſacro-lumbares; coming from the third, fourth, fifth, and ſixth vertebra of the neck.

Moſt authors reckon theſe, though improperly, a production and part of the ſacro-lumbus.

ERVIX, in anatomy, properly denotes the hind-part of the neck; as contradiſtinguiſhed from the fore-part, which is called *Jugulum*, or the throat.

Ervix *of the Uterus*, the neck of the uterus, or that oblong canal, or paſſage between the internal and external orifices, which receives and incloſes the penis like a ſheath, whence it is alſo called *Vagina*. See Uterus, and Vagina.

The *Cervix Uteri*, in maids, is very narrow, except in the time of the menſes; ſcarce wide enough to admit a gooſe's quill: its inner extremity is called *Oſculum Internum*, which is kept ſealed up with a kind of glutinous matter, iſſuing from the glands about it.

ERUMEN, a thick, viſcous, bitter, excrementitious humour, ſeparated from the blood by proper glands placed in the meatus auditorius, or outer paſſage of the ear.

This is alſo called *Gerumen aurium*, in Engliſh, *Ear-wax*. See Ear.

ERUSSE, Ceruse, a white calx of lead, uſed in painting, and coſmetics; made by calcining that metal, in the vapour of vinegar.

Ceruſſe is made of thin laminæ, or plates of lead, made up into rolls, and ſo placed as to receive and imbibe the fumes of vinegar, contained in a veſſel ſet over a moderate fire.

The laminæ are, by means hereof, converted into a white ruſt; which they gather together, and grinding it up with water, form it into little cakes. Cardan ſhews how to make a ſort of *Ceruſſe* of tin and urine.

Ceruſſe make a beautiful white colour, and is much uſed by the painters, both in oil and water-colours. It makes the principal ingredient in the fucus uſed by the ladies for the complexion. Taken inwardly, it is a dangerous poiſon; it ſoon ſhews its malignity, ſpoiling the breath and teeth, and haſtening wrinkles, and all the ſymptoms of old age.

The beſt *Ceruſſe* is that of Venice; but this is rare: that chiefly uſed, is either Engliſh or Dutch, both of which have more chalk in them than white lead; the latter, however, is the better of the two.—Fallopius ſpeaks of a native *Ceruſſe*, but every body elſe knows it to be factitious.

SAR. See the article Cæsar.

SARIAN *Section*. See Cæsarian *Section*.

SSAVIT, a writ which lies in divers caſes; upon this general ground, that he againſt whom it is brought, has for two years ceaſed or neglected to perform ſuch ſervice, or pay ſuch rent, as he is obliged to by his tenure; and has not upon his lands or tenements ſufficient goods or chattels to be diſtrained.

A *Ceſſavit* only lies for annual ſervice, rent, and ſuch-like, not or homage or fealty.—The forms and ſpecies of *Ceſſavit* are arious; as *Ceſſavit de Cantaria*, *Ceſſavit de Feodifirma*, *Ceſvit per Biennium.*

SSION, in a legal ſenſe, an act whereby a perſon ſurrenders p, and tranſmits to another perſon, a right which belonged himſelf.

ſſion is a general term, the ſpecies whereof are, a *Surrender*, *elinquiſhment*, *Transfer*, and *Subrogation*; which ſee.

SION is particularly uſed in the civil law, for a voluntary and gal ſurrender of a perſon's effects to his creditors, to avoid npriſonment.

his practice ſtill obtains in France, and other countries; and done by virtue of letters patent granted in favour of the poor d honeſt. The *Ceſſion* originally carried with it a mark of famy, and obliged the perſon to wear a green cap, or bonnet; Lucca an orange one; to neglect this, was to forfeit the privileges of the *Ceſſion*. This was originally intended to ſignify, that the *Ceſſionary* was become poor through his own folly.

The Italian lawyers deſcribe the ceremony of *Ceſſion* to conſiſt in ſtriking the bare breech three times againſt a ſtone, called *Lapis Vituperii*, in the preſence of the judge. Formerly it conſiſted in giving up the girdles and keys in court; the antients uſing to carry at their girdles the chief utenſils wherewith they got their living; as the ſcrivener his eſcritoire, the merchant his bag, &c.

The form of *Ceſſion* among the antient Romans and Gauls was as follows. The *Ceſſionary* gathered up duſt in his left hand, from the four corners of the houſe; and, ſtanding on the threſhold, holding the door-poſt in his right hand, threw the duſt back over his ſhoulders; then ſtripping into his ſhirt, and quitting his girdle and bags, he jumped with a pole over a hedge; hereby letting the world know, that he had nothing left, and that when he jumped, all he was worth, was in the air with him.

This was the *Ceſſion* in criminal matters: in civil caſes, it was ſufficient to lay a broom, ſwitch, or broken ſtraw, on the threſhold. This was called *Chrenecruda per durpillum & feſtucam.*

Cession, in the eccleſiaſtical law, is one manner of vacating or voiding an eccleſiaſtical benefice.

Ceſſion is an implicit kind of reſignation, underſtood where a perſon does ſome act, or takes on himſelf ſome charge, which is inconſiſtent with his holding the benefice he was before poſſeſſed of.

By the ſtatute, if a clerk have one benefice of 8 *l. per annum* value, and takes another, of what value ſoever, with cure of ſouls, and without diſpenſation, the former living is, *ipſo facto*, void: and this kind of voidance of a living is called *Ceſſion.*

What is called by *Ceſſion* in other benefices, is called by *Creation* in relation to a biſhoprick; for if an incumbent be made a biſhop, his benefice is ſaid to be *void by Creation.*

CESSIONARY, a *Bankrupt.*

CESSOR, in law, one dilatory, and delinquent in his duty, or ſervice, and who thereby incurs the danger of the law, and is liable to have the writ *Ceſſavit* brought againſt him.

Where it is ſaid *the tenant ceſſeth*, it is meant he ceaſeth to do his duty, or ſervice, to which he is bound.

CESTUI, a French term, literally ſignifying *He*, or *Him*; frequently uſed in our law-writings. Thus,

Cestui *qui Truſt*, is he who has lands in truſt, &c. committed to him for the benefit of another.

Cestui *qui Vie*, one for whoſe life any lands or tenements are granted.

Cestui *qui Uſe*, he to whoſe uſe another man is infeoffed in land or tenements.

CESTUS *, among antient poets, a fine embroidered girdle worn by Venus, endowed with a faculty of charming, and conciliating love.

* The word is alſo written *Ceſtum*, and *Ceſton*: it comes from the Greek κεςος, a *Girdle*, or other thing embroidered, or wrought with the needle: whence alſo *Inceſtus*; a term uſed at firſt for any naughtineſs by undoing the girdle, &c. but now reſtrained to that between perſons near akin. See Incest.

CESTUS, or Cæstus, was alſo a large leathern gantlet, garniſhed with lead, uſed in the combats or exerciſes of the antient Athletæ. See Cæstus.

CESURE, or Cæsura, in poetry. See Cæsura.

CETACEOUS *, in natural hiſtory, a term applied to all large ſea-fiſhes, and beaſts, which bear a reſemblance to the whale. See Fish, and Whale.

* The word is formed of the Latin *Cetus*, whale.

The horn uſually called the *Unicorn's Horn*, is found to be the tooth of a *Cetaceous* fiſh in the Icy ſea, called *Narval*. See Supplement, article Cetaceous.

CETERIS *Paribus*. See Cæteris *Paribus.*

CETUS, in aſtronomy, the *Whale*; a large conſtellation of the ſouthern hemiſphere, under Piſces, and next the water of Aquarius.

The ſtars in the conſtellation *Cetus*, in Ptolemy's catalogue, are twenty-two; in Tycho's twenty-one; in Hevelius's twenty-two; in the Britannic catalogue ſeventy-eight. The order, names, longitudes, latitudes, magnitudes, &c. whereof, are as follow.

Names and ſituations of the ſtars.		Signs.	Longitude.			Latitude. South.			Magnit.
			°	′	″	°	′	″	
		♓	18	36	40	14	14	15	6
Of thoſe in triangle preced. the tail, by Ptolemy ranked among the informes of Aquarius.	Mid.		19	25	37	16	14	22	4 5
			22	28	40	10	5	0	6
	No.		21	57	12	15	16	3	5
	So.		21	12	12	18	45	54	5
5 North. in the extrem. of the tail)			26	35	0	10	0	41	4 3
			22	56	22	13	27	15	6
		♈	1	45	50	2	42	0	6 7
			0	59	31	6	36	23	6
			2	18	26	6	37	28	6 5

10

Names

Names and Situations of the Stars.	Signs.	Longitude.			Latitude South.			Magnit.
		°	′	″	°	′	″	
Bright. and south. of the tail		4	13	26	4	15	16	6
N. of those prec. in the □ } South.	♓	28	13	2	20	46	52	3
in root of the tail } South.	♈	1	33	31	14	7	45	5
N. of the following side of the □		0	54	30	16	18	39	6
15		2	57	0	14	44	14	5
		7	25	18	6	17	50	6
		4	40	46	13	24	8	6
South. of the same side		4	2	32	15	53	50	6
		4	37	39	16	16	11	6
		8	18	33	10	40	10	6
20								
		6	49	9	15	38	59	6
		6	58	49	15	34	29	6
		7	23	22	15	41	10	6
Prec. in the poster. part of the body		7	25	42	16	6	23	3
		8	20	10	15	6	47	6
25								
		9	48	3	13	24	58	6
		9	42	4	14	37	59	5
		10	35	59	14	41	38	6
		11	55	6	15	35	44	6
Subs. in the poster. part of the body		11	53	52	15	46	30	3
30								
		9	36	36	21	50	7	5
		10	34	17	20	32	40	6
		7	21	44	28	37	56	6 5
		11	17	50	23	41	24	6
		11	45	30	23	33	56	6
35								
Mid. of 3 in the middle of the body		13	35	48	24	57	32	4 3
Contig. to the north. in the body		17	0	46	20	30	12	5
North. in the middle of the body		17	36	47	20	21	19	3
		13	33	32	32	3	28	6
South. in the middle of the body		15	8	32	30	47	52	6
40								
		23	3	55	13	32	34	6
Another, and more south		15	4	15	31	2	29	4 5
		24	22	44	11	39	53	6
		24	21	32	12	9	13	7
		24	56	2	14	29	13	7
45								
		25	28	16	14	8	3	6 7
Preced. in the crest		29	42	33	4	17	15	4
		25	45	20	14	50	5	6
		25	20	13	18	58	51	6
New one in the neck of *Cetus*		27	11	15	15	56	38	2 3
50								
		28	59	42	13	0	56	6
		28	36	4	14	14	1	6
In the hind part of the head	♉	3	2	33	3	34	25	6
	♈	28	37	36	16	15	12	6
Prec. south. in the □ of the breast		25	22	10	25	15	50	4
55								
Subseq. of two in the crest	♉	3	7	35	5	53	7	4
	♈	21	37	0	34	14	5	6
	♉	0	59	19	15	12	15	5 6
South. prec. in the □ of the breast	♈	25	46	2	28	32	48	4
		29	13	58	21	50	36	6
60								
Against the eyebrow	♉	4	3	0	9	12	26	4 5
		0	55	37	17	49	1	6
	♈	29	34	34	21	55	44	6
	♉	1	32	55	17	52	43	6
Prec. in the mouth against the cheek)		3	14	26	14	29	57	3
65								
N. of those following in the square	♈	29	0	15	26	0	25	3
of the breast)	♉	3	18	39	15	35	39	6
In the middle of the mouth		5	7	3	12	1	26	3
That against the forehead		7	34	50	5	35	33	4
South. of those that follow in the square of the breast)	♈	29	24	53	28	16	32	4 3
70								
		27	44	30	32	46	20	8
That against the nostrils	♉	10	45	6	7	49	12	4
Bright star of the jaw		9	59	15	12	36	59	2
		10	5	8	12	22	55	6
		11	2	13	11	25	42	6
75								
		12	31	35	11	33	42	6
Inform. following the bright star		13	57	58	14	29	21	4
of the jaw)	♉	14	30	25	14	18	25	5

CHACE, } See { **Chase**.
CHACING, } See { **Chasing**.

CHACOON *, or **Chacone**, a kind of dance, in manner of a saraband, borrowed from the Spaniards, and by them from the Moors. The bass always consists of four notes, which proceed in conjunct degrees: and whereon they make divers concords and couplets, with the same burden.

CHAFE-*Wax*, or **Chaufer-*Wax***, an officer in chancery, whose business is to fit the wax for the sealing of writs, patents, and other instruments issued thence.

CHAGREEN, or **Chagrin**, in commerce. See the article **Shagreen**.

CHAIN, **Catena**, a series of several rings, or links; fitted into one another.

There are *Chains* of divers matters, sizes, and forms, and for divers uses.—Ports, rivers, streets, *&c.* are closed with iron *Chains*: rebellious cities are punished by taking away their *Chains*, and barriers.

The arms of the kingdom of Navarre are, *Chains Or, in a field Gules*. The occasion hereof is referred to the kings of Spain leagued against the Moors; who having gained a celebrated victory against them in 1212. in the distribution of the spoils, the magnificent tent of Miralmumin fell to the king of Navarre; as being the first that broke and forced the *Chains* thereof.

A Gold **Chain**, is one of the ornaments or badges of the dignity of a lord mayor of London; and remains to the person, after his being divested of that magistrature, as a mark that he has passed the *Chair*.

Something like this, Chorier observes, obtained among the antient Gauls: the principal ornament of their people in power and authority was a gold *Chain*, which they wore on all occasions; and even in battle to distinguish them from the common soldiers. *Hist. de Dauph.* Lib. III. p. 130.

Chain also denotes a kind of string, of twisted wire; serving to hang watches, tweezer-cases, and other valuable toys upon. The invention of this piece of curious work was owing to the English; whence, in foreign countries, it is denominated the *English Chain*. It was some time before foreigners undertook to imitate them, and at last with no extraordinary success: those of Paris have come nearest. These *Chains* were at first usually either of silver or gold, some of gilt copper; the thread or wire of each kind must be very fine.

For the fabric, or making of these **Chains**; a part of the wire is folded into little links of an oval form; the longest diameter about three lines; the shortest, one. These, after they have been exactly soldered, are again folded into two; and then bound together, or interwoven, by means of several other little threads of the same thickness; some whereof, which pass from one end to the other, imitate the warp of a stuff; and the others, which pass transverse, the woof. There are at least four thousand little links in a *Chain* of four pendants; which are, by this means, bound so equally, and withal so firmly together, that the eye is deceived, and takes the whole to consist of one intire piece.

Chain-*Pump*. See *Pump*, and **Bur-*Pump***.

Chain-*Shot*, in war, two bullets, or rather half-bullets, linked together by a *Chain*: their use at sea is to shoot down yards, or masts; or to cut the shrouds, or any other rigging of a ship.

Chain, in surveying, is a measure consisting of a certain number of links of iron wire, usually 100; serving to take the dimensions of fields, *&c.* See **Measure**, and **Surveying**.

This is what Mersenne takes to be the arvipendium of the antients.

The *Chain* is of various dimensions, as the length or number of links varies: that commonly used in measuring land, called *Gunter's Chain*, is in length four poles, or perches; or sixty-six feet, or a hundred links; each link being seven inches $\frac{92}{100}$.

That ordinarily used for large distances, is in length 100 feet; each link one foot.

For small parcels, as gardens, *&c.* is sometimes used a small *Chain* of one pole, or sixteen feet and a half length; each link one inch $\frac{98}{100}$.

Some, in lieu of *Chains* use ropes; but these are liable to several irregularities; both from the different degrees of moisture, and of the force which stretches them. Schwenterus, in his practical geometry, tells us, he has observed a rope sixteen feet long, reduced to fifteen in an hour's time, by the mere falling of a hoar frost. To obviate these inconveniences, Wolfius directs, that the little strands whereof the rope consists be twisted contrary ways, and the rope dipped in boiling hot oil, and when dry, drawn through melted wax. A rope thus prepared, will not get or lose any thing in length, even though kept under water a day.

Use of the **Chain** *in surveying.*—The manner of applying the *Chain* in measuring lengths is too popular to need description. In entering down the dimensions taken by the *Chain*, the *Chains* and links are separated by a dot: thus a line sixty-three *Chains* fifty-five links long, is written 63.55. If the links be short of 10, a cypher is prefixed; thus 10 *Chains*, 8 links, are written 10.0

To find the area of a field, &c. the dimensions whereof are given in **Chains** *and links.* 1st, Multiply the lines by one another according to the rules given under **Area**; and from the product cut off five figures towards the right; those remaining on the left will be acres. 2dly, Multiply the five figures cut off by four; and cutting off five again from the product on the right, those remaining on the left will be roods. Lastly, Multiply the five thus cut off by forty: and cutting off five as before, on the right, those remaining on the left are square perches.

To take an angle DAE, (Tab. *Surveying*, fig. 1.) *by the Chain*, measure a small distance from the vertex A along each leg, as to *d* and *c*; then measure the distance *d c*: to lay this down, draw

* The word is formed of the Spanish *Chacona*; not, as others pretend, from the Italian *Cecone*, a blind man, the inventor.

draw AE at pleaſure, and from your ſcale ſet off the diſtance meaſured on it. See SCALE.

Then, taking in your compaſſes the length meaſured on the other ſide, on the vertex A, as a centre, deſcribe an arch *dc*; and on the point *c*, as a centre, with the meaſured diſtance of *cd*, deſcribe another arch *ab*. Through the point where this interſects the former arch, draw a line AD. So is the angle plotted; and its quantity, if required, may be meaſured on a line of chords. See CHORD.

To take the plan or plot of any place, as ABCDE (fig. 2.), *by the* Chain. Draw a rough ſketch of the place by eye; and meaſuring the ſeveral ſides AB, BC, CD, DE, enter down the lengths on the reſpective lines: then if the plan be to be taken within-ſide of the place, inſtead of meaſuring the angles, as before, meaſure the diagonals AD, BD. Thus will the figure be reduced into three triangles, whoſe ſides are all known, as in the former caſe; and may be laid down on paper, according to the method above.

If the plan be to be taken without-ſide the place, the angles muſt be taken thus; *v. g.* for the angle BCD, produce the lines BC and CD to any certain equal diſtance, *v. g.* to *a* and *b*, five *Chains*: and meaſure the diſtance of *ab*. Thus have you an iſoſceles triangle C*ab*, wherein the angle *a*C*b* = BCD its oppoſite one is had: thus is the quantity of BCD found, and the angle laid down as before.

By the Chain *to find the diſtance between two objects inacceſſible* in reſpect of each other. From ſome place, as C (fig. 3.), whence the common diſtance to each object A and B, is acceſſible in a right line; meaſure the diſtance CA, which ſuppoſe fifty *Chains*; and continue the line to D, *viz.* fifty more: meaſure alſo BC, which ſuppoſe thirty *Chains*; and produce the line to E, *viz.* thirty more. Thus will be formed the triangle CDE, equal and ſimilar to the triangle ABC; conſequently the diſtance DE, being meaſured, will give the inacceſſible diſtance required.

By the Chain *to find the diſtance of an inacceſſible object*, *v. g.* the breadth of a river. On one ſide place a pole, four or five feet high, perpendicularly, having a ſlit a-top, with a ſtrait piece of wire, or the like, two or three inches long, put through the ſame. This is to be ſlipped up or down, till, looking along it, you find it point full on the other ſide of the river; then turning the pole with the wire in the ſame direction, obſerve the point on the dry land, to which it points when looked along as before: meaſure the diſtance from the pole to this laſt point; it is the ſame with that of the firſt required.

CHAIR, CATHEDRA, was antiently uſed for the pulpit, or ſuggeſtum, whence the prieſt ſpoke to the people.

It is ſtill applied to the place whence profeſſors and regents in univerſities deliver their lectures, and teach the ſciences to their pupils: thus, we ſay, the profeſſor's *Chair*, the doctor's *Chair*, &c.

Curule CHAIR, was an ivory ſeat placed on a car, wherein were ſeated the prime magiſtrates of Rome, and thoſe to whom the honour of a triumph had been granted.

CHAIR is alſo applied by the Romaniſts to certain feaſts, held antiently in commemoration of the tranſlation of the ſee, or ſeat of the vicarage of Chriſt, by St. Peter.

The *perforated Chair*, wherein the new-elected pope is placed, F. Mabillon obſerves, is to be ſeen at Rome: but the origin thereof he does not attribute, as is commonly done, to the adventure of pope Joan; but ſays there is a myſtery in it; and it is intended, forſooth, to explain to the pope thoſe words of ſcripture, that *God draws the poor from out of the duſt and mire.*

CHAIRMAN, the preſident, or ſpeaker of an aſſembly, company, *&c.* See PRESIDENT, *&c.*

We ſay, the *Chairman* of a committee, *&c.*

CHAISE, a ſort of light open chariot, or calaſh.

CHALASTIC *Medicines* *, are ſuch as have the faculty of relaxing the parts; when, on account of their extraordinary tenſion, or ſwelling, they occaſion pain.

* The word comes from the Greek χαλαω, *I looſen, relax.*

Of this kind are butter, and many oils, *&c.*

CHALAZA, among naturaliſts, a white knotty kind of ſtring at each end of an egg, formed of a plexus of the fibres of the membranes whereby the yolk and white are connected together. See EGG.

Its uſe, according to Harvey, is to be as it were the poles of this microcoſm, and the connexion of all the membranes twiſted and knit together; whereby the liquors are not only conſerved, each in its place, but alſo in its due poſition to the reſt.

Mr. Derham adds, that they alſo ſerve to keep one and the ſame part of the yolk uppermoſt, let the egg be turned which way it will; which is done by the following mechaniſm: the *Chalazæ* are ſpecifically heavier than the whites wherein they ſwim; and being braced to the membrane of the yolk, a little out of the axis, they cauſe one ſide of the yolk to be heavier than the other. The yolk being thus by the *Chalazæ* made buoyant, and kept ſwimming in the midſt of two whites, is by its own heavy ſide kept with the ſame ſide always uppermoſt: which uppermoſt ſide he imagines to be that whereon the cicatricula lies.

CHALCANTHUM, χαλκανθος, the ſame with vitriol. See VITRIOL.

Some have alſo uſed *Chalcanthum* corruptly for colcothar, or vitriol rubified.

CHALCEDONY, or CALCEDONY. See the article CALCEDONY.

CHALCIDIC, CHALCIDICUM, or CHALCEDONIUM *, in the antient architecture, a large magnificent hall belonging to a tribunal, or court of juſtice.

* Feſtus ſays, it took its name from the city Chalcis; but he does not give the reaſon. Philander will have it to be the court, or tribunal, where affairs of money and coinage were regulated; ſo called from χαλκος, *Braſs*, and δικη, *Juſtice*. Others ſay, the money was ſtruck in it; and derive the word from χαλκος, and οικος, *Houſe*.

In Vitruvius, it is uſed for the auditory of a baſilica: in other of the antient writers, for a hall, or apartment, where the heathens imagined their gods to eat. See BASILICA.

CHALCITIS, a kind of vitriolic mineral, rediſh like copper, friable, and having yellow ſhining veins within.

It has the taſte of the blue vitriol of copper, and diſſolves very eaſily in aqueous liquors. There are two other minerals, called *Miſi* and *Sory*, very much like the *Chalcitis*. In effect, the antients confounded them together; and not only the miſi and ſory, but alſo the melanteria; or rather, they imagined a ſucceſſive tranſmutation of the four minerals, which began with *Chalcitis*, then became miſi, then melanteria, and laſtly ſory, where it fixed.

The moderns make theſe four diſtinct matters; though the chief difference between them is ſuppoſed to lie in the different tenuity or groſſneſs of their ſubſtance.

Some ſay, the miſi is formed on the *Chalcitis*, as verdegris on copper, being properly its ruſt; and that *Chalcitis* is formed in the ſame manner on the ſory.

This is certain, they are all found in copper mines: but the modern druggiſts know little of any of them.

The *Chalcitis* is brought from Germany: it is very cauſtic and eſcharotic. Its chief uſe is in the compoſition of venice-treacle: in lieu of it is frequently ſubſtituted chalcanthum rubified, or copperas. See Supplement, articles CHALCITIS, MISY, SORY, and MELANTERIA.

CHALCOGRAPHY, the art of engraving on copper and braſs. See ENGRAVING.

CHALDEE, or CHALDAIC *Language*, that ſpoken by the Chaldeans, or people of Chaldea.

The *Chaldee* is a dialect of the Hebrew.

CHALDEE *Paraphraſe*, in the rabbinical ſtile, is called *Targum*. See TARGUM.

There are three *Chaldee* paraphraſes in Walton's polyglot; *viz.* that of Onkelos, that of Jonathan ſon of Uziel, and that of Jeruſalem.

CHALDRON, CHALDER, or CHAUDRON *of coals*, a dry Engliſh meaſure, conſiſting of thirty-ſix buſhels heaped up, according to the ſealed buſhel kept at Guildhall, London.

The *Chaldron* ſhould weigh two thouſand pounds.—On ſhipboard, twenty-one *Chaldrons of coals* are allowed to the ſcore. See COAL.

CHALICE, the cup, or veſſel, uſed to adminiſter the wine in, in the euchariſt; and, by the Romaniſts, in the maſs.

Bede affirms, that the *Chalice*, uſed by Jeſus Chriſt at the ſupper, had two handles, and held juſt half a pint; which the antients imitated. In the primitive times the *Chalices* were of wood: pope Zephyrine firſt appointed them to be of ſilver and gold; though others aſcribe this to Urban I. Leo IV. forbad tin and glaſs; as did likewiſe the council of Calcyth in England: Horn Lindanus, and Beatus Rhenanus, who had ſeen ſome of the antient *Chalices* in Germany, obſerve, that they had a pipe, or tube, fitted artfully to them, through which the people ſucked, inſtead of drinking.

CHALK, a white foſſil ſubſtance, uſually reckoned as a ſtone; but Dr. Slare thinks, without reaſon, ſince, when examined by the hydroſtatical balance, it is found to want much of the weight and conſiſtence of a real ſtone: ſo that he thinks it more juſtly ranked among the earths.

This he obſerves to be the caſe, not only in *Chalk*, but various other bodies, taken for granted to be ſtones; ſome whereof are nearer to earth than ſtone; others nothing but earth, ſulphur, metal, *&c.*

Chalk is of two ſorts; the firſt, a hard, dry, ſtrong *Chalk*, uſed for making of lime. The other a ſoſt, unctuous *Chalk*, uſed to manure lands; as eaſily diſſolving with rain and froſt: it is beſt for cold, ſour ground, and promotes the yielding of corn; it ſweetens graſs ſo as to cauſe cattle to fatten ſpeedily, and cows to give thick milk.

Chalk is alſo uſed in medicine, as an aſtringent, an abſorbent, and a ſweetener; and is celebrated for curing the heart-burn, beyond any thing whatſoever. See Supplement, article CRETA.

CHALLENGE *, a cartel, or invitation to duel, or other combat. See DUEL.

* The word *Challenge* was antiently latined *Calumnia*.

CHALLENGE, in law, is an exception made to jurors who are returned to paſs on a tryal.

Challenge to the jurors, is either made to the array, or to the poll: to the array, as when the whole number is excepted againſt, as partially impanelled. To the poll, as when particulars are excepted againſt, as not indifferent.

Challenge to the jurors, is alſo divided into *Challenge Principal*, and *Challenge per Cauſe*; i. e. upon cauſe or reaſon alleged.

Challenge Principal, otherwiſe called *Challenge Peremptory*, is what the law allows without cauſe alleged, or further examination: thus a priſoner at the bar, arraigned on felony, may peremptorily *challenge* twenty, one after another, alleging no cauſe but his own diſlike; and they will be ſet aſide, and new ones choſen in their room. In caſe of high-treaſon, no *Challenge peremptory* was formerly allowed; but by *Stat.* 7. Gul. III. liberty is given *peremptorily* to *challenge* thirty-five.

Yet there ſeems to be a difference between *Challenge principal* and *Challenge peremptory*; the latter being only in matters criminal, and without any cauſe alleged; the former moſtly in civil caſes, and with aſſigning ſome ſuch cauſe, as being found true, the law allows; *v. g.* if either party allege, that one of the jurors is the ſon, brother, couſin, or tenant, of the other, the exception is good. Alſo in the plea of the death of a man, or in any action real or perſonal, where the debt or damages amount to forty ſhillings, it is a good *Challenge* to a juror, that he cannot diſpend forty ſhillings *per annum* of freehold.

Challenge upon Reaſon or Cauſe, is when the party does allege ſome ſuch exception as is ſufficient upon acknowlegement of the truth of it; *v. g.* if the ſon of the juror have married the daughter of the other party, or the like.

CHALLENGE, in hunting. When hounds, at firſt finding the ſcent of their game, preſently open, and cry, the huntſmen ſay, *they challenge*.

CHALYBEAT, in medicine, ſomething that partakes of the nature of ſteel, or iron; or that is impregnated with particles of thoſe metals.

Chalybeats act chiefly as abſorbents, and deobſtruents. Iron, M. Lemery obſerves, is a mixture of an oily ſubſtance with a metallic matter; but the oil is predominant in the mixture: and between the parts mixed are large pores. Hence, iron becomes eaſily diſſolvable; and its oil eaſily diſengages itſelf; but when once decompounded, *i. e.* when once the oil is ſeparated from the pure, ferruginous, or metallic part, no diſſolvent has any effect on the caput mortuum.

Hence appears the abſurdity of that common practice, of calcining iron to ſuch a degree, as to convert it into what the chymiſts call a *Crocus*, or ſaffron. This operation muſt of neceſſity take away all, or moſt of the oily ſubſtance, and leave nothing but the indiſſoluble caput mortuum. The oil here ſeparated ſhould properly have been ſeparated by the heat of the ſtomach; whence, according to Mr. Lemery, it would have carried into the blood a new ſpirituous, ſalutary juice: he obſerves alſo, that iron acts as an abſorbent, from the largeneſs of its pores, and the eaſe wherewith all kinds of ſalts, even groſs ones, inſinuate themſelves into them: even ſcorbutic acids are abſorbed thereby. Further, it is not all, that peccant acids enter iron; but in entering they alſo expel and expreſs that ſalutary juice, which is alſo put in motion, and diſpoſed to be evacuated by the natural heat. Thus is iron doubly advantageous, both by the oil it furniſhes the blood withal, and by the ſalts it frees it from. The action of the particles of a *Chalybeat*, by their elaſticity, together with the momentum they give the blood by their ponderoſity, make it not only preferable to moſt other deobſtruents, but alſo proper in other caſes; eſpecially where there is a viſcidity of the juices; the blood depauperated, and where the circulation is languid; as in moſt hectic and hypochondriac caſes.

CHAM, or **KHAN** *, the title given to the ſovereign princes of Tartary.

* The word, in the Perſian, ſignifies, *mighty lord*; in the Sclavonic, *emperor*. Sperlingius, in his diſſertation on the Daniſh term of majeſty, *koning*, king, thinks the Tartarian *Cham* may be well derived from it; adding, that in the north they ſay *Kan*, *Konnen*, *Konge*, *Konning*, &c.

The term *Cham* is alſo applied, among the Perſians, to the great lords of the court, and the governors of provinces.

CHAMADE *, in war, a certain beat of a drum, or ſound of a trumpet, which is given the enemy as a ſignal, to inform them of ſome propoſition to be made to the commander; either to capitulate, to have leave to bury their dead, make a truce, or the like.

* Menage derives the word from the Italian *Chiamata*, of *clamare*, to cry.

CHAMBER *, in building, a member of a lodging, or piece of an apartment, ordinarily intended for ſleeping in; and called by the Latins *Cubiculum*.

* The word comes from the Latin *Camera*; and that, according to *Nicod*, from the Greek καμαρα, *Vault*, or *Curve*; the term *Chamber* being originally confined to places arched over.

A complete apartment is to conſiſt of a hall, antechamber, *Chamber*, and cabinet.

Bed-**CHAMBER**. See the article BED-*Chamber*.

Privy-**CHAMBER**. — *Gentlemen of the Privy*-CHAMBER are ſervants of the king, who are to wait and attend on him and the queen at court, and in their diverſions, progreſſes, &c.

Six of theſe are appointed by the lord chamberlain, together with a peer, and the maſter of the ceremonies, to attend all embaſſadors from crowned heads in their public entries. Their number is forty-eight.

Their inſtitution is owing to king Henry VII. As a ſingular mark of favour, they are impowered to execute the king's verbal command, and without producing any written order; their perſon and character being deemed ſufficient authority.

CHAMBER *in Policy*, is uſed for the place where certain aſſemblies are held; alſo, for the aſſemblies themſelves.

Of theſe there are various kinds; ſome eſtabliſhed for the adminiſtration of juſtice, others for matters of commerce, &c.

Of the firſt kind among us are the

Star-**CHAMBER**, *Camera Stellata*, or *Chambre de Eſtoiels*, ſo called becauſe the roof was originally painted with ſtars: this is of an antient ſtanding; but its authority was very much heightened by Henry VII. and Henry VIII. who appointed, by two ſeveral ſtatutes, that the chancellor, aſſiſted by others there named, ſhould have power to hear complaints againſt retainers, embracers, miſdemeanors of officers, and other like offences, which through the power and authority of thoſe who committed them did lift up the head above other faults; and for which inferior judges were not ſo meet to give correction, and the common law had not ſufficiently provided.

By the ſtatute 17 Car. I. the court called *Star-chamber*, and all juriſdiction, power, and authority thereto belonging, are, from Auguſt the firſt, 1641. abſolutely diſſolved.

Imperial **CHAMBER**, is a court or juriſdiction held antiently at Spires, but ſince transferred to Wertſlar; in which are determined the differences ariſing among the princes and cities of the empire.

It was at firſt ambulatory: in 1473. it was fixed to Augſburg, then removed to Frankfort; and thence to Worms, in 1497. afterwards it was removed to Nuremberg and Ratiſbon; again to Worms and Nuremberg; and from this laſt to Eſlingen; thence, in 1527. to Spires; where Charles V. rendered it ſedentary, in 1530.

At its firſt inſtitution it conſiſted of ſixteen aſſeſſors; but the reformation enſuing, occaſioned the number to be increaſed: by the treaty of Oſnabrug, in 1648. there were appointed fifty aſſeſſors; whereof twenty-four were to be proteſtants, and twenty-ſix catholics; beſides five preſidents, two of them proteſtants, the reſt catholics.

As the princes or circles of the empire are not always exact in filling up the vacancies in this *Chamber*, the number of aſſeſſors is now reduced to ſixteen.

This *Chamber* has a right of judging by appeal, and is the laſt reſort, of all civil affairs of all the ſtates and ſubjects of the empire, in the ſame manner as the Aulic council reſiding at Vienna. Proceſſes are here almoſt immortal, by reaſon of the infinite number of ceremonies and formalities wherewith they are embarraſſed.

The *Imperial Chamber* is frequently afraid to pronounce ſentence, for fear of expoſing its awards to ſome diſgrace; the princes ſometimes not permitting ſuch to be executed as diſpleaſe them.

CHAMBER *of Accounts*, is a ſovereign court in France, where accounts are rendered of all the kings revenues; inventories and avowals thereof regiſtred; oaths of fidelity taken, and other things relating to the finances tranſacted. The French have alſo,

Eccleſiaſtical **CHAMBERS**, which judge, by appeal, of differences ariſing on the raiſing of tythes: of theſe *eccleſiaſtical Chambers* there are nine; *viz.* at Paris, Bordeaux, Rouen, Lyons, Tours, Tholouſe, Bourges, Pau, and Aix: they uſually conſiſt of the archbiſhop of the place, as preſident; other archbiſhops and biſhops, a deputy of each of the dioceſes, and three counſellors of parliament. The *Chamber* chooſes as many counſellors out of the clergy as it thinks proper; as alſo a promoter.

Apoſtolical **CHAMBER**, at Rome, is that wherein affairs relating to the revenues and domains of the church and the pope are tranſacted.

CHAMBER *of Audiences*, or *grand* CHAMBER, a juriſdiction in each parliament of France.

At the firſt inſtitution of their parliaments, there were two *Chambers*, and two kinds of counſellors; the one the grand *Chamber* for audiences, the counſellors whereof were called *Jugeurs*, who only judged; the other the *Chamber of inqueſts*, the counſellors whereof were called *Rapporteurs*; who only reported proceſſes by writing.

CHAMBER *of the Edict*, or *Mi-party*, was a court eſtabliſhed by virtue of the edicts of pacification, in favour of thoſe of the reformed religion: wherein the number of judges of either re gio gion were the ſame; and to which recourſe was had in all affairs wherein any of the proteſtants were concerned. This *Chamber* is now ſuppreſſed.

CHAMBER *of London.* See CHAMBERLAIN.

CHAMBERS *of Commerce*, are aſſemblies of merchants and dealers, where they treat about matters relating to commerce. Of theſe there are ſeveral, eſtabliſhed in moſt of the chief cities of France, by virtue of an arret of the 30th of Auguſt 1701. Indeed there were ſome before this general eſtabliſhment, particularly one at Marſeilles, and another at Dunkirk.

CHAMBER *in War*, is uſed for the place where the powder of a mine is lodged.

The *Chamber of a Mine* is a cavity of five or ſix cubic feet; generally made of a cubical form.

CHAMBER *of a Mortar*, or *Cannon* of the new make, is a cell, or cavity at the bottom of the barrel, or chace, where the charge of powder is lodged.

The different form of the *Chamber*, is found by experiment to have an influence on the range of the piece. A cubical *Chamber* carries the ball to a leſs diſtance than a circular one; and that leſs than a cylindrical one.

CHAMBERLAIN *, an officer who has the management, or direction of a chamber.

* The word *Chamberlain*, according to Ragueau, originally ſignified a gentleman who was to ſleep in the king's bed-chamber, at his bed's feet, in the abſence of the queen.

There are almoſt as many kinds of *Chamberlains* as chambers: the principal are as follow.

Lord Great CHAMBERLAIN *of England*, an officer of great antiquity and honour; being ranked the ſixth great officer of the crown: a conſiderable part of his function is at the coronation of a king; when he dreſſes him, carries the coif, ſword, and gloves, to be uſed on that occaſion; the gold ſword and ſcabbard to be offered by the king; and the robe royal and crown: he alſo undreſſes him, and waits on him at dinner; having for his fee the king's bed, and all the furniture of his chamber, the night-apparel, and the ſilver baſon wherein the king waſhes, with the towels.

To him likewiſe belongs the proviſion of every thing in the houſe of lords, in the time of parliament; to which end he has an apartment near the lords houſe. He has the government of the palace of Weſtminſter; and iſſues out warrants for preparing, fitting out, and furniſhing Weſtminſter-hall, againſt coronations, tryals of peers, &c.

He diſpoſes of the ſword of ſtate, to be carried by whom he pleaſes; and when he goes to parliament, is on the right hand of the ſword, the lord marſhal being on the left. On all ſolemn occaſions, the keys of Weſtminſter-hall, of the Court of Wards, and Court of Requeſts, are delivered him.

To him belong livery and lodging in the king's court; and he has certain fees from every biſhop at his doing homage to the king, and from every peer at his creation. Under his command are, the gentleman-uſher of the black rod, the yeoman-uſher, and door-keepers.

This honour was long held by the earls of Oxford; *viz.* from the time of Henry I. by an eſtate-tail, or inheritance; but in the three laſt coronations by the marquis Lindſey, after duke of Ancaſter, by an eſtate or inheritance from a daughter and heir general, claimed, but controverted.

ord CHAMBERLAIN *of the Houſhold*, an officer who has the overſight and direction of all officers belonging to the king's chamber, except the precinct of the bed-chamber; which is abſolutely under the groom of the ſtole.

He has the overſight and direction of the officers of the wardrobe, of the removing wardrobes, beds, tents, revels, muſic, comedians, hunting, meſſengers, trumpeters, drummers, handicrafts, and other tradeſmen retained in the king's ſervice: as alſo of all ſerjeants at arms, phyſicians, apothecaries, ſurgeons, barbers, the king's chaplains, &c. and adminiſters the oath to all officers above ſtairs.

ere are alſo CHAMBERLAINS *of the king's courts*, *of the Exchequer*, *of North Wales*, *of Cheſter*, *of the city of London*, &c. In theſe caſes, this officer is commonly the receiver of all ents and revenues belonging to the place whereof he is *Chamberlain.*

When there is no prince of Wales, and earl of Cheſter, the *Chamberlain* of Cheſter hath the receipt and return of all writs oming thither out of any of the king's courts.

n the Exchequer, there are two *Chamberlains*, who keep a ontroulment of the pells of receipts, and exitus, and have ertain keys of the treaſury and records: they alſo keep the eys of that treaſury where the leagues of the king's predeceſ- rs, and divers antient books, as Dooms-day Book, and the lack-Book of the Exchequer, remain.

CHAMBERLAIN *of London* keeps the city-money, which laid up in the chamber of London, an apartment in Guild- ll: he alſo preſides over the affairs of maſters and appren- ces; and makes free of the city, &c.

s office laſts but for a year, being choſen annually on Midſummer-day: but the cuſtom uſually obtains, to rechooſe the ſame perſon; unleſs he have been chargeable with any miſdemeanor in his office.

Vice-CHAMBERLAIN. See VICE-*Chamberlain*.

CHAMBRANLE, in architecture and joinery, the border, frame, or ornament of ſtone, or wood, ſurrounding the three ſides of doors, windows, and chimneys.

The *Chambranle* is different in the different orders: when it is plain, and without mouldings, it is called ſimply and properly, *Band*, *Caſe*, or *Frame*.

The *Chambranle* conſiſts of three parts; the two ſides, called *Aſcendants*; and the top, called the *Traverſe*, or *Supercilium*.

The *Chambranle* of an ordinary door is frequently called *Door-caſe*; of a window, *Window-frame*.

CHAMELOT, in commerce. See CAMBLET.

CHAMFER, or CHAMFERET, in architecture, an ornament conſiſting of half a ſcotia; being a kind of ſmall furrow, or gutter on a column: called alſo *Strix*, and *Stria*.

CHAMFERING, or CHAMFRAINING, is uſed for cutting the edge, or end of any thing aſlope, or bevel. See the article BEVEL.

CHAMPAIN. See CAMPAIGN, and CHAMPION.

A Point CHAMPAIN, in heraldry, is a mark of diſhonour in the coat of arms of him who kills a priſoner of war after he has cried quarter.

CHAMPARTORS, or CHAMPERTORS, are thoſe who move pleas, or ſuits, or cauſe them to be moved, either by their own procurement or others; and ſue them at their proper coſts, to have part of the land, or other matter in variance: againſt whom lies a writ of *Champarty*.

CHAMPARTY *, or CHAMPERTY, in law, a maintenance of any man in his ſuit, upon condition of having part of the thing in queſtion, be it lands or goods; in caſe it be recovered.

* The word comes from the French *Champ*, field, and *parti*, divided; the field, or thing conteſted for, being ſuppoſed to be divided between the *Champartor*, or maintainer, and the perſon in whoſe right he ſues.

This ſeems to have been an antient grievance; for notwithſtanding ſeveral ſtatutes againſt it, and a form of writ accommodated to them, in the time of Edward I. yet in that of Edward III. it was enacted, That whereas redreſs on the former ſtatute was only to be had in the king's-bench, which then followed the court; for the future it ſhould likewiſe be cognizable by the juſtices of the common pleas, and judges of aſſize.

CHAMPION *, properly ſignifies, a perſon who undertakes a combat, in the place or quarrel of another: though the word is alſo ſometimes uſed for him who fights in his own cauſe. See COMBAT.

* Hottoman defines *Champion*, *certator pro alio datus in duello, à campo dictus, qui circus erat decertantibus definitus*: hence alſo the word *Campfight*.

Du Cange obſerves, that *Champions*, in the juſt ſenſe of the word, were perſons who fought in lieu of thoſe who, being obliged by cuſtom to accept the duel, had yet a juſt excuſe for diſpenſing with it, as being too old, or infirm, being eccleſiaſtic, or the like. He adds, that the *Champions* were uſually retained or hired for ſums of money, and were held infamous.

There were alſo ſome vaſſals, who, by the faith and homage ſworn to their lords, were obliged to fight for them in caſe of need.

Some authors hold, that any perſon was allowed the benefit of a *Champion*, excepting parricides, and thoſe accuſed of very heinous offences.

This cuſtom of deciding differences by combat, was derived from the north; whence it paſſed into Germany, and, with the Saxons, into England, and inſenſibly through the reſt of Europe. See DUEL.

When two *Champions* were choſen to maintain the pro and the con. it was always required there ſhould be a decree of the judge to authorize the combat: when the judge had pronounced ſentence, the accuſed threw a gage, or pledge, ordinarily a glove, or gantlet; which being taken up by the accuſer, they were both taken into ſafe cuſtody till the day of battle appointed by the judge.

If either of them fled after this, he was declared infamous, and deemed to have committed the crime in queſtion. Nor were the accuſer and accuſed now allowed to make up the matter; at leaſt, not without the conſent of the judge; which was never granted, without making the lord ſatisfaction for the right of inheritance to the effects of the vanquiſhed.

Before the *Champions* took the field, their heads were ſhaved, and they made oath, that "They believed the perſon who retained "them was in the right; and that they would defend his cauſe "to the utmoſt of their power." The weapons they uſed in the combat were a ſword and buckler; ſome ſay, in England, only a club and buckler: when on horſeback, they were armed at all points. Their weapons were bleſſed in the field by the prieſt, with a world of ceremony; and each took an oath he had no charm upon him.

The action began with railing, and giving each other ill language; at the ſound of a trumpet they were to go to blows: after the number of blows or rencounters expreſſed in the cartel, the judges of the combat threw a rod into the air, to advertiſe the *Champions* that the combat was ended. If it laſted till night, or ended with equal advantage on either ſide, the accuſed was reputed victor.

The puniſhment of the vanquiſhed was that which the crime merited, whereof he was accuſed: if it were a capital crime, the vanquiſhed was diſarmed, led out of the field, and immediately executed, together with the party whoſe cauſe he maintained. If the conquered *Champion* fought in the cauſe of a woman, ſhe was burnt.

Champion *of the king* is an officer, whoſe buſineſs is, at the coronation of a king of England, to ride into Weſtminſter-hall, armed cap-a-pe, when the king is at dinner, and throw down his gantlet by way of challenge; pronouncing, by a herald, "That if any man ſhall deny, or gainſay the king's "title to the crown, he is there ready to defend it in ſingle "combat, *&c.*" Which done, the king drinks to him, ſending him a gilt cup with a cover, full of wine; which the *Champion* drinks, and has the cup for his fee.

This office, ever ſince the coronation of Richard II. has been continued in the family of Dymocke, who held the manor of Scrivelſby in Lincolnſhire, hereditary from the family of the Marmions, who had it before, by grand ſerjeantry; on condition that the lord thereof ſhould be the king's *Champion.*

Champion, or rather **Champain**-*Lands*, are lands not incloſed; or large fields, downs, or places without woods or hedges.

CHAMOIS, **Chammy**, or *Shammy*. See the article Shammy.

CHANCE, a term we apply to events, to denote that they happen without any neceſſary, or foreknown cauſe.

Our aim is, to aſcribe thoſe things to *Chance*, which are not neceſſarily produced as the natural effects of any proper cauſe: but our ignorance and precipitancy lead us to attribute effects to *Chance*, which have neceſſary and determinate cauſes.

When we ſay a thing happens *by Chance*, we really mean no more, than that its cauſe is unknown to us: not, as ſome vainly imagine, that *Chance* itſelf can be the cauſe of any thing. From this conſideration, Dr. Bentley takes occaſion to expoſe the folly of that old tenet, *The world was made by Chance.*

The caſe of the painter, who, unable to expreſs the foam at the mouth of a horſe he had painted, threw his ſponge in deſpair at the piece, and, *by Chance*, did that which he could not before do by deſign, is an eminent inſtance of the force of *Chance:* yet, it is obvious, all we here mean by *Chance*, is, that the painter was not aware of the effect; or that he did not throw the ſponge with ſuch a view: not but that he actually did every thing neceſſary to produce the effect; inſomuch that, conſidering the direction wherein he threw the ſponge, together with its form, ſpecific gravity, the colours wherewith it was ſmeered, and the diſtance of the hand from the piece, it was impoſſible, on the preſent ſyſtem of things, that the effect ſhould not follow.

Chance is frequently perſonified, and erected into a chimerical being, whom we conceive as acting arbitrarily, and producing all the effects, whoſe real cauſes do not appear to us: in which ſenſe, the word coincides with the Τυχη, *Fortuna*, of the antients.

Chance is alſo confounded with *Fate*, and *Deſtiny*.

Chance is alſo uſed for the manner of deciding things, the conduct or direction whereof is left at large, and not reducible to any determinate rules or meaſures; or where there is no ground for preference: as at cards, dice, lotteries, *&c.*

For the Laws of **Chance**, *or the proportion of Hazard in Gaming*; ſee Game.

The antient Sors, or *Chance*, M. Placette obſerves, was inſtituted by God himſelf; and in the Old Teſtament, we find ſeveral ſtanding laws, and expreſs commands, which preſcribed its uſe on certain occaſions: hence, the ſcripture ſays, *The Lot*, or Chance, *fell on St. Matthias*; when it was in queſtion who ſhould fill Judas's place in the apoſtolate.

Hence alſo aroſe the *ſortes ſanctorum*; or method of determining things among the antient Chriſtians, by opening ſome of the ſacred books, and pitching on the firſt verſe they caſt their eye on, as a ſure prognoſtic of what was to befal them. The *ſortes Homericæ*, *Virgilianæ*, *Prænеſtinæ*, &c. uſed by the heathens, were with the ſame view, and in the ſame manner. See Sortes.

St. Auguſtine ſeems to approve of this method of determining things future, and owns that he had practiſed it himſelf; grounded on this ſuppoſition, that God preſides over *Chance*, and on *Proverbs* xvi. *v.* 33.

Many among the modern divines hold *Chance* to be conducted in a particular manner by providence, and eſteem it an extraordinary way which God uſes to declare his will, and a kind of immediate revelation.

CHANCE-MEDLEY, in law, the accidental killing of a man, not altogether without the killer's fault, though without any evil intent.

Stamford calls it, *Homicide by miſadventure:* Weſt calls it *Homicide mixed*; and ſays, it is when the killer's ignorance or negligence is joined with the *Chance:* as ſuppoſing a man lopping trees by the highway, and a bough falling chance to kill a paſſenger; the party here offends in not having given warning, whereby the ſlain might have been induced to take more heed.

CHANCEL *, is properly that part of the choir of a church, between the altar, or communion-table, and the baluſtrade, or rail that incloſes it; where the miniſter is placed at the celebration of the communion.

* The word comes from the Latin *Cancellus*, which in the lower Latin is uſed in the ſame ſenſe, from *Cancelli*, lattices, or croſs bars, wherewith the *Chancels* were antiently encompaſſed, as they now are with rails.

The right of a ſeat and a ſepulchre in the *Chancel*, is one of the privileges of founders of a church.

CHANCELLOR, an officer, ſuppoſed originally to have been a notary, or ſcribe, under the emperors, and named *Cancellarius*, becauſe he ſat behind a lattice, called in Latin *Cancellus*, to avoid being crouded by the people.

Naude ſays, it was the emperor himſelf who ſat and rendered juſtice within the lattice; the *Chancellor* attending at the door thereof, whence he took his title.

Others ſay, he had it from this, that all letters, addreſſes, petitions, *&c.* to the king, being firſt examined by him, were *cancelled* where amiſs: others, becauſe all patents, commiſſions, and warrants, coming from the king, were examined and *cancelled* by him. Others, becauſe he *cancelled* and annulled the ſentences of other courts.

Du Cange, from Joannes de Janua, fetches the original of the word *Chancellor* from Paleſtine, where the houſes being flat, and made in form of a terrace, with parapets or paliſadoes called *Cancelli*; thoſe who mounted theſe houſes to rehearſe any harangue, were called *Cancellarii:* whence the name paſſed to thoſe who pleaded at the bar, which he calls *Cancelli forenſes*, and at length to the judge who preſided; and laſtly to the king's ſecretaries.

This officer is now in great authority in all countries: the perſon who bears it with us, or the

Lord High **Chancellor** *of England*, is the firſt perſon of the realm, next after the king, and princes of the blood, in all civil affairs. He is the chief adminiſtrator of juſtice next the ſovereign; being the judge of the court of chancery.

All other juſtices are tied to the ſtrict law; but the *Chancellor* has the king's abſolute power to moderate the rigour of the written law, to govern his judgment by the law of nature and conſcience, and to order all things *ſecundum æquum & bonum.* Accordingly, Stamford ſays, the *Chancellor* has two powers, the one abſolute, the other ordinary; meaning, that though by his ordinary power he muſt obſerve the ſame form of procedure as other judges, yet in his abſolute power he is not limited by any written law, but by conſcience and equity.

The offices of *Lord Chancellor* and lord keeper are by the ſtatute 5 *Eliz.* made the ſame thing; till that time they were different; and frequently ſubſiſted at the ſame time in different perſons: ſometimes the lord *Chancellor* had a *Vice-Chancellor*, who was keeper of the ſeal.

The keeper was created *per traditionem magni ſigilli*, but the lord *Chancellor* by patent, though now that he has the keeper's office, he is created in like manner by giving him the ſeal. The *Chancellor* is likewiſe ſpeaker of the houſe of lords. See Parliament.

Though he be ſole judge of the court of chancery, yet in matters of much difficulty he ſometimes conſults the othe judges; ſo that this office may be diſcharged by one who no profeſſed lawyer, as antiently it commonly was. He twelve aſſiſtants, or coadjutors, antiently called *Clerici*, then being in holy orders, now *Maſters in Chancery*, the fir whereof is the *Maſter of the Rolls.* See Master of *Rolls*, Masters *in Chancery*, &c.

Chancellor *of a Dioceſe*, is a judge of the biſhop's cou held in the cathedral of each dioceſe.

He was antiently called *Eccleſiaſticus*, and *Eccleſiæ Cauſſidic* the church-lawyer. See Bishop's *Court.*

Chancellor *of a Cathedral.* His office is thus deſcribed in Monaſticon; *viz.* to hear the leſſons, and lectures read in church, either by himſelf, or his vicar; to correct and ſet rig the reader when he reads amiſs; to inſpect ſchools, to causes, apply the ſeal, write and diſpatch the letters of chapter, keep the books, take care there be frequent prea ings, both in the church, and out of it, and aſſign the office preaching to whom he liſts.

Chancellor *of the Duchy of Lancaſter*, is an officer, the head of that court; whoſe buſineſs is to judge and determine all controverſies between the king, and his tenants of the duchy-land; and otherwiſe to direct all the king's affairs relating to that court. See Duchy *Court*.

Chancellor *of the Exchequer*, is an officer, ſuppoſed by ſome to have been created for moderating extremities in the exchequer.

He ſometimes ſits in that court and the exchequer-chamber, and, with the reſt of the court, orders things to the king's beſt benefit. He is always in commiſſion with the lord treaſurer for letting lands accruing to the crown by diſſolution of abbeys, and otherwiſe: he has power, with others, to compound for forfeitures on penal ſtatutes, bonds, and recognizances entered into by the king.

He has a great authority in managing the royal revenue, and in matters of firſt-fruits.

The court of equity, in the exchequer-chamber, is held before the lord treaſurer, *Chancellor*, and barons, as that of common law before the barons only.

Chancellor *of an Univerſity*, is he who ſeals the diplomas or letters of degrees, proviſion, &c. given in the univerſity.

The *Chancellor* of Oxford is their chief magiſtrate, elected by the ſtudents themſelves: his office is *durante vita*, to govern the univerſity, preſerve and defend its rights and privileges, convoke aſſemblies, and do juſtice among the members under his juriſdiction.

Under the *Chancellor* is the *Vice-Chancellor*, who is choſen annually; being nominated by the *Chancellor*, and elected by the univerſity in convocation. His buſineſs is to ſupply the *Chancellor*'s abſence.

At his entrance upon his office, he chooſes four *Pro-Vice-Chancellors*, out of the heads of colleges, to one of whom he deputes his power in his abſence.

The Chancellor *of Cambridge*, is in moſt reſpects the ſame with that of Oxford; only he does not hold his office *durante vita*, but may be elected every three years.

He has under him a commiſſary, who holds a court of record of civil cauſes, for all perſons of the univerſity under the degree of maſters of arts.

The *Vice-Chancellor* of Cambridge is choſen annually by the ſenate, out of two perſons nominated by the heads of the ſeveral colleges and halls.

Chancellor *of the Order of the Garter*, and other military orders, is an officer who ſeals the commiſſions and mandates of the chapter and aſſembly of the knights, keeps the regiſter of their deliberations, and delivers acts thereof under the ſeal of the order. See Garter.

CHANCERY, the grand court of equity, and conſcience, inſtituted to moderate the rigour of the other courts that are tied to the ſtrict letter of the law.

The judge of this court is the lord high chancellor, whoſe function ſee under Chancellor.

The proceedings of this court are either *Ordinary*, like other courts, according to the laws, ſtatutes, and cuſtoms, of the nation, by granting out writs remedial and mandatory, writs of grace, &c. Or *Extraordinary*, according to equity and conſcience, by bills, anſwers, and decrees, to examine frauds, combinations, truſts, ſecret uſes, &c. to ſoften the ſeverity of common law, and reſcue people from oppreſſion; to relieve them againſt cheats, unfortunate accidents, breaches of truſt, &c.

Out of the court of *Chancery*, are iſſued writs or ſummons's for parliaments and convocations, edicts, proclamations, charters, protections, patents, ſafe conducts, and writs of moderata miſericordia, &c.

Here are alſo ſealed and enrolled letters patent, treaties and leagues, deeds, writs, and commiſſions.

The officers of this court, beſide the lord chancellor, who is ſupreme judge, are, the maſter of the rolls, who, in the chancellor's abſence, hears cauſes, and gives decrees; and twelve *Maſters of Chancery*, who are aſſiſtants, and ſit by turns on the bench.

For the equity part of this court are ſix clerks, who have each under him about fifteen more, in the nature of attorneys of the court: two chief examiners, for examining witneſſes, who have each five or ſix clerks apiece: one principal regiſter, who has four or five deputies: clerk of the crown, who makes writs, commiſſions, &c. warden of the Fleet; ſerjeant at arms, who bears the mace before the chancellor; and the uſher and crier of the court.

To the common law part, belong the twenty-four curſitors, and their clerks, who make out original writs; clerks of the petty bag; clerks of the hanaper; controller of the hanaper; clerk of appeals; clerk of the faculties; ſealer; chafe-wax; clerks of the patents, of preſentations, diſmiſſions, licences to alienate, enrollments, protections, ſubpœnas, affidavits, &c. See each under its proper article.

HANDELIER, or Chandeleer, in fortification, a wooden frame, whereon are laid faſcines or fagots, to cover the workmen inſtead of a parapet.—See *Tab. Fortif. Fig.* 25.

Chandeliers are ſometimes alſo made to prevent the enemy from ſeeing what paſſes within.

The difference between *Chandeliers*, and blinds, conſiſts in this, that the former ſerve to cover the pioneers before, and the latter alſo cover them over head.

CHANGE, in commerce, &c. See Exchange.

CHANGER, or Chaunger, an officer belonging to the king's mint, who changes money for gold, or ſilver bullion. See Mint.

Money-Changer, is a banker, who deals in the exchange, receipt, and payment, of moneys. See Banker.

CHANGES in arithmetic, &c. the permutations or variations of any number of quantities; with regard to their poſition, order, &c.

To find all the poſſible Changes *of any number of quantities, or how oft their order may be varied:*

Suppoſe two quantities *a* and *b*. Since they may be either wrote *a b* or *b a*, it is evident their *Changes* are $2=2.1$. Suppoſe three quantities *a b c*: their *Changes* will be as in the margin; as is evident by combining *c* firſt with *a b*, then with *b a*; and hence the number of *Changes* ariſes $3.2.1=6$. If the quantities be 4, each may be combined four ways with each order of the other three; whence the number of *Changes* ariſes $6.4=4.3.2.1.=24$. Wherefore, if the number of quantities be ſuppoſed *n*, the number of *Changes* will be $n.n-1.\ n-2.\ n-3.\ n-4.$ &c. If the ſame quantity occur twice, the *Changes* of two will be found *b b*, of three *b a b*, *a b b*, *b b c*; of four *c b a b*, *b c a b*, *b a b c*. And thus the number of *Changes* in the firſt caſe will be $1=(2.1):2.1$; in the ſecond, $3=(3.2.1):2.1$; in the third, $1.2=(4.3.2.1):2.1$.

c a b
a c b
a b c
——
c b a
b c a
b a c

If a fifth letter be added, in each ſeries of four quantities, it will beget five *Changes*, whence the number of all the *Changes* will be $60=(5.4.3.2.)\,1,:2.1$. Hence if the number of quantities be *n*, the number of *Changes* will be $(n.n-1.\ n-2.\ n-3.\ n-4.$ &c.$):2.1$. From theſe ſpecial formulæ may be collected a general one; *viz.* if *n* be the number of quantities, and *m* the number which ſhews how oft the ſame quantity occurs; we ſhall have $(n.n-1.\ n-2.\ n-3.\ n-4.\ n-5.\ n-6.\ n-7.\ n-8.\ n-9.$ &c.$):(m-1.\ m-2.\ m-3.\ m-4.$ &c.$)$; the ſeries being to be continued, till the continual ſubtraction of unity from *n* and *m* leave 0. After the ſame manner we may proceed further, till putting *n* for the number of quantities, and *l*, *m*, *r*, &c. for the number that ſhews how oft any of them is repeated, we ariſe at an univerſal form, $(n.n-1.\ n-2.\ n-3.\ n-4.\ n-5.\ n-6.\ n-7.\ n-8.$ &c.$):(l.l-1.\ l-2.\ l-3.\ l-4.\ l-5.$ &c. $m.m-1.\ m-2.\ m-3.$ &c.$)\ r.r-1.\ r-2.\ r-3.\ r-4.\ r-5.$ &c.

Suppoſe, for inſtance, $n=6$, $l=3$, $r-0$. The number of *Changes* will be $(6.5.4.3.2.1.):(3.2.1.3.2.1)=(6.5.4.):3.2=2.5.2=20$.

Hence, ſuppoſe thirteen perſons at a table, if it be required how oft they may *change* places; we ſhall find the number $13.12.11.10.9.8.7.6.5.4.3.2.1.=6227020800$.

In this manner may all the poſſible anagrams of any word be found in all languages, and that without any ſtudy: ſuppoſe, *v. g.* it were required to find the anagrams of the word *amor*, the number of *Changes* will be

a	*oam*	*rmoa*	*maro*	*arom*
——	*aom*	*mroa*	*maor*	*aorm*
ma	*amo*	*mora*	——	*aomr*
am	——	*moar*	*raom*	——
——	*roma*	——	*oram*	*ramo*
oma	*orma*	*rmao*	*oarm*	*armo*
moa	*omra*	*mrao*	*oamr*	*amro*
mao	*omar*		——	*amor*
			raom	

The anagrams therefore of the word *amor*, in the Latin tongue, are *roma*, *mora*, *maro*, *ramo*, *armo*. See Anagram.

Whether this new method of anagrammatizing be like to prove of much ſervice to that art, is left to the poets.

CHANNEL, in anatomy, chirurgery, &c. See Canal.

Channel, or *bed of a river*. See River.

Channel is alſo applied to divers arms of the ſea, where the water runs within the land; or to certain narrow ſeas, confined between two adjacent continents, or between an iſland and continent.

In this ſenſe, we ſay, St. George's *Channel*, the Britiſh *Channel*, the *Channel* of the Black Sea, of Conſtantinople, &c.

Channel in building. See Gutter.

Channel *of the Volute*, in the Ionic capital, is the face of its circumvolution; incloſed by a liſtel. See Volute.

Channel *of the Larmier*, is the hollow ſoffit of a cornice, which makes the pendant mouchette. See Larmier.

CHANNELINGS. See the article Flutings.

CHANT, Cantus, is uſed for the vocal muſic of churches.

In church-hiſtory we meet with divers kinds of *Chant*, or *Song*: the firſt is the *Ambroſian*, eſtabliſhed by St. Ambroſe. See Ambrosian *Chant*.

The ſecond, the *Gregorian chant*, introduced by pope Gregory the Great, who eſtabliſhed ſchools of *chantors*, and corrected the church ſong.

This is ſtill retained in the church under the name of *plain ſong*: at firſt it was called the *Roman ſong*.

The *plain*, or *Gregorian chant*, is where the choir and people ſing in uniſon, or all together in the ſame manner.

CHANT *Royal*. See the article COMEDY.

CHANTLATE, in building, a piece of wood faſtened near the ends of the rafters, and projecting beyond the wall, to ſupport two or three rows of tyles, ſo placed to prevent the rain-water from trickling down the ſides of the wall.

CHANTOR, or CHAUNTOR, a perſon who ſings in the choir of a cathedral.

All great chapters have *chantors* and chaplains to eaſe and aſſiſt the canons, and officiate in their abſence.

St. Gregory firſt inſtituted the office of *chantors*, erecting them into a body, called *ſchola cantorum*: tho' Anaſtaſius ſeems to attribute their riſe to pope Hilary, who lived an hundred years before Gregory.

But the word grows obſolete in this ſenſe, and inſtead thereof we uſe the word *choriſter*, or ſinging-man.

CHANTOR is uſed, by way of excellence, for the præcentor, or maſter of the choir; which is one of the dignities of the chapter.

The *chantor* bears the cope and the ſtaff at ſolemn feſtivals; and gives tune to the reſt at the beginning of pſalms and anthems.

The antients called the *chantor*, *primicerius cantorum*.

To him formerly belonged the direction of the deacons, and other inferior miniſters.

CHANTRY, or CHAUNTRY. See the article CHAUNTRY.

CHAOLOGY, the hiſtory or deſcription of the chaos.

Orpheus, in his *chaology*, ſets forth the different alterations, ſecretions, and divers forms, which matter went thro' till it became inhabitable; which amounts to the ſame with what we otherwiſe call *coſmogony*, or the creation of the world.

Dr. Burnet likewiſe gives us a *chaology*, in his theory of the earth. He repreſents the *chaos*, as it was at firſt, intire, undivided, and univerſally rude and deformed; or the tohu bohu: then ſhews how it came divided into its reſpective regions; how the homogeneous matter gathered itſelf apart from all of a contrary principle; and laſtly, how it hardened, and became a ſolid habitable globe.

CHAOS, among the antient philoſophers, was deſcribed a dark, turbulent kind of atmoſphere; or a diſorderly ſyſtem, or mixture of all ſorts of particles together, without any form or regularity: out of which the world was formed.

Chaos is every-where repreſented as the firſt principle, ovum, or ſeed of nature, and the world. All the antient ſophiſts, ſages, naturaliſts, philoſophers, theologues, and poets, hold that *chaos* was the eldeſt and firſt principle, το αρχαιον χαος.

The Barbarians, Phœnicians, Egyptians, Perſians, &c. all refer the origin of the world to a rude, mixed, confuſed maſs of matter. The Greeks, Orpheus, Heſiod, Menander, Ariſtophanes, Euripides, and the writers of the cyclic poems, all ſpeak of the firſt *chaos*: the Ionic and Platonic philoſophers build the world out of it. The Stoics hold, that as the world was firſt made of a *chaos*, it ſhall at laſt be reduced to a *chaos*; and that its periods and revolutions in the mean time are only tranſitions from one *chaos* to another.

Laſtly, the Latins, as Ennius, Varro, Ovid, Lucretius, Statius, &c. are all of the ſame opinion. Nor is there any ſect or nation whatever, that does not derive their Διακοσμησις, the ſtructure of the world, from a *chaos*.

The opinion firſt aroſe among the Barbarians, whence it ſpread to the Greeks, and from the Greeks to the Romans, and other nations.

Dr. Burnet obſerves, that beſides Ariſtotle, and a few other pſeudo-Pythagoreans, nobody ever aſſerted, that our world was always, from eternity, of the ſame nature, form, and ſtructure, as at preſent: but that it had been the ſtanding opinion of the wiſe men of all ages, that what we now call the terreſtrial globe, was originally an unformed, indigeſted maſs of heterogeneous matter, called *chaos*; and no more than the rudiments, and materials, of the preſent world.

It does not appear who firſt broached the notion of a *chaos*. Moſes, the eldeſt of all writers, derives the origin of his world from a confuſion of matter, dark, void, deep, without form, which he calls *tohu bohu*; which is preciſely the *chaos* of the Greek and Barbarian philoſophers. And hence, poſſibly, might thoſe philoſophers derive their *chaos*, with ſome alteration and interpolation.

Moſes goes no further than the *chaos*; nor tells us whence it took its origin, or whence its confuſed ſtate; and where Moſes ſtops, there, preciſely, do all the reſt.

Dr. Burnet endeavours to ſhew, that as the antient philoſophers, &c. who wrote of the coſmogony, acknowleged a *chaos* for the principle of their world; ſo the divines, or writers of the theogony, derive the origin or generation of their fabled gods from the ſame principle.

Mr. Whiſton ſuppoſes the antient *chaos*, the origin of our earth, to have been the atmoſphere of a comet; which, though new, yet, all things conſidered, is not the moſt improbable aſſertion. He endeavours to make it out by many arguments, drawn from the agreement which appears to be between them.

So that, according to him, every planet is a comet, formed into a regular and laſting conſtitution; and placed at a proper diſtance from the ſun, revolving in a nearly circular orbit: and a comet is a planet either beginning to be deſtroyed, or re-made: that is, a *chaos*, or planet unformed, or in its primæval ſtate, and placed, as yet, in an orbit very eccentrical. See COMET.

CHAP. See CHILBLAIN.

CHAPEAU, in a general ſenſe. See the article HAT.

CHAPEAU is ſometimes alſo uſed to denote the cap, or coronet armed with ermin, borne by dukes, &c.

The creſt is borne on the *chapeau*; and by the *chapeau* the creſt and coat are ſeparated; it being a rule, that no creſt muſt touch the ſhield immediately.

CHAPEL *, or CHAPPEL, a kind of little church, ſerved by an incumbent properly under the denomination of a *chaplain*.

* The word *chapel*, according to ſome, comes from the Greek καπηλεια, little tents, or booths, ſet up by traders in fairs to ſhelter them from the weather. Papias fetches it both from the Greek and Latin, *quaſi capiens* λαον, or *populum*, vel *laudem*: others derive it from the *chape*, or cope, which ſerved to cover the body: others, *à pellibus caprarum*; becauſe theſe places were antiently covered with goatſkins. Rebuff derives it from *cappa*, St. Martin's cope, which the kings of France carried to war with them as their ſtandard, and preſerved very carefully in particular tents, thence called *chapels*.

There are two kinds of *chapels*, the one conſecrated, and held as benefices: the other ſecular, being of the nature of oratories.

The firſt are built apart, and at a diſtance from the pariſh-church: being neither pariſhes, cathedrals, nor priories, but ſubſiſting of themſelves.

Theſe are called by the canoniſts *ſub dio*, and by us *chapels of eaſe*; as being erected at a diſtance from the mother-church, where the pariſh is large and wide, for the eaſe and conveniency of ſome of the pariſhioners who reſide far off.

Theſe are ſerved by ſome inferior paſtor, provided either by the rector of the pariſh, or by thoſe for whoſe eaſe and benefit they are intended.

The ſecond kind are frequently built in, or adjoining to a church, as a part thereof; having only a deſk, &c. to read prayers in; and, in the Romiſh churches, an altar, &c. to celebrate maſs on: but without any baptiſtery, or font.

Theſe the canoniſts call *ſub tecto*. They are generally erected by ſome conſiderable perſon, for the uſe of their own families; *ut ibidem familiaria ſepulcra ſibi conſtituant*.

The twenty-firſt canon of the council of Agda, held in 506, allows private perſons the uſe of *chapels*; but with prohibition to all clerks to officiate in them without leave from the biſhop.

Free CHAPELS are thoſe *chapels of eaſe* which have ſettled revenue for perpetual maintenance of a paſtor, &c. by charitable donatives of lands, or rents beſtowed on them; ſ as not to be any charge either to the rector, or the pariſhioners.

There are ſeveral collegiate churches in France, which they call *ſaintes chapelles*, holy chapels; as thoſe of Paris, Dijon Bourges, Bourbon, &c. Theſe are ſo denominated, by reaſon there are relics in them.

Hence, all thoſe places where relics were preſerved came t be called *chapels*; and the perſons who had the care of them *chaplains*.

CHAPEL is alſo a name given to a printer's workhouſe; b reaſon, ſay ſome authors, printing was firſt actually performed in *chapels*, or churches.

In this ſenſe they ſay, the orders, or laws of the *chapel*, t ſecrets of the *chapel*, &c.

Knights of the CHAPEL was an order of knights inſtituted king Henry VIII. in his teſtament, to the number of thirtee tho' theſe have been increaſed to the number of twenty-ſi they are called alſo *poor knights*.

Theſe are not knights of the order of the garter; but are, it were, their aſſiſtants or deputies, ſerving to diſcharge their offices in the funeral ſervices of the kings of Englan They are ſubject to the office of the canons of Windſor, live on penſions which the order aſſigns them.

They bear the blue or red cloke, with the arms of St. Ge on the left ſhoulder; but the cloke is only cloth, and they no ſort of garter: which diſtinguiſhes them ſufficiently f the knights of the garter.

CHAPERON, CHAPERONNE, or CHAPEROON, prop ſignifies a ſort of hood, or covering of the head, anti worn both by men and women, the nobles, and the po lace, and afterwards appropriated to the doctors, and li tiates in colleges, &c.

Hence, the name paſſed to certain little ſhields, and other f ral devices, placed on the foreheads of the horſes that dra hearſes in pompous funerals, and which are ſtill called ch *roons*, or *ſhafferoons*; by reaſon ſuch devices were originally faſtened on the *chaperonnes*, or hoods, worn by thoſe horſes with their other coverings of ſtate.

CHAPITERS, in law, were antiently a ſummary of ſuch matters as were to be inquired of, or preſented before juſtices in eyre, juſtices of aſſize, or of the peace, in their ſeſſions.

Chapiters are now taken for articles delivered by the mouth of the juſtice in his charge to the inqueſt: tho' it appears from Bracton and Briton, they were formerly written exhortations given by the juſtices for the good obſervation of the laws, and the king's peace; firſt read in open court, then delivered in writing to the grand inqueſt: which the grand jury, or inqueſt, were likewiſe to anſwer to upon their oaths, either affirmatively, or negatively.

CHAPLAIN properly ſignifies a perſon provided of a chapel; or who diſcharges the duty thereof. See CHAPEL.

CHAPLAIN is alſo uſed for an eccleſiaſtical perſon, in the houſe of a prince, or a perſon of quality, who officiates in their chapels, &c.

With us there are forty-eight *chaplains* to the king, who wait four each month, preach in the chapel, read the ſervice to the family, and to the king in his private oratory, and ſay grace in the abſence of the clerk of the cloſet.

While in waiting, they have a table and attendance, but no ſalary.

The firſt *chaplains* are ſaid to have been thoſe inſtituted by the antient kings of France, for preſerving the *chape*, or *cape*, with the other relics of St. Martin, which the kings kept in their palace, and carried out with them to the war. The firſt *chaplain* is ſaid to have been Gul. de Meſmes, *chaplain* to S. Louis.

CHAPLAIN *in the order of Malta* is uſed for the ſecond rank, or claſs, in that order; otherwiſe called *diaco*.

The knights make the firſt claſs, and the *chaplains* the ſecond. See MALTA.

CHAPLAINS *of the pope* are the auditors, or judges of cauſes in the ſacred palace; ſo called, becauſe the pope antiently gave audience in his chapel, for the deciſion of caſes ſent from the ſeveral parts of Chriſtendom.

He hither ſummoned as aſſeſſors the moſt known lawyers of his time, and they hence acquired the appellation of *capellani*, *chaplains*.

It is from the decrees formerly given by theſe, that the body of decretals is compoſed: their number pope Sixtus IV. reduced to twelve.

If it be true, that the word *chaplain* was firſt applied to thoſe who preſerved St. Martin's chape, as above, the word muſt be derived from *capa*, *chape*; not from *capella*, of *capſula*, or *capſa*, a caſe, as others imagine.

Some ſay, the ſhrines of relics were covered with a kind of *tent*, *cape*, or *capella*, i. e. little cape; and that hence the prieſts, who had the care of them, were called *chaplains*. In time theſe relics were repoſited in a little church, either contiguous to a larger, or ſeparate from it; and the ſame name, *capella*, which was given to the cover, was alſo given to the place where it was lodged: and hence the prieſt who looked to it came to be called *chaplain*.

CHAPLET, or CHAPELET, a ſtring of beads, uſed in the Romiſh church, to keep account of the number of paternoſters, and ave-mary's to be rehearſed in honour of God, and the holy virgin.

Chaplets are otherwiſe called *pater-noſters*: there are *chaplets* of coral, of diamonds, of callambo, of St. Lucy's wood, &c. A roſary is a *chaplet* * of fifteen decads of ave-mary's. See ROSARY.

* Menage derives the word from *chapeau*, hat; by reaſon of the reſemblance the thing bears to a hatband, or *chaplet* of roſes, *chapeau de roſes*; the modern Latins call it *capellina*; the Italians more frequently *corona*.

Larrey and P. Viret aſcribe the firſt invention of the *chaplet* to Peter the hermit, well known in the hiſtory of the croiſades.

There is a *chaplet* of our Saviour, conſiſting of thirty-three beads, in honour of his thirty-three years living on earth, inſtituted by father Michael, the Camaldulian.

The orientals have a kind of *chaplets*, which they call *chains*, and which they uſe in their prayers, rehearſing one of the perfections of God on each link, or head. The great Mogul is ſaid to have eighteen of theſe chains, all of precious ſtones, ſome diamonds, others rubies, pearls, &c.

The Turks have likewiſe *chaplets*, which they bear in the hand, or hang at the girdle: but father Dandini obſerves, they differ from thoſe uſed by the Romaniſts, in that they are all of the ſame bigneſs, and have not that diſtinction into decads; tho' they conſiſt of ſix decads, or ſixty beads. He adds, that the muſſulmen have preſently run over the *chaplet*, the prayers being extremely ſhort, as containing only theſe words, *Praiſe to God*; or theſe, *Glory to God*, for each bead.

Beſides the common *chaplet*, they have likewiſe a larger one, conſiſting of one hundred beads, where there is ſome diſtinction, as being divided by little threads into three parts, on one of which they repeat thirty times *Soubhan allah*, i. e. *God is worthy to be praiſed*; on another, *Ellamb allah*, *Glory be to God*; and on the third, *Alla echer*, *God is great*. Theſe thrice thirty times making only ninety; to complete the number one hundred, they add other prayers for the beginning of the *chaplet*.

He adds, that the Mahometan *chaplet* appears to have had its riſe from the *Mea beracoth*, or *hundred benedictions*; which the Jews are obliged to repeat daily, and which we find in their prayer-books, the Jews and Mahometans having this in common, that they ſeldom do any thing without pronouncing ſome laud, or benediction.

CHAPLET, or CHAPELET, in architecture, a little moulding cut, or carved into round beads, pearls, olives, or the like.—See *Tab. Archit. Fig.* 12.

A *chaplet*, in effect, is little elſe but a baguette enriched with ſculpture. See BAGUETTE.

CHAPPAR *, a courier of the king of Perſia, who carries diſpatches from court to the provinces, and from the provinces to the court. See COURIER.

* The word, in the original Perſian, ſignifies *courier*.

The poſts, M. Tavernier tells us, are not eſtabliſhed and regulated in Perſia as among us: when the court ſends out a *chappar*, the ſophi's maſter of the horſe furniſhes him with a ſingle horſe, how long ſoever his journey be, and a man to run after him: when his horſe is weary, he takes that of the firſt horſeman he meets with, who dares not make the leaſt refuſal, and ſends his own home by the man who follows him. As for the maſter of the new horſe he has taken, he muſt run, or at leaſt ſend, after the *chappar* to retake him, when the *chappar* diſmounts ſome other horſeman to change him.

CHAPPE, in heraldry, the partition of an eſcutcheon, by lines drawn from the center of the upper edge to the three angles below: as repreſented in *Tab. Herald. Fig.* 14. which they blazon *chappé* Or, and Vert.

The ſections of the ſides are to be of a different colour from the reſt. Makenzy calls it, *A chief party per bend dexter*, or *ſiniſter*, or both.

CHAPPEL, or CHAPEL. See the article CHAPEL.

CHAPTER, CAPITULUM, a community of eccleſiaſtics belonging to a cathedral, or collegiate church.

The chief, or head of the *chapter*, is the dean; the body conſiſts of canons, or prebendaries, &c.

The *chapter* has now no longer any ſhare in the adminiſtration of the dioceſe, during the life of the biſhop; but ſucceeds to the whole epiſcopal juriſdiction during the vacancy of the ſee.

The origin of *chapters* is derived from hence, that antiently the biſhops had their clergy reſiding with them in their cathedrals, to aſſiſt them in the performance of ſacred offices, and in the government of the church; and even after parochial ſettlements were made, there was ſtill a body of clerks who continued with the biſhop, and were indeed his family, maintained out of his income.

After the monaſtic life grew into requeſt, many biſhops choſe monks rather than ſeculars for their attendants.

Theſe bodies, either of monaſtics or ſeculars, then had the ſame privilege of chuſing the biſhop, and being his council, which the whole clergy of the dioceſe had before; but, by degrees, their dependence on the biſhop grew leſs and leſs; and then they had diſtinct parcels of the biſhop's eſtate aſſigned them for their maintenance; till at laſt, the biſhop had little more left than the power of viſiting them.

On the other hand, theſe capitular bodies by degrees alſo loſt their privileges; particularly that of chuſing the biſhop, for which the kings of England had a long ſtruggle with the pope: but at laſt, Henry VIII. got this power veſted in the crown; and now the deans and *chapters* have only the ſhadow of it.

The ſame prince likewiſe expelled the monks from the cathedrals, and placed ſecular canons in their room; thoſe he thus regulated, are called *deans and chapters of the new foundation*; ſuch are Canterbury, Wincheſter, Worceſter, Ely, Carliſle, Durham, Rocheſter, and Norwich: ſuch alſo are the *chapters* of the four new ſees, of Peterborough, Oxford, Glouceſter, and Briſtol.

CHAPTER is alſo applied to the aſſemblies held by religious and military orders, for deliberating on their affairs, and regulateing their diſcipline.

Papias ſays they are ſo called, *quòd capitula ibi legantur*.

The eſtabliſhment of general *chapters* of religious orders is owing to the Ciſtercians, who held the firſt in 1116. and were ſoon followed by the other orders.

CHAPTER is alſo uſed for a diviſion of a book; contrived for keeping the matters treated thereon more ſeparate, clear, and diſtinct.

The antients were unacquainted with the diviſion of books into *chapters*, and ſections: Papias ſays, the name *chapter*, *caput*, aroſe hence, *quòd ſit alterius ſententiæ caput*, or *quòd capiat totam ſummam*. S. Auguſtine compares *chapters* to inns, inaſmuch as they refreſh the reader, as thoſe the traveller.

The three CHAPTERS is a phraſe famous in eccleſiaſtical hiſtory, ſignifying a volume publiſhed by Theodoret, an adherent of Neſtorius, againſt St. Cyril; conſiſting of a letter of Ibas prieſt of Edeſſa, to Maris a biſhop of Perſia; of extracts from the works of Diodorus of Tarſus, and Theodore of Mopſueſtia, wherein the ſame doctrines were taught, that were contended for by Neſtorius: and of two pieces of Theodoret, the one againſt the council of Epheſus, the other againſt the anathemas of St. Cyril.

Theſe make the famous three *chapters*; which have been, ſince, condemned by various councils, and many popes.

CHAPTREL. See the article IMPOST.

CHARACTER *, in a general ſenſe, ſignifies a mark, or figure drawn on paper, metal, ſtone, or other matter, with a pen, graver, chiſſel, or other inſtrument, to ſignify, or denote any thing.

* The word is Greek, χαρακτηρ, formed from the verb χαρασσειν, *inſculpere*, to ingrave, impreſs, &c.

The various kinds of *characters* may be reduced to three heads, *viz. literal characters*, *numeral characters*, and *abbreviations*.

Literal CHARACTER, is a letter of the alphabet, ſerving to indicate ſome articulate ſound, expreſſive of ſome idea, or conception of the mind.

Theſe may be divided, with regard to their nature and uſe, into *nominal*, *real*, and *emblematical*.

Nominal CHARACTERS are thoſe we properly call *letters*; which ſerve to expreſs the names of things.

Real CHARACTERS are thoſe, that, inſtead of names, expreſs things and ideas.

Emblematical, or *ſymbolical* CHARACTERS, have this in common with real ones, that they expreſs the things themſelves; but they alſo have this further, that they in ſome meaſure perſonate them, and exhibit their form: ſuch are the hieroglyphics of the antient Egyptians.

Literal CHARACTERS may be again divided, with regard to their invention and uſe, into *particular* and *general*.

Particular CHARACTERS, are thoſe peculiar to this or that nation; or that have been ſo: ſuch are the Roman, Italic, Greek, Hebrew, Arabic, Gothic, Chineſe, *&c. characters*.

Univerſal CHARACTERS are alſo *real characters*, and make what ſome authors call a *philoſophical language*.

The diverſity of *characters* uſed by the ſeveral nations to expreſs the ſame idea, is found the chief obſtacle to the advancement of learning: to remove this, ſeveral authors have taken occaſion to propoſe plans of *characters* that ſhould be univerſal, and which each people ſhould read in their own language. The *character* here is to be real, not nominal; to expreſs things, and notions; not, as the common ones do, letters, or ſounds: yet to be mute, like letters, and arbitrary; not emblematical, like hieroglyphics.

Thus, every one ſhould retain their own language, yet every one underſtand that of each other, without learning it; only by ſeeing a real or univerſal *character*, which ſhould ſignify the ſame thing to all people; by what ſounds ſoever each expreſſed it in his particular idiom. For inſtance, by ſeeing the *character* deſtined to ſignify *to drink*, an Engliſhman ſhould read *to drink*; a Frenchman *boire*; a Latin *bibere*; a Greek πινειν; a Jew שמה; a German *trincken*; and ſo of the reſt: in the ſame manner as ſeeing a horſe, each people expreſſes it after their own manner; but all mean the ſame animal.

This real *character* is no chimera; the Chineſe and Japoneſe have already ſomething like it. They have a common *character* which each of thoſe nations underſtand alike in their ſeveral languages; though they pronounce it with ſuch different ſounds, that they do not underſtand a tittle of one another in ſpeaking.

The firſt, and moſt conſiderable attempts for a real *character*, or philoſophical language, in Europe, are thoſe of biſhop Wilkins, and Dalgarme: but theſe, with how much art ſoever they were contrived, have yet proved ineffectual.

M. Leibnitz had ſome thoughts the ſame way: he thinks thoſe great men did not hit the right method; and adds, it was probable, indeed, that, by this means, people, who do not underſtand one another, might eaſily have a commerce together; but that they have not hit on true, *real characters*.

According to him, the *characters* ſhould reſemble thoſe uſed in algebra: which, in effect, are very ſimple, yet very expreſſive; without any thing ſuperfluous or equivocal; and contain all the varieties required.

The real *character* of biſhop Wilkins has its juſt applauſe: Dr. Hook recommends it on his own knowlege and experience, as a moſt excellent ſcheme; and to engage the world to the ſtudy thereof, publiſhes ſome fine inventions of his own therein.

M. Leibnitz tells us, he had under conſideration an *alphabet of human thoughts*; in order to a new philoſophical language, on his own ſcheme; but his death prevented this from being brought to maturity.

M. Lodwic, in the *Philoſophical Tranſactions*, gives us a plan of *an univerſal alphabet*, or *character* of another kind: this was to contain an enumeration of all ſuch ſingle ſounds, or letters, as are uſed in any language; by means whereof, people ſhould be enabled to pronounce truly and readily any language; to deſcribe the pronunciation of any language that ſhould be pronounced in their hearing; ſo, as others accuſtomed to this language, though they had never heard the language pronounced, ſhould at firſt be able truly to pronounce it: and, laſtly, this *character* to ſerve as a ſtandard to perpetuate the ſounds of any language.

In the Journal Literaire, *an*. 1720. we have a very ingenious project for an univerſal *character*: the author, after obviating the objections that might be made againſt the feaſibleneſs of ſuch ſchemes in the general, propoſes his own: his *characters* are to be the common Arabic, or numeral figures. The combinations of theſe nine are ſufficient to expreſs diſtinctly an incredible quantity of numbers, much more than we ſhall need terms to ſignify our actions, goods, evils, duties, paſſions, &c. Thus is all the trouble of framing and learning any new *characters* at once ſaved; the Arabic figures having already all the univerſality required.

The advantages are immenſe: for 1°, We have here a ſtable, faithful interpreter; never to be corrupted or changed, as the popular languages continually are. 2°, Whereas the difficulty of pronouncing a foreign language, is ſuch as uſually gives the learner the greateſt trouble, and there are even ſome ſounds which foreigners never attain to; in the *character* here propoſed this difficulty has no place: every nation is to pronounce them according to the particular pronunciation that already obtains among them. All the difficulty is, the accuſtoming the pen and the eye to affix certain notions to *characters* that do not, at firſt ſight, exhibit them. But this trouble is no more than we find in the ſtudy of any language whatever.

The inflexions of words are here to be expreſſed by the common letters: for inſtance, the ſame *character* ſhall expreſs a *filly*, or a *colt*, a *horſe*, or a *mare*, an *old horſe*, or an *old mare*, as accompanied with this or that diſtinctive letter, which ſhall ſhew the ſex, youth, maturity, or old age: a letter is alſo to expreſs the bigneſs or ſize of things; thus, *v. g.* a man with this or that letter, to ſignify a *great man*, or a *little man*, &c.

The uſe of theſe letters belongs to the grammar, which once well underſtood, would abridge the vocabulary exceedingly. An advantage of this grammar is, that it would only have one declenſion, and one conjugation: thoſe numerous anomalies of grammarians are exceeding troubleſome, and ariſe hence, that the common languages are governed by the populace, who never reaſon on what is beſt: but in the *character* here propoſed, men of ſenſe having the introduction of it, would have a new ground, whereon to build regularly.

The difficulty is not in inventing the moſt ſimple, eaſy, and commodious *character*, but in the engaging the ſeveral nations to uſe it; there being nothing they agree leſs in, than the underſtanding and purſuing their common intereſt.

Literal Characters, again, may be divided, with reſpect to the nations among whom they have been invented and uſed, into *Greek characters*, *Roman characters*, *Hebrew characters*, &c.

The *character* now ordinarily uſed throughout Europe, is the *Latin character* of the antients.

The Latin *character* was formed from the Greek, and that from the Phœnician, which Cadmus brought into Greece.

The Phœnician *character* was the ſame with that of the antient Hebrew, which ſubſiſted to the time of the Babyloniſh captivity; after which they uſed that of the Aſſyrians, which is the ſquare Hebrew, now in uſe; the antient being only found on ſome Hebrew medals, commonly called *Samaritan medals*.

Poſtellus, and others, ſhew, that beſide the Phœnician, the Chaldee, Syriac, and Arabic *characters*, were likewiſe formed from the antient Hebrew.

The French were the firſt who, with the Latin of St. Gregory, admitted the Latin *characters*. And in a provincial ſynod, held in 1091. at Leon in Spain, the uſe of the Gothic *characters* invented by Ulfilas, was aboliſhed, and the Latin ones eſtabliſhed.

Medalliſts obſerve, that the Greek *character*, conſiſting only of majuſcule letters, has preſerved its uniformity on all medals, as low as the times of Gallienus; there being no alteration found in the turn of the *character*, notwithſtanding the many conſiderable ones both in the uſe and pronunciation. From the time of Gallienus, it appears ſomewhat weaker and rounder: from the time of Conſtantine to Michael, the ſpace of five hundred years, we find only Latin *characters*; and after Michael, the Greek *characters* re-commence: but from that time they began to alter with the language, which was then a mixture of Greek and Latin. See GREEK.

The Latin medals preſerve both their *character* and language, as low as the tranſlation of the ſeat of the empire to Conſtantinople. Towards the time of Decius the *character* began t alter, and to loſe of its roundneſs and beauty: ſome time afte it retrieved itſelf, and ſubſiſted tolerably till the time o Juſtin; when it fell into the laſt barbarity mentioned, unde Michael; though it afterwards grew worſe, and degenerat into the Gothic: ſo that the rounder and better formed the cha*racter* is on a medal, the greater pretence it has to antiquity.

Numeral CHARACTERS, are thoſe uſed to expreſs numbers.

Numeral characters are either *letters*; or *figures*, otherwi called digits.—The *kinds* now chiefly in uſe, are the Commo and the Roman: to which may be added the Greek, and a other called the *French character*; as alſo the letters of oth alphabets which have been made uſe of to expreſs numbers. *Common character* is that ordinarily called the *Arabic*, as ſu poſed to have been invented by the Arab aſtronomers; tho' th

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Arabs themſelves call it the *Indian Character*; as if they had borrowed it from the people of India.

The *Arabic characters* are ten, *viz.* 1, 2, 3, 4, 5, 6, 7, 8, 9, 0; the laſt is called *Cipher*.

The *Arabic character* is uſed almoſt throughout Europe, and that on almoſt all occaſions; in commerce, in meaſuring, in aſtrononomical calculations, *&c.*

Roman character conſiſts of the majuſcule letters of the Roman alphabet; whence probably its name: or, perhaps, from its being uſed by the antient Romans on their coins, and in the inſcriptions of their public monuments, erected in honour of their gods, and great men; on their ſepulchres, *&c.*

The numeral letters that compoſe the Roman *character* are in number ſeven, *viz.* I, V, X, L, C, D, M.

The I denotes one, V five, X ten, L fifty, C a hundred, D five hundred, and M a thouſand.

The I, repeated twice, makes two, II; thrice, three, III; four is expreſſed thus, IV, I before V or X taking an unit from the number expreſſed by each of thoſe letters.

To expreſs ſix, an I is added to a V, VI; for ſeven, two, VII; and for eight, three, VIII: nine is expreſſed by an I before X, IX; agreeably to the preceding remark.

The like remark may be made of the X before L or C, except that the diminution is by tens, not units: thus, XL ſignifies forty, and XC ninety; an L followed with an X, ſixty, LX, *&c.* The C before D or M, diminiſhes each by a hundred.

Beſides the letter D, which expreſſes five hundred, that number may alſo be expreſſed by an I before a C inverted, thus IↃ; and thus, in lieu of the M, which ſignifies a thouſand, is ſometimes uſed an I between two C's, the one direct, the other inverted, thus, CIↃ: * agreeable to this, ſix hundred may be expreſſed IↃC; and ſeven hundred, IↃCC, *&c.*

* The addition of C and Ↄ before, or after, raiſes CIↃ by tens, thus, CCIↃↃ, 10000, CCCIↃↃↃ, 100,000, *&c*

This is the common way of notation, formerly uſed by the Romans; who alſo expreſſed any number of thouſands by a line drawn over any numeral leſs than a thouſand; *e. g.* $\overline{\text{V}}$ 5000, $\overline{\text{LX}}$ 60,000, ſo likewiſe $\overline{\text{M}}$ is 1,000,000; $\overline{\text{MM}}$ is 2,000,000 *&c.*

Beſides which, (I.) certain liberties or variations have been admitted, at leaſt in ſome modern writers; *e. g.* IIX, 8; IICIX, 89. (II.) And certain *characters* have been uſed, which ſeem to have been derived from the letters; *e. g.* M, by which they expreſs (Mille) 1000, was turned into CXↃ, or CIↃ; half of which, *viz.* IↃ, ſtood for 500. (III.) And for the eaſier writing of theſe *characters*, 1. IↃ ſeems to have been altered into D; 2. IↃↃ into Λ, or V; (3.) CIↃ into ∞ or ⅄: whence ΨT 10060, ΨΨ 20000. V. X.

Greek Numerals. The Greeks had three ways of expreſſing numbers: (I.) The moſt ſimple was, for every ſingle letter, according to its place in the alphabet, to denote a number from α 1 to ω 24; in which manner the books of Homer's Ilias are diſtinguiſhed. (II.) Another way was by dividing the alphabet into (1.) 8 units[a]: α 1, β 2, *&c.* (2.) 8 Tens[a]: ι 10, κ 20, *&c.* (3.) 8 Hundreds[a]: ρ 100, σ 200, *&c.* *N. B.* Thouſands they expreſſed by a point, or accent under a letter, *e. g.* ͵α 1000, ͵β 2000, *&c.* (III.) A third way was by ſix capital letters, thus, I [ἰα for μια] 1, Π [πεντε] 5, Δ [δεκα] 10, H [Hεκατον] 100, X [χιλια] 1000, M [μυρια] 10000: and when the letter Π incloſed any of theſe, except I, it ſhewed the incloſed letter to be five times its own value, as, $\overline{|\Delta|}$ 50, $\overline{|\text{H}|}$ 500, $\overline{|\text{X}|}$ 5000, $\overline{|\text{M}|}$ 50000.

N. B. 6, 90, 900, are expreſſed by *Characters.*

Hebrew Numerals. The Hebrew alphabet was divided into 9 Units: א 1, ב 2, *&c.*—9 Tens: י 10, כ 20, *&c.*—9 Hundreds: ק 100, ר 200, *&c.* ך 500, ם 600, ן 700, ף 800, ץ 900.—Thouſands (1.) were ſometimes expreſſed by the units prefix'd, to hundreds, as, אךלד 1534, *&c.* and even to tens, as, אע 1070, *&c.* (2.) But generally by the word אֶלֶף 1000; אַלְפַּיִם 2000; אֲלָפִים, with the other numerals prefixed, to ſignify the number of thouſands: *e. g.* ג אֲלָפִים 3000, *&c.*

French character, ſo called, becauſe invented and chiefly uſed by the French, is more uſually denoted, *Character of Account*, or *Finance*.

It conſiſts of ſix figures; partly taken from the letters of the uſual current hand, and partly invented by the contriver; the ſix *characters* are *j*, *b*, *x*, L, C, γ. The *j* conſonant ſtanding for one, the *b* for five, the *x* for ten, the L for fifty, the C for an hundred, and the laſt *character* γ for a thouſand.

This *character* is only an imitation of the Roman *character*; and its uſe is in moſt reſpects the ſame, particularly in what relates to the combination of certain letters, which placed before or after others, diminiſh or increaſe their value. Indeed it has theſe things peculiar in it, that when ſeveral units occur ſucceſſively, only the laſt is expreſſed. 2dly, That ninety, and the following numbers to one hundred, are expreſſed, thus, $jjjj^{xxx}$ ninety; $jjjj^{xxx}j$ ninety-one; $jjjj^{xxx}jj$, &c.

It is principally uſed in the chambers of accounts, in the accounts given in by treaſurers, receivers, farmers, and other perſons concerned in management of the revenue.

Characters, in printing, denote the letters or types, by the various arrangement whereof, are compoſed forms; whence impreſſions are taken, by means of a preſs, on paper.

For *the method of caſting theſe* Characters, ſee *Letter* Foundery.

Character * is alſo uſed, in ſeveral of the arts, for a ſymbol, contrived for the more conciſe, immediate, and artful conveyance of the knowlege of things.

* In this ſenſe of the word, Paulus Diaconus refers the invention of *characters* to Ennius; who, he ſays, contrived the firſt eleven hundred. To theſe were many more added by Tyro, Cicero's freedman, and by Philargyrus, Fannius, and Aquila, freedmen of Mæcenas.

Laſtly, L. Annæus Seneca made a collection of them, reduced them into order, and increaſed their number to five thouſand. Tyro's notes may be ſeen at the end of Gruter's inſcriptions. Valerius Probus, a grammarian, in the time of Nero, laboured to good purpoſe in explaining the notes of the antients. P. Diaconus wrote an ample treatiſe of the explication of the *characters* in law, under the reign of the emperor Conrad I. and Goltzius another for thoſe of medals.

Characters, or ſymbols, are now chiefly affected in the ſeveral parts of mathematics; particularly in algebra, geometry, trigonometry, and aſtronomy: as alſo in medicine, chymiſtry, muſic, *&c.* The principal of each kind we ſhall here ſubjoin.

Characters *uſed in Arithmetic and Algebra.*

a, *b*, *c*, and *d*, the firſt letters of the alphabet, are the ſigns or *characters* that denote given quantities; and z, *y*, *x*, *&c.* the laſt letters, are the *characters* of quantities ſought.

Note, Equal quantities are denoted by the ſame *character*.

m, *n*, *r*, *s*, *t*, &c. are *characters* of indeterminate exponents, both of ratios and powers; thus x^m, y^n, z^r, &c. denote indeterminate powers of different kinds; mx, ny, rz, different multiples, or ſubmultiples of the quantities x, y, z, according as m, n, r, are either whole numbers or fractions.

+ Is the ſign of real exiſtence, and is called the *affirmative*, or *poſitive* ſign; importing the quantities to which it is prefixed, to be of a real and poſitive nature.

It is alſo the ſign of addition, and is read *plus*, or *more*; thus $9+3$, is read 9 *plus* 3; or 9 more 3: that is, nine added to 3, or the ſum of 9 and 3, equal to 12.

— Before a ſingle quantity, is the ſign of *negation*, or *negative* exiſtence; ſhewing the quantity to which it is prefixed to be leſs than nothing.

Between quantities, it is alſo the ſign of ſubtraction, and is read *minus*, or *leſs*; thus $14-2$, is read, 14 *minus*, or abating, 2; that is, the remainder of 14, after 2 has been ſubtracted, *viz.* 12.

= Is the ſign of *equality*: thus, $9+3=14-2$; ſignifies 9 *plus* 3, to be *equal* to 14, *minus* 2.

This *character* was firſt introduced by Harriot: Des Cartes in lieu of it uſes ∝. Before Harriot there was no ſign of equality at all.

Wolfius, and ſome other authors, uſe the ſame *character*, = for the identity of ratios; or to denote the terms to be in a geometrical proportion: which moſt authors expreſs thus ::

× Is the ſign of multiplication, denoting the quantities on either ſide to be multiplied into one another: thus, 4×6, is read 4 multiplied by 6; or the factum, or product of 4 and $6=24$; or the rectangle between 4 and 6.

Ordinarily, however, in algebra, the ſign is omitted, and the two quantities put together: thus, $b\,d$ expreſſes the product of the two numbers denoted by b and d, which ſuppoſe 2 and 4, the product whereof is 8, ſignified by $b\,d$.

Wolfius, and others, make the ſign of multiplication a dot (.) between the two factors: thus 6.2 ſignifies the product of 6 and $2=12$.

Where one or both the factors are compounded of ſeveral letters, they are diſtinguiſhed by a line drawn over them: thus, the factum of $a+b-c$ into d, is wrote $d\times\overline{a+b-c}$.

Guido Grandio, and after him Leibnitz, Wolfius, and others, to avoid the perplexity of lines, in lieu thereof diſtinguiſh the compound factors, by including them in a parentheſis, thus $(a+b-c)\,d$.

÷ Is the *character* of diviſion: thus, $a\div b$ denotes the quantity a to be divided by b.

Indeed, ordinarily in algebra, the quotient is expreſſed fraction-wiſe; thus, $\frac{a}{b}$ denotes the quotient of a divided by b.

Wolfius, *&c.* make the ſign of diviſion (:) thus, 8 : 4 denotes the quotient of 8 divided by $4=2$.

If either the diviſor or dividend, or both, be compoſed of ſeveral letters; *v. g.* $a+b$, divided by c; inſtead of writing the quotient fraction-wiſe thus $\frac{a+b}{c}$ Wolfius, *&c.* include the compound quantities in a parentheſis; thus, $(a+b:c.)$

⊙ Is the *character* of *involution*, or of producing the ſquare of any quantity by multiplying it by itſelf.

ɯ The *character* of *evolution*, or of extracting the roots out of the ſeveral powers; the reverſe of ⊙.

⁊ Is the ſign of *majority*, or of the exceſs of one quantity beyond another: ſome uſe this ⊏, or this ⌉.

∠ Is the ſign of *minority*: theſe two *characters* were firſt introduced by Harriot, and have been ſince uſed by Wallis and Lamy. Other authors uſe others; ſome this ⊐; but the generality none at all.

∽ The ſign of *Similitude* commended in the *Miſcellanea Berolinenſia*, and uſed by Leibnitz, Wolfius, and others; though the generality of authors uſe none. See SIMILITUDE.

The ſame *character* is uſed in other authors for the difference between two quantities, while it is yet unknown which is the greater.

√ Is the *character* of *Radicality*, and ſhews that the root of the quantity, to which it is prefixed, is extracted, or to be extracted: thus, $\sqrt{25}$, or $\sqrt[2]{25}$, denotes the ſquare root of 25, *viz.* 5. and $\sqrt[3]{25}$, the cube root of 25. See ROOT.

This *character* ſometimes affects ſeveral quantities diſtinguiſhed by a line drawn over them, thus $\sqrt{\overline{b+d}}$, denotes the ſum of the ſquare roots of *b* and *d*.

Wolfius, &c. in lieu hereof, includes the roots compoſed of ſeveral quantities in a parentheſis, adding its index: thus $(a+b-c)^2$ denotes the ſquare of $a+b-c$, ordinarily written $\overline{a+b-c}^{2}$

: Is the *character* of arithmetical proportion disjunct; thus 7 . 3 : 13 . 9. intimates three to be exceeded by 7, as much as 9 by 13; *viz.* by 4.

:: This is the *character* of identity of ratio, and geometrical proportion disjunct; thus, 8:4::30:15. expreſſes the ratio of 30 to 15, to be the ſame with that of 8 to 4; or that the four terms are in geometrical proportion, *viz.* 8 to 4, as 30 to 15.

Wolfius, in lieu hereof, uſes the *character* of equality =; which he prefers to the former, as more ſcientifical and expreſſive.

∺ The *character* of geometrical proportion continued, implying the ratio to be carried on without interruption: thus, 2, 4, 8, 16, 32, ∺ are in the ſame uninterrupted proportion.

CHARACTERS *in Geometry, and Trigonometry.*

‖ Is the *character* of paralleliſm; implying two lines or planes to be equidiſtant from each other. See PARALLEL.

△ *Character* of a triangle. See TRIANGLE.

□ A ſquare.
▯ ▭ A rectangle.
⊙ A circle.
$\overset{\text{v}}{=}$ Equality of angles.
$\overset{1}{=}$ Equality of ſides.
∠ An angle.
∟ A right angle.
⊥ A perpendicular.

° A degree; thus 75° implies 75 degrees.

′ A minute, or prime; thus, 50′ implies 50 minutes.

″ ‴ ⁗, &c. The *characters* of ſeconds, thirds, fourths, &c. of a degree: thus, $5''$, $6'''$, $18''''$, $20'''''$, denotes 5 ſeconds, 6 thirds, 18 fourths, and 20 fifths.

Note, The ſame *characters* are ſometimes uſed, where the progreſſion is by tens, as it is here by ſixties.

CHARACTERS *uſed in the arithmetic of Infinites.*

. The *character* of an infiniteſimal, or fluxion: thus, $\dot{x}$, $\dot{y}$, &c. expreſs the fluxions, or differentials of the variable quantities *x* and *y*; two, three, or more dots, denote ſecond, third, or higher fluxions.

This method of denoting the fluxions, we owe to Sir Iſaac Newton, the inventor of fluxions: it is adhered to by the Engliſh; but foreigners generally follow M. Leibnitz, and in lieu of a dot prefix the letter *d* to the variable quantity; on pretence of avoiding the confuſion ariſing from the multiplication of dots, in the differencing of differentials.

d The *character* of a differential of a variable quantity; thus, dx is the differential of *x*; dy the differential of *y*.

The *character* was firſt introduced by M. Leibnitz; and is followed by all but the Engliſh, who, after Sir Iſaac Newton, expreſs the differential by a dot over the quantity. See CALCULUS *Differentialis*.

CHARACTERS *uſed in aſtronomy.*

♄ *Character* of Saturn.
♃ Jupiter.
♂ Mars.
♀ Venus.
☿ Mercury.
☉ The Sun.
☾ The Moon.
⊕ The Earth.
♈ Aries.
♉ Taurus.
♊ *Character* of Gemini.
♋ Cancer.
♌ Leo.
♍ Virgo.
♎ Libra.
♏ Scorpio.
♐ Sagittarius.
♑ Capricornus.
♒ Aquarius.
♓ Piſces.

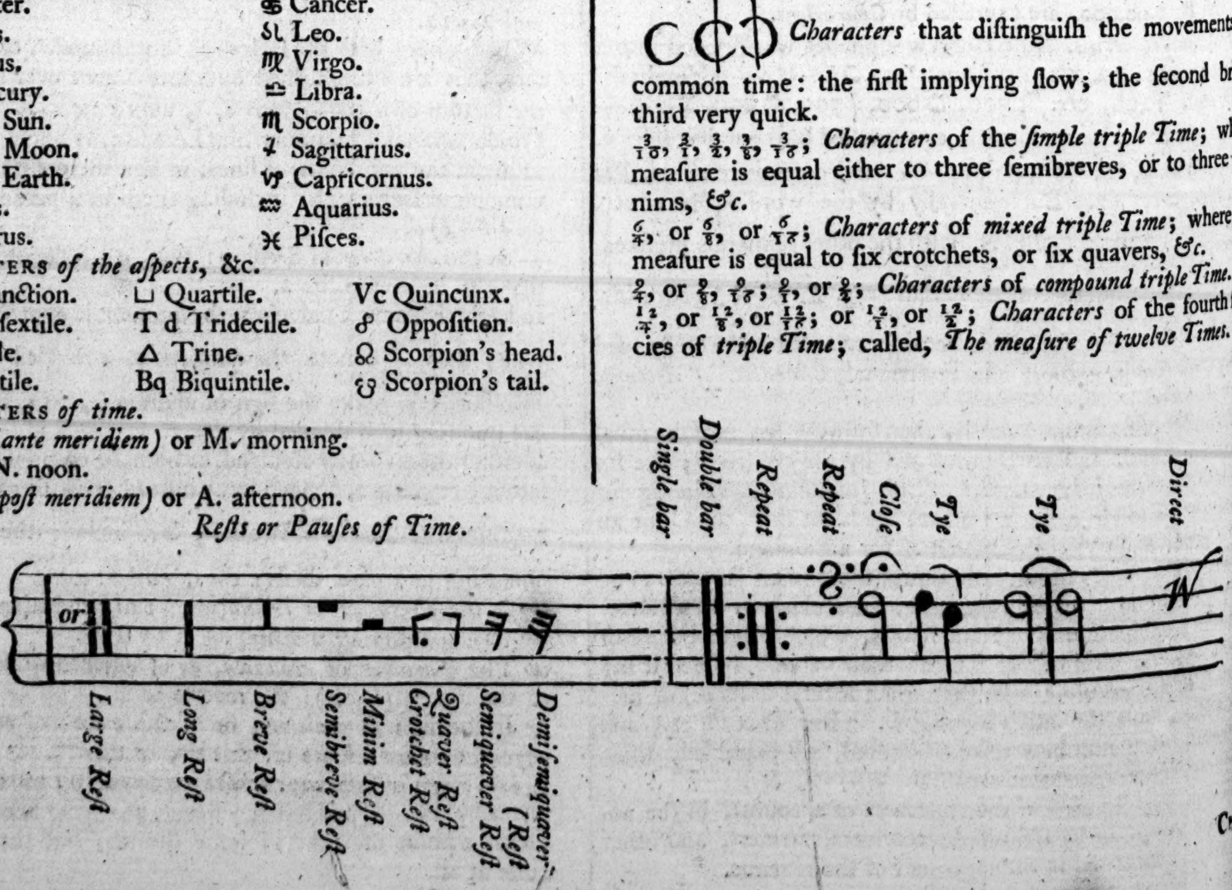
CHARACTERS *of the aſpects*, &c.

S Conjunction.
SS Semiſextile.
∗ Sextile.
Q Quintile.
⊔ Quartile.
T d Tridecile.
△ Trine.
Bq Biquintile.
Vc Quincunx.
☍ Oppoſition.
☊ Scorpion's head.
☋ Scorpion's tail.

CHARACTERS *of time.*

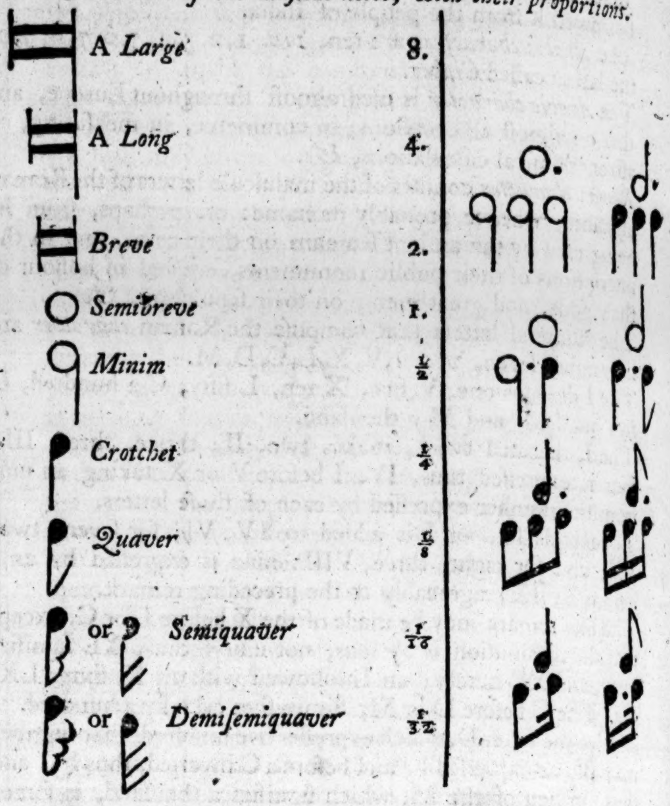
A. M. *(ante meridiem)* or M. morning.
O. or N. noon.
P. M. *(poſt meridiem)* or A. afternoon.

Reſts or Pauſes of Time.



CHARACTERS *uſed in Muſic.*

Characters of the muſical notes, with their proportions.



♯ *Character* of a *ſharp Note.* This *character* at the beginning of a line, or ſpace, denotes all the notes in that line, or ſpace, to be taken a ſemitone higher than in the natural ſeries. And the ſame affects all their octaves, above and below, though not marked.

When the *character* is prefixed to any particular note, it ſhews that note alone to be a ſemitone higher than it would be without ſuch *character*.

♭ *Character* of a *flat Note.* This *character*, at the beginning of a line, or ſpace, ſhews, that all the notes in that line, or ſpace, are to be taken a ſemitone lower than in the natural ſeries; affecting, in like manner, all the octaves, both above and below. When prefixed to any note, it ſhews that note alone to be a ſemitone lower than it would otherwiſe be.

♮ *Character* of a *natural Note.* Where, in a line or ſeries of artificial notes, marked at the beginning for either ſharps or flats, the natural note happens to be required, it is denoted by this *character*.

𝄞 *Character* of *Treble Clef.*

𝄡 *Mean Clef.*

𝄢 *Baſs Clef.*

CHARACTERS *of Time.*

2, or $\frac{2}{4}$, or $\frac{4}{8}$; *Characters* of *common*, or *duple Time*; ſignifying the meaſure of two crotchets to be equal to two notes, whereof four make a ſemibreve.

C ¢ Ↄ *Characters* that diſtinguiſh the movements in common time: the firſt implying ſlow; the ſecond briſk; third very quick.

$\frac{3}{16}$, $\frac{3}{1}$, $\frac{3}{2}$, $\frac{3}{8}$, $\frac{3}{16}$; *Characters* of the *ſimple triple Time*; whoſe meaſure is equal either to three ſemibreves, or to three minims, &c.

$\frac{6}{4}$, or $\frac{6}{8}$, or $\frac{6}{16}$; *Characters* of *mixed triple Time*; where the meaſure is equal to ſix crotchets, or ſix quavers, &c.

$\frac{9}{4}$, or $\frac{9}{8}$, $\frac{9}{16}$; $\frac{9}{1}$, or $\frac{9}{2}$; *Characters* of *compound triple Time.*

$\frac{12}{4}$, or $\frac{12}{8}$, or $\frac{12}{16}$; or $\frac{12}{1}$, or $\frac{12}{2}$; *Characters* of the fourth ſpecies of *triple Time*; called, *The meaſure of twelve Times.*

Characters *uſed in Medicine, Pharmacy, and Chymiſtry.*

Authors are very redundant, and even fanciful, in pharmaceutical *characters:* but the moſt uſual are theſe that follow.

℞ Recipe.
á, áá, *ana*, of each alike.
♁ Antimony.
🜅 Aqua fortis.
🜆 Aqua regia.
MB Balneum Mariæ.
♆ Calx viva.
🝎 Caput mortuum.
♀ Copper.
🜔 Common ſalt.
σ Diſtil.
☉ Gold.
CC Harts-horn.
CCC Harts-horn calcined.
♂ Iron.
aaa. Amalgamate.
ſ.ſ.ſ. Stratum ſuper ſtratum.
♃ Jupiter, tin.
♄ Lead.
☿ Mercury.
☿— Sublimate.
☿— Precipitate.
🜕 Nitre.
✱ Sal armoniac.
🜖 Vitriol.

Sulphur.
SV Spirit of wine.
SVR or S, V, R, ſpirit of wine rectified.
☾ Silver.
🜿 Tartar.
℔ A pound, or a pint.
℥ An ounce.
ʒ A drachm.
℈ A ſcruple.
gr. Grains.
ſs. Half of any thing.
Cong. Congius, A gallon.
Cochl. Cochleare, A ſpoonful.
M. Manipulus, A handful.
P. A pugil.
P. Æ. Equal quantities.
S. A. According to art.
q. ſ. A ſufficient quantity.
q. pl. Quantum placet, as much as you pleaſe.
P. P. Pulvis patrum, the Jeſuit's bark.

Characters *among the antient Lawyers, and in antient Inſcriptions.*

§ *Paragrapho.*
ff. *Digeſtis.*
E. *Extra.*
S.P.Q.R. *Senatus Populuſque Romanus.*

Scto. *Senatuſconſulto.*
P. P. *Pater Patriæ.*
C. *Code.*
CC. *Conſules.*
T. *Titulus*, &c.

Characters *on Tomb-ſtones.*

S. V. *Siſte, Viator*, Stay, traveller.
M. S. *Memoriæ Sacrum*, Sacred to memory.
D. M. *Diis Manibus.*
IHS. *Jeſus.*
XP. A *character* found on antient monuments, about the meaning whereof authors are not agreed. See **Catacomb.**

Characters *in Grammar, Rhetoric, Poetry,* &c.

, *Character* of a *Comma.*
; *Semicolon.*
: *Colon.*
. *Period.*
! *Exclamation.*
? *Interrogation.*
() *Parentheſis.*
- *Hyphen.*
' *Apoſtrophe.*

ˊ *Emphaſis*, or accent.
˘ *Breve.*
¨ *Dialyſis.*
ˆ *Caret*, and *Circumflex.*
" *Quotation.*
† and * *References.*
§ *Section*, or diviſion.
¶ *Paragraph.*

LL.D. *Doctor of Laws*, or, *of the Civil and Canon Law.*
SS.T.D. *Sacro-Sanctæ Theologiæ Doctor*, i. e. Doctor in divinity.
M. D. *Doctor in phyſic.*
V.D.M. *Verbi Dei Miniſter*, Miniſter of the word.
A. M. *Artium Magiſter*, Maſter of arts.
A.B. *Artium Baccalaureus*, Bachelor of arts.
F.R.S. *Fellow of the Royal Society.*

Characters *in Commerce.*

D° *Ditto*, the ſame.
N° *Numero*, or number.
F° *Folio*, or page.
R° *Recto* } folio.
V° *Verſo* } folio.
£ *Sterling*, or ℔ Pound ſterling.
ʃ Shillings.
₰ Pence, or Deniers.

℔ Pound weight.
C. or ⊕ hundred weight, or 112 pound.
qr Quarters.
℘ *Per*, or By.—As ℘ *ann.* by the year.—℘ *cent.* in the hundred, *&c.*
R^x^. *Rixdollar.*
D^d^. *Ducat.*
P. S. Poſtſcript.

For *characters* in printing, ſee **Correction.**

Character is alſo uſed for a certain manner, air, or aſſemblage of qualities, reſulting from ſeveral particular marks, which diſtinguiſh a thing from any other, ſo as it may be known thereby.

Thus, we ſay, the *character* of Achilles; generoſity and greatneſs of mind was the *character* of the Romans: Cicero had a *character* of politeneſs, which is wanting in Demoſthenes; every paſſion has its peculiar *character.*

The writers of *characters* are Theophraſtus, whoſe fragments are ſtill extant; Du Moulin, in his *Exemplar Morum*; Paſchal, in *Characteres Virtutum & Vitiorum*; M. de la Chambre, in his *Characters of the Paſſions*; and de la Bruyere, in his *characters and Manners of the Age.*

Character, in poetry, eſpecially the epopea and drama, is the reſult of the manners, or that which each perſon has peculiar and ſingular in his manners, whereby he is diſtinguiſhed from others.

The poetical *character*, Boſſu obſerves, is not properly any virtue or quality in particular; but 'tis a compoſition of ſeveral, mixed and combined in various degrees, according to the occaſions of the fable, and the unity of the action. All the ſimple qualities that enter this compound, muſt not have the ſame rank, nor be equal to each other: ſince, in that caſe, one prevailing on one occaſion, and another on another, the *character* will appear changeable; and the poem, as well as the hero, will ſeem animated with ſeveral ſouls.

There muſt, therefore, be one to reign over all the reſt; and this muſt be found in ſome degree in every part: juſt as the ſame hero, in ſeveral paintings, ſhould have the ſame lines and features, how different ſoever his poſtures and paſſions may be.

This firſt quality, in Homer's Achilles, is wrath; in Ulyſſes, diſſimulation; and in Virgil's Æneas, mildneſs: each of which may, by way of eminence, be called the *character* of thoſe heroes.

Theſe are never to go alone, but always are to be accompanied with others, to give them the greater luſtre; either by hiding their defects, as in Achilles, whoſe anger is palliated by a world of courage: or by making them centre in ſome ſolid virtue, as in Ulyſſes, whoſe diſſimulation makes a part of his prudence; and Æneas, whoſe mildneſs is chiefly employed in a ſubmiſſion to the will of the gods.

Theſe ſecondary qualities of courage, prudence, and ſubmiſſion, make the goodneſs of the *characters* of thoſe heroes, and even of the poems.

Boſſu adds, that the quality of courage muſt always have a ſhare in the *character* of a hero, to ſerve as a ſupport to the reſt: the heroic *character*, therefore, he makes a compound of three kinds of qualities. Thoſe of the firſt kind are neceſſary and eſſential to the fable; thoſe of the ſecond are the ſupplements, or embelliſhments of the firſt; and courage, which ſuſtains the other two, makes the third.

The firſt, which is the chief, is to be ſome univerſal quality, to have place on all occaſions, and to diſtinguiſh the hero where-ever he is found.

For the unity of *character*, we have Horace's expreſs command, *Sit quodvis ſimplex duntaxat & unum.* Boſſu adds, that the *character* is not leſs the ſoul of the hero, and the whole action, than the fable is of the poem; and of conſequence the unity muſt be as exact in the one as the other: which accordingly we find obſerved both by Homer and Virgil.

The unity of *character* is ſomewhat different from that of the manners: in the latter, the unity or equality conſiſts in not giving contrary ſentiments to the ſame perſon; which is not ſufficient to the unity of *character*; but to this muſt be added, that the ſame ſpirit muſt always appear on all occaſions, whether contrary, or otherwiſe: thus, Æneas, ſhewing a deal of goodneſs in the firſt part of the poem, and a world of valour in the ſecond, but without diſcovering any of his former piety, and gentleneſs; there had been no offence againſt the evenneſs of the manners, but much againſt the unity of the *character.*

So that beſides the qualities which have their particular place on different occaſions, there muſt be one to have place throughout, and to reign over all the others. Without this there is no *character:* as would be the caſe, ſhould a poet give his hero the piety of Æneas, and the courage of Achilles, without conſidering the ſeverity of the one, and the mildneſs of the other.

A hero, it is true, may be made as brave as Achilles, as mild, or pious, as Æneas, and, if one will, as prudent as Ulyſſes; but it would be a mere chimera to imagine a hero with the particular courage of Achilles, the piety of Æneas, and the prudence of Ulyſſes, at the ſame time.

The unity of *character* is not only to be kept in the hero, and the ſeveral other perſons of the piece; but alſo in that of the poem itſelf: that is, all the *characters*, how oppoſite ſoever, muſt centre and reunite in that of the hero; and be ſo ſwayed by it, as that this alone may ſeem to govern throughout the whole. Thus Homer makes wrath prevail throughout the whole Iliad; and artifice and diſſimulation throughout the Odyſſee: the hero's *character* is perceived every-where, has its full ſwing, and is favoured by the ſimilitude of the *characters* of ſome of the other perſons. Virgil had a great difficulty to grapple with to preſerve his unity: in regard of the direct oppoſition between the humours of his hero, and thoſe of ſome other of his perſons, as Turnus, Mezentius, Dido, *&c.* He therefore takes care not to carry thoſe oppoſite *characters* to their full length, but moderates and reſtrains them: and as that moderation could not flow naturally from the perſons themſelves; it is produced either by ſome paſſion, as in Dido; or ſome dependence, as in Turnus and Mezentius. To this artifice he adds epiſodes, accommodated to the general *character*, by which he interrupts the particular actions, which require an oppoſite *character.*

Claudian's conduct, in this reſpect, is unpardonable; from the horrible *characters* of Pluto, and the furies, with all the terrors of hell, he paſſes to the gaiety and pleaſures of the graces, gilded palaces, flowery fields, *&c.* He has as many different prevailing *characters* in his three books, as Homer and Virgil in their ſixty.

CHARACTER is alſo uſed for certain viſible qualities, which claim reſpect, or reverence, to thoſe veſted therewith.

The majeſty of kings gives them a *character*, which procures reſpect from the people. A biſhop ſhould ſuſtain his *character* by learning and ſolid piety, rather than by worldly luſtre, &c. The law of nations ſecures the *character* of an embaſſador from all inſults.

CHARACTER is alſo uſed among divines, eſpecially thoſe of the Romiſh church, for an indelible mark, or impreſſion, which certain ſacraments are ſuppoſed to leave behind them in thoſe who receive them.

The ſacraments that leave this *character*, are incapable of being repeated. The *character* is generally ſuppoſed to be ſomething phyſical.

It is the ſacraments of baptiſm, confirmation, and ordination, which leave ſuch indelible *character*.

CHARACTER *of a Plant*. See GENUS, CHARACTERISTIC, &c.

CHARACTERISTIC, in the general, is that which *characterizes* a thing, or perſon, *i. e.* conſtitutes its *character*, whereby it is diſtinguiſhed from all others.

CHARACTERISTIC is peculiarly uſed, in grammar, for the principal letter of a word; which is preſerved in moſt of its tenſes and moods, its derivatives and compounds.

The *characteriſtic* frequently ſhews its etymology; and ought conſtantly to be retained in its orthography; ſuch is the letter *r* in courſe, ſort, &c.

The *characteriſtics* are of great uſe in the Greek grammar, eſpecially in the formation of the tenſes; as being the ſame in the ſame tenſes of all verbs of the ſame conjugation, excepting in the preſent tenſe, which has ſeveral *characteriſtics*; and the future, the Aoriſtus primus, the preterperfect, and the pluſquam perfect tenſe of the fourth conjugation, which have two *characteriſtics*.

CHARACTERISTIC *of a Logarithm*, is its index, or exponent. See INDEX, and LOGARITHM.

CHARACTERISTIC *Triangle of a Curve*, in the higher geometry, is a rectilinear right-angled triangle, whoſe hypothenuſe makes a part of the curve, not ſenſibly different from a right line. It is ſo called, becauſe curve lines are uſed to be diſtinguiſhed hereby.

Suppoſe, *e. gr.* the ſemiordinate pm (*Tab. Analyſis*, *fig.* 7.) infinitely near another PM; then will Pp be the differential of the abſciſſe: and letting fall a perpendicular, $MR = Pp$, Rm will be the differential of the ſemiordinate. Draw, therefore, a tangent TM; and the infinitely ſmall arch Mm, will not differ from a right line: conſequently MmR is a rectilinear right-angled triangle; and conſtitutes the *characteriſtic* triangle of that curve.

CHARAG, the tribute which Chriſtians and Jews pay to the grand ſignior.

It conſiſts of ten, twelve, or fifteen francs *per ann.* according to the eſtate of the party. Men begin to pay it at nine, or at ſixteen years old; women are diſpenſed with, as alſo prieſts, rabbins, and religious.

CHARCOAL, a ſort of artificial coal, or fuel, conſiſting of wood half burnt; chiefly uſed where a clear ſtrong fire, without ſmoke, is required; the humidity of the wood being here moſtly diſſipated, and exhaled in the fire wherein it was prepared.

The microſcope diſcovers a ſurpriſing number of pores in *charcoal*: they are diſpoſed in order, and traverſe it lengthwiſe: ſo that there is no piece of *charcoal*, how long ſoever, but may be eaſily blown thro'. If a piece be broken pretty ſhort, it may be ſeen through with a microſcope. In a range the 18th part of an inch long, Dr. Hook reckoned one hundred and fifty pores; whence he concludes, that in a *charcoal* of an inch diameter, there are not leſs than five millions ſeven hundred twenty-four thouſand pores.

It is to this prodigious number of pores, that the blackneſs of *charcoal* is owing: for the rays of light, ſtriking on the *charcoal*, are received and abſorbed in its pores, inſtead of being reflected; whence the body muſt of neceſſity appear black, blackneſs in a body being no more than a want of reflexion.

Charcoal was antiently uſed to diſtinguiſh the bounds of eſtates and inheritances; as being ſuppoſed incorruptible, when let very deep within the ground. In effect, it preſerves itſelf ſo long, that there are many pieces found intire in the antient tombs of the northern nations.

M. Dodart ſays, there is ſometimes found *charcoal* made of corn, probably as old as the days of Cæſar: he adds, that it has kept ſo well, that the wheat may be ſtill diſtinguiſhed from the rye; which he looks on as a proof of its incorruptibility.

Method of making CHARCOAL.—The beſt is that made of oak, cut into lengths of about three feet. The ground whereon the operation is to be performed, is bared of all the turf, and other combuſtible matter; and is in form circular, a ſtake being driven in the centre. This area is filled up with wood, eight feet high, placed alternatively lengthwiſe, and perpendicularly; then coped atop in the form of a ſugarloaf, and all inequalities filled up with ſmall wood, till it lie very cloſe: the whole is then to be covered over moderately thick with turf, and other rubbiſh. A moveable ſcreen being then ſet up againſt the wind; the ſtake is pulled up, and fire ſet to the pile, by pouring into the cavity ſome *charcoal*, and other coal fully kindled; the vent, or tunnel a-top, is then covered with turf, and vent-holes are made through the ſtuff that covers the pile, two or three feet apart, quite round, a foot from the top. The next day a new range of holes is made, a foot and a half below the firſt; and thus on to the bottom: obſerving, that as the pile cools, and ſinks to the centre, it muſt be continually fed with ſhort wood, that no part remain unfired; and that if any part chars faſter than other, the vent-holes there are to be ſtopped up.

A parcel is thus burnt in five or ſix days: as it cools, the ſmoke grows thinner, and bluer. The heap requires two or three days to cool; which is promoted by ſtopping the vents, and ſtripping off the covering by degrees, about a yard at a time; at firſt only taking off the coarſeſt part, and leaving the reſt; that the pile may neither cool too faſt, nor endanger the reduction of the whole into aſhes. Laſtly, the coals are taken out from around the bottom, by which means the whole maſs, coals and rubbiſh, ſinks down, and extinguiſhes the fire at once.

Charcoal for powder-mills, is uſually made of elder-wood; the proceſs the ſame; but is finiſhed in two days.

CHARDS, in gardening.—The *chards* of artichokes are the leaves of good artichoke-plants, tied and wrapped up, all over but the top, in ſtraw, during the autumn and winter; this makes them grow white, and loſe ſome of their bitterneſs.

CHARDS *of Beets* are white beets, covered with dry dung, during the winter-ſeaſon, when they produce large tops, with a downy cotton ſhoot; which is the true *chard*, to be uſed in pottages, intermeſſes, &c.

CHARGE, in gunnery, the load of a piece; or the quantity of powder and ball, or ſhot, wherewith it is to be prepared for execution.

The rules for *charging* large pieces in war, are, that the piece be firſt cleaned, or ſcoured, within ſide; that the proper quantity of gunpowder be next driven in, and rammed down; care, however, being taken, that the powder be not bruiſed in ramming, for that weakens its effect; that a little quantity of paper, hay, or the like, be rammed over it, and that then the ball, or ſhot, be intruded.

If the ball be red-hot, a tampion, or trencher of green wood, is to be driven in before it.

The weight of gunpowder neceſſary for a *charge*, is commonly in a ſubduple proportion to that of the ball. See CANNON.

CHARGE, in heraldry, is applied to any figure, or thing, borne or repreſented in an eſcutcheon, or coat of arms; whether it be animal, vegetable, or other matter.

Too many *charges* are not deemed ſo honourable as fewer.

Charges peculiar to the art and uſage of armory, as the croſs, chief, pale feſſe, &c. are called *proper charges*; and frequently *ordinaries*.

Bloom reſtrains the term *charges* to thoſe additions, or rewards of honours frequently placed on eſcutcheons; as cantons, quarters, girons, flaſques, &c.

CHARGE, in the manage, a ſort of unguent made of oil, honey, greaſe, turpentine, and ſometimes of lees of wine, and other matters, applied externally to a horſe, &c. for the cure of ſtrains, bruiſes, and ſwellings.

CHARGE, or rather *Overcharge*, in painting, is an exaggerated repreſentation of any perſon; wherein the likeneſs is preſerved; but withal ridiculed.

Few painters have the genius neceſſary to ſucceed in theſe *charges*: the method is, to pick out and heighten ſomething already amiſs in the face, whether by way of defect, or redundancy: thus, *v. g.* if nature have given a man a noſe a little larger than ordinary, the painter falls in with her, and makes the noſe extravagantly long: or if the noſe be naturally too ſhort, in the painting it will be a mere ſtump; and thus of the other parts.

CHARGE *of Lead*, is thirty-ſix pigs. See LEAD, &c.

CHARGED, in heraldry. A ſhield, carrying on it ſome figure or impreſs, is ſaid to be *charged* therewith.

So, alſo, when one bearing, or *charge*, has another figure added upon it, it is properly ſaid to be *charged*.

CHARIENTISMUS, in rhetoric, a figure wherein a taunting expreſſion is ſoftened by a jeſt.

CHAR. } See { CARR.
CHARIOT. } See { COACH.

CHARISTIA *, a family feaſt celebrated among the Romans, on the 11th of the calends of March; *i. e.* on the 19th of February; in honour of the goddeſs *Concord*.

The *chariſtia* were inſtituted to re-eſtabliſh peace and amity, in families embroiled, or at variance among themſelves. It conſiſted in a great entertainment made in each family, to which no ſtrangers were admitted, but only relations, and kindred. The jo and freedom inſpired by the repaſt, was looked upon as a proper means to reunite divided minds; to which the good offices of ſo many friends would greatly contribute.

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* The word comes from the Greek χαρις, *grace*, *favour*; q. a day of reconciliation, or of reſtoring into favour. It w alſo called *dies charæ cognationis*. Vigenere, on Livy, c it the *day of good chear*.

CHARISTICARY, *Commendatary*, or *Donatary*, a perſon to whom is given the enjoyment of the revenues of a monaſtery, hoſpital, or benefice.

The *chariſticaries* among the Greeks, were a kind of donataries, or commendataries, who enjoyed all the revenues of hoſpitals and monaſteries, without giving an account thereof to any perſon.—The original of this abuſe is referred to the Iconoclaſtæ, particularly Conſtantine Copronymus, the avowed enemy of the monks, whoſe monaſteries he gave away to ſtrangers.

In after-times, the emperors and patriarchs gave many to people of quality, not by way of gift, to reap any temporal advantage from them; but to repair, beautify, and patronize them. At length avarice crept in, and thoſe in good condition were given, eſpecially ſuch as were rich; and at laſt they were all given away, rich and poor, thoſe of men and of women; and that to laymen, and married men.

M. Coutelier, in his *eccleſiæ Græcæ monumenta*, gives us the form of theſe donations: they were granted for life, and ſometimes for two lives. See ABBOT.

CHARITATIVE, in the canon law. *A charitative Aid*, or *Subſidy*, is a moderate allowance, which a council grants a biſhop upon any urgent occaſion; *e. g.* when his revenues will not bear his expences to a council, *&c.*

CHARITY, one of the three grand theological virtues, conſiſting in the love of God, and our neighbour.

Charity is the habit, or diſpoſition of loving God with all our heart, and our neighbour as ourſelves. It has two material objects, therefore, as the ſchool expreſſes it, *viz.* God, and our neighbour.

CHARITY is alſo uſed for the effect of a moral virtue, which conſiſts in ſupplying the neceſſities of others, whether with money, counſel, aſſiſtance, or the like.

CHARITY *Schools*, are ſchools erected and maintained in various pariſhes, by the voluntary contributions of the inhabitants, for teaching poor children to read, write, and other neceſſary parts of education.

In moſt *charity-ſchools* the children are likewiſe clothed, and put out to trades, ſervices, *&c.* on the ſame charitable foundation.

Charity-ſchools are but of a few years ſtanding: they were begun in London; and have ſince ſpread throughout moſt of the conſiderable towns of England and Wales. In the year 1710. the account of the *charity-ſchools*, in and about London, ſtood thus. Number of ſchools 88. Of boys taught therein 2181. Of girls 1221.

Boys clothed	1863	In all 2977.
Girls	1114	
Boys not clothed	373	In all 501.
Girls	128	

Note, Out of the whole, 967 boys, and 407 girls, had been put out apprentices: but the number is, ſince that time, vaſtly increaſed.

In London we had likewiſe a CHARITABLE *Corporation* for the relief of the induſtrious poor, erected under queen Anne; for enabling indigent manufacturers and traders to take up money at common and legal intereſt; there being a ſum of 30000*l.* raiſed for that end.

Order of CHARITY. There are ſeveral religious orders which bear this title: one inſtituted by S. John de Dieu, for the aſſiſtance of the ſick: this inſtitute was approved of in 1520. by Leo X. and confirmed by Paul V. in 1617. The religious of this order apply themſelves wholly to the ſervice of the diſeaſed.

CHARITY *of the holy Virgin*, is a religious order eſtabliſhed in the dioceſe of Chalons, by Guy lord Joinville, *&c.* towards the cloſe of the thirteenth century, approved under the rule of St. Auguſtine, by the popes Boniface VIII. and Clement VI.

In each pariſh of Paris, there is a ſociety of women, who apply themſelves to find out and relieve the wants of the poor of the pariſh; and on this account called, *Dames de la Charité*, and *Seurs de la Charité*.

CHARKING, or CHARRING, the burning of wood to make charcoal. See CHARCOAL.

CHARKS, pit-coal *charked*, or *charred*. See COAL.

CHARLATAN *, or CHARLETAN, an empiric, or quack, who retails his medicines on a public ſtage, and draws the people about him with his buffoonries, feats of activity, *&c.* See EMPIRIC.

* The word, according to Calepine, comes from the Italian *ceretano*, of *Cæretum*, a town near Spoletto in Italy, where theſe impoſtors are ſaid to have firſt riſen. Menage derives it from *ciarlatano*, and that from *circulatarius*, of *circulator*, a quack.

CHARLES's WAIN, in aſtronomy, ſeven ſtars in the conſtellation *Urſa Minor*.

CHARM *, a magic power, or ſpell, by which, with the aſſiſtance of the devil, ſorcerers and witches are ſuppoſed to do wondrous things, far ſurpaſſing the powers of nature. See MAGIC.

* The word comes from the Latin *carmen*, verſe.

Phylacteries, ligatures, *&c.* are, all, kinds of *charms*.

We have the hiſtory of a notable *charm*, wherewith great things are pretended to have been done in the way of poiſoning and tormenting; deſcribed by a famous ſorcerer, one Braſs de Forthen, while under ſentence of death in France, as follows: It conſiſts of a new earthen pan, varniſhed, not bought, nor bargained for; wherein is put ſheep's blood, wool, hair of ſeveral beaſts, with poiſonous herbs, mixed together with a great deal of grimace, and ſuperſtitious ceremonies, uttering certain words, and invoking devils. This pan is put in a ſecret place in the neighbourhood, where the miſchief is to be done, and ſprinkled with vinegar, according to the effect it is to produce. The *charm* holds a certain time, and cannot be taken away, but either by the party that lodged it, or ſome ſuperior power which overcomes it. But theſe things are now ſufficiently exploded.

CHARNEL, a portico, or gallery, antiently near the church-yard; over which were diſpoſed the bones of the dead, when the fleſh was conſumed.

The *charnels*, or *charnel*-houſes, are now uſually contiguous to the church.

CHART, or *Sea*-CHART, a hydrographical map; or a projection of ſome part of the ſea, in plano; for the uſe of navigation.

The invention of *Sea-charts*, Fournier refers to Henry ſon of John king of Portugal. They differ very conſiderably from geographical, or land-maps, which are of no uſe in navigation. Nor are *Sea-charts* all of the ſame kind; ſome being what we call *Plain Charts*, others *Reduced*, or *Mercator's Charts*, and others *Globular Charts*.

Plain CHARTS, are thoſe wherein the meridians and parallels are exhibited by right lines, parallel to each other.

Theſe, Ptolemy, in his geography, rejects for the following faults, though their inventor judged them of good uſe; and experience has confirm'd his judgment; eſpecially in ſhort voyages. Their defects are, 1. That ſince in reality all the meridians meet in the poles, it is abſurd to repreſent them, eſpecially in large *charts*, by parallel right lines. 2. That *plain charts* exhibit the degrees of the ſeveral parallels, equal to thoſe of the equator; and of conſequence the diſtances of places lying eaſt and weſt, much larger than they ſhould be. And, 3. In a *plain chart*, while the ſame rhumb is kept, the veſſel appears to fail in a great circle, which yet is falſe.

But notwithſtanding theſe defects in the *plain chart*, yet the eaſineſs of its application has ſo reconciled it to the mariners, that it is uſed almoſt alone; in excluſion of the more accurate ones.

Conſtruction of a Plain CHART.—1. Draw a right line, as A B (*Tab. Hydrography*, *fig.* 9.), and divide it into as many equal parts, as there are degrees of latitude in the portion of the ſea to be repreſented. 2. Add another to it at right angles BC, divided into as many parts, and thoſe equal to one another, and to the former, as there are degrees of longitude in the portion of the ſea to be repreſented. 3. Complete the parallelogram ABCD, and reſolve its area into little ſquares; then right lines, parallel to A B and C D, will be meridians; and thoſe parallel to AD and BC parallels. 4. The coaſts, iſlands, bays, ſands, rocks, *&c.* inſert from a table of longitudes and latitudes, in the ſame manner as is laid down under MAP.

Hence, 1. The latitude and longitude of a ſhip being given, her place is eaſily exhibited in the *chart*. 2. The places F and G, to and from which the ſhip ſails, being given in a map, the right line F G, drawn from the one to the other, makes, with the meridian A B, an angle A F G, equal to the inclination of the rhumb: and ſince the parts F 1, 12, 2 G, intercepted between equidiſtant parallels, are equal; and the inclination of the right line F G, to all the meridians or right lines parallel to A B, is the ſame; the right line F G truly repreſents the rhumb. After the ſame manner it may be ſhewn, that this *chart* exhibits latus mecodynamicum, or miles of longitude, truly.

It follows, that *plain charts* may be uſed to very good purpoſe in directing a ſhip; provided care be taken there eſcape no error in the diſtance of the places F and G.

Conſtruction of a ſcale to correct the errors of the diſtances in Plain CHARTS.—1. Upon the right line A B (*fig.* 10.), from the map transfer five degrees, and divide them into 300 equal parts, or geographical miles. 2. On this deſcribe a ſmall circle ACB, to be divided into 90 equal parts: if then it be deſired to know how many miles make five degrees in the parallel fifty; in the compaſſes take the interval fifty, and transfer it on to the diameter A B; the number of miles required will here be ſhewn. It follows, that if a ſhip ſail on an eaſtern or weſtern rhumb, out of the equator; the miles anſwering to the degrees of longitude will be found as in the preceding article. If it ſail on any collateral rhumb, ſtill the ſailing is ſuppoſed to be an eaſtern or weſtern rhumb, in an intermediate parallel, between the parallel of the place whence the ſhip proceeds, and the parallel of the place at which ſhe arrives.

It is true, this reduction, by an arithmetically mean parallel, is not accurate; yet is it frequently uſed in practice, as being accommodated to the apprehenſions of the generality of mariners. In effect, it does not err any thing conſiderable, if the whole courſe be divided into parts, whereof each does not exceed one degree; whence it appears adviſable, not to take the diameter of the ſemicircle A B above one degree, and to divide it at moſt into geographical miles.

For the application of the Plain **Chart** *in ſailing*; ſee *Plain* **Sailing.**

Reduced **Chart**, or **Chart** *of Reduction*, is that wherein the meridians are repreſented by right lines converging towards the poles; and the parallels by right lines parallel to one another, but unequal. Theſe, therefore, it appears by their conſtruction, muſt correct the errors of the *plain charts*.

But ſince the parallels ſhould cut the meridians at right angles; theſe *charts* are defective, inaſmuch as they exhibit the parallels inclined to the meridians.

Hence, another kind of *reduced charts* has been invented, wherein the meridians are parallel, but the degrees thereof unequal; theſe are called *Mercator's Charts*.

Mercator's **Chart**, is that wherein the meridians and parallels are repreſented by parallel right lines; but the degrees of the meridians are unequal; ſtill increaſing, as they approach the pole, in the ſame proportion as thoſe of the parallels decreaſe: by means whereof, the ſame proportion is preſerved between them, as on the globe.

This *chart* has its name from that of the author who firſt propoſed it for uſe, and made the firſt *chart* of this projection, *N. Mercator*: but neither was the thought originally his own, as having been hinted by Ptolemy near 2000 years ago, nor is the perfection of it owing to him; our countryman Mr. Wright being the firſt who demonſtrated it, and ſhewed a ready way of conſtructing it, by enlarging the meridian line by the continual addition of ſecants.

Conſtruction of Mercator's **Chart.**—1. Draw a right line, and divide it into equal parts, repreſenting degrees of longitude either in the equator, or in the parallel wherein the *chart* is to terminate. From the ſeveral points of diviſion erect perpendiculars to repreſent meridians; ſo as right lines may cut them all under the ſame angle, and therefore repreſent rhumbs: thus far as in the *plain chart*.

That the degrees of the meridians may have their juſt proportion to thoſe of the parallels, the former are to be increaſed; in regard the latter continue the ſame, by reaſon of the parallеliſm of the meridians.

With the intervals therefore of one degree in the equator CD (*Tab. Hydrog. fig.* 11.), deſcribe the quadrant CDE, and in D erect a perpendicular DG; make the arch DL equal to the parallel of latitude, and through L draw CG: this CG will be the enlarged degree of the meridian, to be transferred to the meridian of the *chart*: the reſt as in *plain charts*.

In practice, ſuppoſe it required to draw a *Mercator's chart* from the fortieth degree of north latitude to the fiftieth, and from the ſixth degree of longitude to the eighteenth. Firſt draw a right line repreſenting the fortieth parallel of the equator; which divide into 12 parts, for the 12 degrees of longitude the *chart* is to contain. Then take a line of equal parts, on a ſcale whereof 100 parts are equal to each of theſe degrees of longitude; and at each extreme of the line raiſe two perpendiculars, to repreſent two parallel meridians to be divided by the continual addition of ſecants, which are proved to increaſe in the ſame proportion, as the degrees of longitude ſhould decreaſe.

Thus, for the diſtance from forty degrees of latitude, take $131\frac{1}{2}$ equal parts, from the ſcale which is the ſecant forty degr. thirty min. For the diſtance from forty-one deg. to forty-two deg. take $133\frac{1}{2}$ equal parts, from the ſcale which is the ſecant of forty-one deg. thirty min. and ſo on to the laſt degree of your *chart*, which will be 154 equal parts, *viz.* the ſecant of forty-nine deg. thirty min. and will give the diſtance from forty-nine deg. of latitude to fifty deg. By this means, the degrees of latitude will be augmented, in the ſame proportion as the degrees of longitude on the globe decreaſe.

The meridians being divided, add the card, or compaſs; chooſing ſome convenient place near the middle thereof: from this draw a line parallel to the divided meridians, which will be the north rhumb; and from this the other thirty-one points of the compaſs are to be ſet off.

Laſtly, lay down the towns, ports, iſlands, coaſts, &c. from a table of longitudes and latitudes; and the *chart* is complete.

In Mercator's *chart*, the ſcale changes as the latitude is changed: if then, *v. g.* a ſhip ſails between the fortieth and fiftieth parallels of latitude, the degrees of the meridians between thoſe two parallels, are to be the ſcale for meaſuring the ſhip's way: whence it follows, that though the degrees of longitude be equal in extent on the *chart*, yet they muſt contain unequal numbers of miles, or leagues; and that they will decreaſe as they approach nearer the pole, becauſe meaſured by a magnitude continually increaſing. This *chart* is demonſtratively true; though to appearance falſe: it is found by experience very accurate, and withal very eaſy of application. In effect, it has all the qualifications required to render it of ſervice in navigation; yet do the generality of mariners decline the uſe of it, and rather chooſe to keep the old erroneous *plain chart*.

For the uſe of Mercator's **Chart** *in ſailing*; ſee Mercator's **Sailing.**

Globular **Chart** is a projection ſo called, from the conformity it bears to the *globe* itſelf: this has been ſince the others propoſed to the world by Meſſ$^{rs.}$ Senex, Wilſon, and Harris; wherein the meridians are inclined; the parallels equidiſtant, and curvilinear; and the rhumbs real ſpirals, as on the ſurface of the globe.

We might be allowed to expect ſomething from this, as it came out under the protection of his majeſty's patent, and with the recommendation of ſeveral able navigators, and among others, that of Dr. Halley; and as it has now ſtood the teſt of a pretty ſevere inquiſition. We ſhall only add, that the projection is perfectly agreeable to nature, and therefore eaſily conceivable; and that it has been found to anſwer very exactly, even in very large diſtances; where its failure, if it have any, muſt needs be moſt conſpicuous.

Charts *compoſed by rhumbs and diſtances*, are thoſe wherein there are no meridians or parallels; but all is effected by the rhumbs, and the ſcale of miles.

Theſe are chiefly uſed by the French, and eſpecially in the Mediterranean.

They are patched up, without any great art, from the obſervations of the mariners; any regular account therefore how to make them would be needleſs. They are only uſed in ſhort voyages.

CHARTA primarily ſignifies a ſort of paper made of the plant *Papyrus*, or *Biblus*. See **Paper.**

Charta *Emporetica*, in pharmacy, &c. a kind of paper made very ſoft and porous, and uſed to filtre withal.

Charta is alſo uſed in antient cuſtoms for a *charter*, or deed in writing. See **Charter.**

Charta *de Foreſta*. See **Charter** *of the Foreſt*.

Charta *Magna*, the great *charter*, is an antient inſtrument, containing ſeveral privileges, and liberties, granted to the church and ſtate, by Edward the Confeſſor, together with others relating to the feudal laws of William the Conqueror, granted by Henry I. all confirmed by the ſucceeding princes about thirty times. See **Magna** *Charta*.

Charta *Pardonationis ſe defendendo*, is the form of a pardon for killing another man in his own defence.

Charta *Pardonationis Utlagariæ*, is the form of pardon of a man who is outlawed.

Charta *Simplex*, is a ſingle deed, or deed-pole. See **Deed.**

CHARTEL. See the article **Cartel**, **Combat**, **Duel**, **Champion**, &c.

CHARTER *, **Charta**, an inſtrument, or written evidence of a thing under the ſeal of a prince, lord, church, chapter, or community.

* The word *charter* comes from the Latin *charta*, antiently uſed for a public or authentic act, a donation, contract, or the like, from the Greek *χαρτης*, *thick paper*, or *paſtboard*, whereon public acts were uſed to be written.

Bracton ſays, donations are ſometimes made in *charters*, *in perpetuam rei memoriam.*—He adds, that of *charters* ſome are *royal*, others of private perſons.

Of *royal*, ſome are private, ſome common, ſome univerſal.

Of *private charters*, ſome are *de puro feoffamento*, others *de conditionali feoffamento*, others of recognition, pure or conditional, others of confirmation, &c.

Charter *of the Foreſt*, is that wherein the laws of the foreſt are compriſed and eſtabliſhed, together with the *magna charta*, or *great charter*. See **Forest.**

Great **Charter**, *magna charta*. See **Magna** *charta*.

Charters *of the King*, are thoſe whereby a king makes a grant to a perſon, or community; *v. gr.* a *Charter of Exemption*, that a perſon ſhould not be impanelled on a jury, &c.

Charter *of Pardon*, is that whereby a perſon is forgiven a felony, or other offence againſt the king's crown and dignity. See **Pardon.**

Charter-House. See the article **Chartreuse.**

Charter-Land, in law, is ſuch as a man holds by *charter*, that is, by evidence in writing; otherwiſe called *Freehold*. See **Freehold.**

This the Saxons called Bockland; which Lambard renders, *terra ex ſcripto*.

It was held on more eaſy conditions than the Folkland, or *terra ſine ſcripto*, held without writing: the former being *hæreditaria libera & immunis*; whereas the latter *cenſum penſitabat annuum, atque officiorum quadam ſervitute erat obligatus.*

CHARTERPARTY, in commerce, denotes the inſtrument of freightage, or articles of agreement for the hire of a veſſel.

The *charterparty* is to be in writing; and is to be ſigned both by the proprietor, or the maſter of the ſhip, and the merchant who freights it.

The *charterparty* is to contain the name, and the burden of the veſſel; thoſe of the maſter, and the freighter; the price, or rate of freight; the time of loading, and unloading; and the other conditions agreed on.

It is properly a deed, or policy, whereby the maſter, or proprietor of the veſſel, engages to furniſh immediately a tight ſound veſſel, well equipped, caulked and ſtopped, provided with anchors, ſails, cordage, and all other furniture to make the voyage required, as equipage, hands, victuals, and other munitions; in conſideration of a certain ſum to be paid by the merchant for the freight. Laſtly, the ſhip, with all its furniture, and the cargo, are reſpectively ſubjected to the conditions of the *charterparty*.

The *charterparty* differs from a *bill of lading*, in that the firſt is for the intire freight, or lading, and that both for going and returning; whereas the latter is only for a part of the freight, or at moſt only for the voyage one way.

The preſident Boyer ſays, the word comes from hence, that *per medium charta incidebatur, & ſic fiebat charta partita*; becauſe in the time when notaries were leſs common, there was only one inſtrument made for both parties: this they cut in two, and gave each his portion, and joined them together at their return, to know if each had done his part. This he obſerves to have ſeen practiſed in his time; agreeable to the method of the Romans, who, in their ſtipulations, uſed to break a ſtaff, each party retaining a moiety thereof as a mark.

CHARTIS *reddendis*, a writ which lies againſt him that has *charters* of feoffment intruſted to his keeping, and refuſeth to deliver them to the owner.

CHARTOPHYLAX *, an officer in the church of Conſtantinople, intruſted with the cuſtody of the archives.

* The word is formed from χαρτα, and φυλασσω, *cuſtodio*; and ſignifies *Charter-keeper*.

Codin calls the *grand chartophylax* the judge of all cauſes, and the right arm of the patriarch. He adds, that he was the depoſitary or keeper of all the *charters* relating to the eccleſiaſtical rights; and that he preſided over matrimonial cauſes, and was judge of all the clergy. He drew up all ſentences and deciſions of the patriarch, who ſigned and ſealed them: he preſided in the grand council of the patriarch: he took cognizance of all matters and cauſes eccleſiaſtical and civil, whether among the clergy, the monks, or the people.

He took place of all the biſhops, though himſelf only a deacon; and, on occaſion, diſcharged the functions of the prieſts: he had twelve notaries under him.

The *chartophylax* was much the ſame at Conſtantinople with the *chartulary* at Rome.

There were, in reality, two officers who bore this title; the one for the court, the other for the patriarch; the firſt was called alſo *Regiſtrator*, and the latter *Scriniarius*: though the two are uſually confounded together. Leunclavius, and others, confound *chartophylax* with *chartulary*.

CHARTREUSE, a celebrated monaſtery of Carthuſians; ſo called from the name of a ſteep rocky place, in a frightful deſart, five leagues from Grenoble in France; where S. Bruno retired from the world, and firſt inſtituted the order of Carthuſians.

The name has ſince paſſed to all houſes of Carthuſians; and that near Grenoble, is now diſtinguiſhed by the name of the *great Chartreuſe*.

That of London, corruptly called *Charter-houſe*, is now converted into a college, called alſo from its founder Sutton's *hoſpital*; firſt endowed with 4000*l.* *per ann.* ſince improved to 6000*l.*

It is to conſiſt of decayed gentlemen, ſoldiers, and merchants; eighty of whom have a plentiful maintenance of diet, lodging, clothes, phyſic, &c. living together in a collegiate manner; and of ſcholars, or youths, forty-four of whom are taught, and ſupplied with neceſſaries, and ſuch of them as are fit for the univerſity ſent thither, with an exhibition of 20*l.* *per ann.* for eight years; the reſt are put to trades.

For the ſuperintendency of this hoſpital there are ſixteen governors, generally of the prime quality; vacancies being ſupplied by the election of the remaining governors. The ordinary officers are, a maſter, preacher, regiſter, treaſurer, ſchoolmaſter, &c.

CHARTREUX, religious of the order of S. Bruno, called alſo Carthuſians. See CARTHUSIANS.

CHARTULARY, CHARTULARIUS, a title given to an antient officer in the Latin church, who had the care of *charters* and papers relating to public affairs.

The *chartulary* preſided in eccleſiaſtical judgments, in lieu of the pope.

In the Greek church, the *chartulary* was called *chartophylax*; but his office was there much more conſiderable; and ſome even diſtinguiſh the *chartulary* from the *chartophylax* in the Greek church. See CHARTOPHYLAX.

CHASE, or CHACE, in law, is uſed for a driving of cattle to or from any place; as to a diſtreſs, a ſortlet, &c.

CHASE, or CHACE, is alſo a place of retreat for deer and wild beaſts; of a middle kind, between a foreſt and a park; being uſually leſs than a foreſt, and not poſſeſſed of ſo many privileges; but wanting, *v. g.* courts of attachment, ſwanimote, and juſtice-ſeat.

Yet it is of a larger extent, and ſtocked both with a greater diverſity of wild beaſts, or game, and more keepers, than a park. Crompton obſerves, that a foreſt cannot be in the hands of a ſubject, but it forthwith loſes its name, and becomes a *chaſe*; in regard, all thoſe courts loſe their nature when they come into the hands of a ſubject; and that none but the king can make a lord chief juſtice in eyre of the foreſt.

Yet the ſame author adds, that a foreſt may be granted by the king to a ſubject, in ſo ample a manner, as that there may be courts equivalent to a court of attachment, ſwanimote, and juſtice-ſeat.

HASE, in the ſea-language, is to purſue a ſhip; which is called alſo *giving chaſe*.

Stern CHASE is when the chaſer follows the chaſed aſtern, directly upon the ſame point of the compaſs.

To lie with a ſhip's fore-foot in a Chaſe, is to ſail, and meet with her by the neareſt diſtance, and ſo to croſs her in her way, or to come acroſs her fore-foot.

A ſhip is ſaid to have a *good chaſe* when ſhe is ſo built forward on, or aſtern, that ſhe can carry many guns to ſhoot forwards, or backwards; according to which ſhe is ſaid to have *a good forward*, or *good ſtern chaſe*.

CHASE-*Guns*, are ſuch whoſe ports are either in the head (and then they are uſed in chaſing of others) or in the ſtern, which are only uſeful when they are purſued or chaſed by any other ſhip.

CHASE *of a Gun*, is the whole bore, or length of a piece taken within-ſide. See CANNON.

CHASING, a method of working, or enriching gold, ſilver, &c. properly called *enchaſing*. See ENCHASING.

CHASM, Χασμη. See the articles GROTTO and HIATUS.

CHATELET *, antiently ſignified a little caſtle, or fortreſs, wherein the *chatelain*, or governor, lodged. See CASTLE.

* The word is a diminutive of *chateau*, formed from *caſtellum*, a diminutive of *caſtrum*; or from *caſtelletum*, a diminutive of *caſtellum*, caſtle.

At preſent, the term is uſed for certain courts of juſtice eſtabliſhed in ſeveral cities in France: the *grand chatelet* in Paris, *v. g.* is the place where the preſidial, or ordinary court of juſtice of the prevot of Paris is kept; conſiſting of a preſidial, a civil chamber, criminal chamber, and a chamber of policy. The term ſignifies the ſame at Montpelier, Orleans, &c. The little *chatelet* at Paris is an antient fort, now ſerving as a priſon.

CHATTELS *, CATALIS, CATALLA, a Norman term, under which were antiently comprehended all moveable goods; thoſe immoveable being termed *fief*, or, as we now ſay, *fee*.

* Spelman defines *chattels* to be *bona quæcunque mobilia & immobilia; propriè tamen ea bonorum pars, quæ in animalibus conſiſtat, à quorum* capitibus *res ipſæ*, *alias* capita, *alias* capitalia *dictæ ſunt*.

CHATTELS, in the modern ſenſe of the word, are all ſorts of goods, moveable or immoveable, except ſuch as are in the nature of freehold, or parcel thereof.

Chattels are either *perſonal*, or *real*.

CHATTELS *Perſonal*, are ſuch as do either belong immediately to the perſon of a man, as his horſe, ſword, &c. or ſuch things as being injuriouſly with-held from him, a man has no way to cover but by perſonal action. See PERSONAL.

CHATTELS *Real*, are either ſuch as do not appertain immediately to the perſon, but to ſome other thing, by way of dependence; as charters of land, apples upon a tree, &c. or ſuch as neceſſarily iſſue out of ſome immoveable thing to a perſon; as a leaſe, or rent for years.

CHAUNTOR, CHAUNTER. See CHANTOR.

CHAUNTRY, or CHANTRY, was antiently a church, or chapel, endowed with lands, or other yearly revenue, for the maintenance of one or more prieſts, daily ſaying or ſinging maſs for the ſouls of the donors, and ſuch others as they appointed.

Hence CHAUNTRY-*Rents*, are rents paid to the crown by the tenants, or purchaſers of *chauntry-lands*.

CHAUFFE-WAX. } See { CHAFFE-WAX.
CHAUSSE-TRAPE. } { CALTROP, and CROWSFEET.

CHAZINZARIANS *, a ſect of heretics, who roſe in Armenia in the ſeventh century.

* The word is formed of the Armenian, *chazus*, croſs. In the Greek text of Nicephorus, they are called *Chatzintzarians*, χατζιντζαέιοι.

They are alſo called *ſtaurolatræ*, which, in Greek, ſignifies the ſame as *chazinzarians* in Armenian, *viz. adorers of the croſs*; they being charged with paying adoration to the croſs alone.

In other reſpects they were Neſtorians; and admitted two perſons in Jeſus Chriſt. Nicephorus, l. xviii. c. 54. aſcribes other ſingularities to them, particularly their holding an annual feaſt, in memory of the dog of their falſe prophet Sergius; which they called *artzibartzes*.

CHECK-*Roll*, a roll, or book, containing the names of ſuch as are attendants, and in pay to the king, or other great perſons; as their houſhold ſervants.

It is otherwiſe called the *chequer-roll*. See ROLL.

Clerk of the CHECK, in the king's houſhold, has the *check* and controulment of the yeomen of the guard, and all the uſhers belonging to the royal family; allowing their abſence or defects in attendance, or diminiſhing their wages for the ſame, &c.—He alſo, by himſelf or deputy, takes the view of thoſe that are to watch in the court, and has the ſetting of the watch. 33 H. VIII. c. 12.

Clerk of the CHECK, in the king's navy at Plymouth, is alſo the name of an officer inveſted with like powers. 19 Car. II. c. 1.

CHECK, in falconry, is where a hawk forſakes her proper game, to follow rooks, pies, or other birds that croſs her in her flight.

CHECKER. See the article EXCHEQUER.

CHECKY, in heraldry, is where the ſhield, or a part thereof, as a bordure, &c. is chequered, or divided into chequers, or ſquares.—See *Tab. Heraldry*, *fig.* 15.

Where there is but one row of ſquares, it is not properly called *checky*, but *countercomponed*.

Checky, according to Colombiere, is one of the moſt noble and antient figures in all armory; and ought never to be given, but to perſons who have diſtinguiſhed themſelves in war: for it repreſents a cheſs-board, which itſelf is a repreſentation of a field of battle. The pawns and men, placed on both ſides, repreſent the ſoldiers of the two armies; which move, attack, advance, or retire, according to the will of the two gameſters, who are the generals.

Checky is always compoſed of metal, and colour. Some authors, however, would have it ranked among the ſorts of furs.

When the whole eſcutcheon is chequered, it ſhould ordinarily contain ſix ranges: there is no need of blazoning to expreſs them; only it muſt be obſerved, to begin to blazon by the firſt ſquare in chief on the dexter-ſide. So that if that be *or*, and the next *gules*, the houſe, or family, is ſaid to bear *checky*, *or*, *and gules*.

When the whole ſhield is not chequered, but only the chief, a bend, croſs, or the like, the number of ranges ſhould be expreſſed.

CHEEKS, a general name among mechanics, for almoſt all thoſe pieces of their machines and inſtruments, that are double, and perfectly alike.

The *cheeks of a printing-preſs*, are its two principal pieces: they are placed perpendicular, and parallel to each other; ſerving to ſuſtain the three ſommers, *viz.* the head, ſhelves, and winter, and to bear the ſpindle, and other parts of the machine.

The *cheeks of a turner's lathe*, are two long pieces of wood, between which are placed the *puppets*, which are either pointed, or otherwiſe, ſerving to ſupport the work, and the mandrils of the workman. Theſe two pieces are placed parallel to the horizon, ſeparated from one another by the thickneſs of the tail of the puppets, and joined with tenons to two other pieces of wood, placed perpendicularly; called the *legs of the lathe*.

Cheeks of the glazier's vice, are two pieces of iron joined parallel at top and bottom; in which are the axis, or ſpindles, little wheel, cuſhions, *&c.* whereof the machine is compoſed.

CHEESE, a popular food; being a preparation of milk curdled by means of rennet, and afterwards dried, and hardened.

Cheeſe is nothing but milk purged of its ſerum, or whey; and ſometimes too of the cream, or butyrous part of the milk.

Cheeſe, when new, is found to load the ſtomach, by reaſon of its moiſture and viſcidity; and when too old, it heats and inflames it by its ſalts. The phyſicians adviſe it to be eat in ſmall quantities: hence that Latin verſe,

Caſeus ille bonus, quem dat avara manus.

Dr. Quincy ſays, it cannot be too old: it is certain, the more it abounds with ſalts, the more will it contribute to digeſtion, and the clearing of the ſtomach of other food.

Indeed ſome condemn all uſe of *cheeſe*; ſheltering themſelves under that antient maxim, *Caſeus eſt nequam, quia concoquit omnia ſe quam.*

CHEF. See the article CHIEF.

CHEF *d'Oeuvre.* See the article MASTERPIECE.

CHELIDONIUS*, in natural hiſtory, a ſtone pretended to be found in the ſtomachs of young ſwallows; much eſteemed by ſome for the falling ſickneſs.

* The word is formed from the Greek χελιδων, a ſwallow. See Supplement, article CHELIDONIUS.

CHELONITES*, a ſtone ſaid to be found in the Indian tortoiſes, and to have the faculty of reſiſting poiſon.

* The word is formed from the Greek χελωνη, a tortoiſe.

Some confound the *chelonites* with the buſonites, or toadſtones. See Supplement, article CHELONITES.

CHELSEY *College*, or hoſpital. See HOSPITAL.

CHEMISE, in fortification, a wall wherewith a baſtion, or ditch, is lined, for its greater ſupport and ſtrength.

Fire **CHEMISE** is a piece of linen cloth, ſteeped in a compoſition of oil of petrol, camphor, and other combuſtible matters; uſed at ſea, to ſet fire to an enemy's veſſel.

CHEQ, or **CHERIF**, the prince, or high-prieſt of Mecca; ſovereign pontiff of the Muſſulmans; and owned as ſuch by all the ſects into which they are divided.

The grand ſignior, ſophies, mogols, kans of Tartary, *&c.* ſend him yearly preſents; eſpecially tapeſtry, to cover Mahomet's tomb withal, and tents for himſelf: for the *cheq* has a tent near the moſque of Mecca, wherein he lives during the ſeventeen days of devotion in pilgrimage to Mecca. The tapeſtry and tent are changed each year, and pieces thereof are ſent to the princes who furniſh new ones.

His revenue is very conſiderable, conſiſting of preſents made by the Mahometan princes, and pilgrims, to the moſque of Mecca, and Medina.

The *cheq* ſubſiſts all the pilgrims during the ſeventeen days of devotion; on which account, he is every year furniſhed with a very conſiderable ſum of money from the grand ſignior: the better to obtain this, he makes him believe, that there are conſtantly, during this time, ſeventy thouſand pilgrims; and that, ſhould the number fall ſhort, the angels, in form of men, would make it up.

CHERRY-*Brandy*, a drink made of *brandy*, with the addition of *cherries*.

The *cherries* commonly uſed therein, are of the black kind; with theſe, a bottle being half filled, is filled up with *brandy*, or ſpirits. The whole is to be ſhaken up now-and-then; and in a month's time it becomes fit for uſe.

To ſweeten it, and improve the flavour, ſome chooſe to put in ſugar, with a quantity of raſberries.

CHERSONESUS*, in geography, a peninſula; or a continent almoſt encompaſſed round with the ſea, only joining to the main land by a narrow neck, or iſthmus.

* The word is Greek, χερσόνησος, which ſignifies the ſame.

This term is uſed by the moderns, in complaiſance to the antients, who called all their peninſula's by this name: accordingly, ſuch places as were hereby diſtinguiſhed among them, retain the name among us; as the *Cherſoneſus* of *Peloponneſus*, of *Thrace*, *Cherſoneſus Cimbrica*, *Aurea*, &c.

CHERUB*, or CHERUBIN, a celeſtial ſpirit, which, in the hierarchy, is placed next in order to the ſeraphim. See HIERARCHY.

* The word is formed of the Hebrew כרוב, *cherub*; the plural whereof is *cherubim*.

They are painted red, to ſignify that they are inflamed with the love of God.

CHERUBIN was alſo the name of an antient military order in Sweden, otherwiſe called the order of ſeraphim. It was inſtituted by Magnus IV. in 1334. and aboliſhed by Charles IX. It took its denomination from the golden figures of cherubim, whereof the collar of the order was compoſed.

CHESS*, an ingenious game, performed with little round pieces of wood, on a board divided into ſixty-four ſquares; where art and addreſs are ſo indiſpenſably requiſite, that chance ſeems to have no place; and a perſon never loſes but by his own fault.—On each ſide there are eight noble-men, and as many pawns, which are to be moved and ſhifted, according to certain rules and laws of the game.

* Saraſin has a preciſe treatiſe on the different opinions of the origin of the Latin *Schacchi*; whence the French *Echecs*, and our *Cheſs*, is formed. Menage is alſo very full on the ſame head. Leunclavius takes it to come from the Uſcoches, famous Turkiſh robbers: P. Sirmond from the German *Scackbe*, theft; and that from *Calculus*. He takes *Cheſs* to be the ſame with the *Ludus Latrunculorum* of the Romans, but miſtakenly. This opinion is countenanced by Voſſius and Salmaſius, who derive the word from *calculus*, as uſed for *latrunculus*. G. Toloſanus derives it from the Hebrew *Schach*, *vallavit*; *&* *mat*, *mortuus*; whence *Cheſs* and *Cheſs-mate*. Fabricius ſays, a celebrated Perſian aſtronomer, one Schatrenſcha, invented the game of *Cheſs*; and gave it his own name, which it ſtill bears in that country. Nicod derives it from *ſcheque*, or *xeque*, a Mooriſh word for lord, king, and prince: Bochart adds, that *ſcach* is originally Perſian, and that *ſchachmat*, in that language, ſignifies the king is dead.—The opinion of Nicod and Bochart, which is likewiſe that of Scriverius, appears the moſt probable.

Donatus, on Terence's *Eunuch*, obſerves, that Pyrrhus, the moſt knowing and expert prince of his age, ranging a battle, made uſe of the men at *cheſs* to form his deſigns; and to ſhew the ſecrets thereof to others. Vopiſcus, in his life of Proculus, informs us, that one of the Roman emperors had the title Auguſtus given him, becauſe of his gaining ten games at *cheſs* ſucceſſively. Tamerlane is alſo recorded as a very expert gameſter at *cheſs*.

Cheſs is doubtleſs a moſt antient and univerſal game: the common opinion is, that it was invented by Palamedes at the ſiege of Troy. Others attribute the invention to Diomedes, who lived in the time of Alexander: the romance of the roſe aſcribes it to one Attalus; but the truth is, the game is ſo very antient, there is no tracing its author.

In China, it makes a conſiderable part of the education of their maids, and ſeems to take the place of dancing among us. In Spain, whole cities challenge each other at *cheſs*.

John of Saliſbury relates, that in a battle between the French and Engliſh, in 1117. an Engliſh knight ſeizing the bridle of Louis le Gros, and crying to his comrades, *the king is taken*, that prince ſtruck him to the ground with his ſword, ſaying, *Ne ſcais tu pas qu' aux echecs on ne prend pas le roy?* Doſt thou not know, that at *cheſs* the king is never taken? The reaſon is, that when the king is reduced to ſuch a paſs, that there is no way for him to eſcape, the game ends, without expoſing the royal piece to further affront.

Cardinal Cajetan, and other caſuiſts, rank *cheſs* in the number of prohibited games; as requiring too much application: and Montaign blames it as too ſerious for a game.

CHEST, in commerce, a kind of meaſure, containing an uncertain quantity of ſeveral commodities.

A *cheſt of ſugar*, *v. g.* contains from ten to fifteen hundred weight: a *cheſt of glaſs*, from 200 to 300 feet; *of Caſtile-ſoap*, from 2½ to three hundred weight; *of indigo*, from 1½ to two hundred weight; five ſcore to the hundred.

CHEVAGE*, or CHIEFAGE, according to Bracton, ſignifies a tribute by the head; or a kind of poll-money antiently pai by ſuch as held lands in villainage, or otherwiſe, to their lords, in acknowlegement.

* The word is formed of the French *chef*, head.

The word ſeems alſo to have been uſed for a ſum of mone yearly given to a man of power, for his patronage and pro tection, as to a *chief*, head, or leader.

In the firſt ſenſe, Coke obſerves, there is ſtill a kind of *chev* ſubſiſting in Wales, called *Amabyr*; paid to the prince of Wal for the marriage of his daughters; antiently by all, now on by ſome. Lambard writes it *chivage*.

The Jews, allowed to live in England, long paid *chevage*, o poll-money, *viz.* three-pence *per* head: it was paid at Eaſter.

CHEVAL *de Friſe* *, a large piece of timber, pierced, and traverſed with wooden ſpikes, armed or pointed with iron, five or ſix feet long.—See *Tab. Fortif. fig.* 15.

* The term is French, and properly ſignifies a Frieſland horſe; as having been firſt invented in that country.—It is alſo called a *turnpike*, or *tourniquet*.

Its uſe is, to defend a paſſage, ſtop a breach, or make a retrenchment to ſtop the cavalry.

It is ſometimes alſo mounted on wheels, with artificial fires, to roll down in an aſſault.

Errard obſerves, that the prince of Orange uſed to incloſe his camp with *chevaux de friſe*; placing them over one another.

On a medal of Licinius, is found a kind of *cheval de friſe*, made with ſpikes interpoſed; ſerving to expreſs a fortified camp.

CHEVALIER *, a French term, ordinarily ſignifying a *knight*.

* The word is formed of the French *cheval*, horſe; and that of the Latin *cavallus*.

It is uſed, in heraldry, to ſignify any *cavalier*, or horſeman armed at all points; by the Romans called *cataphractus eques*, now out of uſe, and only to be ſeen in coat-armour. See EQUES.

CHEVELLE, a term uſed by the French heralds to expreſs a head where the hair is of a different colour from the reſt of the head.

CHEVIN. See the article FISHING.

CHEVRON, or CHEVERON, in heraldry, one of the honourable ordinaries of a ſhield; repreſenting two rafters of a houſe joined together, without any diviſion.

It deſcends from the chief towards the extremities of the coat, in form of a pair of compaſſes half open.—Thus, he bears gules, a *chevron* argent.—V. *Tab. Heraldry, fig.* 16.

The *chevron* is the ſymbol of protection, ſay ſome; or of conſtancy, according to others: ſome ſay, it repreſents the knights ſpurs; others, the head-attire of prieſteſſes; others, a piece of the liſt, or the barrier or fence of a park.

When it is alone, it ſhould take up the third-part of the coat; when it is accompanied with any other bearings, its breadth muſt be adjuſted thereby.

It is borne divers ways: ſometimes in chief, ſometimes in baſe, ſometimes enarched, ſometimes reverſed, &c.

The *chevron* is ſometimes charged with another *chevron*, one third of its own height.

Two *chevrons* are allowed in the ſame field, but no more: when they exceed that number, they are called *chevronwiſe*, or *chevronels*. There are *chevrons* of ſeveral pieces.

A *chevron* is ſaid to be *abaſed*, when its point does not approach the head of the chief, nor reach farther than the middle of the coat; *mutilated*, when it does not touch the extremes of the coat; *cloven*, when the upper point is taken off, ſo that the pieces only touch at one of the angles; *broken*, when one branch is ſeparated into two pieces; *couched*, when the point is turned towards one ſide of the eſcutcheon; *divided*, when the branches are of ſeveral metals, or when metal is oppoſed to colour; and *inverted*, when the point is towards the point of the coat, and its branches towards the chief.

A coat is ſaid to be *chevroned*, when it is filled with an equal number of *chevrons*, of colour and metal.

Counterchevroned, is when it is ſo divided, as that colour is oppoſed to metal, and *vice verſa*.

Per CHEVRON, or *party per* CHEVRON, is when the field is divided by only two ſingle lines, riſing from the two baſe points, and meeting in a point above, as the *chevron* does.

CHEVRONEL, a diminutive of *chevron*; and, as ſuch, only containing half a *chevron*.

CHEVRONNE, or CHEVRONNY, ſignifies the parting of the ſhield, ſeveral times *chevronwiſe*: Gibbon ſays, *chevronne of ſix*.

CHIAOUS *, an officer in the grand ſeignior's court, doing the buſineſs of an uſher.

* The word, in the original Turkiſh, ſignifies envoy.

He bears arms offenſive and defenſive, and has the care of priſoners of diſtinction. His badge is a ſtaff covered with ſilver; and he is armed with a ſcimiter, bow, and arrows.

The emperor uſually chooſes one of this rank to ſend as embaſſador to other princes.

The *chiaous* are under the direction of the *chiaous-baſchi*, an officer who aſſiſts at the divan, and introduces thoſe who have buſineſs there.

CHICANE *, or CHICANRY, in law, an abuſe of judiciary proceeding, tending to delay the cauſe, and deceive or impoſe on the judge, or the parties.

* Some derive the word from *ciccum*, the ſkin of a pomgranate; whence the Spaniards formed their *chico*, little, ſlender; *chicane* being converſant about trifles.

The French call ſollicitors, attorneys, &c. *gens de chicane*.

CHICANE is alſo applied, in the ſchools, to vain ſophiſms, diſtinctions, and ſubtilties, which immortalize diſputes, and obſcure the truth: as, the *chicane* of courts does juſtice.

CHIEF *, a term denoting head, or a principal thing, or perſon.

* The word is formed of the French *chef*, head; of the Greek *κεφαλη*, *caput*, head: though Menage derives it from the Italian *capo*; formed of the Latin *caput*.

We ſay, the *chief* of a party; the *chief* of a family, &c. Agamemnon was the *chief* of the Greeks who beſieged Troy. The Romans ſometimes refuſed triumphs to their victorious generals, by reaſon the conduct of the *chief* was not anſwerable to his ſucceſs. The abbeys that are *chiefs* of their order are all regular; and it is there the general chapters are held.

CHIEF-JUSTICE. See the article JUSTICE.

CHIEF LORD, denotes the feudal lord, or lord of an honour, on whom others depend. See LORD; ſee alſo HONOUR.

Holding in CHIEF. See CAPITE, and TENURE.

CHIEF, in heraldry, is the upper-part of the eſcutcheon, reaching quite acroſs, from ſide to ſide.

The arms of France are, three golden flower de lys's, in a field azure; two in *chief*, and one in point.

CHIEF is more particularly uſed for one of the honourable ordinaries, placed athwart the top of the coat, and containing one third part of its height.

When the eſcutcheon is cut in ſtone, or in relievo, the *chief* ſtands out prominent beyond the reſt; and is ſuppoſed to repreſent the diadem of the antient kings and prelates; or the caſk of the knights.

It is frequently without any ornament; ſometimes it is charged with other bearings; ſometimes it is of a colour or metal different from that of the coat.

The line that bounds it at the bottom is ſometimes ſtrait, ſometimes indented, engrailed, embatteled, lozenged, &c. Thus, ſay they, the field is gules, a *chief* argent, &c. again, he bears gules, a *chief* crenelle, or embatteled argent.

Sometimes one *chief* is borne on another; expreſſed by a line drawn along the upper-part of the *chief*: when the line is along the under-part, it is called a *fillet*. The firſt is an addition of honour, the ſecond a diminution.

The *chief* is ſaid to be *abaſed*, when it is detached from the upper-edge of the coat, by the colour of the field which is over it; and which retrenches from it one third of its height. We alſo ſay, a *chief* is *chevroned*, *paled*, or *bended*, when it has a chevron, pale, or bend, contiguous to it, and of the ſame colour with itſelf. A *chief* is ſaid to be *ſupported*, when the two thirds at top are of the colour of the field, and that at bottom of a different colour.

In CHIEF.—By this is underſtood any thing borne in the *chief* part, or top, of the eſcutcheon.

CHIEF-PLEDGE, the ſame as headborough. See HEADBOROUGH.

CHIEF-POINT. See the article POINT.

CHIEFTAIN, the *chief*, leader, or general, of an army; or the like.

CHILBLAIN *, *Pernio* † (in medicine), a tumor afflicting the feet and hands; accompanied with an inflammation, pain, and ſometimes an ulcer, or ſolution of continuity: in which caſe it takes the denomination of *chaps* ‖, on the hands; and *kibes* ‡, on the heels.

* *Chilblain* is compounded of chill, and blain; *q. d.* a blain, or ſore, contracted by cold.

† *Pernio* is the Latin name adopted by the phyſicians; and is derived by Voſſius from *perna*, a gammon of bacon; on account of ſome reſemblance.

‖ *Chap* alludes to gape, both in ſound and appearance.

‡ *Kibes*, in Welſh *kibws*, may be derived from the German *kerben*, to cut; the ſkin, when broke, appearing as if cut.

Chilblains are occaſioned by exceſſive cold ſtopping the motion of the blood in the capillary arteries.

The tumor, from white, generally inclines to blueneſs. For the cure of *chilblains*, it is uſual to waſh them with warm brine, urine, &c. but petroleum, or warm Hungary-water, with ſpirit of wine camphorated, uſed with a ſponge, are much better. —For chaps and kibes, nothing exceeds the unguentum deſiccativum rubrum, or diapompholyx mixed with a little camphor; and uſed, for the dreſſings, with emplaſtrum de minio, or diachylon ſimplex, let-down with oil of roſes.

CHILD, a term of relation to parent.

We ſay, natural *child*, legitimate *child*, putative *child*, baſtard *child*, adoptive *child*, poſthumous *child*, &c. See NATURAL, PUTATIVE, BASTARD, ADOPTIVE, POSTHUMOUS, &c.

Mr. Derham computes, that marriages, one with another, produce four *children*; not only in England, but in other parts alſo.

In the genealogical hiſtory of Tuſcany, wrote by Gamarini, mention is made of a nobleman of Sienna, named Pichi, who, of three wives, had an hundred and fifty *children*; and that, being ſent embaſſador to the pope and the emperor, he had forty-eight of his ſons in his retinue.

In a monument in the church-yard of St. Innocent, at Paris, erected to a woman who died at eighty-eight years of age, it is recorded, that ſhe might have ſeen 288 *children* directly iſſued from her. This greatly exceeds what Hakewell relates of Mrs. Honeywood, a gentlewoman of Kent, born in the year 1527. and married at ſixteen to her only huſband R. Honeywood, of Charing, Eſq; and who died in her ninety-third year.

She had ſixteen *children* of her own body; of which three died young, and a fourth had no iſſue: yet her *grandchildren* in the ſecond generation amounted to 114; in the third to 228; tho' in the fourth they fell to 9. The whole number ſhe might have ſeen in her life-time being 367. 16 + 114 + 228 + 9 = 367. So that ſhe could ſay the ſame as the diſtich does of one of the Dalburg's family at Baſil.

1 2 3 4
Mater ait natæ, Dic natæ, filia natam
5 6
Ut moneat natæ plangere filiolam.

Dr. Harris has an expreſs treatiſe *of the acute diſeaſes of children, de morbis acutis infantum.* He takes them all to ariſe from the humours in the primæ viæ growing ſoure and degenerateing into acidities: which is confirmed from their ſour belches and dejections. Hence, all that is required to cure them is, to combat this acidity; which is to be effected two ways: by diſpoſing it to be evacuated, and by actual evacuation by rhubarb, and other gentle purgatives.

To diſpoſe the peccant acid for evacuation, no ſudorifics or cordials are to be uſed, thoſe remedies being too violent; but crabs eyes and claws, oyſter-ſhells, cuttlefiſh-bones, egg-ſhells, chalk, coral, pearls, bezoar, burnt ivory, ſcrapings of the unicorn's horn, Armenian bole, terra ſigillata, and lapis hæmatites; the goa ſtone, and the confection of hyacinth: but, of all theſe, he prefers old ſhells that have lain long on the edge of the ſea, expoſed to the ſun, which is better than any chymical furnace.

Child-Bed. } See the article Delivery.
Child-Birth. }

Child-wit, a power to take a fine of a bond-woman unlawfully gotten with *child*; that is, without conſent of her lord.

Every reputed father of a baſe *child*, got within the manor of Writtel in Eſſex, pays to the lord, for a fine, 3*s.* 4*d.* where, it ſeems, *child-wit* extends to free, as well as bond-women.— *Quicunque fecerit* child-wit, *archiepiſcopus aut totam, aut dimidiam emendationis partem habebit, quietum eſſe de* child-wit. Du Cange.

Charity-**Children.** See Charity-*School*, and Hospital.

CHILDERMASS-*Day*, called alſo *Innocents-Day*, an anniverſary feaſt of the church, held on the 28th of December, in memory of the *children* of Bethlehem, maſſacred by order of Herod.

CHILIAD*, an aſſemblage of ſeveral things ranged by thouſands.

* The word is formed of the Greek χιλιας, *mille*, a thouſand.

CHILIARCHA *, or Chiliarchus, an officer in the armies of the antients, who had the command of a thouſand men.

* The word comes from the Greek χιλιας, thouſand; and αρχη, command.

CHILIASTS. See the article Millenary.

CHILMINAR, Chelminar, or *Tchelminar*, the nobleſt and moſt beautiful piece of architecture remaining of all antiquity; being the ruins of the famous palace of Perſepolis, to which Alexander the Great, being drunk, ſet fire, at the perſuaſion of the courteſan Thais.

Authors and travellers are exceedingly minute in their deſcriptions of the *Chilminar*; particularly Gracias De Silva Figueroa, Pietro De la Valle, Chardin, and Le Brun.

A general idea thereof may be conceived as follows:

There appear the remains of near fourſcore columns; the fragments whereof are at leaſt ſix feet high: but there are only nineteen that can be called intire; with a twentieth all alone, 150 paces from the reſt.

A rock of black hard marble ſerves for the foundation of the edifice. The firſt plan of the building is aſcended to by fourſcore and fifteen ſteps cut in the rock. The gate of the palace is twenty feet wide; on one ſide is the figure of an elephant, and on the other of a rhinoceros, each thirty feet high, and of ſhining marble: near theſe animals are two columns; and not far off the figure of a Pegaſus.

After this gate is paſſed, there are found a great number of columns of white marble; the remains whereof ſhew the magnificence of the work: the ſmalleſt of theſe columns is fifteen cubits high, the largeſt eighteen; each has forty flutings, three large inches broad; whence the height of the whole may be gueſſed at, with the other proportions. Near the gate is an inſcription on a ſquare piece of marble, ſmooth as glaſs, containing about twelve lines: the characters are of a very extraordinary figure, reſembling triangles and pyramids.

Theſe noble ruins are now the ſhelter of beaſts, and birds of prey. Beſides the inſcription above-mentioned, there are others in Arabic, Perſian, and Greek. Dr. Hyde obſerves, that the inſcriptions are very rude and unartful; and that ſome, if not all of them, are in praiſe of Alexander the Great; and therefore are later than that conqueror.

M. Le Brun tells us, that he took his voyage to the Eaſt-Indies merely for the ſake of viewing the *Chilminar*.

CHIMERA, or Chimæra, a fabulous monſter, which the poets feign to have the head and breaſt of a lion, the belly of a goat, and the tail of a dragon; and to have been killed by Bellerophon, mounted on the horſe Pegaſus.

The foundation of the fable is this: that antiently, in Lycia, there was a volcano, or burning mountain, of this name; the top whereof, which was deſart, only inhabited by lions; the middle, having good paſtures, was frequented by goats; and the foot, being marſhy, by ſerpents. Thus Ovid;

—Mediis in partibus hircum,
Pectus & ora leæ, caudam ſerpentis habebit.

Bellerophon being the firſt who cauſed this mountain to be inhabited, it was feigned, he ſlew *Chimera*. Pliny ſays, the fire thereof would burn in water, and could be extinguiſhed with nothing but earth, or dung.

CHIMES *of a clock*, a kind of periodical muſic, produced at certain ſeaſons of the day, by a particular apparatus added to a *clock*.

To calculate numbers for the *chimes*, and to fit and divide the *chime-barrel*, it muſt be obſerved, that the barrel muſt be as long in turning round, as you are in ſinging the tune it is to play.

As for the *chime-barrel*, it may be made up of certain bars which run athwart it, with a convenient number of holes punched in them, to put in the pins that are to draw each hammer: by this means, the tune may be changed, without changing the barrel. In this caſe, the pins, or nuts, which draw the hammers, muſt hang down from the bar, ſome more, ſome leſs; and ſome muſt ſtand upright in the bar: the reaſon whereof is, to play the time of the tune rightly. For the diſtance of each of theſe bars may be a ſemibreve; but the uſual way is, to have the pins, which draw the hammers, fixed on the barrel.

For the placing of theſe pins, you may proceed by the way of changes on bells; *viz.* 1, 2, 3, 4, *&c.* or rather, make uſe of the muſical notes: where it muſt be obſerved, what is the compaſs of the tune, or how many notes, or bells, there are from the higheſt to the loweſt; and, accordingly, the barrel muſt be divided from end to end.

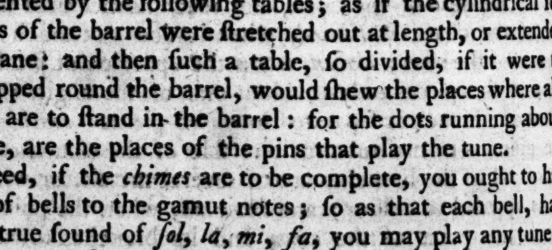
Thus, in the following example, each of the tunes are eight notes in compaſs; and, accordingly, the barrel is divided into eight parts: theſe diviſions are ſtruck round the barrel; oppoſite to which are the hammer-tails.

We ſpeak here as if there were only one hammer to each bell, that it may be more clearly apprehended; but when two notes of the ſame ſound come together in a tune, there muſt be two hammers to the bell to ſtrike it: ſo that if, in all the tunes you intend to *chime* of eight notes compaſs, there ſhould happen to be ſuch double notes on every bell; inſtead of eight, you muſt have ſixteen hammers; and, accordingly, you muſt divide the barrel, and ſtrike ſixteen ſtrokes round it, oppoſite to each hammer-tail: then you are to divide it round about, into as many diviſions as there are muſical bars, ſemibreves, minims, *&c.* in the tune.

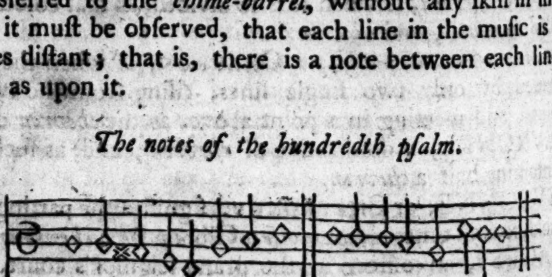
Thus, the hundredth pſalm-tune has twenty ſemibreves, and each diviſion of it is a ſemibreve: the firſt note of it, alſo, is a ſemibreve; and therefore on the *chime-barrel* there muſt be a whole diviſion, from five to five; as you may underſtand plainly, if you conceive the ſurface of a *chime-barrel* to be repreſented by the following tables; as if the cylindrical ſuperficies of the barrel were ſtretched out at length, or extended on a plane: and then ſuch a table, ſo divided, if it were to be wrapped round the barrel, would ſhew the places where all the pins are to ſtand in the barrel: for the dots running about the table, are the places of the pins that play the tune.

Indeed, if the *chimes* are to be complete, you ought to have a ſet of bells to the gamut notes; ſo as that each bell, having the true ſound of *ſol, la, mi, fa*, you may play any tune with its flats and ſharps; nay, you may, by this means, play both the baſs and treble with one barrel: and by ſetting the names of your bells at the head of any tune, that tune may eaſily be transferred to the *chime-barrel*, without any ſkill in muſic: but it muſt be obſerved, that each line in the muſic is three notes diſtant; that is, there is a note between each line, as well as upon it.

The notes of the hundredth pſalm.



A table for dividing the chime-barrel *of the hundredth pſalm.*



CHIMIN, or Chemin, in law, a road, or way. See Road.

Hence,

CHIMINAGE, a toll for wayfarage, or paſſage through a foreſt. The feudiſts call it *pedagium*,

CHIMNEY *, in architecture, a part of a houſe, or lodging, wherein the fire is made.

* The word *chimney* comes from the French *cheminée*; and that from the Latin *caminata*, a chamber wherein is a *chimney*: *caminata*, again, comes from *caminus*; and that from the Greek καμινος, a *chimney*; of καιω, *uro*, I burn.

The parts of a *chimney* are, the jambs, or ſides; the back, or hood; the mantle-tree, reſting on the jambs: the tube, or funnel, which conveys away the ſmoke; the *chimney-piece*, or moulding, on the fore-ſide of the jambs over the mantle-tree; and the hearth, or fire-place.

Palladio ſettles the proportions of a chamber-*chimney* thus: breadth on the inſide, 5½, 6, or 7 feet; height to the mantle-tree, 4, or 4½; depth, 2, or 2½ feet.

According to Wolfius, the breadth of the aperture, at bottom, to be to the height, as three to two; to the depth, as four to two. In ſmall apartments, the breadth is three feet; in larger, five; in bed-chambers, four; in ſmall banqueting-rooms 5½, in large 6: but the height is never to exceed 2½; leſt, there being too much room for the air and wind, the ſmoke be driven down into the room. Nor muſt the height be too little; leſt the ſmoke miſs its way, and be checked at firſt ſetting out. The ſame author adviſes, to have an aperture, through which the external air may, on occaſion, be let into the flame, to drive up the ſmoke; which the internal air would otherwiſe be unable to do.

The mouth of the tube, or that part joined to the *chimney*-back, Felibien orders to be a little narrower than the reſt; that the ſmoke coming to be repelled downwards, meeting with this obſtacle, may be prevented from getting into the room.

Some make the funnel twiſted, to prevent the ſmoke's deſcending too eaſily; but the better expedient is, to make the funnel narrower at bottom than at top; the fire impelling it upward more eaſily when contracted at bottom; and in mounting, it finds more ſpace to diſengage itſelf, and therefore has leſs occaſion to return into the chamber.

To prevent ſmoking CHIMNEYS, M. Lucar adviſes two holes, or two pipes, one over the other, to be left in each ſide of the *chimney*; one ſloping upwards, the other downwards: through one of theſe, ſays he, the ſmoke will paſs in any poſition.

De l'Orme orders a braſs ball full of water, with one ſmall aperture, to be hung up in the *chimney*, at a height a little above the greateſt flame: here, as the water grows hot, it will rarefy and drive through the aperture in a vapoury ſteam, which will drive up the ſmoke that would otherwiſe linger in the funnel.

Others place a kind of moveable vane, or weathercock, a-top of the *chimney:* ſo that what way ſoever the wind comes, the aperture of the *chimney* will be ſcreened, and the ſmoke have free egreſs: but, in truth, the beſt prevention of a ſmoking *chimney* ſeems to lie in the proper ſituation of the doors of the room, and the apt falling back of the back, and convenient gathering of the wings and breaſt of the *chimney*.

It is a rule, in building, that no timber be laid within twelve inches of the fore-ſide of the *chimney*-jambs; that all joiſts on the back of the *chimney* be laid with a trimmer, at ſix inches diſtance from the back; and that no timber be laid within the funnel.

Chimneys are uſually ſuppoſed a modern invention; the antients only making uſe of ſtoves: but Octavio Ferrari endeavours to prove *chimneys* in uſe among the antients: To this end, he cites the authority of Virgil: *Et jam ſumma procul villarum culmina fumant.* And that of Appian, who ſays, 'That of thoſe perſons proſcribed by the triumvirate, ſome hid themſelves in 'wells, *cloacæ*, and common-ſewers; ſome in the tops of 'houſes, and *chimneys:*' for ſo he underſtands καπνωδεις ὑπωρόφιας, *fumaria ſub tecto poſita.* Add, that Ariſtophanes, in one of his comedies, introduces his old man, Polycleon, ſhut up in a chamber; whence he endeavours to make his eſcape by the *chimney*. However, the few inſtances remaining among the antients, together with the obſcurity of the rules of Vitruvius on this head, make us rather conclude the uſe of ſtoves, whereof the antients had intire apartments, made them neglect this point of building, which the coldneſs of our climates obliges us to have a principal regard to.

In the year 1713. there appeared a French book, intituled, La Mechanique du Feu, or the art of augmenting the effects, and diminiſhing the expence, of fire, by M. Gauger; ſince publiſhed in Engliſh, by Dr. Deſaguliers: wherein the author examines what diſpoſition of *chimneys* is moſt proper to augment the heat; and proves geometrically, that the diſpoſition of parallel jambs, with the back inclined as in the common *chimney*, is leſs fitted for reflecting heat into the room, than parabolical jambs, with the bottom of the tablette horizontal.

He gives ſeven ſeveral conſtructions of his new *chimneys*, and the manner of executing them.

M. Gauger, however, does not appear to be the firſt inventor of the *chimney* he deſcribes; the deſcription of a like *chimney* being found in a German book, printed at Leipſick in 1699.

HIMNEY-JAMBS are the ſides of a *chimney*, uſually ſtanding out perpendicularly, ſometimes circularly, from the back; on the extremities whereof the mantle-tree reſts.

HIMNEY-MONEY, or *hearth-money*, a tax impoſed by ſtatute 24 Car. II. expreſſing, that every fire-hearth and ſtove of every dwelling, or other houſe, within England and Wales, except ſuch as pay not to church and poor, ſhall be chargeable with two ſhillings *per ann.* payable at Michaelmas and Lady-day, to the king and his heirs.

IMNEY-PIECE, in building, a compoſition of certain mouldings, of wood or ſtone, ſtanding on the fore-ſide of the jambs, and coming over the mantle-tree.

CHINA, or **CHINA**-*Ware*, a fine ſort of earthen ware, properly called *porcelain*. See PORCELAIN.

CHINA-CHINA, a name ſometimes given to the Quinquina, or Peruvian bark. See QUINQUINA.

CHINA-*Root*, a medicinal root, brought from the Eaſt-Indies; and lately alſo from Peru, and New Spain.

It is of a ruddy brown colour, bordering on black, withoutſide; and white, or rediſh, within. It grows chiefly in fenny places, uſually covered with the ſea; which, upon its withdrawing, leaves great quantities thereof on the ſhore. The beſt is that which is firm, ruddy, and freſh.

It is eſteemed a ſweetener of the blood, and uſed as ſuch in decoction, in venereal and ſcorbutic caſes.

CHINESE, or *Chineſe Tongue*, the language of the people of China.

F. Le Comte obſerves, that the *Chineſe* has no analogy to any other language in the world: it only conſiſts of three hundred and thirty words, which are all monoſyllables; at leaſt, they are pronounced ſo ſhort, that there is no diſtinguiſhing above one ſyllable, or ſound, in them. But the ſame word, as pronounced with a ſtronger or weaker tone, has different ſignifications: accordingly, when the language is accurately ſpoke, it makes a ſort of muſic, which has a real melody, that conſtitutes the eſſence and diſtinguiſhing character of the *Chineſe* tongue.

As to *Chineſe characters*, they are as ſingular as the language: the *Chineſe* have not, like us, any alphabet, containing the elements, or, as it were, the principles of their words: in lieu of an alphabet, they uſe a kind of hieroglyphics; whereof they have above eighty thouſand.

CHIN-COUGH, a diſeaſe which children are chiefly ſubject to. It conſiſts in a violent and immoderate *coughing*, to a danger of ſuffocation. Letting of blood, and balſamics, are the uſual cure.

CHIRAGRA *, in medicine, the gout in the hands.

> * The word comes from the Greek χειρ, *manus*, hand; and αγρα, *captura*, ſeizing.

The *chiragra* has its ſeat in the carpus, or extreme part of the hand, or the ligaments and junctures of the fingers.

CHIROGRAPH *, CHIROGRAPHUM, was antiently a deed which, requiring a counterpart, was engroſſed twice on the ſame piece of parchment, counterwiſe; leaving a ſpace between, wherein was wrote *CHIROGRAPH*; through the middle whereof the parchment was cut, ſometimes ſtrait, ſometimes indentedly; and a moiety given to each of the parties.

> * The word is compounded of the Greek χειρ, hand; and γραφω, *ſcribo*, I write: *q. d.* hand-writing.

This was afterwards called *dividenda*, and *chartæ diviſæ*; and was the ſame with what we now call *charter-party*. See CHARTER-*Party*.

The firſt uſe of theſe *chirographs* with us, was in the time of king Henry III.

According to ſome, a deed was properly a *chirograph*, when it was ſubſcribed by the hand-writing of the vendor, or creditor, and delivered to the buyer, or debtor. Theſe authors make the *chirograph* differ from a *ſyngraph*, in this; that in the latter, the word *ſyngraph* was wrote in the middle, and cut through, in the manner juſt obſerved of *chirograph*. Thoſe authors, therefore, make the *ſyngraph* and the *chirograph* a different thing.

CHIROGRAPH was alſo antiently uſed for a fine: the manner of ingroſſing the fines, and cutting the parchment in two pieces, is ſtill retained in the office, called the *chirographer's office*.

CHIROGRAPHER *of Fines*, an officer in the common-pleas, who ingroſſes fines, acknowleged in that court, into a perpetual record (after they have been examined, and paſſed by other officers); and writes and delivers the indentures thereof to the party.

He makes two indentures; one for the buyer, the other for the ſeller: and a third indented piece, containing the effect of the fine, and called *the foot of the fine*; and delivers it to the *cuſtos brevium*.

The ſame officer alſo, or his deputy, proclaims all fines in court every term, and indorſes the proclamations on the backſide of the foot; keeping, withal, the writ of covenant, and the note of the fine.

CHIROMANCY *, the art of divining the fate, temperament, and diſpoſition, of a perſon, by the lines and lineaments of the hand: this is otherwiſe called *palmiſtry*.

> * The word comes from the Greek χεις, hand; and μαντεια, divination.

We have a great number of authors on this vain and trifling art: as Artemidorus, Fludd, and Johannes De Indagine. Taiſnerus, and M. De le Chambre, have done the beſt.

This laſt inſiſts on it, that the inclinations may be known from inſpecting the hand; there being a very near correſpondence between the parts of the hand, and the internal parts of the body, the heart, liver, &c. whereon the paſſions and inclinations much depend. He adds, however, that the rules and precepts of *chiromancy* are not ſufficiently warranted; the experiments, whereon they ſtand, not being well verified. He concludes, that there muſt be a new ſet of obſervations, made with juſtneſs and exactitude; in order to give *chiromancy* the form and ſolidity which an art or ſcience demands.

CHIROTONIA*, the impoſition of hands, in conferring any prieſtly orders. See IMPOSITION.

* The word comes from the Greek χειροτονια, the action of ſtretching out the hands: and becauſe the antients gave their ſuffrages by ſtretching out the hands, they gave the name *chirotonia* to the election of magiſtrates.

This cuſtom was firſt eſtabliſhed in Greece; as appears from an oration of Demoſthenes againſt Neæra, and that of Æſchines againſt Cteſiphon: thence it paſſed to the Romans. From prophane authors it paſſed to eccleſiaſtical ones; and was uſed by them, not only in ſpeaking of elections, but alſo of ordinations.

CHIRURGERY*, popularly called *Surgery*, the third branch of medicine; conſiſting in operations performed by the hand, for the cure of wounds, and other diſorders.

* The word *chirurgery* is formed from the Greek χειρ, *manus*, hand; and εργον, *opus*, operation.

Chirurgery may be defined, the art of curing wounds, and various diſeaſes, by the opening of veins, application of topics, and by inciſions and amputations of ſeveral parts of the body.

Chirurgery is divided into ſpeculative, and practical; one whereof does that in effect, which the other teaches to do.

All the operations of *chirurgery* are reduced under four kinds: the firſt whereof rejoins what has been ſeparated; and is called *ſyntheſis*.

The ſecond divides, with diſcernment, thoſe parts whoſe union is prejudicial to health; and is called *diæreſis*.

The third extracts, with art, foreign bodies; called *exæreſis*.

And the fourth, called *proſtheſis*, adds and applies what is wanting.

The principal things that come under the conſideration of *chirurgery* are, tumors, ulcers, wounds, diſlocations, and fractures.

Chirurgery has the advantage of medicine, in the ſolidity of its foundation, the certainty of its operations, and the ſenſibility of its effects; inſomuch that thoſe who deny medicine to be of any ſignificancy, yet allow the uſefulneſs of *chirurgery*.

Chirurgery is very antient; and even much more ſo than medicine, whereof it now makes a branch. It was, in effect, the ſole medicine of the firſt ages; they betaking themſelves to the cure of external diſorders, before they came to examine or diſcover what related to the cure of internal ones.

Apis, king of Egypt, is ſaid to be the firſt inventor of *chirurgery*; after him, Æſculapius compoſed a treatiſe of wounds and ulcers: he was ſucceeded by the philoſophers of the following ages, in whoſe hands *chirurgery* wholly lay: ſuch were Pythagoras, Empedocles, Parmenides, Democritus, Chiron, Pæon, Cleombrotus, who cured king Antiochus, *&c.*

Pliny tells us, upon the authority of Caſſius Hemina, that Archagathus was the firſt of the profeſſion that ſettled at Rome: that the Romans were wonderfully pleaſed with this *Vulnerarius*, as they called him, at his firſt coming, and ſhewed him ſome extraordinary marks of their eſteem; but that they were diſguſted at him afterwards, and nick-named him *Carnifex*, for his cruelty in cutting off limbs. Some pretend, that he was even ſtoned by them to death in the Campus Martius: but if he really came to ſuch an unlucky end, it is ſtrange Pliny ſhould take no notice of it. *Vid. Plin. Hiſt. Nat. l.* 29. *c.* 1.

Chirurgery was cultivated with much more earneſtneſs by Hippocrates, than by any of the preceding phyſicians: it is ſaid to have been perfected in Egypt by Philoxenus, who wrote ſeveral volumes on that ſubject Among the Greeks, Gorgias, Soſtrates, Heron, the two Apollonius's, Ammonius of Alexandria; and at Rome, Trypho the father, Euelpiſtus, and Meges, made it flouriſh, each in their time.

The more modern authors, who have contributed moſt to the perfection of *chirurgery*, are, Paræus, Fab. ab Aquapendente, Harvey, Wharton, Gliſſon, Du Laurence, Diemerbroeck, Vieuſſens, Barbette, Dionis, Charriere, Heiſter, *&c.*

Scultetus has publiſhed a deſcription of all the inſtruments uſed in *chirurgery*, under the title of *Armamentarium Chirurgicum*; and our countryman, Mr. Wiſeman, ſerjeant-*chirurgeon* to king Charles II. a folio volume of *chirurgical* treatiſes, containing practical obſervations, both in reſpect to the internals and externals, of a number of caſes in each branch of the art, from his own experience; under the title of *Several chirurgical treatiſes*. This work has been made uſe of ever ſince, by the moſt knowing of our Engliſh *chirurgeons*; and has been the foundation of moſt *chirurgical* treatiſes ſince its publication, *anno* 1676.

In England there are two diſtinct companies now occupying the ſcience or faculty of ſurgery; the one company called *barbers*, the other *ſurgeons*; which latter were not till very lately incorporated.—The two were united to ſue, and be ſued, by the name of maſters or governors and commonalty of the myſtery of Barbers and Surgeons of London. 32 *H.* VIII. *c.* 42.

No perſon uſing any barbery, or ſhaving, in London, was to occupy any ſurgery, letting of blood, or other matter; drawing of teeth only excepted.—And no perſon uſing the myſtery or craft of ſurgery was to occupy or exerciſe the feal or craft of barbery, or ſhaving; neither by himſelf, nor any other for his uſe. 32 *H.* VIII. *c.* 42.

By the ſame ſtatute, ſurgeons were obliged to have ſigns at their doors.

The French *chirurgeons*, being refuſed to be admitted into the univerſities, notwithſtanding that their art makes a branch of medicine, one of the four faculties; on pretence of its bordering a little on butchery, or cruelty; aſſociated themſelves into a brotherhood, under the protection of S. Coſmus, and S. Damian: on which account, according to the laws of their inſtitution, they are obliged to dreſs and look to wounds *gratis*, the firſt Monday of each month.

They diſtinguiſh between a *chirurgeon of the long robe*, and a *barber chirurgeon*: the firſt has ſtudied phyſic, and is allowed to wear a gown.

The ſkill of the other, beſide what relates to the management of the beard, is ſuppoſed to be confined to the more ſimple and eaſy operations in *chirurgery*; as bleeding, tooth-drawing, *&c.*

They were formerly diſtinguiſhed by badges: thoſe of the long gown bore a caſe of inſtruments; and the barber a baſon.

CHISSEL, an inſtrument much uſed in ſculpture, maſonry, joinery, carpentry, *&c.*

There are *chiſſels* of different kinds; though their chief difference lies in their different ſize and ſtrength, as being all made of ſteel well ſharpened and tempered: but they have different names, according to the different uſes to which they a e applied.—The *chiſſels* uſed in carpentry and joinery are, 1. The *former*, which is uſed firſt of all before the paring-*chiſſel*, and juſt after the work is ſcribed. 2. The *paring-chiſſel*, which has a fine ſmooth edge, and is uſed to pare off, or ſmooth the irregularities which the former makes. This is not ſtruck with a mallet, as the former is, but is preſſed with the ſhoulder of the workman. 3. *Skew-former*: this is uſed for cleanſing acute angles with the point, or corner of its narrow edge. 4. The *mortice-chiſſel*, which is narrow, but very thick and ſtrong, to endure hard blows; and it is cut to a very broad baſil: its uſe is, to cut deep ſquare holes in the wood, for mortices. 5. The *gouge*, which is a *chiſſel* with a round edge; one ſide whereof ſerves to prepare the way for an augre, and the other to cut ſuch wood as is to be rounded, hollowed, *&c.* 6. *Socket-chiſſels*, which are chiefly uſed by carpenters, *&c.* have their ſhank made with a hollow ſocket at top, to receive a ſtrong wooden ſprig, fitted into it with a ſhoulder. Theſe *chiſſels* are diſtinguiſhed, according to the breadth of the blade, into half-inch *chiſſels*, three quarters of an inch *chiſſels*, &c. 7. *Ripping-chiſſels*, which is a ſocket-*chiſſel* an inch broad; having a blunt edge, with no baſil to it: its uſe is to rip, or tear two pieces of wood aſunder, by forcing in the blunt edge between them.

CHITTING, in gardening.—A ſeed is ſaid to *chit*, when it firſt ſhoots its ſmall roots into the earth.

CHIVALRY, or CHEVALRY, in law, a tenure of land by knight-ſervice; whereby the tenant was antiently bound to perform ſervice in war, to the king, or the meſne lord of whom he held by that tenure.

By a ſtatute of 12 Car. II. all tenures by *chivalry*, *in capite*, *&c.* are aboliſhed.

CHIVES, or CHIEVES, in botany, the ſmall knobs growing on the ends of the fine threads, or ſtamina, of flowers: by Ray, and others, called alſo *apices*.

Dr. Grew calls the ſtamina, or threads themſelves, on which the apices are fixed, the *chives*.

CHLAMYS, in antiquity, a military habit, worn by the antients over the tunica.

Chlamys was the ſame, in time of war, that the *toga* was in time of peace; each belonged to the patricians. It did not cover the whole body, but chiefly the hind-part; though it alſo came over the ſhoulders, and was faſtened with a buckle on the breaſt. There were four or five kinds of *chlamys*; that of children, that of women, and that of men; which laſt was divided into that of the people, and that of the emperor.

CHLOROSIS*, in medicine, a feminine diſeaſe, vulgarly called the *green-ſickneſs*, *white-jaundice*, &c.

* The word *chloroſis* ſignifies greenneſs, verdure; formed from χλον, graſs.

Its uſual ſubjects are, girls, maids, and widows; or even wives, whoſe huſbands are deficient, *&c.* It gives a pale, yellow, or greeniſh tincture to the complexion, with a circle of violet under the eyes. The patient is melancholy and uneaſy; has frequently a low wandering fever, with an unequal pulſe, vomiting, heavineſs, liſtleſſneſs, drowſineſs, difficulty of breathing, longing for abſurd foods, *&c.*

It comes on, commonly, antecedent to, or about the time o the eruption of the menſes.—Though the ſtoppage of the menſes is not always the cauſe of this diſtemper; for they ſometimes, though but ſeldom, flow regularly, in the progreſs thereof. According to Etmuller, the ſuppreſſion of the menſes i rather the effect than the cauſe of this diſeaſe.

The cure is chiefly to be attempted by chalybeats and bitters. In the colder conſtitutions, decoctions of guaiacum are fou of uſe. See Supplement, article CHLOROSIS.

CHOCOLATE, a kind of cake, or confection, prepared o certain drugs; the baſis, or principal, whereof, is the ca nut.

The name *chocolate* is alſo given to a drink, prepared from the cake, of a duſky colour, ſoft, and oily; uſually drank ho and eſteemed not only an excellent food, as being very n riſhing, but alſo a good medicine; at leaſt a diet, for ke ing up the warmth of the ſtomach, and aſſiſting digeſtion.

The Spaniards were the firſt who brought *chocolate* into uſe in Europe; and that, perhaps, as much out of intereſt, to have the better market for their cacao-nuts, vanilla, and other drugs which their Weſt-Indies furniſh, and which enter the compoſition of *chocolate*; as out of regard to thoſe extraordinary virtues which their authors ſo amply enumerate in it. The qualities above-mentioned are all that the generality of phyſicians, and others, allow it.

Original manner of making CHOCOLATE.—The method firſt uſed by the Spaniards was very ſimple, and the ſame with that in uſe among the Indians: they only uſed cacao-nut, maiſe, and raw ſugar, as expreſſed from the canes, with a little achiotl, or rocou, to give it a colour: of theſe four drugs, ground between two ſtones, and mixed together in a certain proportion, thoſe barbarians made a kind of bread, which ſerved them equally for ſolid food, and for drink; eating it dry when hungry, and ſteeping it in hot water when thirſty.

This drink the Mexicans called *chocolate*, from *chocao*, ſound; and *alte*, or *atte*, water; *q. d.* water that makes a noiſe: from the noiſe which the inſtrument, uſed to mill and prepare the liquor, made in the water.

But the Spaniards, and other nations, afterwards added a great number of other ingredients to the compoſition of *chocolate*; all of which, however, vanilla alone excepted, ſpoil, rather than mend it.

Method of making CHOCOLATE, *now in uſe among the* Spaniards *of* Mexico.—The fruit, being gathered from the cacao-tree, is dried in the ſun, and the kernel taken out, and roaſted at the fire, in an iron pan pierced full of holes; then pounded in a mortar; then ground on a marble ſtone, with a grinder of the ſame matter, till it be brought into the conſiſtence of a paſte; mixing with it more or leſs ſugar, as it is to be more or leſs ſweet. In proportion as the paſte advances, they add ſome long pepper, a little achiotl, and, laſtly, vanilla: ſome add cinnamon, cloves, and aniſe; and thoſe who love perfumes, muſk and ambergris.

There is alſo a kind of Mexican *chocolate*, in the compoſition whereof there enter almonds and filberts; but 'tis rather to ſpare the cacao, than to render the *chocolate* better: and, accordingly, this is looked on as ſophiſticated *chocolate*.

The CHOCOLATE *made in* Spain differs ſomewhat from that made in Mexico: for, beſides the drugs uſed in this laſt, they had two or three kinds of flowers, pods of campeche, and generally almonds and hazel nuts. The uſual proportion, at Madrid, is, to an hundred kernels of cacao, to add two grains of Chilé, or Mexican pepper; or, in lieu thereof, Indian pepper; a handful of aniſe; as many flowers, called by the natives *vinacaxtlides*, or little ears; ſix white roſes in powder; a little machuſia; a pod of campeche; two drachms of cinnamon; a dozen almonds, and as many hazel nuts; with achiotl enough to give it a rediſh tincture: the ſugar and vanilla are mixed at diſcretion; as alſo the muſk and ambergris. They frequently work their paſte with orange-water, which they think gives it a greater conſiſtence and firmneſs.

The paſte is uſually made up into cakes, ſometimes into large rolls; and ſometimes the cakes are made up of pure *chocolate*, without any admixture; thoſe who uſe it being to add what quantity they pleaſe of ſugar, cinnamon, and vanilla, when in the water.

Among us, in England, the *chocolate* is chiefly made thus ſimple, and unmixed, though (perhaps not unadulterated) of the kernel of the cacao; excepting that ſometimes ſugar, and ſometimes vanilla, is added: any other ingredients being ſcarce known among us.

The neweſt *chocolate* is eſteemed the beſt; the drug never keeping well above two years, but uſually degenerating much before that time.

It is to be kept in brown paper, put up in a box; and that in another, in a dry place.

The manners of preparing the maſs into a liquor, with the proportions, are various: ordinarily, the *chocolate* is boiled in water, ſometimes in milk; and ſometimes, by good œconomiſts, in water-gruel: when boiled, it is milled, or agitated with a wooden machine for the purpoſe, and boiled again, till it be of the proper conſiſtence for drinking; then ſugared, if the maſs were pure; then milled afreſh, and poured off.

Note, the beſt *chocolate* is that which diſſolves intirely in the water; leaving no grounds, or ſediment, at the bottom of the pot.

There is a diſpute, among the caſuiſts, whether or no *chocolate* break the faſt? The negative is very ſtifly aſſerted by cardinal Brancaccio, who has wrote expreſly on the ſubject: though ſome have endeavoured to ſhew, that there is more nutritious juice in an ounce of cacao, than in a pound of beef, or mutton.

The quantity of *chocolate* made in New Spain is ſuch, that there are annually uſed twelve millions of pounds of ſugar in the preparation thereof. The Spaniards eſteem it the laſt misfortune that can befal a man, to be reduced to want *chocolate*: they are never known to leave it, excepting for ſome other liquor that will fuddle.

HOIR *, that part of a church, cathedral, *&c.* where the clergy and choriſters, or ſingers, are placed.

* The word, according to Iſidore, is derived *à coronis circumſtantium*; becauſe, antiently, the choriſters were diſpoſed round the altar to ſing: which is ſtill the manner of building altars among the Greeks.

The *choir* with us is diſtinguiſhed from the chancel, or ſanctuary, where the communion is celebrated: as alſo from the nave, or body of the church, where the people are placed.

The patron is ſaid to be obliged to repair the *choir* of a church; and the pariſhioners the nave.

The *choir* was not ſeparated from the nave, till the time of Conſtantine: from that time, the *choir* was railed in with a balluſtrade, with curtains drawn over; not to be opened till after the conſecration.

In the twelfth century they began to incloſe the *choir* with walls: but the antient balluſtrades have been ſince reſtored; out of a view to the beauty of the architecture.—The chantor is maſter of the *choir*.

In nunneries, the *choir* is a large hall, adjoining to the body of the church; ſeparated by a grate, where the religious ſing the office.

CHOLAGOGUE *, Χολαγωγος, a medicine which purges the bile downward.

* The word comes from χολη, bile; and αγειν, to lead, draw.

Of theſe ſome are ſimple, others compound; and both the one and the other are diſtinguiſhed into three kinds, with regard to their activity; the *benign*, the *moderate*, and the *violent*.

Of the firſt kind are, manna, caſſia, roſes, tamarinds, *&c.*

Of the ſecond are, ſena, rhubarb, aloes, *&c.*

Of the third, jalop, ſcammony, *&c.* See each under its article; MANNA, CASSIA, SENA, *&c.*

CHOLEDOCHUS *, in anatomy, a term applied to a canal, or duct, called alſo *ductus communis*; formed of the union of the porus bilarius, and ductus cyſticus.

* The word comes from the Greek χολη, choler; and δεχομαι, I receive, or contain.

The *choledochus ductus*, paſſing obliquely to the lower-end of the duodenum, ſerves to convey the bile from the liver to the inteſtines. Some have imagined, that it conveyed the bile from the liver to the gall bladder: but it being obſerved, that it is the duodenum, not the gall-bladder, that ſwells, upon blowing through this duct; it is evident, the bile contained therein is conveyed no-where elſe but to the duodenum. See BILE, LIVER, GALL-*Bladder*, &c.

CHOLER. See the article BILE.

CHOLERA-MORBUS, a ſudden overflowing, or eruption, of the bile, or bilious matters, both upwards, and downwards. See BILE.

It is ſuppoſed to have its riſe from the great abundance of bilious humours; which, being very acrimonious, vellicate the membranes of the ſtomach and inteſtines; and, by that means, occaſion unuſual and violent contractions.

It is very dangerous: whence the French antiently called it *Trouſſe-Galand*.

It has its name, either from the great quantity of *choler* it evacuates; or becauſe the matter is inceſſantly expelled at the inteſtines, which they antiently called *cholades*.

Dr. Sydenham obſerves, it generally attacks people about the latter end of ſummer; and proceeds, not unfrequently, from ſurfeits: that the cure depends upon large quantities of chicken-broth, drank ſo as to excite vomiting plentifully; and that the broth is alſo to be injected clyſterwiſe: after which, he ſays, the cure is to be completed by laudanum, given at proper intervals, and in proper doſes.

The remedy in the Indies for the *cholera-morbus*, or *mandechin*, is, to keep the patient from drinking; and to burn the ſoals of his feet. See Supplement, article CHOLERA MORBUS.

CHONDROGLOSSUM, in anatomy, a very ſmall muſcle of the tongue, mentioned by Verheyen, and ſeveral other authors, exceedingly ſhort and narrow; ariſing from the cartilaginous proceſſes of the os hyoides, and meeting in the middle of the baſis of the tongue, where it is inſerted, forming an arch under it.

This pair of muſcles is not found in all ſubjects; whence ſome have queſtioned its exiſtence: but nature takes ſo many liberties, in matters even of greater moment than a pair of muſcles; that we need not, on that ſcore, diſpute the veracity of ſo many authors as profeſs to have ſeen it.

CHOP-CHURCH, or CHURCH-CHOPPER, a name, or rather nick-name, given to parſons, who make a practice of exchanging benefices.

Chop-church occurs in an antient ſtatute as a lawful trade, or occupation; and ſome of the judges ſay, it was a good addition. Brook holds, that it was no occupation, but only a thing permiſſible by law.

CHOPIN, or CHOPINE, a French liquid meaſure; containing half their pint.

The Paris *chopin* is nearly equal to the Engliſh pint. A *chopin* of common water weighs a Paris pound. See PINT.

CHORD *, or CORD, primarily denotes a ſlender rope, or cordage.

* The word is formed of the Latin *chorda*, and that from the Greek χορδὴ, a gut; whereof ſtrings may be made.

CHORDS, or CORDS, in muſic, denote the ſtrings, or lines, by whoſe vibrations the ſenſation of ſound is excited; and by whoſe diviſions the ſeveral degrees of tune are determined.

They are called *cords*, or *chords*, from the Greek χορδὴ, a name which the phyſicians give to the inteſtines; in regard the ſtrings of muſical inſtruments are ordinarily made of guts: though others are made of braſs or iron wire; as thoſe of ſpinets, harpſicords, *&c.*

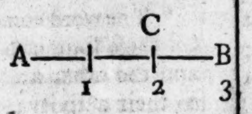
Chords of gold wire, in harpſicords, yield a ſound almoſt twice as ſtrong as thoſe of braſs: *chords*, or ſtrings, of ſteel, yield a feebler ſound than thoſe of braſs; as being both leſs heavy, and leſs ductile.

Mr. Perrault obſerves, that of late they have invented a way of changing the *chords*, to render the ſound ſtronger, without altering the tone.

The ſixth *chord* of baſs-viols, and the tenth of large theorbos, conſiſt of fifty threads, or guts: there are ſome of them 100 feet long, twiſted and poliſhed with equiſetum, or horſe-tail.

For the diviſion of CHORDS, *ſo as to conſtitute any given interval*, the rules are as follow: 1. *To aſſign ſuch a part of a* chord AB, *as ſhall conſtitute any concord*, *v. g.* a fifth, or any other interval, with the whole.

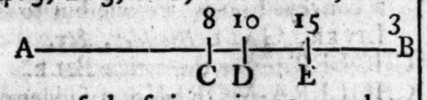
Divide AB into as many parts, as the greateſt number of the interval has units; *v. g.* the fifth being 2 : 3, the line is divided into 3. Of theſe take as many as the leſſer number, *v. g.* 2 = AC; then is AC the part ſought: that is, two lines, whoſe lengths are to each other as AB to AC, make a fifth.



Hence, if it be required to find ſeveral different ſections of the line AB, *v. g.* ſuch as ſhall be 8ve, 5th, and 3d *g*: reduce the given ratios 1 : 2, 2 : 3, and 4 : 5, to one fundamental; the ſeries becomes 30 : 24, 20 : 15. The fundamental is 30; and the ſections ſought are 24, the third *g*; 20, the fifth; and 15, the octave.

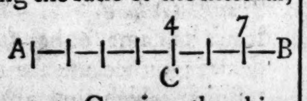
2. *To find ſeveral ſections of a line* AB, *that from the leaſt, gradually to the whole, ſhall contain a given ſeries of intervals in any given order*; viz. ſo as the leaſt to the next greater contain a third *g*; that to the next greater, a fifth; and that to the whole, an octave.

Reduce the three ratios 4 : 5, 2 : 3, 1 : 2, to one ſeries; hence we have 8 : 10 : 15 : 30: divide the line into the number of parts of the greateſt extreme of the ſeries, *viz.* 30; we have the ſections ſought at the points of diviſion anſwering the ſeveral numbers of the ſeries, *viz.* at the points C, D, and E; ſo as AC to AD is a third, AD to AE a fifth, and AE to AB octave.



3. *To divide a line* AB *into two parts*, *to contain betwixt them any interval*, *v. g.* a fourth.

Add together the numbers containing the ratio of the interval, *v. g.* 3 : 4; and the line into as many parts as the ſum, *v. g.* 7; the point of diviſion anſwering to any of the given numbers, *v. g.* 4, or C, gives the thing ſought.



4. *For the harmonical diviſion of* CHORDS. *To find two ſections of a line, which with the whole ſhall be in harmonical proportion, with regard to their quantity.*

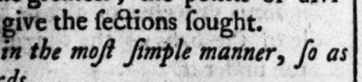
Take any three numbers in harmonical proportion, as 3, 4, 6; and divide the whole line into as many parts as the greateſt of theſe three numbers, *v. g.* 6; and at the points of diviſion anſwering the other two numbers, *v. g.* 3 and 4, you have the ſections ſought.

5. *To find two ſections of a line, which together with the whole ſhall be harmonical, with reſpect to quality, or tune.*

Take any three numbers concords with each other, *v. g.* 2, 3, and 8, and divide the line by the greateſt; the points of diviſion anſwering the other two, give the ſections ſought.

6. *To divide a* CHORD AB, *in the moſt ſimple manner, ſo as to exhibit all the original concords.*

Divide the line into two equal parts at C, and ſubdivide the part CB into equal parts at D; and again, the part CD into two equal parts at E. Here AC to AB is an octave; AC to AD a fifth; AD to AB a fourth; AC to AE a third *g*; AE to AD a third *l*; AE to EB a ſixth *g*, and AE to AB a ſixth *l*.



CHORD is alſo uſed, in muſic, for the note or ſtring to be touched, or ſounded; in which ſenſe, it is applicable to all the intervals of muſic.

CHORD, CHORDA, in geometry, a right line connecting the two extremes of an arch.

Or, it is a right line, terminated at each extreme in the circumference of a circle, without paſſing through the center; and dividing the circle into two unequal parts, called *ſegments.* —Such is the line AB, *Tab. Geometry*, *fig.* 6.

CHORD *of the complement of an arch* is the *chord* that ſubtends the reſt of the arch; or ſo much as makes up the arch a ſemicircle.

The *chord* is perpendicular to a line drawn from the center of the circle to the middle of the arch, as CE; and has the ſame diſpoſition thereto, as the *cord*, or ſtring of a bow, has to the arrow: which occaſioned the antient geometricians to call this line the *chord* of the arch, and the other the *ſagitta*, or arrow; the former of which names is ſtill continued, though the latter is diſuſed. What the antients called *ſagitta*, is now termed the *verſed ſine*.

Half the *chord* of the double arch, B*o*, is what we now call the *right ſine*; and the exceſs of the radii beyond the *chord*, *o*E, the *verſed ſine*.

The *chord* of an angle, and the *chord* of its complement to a ſemicircle, are the ſame thing: the *chord* of fifty degrees is alſo the *chord* of 130.

It is demonſtrated, in geometry, that the radius CE, biſecting the *chord* BA in D, does alſo biſect the arch in E, and is perpendicular to the *chord* AB; and *vice verſa*: and again, if the right line NE biſect the *chord* AB, and be perpendicular thereto; that it paſſes through the center, and does biſect both the arch AEB, and the circle ANB.

Hence we derive ſeveral uſeful corollaries: as, 1. To divide a given arch AB into two equal parts; draw a perpendicular to the middle point D of the *chord* AB; this biſects the given arch AB.

2. To deſcribe a circle, that ſhall paſs through any three points A, B, C, *fig.* 7. From A and C deſcribe arches interſecting in D and E; and alſo others, G and H, from C and B: draw the right lines DE and GH; the point of interſection I, is the center of the circle to be deſcribed through A, B, and C.

Demonſtration. For the points A, B, and C, are in the periphery of ſome circle; and therefore, the lines AC and CB are *chords*: but ED is perpendicular to AC, and GH to BC; ED biſects AC, and GH biſects BC; wherefore each paſſes through the center. Now as DE and GH only interſect in I; I will be the center of a circle, paſſing through the given points A, C, and B.

Hence, aſſuming three points in the periphery, or arch, of any circle; the center may be found, and the given arch completed: hence, alſo, if three points of one periphery do agree or coincide with three points of another; the whole peripheries agree, and therefore the circles are equal.

And hence, laſtly, every triangle may be inſcribed in a circle.

The chord *of an arch* AB (*fig.* 6.), *and the radius* CE, *being given*; *to find the* chord *of the half-arch* AE. From the ſquare of the radius CE, ſubtract the ſquare of half the given *chord* AD, the remainder is the ſquare of *o*C; from which, extract the ſquare root = DC: this ſubtracted from the radius EC, leaves *o*E. Add the ſquares of AE, and E*o*; the ſum is the ſquare of AE: whence, the reſt being extracted, we have the *chord* of the half-arch AE.

Line of CHORDS is one of the lines of the ſector and plain ſcale. See its deſcription and uſe under the words SECTOR, and PLAIN SCALE.

CHORD, CHORDA, in anatomy, a little nerve extended over the membrana tympani, or drum of the ear. See TYMPANUM.

Anatomiſts are not agreed about the uſe of the *chorda tympani*: ſome ſay, it ſerves to vary and modify the ſound of the tympanum, in the ſame manner as the ſtrings, or braces, ſtretched over the war-drum: others will have it to be no more than a branch of the fifth pair.

CHORDAPSUS*, in medicine, a diſeaſe of the inteſtines, otherwiſe called *volvulus*, the *iliac paſſion*, and *miſerere mei*: though others make it a diſtinct ſpecies of the *miſerere*.

* The word comes from the Greek χορδὴ, gut; and *απτω*, *necto*, I knot, or tye.

Galen defines it, a tumidity, or inflation, of the ſmall inteſtines, which makes them appear filled, and ſtretched like a *cord*. Archigenes makes it a kind of *miſerere*; conſiſting in a tumour in a certain place of the ſmall inteſtines, which ſinks in, and gives way to the hand, when preſſed: he adds, that 'tis exceeding dangerous, and ordinarily kills in three or four hours, unleſs it comes to ſuppuration; which, however, does not take away all the danger.

It is probable, however, that the *chordapſus* is, in reality, nothing elſe but the *miſerere* not well underſtood. Celſus informs us, that in his time they were eſteemed the ſame thing.

CHORDEE, in medicine, an inflammation and contraction of the frænum, and under-part of the penis; ſo as to render erection painful.

It happens in gonorrhæas, and is generally proportional to the degree of the virus received: ſo that, in virulent gonorrhœas, it is uſually a very troubleſome ſymptom.

It proceeds from the acrimony of the matter which runs from the urethra, irritating the under-part of the penis; by which it is, as it were, tied or held forcibly downwards in erection, eſpecially its *frænum*. When the acrimony is conſiderable, it ſometimes gives riſe to unnatural erections, or the ſymptom called a *priapiſm*.

If the *chordee* be violent, or does not decreaſe proportionally to the other ſymptoms in gonorrhœas, an emetic of turbith mineral is uſually given with ſucceſs; it cauſing a revulſion from the part.

CHOREA *ſancti Viti*, in medicine, a diſtemper which ſome authors reckon as an hyſterical caſe; or a ſpecies of furor uterinus.

It is ſuppoſed to proceed from a turgency and repletion of hot juices, eſpecially in the uterine veſſels, which raiſes violent motions; and that only females are affected by it: but Dr. Sydenham more properly obſerves it to be an univerſal convulſion, which ſometimes continues ſeveral weeks, nay months, without intermiſſion.

Thoſe affected with this diſeaſe, are continually in ſtrange motions with their head, legs, and arms; ſo that they are unfit to feed themſelves.—It differs from other convulſions, in that the motions are not painful, nor are any of the extremities or parts forcibly contracted, or extended for any time. Boys and girls are moſt ſubject to this diſeaſe, and that from ten years of age to puberty, tho' the latter oftener than the former.

It ſometimes precedes the firſt eruption of the menſes; in which caſe, proper cathartics, with calomel and deobſtruents, are generally uſed; otherwiſe evacuations and antiepileptics, as in other nervous diſtempers.

It takes the name *chorea ſancti Viti*, or St. Vitus's dance, from the chapel of S. Vitus; becauſe it was ſuppoſed to ſeize perſons about May, which was the time of the year they viſited that chapel, and to make them leap and dance about in a ſtrange manner. See Supplement, article VITI CHOREA.

CHOREPISCOPUS *, an epiſcopal officer in the antient church, about whoſe function the learned are extremely divided.

* The word comes from the Greek χωρος, *a region*, or little country, and επισκοπος, a *biſhop*, or *overſeer*.

M. de la Roque thinks, that the *chorepiſcopi* were the country biſhops, and had the ſame authority in villages, that the biſhops had in cities; but that, by degrees, as the church flouriſhed, the country biſhops grew too proud for the country life; and imagined the epiſcopal honour debaſed, and rendered contemptible, in a rural retreat. Accordingly, the Sardic council prohibited the conſecration of biſhops in the country, or in little towns; that the epiſcopal character might always be ſuſtained by the ſplendor of great cities.

M. du Bois adds, that though the *chorepiſcopi* exerciſed moſt of the epiſcopal functions in country towns, *&c.* yet they were not ordained like biſhops, nor veſted with the whole authority of that order, but were only a ſtep above mere prieſts.

M. le Maitre is of opinion, that the office of a *chorepiſcopus*, which is that now diſcharged by the rural deans, was to overlook, under the biſhops, thoſe pariſhes that were at a diſtance from the ſee in the country. He adds, that they were aboliſhed, by reaſon they uſurped the authority of the biſhops.

Others, again, ſay, the *chorepiſcopi* were properly what we now call *biſhops in partibus*; to whom, in quality of ſuffragans, were committed the adminiſtration of dioceſes, during the biſhop's abſence.

Others rather think, the inſtitution of *chorepiſcopi* gave occaſion to that of the *epiſcopi in partibus*; which laſt, however, have privileges that the others had not.

Laſtly, others take the *chorepiſcopi* to be no more than prieſts, veſted by the biſhops with moſt of their authority, in country places.

The council of Antioch, held in 342. appoints, 'That thoſe 'in burghs and villages, called *chorepiſcopi*, know the bounds 'preſcribed them; they may ordain readers, ſubdeacons, 'and exorciſts, but not prieſts or deacons without the biſhop 'whereon they depend; and the *chorepiſcopus* ſhall be or'dained by the biſhop of the city.'

Pope Leo, in 936. ſays, the *chorepiſcopi* may not ordain prieſts, or conſecrate churches: yet pope Nicolas, in a letter to Raoul, in the ninth century, declares, that the *chorepiſcopi* ſhall have the epiſcopal functions; and that the ordinations of prieſts and deacons performed by them are valid.

The firſt time we read of *chorepiſcopi* in the eaſt, is in the beginning of the fourth century; and in the weſt, about the year 439. They ceaſed, both in the eaſt and weſt, in the tenth century.

HOREPISCOPUS * is alſo the name of a dignity ſtill ſubſiſting in ſome cathedrals, particularly in Germany; ſignifying the ſame with *chori epiſcopus*, or biſhop of the choir.

* The word, in this ſenſe, does not come from χωρα, *place*, but χορος, *choir*, &c.

In the church of Cologne, *&c.* the firſt chantor is called *chorepiſcopus*.

HOREUS, χορειος, a foot in the antient poetry, more commonly called *trochæus*. See TROCHEE.

HORIAMBUS, in the Latin poetry, a foot compounded of a choreus, or trochæus, and an iambus. See FOOT.

It conſiſts of four ſyllables; of which the firſt and laſt are long, and the two middle ones ſhort: as filiŏlŭm.

HORION *, the exterior membrane which inveſts the fœtus in the womb.

* The word comes from the Greek χωρειν, *capere*, to contain.

It is very thick and ſtrong; on the inſide, where it joins another membrane, called *amnios*, very ſmooth; but rough and uneven withoutſide; interſperſed with a great number of veſſels, and faſtened to the matrix, or womb, by means of the placenta, which adheres very cloſely to it.

This membrane is found in all animals.

The *chorion*, with the amnios and placenta, make what we all the *Secundine*, or after-birth. See SECUNDINE.

CHORIST, or CHORISTER, a chantor or ſinger in the choir.

CHOROBATES *, a kind of water-level, uſed among the antients; compoſed of a double ſquare, in form of a T, deſcribed by Vitruvius.

* The word comes from the Greek χωροϐατειν, to over run a country.

CHOROGRAPHY *, the art of making a map, or deſcription of ſome country or province.

* The word comes from the Greek χωρος, *region*, *country*, *place*.

Chorography is diſtinguiſhed from geography, as the deſcription of a particular country is from that of the whole earth. See GEOGRAPHY.

From *topography* it is diſtinguiſhed, as the deſcription of the ſame country is from that of a ſingle place, town, or diſtrict in it.

CHOROIDES *, or CHOROEIDES, in anatomy, a term applied to ſeveral parts of the body; bearing ſome reſemblance to the chorion.

* The word is formed from the Greek χοριον, *chorion*, *and* ειδος, *image*, *likeneſs*.

CHOROIDES is particularly uſed for the inner membrane which immediately inveſts the brain; ſo called as being intermingled with a great number of blood-veſſels, like the chorion; but more uſually denominated the *pia mater*, or *meninx tenuis*.

Plexus, or *Lacis* CHOROIDES, is a knot of veins and arteries in the anterior ventricle of the brain, woven out of the branches of the carotid.

CHOROIDES is alſo applied to the inner, and poſterior tunic of the eye, immediately under the ſcletorica.

It is ſoft, thin, and black; and its inner, or concave ſurface, is very ſmooth and polite.—It has its name from its being interſperſed with veſſels.—Its anterior part is called the *uvea*.

M. Mariotte maintains, that viſion is performed rather in the *choroides* than the retina: in which he agrees with Bar. Torinus, and is ſeconded by M. Mery; but moſt other authors are of a different ſentiment.

Next under the *choroides* is the retina. Ruyſch, indeed, ſays, he has found another tunic between the *choroides* and retina; and denominates it from himſelf, *tunica Ruyſchiana*. He adds, that it grows ſo firmly to the *choroides*, that it is overlooked in the common diſſections.

But Verheyen, though he found the *choroides* of a bird diviſible into two membranes, could never ſeparate thoſe of the human eyes; and therefore he thinks there needed not any new name. The *choroides* is black in men; in lions, camels, bears, ſheep, cattle, dogs, cats, and moſt fiſhes, it is of a ſhining colour, like the brilliance of ſilver, or the luſtre of oriental pearl; and makes what naturaliſts call the *tapis*, or colour of the eye.

CHORUS, in dramatic poetry, one, or more perſons, preſent on the ſtage during the repreſentation, and ſuppoſed to be by-ſtanders thereto, without any particular ſhare or intereſt in the action.

Tragedy, in its origin, M. Dacier obſerves, was no more than a ſingle *chorus*, who trod the ſtage alone, and without any other actors; ſinging dithyrambics, or hymns in honour of Bacchus. Theſpis, to relieve the *chorus*, added an actor, who rehearſed the adventures of ſome of their heroes. Æſchylus, finding a ſingle perſon too dry an entertainment, added a ſecond; and at the ſame time greatly reduced the ſinging of the *chorus*, to make more room for the recitation.

Every thing introduced between the four ſongs of the *chorus*, they called by the term *epiſode*; and thoſe four ſongs made the four intervals, or acts of the piece.

But when once tragedy began to be formed, thoſe recitatives, or epiſodes, which at firſt were only intended as acceſſory parts, to give the *chorus* a breathing time, became now the principal parts of the performance: and whereas, before, they were taken from various ſubjects, they were now all drawn from one and the ſame.

The *chorus*, by degrees, became inſerted and incorporated into the action, to which at firſt it was only intended as an addition or ornament. Sometimes the *chorus* was to ſpeak, and then their chief, whom they called *Coryphæus*, ſpoke in behalf of all the reſt: the ſinging was performed by the whole company; ſo that when the Coryphæus ſtruck into a ſong, the *chorus* immediately joined him.

Beſides the four ſongs, which made the diviſion of the piece, and which were managed by the *chorus*, the *chorus* ſometimes alſo joined the actors in the courſe of the repreſentation, with their plaints and lamentations; on occaſion of any unhappy accidents that befel them.

But the proper function of the *chorus*, when tragedy was formed, and that for which it ſeemed chiefly retained, was to ſhew the intervals of the acts: while the actors were behind the ſcenes, the *chorus* engaged the ſpectators; their ſongs uſually turned on what was juſt exhibited; and were not to contain any thing but what was ſuited to the ſubject, and had a natural connexion with it: ſo that the *chorus* concurred with the actors for advancing the action.

It is a fault obſerved in Euripides's tragedies, that his *chorus's* are detached from the action, and not taken from the ſame ſubject. There were ſome other poets, who, to ſave the pains of compoſing *chorus's*, and adapting them to the piece, contented themſelves with invented ſongs, which had no relation at all to the action. Theſe foreign *chorus's* were the leſs pardonable, as the *chorus* was eſteemed to act a part in the piece; and to repreſent the ſpectators, who were looked on as intereſted therein; inſomuch that the *chorus* was not always to be mute, even in the courſe of the acts. In the modern tragedies, the *chorus* is laid aſide; and the muſic ſupplies its place. M. Dacier looks on this retrenchment as of ill conſequence; and thinks it robs tragedy of a great part of its luſtre. He adds, that it is ridiculous to have a tragic action broken and interrupted by impertinent flouriſhes from the muſic-box: and to have the ſpectators, who are ſuppoſed to be moved by the repreſentation, become all of a ſudden calm and eaſy, break off at the height of a paſſion, and amuſe themſelves peaceably with a foreign entertainment. The re-eſtabliſhment of the *chorus* he judges neceſſary, not only for the embelliſhment and regularity of the piece; but alſo, in regard it was one of its principal functions, to redreſs and correct any extravagancies that might fall from the mouths of the actors, when under any violent paſſion, by prudent, and virtuous reflections.

That which occaſioned the ſuppreſſion of the *chorus*, was its being incompatible with certain complots, and ſecret deliberations of the actors. For it is in no-wiſe probable, that ſuch machinations ſhould be carried on in the eyes of perſons intereſted in the action. As the *chorus*, therefore, never went off the ſtage, there ſeemed a neceſſity of laying it aſide, to give the greater probability to theſe kind of intrigues, which require ſecrecy.

M. Dacier obſerves, there was a *chorus*, or grex, alſo in the antient comedy; but this too is ſuppreſſed in the new: chiefly becauſe it was made uſe of to reprove vices, by attacking particular perſons.

The *chorus* in comedy was at firſt no more than a ſingle perſon, who ſpoke in the antient compoſures for the ſtage; the poets, by degrees, added to him another; then two, afterwards three, and laſt more: ſo that the moſt antient comedies had nothing but the *chorus*, and were only ſo many lectures of virtue.

To give the **Chorus**, among the Greeks, was to purchaſe a dramatic piece of the poet, and defray the expences of its repreſentation.

The perſon who did this was called *choragus*. At Athens, the office of choragus was impoſed on the archon; and at Rome on the ædiles.

Chorus is likewiſe uſe in muſic, where, at certain periods of a ſong, the whole company are to join the ſinger in repeating certain couplets, verſes, or clauſes.

CHOSE, *thing*: this word, in law, is uſed in various circumſtances, and with various epithets; as,

Chose *in Action*, is not any thing corporeal, but only a right, *viz.* an annuity, obligation, covenant, *&c.*

Choſe in action, may alſo be called *choſe in ſuſpenſe*, as having no real exiſtence, and not being properly in poſſeſſion.

Chose *Local*, is ſomething annexed to a place, *v. g.* a mill.

Chose *Tranſitory*, ſomething moveable, and which may be tranſported from place to place.

CHRISM, *Χρισμα*, oil conſecrated by the biſhop, and uſed in the Romiſh, and Greek churches, in the adminiſtration of baptiſm, confirmation, ordination, and extreme unction.

The *chriſm* is prepared on Holy Thurſday with a world of ceremony. In Spain, it was antiently the cuſtom for the biſhop to take one third of a ſol for the *chriſm* diſtributed to each church; on account of the balſam that entered its compoſition. Du Cange obſerves, there are two kinds of *chriſm*; the one prepared of oil and balſam, uſed in baptiſm, confirmation, and ordination; the other of oil alone, conſecrated by the biſhop, uſed antiently for the catechumens, and ſtill in extreme unction.

The Maronites, before their reconcilement with Rome, beſides oil and balſam, uſed muſk, ſaffron, cinnamon, roſes, white frankincenſe, and ſeveral other drugs mentioned by Rynaldus, in 1541. with the doſes of each. The jeſuit Dandini, who went to mount Libanus in quality of the pope's nuncio, ordained, in a ſynod held there in 1596. that *chriſm*, for the future, ſhould be made only of two ingredients, oil and balſam; the one repreſenting the human nature of Jeſus Chriſt, the other his divine nature.

The action of impoſing the *chriſm*, is called *chriſmation*: this the generality of the Romiſh divines hold to be the next matter of the ſacrament of confirmation.

The *chriſmation* in baptiſm is performed by the prieſt; that in confirmation by the biſhop: that in ordination, *&c.* is more uſually ſtiled *unction*.

Chrism *Pence*, **Chrismatis** *denarii*, or **Chrismales** *denarii*, a tribute antiently paid to the biſhop by the pariſh-clergy, for their *chriſm*, conſecrated at Eaſter for the enſuing year: this was afterwards condemned as ſimoniacal.

CHRISOM, **Chrismale**, was antiently the face-cloth, or piece of linen laid over the child's head when it was baptized.

Whence, in our bills of mortality, children who die in the month are called *chriſoms*.—The time between the child's birth and baptiſm, was alſo called *chriſomus*.

CHRIST *, an appellation uſually added to Jeſus: and, together therewith, denominating the *Meſſiah*, or ſaviour of the world. See **Messiah**.

* The word in the original Greek, χριστὸς, ſignifies *anointed*, of χρίω, *inungo*, I anoint.

Sometimes the word *Chriſt* is uſed ſingly, by way of antonomaſis, to denote a perſon ſent from God, an anointed prophet, or prieſt.

Order of **Christ**, a military order, founded in 1318. by Dionyſius I. king of Portugal, to animate his nobles againſt the Moors.

Pope John confirmed it in 1320. and appointed the knights the rule of St. Bennet. Alexander VI. permitted them to marry. The order became afterwards inſenſibly reunited to the crown of Portugal; and the king took upon him the adminiſtration thereof.

The arms of the order are, gules, a patriarchal croſs, charged with another croſs argent. They had their reſidence, at firſt, at Caſtromarin; afterwards they removed to the city of Thomar, as being nearer to the Moors of Andaluſia, and Eſtramadura.

Christ is alſo the name of a military order in Livonia, inſtituted in 1205. by Albert biſhop of Riga. The end of their inſtitution was to defend the new Chriſtians who were converted every day in Livonia, but were perſecuted by the heathens.

They wore on their cloaks a ſword with a croſs over it; whence they were alſo denominated *brothers of the ſword*.

CHRISTENING. See the article **Baptism**.

CHRISTIAN, ſomething that relates to Chriſt. See **Christ**.

The king of France bears the title, or ſurname, of the *moſt Chriſtian king*, *rex Chriſtianiſſimus*. The French antiquaries trace the origin of the appellation up to Gregory the Great; who, writing a letter to Charles Martel, occaſionally gave him that title, which his ſucceſſors have ſince retained.

Lambecius, in the IIId tome of his catalogue of the emperor's library, holds, that the quality of *moſt Chriſtian* was not aſcribed to the antient French kings, Louis le Debonair, *&c.* as kings of France, but as emperors of Germany: but the French hiſtorians endeavour to refute this plea.

Christian *Church*. See the article **Church**.

Christian *Court*, *Curia* **Christianitatis**, denotes the eccleſiaſtical or biſhop's *court*; in contradiſtinction to civil courts, which are called *king's courts*, *curiæ domini regis*.

Christian *Name*, that given at baptiſm. See **Name**.

Christian *Religion*, that inſtituted by Jeſus Chriſt.

Christian is peculiarly and abſolutely uſed for a perſon who believes in Chriſt, and is baptized in his name.

The name *Chriſtian* was firſt given at Antioch, to ſuch as believed in Chriſt, as we read in the Acts: till that time they were called *diſciples*.

Christians *of St. John*, a corrupt ſect of *Chriſtians*, very numerous in Baſſora, and the neighbouring towns.

They formerly inhabited along the river Jordan, where St. John baptized; and it was thence they had their name. But after the Mahometans became maſters of Paleſtine, they retired into Meſopotamia and Chaldea.

They hold an anniverſary feaſt of five days; during which, they all go to their biſhops, who baptize them with the baptiſm of St. John: their baptiſm is always performed in rivers, and that only on ſundays.

They have no notion of the third Perſon in the Trinity; nor have they any canonical books, but abundance full of charms, *&c.* Their biſhopricks deſcend by inheritance, as our eſtates do; though they have the ceremony of an election.

Christians *of St. Thomas*, or *San Thoma*, a ſect of antient *Chriſtians*, found in the Eaſt-Indies, when the Europeans touched at the port of Calecut; who pretend to be deſcended from thoſe St. Thomas converted in the Eaſt-Indies: whence the name.

The natives call them, by way of contempt, *Nazarenes*; their more honourable appellation is *Mappuleymer*. See **Thomæan**.

Some learned men in Europe ſay, it was not St. Thomas the apoſtle that converted that country, but another St. Thomas: others ſay, it was a Neſtorian merchant, called *Thomas*. It is certain they are Neſtorians, and have been ſo a long time; inſomuch that *Chriſtians* of St. Thomas, now paſſes for the name of a ſect.

They have a patriarch, who reſides at Moſul.—The pope has made ſeveral attempts to reduce them under his obedience, but to no purpoſe.

CHRISTMAS, the feaſt of the nativity of Jeſus Chriſt.

It appears from S. Chryſoſtom, that in the primitive times, *Chriſtmas* and Epiphany were celebrated at one and the ſame feaſt: that father obſerves, it was but of a little while that *Chriſtmas* had been celebrated at Antioch on the twenty-fifth of December, as a diſtinct feaſt; and that the uſe thereof came from the weſt. The Armenians made but one feaſt of them, as low as the 12th century.

RISTOLYTI *, a ſect of heretics mentioned by Damaſcenus; ſo called, becauſe they deſtroyed the humanity of Chriſt: maintaining, that he deſcended into hell, body and ſoul; and that he left both there; aſcending to heaven with his divinity alone.

* The word comes from the Greek Χειςος, *Chriſt*, and λυω, I *reſolve*.

ROMA *, in rhetoric, a colour, or fair pretence.

* The word is Greek, χρωμα, which literally denotes *Colour*.

ROMA, in muſic. See the article CHROMATIC.

ROMATIC, in the antient muſic, the ſecond of the genera, or kinds, in which the conſonant intervals were ſubdivided into their concinnous parts.

The other two kinds were, the *Enharmonic*, and the *Diatonic*.

The *Chromatic* abounds in ſemitones: it had its name, either by reaſon the Greeks marked it with the character of colour, which they call χρωμα; or, as P. Parran ſuggeſts, becauſe the *Chromatic* kind is a medium between the other two, as colour is between black and white: or elſe becauſe the *Chromatic* kind varies and embelliſhes the diatonic kind, by its ſemitones; which have the ſame effect in muſic, with variety of colours in painting.

Ariſtoxenus divides the *Chromatic* genus into three ſpecies; the *Molle*, *Hemiolion*, and *Tonicum*: Ptolemy into *Molle* or *Antiquum*, and *Intenſion*.

Theſe ſpecies were alſo called *Chroai*, or colours of the genera: the molle expreſſes a progreſſion by ſmall intervals, the intenſum by greater.

The *Chromatic* and enharmonic kinds, only contain the ſmalleſt of the diatonic degrees; ſo that they have the ſame proportion to the diatonic, as fractions have to integers.

Boethius, and after him Zarlin, attribute the invention of the *Chromatic* genus to Timotheus a Mileſian, in the time of Alexander the Great. The Spartans baniſhed it their city, by reaſon of its ſoftneſs.

Mr. Malcolm obſerves, that we are at a loſs what uſe the antients could make of theſe diviſions and ſubdiviſions into genera and ſpecies. All acknowleged the diatonic to be the true melody; the others ſeem only humorous irregularities, calculated to pleaſe the fancy by their novelty and oddneſs; and were beſides ſo very difficult, that few, if any, are ſaid to have ever practiſed them accurately. See MUSIC.

ROMATIC is alſo uſed, in painting, for the colouring; which makes the third part of the art of painting.

RONIC *, CHRONICAL, in medicine, is applied to a ſlow diſeaſe, which laſts a long time; at leaſt upwards of forty days: ſuch as are the gout, dropſy, aſthma, &c.

* The word comes from the Greek χρονος, *time*.

Chronic diſeaſes ſtand in oppoſition to acute diſeaſes, which are ſpeedy, and haſten to a criſis; as fevers, ſmall-pox, &c.

Chronic diſeaſes are uſually owing either to ſome natural defect in the conſtitution; or to an irregular manner of living.

Moſt of the *Chronical* diſeaſes, ſays Dr. Cheyne, the infirmities of old age, and the ſhort periods of the lives of Engliſhmen, are owing to repletion: this is evident hence, that evacuation of one kind or another, is nine parts in ten of their remedy.

The ſources of *Chronical* diſtempers, ſays the ſame author, are, 1. Viſcidity in the juices, or the over-largeneſs of their conſtituent particles; which, not being ſufficiently broken by the concoctive powers, ſtop or retard the circulation. Or, 2. Too great abundance of ſharp acrimonious ſalts; whereby the juices themſelves are rendered ſo corroſive, as to burſt or wear out the ſolids. Or, 3. A relaxation, or want of due force and ſpringineſs of the ſolids themſelves.

An exceſs in the quantity of our meat and drinks begets the firſt; the bad condition of the ſame foods the ſecond; and both together, with want of due exerciſe, the third.

RONICLE, CHRONICON, denotes a hiſtory digeſted in order of time; though the term is ſeldom uſed but in ſpeaking of our old Engliſh hiſtories, as Holinſhead's *Chronicle*, Stow's *Chronicle*, &c.

RONOGRAM *, a kind of compoſition, whoſe numeral letters, joined together, make up ſome date, or epocha. See ANAGRAM.

* The word is compoſed of χρονος, *time*, and γραμμα, *letter*.

RONOLOGY *, the art of meaſuring and diſtinguiſhing time; or the doctrine of epochas, &c.

* The word is compounded of the Greek χρονος, *time*, and λογος, *diſcourſe*.

turmius divides *Chronology* into five diſtinct branches; *viz.* metaphyſical, phyſical, political, hiſtorical, and eccleſiaſtical; according to the various relations, or habitudes, wherein time is conſidered; *viz.* as in itſelf; as connected and ſubjected to the affections, ſtates, and alterations of natural things; as accommodated to civil uſes; as matched with events that paſs in the world; and particularly, as it relates to the celebration of Eaſter.

There is more difficulty in *Chronology* than every one is aware of: it requires not only the knowlege of aſtronomy and geography, and conſequently that of arithmetic, geometry, and trigonometry, both plain and ſpherical; but alſo a world of application to the antient monuments. Its uſe is very great: it is called one of the eyes of hiſtory; and ſerves many good purpoſes in theology.

The more eminent writers on *Chronology*, among the antients, are Julius Africanus in the III^{d} century; Dionyſius Exiguus, Euſebius, and Cyril.

Among the moderns, Bede, Funccius, Mercator, Lilius, Clavius, Scaliger, Vieta, Petavius, Caſſini, Munſter, Calviſius, Hardouin, Capellus, Uſher, Marſham, Helvicus, I. Voſſius, Pagi, &c.

CHRONOMETER *, a general name for any inſtrument uſed in the meaſuring of time. See TIME.

* The word is compoſed of χρονος, *Time*, and μετρον, *menſura*, meaſure.

In this ſenſe, clocks, watches, dials, &c. are *Chronometers.*— Though there are ſome other inſtruments peculiarly called by the name *Chronometer*; particularly one deſcribed by M. Sauveur, in his *Principles of Acouſtics*.

CHRYSALIS *, a term uſed by ſome modern writers of natural hiſtory of inſects, in the ſame ſenſe with nympha.

* The word ſeems to imply a peculiar yellow, or golden colour, uſual in the nymphæ of ſome ſpecies of inſects: from the Greek χρυσος, *gold*: but this is purely accidental, and is not found in all nymphæ.

Some confine the word *Chryſalis* to the nymphæ of butterflies and moths. See Supplement, articles CHRYSALIS, AURELIA, and PUPPET.

CHRYSARGYRUM *, a tribute formerly levied on courteſans, and the like perſons of evil fame.

* Hoffman ſays, it was paid in gold and ſilver; whence its name, χρυσος, *gold*, and αργυρος, *ſilver*.

Zoſimus ſays, that Conſtantine firſt ſet it on foot; though there appear ſome traces of it in the life of Caligula by Suetonius; and that of Alexander by Lampridius. Evagrius ſays, Conſtantine found it eſtabliſhed, and had ſome thoughts of aboliſhing it. It was paid every four years: ſome ſay, all petty traders were liable to it. It was aboliſhed by Anaſtaſius.

M. Godeau thinks the *Chryſargyrum* was a general tribute, levied every four years, on perſons of all conditions, rich and poor, ſlaves and freemen; nay, even on all animals, as low as dogs; for each whereof they paid ſix oboli.

CHRYSOBERYL, a precious ſtone; being a kind of pale beryl, with a tincture of yellow.

CHRYSOCOLLA *, a mineral ſubſtance uſed by the antients in the ſoldering of gold, &c. and frequently alſo in phyſic, as an eſcharotic, reſolvent, and drier. See Plin. Hiſt. Nat. *l.* 33. *c.* 5.

* The term is formed of the Greek χρυσος, *gold*, and κολλα, *glue*.

Chryſocolla is repreſented by Pliny as found in mines of gold, ſilver, copper, and lead: its colour, he ſays, was various, according to that of the matter in which it is found; yellow if among gold, white in ſilver, green in copper, and black in lead.

The Arabs, and inhabitants of Guzuratte, call the modern *Chryſocolla*, which is *Borax*, *Tincar*, or *Tincal*. The beſt is that found in copper mines; and the worſt, in thoſe of lead. See Supplement, article CHRYSOCOLLA.

CHRYSOCOLLA is alſo the name of a ſort of precious ſtones, mentioned by Pliny, *l.* 37. *c.* 10. who calls it alſo *Amphitane*: he deſcribes it as of a gold colour, and of a ſquare figure; adding, that it has the virtue of attracting iron, and even gold.

But this, in all probability, is fabulous; and the ſtone he ſpeaks of is apparently no other than the cubic pyrites.

CHRYSOLITE, with us, a precious ſtone of a duſky green colour, with a caſt of yellow.

The *Chryſolite* of the antients was no other than the topaz of the moderns.

CHRYSOLITE is alſo a generical name, which the antients gave to all precious ſtones, wherein the yellow, or golden, was the prevailing colour.

When the ſtone was green, they called it *Chryſopraſus*: the red and blue too had their particular denominations, which expreſſed their colour; the gold being ſignified by *Chryſo*; which ſtill began the name.

We know but few of theſe *Chryſolites* now; or rather, they are referred to the ſpecies of ſtones which they approach the neareſt to: the green to the emerald, the red to the ruby; and ſo of the reſt. See Supplement, article CHRYSOLITE.

CHRYSTAL.	See	CRYSTAL.
CHRYSTALLINE.		CRYSTALLINE.
CHRYSTALLIZATION.		CRYSTALLIZATION.

CHRYSTAL *Mineral*, the ſame as Sal Prunella.

CHUB. See FISHING.

CHUPMESSAHITES *, a ſect among the Mahometans, who believe that Jeſus Chriſt is God, and the true Meſſiah, the redeemer of the world; but without rendering him any public, or declared worſhip.

* The word, in the Turkiſh language, ſignifies *protector of the Chriſtians*.

Ricaut ſays, there are abundance of theſe *Chupmeſſahites* among the people of faſhion in Turky, and ſome even in the ſeraglio.

CHURCH, an aſſembly of perſons united by the profeſſion of the ſame Chriſtian faith, and the participation of the ſame ſacraments.

Bellarmin, and the Romiſh divines, to this definition add, *Under the ſame pope, ſovereign pontiff, and vicar of Jeſus Chriſt on earth:* in which circumſtance it is that the Romiſh, and reformed notion of *Church* differ.

Amelotte, and others, make a viſible head, or chief, eſſential to a *Church:* accordingly, among the catholics, the pope; in England, the king; are reſpectively allowed heads of the *Church.*

Biſhop Hoadly ſets aſide the notion of a viſible head: Chriſt alone, according to him, is head of the church; which poſition he has maintained with great addreſs, in a celebrated ſermon before the late king on thoſe words, *My kingdom is not of this world*; and in the ſeveral vindications thereof.

Sometimes, we conſider *Church* in a more extenſive ſenſe, and divide it into ſeveral branches.—The *Church Militant*, is the aſſembly of the faithful on earth.—*Church Triumphant*, that of the faithful already in glory.—To which the catholics add the *Church Patient*, which, according to their doctrines, is that of the faithful in purgatory.

The term *eccleſia*, εκκλησια, ſynonymous with our *Church*, is uſed in the Greek and Latin profane authors for any kind of public aſſembly; and even for the place where the aſſembly is held. The ſacred and eccleſiaſtical writers ſometimes alſo uſe it in the ſame ſenſe; but ordinarily they reſtrain the term to the Chriſtians; as the term *ſynagogue*, which originally ſignifies nearly the ſame thing, is in like manner reſtrained to the Jews.

Thus, in the new teſtament, the Greek εκκλησια, ſignifies almoſt always, either the place deſtined for prayer, as 1 Cor. xiv. 34. or the aſſembly of the faithful diffuſed over the whole earth, as Epheſ. v. 24. or the faithful of a particular city, or province, as 2 Cor. viii. 1, 2. or even of a ſingle family, as Rom. xvi. 1. or the paſtors or miniſters of a *Church*, as Matt. xviii. 17.

The Chriſtian *Church* is frequently divided into Greek and Latin.

Greek, or Eaſtern CHURCH, comprehends the *Churches* of all the countries antiently ſubject to the Greek, or eaſtern empire; and through which their language was carried; *i. e.* all the ſpace extended from Greece to Meſopotamia and Perſia, and thence into Egypt; which has been divided ever ſince the time of the emperor Phocas, from the Roman *Church.*

Latin, or Weſtern CHURCH, comprehends all the *Churches* of Italy, France, Spain, Africa, the north, and all other countries whither the Romans carried their language.

Great Britain, part of the Netherlands, of Germany, and of the north, have been ſeparated hence ever ſince the time of Henry VIII. and conſtitute what we call the *Reformed Church*, and what the Romaniſts call the *weſtern ſchiſm*; as the Greek *Church* does the eaſtern one.

The *Reformed* CHURCH is again divided into the Lutheran *Church*, the Calviniſt *Church*, the *Church* of England, *&c.*

CHURCH is alſo uſed for a Chriſtian temple, built and conſecrated to the honour of God; and, antiently, under the invocation of ſome particular ſaint, whoſe name it aſſumed.

In this ſenſe, *Churches* are variouſly denominated, according to the rank, degree, diſcipline, *&c.* as Metropolitan *Church*, Patriarchal *Church*, Cathedral *Church*, Parochial *Church*, Cardinal *Church*, &c. See each under its proper article, METROPOLIS, PATRIARCH, CATHEDRAL, PAROCHIAL, CARDINAL, *&c.*

In eccleſiaſtical writers, we meet with Grand *Church*, for the chief church of a place, particularly in the Greek liturgy, for the *Church* of S. Sophia at Conſtantinople, the ſee of the patriarch, founded by Conſtantine, and conſecrated under Juſtinian: It was at that time ſo magnificent, that Juſtinian is ſaid to have cried out in the conſecration thereof, Ενικησα σε, Σολομων, *I have out-done thee*, Solomon. The dome, which is ſaid to have been the firſt that was built, is 330 feet diameter.

The firſt *Church* publicly built by the Chriſtians, ſome authors maintain to be that of S. Saviour at Rome; founded by Conſtantine: others contend, that ſeveral *Churches* abroad, called by the name of S. *Peter Vivus*, were built in honour of that apoſtle during his life-time.

Mother-CHURCH, *matrix eccleſia.*

CHURCH, with regard to architecture, Daviler defines a large oblong edifice, in form of a ſhip, with nave, choir, iſles, chapel, belfry, *&c.* See each part under its proper head.

Simple CHURCH, is that which has only a nave and a choir.

CHURCH *with Iſles*, that which has a row of porticos, in form of vaulted galleries, with chapels in its circumference.

CHURCH *in a Greek Croſs*, that where the length of the traverſe part is equal to that of the nave; ſo called, becauſe moſt of the Greek *Churches* are built in this form.

CHURCH *in a Latin Croſs*, that whoſe nave is longer than the croſs part, as in moſt of the Gothic *Churches.*

CHURCH *in Rotondo*, that whoſe plan is a perfect circle, in imitation of the Pantheon.

For the form of the antient Greek *Churches*, when they had all their parts, it was as follows: firſt was a porch, or portico, called the *vaunt-nave*, προναος: this was adorned with columns on the outſide, and on the inſide ſurrounded with a wall; in the middle whereof was a door, through which they paſſed into a ſecond portico. The firſt of theſe porticos was deſtined for the energumeni, and penitents in the firſt ſtage of their repentance; the ſecond was much longer, deſtined for penitents of the ſecond claſs, and the Catechumens, and hence called ναρθηξ, *ferula*; becauſe thoſe placed in it began to be ſubject to the diſcipline of the *Church.* Theſe two porticos took up about one third of the ſpace of the *Church.*

From the ſecond portico, they paſſed into the *nave*, ναος, which took up near another third of the *Church.* In the middle, or at one ſide of the nave, was the ambo, where the deacons and prieſts read the goſpel, and preached. The nave was deſtined for the reception of the people, who here aſſiſted at prayers.

Near the entrance of this was the baptiſtery, or font. See BAPTISTERY, and FONT.

Beyond the nave was the choir, χορος, ſet with ſeats, and round: the firſt ſeat on the right, next the ſanctuary, being for the chantor, or choragus.

From the choir, they aſcended by ſteps to the ſanctuary, which was entered at three doors. The ſanctuary had three apſides in its length; a great one in the middle; under which was the altar, crowned with a baldachin, ſupported by four columns: See SANCTUARY, BALDACHIN, *&c.* Under each of the ſmall apſides, was a kind of table, or cupboard, in manner of a beaufet.

Though, of the Greek *Churches* now remaining, few have all the parts above deſcribed; moſt of them having been reduced to ruins, or converted into moſques.

M. Frezier, engineer to the French king, and F. Cordemoy, a regular canon, have diſputed the form of the antient and modern *Churches*, and the beſt manner of building them, with a good deal of learning, in the journals de Trevoux.

For the form of the Latin *Churches*, though it be various, yet may all the variety be reduced to two heads; *viz.* thoſe in form of a ſhip, and thoſe of a croſs.

CHURCH-YARD, a ſacred place adjoining to a *Church*, deſtined for the interment of the deceaſed. See COEMETERIUM.

CHURCH-*Government*, *Diſcipline*, &c. See ECCLESIASTICAL GOVERNMENT, DISCIPLINE, POLICY, *&c.*

CHURCH-REVES. See the article CHURCH-WARDENS.

CHURCH-SCOT, or CHURCHESSET, a payment, or contribution by the Latin writers frequently called *primitiæ ſeminum*; being at firſt, a certain meaſure of wheat, paid to the prieſt on St. Martin's day, as the firſt-fruits of harveſt.

This was injoined by the laws of king Malcolm IV. and Canut. c. 10. But after this, *Church-ſcot* came to ſignify a reſerve of corn-rent paid to the ſecular prieſts, or to the religious; and ſometimes it was taken in ſo general a ſenſe as to include poultry, or any other proviſion that was paid in kind to the religious.

CHURCH-WARDENS, antiently called CHURCH-REVES, are officers choſen yearly in Eaſter week, by the parſon, and his pariſhioners, according to the cuſtom of the place; to look to the *Church*, *Church-yard*, *Church-revenues*, &c. obſerve the behaviour of the pariſhioners with regard to faults that come under the juriſdiction of the eccleſiaſtical court; preſent ſcandalous livers to the biſhop; take care none preach without licence, &c.

The *Church-wardens* are a kind of corporation; and are enabled by law to ſue, and be ſued, for any thing belonging to the *Church*, or the poor of the pariſh.

CHYLE *, in the animal œconomy, a whitiſh juice, into which the food is immediately converted by digeſtion, or more properly, by that firſt branch thereof called *Chylification.*

* The word comes from the Greek χυλὸς, *juice.*

The *Chyle*, Dr. Drake obſerves, is nothing but a mixture of the oily and aqueous parts of the food, incorporated with the ſaline ones; which, while they yet remain mixed with the groſſer parts in the ſtomach, make a thick, whitiſh, partly fluid maſs called *Chyme:* which, as ſoon as it is reduced to a conſiſtence looſe enough to be obedient to the preſſure and periſtaltic motion of the ſtomach, is gradually thruſt out at the pylorus into the duodenum, and then is denominated *Chyle.*

Thus is the *Chyle* begun to be formed in the ſtomach: it is perfected in the inteſtines by the mixture of the bile and the pancreatic juice; and is thence received into the lacteal veins which carry it to the receptaculum chyli, or Pecquet's reſervatory: thence it paſſes into the thoracic duct, which terminates in the left ſubclavian vein: in this vein, the *Chyle* firſt begins to mix with the blood; into which it is afterwards converted by the action called *ſanguification.*

Some of the antients ſuppoſed the *Chyle* was changed into blood in the liver; others of them in the heart: but the moderns, with more reaſon, take the change to be effected by the blood itſelf, in all the parts of the body.

Some take *Chyle* to be the immediate matter of nutrition; others the blood.

Dr. Liſter is of opinion, that in the digeſtion of meat in the ſtomach, there is made a ſeparation, or ſolution of urinous ſalts, no otherwiſe than in the rotting of plants, or animals: that the *Chyle* is highly impregnated with this urinous ſalt; that it owes its whiteneſs to the fermentation it acquires from that mixture: that the ſalt *Chyle* is conveyed into the venal blood, and with it enters the heart; and is thence thrown out *Chyle*, as it comes in, by a continual pulſation, into the arteries: that as oft as it enters the emulgent arteries, it leaves behind part of its ſaline liquor, or urine, and conſequently abates of its colour: and that when ſufficiently freed of its ſalts, it becomes a lympha; which ſeems to be nothing elſe but the reſidue of the *Chyle* not yet converted into blood; as not yet ſufficiently depurated of its ſaline particles. See LYMPHA.

CHYLIFICATION, the formation of the *Chyle*; or the act whereby the food is changed into *Chyle*. See FOOD, and CHYLE.

Chylification is begun by comminuting, or breaking the aliment in the mouth, mixing it with ſaliva, and chewing it with the teeth.

By ſuch means, the food is reduced into a kind of pulp, which falling through the œſophagus into the warm ſtomach, there mixes with the juices thereof; and being thus diluted, begins to ferment, or putrefy, and aſſumes a very different form from what it had before; growing either acid or rancid.

Here it mixes with a juice ſeparated from the blood by the glands of that part, whoſe excretory ducts open into the ſtomach; as alſo with the remains of the former aliment: and thus it becomes better macerated, diluted, diſſolved, and acquires ſtill a greater likeneſs to the animal fluids, and is called *Chyme*.

Add to this, that the fleſhy membrane of the ſtomach continually contracting and preſſing its contents by its periſtaltic motion, occaſions a more intimate mixture, and by degrees works the more fluid parts through the pylorus into the duodenum; along the ſides whereof, and the reſt of the inteſtina tenuia, the lacteals are planted; into the minute orifices whereof, the finer part of the maſs is received.

The fabric of the ſtomach being conſidered, the heat of the circumambient parts, the pulſations of innumerable arteries, the great ſtrokes of the aorta underneath, the conſtant compreſſion of the diaphragma, and abdominal muſcles; it muſt neceſſarily follow, that the finer part of the aliment will be firſt expelled the ſtomach; and that the groſſer will remain; till, by the repeated action of the fluids, and the contraction and pulſation of the ſolids, they alſo become fine enough to go off: thus is the ſtomach left empty; and by means of its muſcular coat, reduced to a ſtate of contraction, and appetite is renewed.

Thus will even the fleſhy membranes, cartilages, &c. of animals fed on, be ſqueezed, and be obliged to give out their juices; and thus is a fluid obtained, that ſhall have in ſome meaſure the ſame properties with thoſe of our bodies.

This juice being got through the pylorus into the inteſtines, its liquefaction is ſtill promoted by its mixture with two other diſſolvents, the pancreatic juice, and the bile; which divide and ſubtilize thoſe parts that were left too groſs: and by the periſtaltic motion of the guts it is protruded forwards. In the paſſage through the ſmall inteſtines, the finer part of the maſs, which we call the *Chyle*, enters the orifices of the lacteal veins of the firſt kind, wherewith the whole meſentery is intermixed; which either alone, or together with the meſaraic veins, diſcharge themſelves into the glands at the baſis of the meſentery.

Then the *Chyle* is taken up by the lacteals of the ſecond kind, and is conveyed into glands between the two tendons of the diaphragma, known heretofore under the name of the *lumbary* glands, now called *Pecquet*'s reſervatory; whence it is carried to the heart, by the thoracic duct, and the ſubclavian vein; wherein it begins to be mixed with the blood, and to circulate, and in time becomes aſſimilated thereto.

HYLOSIS, χυλωσις, in medicine, the action whereby the aliment is converted into *Chyle*, or *Chyme*, in the ſtomach, &c. whether it be by a ferment in the ſtomach, or the contractile force of the ſtomach, or both.

HYME, χυμος, an animal juice, which is, according to ſome, the ſame with that commonly called *Chyle*. See CHYLE.

Some, however, diſtinguiſh between *Chyme* and *Chyle*; reſtraining the word *Chyme* to the maſs of food, &c. while in the ſtomach, ere it be ſufficiently comminuted and liquified to paſs the pylorus into the duodenum, and thence into the lacteals, to be further diluted and impregnated with the pancreatic juice; where it commences *Chyle*.—And others diſtinguiſh and denominate them the contrary way.

YMISTRY *, or CHEMISTRY, the art of ſeparating the ſeveral ſubſtances whereof mixed bodies are compoſed, by means of fire; and of compoſing new bodies in the fire, by the mixture of different ſubſtances or ingredients.

The chief object of *Chymiſtry* is, to analyſe, or decompound, natural bodies; reduce them to their firſt principles; diſcover their hidden virtues; and demonſtrate their inner contexture, or the centre, as they call it, wherein natural ſubſtances concur. In a word, *Chymiſtry* is the anatomy of natural bodies, by means of fire; which is the definition Hanneman gives us of the art.

Boerhaave defines *Chymiſtry* more ſcientifically: 'An art whereby ſenſible bodies contained in veſſels, or capable of being contained therein, are ſo changed, by means of certain inſtruments, and principally of fire, that their ſeveral powers and virtues are thereby diſcovered, with a view to philoſophy, medicine,' &c. This definition appears very prolix and circumſtantial, and more like a deſcription than a definition; but with all his endeavours, that author aſſures us, he could not frame a ſhorter that would expreſs the full ſcope, object, and inſtruments of *Chymiſtry*, ſo as to diſtinguiſh it from every other art: which is a point all the writers of *Chymiſtry* have ſtumbled at.

For *Chymiſtry* cannot juſtly be called the art *of reſolving bodies*, as Regius, Paracelſus, &c. define it; ſince mechanics will alſo do that: nor is the matter mended, by ſaying, it is the art *of analyſing bodies by fire*; as Helmont has done: nor *by ſalt*, as others would have it. Theſe definitions include only a part, inſtead of the whole. And with as little propriety is it termed, the art *of ſeparating the pure from the impure*; inaſmuch as it compounds as well as ſeparates, and frequently mixes the pure with the impure. *Chymiſtry*, on this footing, appears a very extenſive art: its object, or the *materia chymica*, is all ſenſible bodies, capable of being contained in veſſels; and is accordingly divided into three kingdoms, *foſſil*, *vegetable*, and *animal*.

The operations of *Chymiſtry* include all the changes produced in bodies by natural agents or inſtruments; *viz.* *decoction*, *infuſion*, *exhalation*, *calcination*, *extraction*, *diſtillation*, *cryſtallization*, &c.

The effects, or productions of *Chymiſtry*, may be reduced to *magiſteries*, *extracts*, *tinctures*, *elixirs*, and *clyſſus*'s.

The *inſtruments*, *or agents of Chymiſtry*, whereby its operations are performed, are *fire*, *water*, *air*, *earth*, *menſtruums*, and inſtruments properly ſo called, as *alembics*, *cucurbits*, *retorts*, *pelicans*, *furnaces*, and *lutes*.

Chymiſtry is an art of very great antiquity, and is held by ſome very learned perſons to have been practiſed in the antediluvian world. Cham, the ſon of Noah, is commonly held to have been its inventor, from whom it is ſuppoſed to have taken its name. But others refer the invention to Tubal-Cain, whom the ſcripture records as the inventor of inſtruments of braſs and iron. This is pretty certain, that ſome of the higheſt and moſt difficult things in *Chymiſtry* muſt have been known by him; among which are the ſeparating and purifying of copper and iron, the making of braſs, &c.

The firſt mention we find made of the art, is in Zoſimus the Panopolite, who lived about the year of Chriſt 400. 'In the ſacred writings, ſays that author, we find certain genii ſpoken of, who had commerce with women. Hermes ſays as much in his books upon nature; and ſcarce any author, but has ſome footſteps of this tradition. Theſe genii, intoxicated with the love of women, diſcovered to them all the ſecrets of nature; and taught them abundance of things unfit for them to know: for which reaſon they are baniſhed from heaven. The book wherein their ſecrets was contained, was called *Chema*; and hence the name *Chemia*, or *Chymia*.'

The text of ſcripture Zoſimus here refers to, is that paſſage in Moſes, *The ſons of God ſaw the daughters of men, and took them to wife.*

This antediluvian origin of *Chymiſtry* is confirmed by Tertullian: 'The angels that fell, ſays that father, diſcovered gold and ſilver to men, with the arts of working them, of dyeing wool, &c. for which reaſon they were baniſhed, as related by Enoch.'

Borrichius looks on theſe paſſages as authentic; but adds, that Enoch was miſtaken, for that the angles he ſpeaks of, were not real angels; but the deſcendants of Seth and Tubal-Cain, who, degenerating from their fathers, gave themſelves up to criminal pleaſures with the women deſcended from Cain; and in the courſe of their intrigues, divulged the ſecrets God had truſted them withal.

Be this as it will, *Chymiſtry*, no doubt, was firſt practiſed in Egypt. According to Moſes, Tubal-Cain ſhould be the firſt inventor. Profane authors refer it to Vulcan; and ſome of the lateſt and beſt critics endeavour to ſhew, that Tubal Cain and Vulcan were the ſame; as, indeed, there is a great reſemblance between their names.

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* Critics are divided as to the etymology of the name *Chymiſtry*: it is uſually derived from the Geek χυμος, *juice*; or from χεειν, *to melt*. Boerhaave, and others, more juſtly derive it from the Egyptian Chema, or Kema, black; and write it *Chemia*, not *Chymia*. Others, making Cham the inventor of *Chymiſtry*, derive the term from his name; ſupporting their etymology on the ſignification of the word חם *Cham*, which in the Hebrew ſignifies *heat*, *hot*, *black*; all of them bearing ſome relation to the operations of *Chymiſtry*.

Chymiſt is alſo known under various other names: it is ſometimes called the *hermetical art*, from a ſuppoſition of its being invented by Hermes Triſmegiſtus. Others call it, the *Egyptian art*, from the people among whom it was firſt practiſed: others the *ſacred*, *or divine art*; and Poieſis, or the art of *making gold*, &c. Others call it the *ſpagiric* art; Paracelſus, the *hyſſopic* art: and others *pyrotechnia*.

After Tubal Cain, the firſt *Chymiſt* we read of is Moſes; whoſe ſkill in *Chymiſtry* is inconteſtable, from his burning and pulverizing the golden calf the Iſraelites had ſet up, and giving it the people to drink; there being ſcarce a more difficult operation in all *Chymiſtry*, than to make gold potable.

Chymiſtry had the common fate of the other arts, at the declenſion of the eaſtern empire: and lay buried and forgot till the time of Roger Bacon, who retrieved it. He was followed by Lully, Ripley, Baſil Valentine, Paracelſus, Van Helmont, Glauber, Boyle, Lemery, Homberg, *&c.* by whom the art has been carried to its preſent degree of perfection.

The firſt *Chymiſts* confined themſelves to metals: in theſe latter ages, the bounds of *Chymiſtry* have been greatly enlarged; and plants, animals, minerals, *&c.* have been taken into it.

It is but of late that *Chymiſtry* has been applied to the preparation of medicines: Baſil Valentine, and Arnoldus de Villa Nova, ſeem to have been the firſt that attempted it. Paracelſus and Van Helmont carried it to ſuch a length, as to render medicine almoſt wholly *chymical.*

Chymiſtry is divided into *metallurgia*, *alchymia*, *chymical pharmacy*, and *chymical philoſophy*. See METALLURGIA, ALCHYMY, *&c.* Some authors obſerve, that Diocleſian, after the taking of Alexandria, ordered all the books of *Chymiſtry*, antiently written by the Egyptians, for making gold and ſilver, to be ſought out and burnt; that they might not have the power of enriching themſelves by this art, or of putting themſelves, by this means, into a condition of revolting again.

Authors on the ſubject of *Chymiſtry* are very numerous: Borel has publiſhed a catalogue of moſt of them, under the title of *bibliotheca chymica*; containing the names of above four thouſand. Boerhaave is the lateſt, fulleſt, and apparently the beſt; he has given both the hiſtory, theory, and practice, in an orderly, and ſcientifical way. Dr. Freind has reduced *Chymiſtry* to *Newtonianiſm*, and accounted for the reaſons of the operations on mechanical principles.

CHYMOSIS *, Χυμωσις, in medicine, the act of making, or preparing *Chyme*. See CHYME.

* The word comes from χυμος, *ſuccus*, of χεω, *fundo*, I melt.

Chymoſis, according to ſome, is the ſecond of the concoctions made in the body; being a repeated preparation of the moſt impure and groſs parts of the chyle, which, being rejected by the lacteals, is imbibed by the meſeraics, and thence carried to the liver, to be there elaborated, purified, and ſubtilized afreſh. It is of this, according to Rogers, that the animal ſpirits are formed.

CHYMOSIS *, or rather CHEMOSIS, is alſo uſed for an inflammation of the eyelids, which turns out their inſide to ſight.

* In which ſenſe, the word comes from the Greek χαινω, *biſco*, I gape.

CICATRICULA, in natural hiſtory, a little whitiſh ſpeck, or veſicle, in the coat of the yolk of an egg; wherein the firſt changes appear towards the formation of the chick.

The *Cicatricula* is what is otherwiſe called the eye of the egg. See EGG.

CICATRISIVE, CICATRIZANS, in medicine, is applied to ſuch remedies as are very deſiccative; and on that account aid nature to repair the ſkin, and to form a cicatrix, or eſchar.

Such are Armenian bole, powder of tutty, and the unguents diapompholygis, deſiccativum rubrum, *&c.*

Cicatriſive medicines are otherwiſe called *eſcharotics*, *epulotics*, *incarnatives*, *agglutinants*, &c.

CICATRIX *, in medicine, *&c.* a little ſeam, or elevation of callous fleſh, riſing on the ſkin, and remaining there after the healing of a wound, *&c.* ordinarily called a *ſcar*, or *eſchar*.

* Some derive the word from *circa cutem*: others fetch *cicatrix* from *occæcatrix*; the *cicatrix* being only *obductio vulneris*, the covering up, or hiding of the wound: but it is better derived from *cæcatrix*, which has the ſame force; of the verb *cæcare*, to blind.

The *Cicatrix* is the ſame with regard to the joining of the fleſhy parts, as a *callus* is to the bones.

In young infants, theſe calloſities, or ſcars, ſometimes much diminiſh, and oftentimes quite vaniſh when come to age, as is particularly obſerved in the pits of the ſmall-pox: and, in growing, they are ſometimes obſerved to change their ſituation.

CICUTA, a vegetable poiſon, celebrated as ſuch both among antients and moderns.

The modern *Cicuta* is the plant hemlock; whereof there are two kinds: the *Cicuta*, abſolutely ſo called, or *cicuta major*; and the *cicuta minor*.

The firſt grows in places a little moiſt, in the ſhade, among old ruins, or along roads.—So many unhappy effects have been experienced from it, that its uſe, internally, is by no means to be recommended: and yet ſome perſons boaſt of it as a powerful ſudorific. Externally it may be applied, to reſolve wens, and hardneſſes of the ſpleen and liver. It is the baſis of the plaiſter which bears its name.

Phyſicians have generally ranked it among the cold poiſons; but the later writers, with more juſtneſs, regard it as an acrimonious diſſolving, or hot poiſon: and ſay that it kills by corroding and lacerating the ſtomach. The reaſons they give, as related by Wepfer, are, that it bites the tongue; that the effluvia it yields are hot, and ariſe from a volatile ſalt, and an impure ſulphur; that the madneſs it occaſions, as well as the other ſymptoms, ſhew a great activity of parts; and that if the blood be found coagulated by it after death, ſpirit of wine alſo does the ſame. See Mead's Eſſay on Poiſons.

The *leſſer Cicuta* is not leſs dangerous than the *greater*; it is even ſuppoſed more violent, as well as more haſty in its operation.

Several perſons have been rendered delirious, by eating porridge wherein this *Cicuta* has been uſed inſtead of parſly.—According to ſome, it has much ſuch an enmity to the brain, as *cantharides* have to the bladder, and *lepus marinus* to the lungs.

CICUTA is alſo uſed, chiefly among the antients, for a poiſonous juice, or liquor, expreſſed from a plant called *Cicuta aquatica*; being the common poiſon wherewith the ſtate-criminals at Athens were put to death.

The *Cicuta* of the antients is a ſecret now ſcarce poſſible to be diſcovered. Wepfer, in an expreſs treatiſe on the ſubject, will have it the *Oenanthe cicutæ facie, ſucco viroſo*; which he deſcribes by the name of *cicuta aquatica*; and of the diſmal effects of which he gives a very ample relation. — At leaſt the violence of this plant makes it a much fitter inſtrument of haſty death than the common cicuta or hemlock, which is by much leſs malignant.—Though ſome have ſuggeſted, that the poiſonous draught to which the Athenians doomed their criminals was an inſpiſſated juice compounded of the juice of *Cicuta*, and ſome other corroſive herbs. Vid. Mead's Eſſay on Poiſons, ap. Bibl. Anal. Med. *T.* 3. *p.* 281.

Socrates drank the *Cicuta*.—Plato, in his dialogue on the immortality of the ſoul, obſerves, that 'The executioner adviſed 'Socrates not to talk, for fear of cauſing the *Cicuta* to operate 'too ſlowly.' M. Petit, in his *obſervationes miſcellaneæ*, remarks, that this advertiſement was not given by the executioner out of humanity, but to ſave the *Cicuta*: for he was only allowed ſo much poiſon *per ann.* which if he exceeded, he was to furniſh the reſt at his own expence. This conſtruction is confirmed by a paſſage in Plutarch: the executioner who adminiſtred the *Cicuta* to Phocion, not havihg enough, Phocion gave him money to buy more; obſerving, by the way, that it was odd enough, that at Athens a man muſt pay for every thing, even his own death. See Supplement, article CICUTA, and OENANTHE.

CIDER, or CYDER, a briſk, tart, cool liquor, prepared from apples.

Manner of making CYDER. The fruit is firſt ground, or ſtamped, and the juice ſqueezed out in a preſs; then it is ſtrained through a ſieve, or other filtre, and tunned up; the veſſel is not to be full. For two or three days it is to be ſtopped looſely, then quite cloſed with clay. Henceforward, a ſmall quantity is to be drawn out every day for ſome weeks, till ſuch time as it be ſuppoſed pretty clear: then it is pierced, to ſee how fine it is; the ſummer-fruit after a month; the gennet-moil, after the firſt froſts; the redſtreak not till after January; and the other winter-fruits about the ſame time.

If it be not now found fine enough, it ſtands a month longer; and if after this it be defective, it is racked off like wine, ſo as to keep out the air.

Some, inſtead of racking, fine it with iſing-glaſs, ſteeped in white wine, and diſſolved over the fire; this they boil in a quantity of the liquor to be fined, and then mix it with the reſt: and others, inſtead of diſſolving the iſing-glaſs over the fire, let it ſteep in the white wine for about a month, in which time it diſſolves into a gelly of itſelf: a quantity of this is mixed with ſome of the liquor, and the whole beat to a froth; then mingled, together with ſome broom, with the reſt. The liquor once fine, it is drawn out, or bottled off, as occaſion requires.

It is obſerved, that a mixture of fruits is a great advantage to *Cider*; the worſt apples, mixed together, making as good *Cider* as the beſt make alone: always obſerving, however, that they be of equal ripeneſs.

The beſt mixture, according to Mr. Worlidge, is that of redſtreaks with golden-rennets: bitter apples ſpoil the *Cider*; b the juice of them, and of crabs, yield as good ſpirits, as the be apples, when fermented: neither the ſour nor the bitter ta ariſing with the ſpirit upon diſtillation.

If the apples be pounded in a ſtone mortar, which is the cuſto of ſome, the kernels and ſtalks are bruiſed with them, whi gives the liquor an ill ſavour.

CIDERKIN, or *Purre*, is a liquor made of the murk, or g matter remaining after the *Cider* is preſſed out.

For this purpoſe, the murk is put up in a large fat, with a prop quantity of boiled water, which has ſtood till it be cold again half the quantity of water be uſed, that there was of *Cider*, will be good; if the quantities be equal, the *Ciderkin* will ſmall. The whole is left to infuſe forty-eight hours, and th well preſſed: what is ſqueezed out by the preſs, is immedia ly tunned up and ſtopped; it is fit to drink in a few days.

It clarifies of itſelf, and ſerves in families inſtead of ſmall beer. It will keep, if boiled after preſſure, with a convenient quantity of hops.

CILIA, in anatomy, the hairs wherewith the palpebræ, or eyelids, are fringed; eſpecially the upper, which are larger and ſtiffer than thoſe of the under.

Their uſe ſeems to be, to break the too fierce impreſſion of the rays of light; as alſo to keep out flies and moats, and other things floating in the air, which might annoy the eye.

Theſe *cilia* ſpring from a ſmall row of glands, which cover a thin tender cartilage, edging each eyelid, and ſerving as a kind of rod, or ring, to ſtretch them upon.

CILIARE, in anatomy, an epithet given to a part of the eye, called *ligamentum ciliare*; becauſe of its relation to the *cilia*, or hair of the eyelids.

The *ligamentum ciliare*, called alſo *proceſſus ciliaris*, conſiſts of a range of black fibres diſpoſed circularly; having their riſe in the inner part of the uvea, and terminating in the prominent part of the cryſtalline, which they encompaſs round.

Anatomiſts generally imagine their uſe to be to ſuſpend the cryſtalline in the globe of the eye, to lengthen or ſhorten its figure, and bring it nearer to or farther from the uvea; and even to open or contract the pupil as occaſion requires, *i. e.* as near or remote objects, obſcure or bright objects, are to be viewed.

The motion of the pupil, ſome ſay, is effected by the circular and ſtrait fibres of the uvea; others attribute it to the *ciliary* ligament: yet, there is no great doubt, but they both concur in the ſame action; and that the *ligamentum ciliare* doth, at the ſame time the pupil opens or ſhuts, dilate or compreſs the cryſtalline, and bring it nearer, or carry it farther off the retina. Derham *phyſ. theol.*

M. Mariotte denies the *ligamentum ciliare* to have any connexion with the cryſtalline, or to ſerve for any purpoſes thereof.

ILIARIS, in anatomy, a muſcle, otherwiſe called *orbicularis palpebrarum*. See ORBICULARIS.

IMA, or SIMA, in architecture, a member or moulding, called alſo *ogee*, and *cymatium*.—See *Tab. Archit. Fig.* 8.

IMIER, in the French heraldry. See CREST.

INCTURE*, or CEINTURE, in architecture, a ring, or liſt, at the top and bottom of the ſhaft of a column; ſeparating the ſhaft, at one end, from the baſe; and at the other from the capital. See *Tab. Archit. Fig.* 28. and 24. *lit. q. s.*

That at bottom is peculiarly called *apophyge*; as if the pillar took its flight hence: and that at top, *colarin*, or collar.

The *cincture* is ſuppoſed to be an imitation of the girths, or ferils, antiently uſed to ſtrengthen and preſerve the primitive wooden columns. See ORDER.

NERATION, in chymiſtry, the reduction of wood, or any other combuſtible matter, into aſhes, by means of fire.—This, others call *cinefaction*.

NERES. See the article ASHES.

NERES *clavellati*, among chymiſts, are the aſhes of tartar, or lees of wine, burnt.

NERITIOUS, a term applied to things reſembling aſhes; particularly in point of colour, and conſiſtence.

Thus, the cortical part of the brain is alſo called the *cineritious* part.

NNABAR*, in natural hiſtory, a mineral ſubſtance, red, heavy, and brilliant; found chiefly in the quickſilver mines, and being one of the ores of that mineral.

ome have wildly imagined *cinnabar* to be dragon's-blood, gathered, as Pliny and Solinus have it, when the dragon and lephant fight together: this fable is refuted by Dioſcorides, nd Scaliger. See DRAGON'S-BLOOD.

innabar is either *native*, or *factitious*.

tive, or *mineral* CINNABAR, which is that above-mentioned, is found in moſt places where there are quickſilver nines.

t may be eſteemed as an ore of quickſilver, or rather, as uickſilver petrified and fixed, by means of ſulphur, and a ubterraneous heat; chymiſtry being found to reduce it, without much trouble or loſs, to the nature of mercury. Each ound of good *cinnabar* yields fourteen ounces of mercury. ccordingly, the principal property and uſe of this mineral is o yield a moſt excellent mercury; and that which the alcheiſts maintain to be the beſt diſpoſed for attaining to the anſmutation of gold.

he beſt mineral *cinnabar* is of a high colour, brilliant, and ee from ſtony matter.—It is uſed by phyſicians in venereal ſes, and others occaſioned by ſharp ſeroſities. It is alſo teemed a good cephalic, and accounted of ſervice in epilepſies, and other nervous diſtempers: add, that it is reckoned of efficacy in cutaneous caſes, as the ſcurvy.

Factitious, or artificial CINNABAR, is formed of a mixture of mercury, and ſulphur, ſublimed, and thus reduced into a kind of fine red glebe.—The beſt is of a high colour, and full of fibres, like needles.

The method of preparing factitious CINNABAR is thus:—They take ſulphur, one part, melt it in a pipkin; then put to it, by a little at a time, three parts of quickſilver, ſtirring them together till no mercury appears: then letting them cool, they grind the mixture, put it in a bolt-head, bake it, and place it over a naked fire, which they augment by degrees; a coloured fume ariſes firſt to the top of the ſubliming veſſel, which, in the further progreſs of the heat, becomes, at length, of a red, crimſon hue. Taking it off the fire, the *cinnabar* is found at top.

This ſerves for the ſame medicinal purpoſes with the *native cinnabar*: beſides which, it is likewiſe uſed by the farriers, to make pills for their horſes; and by painters, as a colour: it being a very vivid red; but drying with ſome difficulty.

This *cinnabar*, called alſo by the painters *vermilion*, is rendered more beautiful by grinding it with gum-water, and a little ſaffron: this preventing its growing black. See VERMILION.

There is likewiſe a *blue cinnabar*, made by mixing two parts of ſulphur with three of quickſilver, and one of ſal ammoniac: theſe being ſublimed produce a beautiful blue ſubſtance; whereas quickſilver and ſulphur alone produce a red. See Supplement, article CINNABAR.

The chymiſts prepare other kinds of artificial *cinnabar*; as,

CINNABAR *of antimony*, a compoſition of mercury, common ſulphur, and crude antimony, ſublimed.

It is held a diaphoretic, and alterative; and is uſed in ſcrophulous and other chronic caſes.

CINNAMON, an agreeable aromatic ſpice, brought from the Eaſt-Indies.

Cinnamon is allowed to be the bark of a tree growing in the iſland of Ceylon; and, as ſome ſay, alſo in Java, and in Malabar.

The *cinnamon* tree grows in woods, like other trees. It never riſes high: its leaves reſemble thoſe of the laurel, both as to ſubſtance, and colour*. The flowers, when they firſt begin to open, are red as ſcarlet; and if rubbed between the hands, they yield an odour more like that of cloves than of *cinnamon*. Seba ſays he found them blue, and of the bigneſs of the Italian bean-flowers. The fruit reſembles an acorn, or olive; and has neither the ſmell nor taſte of the bark. When boiled in water, it yields an oil, which, as it cools and hardens, becomes as firm and white as tallow; and is called by the Dutch *cinnamon wax*. Its ſmell is agreeable, and they make candles of it, which are only allowed to be burnt in the king's palace. It is alſo uſed in phyſic, as a balſamic and healer.

The chief virtue of the *cinnamon* tree is in its bark; which, when green, appears to be double: its exterior ſurface being browniſh, and the inner of the common *cinnamon* colour.

It is then diviſible into two barks of different colours; but theſe drying together become inſeparable, and paſs for the ſame bark; the browniſh colour changing in proportion as it dries.

When the *cinnamon* is freſh taken from the tree, it is flat, and has little taſte, ſmell, or colour; but it twiſts, or convolves, as it dries, in form of a ſtick, or cane: whence the French call it *canelle*.

By thus exhaling its ſuperfluous humidity, it acquires a ſweet briſk ſmell, and a ſharp pungent taſte. It is ſaid, that after the tree has been ſtripped of its bark, in three years it forms a new one, which is as good as the firſt: but this is not very probable. The Ceyloneſe cut down their *cinnamon* trees as ſoon as they are ſtripped, cloſe to the root: and from the ſtump there ſpring up new ones, which, in 5 or 6 years time, become trees fit for barking—A ſort of pigeons which feed on the fruit of the *cinnamon* tree, are the chief agents in propagating it. In carrying the fruit to a diſtance to their young, they drop it in various places, where it takes root. *Vid.* Phil. Tranſ. Nº 409. p. 104. *ſeq.*

Some hold, that the ſmall branches of the ſame tree make the *caſſia*; but that is a great miſtake. See CASSIA.

The natives draw from the roots of the tree a liquor, which, as it hardens, in all reſpects reſembles camphor; and which in reality is a true camphor.

Cinnamon, to be good, muſt have a briſk, agreeable taſte, and a bright brown colour. Its qualities are, to heat and dry; to promote the menſes, to fortify the ſpirits, and to help digeſtion: but its chief uſe, in medicine, is an aſtringent; with which intention it is preſcribed in diarrhœas, and weakneſſes of the ſtomach.

The *cinnamon* of the antients was different from that of the moderns; they diſtinguiſhed five kinds of *cinnamon*: the *moſylitic*; *cinnamon of the mountain*; *black* and *branched cinna-*

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* The word in its original French ſignifies *girdle*, of the Latin, *cingo*, I gird.—

* The word comes from the Greek κιναβρα, *the ſmell of goats*; by reaſon, ſays Matthiolus, in digging one kind of mineral *cinnabar*, it yields ſo ſtrong a ſcent, that the diggers are obliged to ſtop their noſtrils.

* The leaves of the *cinnamon* tree are called *folia malabathri*, and yield a bitteriſh aromatic oil, called *oleum malabathri*, reputed excellent againſt cephalalgia's, *&c.*

mon; another white and ſpongious; and a fifth of leſs value, rediſh, and of a ſtrong ſmell: as alſo a *baſtard cinnamon*, called *zinziber*: this laſt ſpecies was antiently in very high eſteem, but is now no longer known.

They extract an oil from *cinnamon*, called its *eſſence*, or *quinteſſence*, which is an excellent cardiac: it is drawn by diſtillation, like the oils of other vegetables. Indeed, being heavier than moſt other eſſential oils, it requires a greater heat to raiſe it. And for the ſame reaſon it ſinks to the bottom of the water that comes over with it into the receiver, whereas others ſwim atop, the eſſential oil of cloves, ſaſſafras, guaiacum, and box, excepted. The Dutch are ſaid to have a method of preparing, or, rather, adulterating oil of *cinnamon*, which is kept a ſecret among themſelves. And the common *cinnamon* is often adulterated with that out of which this eſſence has been extracted.

Cinnamon, by means of fire, furniſhes, beſides its oil, waters, extracts, and ſalts; out of which are compounded ſyrups, and paſtils, called *oleo-ſacchara*; together with an eſſence, that ſerves to turn all manner of wines, white and red, into hypocras.

CINNAMON-*Water* is made by diſtilling the bark (firſt infuſed for ſome days) in ſpirit of wine, brandy, or white-wine.

All the *cinnamon* conſumed in Europe comes from the Dutch; who have got the whole commerce thereof in their own hands, by becoming maſters of the Iſle of Ceylon, and deſtroying all the other *cinnamon* trees about the kingdom of Cochin.

Glove CINNAMON is alſo the bark of a tree growing in Braſil and Madagaſcar; where it is known under the name of *ravendſara*. The Portugueſe call it *cravo de marenham*.

This bark, pulverized, is ſometimes ſubſtituted for real *cloves*, though far ſhort of them in reſpect of flavour.

Saſſafras is ſometimes alſo called *cinnamon-wood*. See SASSAFRAS.

White CINNAMON, which ſome call *coſtus corticus*, or *corticoſus*, or *cortex Winteri*, *Winter's bark*, from the perſon's name who firſt brought it into England; is the bark of a tree reſembling the olive-tree, frequent in the iſlands of S. Domingo, Guadalupa, and Madagaſcar; called by the natives *ſimpli*.

This bark, which dries like that of *cinnamon*, is at firſt browniſh, of a ſharp biting taſte, like pepper; and a ſmell like muſk: as it dries, it whitens.—Some uſe it in lieu of nutmeg: and in medicine it is uſed as a ſtomachic, and ſometimes as an antiſcorbutic.

The ſame tree alſo yields a gum called *alouch*, ſometimes *bdellium*, which is no diſagreeable perfume. See Supplement, article CINNAMOMUM, and WINTERANUS CORTEX.

CINQUE-PORTS, *Quinque portus*, five havens that lie on the eaſt part of England, towards France; thus called by way of eminence, on account of their ſuperior importance; as having been thought by our kings to merit a particular regard, for their preſervation againſt invaſions.

Hence, they have a particular policy, and are governed by a keeper, with the title of *Lord warden of the cinque-ports*.

They have various privileges granted them, as a particular juriſdiction; their warden having the authority of an admiral among them, and ſending out writs in his own name.

Camden tells us, that William the Conqueror firſt appointed a warden of the *cinque-ports*; but king John firſt granted them their privileges: and that upon condition they ſhould provide eighty ſhips at their own charge for forty days, as often as the king ſhould have occaſion in the wars: he being then ſtreightened for a navy to recover Normandy.

Theſe five ports are Haſtings, Romney, Hythe, Dover, and Sandwich.—Thorn tells us, that Haſtings provided twenty-one veſſels; and in each veſſel twenty-one men. To this port belong Seaford, Pevenſey, Hedney, Winchelſea, Rye, Hamine, Wakeſbourn, Creneth, and Forthclipe.—Romney provided five ſhips, and in each twenty-four men. To this belong Bromhal, Lyde, Oſwarſtone, Dangemares, and Romenhal.—Hythe furniſhed five ſhips, and in each twenty-one ſeamen. To this belongs Weſtmeath.—Dover the ſame number as Haſtings. To this belong Folkſton, Feverſham, and Marge.—Laſtly, Sandwich furniſhed the ſame with Hythe. To this belong Fordiwic, Reculver, Serre, and Deal.

CION, or CYON, in gardening, a young ſhoot, ſprout, or ſprig, put forth by a tree.

Grafting is performed by the application of the *cion* of one plant upon the ſtock of another.

To produce a ſtock of *cions* for grafting, planting, &c. the gardeners ſometimes cut off the bodies of trees, a little above the ground, and only leave a ſtump or root ſtanding: in this caſe the redundant ſap will not fail next ſpring to put forth a great number of ſhoots.

In dreſſing dwarf-trees, a great many *cions* are to be cut off. See DWARF; ſee alſo PRUNING.

CION, in anatomy, is ſometimes uſed for the uvula. See UVULA.

CIPHER*, or CYPHER, one of the numeral characters, or figures; formed thus, o.

* The word *cipher* comes from the Hebrew *ſifre*, number, enumeration.

The *cipher* of itſelf implies a privation of value; but when diſpoſed with other characters on the left thereof, in the common arithmetic, it ſerves to augment each of their values by ten; and in decimal arithmetic, to leſſen the value of each figure to the right thereof, in the ſame proportion.

CIPHER denotes alſo a kind of enigmatic character, compoſed of ſeveral letters interwoven; which are ordinarily the initial letters of the perſons names, for whom the *cipher* is intended.

Theſe are frequently uſed on ſeals, coaches, and other moveables.—Antiently merchants and tradeſmen were not allowed to bear arms: in lieu thereof they bore their *ciphers*, or the initial letters of their names, artfully interwoven about a croſs; of which we have divers inſtances on tombs, &c.

CIPHER is alſo applied to certain ſecret characters, diſguiſed and varied; uſed for the writing of letters that contain ſecrets not to be underſtood by any but thoſe between whom the *cipher* is agreed on. This is now reduced into a ſeparate art, called *cryptographia*, *polygraphia*, and *ſteganographia*; but it appears to have been little known to the antients.

De la Guilletiere, in his *Lacedæmon antient and modern*, endeavours to make the antient Spartans the inventors of the art of writing in *cipher*.

Their ſcytala, according to him, was the firſt ſketch of this myſterious art: theſe ſcytalæ were two rollers of wood, of equal length and thickneſs; one of them kept by the ephori; the other by the general of the army ſent on any expedition againſt the enemy.

Whenſoever thoſe magiſtrates would ſend any ſecret orders to the general, they took a ſlip of parchment, and rolled it very juſtly about the ſcytala which they had reſerved; and in this ſtate wrote their intentions, which appeared perfect and conſiſtent while the parchment continued on the roller: when taken off, the writing was maimed, and without connexion; but it was eaſily retrieved by the general, upon his applying it to his ſcytala. Polybius ſays, that Æneas Tacticus, 2000 years ago, collected together twenty different manners of writing ſo as not to be underſtood by any but thoſe in the ſecret; part whereof were invented by himſelf, and part uſed before his time.—Trithemius, Bap. Porta, Vigenere, and P. Niceron, have written expreſly on the ſubject of *ciphers*.

As the writing in *cipher* is become an art; ſo is the reading, or unravelling thereof, which is called *deciphering*. See DECIPHERING.

CIPHER *with a ſingle key* is that wherein the ſame character is conſtantly uſed to expreſs the ſame word, or letter: this is eaſily deciphered with a little application.

CIPHER *with a double key* is that wherein the alphabet, or key, is changed in each line, or in each word; and wherein are inſerted many characters of no ſignificancy, to amuſe and perplex the meaning.

CIPHERING, or CYPHERING, is popularly uſed for the art of accompting; properly called *arithmetic*.

CIPPUS, among antiquaries, a little, low column, erected in roads, or other places, with an inſcription thereon; either to ſhew the way to travellers, to ſerve as a boundary, or preſerve the memory of ſomething remarkable, and particularly the grave of a defunct.

The *cippi* placed in the highway, for the convenience of travellers, were more properly called *milliary columns*. See MILLIARY *column*.

Hottinger has an expreſs treatiſe of the *cippi* of the Jews, *de cippis Hebræorum*; wherein he takes *cippus* for the tomb-ſtone of a defunct.

CIPPUS was alſo uſed in antiquity for a wooden inſtrument wherewith criminals and ſlaves were puniſhed; being a kind of clog, or ſtocks for the feet.

CIRCELLIONES. See AGONISTICI.

CIRCENSES *ludi*, CIRCENSIAN *games*, or *games of the* CIRCUS, a general term, under which were comprehended all combats exhibited in the Roman *circus*, of what kind ſoever; whether on foot, on horſeback, or in a car; wreſtling, or boxing; with ſwords, pikes, darts, or arrows; againſt men, or againſt beaſts; on the ground, or aboard veſſels.

There were few except ſlaves that gave the people this cruel pleaſure: it was an exerciſe that would have diſgraced people of any account. See GLADIATOR.

Some ſay, the *circenſian games* were ſo called from the Latin *circumenſes*; becauſe they were held in a place incompaſſed round with naked ſwords, that the combatants might not have an opportunity of eſcaping.

At firſt they are ſaid to have been exhibited on the brink of the river Tyber, and the ground encompaſſed, to the landward, with naked ſwords.

Moſt of the feaſts of the Romans were accompanied with *circenſian games*; and the magiſtrates, or other officers of the republic, frequently preſented the people with them on other occaſions.—The grand ones were held for five days, commencing on the 15th of September.

CIRCLE, CIRCULUS, in geometry, a plane figure, comprehended under one ſingle line, which returns into itſelf; having a point in the middle, from which all the lines drawn to its circumference are equal.

Properly ſpeaking, it is the ſpace included within the circumference, or periphery, that is the *Circle:* tho' in the popular uſe of the word, *Circle* is frequently uſed for the periphery alone. Every *Circle* is ſuppoſed to be divided into 360 degrees.

The area of a *Circle* is found by multiplying the periphery by the fourth part of the diameter; or half the periphery by half the diameter.—The area is alſo had by finding a fourth proportional to 1000,785, and the ſquare of the diameter: or, to 452,355, and the ſquare of the diameter.

Circles, and ſimilar figures inſcribed in them, are always as the ſquares of the diameters: ſo that they are in a duplicate ratio of their diameters; and therefore of their radii.

A *Circle* is equal to a triangle whoſe baſe is equal to the periphery, and its altitude to the radius. *Circles*, therefore, are in a ratio compounded of the peripheries and the radii.

To find the proportion of the diameter of a CIRCLE *to its periphery.*—Find, by continual biſection, the ſides of the inſcribed polygons, till you arrive at a ſide ſubtending any arch, howſoever ſmall: this found, find likewiſe the ſide of a ſimilar circumſcribed polygon; multiply each by the number of ſides of the polygon; by which you will have the perimeter of each polygon. The ratio of the diameter to the periphery of the circle, will be greater than that of the ſame diameter to the perimeter of the circumſcribed polygon; but leſs than that of the inſcribed polygon.

The difference of the two being known, the ratio of the diameter to the periphery is eaſily had in numbers very nearly true; though not juſtly ſo.

Thus, Wolfius finds it as 1000000000000000 to 3141592-6535897932. Archimedes fixed the proportion as 7 to 22. Ludolphus à Ceulen carries it to a much greater accuracy; finding, that putting the diameter for 1, the periphery is greater than 3,14159265358979323846264338387950; but, leſs than the ſame number with the laſt cypher changed into an unite.

Metius gives us the following proportion, which is the beſt that is expreſſed by ſmall numbers: if the diameter be 113, the periphery (113.31415): 10000; that is, 355, nearly.

To circumſcribe a CIRCLE *about a given regular polygon:* biſect two of the angles of the polygon E and D (*Tab. Geometry, Fig.* 28.), by the lines E F and D F; and on the point of concourſe F, as on a centre, with the radius E F, deſcribe a *Circle*. See CIRCUMSCRIBING.

To inſcribe any given regular polygon in a CIRCLE: divide 360 by the number of ſides, to find the quantity of the angle E F D; which being made, in the centre apply the chord E D to the periphery, as often as it will go: thus is the figure inſcribed in the *Circle*.

Through three given points, not in a right line, A, B, C, *Fig.* 7. *to deſcribe a* CIRCLE. On A and C ſtrike arches interſecting in D and E; and others, G and H; from C and B draw the right lines D E and H G: the point of interſection, I, is the centre of the *Circle*. Hence, 1ſt, by aſſuming three points in the periphery, or the arch of any *Circle*, the centre may be found, and the given arch be perfected.

2dly, If three points of any periphery agree, or coincide with three points of another; the whole peripheries agree, and the *Circles* are equal.

3dly, Every triangle may be inſcribed in a *Circle*.

In optics, it is ſhewn, that a *Circle* never appears truly ſuch, unleſs either the eye be directed perpendicularly to its centre; or the diſtance of the eye from the centre, when directed obliquely, be equal to the ſemidiameter of the *Circle:* in every other caſe, the *Circle* appears oblong; and to make a *Circle* that ſhall appear ſuch, it muſt be oblong.

arallel, or *concentric* CIRCLES, are ſuch as are equally diſtant from each other in every point of their peripheries; or are deſcribed from the ſame centre: as, on the contrary, thoſe ſtruck from different centres, are ſaid to be *eccentric*.

he Quadrature of the CIRCLE, or the manner of making a ſquare, whoſe ſurface is perfectly and geometrically equal to that of a *Circle*, is a problem that has employed the geometricians of all ages. See QUADRATURE.

Many maintain it to be impoſſible: Des Cartes, in particular, inſiſts on it, that a right line, and a *Circle*, being of different natures, there can be no ſtrict proportion between them: and, in effect, we are likewiſe at a loſs for the juſt proportion between the diameter and circumference of a *Circle*.

Archimedes is the perſon who has come the neareſt to the quadrature of the *Circle:* all the reſt have made paralogiſms.—Charles V. offered a reward of 100000 crowns to the perſon who ſhould ſolve this celebrated problem; and the ſtates of Holland have alſo propoſed a reward for the ſame.

RCLES *of the higher kinds*, are curves wherein $AP^m : PM^m :: PM : PB$. or, $AP^m : PM^m :: PM^n PB^n$. *Tab. Analyſis, Fig.* 8. *Cor.* I. Suppoſe $AP = x$, $PM = y$, $AB = a$: then will $PB = a - x$. And conſequently $x^m : y^m :: y : a - x$. Hence we have an equation that defines infinite *Circles*, viz. $y^m + 1 = a x^m - x m + 1$; and another defining infinite other *Circles*, viz. $y m + n = (a - x) n x^m$.

Cor. II. If $m = 1$, then will $y^2 = a x - x^2$; and therefore Circle of the firſt order is contained under this equation alone. If $m = 2$, $y^3 = a x^2 - x^3$. which equation defines a *Circle* of the ſecond order.

CIRCLES *of the Sphere*, are ſuch as cut the mundane ſphere, and have their periphery either on its moveable ſurface, or in another immoveable, conterminous, and equidiſtant ſurface.

Hence ariſe two kinds of *Circles*, *moveable*, and *immoveable*.

The firſt, are thoſe whoſe peripheries are in the moveable ſurface, and which therefore revolve with its diurnal motion; as, the *meridians*, &c.

The latter, having their periphery in the immoveable ſurface, do not revolve; as the *ecliptic*, *equator*, and its *parallels*, &c.

If a ſphere be cut in any manner, the plane of the ſection will be a *Circle*, whoſe centre is in the diameter of the ſphere.

Hence the diameter of a *Circle* paſſing through the centre, being equal to that of the *Circle* which generated the ſphere; and that of a *Circle* which does not paſs through the centre, being only equal to ſome chord of the generating *Circle;* the diameter being the greateſt of all chords, there hence ariſes another diviſion of the *Circles* of the ſphere, *viz.* into *great* and *leſſer*.

Great CIRCLE *of the Sphere*, is that which divides it into two equal parts, or hemiſpheres; having its centre in the centre thereof.

Hence, all *great circles* are equal, and cut each other into equal portions, or ſemicircles.

The *great Circles* are the *horizon*, *meridian*, *equator*, *ecliptic*, the *colures*, and the *azimuths;* which ſee in their places.

Leſſer CIRCLE *of a Sphere*, is that which divides the ſphere into two unequal parts, and has its centre in the axis of the ſphere, but not in the centre thereof.

Theſe are uſually denominated from the great *Circles* they are parallel to; as, *parallels of the equator*, &c.

CIRCLES *of Altitude*, otherwiſe called *almucantars*, are *Circles* parallel to the horizon, having their common pole in the zenith, and ſtill diminiſhing as they approach the zenith.

They have their names from their uſe; which is to ſhew the altitude of a ſtar above the horizon.

CIRCLES *of Declination*, are great *Circles* interſecting each other in the poles of the world.

Diurnal CIRCLES, are immoveable *Circles*, ſuppoſed to be deſcribed by the ſeveral ſtars, and other points of the heavens, in their diurnal rotation round the earth; or rather, in the rotation of the earth round its axis.

The *Diurnal Circles* are all unequal: the equator is the greateſt.

CIRCLE *Equant*, in the Ptolemaic aſtronomy, is a *Circle* deſcribed on the centre of the equant.

Its chief uſe is, to find the variation of the firſt inequality.

CIRCLES *of Excurſion*, are *Circles* parallel to the ecliptic, and at ſuch a diſtance from it, as that the excurſions of the planets towards the poles of the ecliptic, may be included within them; uſually fixed at 10 degrees.

It may be here added, that all the *Circles* of the ſphere above deſcribed, are transferred from the heavens to the earth; and thence come to have a place in geography, as well as in aſtronomy: all the points of each *Circle* being conceived to be let fall perpendicularly on the ſurface of the terreſtrial globe, and ſo to trace out *Circles* perfectly ſimilar to them.

Thus, the terreſtrial equator is a line, conceived preciſely under the equinoctial line, which is in the heavens; and ſo of the reſt.

Horary CIRCLES, in dialling, are the lines which ſhew the hours on dials; though theſe be not drawn circular, but nearly ſtrait.

CIRCLES *of Latitude*, or *Secondaries of the Ecliptic*, are great *Circles* parallel to the plane of the ecliptic, paſſing through the poles thereof, and through every ſtar and planet.

They are ſo called, becauſe they ſerve to meaſure the latitude of the ſtars, which is nothing but an arch of one of theſe *Circles*, intercepted between the ſtar and the ecliptic.

CIRCLES *of Longitude*, are ſeveral leſſer *Circles*, parallel to the ecliptic; ſtill diminiſhing, in proportion as they recede from it.

On the arches of theſe *Circles*, the longitude of the ſtars is reckoned.

CIRCLE *of perpetual Apparition*, one of the leſſer *Circles*, parallel to the equator; deſcribed by any point of the ſphere touching the northern point of the horizon; and carried about with the diurnal motion.

All the ſtars included within this *Circle* never ſet, but are ever viſible above the horizon.

CIRCLE *of perpetual Occultation*, is another *Circle* at a like diſtance from the equator; and contains all thoſe ſtars which never appear in our hemiſphere.

The ſtars ſituate between theſe *Circles*, alternately riſe and ſet at certain times.

Polar CIRCLES, are immoveable *Circles*, parallel to the equator, and at a diſtance from the poles equal to the greateſt declination of the ecliptic.

That next the northern pole is called the *arctic;* and that next the ſouthern one the *antarctic*.

CIRCLES *of Poſition*, are *circles* paſſing through the common interſections of the horizon and meridian, and through any degree of the ecliptic, or the centre of any ſtar, or other point in the heavens; uſed for finding out the ſituation or poſition of any ſtar.

They are uſually made ſix in number; and cut the equator into twelve equal parts, which the aſtrologers call the *celeſtial houſes.* Hence ſome call them *circles of the celeſtial houſes.*

Antarctic **CIRCLE.** See the article ANTARCTIC.

Arch of a Circle. See the article ARCH.

Arctic **CIRCLE.** See the article ARCTIC.

Axis of a **CIRCLE.** See the article AXIS.

Center of a **CIRCLE.** See the article CENTER.

Eccentric **CIRCLE.** See the article ECCENTRIC.

Equal **CIRCLE.** See the article EQUAL.

Fairy **CIRCLE.** See the article FAIRY.

Right **CIRCLE.** See the article RIGHT.

Secondary **CIRCLES.** See the article SECONDARY.

Segment of a **CIRCLE.** See the article SEGMENT.

Vertical **CIRCLES**, or *azimuths*. See VERTICAL, and AZIMUTH.

CIRCLE, CIRCULUS, is underſtood among the ſchoolmen, of a viciſſitude of generations, ariſing one out of another.

Thus, good concoction cauſes a good habit of body; a good habit of body produces ſtrength and vigour; theſe occaſion frequent exerciſes; and theſe a good concoction.

It is a celebrated dogma of the Scotiſts, ‘ There is no *circle* ‘ in cauſes of the ſame order, or kind.’

CIRCLE, in logic, that fault of an argument that ſuppoſes the principle it ſhould prove, and afterwards proves the principle by the thing it ſeemed to have proved.

Or, a *circle* in logic, called alſo *ſyllogiſtic circle*, is when the ſame terms are proved, *in orbem*, by the ſame terms; and the parts of the ſyllogiſm, alternately by each other, both directly and indirectly.

There are two kinds of *circles*; the one *material*, the other *formal*.

The *formal* is that which in two reciprocal ſyllogiſms begs the medium, which is the next cauſe of the greater extreme. This kind is by no means to be admitted: otherwiſe, the ſame thing becomes both prior and poſterior; the cauſe and effect of itſelf; which is abſurd.

The *material circle*, called alſo *regreſſus*, conſiſts of two ſyllogiſms, the former whereof proves the cauſe by the effect; and the latter the effect by the cauſe: this may be admitted.

CIRCLES *of the Empire*, are ſuch provinces, and principalities of the empire, as have a right to be preſent at diets.

The diviſion of the empire into ſix *circles*, was eſtabliſhed by Maximilian I. in 1500. at Augſbourg: twelve years afterwards he divided it afreſh, into ten *circles*; which partition was confirmed by Charles V. at the diet of Nuremberg, in 1522.

Though the order of theſe *circles* has never been well regulated; yet, in the imperial matricula, it is as follows: the *circle* of Auſtria, that of Burgundy, of the Lower Rhine, of Bavaria, Upper Saxony, Franconia, Suabia, Upper Rhine, Weſtphalia, and the Lower Saxony. See DIET.

CIRCUIT, or CIRCUITY, in law; a longer courſe of proceeding to recover the thing ſued for, than is needful.

Thus, if a man grant a rent-charge of 10*l.* out of his manor, and after, the grantee diſſeizeth the grantor of the ſame manor, who brings an aſſiſe, and recovers the land, and 20*l.* damages; which being paid, the grantee brings his action for 10*l.* of his rent, due during the time of the diſſeiſin, and which he muſt have had, if no diſſeiſin had been: this is called *circuit of action*; becauſe, whereas the grantor was to receive 20*l.* damages, and to pay 10*l.* rent, he might have received but 10*l.* for damages, and the grantee have kept the other.

CIRCUIT, is alſo the journey, or progreſs the judges take, twice every year, through the ſeveral counties of England and Wales, to hold courts, and adminiſter juſtice, where recourſe cannot ſo well be had to the king's courts at Weſtminſter. See JUDGE, and ASSISE.

England is divided into ſix *circuits*; *viz.* the Home *circuit*, Norfolk *circuit*, Midland *circuit*, Oxford *circuit*, Weſtern *circuit*, and Northern *circuit*.

CIRCUITORES. See AGONISTICI.

CIRCULAR, any thing that is deſcribed, or moved in a round; as the circumference of a circle, or the ſurface of a globe. See CIRCLE.

The *circular* form is of all others the beſt diſpoſed for motion; and the moſt capacious.

The modern aſtronomers ſhew, that the heavenly bodies do not move in *circular*, but in elliptic orbits. See ORBIT, PLANET, &c.

CIRCULAR *Arches.* See the article ARCH.

CIRCULAR *Letter*, a letter directed to ſeveral perſons, who have the ſame intereſt in ſome common affair; as, in the convocation of aſſemblies, &c.

CIRCULAR *Lines*, an appellation given by ſome to ſuch ſtrait lines as are divided from the diviſions made in the arch of a circle.—Such are ſines, tangents, ſecants, &c. See SINE, and TANGENT.

CIRCULAR *Numbers*, are ſuch whoſe powers end in the roots themſelves; whoſe ſquare is 25, and cube 125. See NUMBER.

CIRCULAR *Sailing*, is that performed in the arch of a great circle.

Circular ſailing, of all others, goes the neareſt or ſhorteſt way: and yet there are ſuch advantages in ſailing by rhumbs, that this latter is generally preferred. See SAILING.

CIRCULAR *winding Stairs.* See the article STAIRS.

Reſiſtance of a **CIRCULAR** *Segment.* See RESISTANCE.

CIRCULAR *Velocity*, a term in aſtronomy, ſignifying that velocity of a planet, or revolving body, which is meaſured by the arch of a circle: as ſuppoſe by A *b* (*Tab. Aſtronomy, fig.* 10.); deſcribed on the centre of attraction S.

The *circular velocity* of a body moving from B to C, is meaſured by the arch B C.

CIRCULATION, the act of moving round, or in a *circle*.

We ſay, the *circulation* of the blood; the *circulation* of the ſap; of the ſpirits, &c.

As in the great world we find a perpetual and orderly *circulation* of waters, conveyed from the ſea by ſubterraneous paſſages, ſprings, &c. and returned thither again by rivers, &c. ſo in the little world, man, a like circuit is obſerved; the blood being continually driven from the heart, by the arteries, to all parts of the body; and brought back again to the heart by the veins.

CIRCULATION *of the blood*, denotes a natural motion of the blood in every living animal; whereby that humour is alternately conveyed from the heart to all the parts of the body by the arteries, and returned from the ſame parts to the heart by the veins.

The heart, we have elſewhere ſhewn, is a muſcle, into the ventricles or cavities whereof, all the veins diſcharge themſelves, and from which all the arteries ariſe; having withal, a reciprocal action of dilatation, or diaſtole; and conſtriction, or ſyſtole. Now, the neceſſary effect of ſuch alternate action, is, that the heart, by turns, both receives and expels the blood. The blood expelled out of the right ventricle, muſt be carried through the pulmonary artery (which ariſes thence) into the lungs; from which it muſt be returned, by the pulmonary vein, to the left ventricle (in which that vein terminates). From the left ventricle, the blood thus imported, is, by the conſtriction of that part, again expelled into the aorta, and by it diſtributed all over the reſt of the body; and thence is returned again to the right ventricle by the cava, which completes the *circulation*.

The *circulation* of the blood has been generally allowed to have been firſt diſcovered in England, in the year 1628. by Harvey, a phyſician of our own country; though there are ſeveral authors who diſpute it with him.

Janſſon ab Almeloveen, in a treatiſe *of new inventions*, printed in 1684. quotes ſeveral paſſages from Hippocrates, to prove that the *circulation* was known to him. Wallæus, *ep. ad Barthol.* pretends, it was known not only to Hippocrates, but alſo to Plato and Ariſtotle.—It is added, that the Chineſe phyſicians taught it, 400 years before it was ſpoken of in Europe.

Some go back as far as Solomon, and imagine they ſee ſome traces of it in Eccleſiaſtes, ch. xii.—Bern. Genga, in an Italian treatiſe of anatomy, quotes ſeveral paſſages from Realdus Columbus, and And. Cæſalpinus, whereby he endeavours to prove, that they admitted a *circulation*, long enough before Harvey. He adds, that Fra. Paolo Sarpi, the famous Venetian, from a conſideration of the ſtructure of the valves of the veins, and other experiments, concluded a *circulation*.

Leonicenus adds, that F. Paolo durſt not make known his diſcovery, for fear of the inquiſition; that he therefore only communicated the ſecret to Fab. ab Aquapendente; who, after his death, depoſited the book he had compoſed on it in the library of S. Mark; where it lay hid a long time, till Aquapendente diſcovered the ſecret to Harvey, who then ſtudied under him at Padua; and who, upon his return to England, a country of liberty, publiſhed it as his own.—But much of this is fable. Sir Geo. Ent has ſhewn, that Father Paul received the firſt notice of the *circulation* of the blood from Harvey's book on the ſubject, which was carried to Venic by the embaſſador of the republic at the court of Englan who ſhewed it to F. Paul, by whom ſome extracts we made from it, which, coming afterwards into the hands of h heirs, gave riſe to an opinion in ſeveral perſons, that he w the author of the papers, and the invention. See Doug Biblioth. Anat. Spec. p. 227. Edit. 1734.

The *circulation* of the blood is evinced, from the follow conſiderations.—1. All the blood of a living animal, up wounding any one of the larger arteries, is, in a little tim evacuated; and that with a conſiderable force: as app from the operations of butchers, &c.

Hence, it follows, that the blood has a paſſage from eve part of the animal body into every artery: and if the wh maſs of blood be found to move on this occaſion, it is ev dent it muſt have moved before.

2. The great quantity of blood driven out of the heart into arteries at every pulſe, makes a *circulation* neceſſary; ſin without it, an infinitely greater ſtock of blood muſt be ſuppo

in the body of a man, than any obſervation, or experiment, will allow of.

For though the antients, who knew not this *circulation*, imagined, that only a drop or two was expelled at each ſyſtole, which they were neceſſitated to ſuppoſe, to avoid the too great diſtention of the arteries, from a more conſiderable influx: yet it is certain, and even demonſtrable, that there muſt needs be an ounce, or more, driven into them at each time; and yet ſome compute, that there are five or ſix thouſand pulſations in an hour.

3. Any of the arteries, being tyed with a thread, ſwell, and beat, between the bandage and the heart; but they grow flaccid between the bandage and the extremities of the body.

If now the artery be cut between the bandage and the heart, blood ſtreams out, even to death: if it be cut between the bandage and the extremities of the body, the quantity of blood it yields is very ſmall.

The vital blood, therefore, flows through the arteries; and its courſe is from the heart towards the extremes of the body: and this it does in every point of the body, internal and external, ſtill out of a wider part into a narrower; out of the trunk into the branches. And it is on this principle, alone, that all the blood may be derived into any artery, and evacuated at it.

4. Any one of the larger veins, being bound up with a thread, ſwells between the extremes of the body and the bandage; but without beating: and between the bandage and the heart it becomes flaccid.

If opened in the former part, it bleeds largely; if in the latter, it ſcarce bleeds at all: the blood, therefore, flows briſkly from every part of the body into this vein; and its courſe is from the extremes of the body towards the heart; from the narrower parts of the vein, towards the wider parts; from the branches to the trunk.

From the whole, it is evident, that all the arteries of the body are continually bringing the blood from the left part of the heart, through the trunks of the arteries, into the branches; and from thoſe to all parts of the body, internal and external: and, on the contrary, that all the veins, excepting the porta, are perpetually bringing back the blood from the extreme parts into the ſmaller branches; from thoſe it paſſes into the larger, at length into the trunks, and thence into the cava; and through the ſinus venoſus, or trunk of that vein (which ends in the cavity of the right auricle), into the heart.

The blood being arrived here, its motion, or *circulation*, is continued as follows:

The auricles of the heart being large hollow muſcles, furniſhed with a double ſeries of ſtrong fibres proceeding with a contrary direction to two oppoſite tendons, the one adhering to the right ventricle, the other to the ſinus venoſus; as alſo with innumerable veins and arteries; by the contractile force of theſe auricles, the blood will be vigorouſly expreſſed, and drove into the right ventricle; which, upon this contraction, is rendered flaccid, empty, and diſpoſed to admit it.

If now the right ventricle, thus full of blood, by the contraction of its fibres preſs the blood towards the aperture again; the venous blood, at the ſame time, pouring in, will drive it back again into the cavity, and mix it more intimately; till, riſing up againſt the parietes, it raiſe the valvulæ tricuſpides, which are ſo connected to the fleſhy columns extended on the oppoſite ſide, as that, when laid quite down, they cannot cloſe the parietes of the right ventricle: theſe it thruſts towards the right auricle, till, being there joined, they ſtop the paſſage very cloſely, and prevent any return.

By the ſame means, the ſame blood riſes up into the three ſemilunar valves, placed in the extremity of the other mouth, and lying open to the pulmonary artery: theſe it ſhuts cloſe againſt the ſides of the artery, and leaves a paſſage into the artery alone. The venous blood, therefore, that is, the blood of the whole body, continually moves out of the ſinus, or trunk of the vena cava, through the right auricle, and right ventricle, into the pulmonary artery, and that in a continued and forcible ſtream.

The blood carried by this artery into the lungs, and diſtributed by its branches through the whole ſubſtance thereof, is firſt admitted into the extremities of the pulmonary vein, called *arteria venoſa*; whence, paſſing into four large veſſels, which unite together, it is brought to the left ſinus venoſus, or trunk of the pulmonary vein; by the force of whoſe muſculous ſtructure it is driven into the left ventricle, which, on this occaſion, is relaxed, and by that means prepared to receive it. Hence, as before, it is driven into the left ventricle, which is relaxed by the ſame means; and the valvulæ mitrales opening, admit it into the left ventricle, and hinder its reflux into the pulmonary vein.

From hence it is forced into the aorta, at whoſe orifice there are three ſemilunar valves; which alſo prevent a reflux, by cloſing the ſame.

And thus is *circulation* effected; all the blood ſent into the lungs, and received into the arteria venoſa, ſinus venoſus, left auricle and ventricle, being here continually propelled into the aorta; whoſe ramifications are ſpread throughout all the reſt of the body, with a violent motion.

This motion, in living animals, is attended with the following phænomena:

1. Both the venous ſinus's are filled, and grow turgid at the ſame time. 2. Both auricles grow flaccid at the ſame time, and both are filled at the ſame time, with blood impelled by the contractile force of its correſpondent muſcular venous ſinus. 3. Each ventricle contracts, and empties itſelf of blood at the ſame time; and the two great arteries are filled and dilated at the ſame time. 4. As ſoon as the blood, by this contraction, is expelled, both ventricles being empty, the heart grows longer and broader, and, conſequently, more flaccid and capacious. 5. Upon which, the muſcular fibres of both venous ſinus's contract, and expreſs the blood contained in them into the ventricles of the heart. 6. In the mean time, the venous ſinus's are again filled, as before; and the auricles, *&c.* return into their former habitude. 7. And this alternation continues till the animal begins to languiſh, under the approach of death; at which time the auricles and venous ſinus's make ſeveral palpitations, for one contraction of the ventricle.

Thus is all the blood, in its return from every point of the body, internal and external, and from every point of the heart and its auricles, impelled into the right ventricle; out of that into the lungs; thence into the left ventricle; and thence through the whole extent of the body; and thence again is brought back to the heart.

As to the manner of the blood's paſſing out of the arteries into the veins, in order to its being returned to the heart; there are two opinions.

In the firſt, the veins and arteries are ſuppoſed to open into each other, or to be continued from each other, by anaſtomoſes, or inoſculations of their extremities.

In the latter, the extreme capillary arteries are ſuppoſed to let out their blood into the pores of the ſubſtance of the parts; on whoſe nutrition part is ſpent, and the reſt is received in at the mouths of the capillary veins.

Each of theſe manners muſt be allowed to have its reaſon: for without the firſt it were difficult to account for ſo quick a return of the blood to the heart, as in effect we find; beſides, that, in ſome of the larger veſſels, there is a confeſſed anaſtomoſis, *v. g.* in the ſplenic artery with the ſplenic vein, *&c.* whence authors conclude the ſame contrivance to hold in the leſſer veſſels; even in the ſmalleſt twigs in the extreme parts of the body, though not diſcovered by the eye; nature being ordinarily found very uniform, and conſiſtent with herſelf.

Riolanus, however, who will allow of no *circulation* but by anaſtomoſes; allows of none, neither, but by the larger veſſels.

The reaſon of the latter opinion is deduced hence; that if part of the arterial blood did not ouſe out into the ſubſtance of the parts, they could not be nouriſhed thereby: for the blood, while contained in the veſſels, may indeed convey warmth thereto, but no nutriment; the very veſſels themſelves being not nouriſhed by the fluid running in their cavity, but by capillaries paſſing their coats.

If, then, the blood be driven out of the veſſels in a greater quantity than is required for nutrition; the redundancy muſt be imbibed by the capillary veins.

M. Leewenhoeck ſeemed to have put this matter out of doubt, by his microſcopes; with which he diſcovered the inoſculations, or continuations of the extremities of the veins and arteries in fiſhes, frogs, *&c.* but ſome ſtill doubt, whether there be ſuch continuations in the extremes of the veins and arteries in human bodies and quadrupeds; thoſe animals, it has been hitherto obſerved in, being either fiſh, or ſome of the amphibious kind, which have but one ventricle in the heart, and their blood actually cold: to which it may be added, that the blood in theſe creatures does not circulate with that rapidity as in thoſe whoſe hearts have two ventricles.

This difference, in the principal organs of *circulation*, occaſioned Mr. Cowper to make experiments on other animals, whoſe parts have the ſame ſtructure with thoſe of man. In the omentum of a cat, he ſaw the blood move briſkly through the inoſculations; the ſame, alſo, he found of the omentum, and much clearer in the meſentery, of a dog. He adds, that the extremities of the veſſels are not equally leſſened, in the inoſculations, in different animals.

In the tail of the tadpole, he frequently obſerved ſeveral communications between the veins and the arteries; through each of which two globules of blood might paſs abreaſt. In young fiſh, particularly grigs, the communicant branch is ſo ſmall, that one globule of blood can ſcarce paſs in the ſpace of three ſeconds.

In a fœtus, the apparatus for the *circulation* is ſomewhat different from that above deſcribed.—The ſeptum, which ſeparates the two auricles of the heart, is pierced through with an aperture, called the *foramen ovale*; and the trunk of the pulmonary artery, a little after it has left the heart, ſends out a tube in the deſcending aorta, called the *communicating canal*.

The fœtus being born, the foramen ovale cloſes, by degrees, and the canal of communication dries up, and becomes a ſimple ligament.

This mechaniſm once known, it was eaſy to perceive its uſe.—For while the fœtus is incloſed in the uterus, it receives no air, but that little furniſhed it by the umbilical vein: its lungs, therefore, cannot ſwell and ſubſide as they do after the birth, and after the free admiſſion of the air. They continue almoſt at reſt, and without any motion; their veſſels are, as it were, full of themſelves, and do not allow the blood to circulate, either in abundance, or with eaſe.

Nature, therefore, has excuſed the lungs from the paſſage of the greateſt part of the blood; and has contrived the foramen ovale, by which part of the blood of the vena cava, received into the right auricle, paſſes into the left auricle, as the mouth of the pulmonary veins; and by this means is found as far in its journey as if it had paſſed the lungs.

But this is not all: for the blood of the cava, which, miſſing the foramen ovale, paſſes from the right auricle into the right ventricle; being ſtill in too great quantity to paſs by the lungs, whither it is driven through the pulmonary artery; the communicant canal intercepts part of it in the way, and pours it immediately into the deſcending aorta.

This is the doctrine of Harvey, Lower, and moſt other anatomiſts; but M. Mery, of the Royal Academy, has made an innovation in it.

He aſſigns another uſe for the foramen ovale; and maintains, that the whole maſs of blood brought from the cava to the right ventricle, paſſes, as in adults, into the pulmonary artery; whence part of it is conveyed by the communicant canal into the aorta; and the reſt brought from the lungs by the pulmonary vein into the left auricle, where it is divided into two parts; the one paſſing through the foramen ovale into the right ventricle, without circulating through the aorta, and the reſt of the body; the other part puſhed, as in adults, by the contraction of the left ventricle, into the aorta, and the whole body of the fœtus.

The whole queſtion, then, turns upon this; *viz.* whether the blood paſs through the foramen ovale from the right to the left ventricle, or from the left to the right?

M. Du Verney aſſerts the antient opinion, againſt M. Mery; and maintains, that the foramen ovale has a valve ſo diſpoſed, as to be opened by the blood driving into the right ventricle; but ſhut the more firmly, by its puſhing towards the left. But M. Mery denies the exiſtence of any ſuch valve.

Again, in an adult, the aorta, being to receive all the blood of the pulmonary artery, is found of the ſame bigneſs. In a fœtus, the two arteries are to receive unequal quantities, which of the two ſyſtems ſoever be followed.

According to the common opinion, the aorta, receiving more blood than the pulmonary, ſhould be bigger: according to the opinion of M. Mery, the pulmonary artery ſhould be the bigger, as being eſteemed to receive a greater quantity of blood.

To judge of the two ſyſtems, therefore, it ſhould ſeem, there needed nothing but to determine which of the two veſſels were biggeſt in a fœtus.

M. Mery always found the pulmonary artery half as big again as the aorta; and, on the other hand, Mr. Tauvry, who ſeconded M. Du Verney, produces caſes where the pulmonary is leſs than the aorta: the facts on both ſides being examined by the French Royal Academy.

M. Tauvry adds, that though the pulmonary artery ſhould be greater than the aorta, yet this does not prove, that more blood paſſes the firſt than the ſecond; ſince it may be accounted for from the blood's preſſing more ſlowly towards the lungs, which it finds ſome difficulty to penetrate, and accordingly ſwells, and is driven back.

M. Littre, upon diſſecting an adult, in whom the foramen ovale was ſtill open, and meaſuring the capacities of the veſſels on each ſide, declares for M. Mery.

For the ſource of the *circulation* in the fœtus, anatomiſts are again divided.—The popular opinion is, that, during geſtation, the arteries of the uterus convey their blood into the placenta, which is nouriſhed by it, and the ſurplus conveyed into the roots of the umbilical vein, which makes part of the navel-ſtring: thence it is carried to the liver of the fœtus, where it enters the vena cava, and is thence conveyed to the right ventricle of the heart, and diſtributed as before.

Again, the blood, brought from the iliac arteries of the fœtus, enters the navel-ſtring by the umbilical arteries; then paſſes into the placenta, where it is reſumed by the veins of the uterus, which carry it back again to the mother; and perhaps, alſo, by the roots of the umbilical vein, which mix it afreſh with the blood of the mother.

According to this ſyſtem, therefore, it is the blood of the mother that ſupplies the child; which is here only regarded as a diſtinct member, or part, of her frame.

The beating of her heart ſends it a portion of her blood; and ſo much of the impulſe is preſerved, as ſuffices to maintain that languid *circulation* which a fœtus enjoys; and, in all probability, gives that feeble pulſation obſerved in the heart.

Other anatomiſts maintain, that the fœtus is only ſupplied with chyle from the glands of the uterus; which is further elaborated, and turned into blood, in the veſſels of the fœtus; and circulates therein, without any further communication with the mother.—Theſe allow of no reciprocal *circulation*, excepting between the placenta and the fœtus.

But the former opinion ſeems beſt ſupported: for the placenta, being ſeparated from the uterus, during the time of geſtation, neither yields any chyle, nor any other thing but blood. Beſides, M. Mery has ſhewn, that the uterus has no glands to furniſh any chyle.

Two other obſervations, of the ſame author, confirm the popular ſyſtem: the inner ſurface of the uterus is lined with veins; and the outer ſurface of the placenta is not lined with any membrane: now as it is by theſe two ſurfaces that the two ſeem, in ſome meaſure, glued together; it looks as if they were only left without membranes, for an immediate communication between their blood-veſſels.

Add to theſe a fact, whereof M. Mery was an eye-witneſs: A woman, big with child, was killed by a fall; in the cavity of her belly were found ſeven or eight pints of blood; all the blood-veſſels being emptied: the child, too, was found dead; but without the leaſt appearance of any wound, or contuſion; all its blood-veſſels being empty of blood, like thoſe of the mother. The body of the placenta ſtill adhered to the whole inner ſurface of the uterus; nor was there any extravaſated blood there.

Now the blood here had no other way to diſcharge itſelf, but by the veins of the uterus: whence it follows, that thoſe veins bring back to the mother the blood of the fœtus; which, alone, eſtabliſhes the whole ſyſtem. If the *circulation* were only from ths fœtus to the placenta, and not alſo to the mother; the dead child would have had all its blood.

Upon the whole, the blood in the lungs of the fœtus has none of the advantages of air, or reſpiration; which yet being neceſſary, nature, it is ſuppoſed, takes care that it receives a portion of air, mixed together with its mother's blood, and tranſmitted to it by the umbilical veſſels, to be diffuſed through the body.

This is confirmed hence; that, by conſtringing the navel-ſtring very tight, the child dies like a man ſtrangled: which appears to be owing to nothing but the want of air. Add to this, that as ſoon as the mother ceaſes to reſpire, the fœtus expires.

As to the velocity of the circulating blood, and the time wherein a *circulation* is completed; ſeveral computations have been made.—By Dr. Keill's account, the blood is driven out of the heart into the aorta, with a velocity which would carry it 52 feet in a minute; but this velocity is continually abated in the progreſs of the blood through the numerous ſections, or branches, of the arteries: ſo that, before it arrive at the extremities of the body, its motion is infinitely diminiſhed.

The ſame author, upon a moderate ratio of the branches of the arteries to the trunks, ſhews, that the greateſt velocity of the blood is to the leaſt, in a greater proportion than of 10000, 00000,00000,00000,00000,00000,00000,00000 to 1.

The ſpace of time wherein the whole maſs of blood may ordinarily circulate, is variouſly determined.—Some of the lateſt writers ſtate it thus: ſuppoſing the heart to make 2000 pulſes in an hour, and that at every pulſe there is expelled an ounce of blood; as the whole maſs is not ordinarily computed to exceed 24 pounds, it muſt be circulated ſeven or eight times over, in the ſpace of an hour.

Circulation *of the ſpirits*, or *nervous juice.* That the ſpirits circulate, is evinced, in the ſame manner as ſome authors chooſe to prove the *circulation* of the blood; *viz.* that as the heart drives out, every hour, three or four thouſand ounces of blood; whereas, ordinarily, there is not above two thouſand in the whole body; there is a neceſſity for the blood, driven out, to return to the heart, in order to ſupply a fund to be expelled.

In like manner it is ſhewn, that there is formed, each hour, a large quantity of ſpirits, which are nothing but the more ſubtil parts of this blood driven out from the heart; whence it is inferred, that theſe two muſt circulate.

The courſe they are ſuppoſed to take, is this.—The moſt ſubtil parts of the arterial blood, being carried from the heart to the brain by the carotid arteries, are thrown violently into the fine net-work wherewith the bottom of the ventricles of the brain is lined; whence the more delicate parts are driven into the mouths of the choroid arteries, where they continue their rapid motion, and diſcharge themſelves at the pores where thoſe veſſels terminate around the pineal gland.

Hence they enter that gland, and there form a conſtant ſpring of ſpirits; which, being here purified, enter the cavities of the brain; and, inſinuating into the pores of its ſubſtance, flow into the lymphatics; whence they are carried to the heart by two ways: thoſe from the upper parts by the ſubclavian veins, and the adjacent veſſels; thoſe from the lower, being diſcharged into Pecquet's reſervoir, proceed by the thoracic duct; and at laſt, by the deſcending veins, to the heart; whence they begin their courſe afreſh.

Circulation *of the Sap* is a natural motion of the nutriti juice of plants, from the root to the extreme parts, and then back again to the root.

The experiments of modern naturaliſts, and gardeners, ſee to prove a *circulation* in the body of plants, by veins and a teries, analogous to that in animals.

M. Perrault ſtarted the *circulation* of the ſap in France, a propoſed it, in 1667. to the Royal Academy: though M Major, a phyſician of Hambourg, had publiſhed it, unkno to M. Perrault, two years before. A year and half af wards, M. Mariotte propoſed the ſame to the academy a ne a new thing; not knowing that M. Perrault had been beforehand with him: and the great Malpighi appears to have entertained the ſame thought about the ſame time.

The opinion, however, was not univerſally received: ſome of the ableſt botaniſts, and particularly M. Dodart, proteſting openly againſt it.

That author allows of a juice mounting from the root to the extremities of the branches; and of another deſcending from thoſe extremities to the root: the firſt imbibed from the ſoil, and digeſted in the root, for the nouriſhment of the plant; the ſecond received, from the moiſt parts of the air, in at the extremities of the branches. The riſing and deſcending juices, therefore, according to him, are not the ſame; or, that which riſes, never deſcends, and reciprocally; *i.e.* there is no *circulation*.

Dr. Tong, in the *Philoſophical Tranſactions*, maintains, that the ſap always riſes, and never properly deſcends; having only a ſubſiding, or recidivation, which he can by no means call a *circulation*.

Mr. Switzer owns himſelf at a loſs for the method wherein a *circulation* ſhould be effected; as well as for the parity of reaſon commonly urged for a *circulation* of the ſap, and of the blood. In animals, he obſerves, the degree of growth, or extenſion, is but very ſmall: ſo that the blood, not being employed in any other ſervice, may be eaſily ſuppoſed to circulate: but trees growing to an unlimited tallneſs, it is probable, the great effort of nature is employed in extending them that way; and that the nutritious juice only aſcends. He adds, that, as to the ſwelling or extenſion of trees in bulk, it evidently ariſes from the effuſion of the ſap from the heart of the tree through the pores; which dilates the whole inſenſibly, by accumulating circle on circle; which are annual gradations eaſily obſerved upon cutting a branch, or trunk, acroſs.

But ſtill the arguments for a *circulation* ſeem of more weight than any thing here urged againſt it.—The ſame experiments of ligature, and inciſion, which evince a *circulation* in animals, have been made in plants; particularly in ſuch as abound in ſap; as the ſpurges, &c. and with the ſame ſucceſs: the part between the ligature and the root ſwelling very conſiderably, and the other much leſs.

The ligatures are to be made with metalline rings. Dr. Liſter gives us an inſtance, in the cataputia minor, where the ligature being only a ſilken thread, tied as hard as poſſible without breaking the ſkin; no greater ſwelling aroſe on one ſide the ligature than on the other.

Mr. Lawrence gives us a demonſtration of the *circulation* of the ſap, from an experiment on the yellow-ſtriped jeſſamine.—Upon a branch of a plain jeſſamine, whoſe ſtem ſpreads itſelf in two or three branches, inoculate a bud of the yellow-ſtriped jeſſamine, in autumn: as the tree comes to ſhoot, the following ſummer, ſome of the leaves will be found tinged here and there with yellow, and this even on the branches not inoculated; till, by degrees, the whole tree, even the very wood of the young branches, will be all variegated, or ſtriped with green and yellow.

Mr. Fairchild confirms this experiment, by a ſimilar one of his own: Having inoculated a yellow-ſpotted jeſſamine-tree, into another jeſſamine-tree; he found, that though the bough did not take, yet, in a fortnight's time, yellow ſpots began to appear on a ſhoot which came out of the ground from another part of the plant.

As to the manner of the *circulation*; it is not difficult to conceive. Malpighi, Grew, &c. by means of microſcopes, have diſcovered, that the wood of plants conſiſts of fine capillary tubes, which run parallel from the root, through the trunk, and may be looked on as arteries; and on the outſide of theſe, betwixt the wood and the inner bark, are other large tubes, to do the office of veins.

Now, the root having imbibed a ſtock of juice from the earth, hat juice will be put in motion by the heat; that is, it will be arefied, and made to aſcend in form of a ſteam, or vapour: meeting, therefore, with the open mouths of the arterial veſ els, it will paſs through the ſame to the top and extreme parts f the tree, with a force anſwerable to the heat by which it is ut in motion: when it is there arrived, meeting with the old of the external air, it is condenſed into a liquor; and in at form returns, by its own weight, towards the root of the enal veſſels above-mentioned.

CULATION, in chymiſtry, is an operation whereby the me vapour, raiſed by fire, falls back; to be returned and ſtilled ſeveral times, and thus reduced into its moſt ſubtil rts.

irculation is performed by diſpoſing the liquor in a ſingle veſ , ſtopped at top, called a *pelican*; or in a double veſſel, con ting of two pieces, luted on each other; the lower to con n the liquor, and its vapours.

is performed either by the heat of a lamp, or that of aſhes, of ſand moderately hot, or in dung, or by the ſun. It ally demands a continued heat of ſeveral days, ſometimes ſeveral weeks, or even ſeveral months.—By *circulation*, the eſt part of the fluid mounts to the top of the veſſel; and, ding no iſſue there, falls back again, and rejoins the matter behind at the bottom, whence it aroſe: and thus, by continuing to riſe and fall, alternately, in the veſſel, there is effected a kind of *circulation*, or remixtion, of the ſpirituous parts with the groſs ones; whereby the former are rendered finer, and more ſubtil, and are better diſpoſed to exert their activity, when ſeparated from the latter.

CIRCULATORY, **CIRCULATORIUM**, in chymiſtry, the veſſel wherein a fluid is put, to undergo the proceſs of circulation. See CIRCULATION.

There are two kinds of *circulatories*; the *diota*, or double veſſel; and the *pelican*. See DOUBLE *Veſſel*, and PELICAN.

CIRCULUS, in geometry, logic, &c. See CIRCLE.

CIRCULUS, among chymiſts, is a round iron inſtrument, uſed in cutting off the necks of glaſs veſſels; which they effect thus:

The inſtrument, being heated, is applied to the glaſs veſſel, and there kept till the latter grow hot: then, by a few drops of cold water, or a cold blaſt thereon, it flies evenly and regularly off.—Thus they cut off the necks of retorts, or cucurbits.

There is another method of doing the ſame; *viz.* by tying a thread, firſt dipped in oil of turpentine, round the place where the ſection is to be; and then ſetting fire to the thread.

This done, ſome cold water being ſprinkled on the place, the glaſs will be cracked through preciſely where the thread was tied.

CIRCUMAGENTES *Muſculi*, in anatomy. See OBLIQUI.

CIRCUMAMBIENT, an epithet denoting a thing to inveſt, or encompaſs, another round.

We ſay, the ambient, or *circumambient* air, &c.

CIRCUMCISION, the act of cutting off the prepuce; or, a ceremony, in the Jewiſh and Mahometan religions, wherein they cut away the fore-ſkin of the males who are to profeſs the one, or the other law.

Circumciſion commenced in the time of Abraham; and was, as it were, the ſeal of a covenant ſtipulated between God and him: it was in the year of the world 2178. that Abraham, by Divine appointment, circumciſed himſelf, and all the males of his family; from which time it became an hereditary practice among his deſcendants.

The ceremony, however, was not confined to the Jews: Herodotus and Philo Judæus obſerve, that it obtained alſo among the Egyptians and Ethiopians. Herodotus ſays, that the cuſtom was very antient among each people; ſo that there was no determining which of them borrowed it from the other.

The ſame hiſtorian relates, that the inhabitants of Colchis alſo uſed *circumciſion*; whence he concludes, that they were originally Egyptians. He adds, that the Phœnicians and Syrians were likewiſe circumciſed; but that they borrowed the practice from the Egyptians. And, laſtly, that a little before the time when he wrote, *circumciſion* had paſſed from Colchis, to the people inhabiting near Thermodoon and Parthenius.

Marſham is of opinion, that the Hebrews borrowed *circumciſion* from the Egyptians; and that God was not the firſt author thereof: citing Diodorus Siculus, and Herodotus, as evidences on his ſide. This latter propoſition ſeems directly contrary to the teſtimony of Moſes; who aſſures, Gen. xvii. that Abraham, though 99 years of age, was not circumciſed till he had the expreſs command of God for it: but as to the former poſition of Marſham, it will admit of more debate.

The arguments, on both ſides, may be ſeen, in one view, in Spencer de Legibus Hebræor. l. 2. c. 4.

Be this as it will, it is certain, the practice of *circumciſion*, among the Hebrews, differed very conſiderably from that of the Egyptians.—Among the firſt, it was a ceremony of religion, and was performed on the eighth day after the birth of the child; among the latter, it was a point of mere decency and cleanlineſs; and, as ſome will have it, of phyſical neceſſity; and was not performed till the thirteenth year; and then on girls, as well as boys.

Among the Jews, *circumciſion* was performed with a knife of ſtone.—They ſet aſide the practice of *circumciſion*, during the forty years of their paſſage through the wilderneſs; in regard, *circumciſion* being intended as a mark of diſtinction between the Jews and the Gentiles, it was unneceſſary to make any mark at all, in a place wherein there was nobody to mix with them. M. Fleury obſerves, that the Jews were not unanimous as to the neceſſity of *circumciſion*; ſome holding it an eſſential, others only as a circumſtance.

The Turks, before the operation of *circumciſion*, ſqueeze the ſkin with little pincers, to deaden the ſenſation; they then cut it off with a razor, and apply a certain powder, which heals the wound, and takes off the pain. They never circumciſe till the ſeventh or eighth year; as having no notion of its being neceſſary to ſalvation.

The Perſians circumciſe their boys at thirteen years, and their girls from nine to fifteen.—Thoſe of Madagaſcar cut off the fleſh at three ſeveral times; and the moſt zealous of the relations preſent catches hold of the preputium, and ſwallows it.

Herrera tells us, there is a kind of *circumciſion* among the Mexicans, though they are very far both from Judaiſm and Mahometaniſm: they cut off the foreſkin of the virile member, and the ears, as ſoon as the child is born, with a world of ceremony.

Circumciſion is alſo practiſed on women, by cutting off the fore-ſkin of the clitoris, which bears a near reſemblance and analogy to the preputium of the male penis. Strabo ſays, the Egyptian women were circumciſed; Belon ſays the ſame of the Cophtæ; and P. Jovius and Munſter of the ſubjects of Preſter John.

Among the Jews, the father is obliged to have his ſon circumciſed on the eighth day; it may not be ſooner: but the child's weakneſs may allow of its being deferred longer. There is a godfather to hold the child, and a godmother to carry it from the houſe to the ſynagogue, and to preſent it there. He who circumciſes is called, in Hebrew, *Mohel*: any perſon is choſen for the purpoſe, indifferently; provided he be but capable of the function; which, among the Jews, is a title of great merit.

The manner of the ceremony, as related by Leo De Modena, is as follows.—Two ſeats are prepared, in the morning, with ſilken cuſhions; one for the godfather who holds the child; the other, as they ſay, for the prophet Elias, whom they ſuppoſe to aſſiſt inviſibly. The perſon who is to circumciſe, brings the neceſſary utenſils; the razor, ſtyptic, linen, fillet, and oil of roſes; to which ſome add a ſhell full of ſand, to put the preputium in. A pſalm is ſung till the godmother brings the child, attended with a crowd of women, and delivers it to the godfather; none of them entering the door: the godfather, being ſeated, ſets the child on his lap; then the *circumciſer*, taking the razor, and preparing the child for the operation, ſays, *Bleſſed be thou, O Lord, who haſt injoined us Circumciſion*; and, in ſo ſaying, cuts off the thick ſkin of the preputium, and with his finger-nails tears off another finer ſkin remaining; ſucking the blood two or three times, as it breaks out, and ſpitting it out into a glaſs full of wine: then he lays dragons-blood on the wound, with powder of coral, and other things, to ſtanch the blood; and, laſtly, a compreſs of oil of roſes; and thus binds up the whole: this done, he takes a glaſs of wine, and, bleſſing it, adds another benediction for the child, and impoſes the name.

The manner of circumciſing among the Turks, differs from that of the Jews: for the former, after they have cut off the ſkin, meddle no further; but the laſt tear off the edge of the remaining ſkin in ſeveral places with their thumb-nails; which is the reaſon why the circumciſed Jews are cured much ſooner than the Turks.

Thoſe among the Jews who perform the operation of *circumciſion*, are diſtinguiſhed by the length of their thumb-nails.

Circumcision is alſo the name of a feaſt celebrated on the firſt of January, in commemoration of the *circumciſion* of our Saviour.

This day was antiently kept a faſt; in oppoſition to the pagan ſuperſtitions, who feaſted on it in honour of the god Janus.

CIRCUMFERENCE *, in geometry, the curve line that incloſes a circle, or circular ſpace; called alſo the *periphery*. See Circle, and Periphery.

* The word is formed from the Latin *circum*, about; and *fero*, I carry.

All lines drawn from the center of a circle to the *circumference*, called *radii*, are equal.

Any part of the *circumference* is called an *arch*; and a right line drawn from one extreme of the arch to the other, a *chord*.

The *circumference* of every circle is ſuppoſed to be divided into 360 equal parts, which are called *degrees*.

The angle at the *circumference* is double that at the center.

Every circle is equal to a triangle, whoſe baſe is equal to the *circumference*, and its height to the radius.

Hence, the *circumferences* of circles are to each other as their radii.

Hence, again, ſince the *circumference* of one circle is to its radius, as that of any other circle to its radius; the ratio of the *circumference* to the radius is the ſame in all circles.

The ratio of the diameter of a circle to its *circumference*, Archimedes makes as 7 to 22; others, who bring it nearer the truth, as 100000000000000000 to 314159265358979 32. For uſe, the proportion of 100 to 314 in ſmaller circles; and of 10000 to 31415 in larger circles; is commended by Vieta, Huygens, &c. though the juſteſt proportion, for ſmall numbers, is that of Metius; who makes it as 113 to 355.

The diameter of a circle, therefore, being given, its *circumference* is had; and that multiplied by one fourth part of the diameter, gives the area of the circle.

CIRCUMFERENTOR, an inſtrument uſed, in ſurveying, to take angles by.

The *circumferentor* is very ſimple, yet expeditious in the practice. It conſiſts of a braſs circle and an index, all of a piece. —See its figure in *Tab. Surveying, fig.* 19.

On the circle is a card, or compaſs, divided into 360 degrees; the meridian line whereof anſwers to the middle of the breadth of the index: on the limb, or circumference, of the circle, is ſoldered a braſs ring; which, with another fitted with a glaſs, make a kind of box for the needle, which is ſuſpended on a pivot in the center of the circle: to each extreme of the index is fitted a ſight.

The whole is mounted on a ſtaff, with a ball and ſocket, for the conveniency of its motion.

To take an angle by the Circumferentor.—Suppoſe the angle required EKG (*Tab. Surveying, fig.* 20.): place the inſtrument, *v. g.* at K, with the flower-de-luce in the card towards you; then direct the ſights, till through them you ſpy E; and obſerve what degree is pointed at by the ſouth end of the needle, which ſuppoſe 296: then turn the inſtrument about, the flower-de-luce ſtill towards you, and direct the ſights to G; noting the degree at which the ſouth end of the needle points, which ſuppoſe 182.

This done, ſubtracting the leſſer number 182, from the greater 296, the remainder 114, is the number of degrees of the angle EKG.

If the remainder chance to be more than 180 degrees, it muſt be again ſubtracted from 360 degrees; the laſt remainder is the quantity of the angle ſought.

To take the plot of a field, wood, park, &c. *by the* Circumferentor.—Suppoſe ABCDEFGK (*fig.* 21.) an incloſure to be ſurveyed with the *circumferentor*.

1. Placing the inſtrument at A, the flower-de-luce towards you, direct the ſights to B; where ſuppoſe the ſouth end of the needle to cut 191°; and the ditch, wall, or hedge, meaſured with the chain, to contain 10 chains, 75 links; which enter down. See Chain.

2. Placing the inſtrument at B, direct the ſights, as before, to C; the ſouth end of the needle, *v. g.* will cut 279°; and the line BC will contain 6 chains, 83 links, to be noted as before: then move the inſtrument to C; turn the ſights to D, and meaſure CD, as before.

In the ſame manner proceed to D, E, F, G, H, and, laſtly, to K; ſtill noting down the degrees of every bearing, or angle, and the diſtances of every ſide.

Having thus gone round the field, you will have a table in the following form:

Stations.	Degrees.	Min.	Chains.	Links.
A	191	00	10	75
B	279	00	6	83
C	216	30	7	82
&c.				

From this table, the field is to be plotted, or protracted; for the manner whereof, ſee Plotting, and Protractor.

Note, Where ſecurity is to be conſulted, rather than diſpatch, it may be convenient to take back-ſights; *i. e.* to place the inſtrument ſo, at each ſtation, as that, looking backwards through the ſights to the laſt ſtation, the north end of the needle may point to the ſame degree as the ſouth end did, in looking forwards from the laſt ſtation to this: both which inſtruments are uſed, on occaſion, as *circumferentors*.

CIRCUMFLEX, in grammar, an accent, ſerving to note, or diſtinguiſh, a ſyllable of an intermediate ſound between acute and grave; and generally ſomewhat long.

The Greeks had three accents; the *acute*, the *grave*, and the *circumflex*; formed thus, ´, `, ˜. In Latin, Engliſh, French, &c. the *circumflex* is made thus ˆ.

The acute raiſes the voice, and the grave falls, or lowers it: the *circumflex* is a kind of undulation, or wavering of the voice, between the two.

It is ſeldom uſed among the moderns, unleſs to ſhew the omiſſion of a letter which made the ſyllable long and open; a thing much more frequent in the French, than among us: thus they write *pâte*, for *paſte*; *tête*, for *teſte*; *fûmes*, for *fuſmes*, &c. They alſo uſe the *circumflex* in the participles; ſome of their authors writing *conneu*, *peu*, others *connû*, *pû*, &c. Father Buffier is at a loſs for the reaſon of the *circumflex* on this occaſion.

The form of the Greek *circumflex* was antiently the ſame with that of ours, *viz.* ˆ; being a compoſition of the other two accents ʌ in one.—But the copiſts, changing the form of the characters, and introducing the running-hand, changed alſo the form of the *circumflex* accent; and inſtead of making a juſt angle, rounded it off, adding a daſh, through too much haſte; and thus formed an *s*, laid horizontally, which produced this figure˜, inſtead of this ʌ.

CIRCUMINCESSION, in theology, a term whereby the ſchoolmen uſe to expreſs the exiſtence of three divine perſons in one another, in the myſtery of the trinity. See Person.

The ſchool divines are not the firſt authors of this term; Damaſcenus, in the eighth century, having uſed the word περιχωρησις, which ſignifies the ſame thing, in his explication of that text, *I am in my father, and my father is in me.*

CIRCUMLOCUTION *, an ambages, or tour of words, uſed either when a proper term is not at hand, to expreſs a thing naturally and immediately by; or when one chooſes not to do it, out of reſpect; or for ſome other reaſon.

* The word comes from the Latin *circumloquor*, I ſpeak about.

Circumlocution, in oratory, is the avoiding of ſomething diſagreeable, or inconvenient, to be expreſſed in direct terms, by intimating the ſenſe thereof in a kind of paraphraſe, conceived as to ſoften, or break, the force thereof.

Thus Cicero, unable to deny that Clodius was ſlain by M owns it, with this *circumlocution*, 'Milo's ſervants being pr 'ed from aſſiſting their maſter, who was reported to be k 'by Clodius; they, in his abſence, and without his privity, 'con

‘ conſent, did what every body would expect from their own ‘ ſervants on ſuch an occaſion.’

CIRCUM-POLAR *Stars*, are ſuch ſtars as, being pretty near our north-pole, move round it; and in our latitude, never ſet, or go below the horizon.

CIRCUMSCRIBING, in geometry, denotes the deſcribing a polygonous figure about a circle, in ſuch manner, as that all its ſides are tangents to the circumference.

The term is ſometimes alſo uſed for the deſcribing of a circle about a polygon; ſo, as that each ſide is a chord. But in this caſe, we more uſually ſay, the polygon is inſcribed, than the circle circumſcribed.

Any regular figure ABCDE (*Tab. Geometry*, *fig.* 29.), inſcribed in a circle, is reſolved into equal and ſimilar triangles, by radii drawn from the centre of the *circumſcribing* circle F, to the ſeveral angles of the figure; and its area is equal to a rectangled triangle, whoſe baſe is equal to the circumference of the whole polygon; and its height a perpendicular let fall from the centre F to one ſide AB.

The ſame may be ſaid of the area of the *circumſcribing* circle *abcde* (*fig.* 28.); excepting that the height is to be the radius.

The area of every polygon that can be inſcribed in a circle is leſs, and that of every polygon that can be circumſcribed, greater, than that of the circle: in like manner, the perimeter of the firſt is leſs, and that of the ſecond is greater, than the circumference of the circle.

On this principle Archimedes attempted the quadrature of the circle; which is nothing elſe, in effect, but the meaſuring of the area, or capacity of a circle.

The ſide of a hexagon is equal to the radius of a circumſcribed circle.

o circumſcribe a circle about any given regular polygon, ABC; (*fig.* 28.); and *vice verſa*. Biſect two of the angles, *v. g.* A and B; and on the point F, where the two lines of biſection interſect, as on a centre, deſcribe a circle with the radius FA.

circumſcribe a ſquare about a circle. Draw two diameters, AB and DE (*fig.* 31.), interſecting each other in the centre C, at right angles. From AEBD, with the interval of the radius, make interſections in F, G, H, I. Draw the right lines FG, GH, IH, and IF. Then is FGHI a ſquare circumſcribed about the circle.

circumſcribe any regular polygon, *v. g.* a pentagon, about a circle. Biſect the chord AE (*fig.* 28.) by the perpendicular FG, which continue till it cut the arch in *g*. Through A and E, draw the radii AF and EF: and through *g*, draw a line parallel to AE, meeting the radii continued on each ſide in *a* and *e*: then is *ae* one ſide of the circumſcribed polygon. Produce the radius FB to *b*, till F*b*=F*a*; and draw *ab*: this is another ſide of the polygon; and in the ſame manner may the reſt of the ſides be drawn.

inſcribe any regular polygon in a circle. Divide 360 by the number of ſides, in order to find the quantity of the angle EFD; which make at the centre, and apply the chord to the periphery as often as it will go. Thus will the deſired figure be inſcribed in the circle.

RCUMSTANCES, the incidents of an event, or the particularities that accompany an action.

Divines ſay, the converſion of a ſinner depends on a certain aſſemblage, and a certain management, of external *Circumſtances*, in the midſt whereof he is placed; which arrangement of *Circumſtances* depends on the providence of God: whence converſion alſo depends on him.

The *Circumſtances* of the actions of men, are expreſſed in this Latin verſe:

> *Quis, quid, ubi, quibus auxiliis, cur, quomodo, quando.*

Quis, who, denotes the quality, ſtate, age, &c. of the perſon. *Quid*, what, the greatneſs, ſmalneſs, multitude, fewneſs, &c. of the thing. *Ubi*, where, the place. *Quibus auxiliis*, with what aſſiſtances, the inſtruments, means, &c. *Cur*, why, on what account, with what view. *Quomodo*, how, the quality of the action, as to intention or remiſſneſs, deſignedneſs, or caſualty, ſecrecy, or openneſs. *Quando*, when, the time; s on a holiday, at the hour of prayer, &c.

RCUMSTANTIBUS, in law, is uſed for the ſupplying, and making up the number of jurors (in caſe any impanelled appear not; or appearing, be challenged by either party), by adding to them ſo many of the perſons preſent, or ſtanding y, as will ſerve the turn.

RCUMVALLATION *, in fortification, a line or trench, with a parapet, thrown up by the beſiegers, encompaſſing all their camp, to defend it againſt any army that may attempt to relieve the place.

> * The word is formed from the Latin *circum*, about; and *vallum*, wall, or mound.

This line is to be cannon-ſhot diſtant from the place, ordinarily, about 12 feet broad, and ſeven deep. It is bordered with a breaſt-work, and flanked with redoubts, or little forts, erected from ſpace to ſpace. It ſerves both to prevent any ſuccour from being ſent into the place, to keep in deſerters, and to prevent incurſions of the enemy's riſon.

are muſt be taken, that the line of *Circumvallation* never paſs by the foot of an eminence; leſt the enemy, ſeizing on the eminence, lodge his cannon, and command the line.

CIRCUMVOLUTIONS *, in architecture, the turns of the ſpiral line of the Ionic volute.

> * The word comes from the Latin *circumvolvere*, to turn around; and is alſo applied to the turns of a wreathed, or twiſted column. See COLUMN.

CIRCUS *, in antiquity, a large building, either round, or oval; uſed for the exhibiting of ſhews to the people.

> * Some derive the word from *Circe*, to whom Tertullian attributes the invention. Caſſiodorus ſays, *Circus* comes *à circuitu*.—The Romans, Servius obſerves, at firſt, had no other *Circus*, but that made by the Tiber, on one ſide, and a paliſade of naked ſwords on the other. Hence, according to Iſidore, came the term *ludi circenſes*, *quaſi circum enſes*. But Scaliger laughs at that etymology.

The Roman *Circus* was a large oblong edifice, arched at one end; encompaſſed with porticoes, and furniſhed with rows of ſeats, placed aſcending over each other.

In the middle was a kind of foot-bank, or eminence, with obeliſks, ſtatues, and poſts at each end. This ſerved them for the courſes of their *bigæ* and *quadrigæ*.

There were no leſs than ten *Circus's* at Rome: the largeſt was that built by the elder Tarquin, called *Circus Maximus*; between the Aventine and Palatine mounts. Pliny ſays, it was inlarged by J. Cæſar, ſo as to take in no leſs than three ſtadia in length, and one in width.

The moſt magnificent *Circus's* were thoſe of Auguſtus and Nero. There are ſtill ſome remains of the *Circus's*, both at Rome, at Niſmes, and other places.

The Romans were exceſſively fond of the games exhibited in the *Circus*: witneſs that verſe in Juvenal,

> ——— *Atque duas tantum res anxius optat,*
> *Panem & Circenſes* ———

The Games of the CIRCUS, which ſome call CIRCENSIAN *Games*, were combats celebrated in the *Circus*, in honour of Conſus the god of councils; and thence alſo called *Conſualia*.

They were alſo called *Roman Games*, *Ludi Romani*, either on account of their antiquity, as being coeval with the Roman people, or becauſe eſtabliſhed by the Romans: and the games held here, the great games, *ludi magni*, becauſe celebrated with more expence and magnificence than any others; and becauſe held in honour of the great god Neptune, who was their Conſus.

Thoſe who ſay they were inſtituted in honour of the ſun, confound the *pompa circenſis*, or proceſſion of the *Circus*, with the games.

The games of the *Circus* were inſtituted by Evander, and re-eſtabliſhed by Romulus: the pomp, or proceſſion, was only a part of the games, making the prelude thereof; and conſiſting of a ſimple cavalcade of chariots.

Till the time of the elder Tarquin, they were held in an iſland of the Tiber; and were called *Roman Games*: after that prince had built the *Circus*, they took their name therefrom; as being conſtantly held there.

There were ſix kinds of exerciſes in the *Circus*: the firſt was wreſtling, and fighting with ſwords, with ſtaves, and with pikes: the ſecond was racing: the third ſaltatio, dancing: the fourth diſci, quoits, arrows, and ceſtus; all which were on foot: the fifth was horſe-courſing: the ſixth courſes of chariots, whether with two horſes, or with four.

In this laſt exerciſe, the combatants were at firſt divided into two ſquadrons or quadrils; then into four; each bearing the names of the colours they wore; *factio alba*, *ruſſea*, &c.

At firſt there was only white and red; then green was added, and blue. Domitian added two more colours, but they did not hold.

It was Oenomaus who firſt invented this method of diſtinguiſhing the quadrils by colours. The green was for thoſe who repreſented the earth; the blue for the ſea, &c.

CIRRI, in botany, a term uſed for thoſe fine ſtrings, or hairs, by which ſome plants faſten themſelves to walls, &c. for their ſupport; as ivy, and the like.

CIRSOCELE *, in medicine, a multitude of varices in the teſticles, which prodigiouſly increaſe their bulk, and hinder the due preparation of the ſeed: ſo as ſometimes even to render caſtration neceſſary. This diſorder is otherwiſe called *hernia varicoſa*.

> * The word comes from the Greek κιρσος, *varix*, vein, and κηλη, *hernia*. See VARIX.

CISALPINE *, any thing on this ſide the Alps.

> * The word is formed from the prepoſition *cis*, on this ſide, and *Alpes*; which, though properly confined to the mountains ſeparating Italy and France, yet is uſed by authors for any very high mountains.—Thus, Auſonius ſpeaks of the Alps of the Pyreneans, the Alps of the Apennines, &c.

The Romans divided Gaul, and the country now called Lombardy, into *Ciſalpine* and *Tranſalpine*.

That which was *Ciſalpine* with regard to the Romans, is *Tranſalpine* with regard to us.

CISSOID, in geometry, an algebraic curve, firſt invented by Diocles; whence it is peculiarly called the *Ciſſoid* of Diocles. See CURVE.

The geneſis of the *Ciſſoid* may be thus conceived: To the diameter AB (*Tab. Analyſis, fig.* 9.) of the ſemicircle AOB, draw an indefinite line, at right angles, BC: then, draw the right line AH, and make $AM=IH$; or in the other quadrant, $LC=AN$. Thus will the points M and L be in a curve line, $AMOL$; which is the *Ciſſoid* of Diocles.

Properties of the CISSOID.—From the geneſis it follows, 1. That drawing the right lines PM and KI, perpendicular to AB; we ſhall have $AP:KB::AM:IH$. But $AM=IH$; conſequently, $AP=AB$. And therefore, $AK=PB$; and $PN=IK$.

2. After the ſame manner, it appears, that the *Ciſſoid* AMO biſects the ſemicircle AOB.

3. Again, $AK:KI::KI:KB$. That is, $AK:PN::PN:AP$. And again, $AK:PN::AP:PM$; therefore, $PN:AP::AP:PM$. Conſequently, AK, PN, AP, and PM, are four lines in continual proportion. And if $PN=v$, $AP=x$, $PM=y$; $x^2=vy$. And after the ſame manner it may be ſhewn, that AP, PN, AK, and KL, are in continual proportion.

4. In the *Ciſſoid*, the cube of the abſciſſe AP is equal to a ſolid ariſing from the ſquare of the ſemiordinate PM, multiplied into the complement of the diameter of the generating circle PB.

Hence, when the point P falls on B, then $x=a$, and $BC=y$; conſequently, $y^2=\frac{a^3}{0}$. Wherefore, $0:1::a^3:y^2$; that is, the value of y becomes infinite: and therefore the *Ciſſoid* $AMOL$, though it continually approach BC, yet they will never meet.

5. BC, therefore, is an aſymptote of the *Ciſſoid*.

The antients made uſe both of the conchoid and *Ciſſoid*, for the finding of two mean continual proportionals between two given right lines.

For the *quadrature*, *ſubnormal*, and *ſubtangent of the* CISSOID: ſee QUADRATURE, SUBTANGENT, &c.

CISSOID *Angle*. See the article ANGLE.

CISTERCIANS, an order of religious, reformed from the Benedictines, conſiſting of an hundred monaſteries, and near as many nunneries.

The order took its riſe in 1075. from twenty-one zealous monks in the monaſtery of Moleſme in Burgundy; who, with their abbot Robert, complaining that the rule of S. Benedict was not ſtrictly enough obſerved; obtained permiſſion of Hugh archbiſhop of Lyons, and legate of the holy ſee, to ſettle in a place called *Ciſteaux*, five miles from Dijon.

Here, Eudes duke of Burgundy erected them a houſe, into which they were admitted in 1098.; endowing it with a conſiderable revenue. The biſhop of Chalons gave Robert the paſtoral ſtaff, in quality of abbot; and erected the new monaſtery into an abbey.

Such was the beginning of the *Ciſtercians*, ſo famous in after-times, and now ſo extended throughout all Europe.

CISTERN * is properly uſed for a ſubterraneous reſervoir of rain-water.

> * The word, according to ſome, comes from *cis*, and *terram*, i. e. *inter terram*; others derive it from *ciſta*, a duct, &c.

Earthen *Ciſterns* muſt be made with good cement, to retain the water. And the bottom ſhould be covered with ſand, to ſweeten and preſerve it.

Authors mention a *Ciſtern* at Conſtantinople, the vaults whereof are ſupported by two rows of pillars, 212 in each row; each pillar being two feet in diameter. They are planted circularly, and in radii tending to that in the centre.

CISTIC.	See	CYSTIC.
CIST-*Hepatic.*		CYST-*Hepatic.*

CISTIS. See the articles CYSTIS, and HYPOCISTIS.

CISTRUM. See the article SISTRUM.

CISTULA *Catoptric.* See the article CATOPTRIC.

CITADEL *, or CITTADEL, a fort, or place fortified with four, five, or ſix baſtions; built ſometimes in the moſt eminent part of a city, and ſometimes only near the city.

> * The word is a diminutive of the Italian *citta*, city, *q. d.* little city.

In the firſt caſe, the *Citadel* ſerves to defend the city againſt enemies.

In the latter, it ſerves to command it, and to keep the inhabitants in their obedience: for which purpoſe the city is left unfortified on the part toward the *Citadel*; but the *Citadel* is fortified toward the city.

The moſt uſual form for *Citadels* is that of a pentagon: a ſquare being too weak, and a hexagon too large.

There is always a large eſplanade between the city and *Citadel*. See ESPLANADE.

CITATION *, in the eccleſiaſtical courts, a ſummons to appear before an eccleſiaſtical judge, on ſome affair relating to the church.

> * The word comes from *cito*, of *cieo*, I ſtir up.

In the civil and ordinary courts, it is called *ſummoning*.

CITATION is alſo uſed in ſpeaking of military and monaſtic, a well as eccleſiaſtical courts. Such a heretic was *cited* to Rome; to a general council, &c.

Knights are *cited* to the general chapters of their order.

King Edward I. of England, was *cited*, by order of Philip IV. of France, to a court of his peers: the *Citation* was publiſhed by the ſeigneur d'Arrablay, ſeneſchal of Perigord and Querci; and was paſted up, by his order, on the gates of the city Libourne, which then belonged to king Edward; And for default in not appearing, all his domains and effects in France were confiſcated. F. Daniel.

CITATION is alſo an allegation, or quotation of ſome law, authority, or paſſage.

CITHARA, an antient muſical inſtrument, by ſome ſuppoſed the ſame with the lyra; or, at leaſt, a particular ſpecies of the lyra; by others different: though its preciſe ſtructure does not appear to be known.

The antients deſcribe it as triangular, in form of a Greek Delta, Δ: the poets aſcribe the invention of it to Apollo.

CITIZEN *, or CITTIZEN, a native or inhabitant of a city, veſted with the freedom and rights thereof.

> * The word comes from the Latin *civis*; which authors derive from *coeo*, by reaſon the *Citizens* live together; or rather from *cieo*, I call together.

Auguſtus, upon numbering the Roman *Citizens*, found they amounted to upwards of four millions.

To make a good Roman *Citizen*, there were three things required: that he were an inhabitant of Rome; that he were inrolled in one of the 35 tribes; and that he were capable of dignities.—Thoſe ſtrangers to whom were granted the rights and privileges of Roman *Citizens*, were properly only *honorary Citizens*.

The ſeventh law, *de incolis*, makes a great deal of difference between a *Citizen* and a mere inhabitant. Birth, alone, made a *Citizen*; and intitled to all the privileges of burgeſy: time could not acquire it; but the emperor could beſtow it.

CITRON, an agreeable fruit, in colour, taſte, ſmell, &c. reſembling a lemon; and ſerving, like that, to cool, and quench thirſt: being produced by a tree of the ſame name, much reſembling the lemon-tree.

The *Citron* is diſtinguiſhed from the lemon, in that it is bigge and its pulp firmer; its ſmell briſker, and colour higher. I is held excellent againſt poiſons: and Athenæus relates an inſtance of two perſons ſaid to be preſerved ſafe from the m dangerous aſpics, by only eating a *Citron*.

The diſtillers, perfumers, confectioners, &c. procure diver things from *Citrons*; as eſſences, oils, confections, waters &c.

CITRON-*Water*. See the article *Citron*-WATER.

CITRON-*Santal*. See the article SANTAL.

CITY, or CITTY, *Urbs*, a large town incloſed with a wall.

It is hard to give any juſt definition of a *City*; in regard cuſtom has reſerved the appellation of towns, to many places which ſeem to have every thing requiſite to conſtitu *Cities*.

Formerly, *City* was only underſtood of ſuch towns as we biſhops ſees: which diſtinction ſeems ſtill to hold in England though no-where elſe. See BISHOP, and DIOCESE.

The term *City* had its riſe among us, ſince the conqueſt; f in the time of the Saxons there were no *Cities*, but all gre towns were called *Burghs*.—Thus, London was called L *den Burgh*. See BURGH.

And for a long time after the conqueſt, *City* and *Burgh* w uſed promiſcuouſly.—Thus, in the charter of Leiceſter, th place is called both *civitas* and *burgus*; which ſhews a miſt in my lord Coke, where he tells us, that every *City* was, is, a biſhop's ſee. Nor had Gloceſter any biſhop then; thou it is called a *City* in Domeſday. The like may be obſerv of Cambridge; to which it may be added, that Cromp reckoning up our *Cities*, leaves out Ely, though it had biſhop, and a cathedral.

Yet Chaſſanæus *de Conſuetud. Burgund.* ſays, France has wit in its territories 104 *Cities*; and gives his reaſon, becauſe has ſo many archbiſhops, and biſhops.

CITY is particularly uſed to expreſs the heart of the place. Paris they have the *City*, and the *Univerſity*; at London have the *City* and the *Suburbs*.

Advocate of a CITY.	See the article	ADVOCATE.
Capital CITY.		CAPITAL.
College of CITIES.		COLLEGE.
Foreſt CITIES.		FOREST.
Freedom of a CITY.		FREEDOM.
Honours of the CITY.		HONOURS.
Imperial CITIES.		IMPERIAL.
Municipal CITIES.		MUNICIPAL.
Provoſt of the CITY.		PROVOST.

CITY, CIVITAS, in ſpeaking of antiquity, ſignifies a ſtate, people, with all its dependencies, conſtituting a partic republic.—Such as are, ſtill, ſeveral *Cities* of the empire, the Swiſs cantons.

Th

Though the antient Gauls were, in effect, only one nation; they were yet divided into ſeveral peoples, which formed as many different ſtates: or, to ſpeak with Cæſar, as many different *Civitates*, *Cities*. Beſides that each *City* had its particular aſſembles, it ſent deputies, too, from time to time, to the general aſſemblies held on affairs relating to their common intereſt.

CIVET *, a kind of perfume, bearing the name of the animal whence it is taken.

* The word comes from the Arabic *Zibet*, or *Zebed*, ſcum, froth.

The *Civet*, or *Civet-cat* *, is a little animal, not unlike our cat; excepting that its ſnout is more pointed, its claws leſs ſharp, and its cry different.

* Some naturaliſts will have it the ſame with the hyæna of Ariſtotle, and call it *hyæna odorifera*. Others ſuppoſe it the panther of the antients, while the generality take it for a kind of wild cat, and call it *felis zibetica* on account of the perfume it yields, which the Arabs call *zibet*. It is a native of Africa, the Indies, Peru, Brazil, Guiney, &c.

The perfume this animal produces, is formed like a kind of greaſe, or thick ſcum, in a receptacle, or bag, under its tail, between the anus and pudendum of the creature *.

* An ample deſcription of the *Civet bag*, its glands, the reſervoirs of the perfume, &c. is given by M. Morand in Mem. Acad. R. Scienc. *An.* 1728. p. 568. § 99.

It is gathered from time to time; and ſtill abounds, in proportion as the animal is fed.

There is a very conſiderable traffick of *Civet*, from Baſſora, Calicut, and other places, where the animal that produces it is bred: though great part of the *Civet* among us is furniſhed us by the Dutch; who bring up a conſiderable number of the animals.

Before any of theſe animals were ſeen in Europe, or it had been obſerved how the perfume had been gathered, the common opinion, founded on the relations of travellers, was, that it was the ſweat of that animal, when irritated and provoked into rage. To this effect, it was ſaid, that the animal was incloſed in an iron cage; and after having been a long time beaten with rods, they gathered with a ſpoon, through the bars of the cage, and between the thighs of the animal, the ſweat or foam, which the rage and agitation had produced: and that, without this precaution, the animal would yield no perfume at all.

But experience has taught us better; and we now know, that the perfume *Civet* is only a thick unctuous humour, ſecreted by certain glands between the two tunics of the bag wherein it is amaſſed, under the creature's tail, beneath the anus.

Civet muſt be choſen new, of a good conſiſtence, a paliſh colour, and a ſtrong ſmell.

Beſides the Indian and Dutch *Civet*, there is alſo a *Civet* from Braſil, or Guiney, like that of India; and an *occidental Civet*, which bears no reſemblance to it: this being only a term uſed to expreſs the human excrements.

Civet is little uſed in medicine, except in a thickneſs of hearing, from cold; where a grain or two being put in a little cotton, or wool, and the ears ſtopped therewith, is ſometimes of ſervice. It is much uſed among perfumers and confectioners. See Supplement, article ZIBETHICUM *Animal*.

CIVIC, CIVICUS, an epithet applied to a kind of crown, made of oaken leaves; antiently beſtowed by the Romans, on thoſe who ſaved the life of a fellow-citizen in a battle, or an aſſault. The *Civic* crown was exceedingly eſteemed; and was even given as an honour, to Auguſtus; who on this occaſion ſtruck coins with this device, OB CIVES SERVATOS.—It was alſo granted to Cicero, after his diſcovery of Catiline's conſpiracy.

CIVIL, CIVILIS, in its general ſenſe, denotes ſomething that regards the policy, public good, or peace of the citizens, or ſubjects of a ſtate.

In this ſenſe, we ſay, *Civil* government; *Civil* law; *Civil* rights; *Civil* war, &c.

CIVIL, in a legal ſenſe, is alſo applied to the ordinary procedure in an action relating to ſome pecuniary matter, or intereſt.—In which ſenſe it is oppoſed to criminal.

CIVIL *Action*. See the article ACTION.

CIVIL *Architecture*. See the article ARCHITECTURE.

CIVIL *Day*. See the article DAY.

CIVIL *Death*, any thing that retrenches, or cuts off a man from *Civil* ſociety: as, a condemnation to the gallies, perpetual baniſhment, condemnation to death, outlawry, and excommunication; all which make a man ceaſe to be looked on as a citizen.

The term is likewiſe applied to thoſe who are no longer capable of acting in temporal concerns: as, thoſe who renounce the world, who retire and make vows in a monaſtery, &c.

CIVIL *Fruits*. See the article FRUITS.

CIVIL *Hiſtory*. See the article HISTORY.

CIVIL *Law*, *Lex* CIVILIS, is defined, in the inſtitutes, to be the laws peculiar to each city, or each people.—But in the modern uſe, it properly implies the Roman law, contained in the inſtitutes, the digeſt, and the code; otherwiſe called, *lex ſcripta*, or the *written law*.

The Roman law, at its commencement, was very inconſiderable. Under the kings, the people were governed by certain laws prepared by the ſenate, paſſed by the kings, and confirmed in an aſſembly of the people.

Papirius was the firſt who made a collection of the regal laws; which took its name from its author, and was called *jus Papirianum*.

The republic, after aboliſhing the regal government, ſtill retained the royal laws: to theſe they added the law of the twelve tables, drawn by the decemviri, from the laws of twelve of the principal cities of Greece; and the more equitable among the laws hitherto practiſed at Rome.

The law of the twelve tables was at length found ſo ſevere, and conceived in ſuch obſcure terms; that it was judged proper to moderate, reſtrain, and aſcertain it, by other laws, propoſed to the ſenate by the conſuls, and paſſed at general aſſemblies of the people; according to the practice that had obtained under the kings themſelves.

In the year of Rome 731. the republic expired; and the whole power of the people was transferred to Auguſtus, who was contented to publiſh his new laws in the aſſembly of the people; to keep up ſome image of the republic by this formality.

Tiberius aboliſhed theſe occaſional aſſemblies, on pretence of their being too numerous; and in lieu thereof offered his laws to the ſenate, who never failed to confirm them: inſomuch that the laws of Tiberius, and his ſucceſſors, who kept the ſame meaſures with the ſenate, were eſteemed *ſenatus conſulta*.

Thus aroſe two kinds of Roman law, with regard to the changes in the legiſlative authority: the laws eſtabliſhed by the people, *plebiſcita*; and the laws of the emperors, or *imperial laws*.

During the time of the republic, and even under the emperors, there were juris-conſulti; who making public profeſſion of the ſtudy of the law, interpreted, were conſulted on the different ſenſes of the laws, and gave anſwers to the queſtions propoſed to them hereon; which were called *reſponſa prudentum*.

Papirius was the firſt of theſe juris-conſulti, after the expulſion of the kings; and Modeſtinus was the laſt. See JURIS-CONSULTUS.

After him, *viz.* in 240. theſe oracles of the Roman juriſprudence ceaſing, out of their writings, which made no leſs than 2000 volumes, a body of the Roman law was afterwards compiled, by order of Juſtinian.

The magiſtrates, on their ſide, in adminiſtring juſtice, interpreted the laws with more freedom than even the juris-conſulti, and were, as it were, the living voice of the law.

The emperors too, to render the interpretation of the magiſtrates leſs free and frequent, appointed, that they themſelves ſhould be conſulted, and their anſwers expected, as to queſtions in law: as may be obſerved from Pliny's epiſtles to Trajan.

In proportion as new laws were made at Rome, care was taken to collect and reduce them into bodies. Papirius, as before obſerved, in the time of Tarquinius Superbus, made a collection of the regal laws. And no ſooner was the republic eſtabliſhed, than the body of laws of the twelve tables was compiled.

In the time of Julius Cæſar, Offilius, a lawyer, began a collection of the edicts of the prætors; but this was not finiſhed till the time of Adrian, by another lawyer, Julianus.

In the time of Conſtantine, or his children, two juris-conſulti compiled two codes; from their authors called the *Gregorian*, and *Hermogenian Code*. See CODE.

Laſtly, Juſtinian, finding the authority of the Roman law almoſt aboliſhed in the weſt, by the declenſion of the empire; reſolved to make a general collection of the whole Roman juriſprudence; and committed the care thereof to his chancellor Trebonianus.

That miniſter executed his commiſſion with a great deal of diligence, not to ſay precipitation: a new code was finiſhed in 529. and a digeſt in 533.

The ſame year he publiſhed an abridgment thereof, containing the firſt principles and elements of law, under the title of *inſtitutes*.

In the courſe of this reign, Juſtinian made 168 conſtitutions, and 13 edicts; which made a conſiderable alteration in the antient law, and were called *novels*.

All theſe together, make the *corpus juris civilis*, or body of the *civil law*, as reduced, by order of Juſtinian.

For the ſpace of 300 years, this ſyſtem of law obtained without any innovation. But the new conſtitutions, made by the emperors from time to time, at length occaſioning ſome alterations; the emperor Baſil, and Leo his ſon, compoſed a new body of the Roman law, chiefly from the Juſtinian, in the Greek language; dividing it into ſeven volumes, and 60 books; under the title of *Baſilica*. From which time, Juſtinian's body had but little credit in the eaſt; the Baſilica taking place of it.

In the weſt, the *Civil Law* had a different fortune: it is ordinarily ſuppoſed not to have been there known till the year 600. when Lotharius II. finding the book at the taking of Melphi, a town in Naples, made a preſent of it to the city of Piſa: though we find it quoted in ſeveral Latin works long before Lotharius. It is true, however, it was never taught publicly till the twelfth century; when Irnerius firſt made profeſſion of it at Bologna, in 1128.; whence it was carried by his diſciples into other countries; and in a little time was taught in all the univerſities.

It is allowed, that the *Civil* law contains all the principles of natural equity; and that nothing can be better calculated to form good ſenſe, and ſound judgment. Hence, though in ſeveral countries it has no other authority but that of reaſon, and juſtice; it is every-where referred to for authority, and is that alone taught in the univerſities.

It is not received at this day in any nation without ſome alterations: and ſometimes the feudal law is mixed with it, or general and particular cuſtoms; and often, ordinances and ſtatutes cut off a great part of it.

In Turky, the *Baſilics* are only uſed. In Italy, the canon law, and cuſtoms, have excluded a good part of it. In Venice cuſtom hath almoſt an abſolute government. In the Milaneſe, the feudal law, and particular cuſtoms, bear ſway. In Naples and Sicily, the conſtitutions and laws of the Lombards are ſaid to prevail. In Germany, and Holland, the *civil law* is eſteemed to be the municipal law: but yet many parts of it are there grown obſolete; and others are altered, either by the canon law, or a different uſage.

In Friezeland, it is obſerved with more ſtrictneſs: but in the northern parts of Germany, the jus Saxonicum, Lubecenſe, or Culmenſe, is preferred before it. In Denmark and Sweden it hath ſcarce any authority at all. In France only a part of it is received; and that part is in ſome places as a cuſtomary law: and in thoſe provinces neareſt to Italy, it is received as a municipal written law. In criminal cauſes, the *civil law* is more regarded in France; but the manner of tryal is regulated by ordinances and edicts.

The *civil law*, in Spain and Portugal, is connected with the jus regium and cuſtom. In Scotland, the ſtatutes of the ſederunt, part of the regiæ majeſtatis, and their cuſtoms, controul the *civil law*.

In England, it is uſed in the eccleſiaſtical courts; in the courts of the admiralty; and in the two univerſities: yet in all theſe it is reſtrained and directed by the common law. See LAW, COMMON *Law*, &c.

CIVIL *Month*. See the article MONTH.

CIVIL *Obligation*. See the article OBLIGATION.

CIVIL *War*, a war between people of the ſame ſtate, or the citizens of the ſame city.

CIVIL *Year*, is the legal year, or civil account of time, which every government appoints to be uſed within its own dominions. See TIME.

It is thus called, in contradiſtinction to the natural year; which is meaſured exactly by the revolution of the heavenly bodies.

CIVILIANS *College*. See the article COLLEGE.

CIVILISATION, a law, or judgment, which renders a criminal proceſs, civil. See CIVIL, *&c.*

Civiliſation is performed by turning the information into an inqueſt, or vice verſa.

CLAIM, in law, a challenge of intereſt in any thing that is in poſſeſſion of another; at leaſt of a man's own. See CHALLENGE, POSSESSION, *&c.* See alſo NON-CLAIM.

There are divers kinds of *Claims*: as *Claim by charter*, *by deſcent*, *by acquiſition*, &c.

Continual CLAIM, a *Claim* made from time to time, within every year and day, to land, or other thing, which, on ſome accounts, cannot be attained without danger.

Thus, if I am diſſeiſed of land, into which, though I have a right, I do not enter for fear of being beaten; I am to hold on my right of entry at my beſt opportunity; by approaching as near as I can, once every year, as long as I live: and thus I leave the right of entry to my heir.

Falſe CLAIM. See the article FALSE.

Quit CLAIM. See the article QUIT.

CLAIR-OBSCURE, or CHIARO-SCURO, in painting, the art of diſtributing to advantage the lights and ſhadows of a piece; both with regard to the eaſing of the eye, and heightening the effect of the whole compoſition.

Thus, when a painter gives his figures a ſtrong relievo, looſens them from the ground, and ſets them free from each other, by the management of his lights and ſhadows; he is ſaid to underſtand the *Clair-obſcure*.

The *Clair-obſcure* makes one of the great diviſions, or branches of painting; the whole of a picture being reſolvable into light and ſhadow.

The doctrine of the *Clair-obſcure* will come under the following rules.—Light may either be conſidered with regard to itſelf; to its effects; the place wherein it is diffuſed; or its uſe.

For the 1ſt, light is either *natural*, or *artificial*.

Natural, either comes immediately from the ſun, which is briſk, and its colour various, according to the time of the day; or it is that of a clear air, through which light is ſpread, and whoſe colour is a little bluiſh; or of a cloudy air, which is darker, yet repreſents objects in their genuine colours with more eaſe to the eye.

Artificial light proceeds from fire, or flame, and tinges the object with its own colour: but the light it projects, is very narrow and confined.

For the 2d, the effects of light are either *principal*, as when the rays fall perpendicularly on the top of a body, without any interruption; or glancing, as when it ſlides along bodies; or *ſecondary*, which is for things at a diſtance.

3. For the place, it is either the open campaign, which makes objects appear with great ſoftneſs; or an incloſed place, where the brightneſs is more vivid, its dimunition more haſty, and its extremes more abrupt.

4. For the uſe, or application: the light of the ſun is always to be ſuppoſed without, and over-againſt the picture; that it may heighten the foremoſt figures; the luminaries themſelves never appearing, in regard the beſt colours cannot expreſs them. The chief light is to meet on the chief group, and as much as poſſible on the chief figure of the ſubject. The light is to be purſued over the great parts, without being croſſed, or interrupted with little ſhadows. The full force of the principal light to be only in one part of the piece: taking care never to make two contrary lights. Not to be ſcrupulouſly confined to one univerſal light; but to ſuppoſe other acceſſory ones, as the opening of clouds, *&c.* to looſen ſome things, and produce other agreeable effects. Laſtly, the light to be different, according to the quality of the things whence it proceeds, and the nature of the ſubjects which receive it. For ſhadows; they are diſtinguiſhed, 1°, Into thoſe formed on the bodies themſelves, by their proper relievoes. 2°, Thoſe made by adjacent bodies: thoſe that make part of any whole; and the different effects, according to the difference of places. For the firſt, ſince the different effects of lights only appear by ſhadows, their degrees muſt be well managed. The place which admits no light, and where the colours are loſt, muſt be darker than any part that has relievo, and diſpoſed in the front. The reflex, or return of the light, brings with it a colour borrowed from the ſubject that reflects it; and flies off at a greater or leſs angle, according to the ſituation of the reflecting body with regard to the luminous one: hence, its effects muſt be different in colour, and in force; according to the diſpoſitions of bodies. Deepenings, which admit not of any light, or reflex, muſt never meet on the relievo of any member of any great elevated part; but in the cavities or joints of bodies, the folds of draperies, *&c.* And to find occaſions for introducing great ſhadows to ſerve for the repoſe of the ſight, and the looſening of things; inſtead of many little ſhadows, which have a pitiful effect.

For the 2d, the ſhadows made by bodies, are either in plain and ſmooth places, or on the earth; wherein they are deeper than the bodies that occaſion them, as receiving leſs reflex light; yet ſtill diminiſh as they depart farther from their cauſe; or they are on the neighbouring bodies, where they are to follow the form of the ſaid bodies, according to their magnitude and poſition, with regard to the light.

For the 3d, in ſhadows that have parts, the painter muſt obſerve to take for a light in a ſhadowed place, the teint, or luſtre of the light part; and, on the contrary, for the ſhadow in the lightened part, the teint or luſtre in the ſhadow: to make an agreeable aſſemblage of colour, ſhadow, and reflex in the ſhadowed part, but without interrupting the great maſſes of ſhadow: to avoid forming little things in the ſhadow, as not being perceived, unleſs cloſely looked at; and to work, as it were, in the general, and at one ſight: never to ſet the ſtrong ſhadows againſt the lights, without ſoftening the harſh contraſt by the help of ſome intermediate colour: though the maſs of light may be placed either before or behind that of the ſhadow; yet ought it to be ſo diſpoſed, as to illumine the principal parts of the ſubject.

For the 4th, the effects of ſhadows are different, as the place is either wide and ſpacious; as in thoſe coming immediately from the ſun, which are very ſenſible, and their extremes pretty abrupt; from the ſerene air, which are fainter, and more ſweet; from the dark air, which appear more diffuſed, and almoſt imperceptible; and thoſe from an artificial light, which makes the ſhadows deep, and their edges very abrupt: or as it is more narrow and confined, where the lights coming from the ſame place make the ſhadow more ſtrong, and the reflex leſs ſenſible.

CLAIR-OBSCURE, CHIARO-SCURO, is alſo uſed for a deſign conſiſting only of two colours; ordinarily black and white, ſometimes black and yellow.

Or, it is a deſign only waſhed with one colour; the ſhadows being of a duſky brown colour, and the lights heightened u with white.

The word is alſo applied to prints of two colours, taken off a twice; whereof there are volumes in the cabinets of the curiou in prints.

The word *clair-obſcure* is compounded of two others. *Clair* i uſed among the French for thoſe parts of a painting which reflect the moſt light; and comprehends not only the ligh themſelves, but alſo thoſe colours that are luminous. By o *ſcure*, is meant not only all the ſhades, but alſo all the colour that are duſky.

CLAMEA *admittenda in itinere per atturnatum*, is a wri whereby the king commands the juſtice in eyre to admit a per ſon's *claim* by an attorney, who, being employed in the king ſervice, cannot come in perſon.

CLAMOR, or **Clameur** *de Haro*, a popular term in the French laws, importing a complaint, or cry, whereby any one implores the aſſiſtance of juſtice againſt the oppreſſion of another.

CLAMP, in a ſhip, a piece of timber appled to a maſt, or yard, to ſtrengthen it, and prevent the wood from burſting.

Clamp, alſo, denotes a little piece of wood, in form of a wheel; uſed inſtead of a pully in a mortice.

CLAMPING, in joinery, &c. — When a piece of board is fitted with the grain, to the end of another piece of board croſs the grain; the firſt board is ſaid to be *clamped*.—Thus the ends of large old tables were commonly *clamped*, to preſerve them from warping.

Clamp-Nails, are ſuch nails as are uſed to faſten on *clamps*, in building and repairing of ſhips.

CLANCULARII, a ſect of Anabaptiſts, who denied the neceſſity of making an open profeſſion of the faith; and taught that a private one would be ſufficient.

Theſe were alſo called *Hortulani*, and *Gardeners*; from the places they choſe to aſſemble in, inſtead of churches.

CLANDESTINE *, any thing done ſecretly, and without the knowlege of ſome of the parties intereſted in it; or without the proper ſolemnities.

* The word comes from the prepoſition *clam*, of κλειω, *claudo*, I ſhut; or κλεμμα, *furtum*, theft.

Thus, a marriage is ſaid to be *clandeſtine*, when performed without the publication of banns, the conſent of parents, or the knowlege of the ordinary.—The council of Trent, and the French ordonnances, annul all *clandeſtine* marriages.

CLAP, in medicine, the firſt ſtage, or ſtate, of the venereal diſeaſe; called alſo a *Gonorrhœa*.

Dr. Cockburn, and others after him, will have the *clap* to conſiſt in an ulceration of the mouths of the glands of the urethra in men, and of the glandular lacunæ in women; occaſioned by the inſinuation of an acrimonious, purulent matter contracted from an infected perſon in actu coitus.

From theſe glands, iſſues or gleets a ſharp corroſive matter, accompanied with heat of urine, chordee, &c. which makes what is uſually termed the firſt ſtage of the diſtemper.

A *clap* appears ſometimes ſooner, and other times later, though generally in about three or four days after the infection is received; and diſcovers itſelf by the running, &c. of the penis, with inflammation of the glans, or nut of the yard.

If the perſon be affected with a phimoſis, or paraphimoſis; if the running be of a thin conſiſtence, a yellow or green colour, and in great quantity, and the teſticles ſwelled; it is uſually termed a *gonorrhœa virulenta*; and the *clap* ſuppoſed to be in its ſecond ſtage.

Some authors think, that in this degree, or ſtage, the infection has reached the maſs of blood, and the veſiculæ ſeminales; others inſiſt, that theſe ſymptoms may be accounted for, from the running, or virus, being more corroſive; and by that means irritating and inflaming the adjacent parts.

The cure of a *clap* conſiſts in proper evacuations, as calomel-purgatives, refrigerant emulſions, powders, &c. turbith-emetics, and laſtly, proper terebinths, &c. to which ſome add, decoctions of the lignum vitæ. As to externals, they are generally comprehended under the form of fomentations, cataplaſms, liniments, and lotions.

Late authors, and eſpecially Dr. Cockburn, have inſiſted on the cure of a *clap* by a particular injection, without the uſe of any other medicine.—This has given a handle to quacks, who, by affecting to do the ſame by their injections, generally check the running, and make a confirmed pox.

Turbith-mineral, calomel, &c. given in ſmall doſes, and continued for ſome time, ſo as to take effect by way of alteratives, have been lately much commended as to ſucceſs. Mercurial unguents, uſed in ſmall quantities, ſo as not to raiſe a ſalivation, are ſaid to cure all the ſtages of the venereal diſeaſe: this practice is uſual at Montpelier.

Mr. Becket, in the *Philoſophical Tranſactions*, attempts to ſhew, that the diſeaſe we now call a *clap*, is the ſame with that our forefathers called a *burning*, or *brenning*, under which name it was known ſeveral hundred years before the commonly ſuppoſed origin of the venereal diſeaſe; and that the appellation *brenning*, &c. was only diſcontinued as that of *clap* commenced.

In a MS. as old as Henry IV. Arden, chirurgeon to that prince, defines brenning to be a certain inward heat and excoriation of the urethra; which, Mr. Becket obſerves, gives us a perfect idea of what we now call a *clap*. For frequent diſſections of such as have laboured under that diſeaſe, have made it evident, that the urethra is excoriated by the virulency of the matter they receive from the infected woman: which excoriation, or ulceration, he adds, is not confined to the oſtioli, or mouths of the mucous glands of the urethra, as has been lately imagined; but may equally attack any part of the urethra.

The heat, or burning which ſuch perſons feel in making water, is a conſequence of this excoriation of the urethra; the ſalts contained in the urine pricking and irritating the nervous fibrillæ of the urethra, thus diveſted of its natural membrane. See Supplement, article Gonorrhœa.

CLARENCIEUX, the ſecond king at arms; thus called from the duke of Clarence, to whom he firſt belonged.

Lionel, third ſon of Edward III. having by his wife the honour of Clare in the county of Thomond, was hereupon created duke of Clarence; which dukedom afterwards eſcheating to Edward IV. he made this herald, who properly belonged to the duke, a king at arms; naming him *Clarencieux* in French, and *Clarencius* in Latin.

His office is to marſhal, and diſpoſe of, the funerals of all the lower nobility; as baronets, knights, eſquires, and gentlemen on the ſouth-ſide of Trent: whence he is alſo called *ſurroy*, or *ſouthroy*, in contradiction to *norroy*. See Norroy.

CLARET *, or **Clairet**, *pale red*, a name which the French give to ſuch of their red wines as are not of a deep or high colour. See Wine.

* The word is a diminutive of *clair*, bright, tranſparent.

Claret, **Claretum**, in the antient pharmacy, was a kind of wine ſweetened with ſugar, and impregnated with aromatics; ſometimes alſo called *Hippocras*, or *vinum Hippocraticum*; becauſe ſuppoſed to have been firſt preſcribed by Hippocrates.

It has its name *claret*, from its being clarified by percolation through a flannel bag, called *manica Hippocratis*.

CLARICORD, or *Manicord*, a muſical inſtrument, in form of a ſpinett.

It has 49 or 50 keys, and 70 ſtrings, which bear on five bridges; the firſt whereof is the higheſt, the reſt diminiſhing in proportion. Some of the ſtrings are in uniſon; their number being greater than that of the ſtops.

There are ſeveral little mortiſes for paſſing the jacks, armed with little braſs hooks, which ſtop and raiſe the chords in lieu of the feather uſed in virginals and ſpinetts. But what diſtinguiſhes it moſt, is, that the ſtrings are covered with pieces of cloth, which render the ſound the ſweeter; and deaden it ſo, as that it cannot be heard to any conſiderable diſtance.

Hence ſome call it the *dumb ſpinett*; whence it comes to be particularly in uſe among the nuns, who learn to play, and are unwilling to diſturb the ſilence of the dormitory.

The *claricord* is more antient than either the ſpinett or harpſicord; as is obſerved by Scaliger, who, however, only gives it 35 ſtrings.

CLARIFICATION, in chymiſtry, the act of clearing, or fining of liquors from their groſſer parts.

Clarification is performed by ebullition, deſpumation, and colature, or filtration.

The term is chiefly applied to juices, decoctions, and ſyrups, which are *clarified* by filtration, or by paſſing them through a ſtrainer, after having beat them up into a froth with the whites of eggs; the viſcous parts of the eggs, entangling the thick groſs particles of the liquor, retain them in the ſtrainer. Sometimes the mixture is boiled; by which means, the eggs entangle the groſſer parts, and carry them up to the top in a tough ſcum; which is either taken off with a ſpoon, or ſeparated by a flannel bag, as before, called *Hippocrates's ſleeve*. Another method is, by letting the liquor ſtand in a convenient veſſel, till the groſſer particles ſettle.

In diſtilled waters, &c. which have a milky hue, or are turbid, this is generally effected with fine ſugar, mixed with a ſmall quantity of alum; which will bear down the oily parts, and leave the reſt clear.

Many liquors are clarified by paſſing them through a thick brown paper; among others, hippocras, hydromel, &c. The antients clarified their wines by pouring them from off the lees, into another barrel, through a tin ſtrainer.

Fine and delicate wines are uſually clarified with ichthyocolla, or fiſh-glue: the thicker wines with omelette, or whites of eggs diluted in water; ſometimes with pouring them through a heap of little chips.

It is an error to ſuppoſe, that either iſinglaſs, or omelette, can be prejudicial to the health; ſince both the one and the other fall down with the lees, without producing any ill effect. That which makes wines unwholſome, is not the *clarifying* by theſe innocent means, but the mixtures and ſophiſtications of the vintners, to make them briſk, and bring them to life again after the fret; which is done with aqua vitæ, ſpices, pigeons dung, &c.

Sugar is *clarified* with the whites of eggs, and ſugar beat together.

For malt liquors, particularly beer, there are various methods of clearing; the beſt is by caſting into it fixed nitre: ſome add the quinteſſence of malt and wine; whites of eggs made into balls with a little flower and iſing-glaſs: oil, and quinteſſence of barley, have the ſame effect. It is exceedingly cleared and ſtrengthened, by adding to it, during the time of its fermentation, ſome ardent ſpirit. See Malt *Liquor*.

CLARIGATIO, or **Clarigation**, in the law of nations, a loud, clear call, or ſummons made to an enemy, to demand ſatisfaction for ſome injury received; in defect whereof, recourſe will be had to repriſals.

Clarigatio amounts to much the ſame with what the Greeks call ἀνδροληψια.—Though Naude uſes the word in a ſomewhat different manner. ‘ Repriſals, ſays he, ſignify the ſame ‘ as *pignorationes Budæo, aut clarigationes Hermolao:* for, as to ‘ the Greek word *androlepſia*, it is equivalent to the Latin ‘ *pignorandi poteſtas.*’

CLARION *, a kind of trumpet, whoſe tube is narrower, and its tone acuter and ſhriller, than the common trumpet.

* Menage derives the word from the Italian *clarino*, of the Latin *clarus*, by reaſon of the clearneſs of its ſound.

Nicod ſays, the *clarion*, as now uſed among the Moors, and the Portugueſe, who borrowed it from the Moors, ſerved antiently for a treble to ſeveral trumpets, which ſounded tenor and baſs. He adds, that it was only uſed among the cavalry, and the marines.

CLARION, in heraldry, is a bearing repreſented in Tab. *Heraldry*, fig. 36.—He bears ruby, three *clarions* topaz; being the arms of the earl of Bath, by the name of Granville.

Guillim takes theſe *clarions* to be a kind of old-faſhioned trumpets; but others rather think, they repreſent the rudder of a ſhip; and others a reſt for a lance.

CLARO-OBSCURO, See CLAIR-OBSCURE.

CLARY-WATER. See the article WATER.

CLASP-NAILS. See the article NAILS.

CLASPERS, in botany, are tendrils, threads, or ligaments, of a middle nature between that of a root, and trunk; whereby ſhrubs, and other leſſer plants, take hold of trees, or other things near them, for their ſupport, *&c.*

The wiſdom of the Creator is very conſpicuous, in this proviſion for ſome ſpecies of plants, which need it; as ivy, vines, bryony, *&c.*

The contrivance is various in various ſubjects. Malpighi obſerves, that the *claſpers* of ivy are roundiſh, and covered with hair; and, what is very remarkable, they yield a glutinous terebinthine humour, by means whereof, they adhere cloſely to ſtones, *&c.* Nature, he adds, uſes no leſs artifice in the vitis Canadenſis.

Claſpers ſerve ſometimes for ſupport only; as thoſe of the vine, bryony, *&c.* whoſe branches, being long, ſlender, and brittle, would be weighed down by their own load, and that of their fruit, but for theſe *claſpers*, which by a natural ſpire, or circumvolution, catch hold of any adjacent body.

Claſpers ſometimes alſo ſerve for a ſupply of juice; as in the trunk-roots of ivy, which being a tall plant, and of a compact ſubſtance, the ſap would not be ſufficiently furniſhed to the upper ſprouts, without this expedient.

Claſpers alſo ſometimes ſerve for ſtabiliment, as thoſe of cucumbers; for propagation, as thoſe of camomile; and for ſhade, ſtabiliment, and propagation all together, as thoſe of ſtrawberries.

CLASS *, CLASSIS, a diſtribution of perſons, or things, ranged according to their merit, value, or nature. See RANK, *&c.*

* The word comes from the Latin *Claſſis*, derived by ſome from the Greek *καλεω*, *congrego, convoco*; a *claſs* being nothing but a multitude, aſſembled apart.

CLASS is particularly uſed for a diſtinction among ſcholars; who are diſtributed into ſeveral *claſſes*, or forms, according to their capacities, and attainments.

Quintilian uſes the word *claſſis* in this ſenſe, in the firſt book of his *inſtitutiones*.

CLASSIC, CLASSICAL, a term chiefly applied to authors read in the *claſſes*, at ſchools, and who are in great authority there.

In this ſenſe, Aquinas, and the maſter of the ſentences, are *claſſic* authors in the ſchool-divinity; Ariſtotle, in philoſophy; Cicero and Virgil in the humanities. — Aulus Gellius ranks among *claſſic* authors, Cicero, Cæſar, Salluſt, Virgil, Horace, *&c.*

The term *claſſic* ſeems properly applicable only to authors who lived in the time of the Roman republic, and the Auguſtan age, when the Latin was in its perfection.

It appears to have taken its riſe hence, that an eſtimate of every perſon's eſtate being appointed by Servius Tullus, he divided the Roman people into ſix bands, which he called *Claſſes*. —The eſtate of thoſe of the firſt *claſſis* was not to be under 200 pounds: and theſe, by way of eminence, were called *Claſſics, Claſſici*.

Hence, alſo, authors of the firſt rank came to be called *Claſſics*: all the reſt were ſaid to be *infra claſſem*.

The firſt *claſſis*, again, was ſubdivided into centuries; making fourſcore centuries of footmen, and eighteen of horſemen.

Each *claſſis* conſiſted, one half of the younger ſort, who were to make war abroad; and the other of old men, who ſtaid at home, for the defence of the city.

CLAUDENDA *Curia*. See the article CURIA.

CLAVELLATI *Cineres, Potaſhes.* See the article CINERES.

CLAVICULÆ, collar-bones, in anatomy, two ſmall bones, ſituate at the baſis of the neck, and top of the breaſt.—See Tab. *Anatomy (Oſteol.)*, fig. 3. n. 3, 3.

They are about half a foot long, of the thickneſs of a finger, and a little bent at each end, and that different ways, ſomewhat like the letter S; and are thus called, as being the keys, *claves*, of the thorax.

Their inner ſubſtance is ſpongy; whence they are brittle, eaſily broken, and eaſily coaleſcing again.— They are joined to the acromium of the ſcapula per ſynchondroſin; and on the forepart, per arthrodiam, to a ſinus on each ſide of the upper part of the ſternum.

Their uſe is, to fix the ſcapulæ with the ſternum and the arms, and to prevent them from ſlipping too forward upon the thorax.

CLAVIS, a Latin word, ſometimes uſed in Engliſh writers for a key.

CLAUSE, an article, or particular ſtipulation in a contract; a charge, or condition in a teſtament, *&c.*

We ſay, a *derogatory clauſe, penal clauſe, ſaving clauſe, codicillary clauſe*, &c. See DEROGATORY, *&c.*

CLAUSIT *extremum diem.* See the article DIEM.

CLAUSTRAL *Prior.* See the article PRIOR.

CLAUSUM *Fregit*, an action of treſpaſs; thus called, by reaſon the writ demands the perſon ſummoned to anſwer to *quare clauſum fregit*, of the plaintiff, why he committed ſuch a treſpaſs?

CLAVUS, in antiquity, a band, or fillet of purple, worn on the breaſt by the Roman ſenators and knights, more or leſs broad, according to the dignity of the perſon; from the proportions of which aroſe the difference of *tunica anguſticlavia*, and *laticlavia*. See LATICLAVIA, *&c.*

This ornament, according to ſome, was called *Clavus*, nail, as being ſtudded with little round plates of gold, or ſilver, like the heads of nails. Cantelius maintains, that the *clavus* conſiſted of a kind of purple flowers, ſewed upon the ſtuff.

CLAVUS, in medicine, a name phyſicians give to a ſhooting pain in the head, commonly ſituate a little above the eyes; *viz.* on the ſinus frontalis; and ſuppoſed to reſemble a boring of the head through with an augre; whence the name. In ſome it is only in one, and in others in both ſides.

It is generally allowed to be a ſpecies of an ague, or an intermitting fever; its periods of coming or going being uſually regular or ſtated. In ſome it is quotidian, in others tertian.

The cure conſiſts in giving an emetic a little before the fit, and after, confirming it with a proper quantity of the cortex, *&c.* as in intermitting fevers: though bleeding and diaphoretics ſometimes effect a cure without other aſſiſtants.

A pain like to this, on the top of the head, ſometimes attacks hyſterical perſons; which by Dr. Sydenham is termed *Clavus Hyſtericus*.

CLAVUS is alſo uſed in medicine, for a callus formed on the toes; popularly called a *corn*.

Clavi ariſe from a too great compreſſion of the cutis; which by this means hardens, and forms itſelf into a knot. The cure is by firſt ſoftening them, as with emplaſt. de ranis cum mercurio, or with galban. crocat. with ſal ammoniac; and then pulling them up. A piece of raw beef, applied in manner of a plaiſter, and frequently ſhifted, is often found to diſſipate them in a little time.

CLAWS.—*Elks* CLAWS. See the article ELK.

CLAY, in natural hiſtory, a ſoft viſcous earth, found in various places, and uſed for various purpoſes; of ſeveral kinds and properties.

Dr. Liſter, in the *Philoſophical Tranſactions*, gives us a table of twenty-two ſeveral *clays* found in the ſeveral counties of England; five whereof he calls

Pure, i. e. ſuch as are ſoft like butter, to the teeth, with little or no grittineſs in them; *viz.* 1. Fullers-earth, which he diſtinguiſhes by its colour into yellowiſh, brown, and white. Se FULLERS *Earth.* 2. Boles. See BOLE. 3. Pale yellow cl 4. Cowſhot *clay.* 5. Dark blue *clay*, or marle. See MARLE —The other ſeventeen,

Impure; whereof eight are harſh and duſty when dry: as, 1 Creta, chalk, or milk-white *clay*. 2. Potters pale yello *clay*. 3. Blue potters *clay*. 4. Blue *clay*, wherein is fou the aſtroites. 5. Yellow *clay*. 6. Fine red *clay*. 7. So chalky blue *clay*. 8. Soft chalky red *clay*.

Three are ſtony when dry; *viz.* 1. A red ſtony *clay*. 2. blue ſtony *clay*. 3. A white ſtony *clay*.

Three are mixed with ſand, or pebbles; *viz.* 1. A yellow loa 2. A red ſandy *clay*. 3. A ſecond ſpecies of the ſame kind.

Laſtly, three are mixed with flat or thin ſand, glittering w mica; *viz.* 1. Crouch white *clay*. 2. Grey or bluiſh tobacc pipe *clay*. 3. A red *clay*. But this is a very unartful diſpo tion. See Supplement, article ARGILLA.

CLAYES, in fortification, are wattles made with ſtakes, in woven with oziers, *&c.* to cover lodgments.

CLAYING *of Land.* See MANURING.

CLEAR, in building, is ſometimes uſed among the work for the inſide work of a houſe, *&c.*

CLEAR *Idea, or Notion.* See the article NOTION, and IDEA

CLEARING *of Liquors.* See CLARIFICATION.

CLECHE *, or CLECHY, in heraldry, is explained by Guilli an ordinary open to the light, or pierced through with ano inner one of the ſame figure; *e. gr.* when a croſs appears charged with another croſs of the ſame colour with the f or as if the field appeared through the apertures thereof.

* The word is French, ſuppoſed to be formed of *clef*, key; ends of the croſs being thought to bear ſome reſemblance bowls of the antient keys.

But Colombiere, and ſome other writers, will have this piercing to be only a circumſtance of the croſs *cleché*, and call it by the name *vuidé*, voided. The thing that denominates it *cleché*, is its ſpreading from the centre towards the extremities, which are very wide, and end in an angle in the middle; as in the figure repreſented Tab. *Herald.* fig. 37.

CLEDONISM, **CLEDONISMUS**, a kind of divination in uſe among the antients.

The word is formed from the Greek κληδων, which ſignifies two things, *rumor*, a report, and *avis*, a bird: in the firſt ſenſe, *cledoniſm* ſhould denote a kind of divination drawn from words occaſionally uttered.—Cicero obſerves, that the Pythagoreans made obſervation not only of the words of the gods, but of thoſe of men; and accordingly believed the pronouncing of certain words, *v. gr. incendium*, at a meal, very unhappy.—Thus, inſtead of priſon, they uſed the word *domicilium*; and to avoid *erinnyes*, ſaid *eumenides*.

In the ſecond ſenſe, CLEDONISM ſhould ſeem a divination drawn from birds; the ſame with ornithomantia.

CLEF, or **CLIFF**, in muſic, a mark at the beginning of the lines of a ſong, which ſhews the tone, or key, in which the piece is to begin.—Or, it is a letter marked on any line, which explains and gives the name to all the reſt.

Antiently, every line had a letter marked for a *clef*: now a letter on one line ſuffices; ſince by this all the reſt are known; reckoning up and down, in the order of the letters.

It is called the *Clef*, *q. d.* key, becauſe hereby we know the names of all the other lines and ſpaces; and conſequently the quantity of every degree, or interval.

But becauſe every note in the octave is called a *key*, though in another ſenſe, this letter marked is called in a particular manner the *ſigned clef*; becauſe being written on any line, it not only ſigns and marks that one, but it alſo explains all the reſt.

By *clef*, therefore, for diſtinction-ſake, we mean that letter ſigned on a line, which explains the reſt; and by key the principal note of a ſong, in which the melody cloſes.

There are three of theſe *ſigned clefs*, *c*, *f*, *g*. The *clef* of the higheſt part in a ſong, called *treble*, or *alt*, is *g* ſet on the ſecond line counting upwards. The *clef* of the baſs, or the loweſt part, is *f* on the fourth line upwards: for all the other mean parts, the *clef* is *c*, ſometimes on one, ſometimes on another line. Indeed, ſome that are really mean parts, are ſometimes ſet with the *g clef*.

It muſt, however, be obſerved, that the ordinary ſignature of *clefs* bear little reſemblance to thoſe letters. Mr. Malcolm thinks it would be well if we uſed the letters themſelves. Kepler takes a world of pains, to ſhew that the common ſignatures are only corruptions of the letters they repreſent. See their figure among the other CHARACTERS *of muſic*.

The *clefs* are always taken fifths to one another: that is, the *clef f* is loweſt, *c* a fifth above it, and *g* a fifth above *c*.

When the place of the *clef* is changed, which is not frequent in the *mean clef*, it is with deſign to make the ſyſtem comprehend as many notes of the ſong as poſſible, and ſo to have the fewer notes above or below it. If then there be many lines above the *clef*, and few below it, this purpoſe is anſwered by placing the *clef* in the firſt or ſecond line: if there be many notes below the *clef*, it is placed lower in the ſyſtem. In effect, according to the relation of the other notes to the *clef* note, the particular ſyſtem is taken differently in the ſcale, the *clef* line making one in all the variety.

But ſtill, in whatever line of the particular ſyſtem any *clef* is found, it muſt be underſtood to belong to the ſame of the general ſyſtem, and to be the ſame individual note or ſound in the ſcale. By this conſtant relation of *clefs*, we learn how to compare the ſeveral particular ſyſtems of the ſeveral parts; and know how they communicate in the ſcale, *i. e.* which lines are uniſon, and which not: for it is not to be ſuppoſed, that each part has certain bounds, within which another muſt never come. Some notes of the treble, *v. gr.* may be lower than ſome of the mean parts, or even of the baſs. To put together therefore in one ſyſtem all the parts of a compoſition written ſeparately, the notes of each part muſt be placed at the ſame diſtances above and below the proper *clef*, as they ſtand in the ſeparate ſyſtem; and becauſe all the notes that are conſonant (or heard together) muſt ſtand perpendicularly over each other, that the notes belonging to each part may be diſtinctly known, they may be made with ſuch differences as ſhall not confound, or alter their ſignifications with reſpect to time, but only ſhew, that they belong to this or that part. Thus ſhall we ſee how the parts change and paſs through one another; and which, in every note is higheſt, loweſt, or uniſon. The uſe of particular *ſigned clefs* then, is an improvement with reſpect to the parts of any compoſition; for unleſs ſome one key in the particular ſyſtems were diſtinguiſhed from the reſt, and referred invariably to one place in the ſcale, the relations could not be diſtinctly marked.

It muſt here be obſerved, that for the performance of any ſingle piece, the *clef* only ſerves for explaining the intervals in the lines and ſpaces: ſo that we need not regard what part of any greater ſyſtem it is; but the firſt note may be taken as high or as low as we pleaſe. For as the proper uſe of the ſcale is not to limit the abſolute degree of tone; ſo the proper uſe of the *ſigned clef* is not to limit the pitch, at which the firſt note of any part is to be taken; but to determine the tune of the reſt, with relation to the firſt; and conſidering all the parts together, to determine the relation, of their ſeveral notes by the relations of their *clefs* in the ſcale: thus, their pitch of tune being determined in a certain note of one part; the other notes of that part are determined by the conſtant relations of the letters of the ſcale, and the notes of the other parts by the relations of their *clefs*.

In effect, for performing any ſingle part, the *clef* note may be taken in any octave, *i. e.* at any note of the ſame name; provided we do not go too high, or too low, for finding the reſt of the notes of a ſong. But in a concert of ſeveral parts, all the *clefs* muſt be taken, not only in the relations, but alſo in the places of the ſyſtem above-mentioned; that every part may be comprehended in it.

The difference of *clefs* in particular ſyſtems makes the practice of muſic much more difficult and perplexed, than it would otherwiſe be; both with reſpect to inſtruments, and to the voice. This occaſioned Mr. Salmon to propoſe a method of reducing all muſic to one *clef*; whereby the ſame writing of any piece of muſic ſhould equally ſerve to direct the voice, and all inſtruments; which he calls an *univerſal character*.

The natural and artificial note expreſſed by the ſame letter, as *c* and *c* ♯, are both ſet on the ſame line or ſpace. When there is no character of flat or ſharp, at the beginning with the *clef*, all the notes are natural: and if in any particular place the artificial note be required, it is ſignified by the ſign of a flat or ſharp, ſet on the line a ſpace before that note.

If a ſharp or flat be ſet at the beginning in any line or ſpace with the *clef*, all the notes on that line or ſpace are artificial ones; *i. e.* are to be taken a ſemitone higher or lower than they would be without ſuch ſign. And the ſame affects all their octaves above and below, though they be not marked ſo. In the courſe of the ſong, if the natural note be ſometimes required, it is ſignified by this character. ♮.

The marking of the ſyſtem thus by flats and ſharps, Mr. Malcolm calls the *ſignature of the clefs*.

CLEFT, *in grafting*. See the article ENGRAFTING.

CLEMENTINE *, a term in uſe among the Auguſtins, who apply it to a perſon, who after having been nine years a ſuperior, ceaſes to be ſo, and becomes a private monk, under the command of a ſuperior.

* The word has its riſe hence, that pope Clement, by a bull, prohibited any ſuperior among the Auguſtins from continuing above nine years in his office.

CLEMENTINES, in the canon law, are the conſtitutions of pope Clement V. and the canons of the council of Vienne. See CANON.

CLENCH-NAILS. See the article NAILS.

CLEPSYDRA *, a kind of water-clock, or an hour-glaſs ſerving to meaſure time by the fall of a certain quantity of water.

* The word comes from κλεπτω, *condo*, and ὑδωρ, *aqua*, water.

There have likewiſe been *clepſydræ* made with mercury.

The Egyptians, by this machine, meaſured the courſe of the ſun. Tycho Brahe, in our days, made uſe of it to meaſure the motion of the ſtars, *&c.* and Dudley uſed the ſame contrivance in making all his maritime obſervations.

The uſe of *clepſydræ* is very antient: they were invented in Egypt under the Ptolemies; as were alſo ſun-dials. Their uſe was chiefly in the winter; ſun-dials ſerved in the ſummer. They had two great defects; the one, that the water ran out with a greater or leſs facility, as the air was more or leſs denſe: the other, that the water ran out more readily at the beginning, than towards the concluſion.

M. Amontons has invented a *clepſydra* free from both theſe inconveniences, and which has the three grand advantages; of ſerving the ordinary purpoſe of clocks; of ſerving in navigation for the diſcovery of the longitude; and of meaſuring the motion of the arteries.

Conſtruction of a CLEPSYDRA.—To divide any cylindric veſſel into parts to be emptied in each diviſion of time; the time wherein the whole, and that wherein any part, is to be evacuated, being given.

Suppoſe, *v. gr.* a cylindric veſſel, whoſe charge of water flows out in twelve hours, were required to be divided into parts to be evacuated each hour. 1. As the part of time 1 is to the whole time 12, ſo is the ſame time 12 to a fourth proportional, 144. 2. Divide the altitude of the veſſel into 144 equal parts: here, the laſt will fall to the laſt hour; the three next above to the laſt part but one; the five next to the tenth hour, *&c.* Laſtly, the 23 laſt to the firſt hour.

For, ſince the times increaſe in the ſeries of the natural numbers, 1 2 3 4 5, *&c.* and the altitudes, if the numeration be in retrograde order from the twelfth hour, increaſe in the ſeries of the unequal numbers, 1 3 5 7 9, *&c.* the altitudes computed from the twelfth hour, will be as the ſquares of the times 1 4 9 16

25, &c. Therefore the ſquare of the whole time 144, comprehends all the parts of the altitude of the veſſel to be evacuated. But a third proportional to 1 and 12 is the ſquare of 12; and conſequently it is the number of equal parts into which the altitude is to be divided, to be diſtributed according to the ſeries of the unequal numbers, through the equal intervals of hours.

Since, in lieu of parts of the ſame veſſel, other leſs veſſels equal thereto may be ſubſtituted; the altitude of a veſſel emptied in a given ſpace of time being given, the altitude of another veſſel to be emptied in a given time may be found; *viz.* by making the altitudes as the ſquares of the times.

Hence we ſee the method of conſtructing the *clepſydræ* uſed by the antients.

Clepsydra is alſo uſed for an hour-glaſs of ſand. See Hour-glass.

CLERGY, **Clerus**, Κλῆρος, the aſſembly or body of clerks, or eccleſiaſtics. See Clerk.

In the Romiſh church there are two kinds of *clergy*: the one *regular*, comprehending all the religious of both ſexes: the other *ſecular*, comprehending all the eccleſiaſtics that do not make the monaſtic vows.

Among the reformed, there are none but ſecular *clergy*.—The Roman *clergy* forms a monarchical ſtate, under the pope, who is the head thereof.

The *clergy* was antiently divided into three orders; *viz.* prieſts, deacons, and inferior clerks; and each order had its chief: the arch-prieſt was the head of the firſt order, the archdeacon of the ſecond, and the dean of the third.

Under the name of *clergy*, were alſo formerly compriſed all the officers of juſtice; as being ſuppoſed to be men of letters. See Clerk.

Though the *clergy* formerly claimed an exemption from all ſecular juriſdiction, yet Matt. Paris tells us, William the Conqueror ſubjected the biſhops and abbeys who held per baroniam, and who, till then, had been exempt from all ſecular ſervice; and ordered they ſhould be no longer free from mortuary ſervices. To this purpoſe he preſcribed arbitrarily what number of ſoldiers every abbey and biſhoprick ſhould provide, to ſerve him and his ſucceſſors in war, and laid up theſe regiſters of eccleſiaſtical ſervitude in his treaſury.

But, in effect, the *clergy* were not exempt from all ſecular ſervice till then; as being bound by the laws of king Edgar to obey the ſecular magiſtrate in ſome things; *viz.* upon an expedition to the wars, and in contributing to the building and repairing of bridges, &c. See Trinoda *Neceſſitas*.

The *Privileges of the Engliſh* **Clergy**, by the antient ſtatutes, are very conſiderable: their goods are to pay no toll in fairs or markets; they are exempt from all offices, but their own; from the king's carriages, poſts, &c. from appearing at ſheriffs tourns or frank-pledges; and are not to be fined or amerced, according to their ſpiritual, but their temporal means.

A *clergyman* acknowleging a ſtatute, his body is not to be impriſoned: if he be convict of a crime, for which the benefit of *clergy* is allowed, he ſhall not be burnt in the hand: and he ſhall have the benefit of the *clergy* in infinitum, which no layman can have but once.

The *clergy*, by common law, are not to be burdened in the general charges with the laity; nor to be troubled or incumbered, unleſs expreſly named, and charged by the ſtatute; for general words do not affect them. Thus, if a hundred be ſued for a robbery, the miniſter ſhall not contribute; though the words are, *gentes demorantes*: neither are they aſſeſſed to the highway, to the watch, &c.

The *Revenues of the* **Clergy** were antiently more conſiderable than at preſent: Ethelwolph, in 855. gave them the tythe of all goods, and the tenth of all the lands in England; free from all ſecular ſervices, taxes, &c.

The charter whereby this was given them, was confirmed by ſeveral of his ſucceſſors, Edmund, Edgar, Ethelred, Alfred, and William the Conqueror; which laſt, finding the biſhopricks ſo rich, erected them all into baronies; each barony containing thirteen knights fees, at leaſt.—But ſince the reformation the biſhopricks are much impaired. See Bishop.

The revenues of the inferior *clergy*, in the general, are ſmall; a third part of the beſt benefices being antiently, by the pope's grant, appropriated to monaſteries; upon the diſſolution whereof they became lay-fees.

Indeed an addition was made 2° Annæ; the whole revenue of firſt-fruits and tenths being then granted, to raiſe a fund for the augmentation of the maintenance of the poor *clergy*: purſuant to which, a corporation was formed, by the name of the governors of the bounty of queen Anne, for the augmentation of the maintenance of the poor *clergy*; to whom the ſaid revenues were conveyed in truſt, &c. See First-Fruits.

Articles of the **Clergy**. See Articles.

Proctors of the **Clergy**. See the article Proctors.

Clergy is alſo uſed for an antient liberty of the church, confirmed by ſeveral acts of parliament; conſiſting in this, that when a prieſt, or one in orders, is arraigned of felony before a ſecular judge, he may pray his *clergy*, *i. e.* he may pray to be delivered to his ordinary, to purge himſelf of the crime objected againſt him.—This was formerly admitted, even in caſes of murder.—But the antient courſe of the law is now much altered on this head.—By the ſtatute 18 Eliz. cap. 7. clerks are no more committed to their ordinaries to be purged; but every man to whom the benefit of *clergy* is granted, though not in orders, is put to read at the bar, after he is found guilty, and convicted of ſuch felony; and ſo, burnt in the hand, and ſet free for the firſt time, if the ordinary's commiſſioner, or deputy ſtanding by, do ſay, *legit ut clericus*; otherwiſe he ſuffers death.

CLERICAL *Crown*. See the article Crown.

Clerical *Title*. See the article Title.

Clerici *non eligantur in officio*. See Quod *Clerici*.

Non-reſidentia pro **Clericis** *Regis*. See *Non* Residentia.

Clerico *admittendo*, a writ directed to the biſhop, for the admitting a clerk to a benefice upon a ne admittas tried, and found for the party who procured the writ. See the article Admittendo.

Clerico *capto per ſtatutum mercatorum*, is a writ for the delivery of a clerk out of priſon, who is impriſoned upon the breach of ſtatute-merchant.

Clerico *convicto commiſſo gaolæ in defectu ordinarii deliberando*, is a writ for the delivery of a clerk to his ordinary, that was formerly convicted of felony; by reaſon his ordinary did not challenge him according to the privilege of clerks.

Clerico *intra ſacros ordines conſtituto non eligendo in officium*, is a writ directed to the bailiffs, &c. that have thruſt a bailiwick or beadleſhip upon one in holy orders; charging them to releaſe him.

CLERK*, **Clericus**, a word formerly uſed to ſignify a learned man, or man of letters.

* The word comes from the Greek κλῆρος, uſed for *clergy*, but more properly ſignifying *lot*, or *heritage*; in regard the lot and portion of *clerks* or eccleſiaſtics is to ſerve God.—Accordingly, *clerus* was at firſt uſed to ſignify thoſe, who had a particular attachment to the ſervice of God.—The origin of the expreſſion is derived from the old teſtament, where the tribe of Levi is called the *lot*, *heritage*, κλῆρος; and God is reciprocally called their portion; by reaſon that tribe was conſecrated to the ſervice of God, and lived on the offerings made to God, without any other ſettled proviſion, as the reſt had.

Thus, Paſquier obſerves, the officers of the counts (*comites*) were antiently created under the title of *Clerks of Accompts*; and ſecretaries of ſtate were called *Clerks of the Secrets*. So, *Clericus domini regis*, in the time of Edward I. was engliſhed, the *king's ſecretary*, or *clerk of his council*.

The term was applied indifferently to all who made any profeſſion of learning; or who knew how to manage the pen: though, originally, it was appropriated to eccleſiaſtics.

As the nobility and gentry were uſually brought up to the exerciſe of arms; there was none but the clergy left to cultivate the ſciences: hence, as it was the clergy alone who made any profeſſion of letters, a very learned man came to be called a *great clerk*, and a ſtupid ignorant man, a *bad clerk*.

Ronſard, in his old language, uſes the word femininely, *clergeſſe*, for a learned woman. "*Mais trop plus eſt à craindre* "*une femme clergeſſe*."

Clerk (in the general) is uſed for all thoſe of the eccleſiaſtical ſtate, or who are in holy orders, of any degree, or kind; from the deacon, to the prelate.

Yet, in its utmoſt latitude, the word *clerk* alſo includes *chantors*, *acolythi*, *exorciſtæ*, and *oſtiarii*. See Chantor, Acolythi, Exorcist, &c.

The canons excommunicate all thoſe who lay hands on a clerk. A council held in Africa prohibited the appointing any *clerk* to be a tutor, guardian, or curator, by teſtament.—The council of Elvira injoins continence on all clerks, biſhops, prieſts, or deacons, on pain of being ſtripped of their clericature.

Acephalous **Clerk**, in the ſixth century, was a name given to thoſe *clerks* who ſeparated from the biſhop, and choſe not to live any longer in community with him; in contradiſtinction to

Canonic **Clerks**, who continued to live with the biſhop, according to the canons.

Clerk is alſo a title given to ſeveral officers in the royal palace, the courts of juſtice, revenue, army, navy, &c.—The principal of theſe are as follow.

Clerk *of the Acts*, is an officer of the navy, who receives and enters the commiſſions and warrants of the lord admiral; and regiſters the acts and ordinances of the commiſſioners of the navy.

Clerk *of Aſſiſe*, is he that writeth all things judicially done by the juſtices of aſſiſe, in their circuits.

Clerk *of the Check*, is an officer in the court, ſo called, because he hath the check and controulment of the yeomen of the guard, and all other ordinary yeomen, or uſhers, belonging either to the king, queen, or prince; giving leave, or allowing their abſence, or defects in attendance; or diminiſhing their wages for the ſame.

Clerk *of the Cloſet*, is a divine, otherwiſe called *confeſſor to* *majeſty*; whoſe office is to attend at the king's right hand du di divine ſervice, to reſolve all doubts concerning ſpiritual matters, to wait on the king in his private oratory, *&c.*

Clerk *of the Crown*, or *Crown-Office*, in the king's-bench court, an officer whoſe buſineſs is to read, frame, and record all indictments againſt traitors, felons, and other offenders there, arraigned upon any public crime.

Clerk *of the Crown*, in chancery, is an officer, who by himſelf, or deputy, is continually to attend the lord chancellor, or lord keeper, for ſpecial matters of ſtate, by commiſſion, or the like, either immediately from his majeſty, or by order of his council; as well ordinary as extraordinary.—All general pardons, upon grants of them at the king's coronation, or in parliament; the writs of parliament, with the names of the knights, citizens, and burgeſſes; are alſo returned into his office: beſides which, he has the making of ſpecial pardons, and writs of execution upon bonds of ſtatute ſtaple forfeited.

Clerk *of the Deliveries*, is an officer in the Tower, who takes indentures for all ſtores iſſued thence.

Clerk *of the Inrollments of Fines and Recoveries*, in the court of common-pleas, is an officer under the three elder judges of that court, and removeable at their pleaſure. See Inrollment.

Clerk *of the Errors*, in the court of common-pleas, tranſcribes, and certifies into the king's-bench, the tenor of the records of the cauſe, or action, upon which the writ of error, made by the curſitor, is brought there to be determined.

Clerk *of the Errors*, in the king's-bench, tranſcribes and certifies the records of ſuch cauſes in that court into the exchequer; if the cauſe, or action, is by bill.

Clerk *of the Errors*, in the exchequer, tranſcribes the records certified thither out of the king's-bench; and prepares them for judgment in the court of exchequer, to be given by the juſtices of the common-pleas, and barons, there.

Clerk *of the Eſſoins*, in the court of common-pleas, keeps the eſſoin-roll, or enters eſſoins. He alſo provides parchment, cuts it into rolls, marks the number on them; delivers out all the rolls to every officer, and receives them again when written. See Essoin.

Clerk *of the Eſtreats*, belongs to the exchequer; and, every term, receives the eſtreats out of the lord treaſurer's remembrancer's office, and writeth them out to be levied for the king. He alſo maketh ſchedules of ſuch ſums eſtreated as are to be diſcharged. See Estreat.

Clerks *of the Green-Cloth*. See Green-Cloth.

Clerk *of the Hamper*, or *Hanaper*, is an officer in chancery, whoſe buſineſs is to receive all money due to the king for the ſeals of charters, patents, commiſſions, and writs: as alſo fees due to the officers for inrolling and examining the ſame. He is obliged to attend on the lord chancellor, or lord keeper, daily in term-time; and at all times of ſealing.

Clerk *of the Juries*, or *curata writs*, is an officer belonging to the court of common-pleas, who makes out the writs called *habeas corpus*, and *diſtringas*, for the appearance of juries, either in court, or at the aſſizes; after the panel is returned upon the venire facias. See Jury.

Clerk *Comptroller of the King's Houſe*, an officer of the court, who has place and ſeat in the compting-houſe; with authority to allow or diſallow the charges and demands of purſuivants, and meſſengers of the green-cloth, purveyors, *&c.* He has alſo the overſight of all defaults and miſcarriages of inferior officers; and ſits in the compting-houſe with the ſuperior officers, *viz.* the lord ſteward, treaſurer, comptroller, and cofferer, for the correcting and redreſſing things out of order.

Clerk *of the King's great Wardrobe*, keeps an account or inventory, in writing, of all things belonging to the king's wardrobe. See Wardrobe.

Clerk *of the King's Silver*, is an officer belonging to the common-pleas; to whom every fine is brought, after it has been with the cuſtos brevium; and by whom the effect of the writ of covenant is entered into a paper book; and according to that note, all the fines of that term are alſo recorded in the rolls of the court. See Queen *Gold*.

Clerk *of the Market*, is an officer of the king's houſe, whoſe duty is to take charge of the king's meaſures, and to keep the ſtandards of them, that is, examples of all the meaſures that ought to be uſed through the land.

Clerk *Marſhal* of the king's houſe, ſeems to be an officer who attends the marſhal in his court, and records all his proceedings. See Marshal.

Clerk *of a Ship*, is an officer appointed to take care, that nothing be ſquandered, or ſpent needleſly.

He is obliged to keep a regiſter, or journal, containing an exact inventory of every thing in the loading of the veſſel; as the rigging, apparel, arms, proviſion, munition, merchandizes: as alſo the names of the paſſengers, if there be any; the freight agreed on; a liſt of the crew, their age, quality, wages; the bargains, purchaſes, ſales, or exchanges the ſhip makes from its departure; the conſumption of proviſion; and, in ſhort, every thing relating to the expence of the voyage. He alſo regiſters the conſultations of the captains, pilots, *&c.*—He alſo does the office of a regiſter in all criminal proceſſes; and of a notary, to make and keep the wills of thoſe who die in the voyage; takes inventories of their effects, *&c.* The *clerk* is not allowed to quit the veſſel during the voyage, on forfeiture of all his wages, *&c.* —In ſmall veſſels, the maſter, or pilot, does the office of *clerk*.

Clerk *of the Nichils*, or *Nihils*, is an officer in the exchequer, who makes a roll of all ſuch ſums as are nichilled by the ſheriffs upon their eſtreats of green-wax; and delivers the ſame into the lord treaſurer's remembrancer's office, to have execution done upon them for the king. See Nihil.

Clerk *of the Ordnance*, is an officer in the Tower, who regiſters all orders relating to the king's ordnance. See Ordnance.

Clerk *of the Outlawries*, is an officer belonging to the court of common-pleas; being a deputy to the king's attorney-general, for making out the writs of capias utlagatum, after outlawry; and the king's attorney's name is to every one of thoſe writs.

Clerk *of the Paper-Office*, is an officer of the king's-bench. See Paper-*Office*.

Clerk *of the Parcels*, an officer of the exchequer. See Parcel-*Makers*.

Clerk *of the Parliament*, is an officer who records all things done in parliament; and engroſſes them fairly into parchment rolls, for their better keeping to poſterity.—Of theſe there are two: one of the higher, or houſe of lords; and the other of the lower, or houſe of commons.

Clerk *of the Patents*, or letters patent under the great-ſeal. See Patent.

Clerk *of the Peace*, is an officer belonging to the ſeſſion of the peace, whoſe duty is at the ſeſſion to read the indictments, to inroll the acts, and draw the proceſſes; to inroll proclamations of rates for ſervants wages; to inroll the diſcharge of apprentices; to keep the counterpart of the indenture of armour, *&c.* Alſo to certify in the king's-bench tranſcripts of indictments, outlawries, attainders, and convictions, had before the juſtices of the peace within the time limited by ſtatute.

Clerk *of the Pells*, belongs to the exchequer: his buſineſs is, to enter the tellers bill into a parchment roll, called *pellis receptorum*; and alſo to make another roll of payment, called *pellis exituum*, wherein he ſets down by what warrant the money was paid. 22 and 23 Car. II.

Clerk *of the Petty Bag*, is an officer in chancery, whereof there are three; the maſter of the rolls being their chief.—Their office is to record the return of all inquiſitions out of every county, all liveries granted in the court of wards, all oſter les mains; to make all patents of cuſtomers, gaugers, comptrollers, and aulnagers; congé d'elires for the creations of biſhops; ſummons of the nobility, clergy, and burgeſſes, to parliament; commiſſions directed to the knights and others, of every ſhire, for raiſing of ſubſidies; writs for nomination of collectors for the fifteenths; and all traverſes upon any office, bill, or otherwiſe; and to receive the money due to the king for the ſame.

Clerk *of the Pipe*, belongs to the exchequer; who having all accompts and debts due to the king delivered and drawn out of the remembrancer's office, chargeth them down into the great roll: he alſo writes ſummons's to the ſheriff, to levy the ſaid debts upon the goods and chattels of the ſaid debtors; and if there be no goods, he draws them down to the lord treaſurer's remembrancer, to write eſtreats againſt their lands.

Clerk *of the Pleas*, is an officer in the exchequer, in whoſe office the officers of the court, upon ſpecial privilege belonging to them, ought to ſue, and be ſued, upon any action.

Clerks *of the Privy-Seal*, are four officers who attend the lord keeper of the privy-ſeal, or, if there be none ſuch, the principal ſecretary; and write, or make out, all things ſent by warrant from the ſignet to the privy-ſeal, and to be paſſed to the great-ſeal: as alſo to make out privy-ſeals upon any ſpecial occaſion of the king's affairs; as for loan of money, or the like.

Clerk *of the Sewers*, is an officer belonging to the commiſſioners of the ſewers, who writes down all things they do by virtue of their commiſſion, and the authority given them by 13 El. c. 9.

Clerk *of the Signet*, is an officer continually attending on the king's principal ſecretary; who has cuſtody of the privy-ſignet, as well for ſealing the king's private letters, as for ſuch grants as paſs his majeſty's hand by bills ſigned. Of theſe there are four, who attend in their turn, and have their diet at the ſecretary's table.

Clerk *of the Superſedeas*, is an officer in the court of common-pleas, who makes out writs of *ſuperſedeas* (upon the defendants appearing to the exigent on an outlawry) whereby the ſheriff is forbid to return the exigent.

Clerk *of the Treaſury*, an officer of the common-pleas, who has charge of the records of the niſi prius, the fees due for all ſearches, and the certifying of all records into the king's-bench, when a writ of error is brought.—He alſo makes out all writs of ſuperſedeas de non moleſtanda, which are granted for the defendants while the writ of error hangeth; and all exemplification of records, being in the treaſury.

Clerk *of the Warrants*, is an officer likewiſe belonging to the court of common-pleas, who enters all warrants of attorney for plaintiff and defendant; and inrolls all deeds of indentures of bargain and ſale, which are acknowleged in the court, or before any judges out of the court: and it is his office to eſtreat into the exchequer all iſſues, fines, and amerciaments, which grow due to the king in that court, for which he has a ſtanding fee or allowance.

Miſpriſion of **Clerks.** See the article Misprision.

Riding **Clerk.** See the article Riding.

Six **Clerks.** See the article Six.

CLEROMANCY *, a kind of divination performed by the throwing of dice, or little bones; and obſerving the points, or marks turned up.

* The word comes from the Greek κληρος, *lot*, and μαντεια, *divination*.

At Bura, a city of Achaia, was a temple, and a celebrated oracle of Hercules; where ſuch as conſulted the oracle, after praying to the idol, threw four dies, the points whereof being well ſcanned by the prieſt, he was ſuppoſed to draw an anſwer from them.

CLERUS. See Clerk.

Client, Cliens, among the Romans, a citizen who put himſelf under the protection of ſome great man, who in that relation was called his patron, *patronus*.

The patron aſſiſted his *Client* with his protection, intereſt, and eſtate; and the *Client* gave his vote for his patron, when he ſought any office for himſelf, or his friends. *Clients* owed reſpect to their patrons, as theſe reciprocally owed them their protection.

This right of patronage was appointed by Romulus, to unite the rich and poor together, in ſuch manner, as that one might live without contempt, and the other without envy. But the condition of a *Client*, in courſe of time, became little elſe but a moderate kind of ſlavery.

By degrees, the cuſtom extended itſelf beyond Rome; and not only families, but cities, and intire provinces, even out of Italy, followed the example. Thus Sicily, *v. gr.* put itſelf under the clientela, or protection of Marcellus.

Lazius and Budæus refer the origin of fiefs, and tenures, to the patrons and *Clients* of antient Rome: but the difference is pretty conſiderable between the relation of vaſſals and their lords, and that of *Clients* and their patrons. See Vassal.

The *Clients*, beſide the reſpect they bore their patrons, and the vote they gave them, were obliged to aſſiſt them in all affairs; and even to pay their ranſom, if they ſhould be taken priſoners in war, in caſe they were not able to do it of themſelves.

Client is now uſed for a party in a law-ſuit, who has turned over his cauſe into the hands of a counſellor, or ſollicitor.

CLIMACTERIC *, *Annus* **Climactericus**, a critical year, or period in a man's age, wherein, according to aſtrologers, there is ſome very notable alteration in the body to ariſe; and a perſon ſtands in great danger of death.

* The word comes from the Greek κλιμακτηρ, or κλιμακτηρικος, of κλιμαξ, κλιμακος, *ſcala*; *q. d.* by a ſcale, or ladder.

The firſt *Climacteric* is the ſeventh year of a man's life; the reſt are multiples of the firſt, as 21, 49, 56, 63, and 84; which two laſt are called the *Grand Climacterics*, and the dangers here are ſuppoſed more imminent.

The opinion has a great deal of antiquity on its ſide. Aulus Gellius ſays, it was borrowed from the Chaldeans; who might probably receive it from Pythagoras, whoſe philoſophy turned much on numbers; and who imagined an extraordinary virtue in the number 7.

Marc. Ficinus gives us the foundation of the opinion: he tells us, there is a year aſſigned for each planet to rule over the body of man, each in his turn: now Saturn being the moſt maleficent planet of all, every ſeventh year, which falls to his lot, becomes very dangerous; eſpecially thoſe of 63 and 84, when the perſon is already advanced in years.

Some hold, according to this doctrine, every ſeventh year an eſtabliſhed *Climacteric*; but others only allow the title to thoſe produced by the multiplication of the climacterical ſpace by an odd number, 3, 5, 7, 9, *&c.*—Others obſerve every ninth year as a *Climacteric.*

Hevelius has a volume under the title of *annus climactericus*, deſcribing the loſs he ſuſtained in the burning of his obſervatory, *&c.* which it ſeems happened in his firſt *Grand Climacteric.*

Suetonius ſays, Auguſtus congratulated his nephew upon his having paſſed his firſt *Grand Climacteric*, whereof he was very apprehenſive.

Some pretend that the *Climacteric* years are alſo fatal to political bodies; which perhaps may be granted, when it is proved that they are ſo to natural ones.

Authors on this ſubject, are Plato, Cicero, Macrobius, Aulus Gellius, among the antients; Argol, Magirus, and Salmaſius, among the moderns. And St. Auguſtine, St. Ambroſe, Beda, and Boetius, countenance the opinion.

CLIMATE *, **Clima**, or **Clime**, in geography, a part of the ſurface of the earth, bounded by two circles parallel to the equator, and of ſuch a breadth, as that the longeſt day in the parallel nearer the pole, exceeds the longeſt day in that next the equator by ſome certain ſpace; *viz.* half an hour.

* The word comes from the Greek κλιμα, *inclinamentum*, an inclination.

The *Beginning of the* **Climate**, is the parallel circle wherein the day is the ſhorteſt.

The *End of the* **Climate**, is that wherein the day is the longeſt.

The *Climates* therefore are reckoned from the equator to the pole; and are ſo many bands, or zones, terminated by lines parallel to the equator: though, in ſtrictneſs, there are ſeveral *Climates* in the breadth of one zone.

Each *Climate* only differs from its contiguous ones, in that the longeſt day in ſummer is longer or ſhorter by half an hour in the one place than in the other.

As the *Climates* commence from the equator, the firſt *Climate*, at its beginning, has its longeſt day preciſely twelve hours long; at its end, twelve hours and an half: the ſecond, which begins where the firſt ends, *viz.* at twelve hours and an half, ends at thirteen hours; and ſo of the reſt, as far as the polar circles, where, what the geographers call *Hour-Climates* terminate, and *Month-Climates* commence.

As an *Hour-Climate* is a ſpace compriſed between two parallels of the equator, in the firſt of which, the longeſt day exceeds that in the latter by half an hour; ſo the *Month-Climate* is a ſpace terminated between two circles parallel to the polar circles, whoſe longeſt day is longer or ſhorter than that of its contiguous one by a month, or thirty days.

The antients, who confined the *Climates* to what they imagined the habitable parts of the earth, only allowed of ſeven. The firſt they made to paſs through Meroe; the ſecond through Sienna; the third through Alexandria; the fourth through Rhodes; the fifth through Rome; the ſixth through Pontus; and the ſeventh through the mouth of the Boryſthenes.

The moderns, who have ſailed farther toward the poles, make thirty *Climates* on each ſide: and in regard the obliquity of the ſphere makes a little difference in the length of the longeſt day; inſtead of half an hour, ſome of them only make the difference of *Climates* a quarter.

In fixing the *Climates*, there ordinarily is no regard had to the refraction.

Vulgarly, the term **Climate** is beſtowed on any country or region differing from another, either in reſpect of the ſeaſons, the quality of the ſoil, or even the manners of the inhabitants: without any regard to the length of the longeſt day.

Abulfeda, an Arabic author, diſtinguiſhes the firſt kind of *Climates* by the term *real Climates*; and the latter by that of *apparent Climates*.

Varenius gives us a table of thirty *Climates*; but without any regard to the refraction. Ricciolus furniſhes a more accurate one, wherein the refractions are allowed for: an abſtract of which follows.

A Table of **Climates.**

Middle of *Clim.*	Longeſt Day.	Latit.	*Climates.*	Longeſt Day.	Latit.	Middle of *Clim.*	Latit.	Cont. Light.	North Night.	Cont. Light.	South Night.
I	12^{h} 30	7° 18	VIII	16^{h} 0	48° 15	XV	66° 53	31^{d}	27^{d}	30^{d}	28^{d}
II	13 0	15 36	IX	17 0	53 46	XVI	69 30	62	58	60	59
III	13 30	23 8	X	18 0	57 44	XVII	73 0	93	87	89	88
IV	14 0	29 49	XI	19 0	60 39	XVIII	78 6	124	117	120	118
V	14 30	35 35	XII	20 0	62 44	XIX	84 0	156	148	150	149
VI	15 0	40 32	XIII	22 0	65 10	XX	90 0	188	180	178	177
VII	15 30	44 42	XIV	24 0	65 54						

CLIMAX, Κλιμαξ, or *Gradation*, in rhetoric, a figure, whereby the diſcourſe aſcends, or deſcends, as it were by degrees. Such is that of Cicero to Catiline: *Nihil agis, nihil moliris, nihil cogitas; quod ego non audiam, quod etiam non videam, planeque ſentiam:* thou doſt nothing, moveſt nothing, thinkeſt nothing; but I hear it, nay ſee it, and perfectly underſtand it. Thus, the ſame Cicero to Atticus; *Si dormis expergiſcere; ſi ſtas, ingredere; ſi ingrederis, curre; ſi curris, advola.* So, Tertullian *de Spect.* ‘Who ever found ‘the truth without God? Who ever found God without ‘Chriſt? Who Chriſt without the Holy Spirit? Who the ‘Holy Spirit without Faith?’

CLINIC, CLINICUS *, a term applied by ſome church-hiſtorians to thoſe among the antients, who received baptiſm on their death-bed.

* The word is Greek, κλινικος, formed from κλινη, *a bed.*

It was the doctrine of many of the fathers, that baptiſm abſolutely waſhed away all previous ſins, and that there was no atonement for ſins committed after baptiſm. On this account, many deferred that ſacrament till they were arrived at the laſt ſtage of life, and were pretty ſafe from the danger of ſinning any more, and ſuch were called *Clinici.*

Magnus, in the third century, made a doubt whether or no *Clinics* were truly baptized, in regard the ceremony was only performed by aſperſion, inſtead of immerſion: he conſulted St. Chryſoſtom on the point, who made him anſwer, that the ſacrament does not waſh away ſin after the manner of a corporal bath; and ſhews from ſcripture that aſperſion is ſufficient.

CLINIC is alſo uſed in antiquity for a patient, or perſon merely ſick, even without keeping his bed.—As appears from the life of Charlemaign, in Caniſius.

CLINICUS is alſo uſed for a phyſician.—In regard, phyſicians are much converſant about the beds of the ſick.

It was, however, principally the phyſicians of emperors that were called by this title.

CLINIC is now ſeldom uſed but for a quack; or rather for an empirical nurſe, who pretends to have learned the art of cureing diſeaſes by attending on the ſick.

Medicina CLINICA, was particularly uſed for the method of viſiting, and treating ſick perſons in bed, for the more exact diſcovery of all the ſymptoms of their diſeaſe.

Le Clerc obſerves, that Eſculapius was the firſt who exerciſed the *Clinic medicine.*

CLINOIDES *, in anatomy, an epithet given to three internal apophyſes of the os ſphenoides, one of the bones of the cranium; ſo called, ſay ſome, from their reſembling the feet of a bed. See SPHENOIDES.

* The word is formed of the Greek κλινη, *a bed,* and ειδος, *form*; either from the reſemblance which the three bones bear to the feet of a bed; or from the cavity they form, which reſembles a bed itſelf.

Two of theſe are anterior, or before; the third poſterior, behind: the three together form a little cavity, from its ſhape called *ſella turcia*, or *equina*; wherein is placed the pituitary gland.

CLITORIDIS *Muſculi*, in anatomy. See RECTOR *Clitoridis.*

CLITORIS, Κλειτορις, in anatomy, a long round body in the forepart of the vulva, or natural parts of a woman; being one of the organs of generation in that ſex.—See *Tab. Anat.* (Splanch.) *Fig.* 9. *lit. o. p. Fig.* 11. *lit. m. Fig.* 13. *lit. a.*

Its figure repreſents that of a glans or acorn: ordinarily it is pretty ſmall, but in ſome women thick, and long.—In many reſpects, it repreſents the penis of a man; whence ſome call it *mentula*, or *penis muliebris*, the woman's yard.

In effect, it is compoſed of the ſame parts; it has, like it, two cavernous or ſpongious bodies; and a glans at the extremity, covered with a preputium; but it is not pierced through like the penis.

It has two muſcles which erect it in coition; on which occaſion it ſwells, and grows hard. Some anatomiſts pretend too, that it has two muſculi ejaculatores.—See *Tab. Anat.* (Splanch.) *Fig.* 13. lit. *f. f.*

Its ſenſation is exquiſite; and it is found the chief ſeat of pleaſure; ſo that ſome call it *œſtrum veneris.* And hence it is ſaid, ſome women are apt to abuſe it. See POLLUTION.

The extremity of this part is ſometimes cut off; as in circumciſion, and where it advances out too far. It is ſometimes ſo large and propendent, that it bears a full reſemblance to the virile member; whence the perſons in whom it is ſo found, frequently paſs for hermaphrodites.

The ſpongious bodies of the *Clitoris* ariſe diſtinctly from the lower parts of the os pubis; and approaching one another, unite, and form the body of the *Clitoris.* Before their union they are called the *crura clitoridis*; and are twice as long as the body of the *Clitoris.*

Its muſcles ariſe from the protuberance of the iſchium, and are inſerted into its ſpongious bodies. It has veins and arteries from the hæmorrhoidal veſſels, and pudenda; and nerves from the intercoſtals.

LOACA *, among the antients, was a ſubterraneous aqueduct, or common-ſewer, for the reception and diſcharge of the filth of a city, or houſe.

* The word is formed from the Greek κλυζω, *I waſh away.*

Tarquinius Priſcus is ſaid to have been the firſt who contrived *Cloacæ* in antient Rome; to which end, a canal was firſt dug through the mountains whereon the city ſtood, and divided into three branches, called the *great Cloaca.*

The care and inſpection of the *Cloacæ* belonged to the cenſors, till the time of Auguſtus, who appointed curatores *Cloacarum* on purpoſe.—The Romans had alſo their *Cloacina*, or goddeſs, who preſided over the *Cloacæ.*

LOATHS, or CLOTHES. See the article HABIT.

CLOCK, a kind of movement, or machine, ſerving to meaſure, and ſtrike time.

The uſual chronometers are watches, and *clocks*: the former, in ſtrictneſs, are ſuch as ſhew the parts of time; the latter, ſuch as publiſh it by ſtriking: though the name watch is ordinarily appropriated to pocket-*Clocks*; and that of *Clocks* to larger machines, whether they ſtrike or no.

The parts common to both kinds of movements, ſee under the article MOVEMENT.—Thoſe peculiar to watches and *Clocks*, ſee under WATCH-WORK, and CLOCK-WORK.

The invention of *Clocks* with wheels, is referred to Pacificus archdeacon of Verona, who lived in the time of Lotharius, ſon of Louis the Debonnair; on the credit of an epitaph quoted by Ughelli, and borrowed by him from Panvinius.

They were at firſt called *nocturnal dials*; to diſtinguiſh them from ſun-dials, which ſhewed the hour by the ſun's ſhadow.—Others aſcribe the invention to Boethius, about the year 510.

Mr. Derham makes *Clock-work* of a much older ſtanding; and ranks Archimedes's ſphere, mentioned by Claudian, and that of Poſidonius, mentioned by Cicero, among the machines of this kind; not that either their form or uſe were the ſame with thoſe of ours: but that they had their motion from ſome hidden weights, or ſprings, with wheels, or pullies, or ſome ſuch *Clock-work* principle. Thus he underſtands the *Incluſus variis famulatur ſpiritus aſtris*; *& vivum certis motibus urget opus.*

But be this as it will, it is certain the art of making *Clocks*, ſuch as are now in uſe, was either firſt invented, or at leaſt retrieved, in Germany about 200 years ago.

The water-*Clocks*, or clepſydræ, and ſun-dials, have both a much better claim to antiquity.

—The French annals mention one of the former kind, ſent by Aaron king of Perſia to Charlemaign, about the year 807. which ſeemed to bear ſome reſemblance to the modern *Clocks*: it was of braſs, and ſhewed the hours by twelve little balls of the ſame metal, which fell at the end of each hour, and in falling, ſtruck a bell, and made it ſound. There were alſo figures of twelve cavaliers, which at the end of each hour came forth at certain apertures, or windows in the ſide of the *Clock*, and ſhut them again, *&c.*

Among the modern *Clocks*, the moſt eminent for their furniture, and the variety of their motions and figures, are thoſe of Straſbourg, and of Lyons. In the firſt, a cock claps his wings, and proclaims the hour; the angel opens a door, and ſalutes the virgin; and the Holy Spirit deſcends on her, *&c.* In the ſecond, two horſemen encounter, and beat the hour on each other; a door opens, and there appears on the theatre the virgin with Jeſus Chriſt in her arms; the magi, with their retinue, marching in order, and preſenting their gifts; two trumpeters ſounding all the while to proclaim the proceſſion. See Scottus; ſee alſo Salmaſius on Solinus, Maſius *de Tintinnabulis*, and Kircher in his *Muſeum Romanum*, and *Oedip. Ægypt.*

The invention of pendulum *Clocks* is owing to the happy induſtry of the laſt age: the honour of it is diſputed between Huygens and Galileo. The former, who has a volume on the ſubject, declares it was firſt put in practice in the year 1657. and the deſcription thereof printed in 1658. Becher, *de nova temporis dimetiendi theoria*, *anno* 1680. ſtickles for Galileo; and relates, though at ſecond-hand, the whole hiſtory of the invention: adding, that one Trefler, clockmaker to the father of the then grand duke of Tuſcany, made the firſt pendulum *Clock* at Florence, by direction of Galileo Galilei; a pattern of which was brought into Holland.

The academy de'l Cimento ſay expreſly, that the application of the pendulum to the movement of a *Clock* was firſt propoſed by Galileo, and firſt put in practice by his ſon Vincenzo Galilei, in 1649.

Be the inventor who he will, it is certain the invention never flouriſhed till it came into Huygens's hands, who inſiſts on it, that if ever Galileo thought of ſuch a thing, he never brought it to any degree of perfection.

The firſt pendulum *Clock* made in England, was in the year 1622. by Mr. Fromantil a Dutchman. See PENDULUM.

Pendulum CLOCK.
Pocket CLOCK.
Repeating CLOCK.
} See the articles { PENDULUM *Clock.*
WATCH.

CLOCK-WORK, is that part of the movement which ſtrikes the hour, *&c.* on a bell.

The wheels it conſiſts of are the great, or firſt wheel; which is that the weight or ſpring firſt drives: in ſixteen or twenty hour-*Clocks*, this has uſually pins, and is called the *pin-wheel*; in eight-day pieces, the ſecond wheel is commonly the pin-wheel, or ſtriking-wheel. Next the ſtriking-wheel, is the detent-wheel, or hoop-wheel, having a hoop almoſt round it, wherein is a vacancy at which the *Clock* locks. The next is the third, or fourth wheel, according to its diſtance from the firſt. The laſt is the flying pinion, with a fly, or fan to gather air, and ſo bridle the rapidity of the *Clock*'s motion. To theſe muſt be added the pinion of report; which drives round the locking-wheel, called alſo the *count-wheel*; ordinarily with eleven notches in it, unequally diſtant, to make the *Clock* ſtrike the hours. See WHEEL.

Beſides the wheels, to the *clock* part belongs the raſh, or ratch; a kind of wheel with twelve large fangs, running concentrical to the dial-wheel, and ſerving to lift up the detents every hour, and make the *clock* ſtrike: the detents, or ſtops, which being lifted up, and let fall, lock and unlock the *clock* in ſtriking: the hammers which ſtrike the bell: the hammer-tails, by which the ſtriking pins draw back the hammers: latches, whereby the work is lifted up and unlocked; and lifting-pieces, which lift up and unlock the dents.

Theory and calculation of CLOCK-*work*.—The method of calculating the numbers of a piece of *clock-work* having ſomething in it very pretty, and at the ſame time very eaſy and uſeful, we ſhall give the readers the rules relating thereto: referring, for the general rules that obtain in the calculation of all movements of watch as well as *clock-work*, to the article MOVEMENT; and, for the particular rules of watch-work, to the article WATCH-*work*.

For the ſtrict calculation itſelf, it bears that affinity to the calculation of watch-work, that, to avoid repetitions, we ſhall refer to that head: what *clock-work* has peculiar to itſelf will be conceived from what follows.

Rules for calculating the ſtriking part of a CLOCK.—Firſt then, Obſerve that regard, here, needs only be had to the count-wheel, ſtriking-wheel, and detent-wheel, which move round in this proportion: the count-wheel commonly goes round once in 12 or 24 hours: the detent-wheel moves round every ſtroke the *clock* ſtrikes, or ſometimes but once in two ſtrokes; wherefore, it follows, that,

Secondly, As many pins as are in the pin-wheel, ſo many turns hath the detent-wheel in one turn of the pin-wheel; or, which is the ſame, the pins of the pin-wheel are the quotients of that wheel divided by the pinion of the detent-wheel. But if the detent-wheel move but once round in two ſtrokes of the *clock*, then the ſaid quotient is but half the number of pins.

Thirdly, As many turns of the pin-wheel as are required to perform the ſtrokes of 12 hours (which are 78), ſo many turns muſt the pinion of report have, to turn round the count-wheel once: or thus, the quotient of 78, divided by the number of ſtriking pins, ſhall be the quotient for the pinion of report, and the count-wheel; and this is in caſe the pinion of report be fixed to the arbor of the pin-wheel, which is commonly done.

An example will make all plain: the locking-wheel being
48, the pinion of report 8, the pin-wheel 78, the
8) 48 (6. ſtriking-pins are 13, and ſo of the reſt. Note
——— alſo, that 78 divided by 13 gives 6, the quotient
6) 78 (13. of the pinion of report. As for the warning-wheel,
6) 60 (10. and flying-wheel, it matters little what numbers
6) 48 (8. they have; their uſe being only to bridle the rapidity of the motion of the other wheels.

The following rules will be of good ſervice in this calculation.—

1. *To find how many ſtrokes a clock ſtrikes in one turn of the fuſy, or barrel.* As the turns of the great wheel, or fuſy, are to the days of the *clock*'s continuance; ſo is the number of ſtrokes in 24 hours, *viz.* 156, to the ſtrokes of one turn of the fuſy.

2. *To find how many days the clock will go.* As the ſtrokes in 24 hours are to thoſe in one turn of the fuſy; ſo are the turns of the fuſy to the days of the *clock*'s going.

3. *To find the number of turns of the fuſy, or barrel.* As the ſtrokes in one turn of the fuſy are to thoſe of 24 hours; ſo is the *clock*'s continuance to the turns of the fuſy, or great wheel.

4. *To fix the pin of report on the ſpindle of the great wheel.* As the number of ſtrokes in the *clock*'s continuance is to the turns of the fuſy; ſo are the ſtrokes in 12 hours, *viz.* 78, to the quotient of the pinion of report fixed on the arbor of the great wheel.

5. *To find the ſtrokes in the* clock's *continuance.* As 12 is to 78, ſo are the hours of the *clock*'s continuance to the number of ſtrokes in that time.

To add chimes to a piece of CLOCK-*work*. See the article CHIMES.

Balance of a CLOCK. See the article BALANCE.

CLOCK-*makers compaſſes*. See the article COMPASSES.

CLOISTER, CLAUSTRUM, a habitation ſurrounded with walls, and inhabited by canons, or religious.

In a more general ſenſe *cloiſter* is uſed for a monaſtery of religious of either ſex.

In a more reſtrained ſenſe *cloiſter* is uſed for the principal part of a regular monaſtery, conſiſting of a ſquare built around; ordinarily, between the church, the chapter-houſe, and the refectory; and over which is the dormitory. See DORMITORY, &c.

The *cloiſters* ſerved for ſeveral purpoſes in the antient monaſteries. Petrus Bleſenſis obſerves, that it was here the monks held their lectures; the lecture of morality at the north-ſide, next the church; the ſchool on the weſt, and the chapter on the eaſt; ſpiritual meditation, &c. being reſerved for the church.

Du Cange concludes, that all theſe different exerciſes were performed in the cloiſter itſelf; but by miſtake. The church, the chapter-houſe, and the ſchool, were not parts of the *cloiſter*, but buildings adjoining to it.

Lanfranc obſerves, that the proper uſe of the *cloiſter* was for the monks to meet in, and converſe together, at certain hours of the day.

The form of the *cloiſter* was ſquare; and it had its name *clauſtrum* from *claudo*, I ſhut or cloſe, as being incloſed on its four ſides with buildings.

Hence, in architecture, a building is ſaid to be in form of a *cloiſter*, when there are buildings on each of the four ſides of the court.

CLOISTERED *monks*. See the article MONK.

CLOSE, in heraldry. When any bird, addicted to flight, is drawn in a coat of arms, in a ſtanding poſture; with its wings cloſe down about it, and not either flying or diſplayed; they blazon it by the word *cloſe*.

In which ſenſe *cloſe* ſtands oppoſed to *volant*. See VOLANT.

Cloſe is not applied to the peacock, dunghil-cock, &c. in regard that it is their ordinary poſture.

The term *cloſe* is likewiſe uſed for the barnacles, or bits of a bridle, when not extended, as they are uſually borne.

It is alſo applied to the bearing a helmet, with the vizor down: a barnacle *cloſe*, helmet *cloſe*, &c.

CLOSE, in muſic. See the article CADENCE.

CLOSE *field*. See the article FIELD.

CLOSE *fights* aboard a ſhip are bulk-heads put up fore and aft in the ſhip, for the men to ſtand behind in a cloſe engagement, and fire on the enemy; or, if the ſhips be boarded, to ſcour the decks.

CLOSE *fire*. See FIRE, and REVERBERATION.

Pound CLOSE. See the article POUND.

CLOSET, in heraldry, ſignifies the half of a bar. See BAR.

Clerk of the CLOSET. See the article CLERK.

CLOTH, in commerce, in its general ſenſe, includes all kinds of ſtuffs woven or manufactured on the loom, whether their threads be of wool, hemp, or flax.

CLOTH is more peculiarly applied to a web, or tiſſue of woollen threads, interwoven; whereof ſome, called the *warp*, are extended lengthwiſe, from one end of the piece to the other; the reſt, called the *woof*, are diſpoſed acroſs the firſt, or breadthwiſe of the piece.

Cloths are woven on the looms as well as linens, druggets, ſerges, camblets, &c. They are of various qualities, fine, coarſe, ſtrong, &c. ſome are made of wool, and this of different colours; the wool being dyed and dreſſed, are firſt ſpun, then wove: others are wrought white, deſtined to be dyed in ſcarlet, black, blue, green, yellow, &c.—Their breadths and lengths are various, according to the places where they are manufactured.

The goodneſs of CLOTH conſiſts, 1°, In the wool's being fine, and well dreſſed. See WOOL.—2°, In its being ſpun equably; always obſerving, however, that the thread of the warp be finer, and better twiſted, than that of the woof.

3°, In the *cloth*'s being well wrought and beaten on the loom, ſo as to be every-where equally cloſe and compact.—4°, In the wool's not being finer and better at one end of the piece than in the reſt.—5°, In the liſts being ſufficiently ſtrong, and of the ſame length with the ſtuff; and that they conſiſt of good matter, as wool, hair, or oſtrich feathers, or the hair of Daniſh dogs; which laſt is the beſt.—6°, In the *cloth*'s being well cleared of the knots, and other imperfections.—7°, In its being firſt well ſcoured with good fullers-earth, then fulled with the beſt white ſoap, and waſhed out in clear water. See FULLING.—8°, In the hair or knap's being well drawn out with the teazle, or thiſtle, on the pole, without being too much opened. See TEAZLE.—9°, In its being ſhorn cloſe; yet without laying the ground or thread bare. See SHEERING.—10°, In its being well dyed.—11°, In its not being ſtretched, or pulled farther than is neceſſary to ſet it ſquare, and bring it to its juſt length and breadth. See TENTER.—12°, In its only being preſſed cold; hot-preſſing being an utter enemy to *cloth*.

Manufacturing of white CLOTHS *for dyeing*.—The beſt wools for the purpoſe are thoſe of England and Spain; eſpecially thoſe of Lincolnſhire, and Segovia.

To uſe them to the beſt advantage; when taken out of the bales, they muſt be ſcoured, by putting them in a liquor ſomewhat more than lukewarm, compoſed of three parts of fair water, and one of urine. After the wool has continued long enough in the liquor to diſſolve and looſen the greaſe, it is taken out, drained, and waſhed in a running water: it is known to be well ſcoured, when it feels dry to the touch, and has no ſmell but the natural ſmell of the ſheep.

In this ſtate it is hung out to dry in the ſhade; the heat of the ſun being apt to make it harſh, and untractable. When dry, it is beat with rods on hurdles of wood, or on ropes, to clear out the duſt and groſſer filth: the more it is thus beat and cleaned, the more ſoft it becomes, and the better it ſpins.—After beating, it is well picked, to clear the reſt of the filth, that had eſcaped the rods.

It is now in a ſtate to be oiled, and carded on large iron cards, placed aſlope. The beſt oil for the purpoſe is oil of olives; one fifth of which, at leaſt, ſhould be uſed for the wool deſtined for the woof, and a ninth for that of the warp.

It is now given out to the ſpinners; who firſt card it on the knee, with ſmall fine cards; then ſpin it on the wheel: obſerving to make the thread of the warp ſmaller, by one-third, than that of the woof, and much cloſer twiſted; in order to this, the latter muſt be ſpun with the band, or ſtring open, and the former with it croſſed.

The thread being thus ſpun, reeled, and made into ſkeins; that deſtined for the woof is wound on ſpools, *i. e.* on little tubes, or pieces of paper, or ruſhes, ſo diſpoſed as that they may be eaſily put in the eye of the ſhuttle. That for the warp is wound on a kind of rochets, or large wooden bobbins, to diſpoſe it for warping.

When warped, it is ſtiffened with ſize; whereof, that made of ſhreds of parchment is the beſt; and, when dry, is given to the weavers, who mount it on the loom.

The warp being on the loom, the weavers, who are two to each loom, one on each ſide, tread at the ſame time, alternately, on the ſame treadle; *i. e.* now on the right ſtep, and now on the left, which raiſes and lowers the threads of the warp equally; between which they throw, tranſverſly, the ſhuttle from the one to the other. And each time that the ſhuttle is thrown, and ſo a thread of the woof inſerted within the warp, they ſtrike it conjointly with the ſame frame wherein is faſtened the comb, or reed, between whoſe teeth the threads of the warp are paſſed; repeating the ſtroke as often as is neceſſary; in ſome *cloths* no leſs than twelve or thirteen times, *viz.* ſix with the warp open, and ſeven ſhut.

It may be obſerved, that the more the threads of the woof are ſtruck againſt each other, the cloſer the *cloth* is: and hence it becomes enabled to ſuſtain the violence of the fulling-mill, as well as of the teazing, or fulling-thiſtle, without fretting, or opening.

The weavers having continued their work till the whole warp is filled with woof, the *cloth* is finiſhed: it is taken off the loom by unrolling it from the beam whereon it had been rolled in proportion as it was woven; and is now given to be cleared of the knots, ends of thread, ſtraws, and other filth; which is done with little iron nippers.

In this condition it is carried to the fullery, to be ſcoured with urine, or a kind of potters clay well cleaned and ſteeped in water, put along with the *cloth* in the trough, wherein it is fulled. See FULLING.

The *cloth* being again cleared from the earth, or urine, by waſhing it in water, is returned to the former hands, to have the leſſer filth, ſmall ſtraws, and almoſt imperceptible knots, taken off as before: then it is returned to the fuller, to be beat and fulled with hot water, wherein five or ſix pounds of ſoap have been diſſolved. The ſoap moſt eſteemed is the white, eſpecially that of Genoa. After fulling an hour and a half, it is taken out to be ſmoothed, *i. e.* to be pulled by the liſts lengthwiſe, to take out the wrinkles and creaſes occaſioned by the force of the mallets, or peſtles, falling on the *cloth* when in the troughs.

The ſmoothing is repeated every two hours, till the fulling be finiſhed, and the *cloth* brought to its proper breadth: after which, it is waſhed in clear water, to purge it of the ſoap, and given, all wet, to the carders, to raiſe the hair, or knap, on the right ſide, with the thiſtle, or weed; wherewith they give it two rubs, or courſes; the firſt againſt the grain, the ſecond with the grain.

The *cloth* being dried after this preparation, the cloth-worker takes it, and gives it its firſt cut, or ſheering.--This done, the carders reſume it, and after wetting it, give it as many more rubs, or courſes, with the teazle, as the quality of the ſtuff requires: always obſerving to begin againſt the hair, and to end with it; and to begin with a ſmoother thiſtle, proceeding ſtill to a ſharper, and ſharper, as far as the ſixth degree.

After this, the *cloth* being dried, is returned to the cloth-worker, who ſheers it a ſecond time, and returns it to the carder; who wetting it again, gives it as many courſes as he thinks fit, dries it, and gives it back again to the cloth-worker; who after ſheering it the third and laſt time, returns it to the carders, who repeat their operation as before, till the hair, or knap, be well ranged on the ſurface of the *cloth*, from one end of the piece to the other.

It muſt be obſerved, that it is indiſpenſably neceſſary the *cloth* be wet, while in the carders hands; in order to which, it is ſprinkled from time to time with water.

The knap being finiſhed, and the *cloth* dried, the cloth-worker gives it as many cuts as he thinks requiſite for the perfection of the ſtuff. It muſt alſo be obſerved, that all the ſheerings muſt be on the right ſide, except the two laſt, which muſt be on the other; and that the *cloth* cannot be too dry for ſheering.

The *cloth* thus woven, ſcoured, knapped, and ſhorn, is ſent to the dyer.--When dyed, it is waſhed in fair water, and the cloth-worker takes it again, wet as it is, lays the hair, or knap, with a bruſh on a table, and hangs it on the tenters; where it is ſtretched both in length and breadth, enough to ſmooth it, ſet it ſquare, and bring it to its proper dimenſions, without ſtraining it too much; obſerving to bruſh it afreſh, the way of the hair, while yet a little moiſt on the tenter.

When quite dry, the *cloth* is taken off from the tenter, and bruſhed again on the table, to finiſh the laying of the knap: it is then folded, and laid cold under a preſs, to make it perfectly ſmooth and even, and to give it a little gloſs.

The gloſs is given by laying a leaf of vellom, or cap-paper in each plait of the piece; and over the whole a ſquare plank of wood: on which, by means of a lever, the ſcrew of a preſs is brought down, with the degree of force judged neceſſary, with regard to the quality of the *cloth.*—In France, none but ſcarlets, greens, blues, *&c.* receive this laſt preparation; blacks being judged better without it.

Laſtly, the *cloth* being taken out of the preſs, and the papers removed; it is in a condition for ſale, or uſe.

For the manufacture of mixt CLOTHS, or thoſe wherein the wools are firſt dyed, then mixed, ſpun, and woven of the colours intended; the proceſs, except in what relates to the colour, is moſtly the ſame with that juſt ſpoken of.

The method of adjuſting the mixture, is by firſt making a felt, or flock, of the colours of the intended *cloth*, as a ſpecimen: the wool of each colour is weighed, and when the ſpecimen is to the manufacturer's mind, he mixes, for uſe, a quantity in the ſame proportion; eſtimating each grain of the ſpecimen at twenty pounds weight of the ſame wool in the *cloth* to be made.

Thus, if he would mix three colours, *v. gr.* coffee-colour, feuille-mort, and pale-blue, the firſt to be the prevailing colour; he weighs a quantity of each; for inſtance, 70 grains of the firſt, 25 of the ſecond, and 20 of the third: then multiplies each by 20 pounds of wool: and thus gains 1400 pounds for the coffee-wool; 500 pounds for the feuille-mort, and 400 for the pale blue.

The wools of the ſpecimen, thus weighed, are mixed, oiled, carded, moiſtened with clear water, rubbed with black ſoap, and in this ſtate wrought a long time in the hands; till they be reduced into a piece of felt, like that uſed by hatters.

It is then rinſed in water, to purge out the oil and ſoap; and when dry, the hair, or knap, is carded out with the teazle; then ſhorn carefully, till the ground appear, and the ſeveral colours be diſcoverable.

Laſtly, wetting it a little, and preſſing it, he examines it well; and if he be not contented with it, makes another felt; if he be, he proceeds to mix his wools: when mixed, it is beat on hurdles, cleaned, oiled, carded, ſpun, woven, *&c.* as in white *cloth*.

Caſting of Lead on CLOTH. See the article CASTING.

Cocking CLOTH. See the article COCKING *Cloth*.

Frizing of CLOTH. See the article FRIZING.

Green CLOTH. See the article GREEN.

Houſewife's CLOTH. See the article HOUSEWIFE.

Incombuſtible CLOTH. See ASBESTOS, ASBESTINE, and LINUM *Incombuſtibile*.

Painting on CLOTH. See the article PAINTING.

Sear-CLOTH. See the article SEAR-*Cloth*.

CLOUD, in phyſiology, a collection of condenſed vapour, ſuſpended in the atmoſphere. See VAPOUR.

A *cloud* is a congeries of watery particles, or veſiculæ raiſed from the waters, or watery parts of the earth, by the ſolar, or ſubterraneous heat, or both; which at their firſt riſe from our globe, are too minute to be perceived; but as they mount, meeting with a greater degree of cold, are condenſed, and rendered opaque, by the reunion of their parts; ſo as to reflect light, and become viſible.

The manner wherein vapours are raiſed into *clouds* may be conceived thus.—Fire being of a light, agile nature, eaſily breaks looſe from bodies wherein it is detained: for the manner whereof, ſee BOILING.

Now, by reaſon of the exceeding ſmalneſs of the particles of fire, their attractive force muſt be exceedingly great: hence, in their aſcent through fluid bodies, part of the fluid will cling around them, and mount up together with them, in form of veſicles of water replete with particles of fire; and theſe veſicles are what we call *Vapour*.

Further, theſe vapours, being ſpecifically lighter than air, mount in it, till having reached ſuch a region of the atmoſphere as is of the ſame ſpecific gravity with themſelves, they will be ſuſpended; till the watery veſicles, which were at firſt too thin to be perceived, being now condenſed by the cold of the ſuperior regions; and their included igneous particles extinct, or at leaſt driven into a leſs compaſs, and conſequently the parts ſet cloſer together; their denſity is firſt augmented ſo as to render them opaque enough to reflect the ſun's light, and become viſible; and their ſpecific gravity increaſed, ſo as to make them deſcend: in the former ſtate they are called *clouds*; and in the latter, when they arrive at us, rain.

Clouds, beſide their uſe when they deſcend in ſhowers, are of ſervice while ſuſpended in the atmoſphere; as they help to mitigate the exceſſive heat of the torrid zone, and ſcreen it from the beams of the ſun, eſpecially when in his zenith.

CLOVE*, an aromatic fruit, borne on a tree of the ſame name; by the Latins alſo called *caryophyllus*.

* The fruit is ſomewhat in form of a nail; whence the term *clove*, from the French *Clou*, nail.

The *clove-tree* was antiently very common in the Molucco iſlands; where all the European nations, who traffick in ſpices to the Indies, furniſhed themſelves with what quantity of *cloves* they required. At preſent there are ſcarce any found but in the iſland of Ternate: the Dutch, in order to render themſelves maſters of that merchandize, having dug up the *clove-trees* of the

Moluccos, and tranſplanted them to Ternate; ſo that there are none now to be had but through their hands.

The tree is very large; its bark reſembles that of the olive-tree, and its leaves thoſe of the laurel: its fruit falling, takes root, and thus it multiplies itſelf without any culture. It is ſaid, it will not allow any other herb, or tree, to grow near it; its exceſſive heat drawing to it all the humidity of the ſoil.

When the *clove* firſt begins to appear, it is of a greeniſh-white colour; as it ripens, it grows brown. Nor is there any preparation neceſſary in order to render it ſuch as it comes to us, but to dry it in the ſun; whatever ſome authors talk of firſt ſteeping it in ſea-water, to preſerve it from worms.

Towards the head, it ſeparates into four; and the four quarters being ſhaped angle-wiſe, their apices meeting at the top, form a kind of crown, ſomewhat in the antique manner.

Cloves muſt be choſen dry, brittle, harſh to the touch, well grown, of a duſky-rediſh colour, a hot aromatic taſte, an agreeable ſmell, and, if poſſible, with the ſhank on.

Their properties are, to warm and dry, to correct a fetid breath, to ſharpen the ſight, diſſipate films in the eyes, fortify the ſtomach and liver, and ſtop vomiting. They are uſed in apoplexies, palſies, lethargies, and other diſeaſes of the brain.

Such of the fruit as eſcape the gatherers, grow and ſwell on the tree, and become full of a gum; theſe are ſometimes uſed in medicine, and are called *Mother of cloves*.

There is alſo an oil drawn from *cloves* by diſtillation; which, when new, is of a pale-yellow colour, but reddens as it grows old: it is uſed in medicine as a ſovereign remedy for the tooth-ach, and in compoſitions with the ſame view as the fruit. It is alſo much uſed among the perfumers.

The natives call the *clove-tree chamque*, the Perſians and Arabs *karumfel*, and the Turks *kalafour*. They make ſeveral preparations both of the flowers, and the fruit.

Clove-Cinnamon. See the article Cinnamon.

Clove-Water. See the article Water.

CLOUGH, or *Draught*, in commerce, an allowance of two pounds in every hundred weight for the turn of the ſcale; that the commodity may hold out weight when ſold out by retail.

CLOUT-NAILS. See the article Nail.

CLUNY, or **Clugny**, a celebrated abbey of Benedictine monks, in a city of that name; being the head, or chief of a congregation denominated from them.

It is ſituate in the Maſonnois, a little province of France, on the river Grône; and was founded by William duke of Berry and Aquitain; or, as others ſay, by the abbot Bernon, ſupported by that duke, in the year 910.

This abbey was antiently ſo very ſpacious and magnificent, that in 1245. after the holding of the firſt council of Lyons, pope Innocent IV. went to *Cluny*, accompanied with the two patriarchs of Antioch and Conſtantinople, twelve cardinals, three archbiſhops, fifteen biſhops, and a great number of abbots; who were all entertained, without one of the monks being put out of their place: though S. Louis, Q. Blanche his mother, the duke of Artois, his brother, and his ſiſter, the emperor of Conſtantinople, the ſons of the kings of Arragon and Caſtile, the duke of Burgundy, ſix counts, and a great number of lords, with all their retinue, were there at the ſame time.

Cluny, at its firſt erection, was put under the immediate protection of the apoſtolic ſee; with expreſs prohibition to all ſecular and eccleſiaſtic powers, to diſturb the monks in the poſſeſſion of their effects, or the election of their abbot. By this they pretended to be exempted from the juriſdiction of biſhops; which, at length, gave the hint to other abbeys to inſiſt on the ſame.

Cluny is the head of a very numerous and extenſive congregation: in effect, it was the firſt congregation of divers monaſteries united under one chief, ſo as only to conſtitute one body, or, as they call it, one order, that ever aroſe.

CLYPEUS, or **Clypeum**, *Buckler*; a piece of defenſive armour, which the antients uſed to carry upon the arm, to ſecure them from the blows of their enemies.

The figure of it was either round, oval, or ſexangular: in the middle was a boſs of iron, or of ſome other metal, with a ſharp point. See Shield.

CLYSSUS, a chymical production, conſiſting of the moſt efficacious principles of any body, extracted, purified, and then remixed.

A *clyſſus* is when the ſeveral ſpecies, or ingredients of a body, are prepared and purified ſeparately, and then combined again.--Thus, ſalt, ſulphur, oil, ſpirit, and mercury, reaſſembled into one body, by long digeſtion, *&c.* make a *clyſſus*.

Clyssus *of Antimony*, is an agreeable acid ſpirit, drawn by diſtillation from antimony, nitre, and ſulphur mixed together.

There is alſo a *clyſſus* of vitriol, which is a ſpirit drawn by diſtillation from vitriol diſſolved in vinegar.—This is uſed by phyſicians in various diſeaſes, and to extract the tinctures of ſeveral vegetables.

Clyssus is alſo uſed among ſome authors for a kind of ſapa, or extract, made with eight parts of the juice of a plant, and one of ſugar, ſeethed together into the conſiſtence of honey.

CLYSTER*, Κλυςηρ, in medicine, a liquid remedy, or injection, introduced into the inteſtines by the fundament; in order to refreſh them, looſen the belly, moiſten and ſoften the fæces, diſſipate wind, *&c.*

* The word comes from the Greek κλυζω, *lavo, abluo*, I waſh.

Clyſters are ſometimes made of bran-water, and milk, but more uſually of decoctions of certain herbs; to which are added honey, brown ſugar, and ſometimes lenitive electuary, and other drugs. *Clyſters* are either emollient, carminative, lenitive, aſtringent, laxative, anodyne, uterine, antifebrifie, nouriſhing, *&c.*

Nouriſhing **Clysters**, are thoſe applied with deſign to nouriſh perſons who cannot take in any aliment at the mouth. Hildanus tells us, that Aubery, a phyſician, fed a woman of quality ſix weeks with *clyſters* compoſed of capons fleſh, and other fowls, boiled to a pulp, with yolks of eggs, applied twice a day. It is difficult, however, to conceive how *clyſters* ſhould nouriſh; and the caſe is briſkly controverted in the memoirs of the French royal academy, between M. Littre, who maintains the negative, and M. Lemery.

The arguments urged by the firſt, are, that the materials of the *clyſter*, for want of the ordinary paſſage, want the preparation neceſſary to be converted into nouriſhment; and beſide that, are out of the road for getting into the blood: for in the firſt of the large inteſtines, called the *cæcum*, is a valve called *valvula Bauhini*, to oppoſe the paſſage of any food into the ſmall inteſtines: and there are no lacteal veins in the large inteſtines, but abundance in the ſmall ones. But the lacteals are the only canals that can carry the chyle into its receptacle, and the chyle is the only ſubſtance that can nouriſh.

To this, M. Lemery objects, that very great anatomiſts have found lacteals in the large inteſtines, though but in ſmall number: but though there were none, adds he, the meſaraic veins are indiſputably diſtributed to theſe inteſtines; and may eaſily be ſuppoſed to pump up the moſt ſubtil part of a broth, and carry it into the blood. M. Mery has paſſed a liquor immediately from the large inteſtines into theſe veins; beſides, that the animal machine is ſo porous throughout, that nature ſeems to have intended an extraordinary way of conveying fluids into the blood, to be ready on extraordinary occaſions.

This notion will appear inconteſtable, if M. Morin's theory of the paſſage of the urine be admitted.

Herodotus ſays, the Egyptians were the firſt who invented *clyſters*; or rather, who applied them to uſe. Galen and Pliny add, that they took the hint from a bird of their country, called *Ibis*, which they frequently obſerved to make this kind of injection with its beak, and afterwards to diſcharge itſelf ſeveral times. Others ſay, that the ciconia, or ſtork, firſt taught men the application of *clyſters*.

Uterine **Clysters**, are injections into the uterus, or womb.

Catholicon for **Clysters**. See the article Catholicon.

CNEMODACTYLÆUS, in anatomy, a muſcle, otherwiſe called *extenſor tertii internodii digitorum*. See Extensor *tertii internodii*, &c.

COACERVATUM *vacuum*. See the article Vacuum.

COACH, a vehicle for commodious travelling, ſuſpended on leathers, and moved on wheels.

In England, and throughout Europe, the *coaches* are drawn by horſes, except in Spain, where they uſe mules. In a part of the eaſt, eſpecially the dominions of the great Mogul, their *coaches* are drawn by oxen. In Denmark they ſometimes yoke rein deer in their *coaches*; though this is rather for curioſity than uſe.

The *coachman* is ordinarily placed on a ſeat raiſed before the body of the *coach*. But the Spaniſh policy has diſplaced him in that country by a royal ordonnance; on occaſion of the duke d'Olivares, who found that a very important ſecret whereon he had conferred in his *coach*, had been overheard, and revealed by his coachman: ſince that time, the place of the Spaniſh coachman is the ſame with that of the French ſtage-coachman, and our poſtillion, *viz.* on the firſt horſe on the left.

The invention of *coaches* is owing to the French: yet are not *coaches* of any great antiquity even in France; ſcarce reaching beyond the reign of their Francis I.

Their uſe, at their firſt riſe, was only for the country: and authors obſerve, as a thing very ſingular, that there were at firſt no more than two *coaches* in Paris; the one that of the queen, and the other that of Diana, natural daughter of Henry II. The firſt courtier who had one, was Jean de La de Bois Dauphin, whoſe enormous bulk diſabled him from travelling on horſeback.

One may hence judge how much vanity, luxury, and idleneſs have grown upon our hands in later days; there being no computed in that city no leſs than 15000 *coaches*.

Coaches have had the fate of all other inventions to be broug by ſteps and degrees to their perfection; at preſent they ſee to want nothing, either with regard to eaſe, or magnificence Louis XIV. of France made ſeveral ſumptuary laws for re ſtraining the exceſſive richneſs of *coaches*, prohibiting the of gold, ſilver, *&c.* therein; but they have had the fate be neglected.

Coaches may be divided into two kinds; thoſe that have in bows, or necks, and thoſe that have not; both the one an the other have two principal parts, the body, and the or carriage.

The *body* is that part where the paſſengers are diſpoſed; and the *carriage* is that which ſuſtains the body, and to which the wheels are faſtened, that give motion to the whole machine. *Coaches* are diſtinguiſhed, with regard to their ſtructure, into *coaches*, properly ſo called, *chariots*, *calaſhes*, and *berlins*.—With regard to the circumſtances of their uſe, &c. we diſtinguiſh *ſtage-coaches*, *hackney-coaches*, &c.

Chariot, or *Half*-COACH, is a kind of *coach* that has only a ſeat behind; with a ſtool, at moſt, before.—When theſe are very gay, richly garniſhed, and have five glaſſes, they are called *calaſhes*.

Calaſh is alſo a kind of light ſmall *coach*, with very low wheels, richly adorned, uſed on occaſions of pleaſure, and open on all ſides to take the air, and enjoy the proſpect. There are of theſe *calaſhes* with one, two, and three ſeats; where the perſons do not ſit facing one another, as in the common *coaches*, but all forwards, each ſeat having its back.

Hackney-COACHES, thoſe expoſed to hire, in the ſtreets of London, and ſome other great cities, at rates fixed by authority.

Thoſe in London are under the direction of commiſſioners, who take cognizance of all cauſes and diſputes ariſing thereupon.—They are diſtinguiſhed by numbers affixed to the *coach*-doors; and the fares, or rates, are fixed by a ſtatute 14 Car. II. and confirmed by another in the fifth and ſixth of king William III.

For a whole day of twelve hours the fair is 10*s*. for a ſingle hour 1*s*. 6*d*. for every hour after the firſt 1*s*.—At theſe rates, they are obliged to carry paſſengers any-where within ten miles of London.

Stage-COACHES, are thoſe appointed for the conveyance of travellers from one city or town to another.

COADJUTOR, *Fellow-Helper*, is properly uſed for a prelate joined to another, to aſſiſt him in the diſcharge of the functions of his prelature; and even, in virtue thereof, to ſucceed him.

The *coadjutor* has the ſame privileges with the biſhop himſelf.—*Coadjutors* were formerly appointed by kings, for archbiſhops and biſhops grown old, or abſent, and not able to adminiſter their dioceſes. But the right of appointing *coadjutors*, in Romiſh countries, is now reſerved to the pope alone.

Coadjutors are alſo called biſhops *in partibus infidelium*; in regard it is neceſſary the *coadjutor* of a biſhop ſhould be a biſhop himſelf; without which, he cannot diſcharge the office.

The uſe of *coadjutors* in the church, is borrowed from the Roman empire. Symmachus ſpeaks of aſſiſtants, or *coadjutors*, given to magiſtrates; and calls them *adjutores publici officii*.

The popes, formerly, made a ſhameful abuſe of the *coadjutories*: ſome they granted to children, and young people, with this clauſe, *donec ingreſſus fuerit*; 'Till they were capable of entering upon the adminiſtration of the office.' Others they granted to perſons not in orders, with this clauſe, *donec acceſſerit*: and others to perſons at a great diſtance, with this clauſe, *cùm regreſſus*: but the council of Trent tied down the pope's hands, by adding abundance of reſtrictions on the article of *coadjutors*.

In nunneries they have *coadjutrixes*; who are religious, nominated to ſucceed the abbeſs, under pretence of aiding her in the diſcharge of her office. See ABBESS.

COAGMENTATION, is uſed among chymiſts, for the act of melting down a matter, by caſting in certain powders, and afterwards reducing the whole into a concrete, or ſolid.

COAGULATION, the condenſing, or thickening of a fluid matter, without its loſing any of the ſenſible parts which occaſioned its fluidity; as we frequently ſee in blood, milk, &c.

We diſtinguiſh between that kind of thickening which is effected by the evaporation of the fluid parts of a body, as in clay, which condenſes in the ſun, properly called *hardening*; and that effected without any loſs of its ſubſtance, called *coagulating*. Thus, we ſay, that cold *coagulates* blood, &c.

There is one general term, *viz. concretion*, which includes both *coagulation*, condenſation, and hardening.

Coagulation chiefly depends on the admixtion of ſalts of different natures; as when ſpirit of vitriol is poured on oil of tartar; or when oils are mixed in a mortar with ſaline, or aqueous liquors, as in the unguentum nutritum.

By injecting an acid into the vein of an animal, the blood coagulates; which ſtops its circulation, and brings immediate death.—Several poiſons have their effect by inducing a *coagulation*.

OAL, a black, ſulphurous, inflammable matter, dug out of he earth; ſerving in many countries as the common fuel.

This we ſometimes call *Pit-Coal*, *Foſſil-Coal*, *Earth-Coal*, and *Natural-Coal*, to diſtinguiſh it from an artificial fuel made in mitation hereof, by half burning the branches and roots of rees; properly called *Charcoal*, and *Smallcoal*: in places, whier *coal* is brought by ſea, it is called *Sea-Coal*.

nel, or *Canole*-COAL, is a ſort of foſſil coal found in divers f the northern countries; very hard, gloſſy, and light; apt o cleave into thin flakes; and, when kindled, it yields a connual blaze till it be burnt out.—Camden ſuſpects this to be e lapis obſidianus of the antients.

COAL is ranked among the number of minerals, and the places it is dug out of are called *Coal-Mines*, or *Coal-Pits*. It is common in moſt countries of Europe: though the Engliſh *coal* is of moſt repute, even in foreign countries; notwithſtanding ſome pretend that of the Foſſe in Auvergne is not any thing inferior to it.

The goodneſs of *coal* is found by its being as free as poſſible from ſulphur; in its heating iron well, and in its burning a long time in the ſmith's forge. The Engliſh *coal* has this peculiar to it; that it never lights ſo perfectly, as when water is thrown on it.

The commerce of *coal* is very conſiderable in England; great quantities are exported to France, &c. by way of Rouen. The meaſure whereby it is ſold is the chaldron, containing thirty-ſix buſhels.

In the memoirs of the French royal academy, we have an account of two experiments on the common *Pit-coal*, made by M. Des Landes while in England, and which he thinks have eſcaped the Engliſh philoſophers.

1ſt, Pounding ſome *coal*, and putting half an ounce of it in a viol of water, the mixture became quite black: but leaving it expoſed to the air in a window, during a cold winter night, in the morning it was found frozen, and turned to a rediſh colour. The reaſon of the change muſt be, that the froſt had diſengaged the ſulphurs of the *coal*: though one would little expect ſuch an effect from it.

2dly, From an infuſion of cinders in brandy, mixed with iron filings, ariſes a black tincture, which brightens in proportion as it is heated; when arrived at the heat of boiling, the colour becomes perfectly fine and ſoft, and gives a dye to cloth, which no workman can imitate.

The ſtrata, or veins of *coals*, in coalpits, are numerous, and their order, quality, &c. are very different in different places.

In thoſe at Dudley in Staffordſhire, the ſtrata, below the turf, are two or three clays, a grey ſtone, and a hard grey rock; then they are expreſſed in the *Philoſophical Tranſactions* to be, 1°, *Coal*, called *Bench-coal*; 2°, *Slipper-coal*, leſs black, and ſhineing than the former; 3°, *Spin-coal*, more black and ſhining; 4°, *Stone-coal*, much like *Cannel-coal*.

Theſe ſtrata have between each of them a bat, or bed, of a peculiar ſort of matter, about the thickneſs of a crown piece. Below theſe are divers metalline ſtrata; as a black ſubſtance, called the *Dun-row bat*; a grey iron ore, called the *Dun-row iron-ſtone*; a bluiſh bar, called *White-row*; a blackiſh iron ore, called *White-row grains*, or *Iron-ſtone*; a grey iron ore, called *Mid-row grains*; a black foſſil ſubſtance, called the *Gublin-bat*; a black iron ore, called *Gublin iron-ſtone*; a dark grey iron ore, called *Rubble iron-ſtone*; and laſtly, the *table bat*.

Then 5°, comes a coarſe ſort of *coal*, called *Foot-coal*; a black brittle bat: 6°, the *Heathen-coal*: 7°, A ſubſtance like coarſe *coal*; though called a *bat*, becauſe it does not burn well: and 8°, *Bench-coal*. See Supplement, articles LITHANTHRAX, and LAPIS AMPELITES.

Small-COAL is a ſort of charcoal, prepared from the ſpray, and bruſh-wood, ſtripped off from the branches of coppice-wood, ſometimes bound in bavins for that purpoſe, and ſometimes prepared without binding.

The wood they diſpoſe on a level floor, and ſetting a portion of it on fire, they throw on more and more, as faſt as it kindles; whence ariſes a ſudden blaze, till all be burnt that was near the place. As ſoon as all the wood is thrown on, they caſt water on the heap, from a large diſh, or ſcoop; and thus keep plying the heap of glowing *coals*, which ſtops the fury of the fire, while, with a rake, they ſpread it open, and turn it with ſhovels till no more fire appears. When cold, the coals are put up into ſacks for uſe.

Char-COAL. See its preparation under CHARCOAL.

COALITION, the re-union, or growing together of parts before ſeparated. See CONGLUTINATION, &c.

COAST, a ſea-ſhore, or the country adjoining to the edge of the ſea. See SEA, &c.

COASTING, that part of navigation, wherein the places ſailed to, and from, are not far diſtant; ſo that a ſhip may ſail in ſight of the land, or within ſounding, between them.

Such are the voyages on the narrow, or Britiſh ſeas, between England, Holland, and France; alſo thoſe about the Britiſh ſeas, and in the Mediterranean, &c.

For in the performance hereof, there is only required good knowlege of the land, and the uſe of the compaſs, and of the lead, or ſounding line.

COASTING, in agriculture, &c. denotes the tranſplanting of a tree, and placing it in the ſame ſituation, with reſpect to eaſt, weſt, north, &c. as it ſtood in before.

COAT *of Arms*, in heraldry, a cloak, or habit, worn by the antient knights over their arms, both in war, and at turnaments; and ſtill born by the heralds at arms.

It was a kind of ſurcoat, reaching only as low as the navel; open at the ſides, with ſhort ſleeves; ſometimes furred with ermines and vair; whereon were applied the armories of the knight, embroidered in gold and ſilver, and enamelled with beaten tin, coloured black, green, red, and blue: whence the rule, never to apply colour on colour, nor metal on metal.

The *coats of arms* were frequently open, and diverſified with bands and fillets of ſeveral colours, alternately placed, as we ſtill ſee cloths ſcarleted, watered, *&c.* hence they were alſo called *Divizes*, or *Diviſes*, as being divided, or compoſed of ſeveral pieces, ſewed together; whence the words, *feſſe*, *pale*, *chevron*, *bend*, *croſs*, *ſalteer*, *lozenge*, &c. which have ſince become honourable pieces, or ordinaries of the ſhield. See each in its place, FESSE, BEND, CROSS, *&c.*

Coats of Arms, and *Banners*, were never allowed to be worn by any but knights, and antient nobles.

COAT *of Mail*, *jacque de mail*, a kind of armour made in form of a ſhirt; conſiſting of iron rings wove together net-wiſe. See MAIL.

COAT, in anatomy. See the article TUNIC, and EYE.

COBALT, in natural hiſtory, a kind of marcaſite, ſuppoſed to be the cadmia of the antients; out of which are drawn arſenic, and ſmalt.

Cobalt uſually contains a little ſilver, ſome copper, but much arſenic. There are various mines of *cobalt*, eſpecially in Saxony; and ſome in France, and England. See Supplement, article COBALT.

COBWEB. See the articles WEB, and SILK.

COCCIFEROUS, in botany, ſuch plants, or trees, as bear berries.

COCCULUS *Indicus*, a poiſonous narcotic berry, known moſtly now to poachers, who have got a trick of intoxicating fiſh therewith, ſo as to take them out of the water with their hands; for which reaſon theſe berries are called *baccæ piſcatoriæ*, fiſhers-berries. See Supplement, article COCCULUS INDICUS.

COCCYGIS *os*, in anatomy, a bone joined to the extremity of the os ſacrum; compoſed of three or four bones, whereof the lower is ſtill leſs than the upper, till the laſt ends in a ſmall cartilage.—See *Tab. Anat.* (Oſteol.) *fig.* 7. *n.* 21.

It reſembles a little tail turned inwards; or rather, as ſome imagine, the beak of a cuckow; whence the name.

Its uſe is to ſuſtain the ſtrait gut: it yields to the preſſure of the fœtus in women in travail; and midwives uſe to thruſt it backwards; but ſometimes too rudely and violently, which is the occaſion of great pain, and ſeveral bad effects.

COCHINEAL, or COCHENEEL, a drug uſed by the dyers, *&c.* for giving red colours, eſpecially crimſons, and ſcarlets; and likewiſe in medicine as a cardiac, and alexipharmic.

It is brought from the Weſt-Indies: but authors have been divided as to its nature; ſome taking it to be a kind of worm, and others for the berry of a tree. F. Plumier, a celebrated botaniſt, has maintained the former opinion, and Pomet very abſurdly the latter. That author is very wide of the truth in the deſcription he has given of *cochineal.* Dampier tells us, there are two ſorts; one an inſect, and the other a ſeed; and gives a preciſe deſcription of each kind as follows:

The COCHINEAL *Worm*, is an inſect ingendered in a fruit reſembling a pear: the plant which bears it is five or ſix feet high. A-top of the fruit grows a red flower, which, when mature, falls on the fruit; and that opening, diſcovers a cleft two or three inches in diameter. The fruit then appears full of little red inſects, having wings of a ſurpriſing ſmalneſs, and which would continue and die, and rot there, if not taken out.

The Indians, therefore, ſpreading a cloth under the tree, ſhake it with poles, till the inſects are forced to quit their lodging, and fly about the tree; which they cannot do many moments, but tumble down dead into the cloth; where they are left till they be intirely dry: when the inſect flies, it is red; when it is fallen, black; and when firſt dried, it is greyiſh; though it afterwards changes colour. See *Tab. Nat. Hiſt. fig.* 24.

There are whole plantations of the *cochineal* plant, or *tonna*, as the natives call it, about Guatimala, Chepe, and Guexaca, in the kingdom of Mexico.

The COCHINEAL *Grain*, or, as Dampier calls it, *Sylveſtris*, is a red berry, growing in America, found in a fruit reſembling that of the *cochineal* plant, or *tonna.* The firſt ſhoots produce a yellow flower; then comes the fruit, which is long, and, when ripe, opens with a cleft of three or four inches. The fruit is full of kernels, or grains, which fall on the leaſt agitation, and which the Indians take care to gather. Eight or ten of theſe fruits may yield about an ounce of grain. See *fig.* 24. *n.* 2.

This berry yields a dye almoſt as beautiful as that of the inſect; and a perſon may be eaſily deceived in them; though the other is much the moſt eſteemed. Dampier is miſtaken in ſuppoſing this laſt a ſeed. It is an animal of the ſame kind with the other. The true account of this drug, ſee in the Supplement, article COCHINEAL.

COCHLEA *, in mechanics, one of the five mechanical powers; otherwiſe called the *Screw.* See SCREW.

* It is thus denominated, from the reſemblance a ſcrew bears to the ſpiral ſhell of a ſnail, which the Latins call *cochlea.*

COCHLEA, in anatomy, the third part of the labyrinth, or inner cavity of the ear. See EAR.

The *cochlea* lies directly oppoſite to the ſemicircular canals, and is properly ſo called from the reſemblance it has to the ſhell that ſnails lie in: through its parietes a ſmall branch of the auditory nerve paſſes.

Its canal is divided by a ſeptum compoſed of two ſubſtances, one almoſt cartilaginous, the other membranous.

The two canals that are divided by the ſeptum, are called *ſcalæ*; whereof the one, looking towards the tympanum, by the feneſtra rotunda, is called *ſcala tympani*; the other, having a communication with the veſtibulum, by the feneſtra ovalis, is called the *ſcala veſtibuli*; the firſt lies uppermoſt, and is the largeſt; the laſt lowermoſt, and is the leaſt.

COCK *of a dial*, the pin, ſtyle, or gnomon. See GNOMON.

COCK *bearing high.* See the article HIGH-*bearing.*

Bloody-heel'd COCK. See the article HEELER.

Grubbing a COCK. See the article GRUBBING.

Pea-COCK. See the article PEACOCK.

Weather-COCK. See the article WEATHER-COCK.

COCKET, or COCQUET, a ſeal belonging to the king's cuſtom-houſe. See SEAL.

COCKET, or COCQUET, is alſo a ſcroll of parchment, ſealed and delivered by the officers of the cuſtom-houſe to the merchants, upon entering their goods; certifying that the goods were cuſtomed.

The ſame word is alſo uſed in the ſtatute of bread and ale, 15 Hen. III. where there is mentioned, *cocket-bread*, among ſeveral other kinds: it ſeems to have been hard ſea-biſcuit, which, perhaps, had then ſome *cocket*, mark, or ſeal; or elſe was ſo called from its being deſigned for the uſe of the cockſwains, or ſeamen.

COCKING *Cloth*, a device for the catching of pheaſants withal. It conſiſts of a piece of coarſe canvas, about an ell ſquare, dipped in a tan-pit to colour it; and kept ſtretched by two ſticks, placed from corner to corner, diagonal-wiſe; a hole being left to peep through. The ſportſman then, being provided of a ſhort gun, carries the cloth before him at arms-end; under cover of which, he may approach his game as near as he pleaſes: when near enough, he puts the noſel of his gun thro' the hole, and ſhoots.

COCKLE-*Stairs.* See the article STAIRS.

COCKPIT, a ſort of theatre, whereon game-cocks fight their battles.--The *cockpit* is uſually a houſe, or hovel covered over: they fight on the clod, or green ſod; which is generally marked out round, and encompaſſed with ſeats, one above another.

The COCKPIT *Laws*, are principally theſe: when cocks are ſet, none are to be on the ſod but the two ſetters. When the cocks are ſet beak to beak, in the middle of the clod, and there left by the ſetters, if the ſet cock do not ſtrike in counting twenty, and ſix times ten, and twenty after all, the battle is loſt: but if he do ſtrike, the battle is to begin again, and they muſt count again. If any offer a mark to a groat, or forty to one, and the wager be taken, the cock muſt be ſet, and they are to fight it out. Done, and done, is a ſufficient bet, or wager, when the cocks are caſt on the clod.

COCKPIT, in a man of war, is a place on the lower floor, or deck, abaft the main capſtan, lying between the platform, and the ſteward's room; where are ſubdiviſions, or partitions, for the purſer, the ſurgeon, and his mates.—See *Tab. Ship. fig.* 2. *lit.* Z.

COCKROAD, a contrivance for the taking of woodcocks.— This bird lies cloſe by day, under ſome hedge, or near the roo of an old tree, to peck for worms under dry leaves, and wil ſcarce ſtir out, unleſs diſturbed; as not ſeeing his way ſo wel in the morning; toward the evening he takes wing, to ſeek for water; flying generally low, and when he finds any thoroughfare in a wood, he ventures through it.

To take them, therefore, they plant nets in ſuch places; or for want of ſuch places, ready to their hands, they cut roa through woods, thickets, groves, *&c.*

Theſe roads they uſually make thirty-five, or forty feet broad perfectly ſtrait, and clear; and to two oppoſite trees they ti the net, which has a ſtone faſtened to each corner. Then having a ſtand, or place to lie concealed in, at a proper di ſtance, with a ſtake near the ſame, to faſten the lines of th net to; when they perceive the game flying up the road, the unwind the lines from off the ſtake; upon which, the ſton drawing it down, the birds are intangled in the ſame.

COCKSWAIN, or COCKSON, an officer on board a man o war, who hath the care of the boat, or ſloop, and all thing belonging to it. He is to be always ready with his boat's gan or crew, and to man the boat on all occaſions.—He fits in th ſtern of the boat, and ſteers; and hath a whiſtle to call and en courage his men.

COCOA, or more properly CACAO, the nut whoſe kern yields the chocolate. See CACAO.

COCOS, or COCO, is alſo uſed for a nut, whoſe ſhell is muc uſed by turners, carvers, *&c.* for divers works.

The *coco-tree*, which the Malabarians call *tenga*, grows ſtra without any branches, and ordinarily is thirty or forty f high: its wood is too ſpongious to be uſed in carpentry. At t top it bears twelve leaves, ten feet long, and half a foot bro uſed in the covering of houſes, making mats, *&c.* Abo the leaves grows a large excreſcence, in form of a cabba excellent to eat; but the taking this off, is mortal to the t Between the leaves and the top ariſe ſeveral ſhoots, of the thi neſs of the arm; which, when cut, diſtil a white, ſweet, ag able liquor, ſerving as a wine, and as intoxicating: it becom acid, if kept a few hours; and at the end of 24 hours is conv into a ſtrong vinegar: but it may be prepared into bra While this liquor diſtils, the tree yields no fruit; but when ſuch ſuckers are let grow, it puts forth a large cluſter or bunch, wherein the *coco-nuts* are faſtened, to the number of ten or twelve.

While they are yet new, and the bark tender, they yield each about half a pint of clear cooling water: which in a little time becomes firſt a white, ſoft pulp, and at length condenſes, and aſſumes the taſte of the nut.

The tree yields fruit thrice a year, and thoſe ſometimes as big as a man's head. Many travellers aver, from the ſize, and the many uſeful products of this tree, that from a ſingle *cocos-tree*, and its fruit, a ſhip might be built, equipped, and loaden with merchandize and proviſion.

The *cocos* of the Antilles are not ſo large as thoſe of the Eaſt-Indies, Africa, and Arabia: the trees ſeldom exceed 25 feet in height; and the fruits are in proportion: it is theſe which are uſed among us.

In the kingdom of Siam, the *cocos* fruit, dried, and emptied of its pulp, ſerves as a meaſure, both for things liquid and dry. As theſe ſhells are not all of the ſame capacity, but are ſome larger, others leſs; their content is firſt meaſured with cauris, thoſe little Maldives ſhells, which ſerve as ſmall money in ſeveral ſtates of the Indies. Some *cocos* contain 1000 cauris, others 500, *&c.*

COCTION, a general name for all alterations made in bodies, by the application of fire, or heat.

There are various ſpecies of *coction*; as *maturation*, *friction*, *elixation*, *aſſation*, *torrefaction*, and *uſtion*; which ſee in their places, ASSATION, TORREFACTION, FRICTION, *&c.* ſee alſo CONCOCTION, and DECOCTION.

COD-FISHERY. See the article *Cod*-FISHERY.

CODE*, CODEX, a collection of the laws and conſtitutions of the Roman emperors; made by order of Juſtinian.

* The word comes from the Latin *codex*, a paper-book; ſo called *à codicibus*, or *caudicibus arborum*, the trunks of trees; the bark whereof, being ſtripped off, ſerved the antients to write their books on.

The *code* is compriſed in twelve books, and makes the ſecond part of the civil, or Roman law.

There were ſeveral other *codes* before the time of Juſtinian; all of them collections, or abridgments of the Roman laws. Gregorius and Hermogenes, two lawyers, made each a collection of this kind, called, from their names, the *Gregorian code*, and *Hermogenean code*. Theſe included the conſtitutions of the emperors from Adrian to Diocleſian and Maximin, A.D. 306. We have nothing remaining of them but a few fragments; the compilations themſelves falling to the ground, for want of authority to put them in execution.

Theodoſius the younger was the firſt emperor who made a code, which was compriſed in ſixteen books, formed out of the conſtitutions of the emperors from Conſtantine the Great to his own time; abrogating all other laws not included in it: and this is what we call the *Theodoſian code*; which was publiſhed in the year 438. and received and obſerved, till annulled by the *code* of Juſtinian.

The Theodoſian *code* has been a long time loſt in the weſt: Cujas took a great deal of pains to retrieve it, and to publiſh it in a better condition than ever. Gothofred has given us a comment on the Theodoſian *code*; a work which coſt him thirty years.

In 506. Alaric king of the Goths made a new collection of the Roman laws, taken from the three former *codes*, the *Gregorian*, *Hermogenean*, and *Theodoſian*, which he likewiſe publiſhed under the title of the *Theodoſian code*.—This *code* of Alaric continued a long time in force; and was all the Roman law received into France.

Laſtly, the emperor Juſtinian, finding the authority of the Roman law exceedingly weakened in the weſt, upon the decline of the empire, reſolved to make a general collection of the whole Roman juriſprudence. The management hereof he committed to his chancellor Trebonian; who choſe out the moſt excellent conſtitutions of the emperors, from Adrian to his own time; and publiſhed his work in 528. under the title of the *new code*.

But becauſe Juſtinian had made ſeveral new deciſions, which made ſome alteration in the antient juriſprudence, he retrenched ſome of the conſtitutions inſerted by Trebonianus, and added his own in their place: on which account he publiſhed a new edition of the *code* in 534. and abrogated the former.

This *code* of Juſtinian, as well as the reſt of the Roman law, was a long time loſt in the weſt, till the time of Lotharius II. who found it at the taking of Melphi, and gave it to the city of Piſa. This was firſt republiſhed by Irnerius, in 1128.

The emperor Frederic, at the requeſt of the univerſities, appointed it to be taught in the ſchools; and commanded all his people to obſerve it. Accordingly it obtained in Italy, and Germany; and ſtill obtains in a part of France, particularly in the ſouthern provinces.

There have been various other later *codes*, particularly of the antient Gothic, and ſince of the French kings; as the *code* of Euridic, the *code* Michault, *code* Louis, *code* Neron, *code* Henry, *code* Marchand, *code* des Eaux, *&c.* See CIVIL LAW.

CODE *of canons*, CODEX *canonum*. See CANON.

CODIA, in botany, is uſed for the top, or head of any plant; but, by way of eminence, for that of the white poppy: whence the ſyrup made therewith is called *diacodium*.

CODICIL, a ſchedule, or ſupplement to a will, or other writing.

It is uſed as an addition to a teſtament, when any thing is omitted which the teſtator would add, explain, alter, or retract; and is of the ſame nature as a teſtament, except that it is without an heir, or executor.

So that a *codicil* is a leſs ſolemn will, of one that dies either teſtate or inteſtate, without the appointment of an heir: teſtate, when he that hath made his *codicil* hath either before or afterwards made his teſtament, on which that *codicil* depends, or to which it refers. Inteſtate, when one leaves behind him only a *codicil* without a teſtament, wherein he gives legacies only to be paid by the heir at law, and not by any heir inſtituted by will, or teſtament.

A *codicil*, as well as a will, may be either *written* or *nuncupative*. Some authors call a teſtament, a *great will*; and a *codicil*, a *little* one; and compare the teſtament to a ſhip, and the *codicil* to the boat tied to it.

But there is this further difference between a *codicil* and a teſtament, that a *codicil* cannot contain the inſtitution of an heir; and that in a *codicil*, a man is not obliged to obſerve ſtrictly all the formalities preſcribed by law for ſolemn teſtaments.

In cuſtomary countries, teſtaments, properly ſpeaking, are no more than *codicils*; in regard cuſtom itſelf names the heir, and does not allow of teſtamentary inheritors.

Codicils were firſt brought into uſe in the time of Auguſtus by L. Lentulus: they were originally intended to follow the teſtament; which was, as it were, their baſis. In proceſs of time *codicils* came to have their effect, even though made before the teſtament; provided there was nothing in the teſtament contrary to the *codicil*.—People were alſo allowed to make *codicils* without teſtaments.

Raym. Lully has a book which he calls *The codicil*; wherein he pretends to have left his readers the ſecret of the philoſophers ſtone; provided they do but underſtand it.

CŒCUM, in anatomy, the *blind gut*; the firſt of the thick inteſtines; ſo called, becauſe made like a ſack, having but one aperture, which ſerves it both for entrance and exit.

It is ſituate on the right ſide, below the kidney. In children new-born, and in quadrupeds, it is found full of excrements; but in adults, *&c.* it frequently diſappears, or only hangs like a worm.

Its uſe in adults is very obſcure: in a fœtus, or infant newly born, it appears to ſerve as a receptacle of the fæces during ſuch time as the animal does not diſcharge by ſtool.

Dr. Gliſſon imagines it may likewiſe ſerve in ſuch animals as have it large, as dogs, coneys, rats, *&c.* for a kind of ſecond ventricle, or bag, wherein the prepared aliment may be retained, while a richer and more nutritious juice is drawn from it.

Others will have it contain a ferment; and others, the flatus of the inteſtines: others fanſy it may ſeparate a humour, by ſome glands placed therein, wherewith to harden the excrements as they paſs through the colon.

Dr. Liſter aſſigns the uſe of the *cœcum* to be, to keep the excrements which paſs into the cavity (as moſt of thoſe of ſound animals, he thinks, do), till they are ſufficiently drained, baked, and hardened, to receive the figure to be given them by the colon and rectum. He adds, to confirm this, that where-ever there are regularly figured excrements of the firſt kind, there is a capacious *cœcum*, and *vice verſa*. This indeed is true, that ſome animals, which are naturally looſe, have either no *cœcum* at all, or very little; as the talpa, echinus terreſtris, gula, *&c.* Nature's end, in thus providing for the figuration of the excrements, he takes to be, firſt, to prevent diarrhœas; ſecondly, to make the creature abide hunger the better (thus it is that ſnails, in winter, reſt with full inteſtines); and, laſtly, to heighten the digeſtion and fermentation in the ſtomach and ſmall guts.

Dr. Muſgrave gives us an account, in the *Philoſophical Tranſactions*, of the *cœcum* of a dog being cut out, without any prejudice to the animal. M. Giles gives us another, of the *cœcum* of a lady being diſtended ſo as to form a tumor, that held almoſt three chopines of a thin, greyiſh, and almoſt liquid ſubſtance, whereof ſhe died. And Mr. Knowles, a third, of a boy's *cœcum* being vaſtly extended, and ſtuffed with cherry-ſtones, which likewiſe proved mortal.

Some ſay, the name, *cœcum*, is miſtaken; not allowing this to be the *cœcum* of the antients, which they imagine to be the thick globous part of the colon, immediately appended to the ileum; and therefore give this part the name of *appendicula vermiformis*.

CO-EFFICIENTS, in algebra, are numbers, or given quantities, prefixed to letters, or unknown quantities, into which they are ſuppoſed to be multiplied; and therefore, with ſuch letters, or with the quantities repreſented by them, make a rectangle or product, *co-efficient production*; whence the name.

Thus, in $3a$, or bx, or Cxx; 3 is the *co-efficient* of $3a$; b, of bx; and C of Cxx. If a letter have no number prefixed, it is always ſuppoſed to have the *co-efficient*, ¹; becauſe every thing is once itſelf. Thus, *a*, or *bc*, import as much as 1 *a*, or 1 *bc*.

The *co-efficient*, in a biquadratic equation, is according to its ſign, either the ſum, or the difference of the two roots.

In any equation of an higher nature, the *co-efficient* of the ſecond term is always the aggregate of all the roots retaining their proper ſigns: ſo that if all the negatives be equal to all the affirmatives, the ſecond term will vaniſh; and where the ſecond term is thus wanting, it is a ſign that the quantities under contrary ſigns were thus equal.

The *co-efficient* of the third term is the aggregate of all the rectangles ariſing by the multiplication of every two of the roots, how many ways ſoever thoſe combinations of two's can be had; as three times in a cubic, ſix in a biquadratic equation, &c.

The *co-efficient* of the fourth term is the aggregate of all the ſolids made by the continual multiplication of every three of the roots, how often ſoever ſuch a ternary can be had; as there may be four in a biquadratic, five in an equation of five dimenſions, &c. And thus it will go on infinitely.

CŒLESTIAL *obſervations* are obſervations of the phænomena of the heavenly bodies, made with a proper apparatus of aſtronomical inſtruments, in order to the determining their places, motions, phaſes, &c.

The inſtruments chiefly uſed in *cœleſtial obſervations* are the aſtronomical gnomon, quadrant, micrometer, and teleſcope; each of which ſee under its proper head.

Obſervations in the day-time are eaſy; in regard the croſs hairs in the focus of the object-glaſs of the teleſcope are then diſtinctly perceivable: in the night, thoſe croſs hairs are to be illumined to make them viſible.

This illumination is either performed by a candle, placed obliquely near them, ſo as the ſmoke do not intercept the rays; or, where this is inconvenient, by making an aperture in the tube of the teleſcope, near the focus of the object-glaſs, through which a candle is applied to illumine the croſs hairs.

M. de la Hire has made an improvement on the firſt method, which renders it of very good uſe; and it is by covering that end of the tube next the object-glaſs with a piece of gauſe, or fine white ſilken crape. For, in ſuch caſe, a link, placed at a good diſtance from the tube, ſo enlightens the gauſe, as to render the croſs hairs very perceivable.

Obſervations of the ſun are not to be made without placing a glaſs, ſmoked in the flame of a lamp or candle, between the teleſcope and the eye; to take off from its luſtre, which would otherwiſe damage the eye, were not a good part of its beams intercepted.

Note, when any of the heavenly bodies are obſerved through a teleſcope of only two glaſſes, they appear inverted.

Cœleſtial obſervations are chiefly of two kinds; the one when the objects are in the meridian. See MERIDIAN.

The other, when they are in vertical circles. See VERTICAL.

COELESTIAL *globe*. See the article GLOBE.

CŒLIAC *artery*, the firſt artery detached from the deſcending trunk of the aorta into the abdomen.

It divides into two branches, the one on the right ſide, the other on the left; of which the firſt gives the gaſtrica dextra, which goes to the ſtomach; the cyſtica, which goes to the gall-bladder; the epiplois dextra to the omentum; the inteſtinalis to the duodenum, and to a part of the jejunum; and the gaſtro-epiplois to the ſtomach, to the omentum, and ſome branches to the liver, which enter the capſula communis, to accompany the branches of the vena porta.

The left branch of the *cœliaca* gives the gaſtrica dextra, which is alſo ſpread upon the ſtomach; the epiplois ſiniſtra which goes to the omentum; and the ſplenica to the ſubſtance of the ſpleen. See each branch deſcribed in its place.

COELIAC *paſſion* is a ſort of diarrhœa, or flux of the belly; wherein the aliment comes away either crude or chylified, in lieu of excrements.

Authors frequently confound the *cœliac paſſion* with the lientery; but they are different.

There is alſo a COELIAC *diabetes*, called *cœliaca urinalis*, wherein the chyle paſſes off along with, or inſtead of urine. See DIABETES.

COELIAC *vein* is that which runs through the inteſtinum rectum. See RECTUM.

CŒLUM. See the article HEAVEN.

COELI *fundus*. See the article FUNDUS.

COELUM is alſo uſed by ſome anatomiſts for the cavity of the eye towards the angles, or canthi. See EYE, CANTHUS, &c.

CŒMETERIUM *, CEMETERY, Κοιμητηριον, a *dormitory*, or ſacred place ſet apart for the burial of the dead.

* Chorier obſerves, that under *cœmeterium*, κοιμητηριον, antiently were comprehended, not only the ſtrict dormitory, or place where the dead were diſpoſed; but all the lands which encompaſs the pariſh-churches, and were contiguous to the real churches.—Perhaps it might be added, that all the church domains were compriſed under *cœmeterium*. This will beſt account for that confiſcation of the *cœmeteries* charged on Valerian.

In the primitive times, the Chriſtians held their meetings in *cœmeteria*; as we are informed by Euſebius, lib. vii. and by Tertullian, who alſo calls thoſe *cœmeteria*, where the people uſed to meet to pray, *areas*. Euſebius adds, that Valerian having confiſcated the *cœmeteria*, and places deſtined for the worſhip of God, Gallienus reſtored them by a public reſcript, rehearſed by the ſame author. From theſe paſſages it ſeems as if *cœmeteria*, and places of worſhip, were uſed indifferently for the ſame thing.

The heathen writers frequently upbraid the primitive Chriſtians for their meetings in *cœmeteries*; as if they ſerved other purpoſes beſides thoſe of religion. The council of Elvira prohibits the keeping of tapers lighted in *cœmeteria*, during the day-time; and, by another canon, the women from paſſing the night watching in *cœmeteria*.

The cuſtom of bleſſing *cœmeteries* is of an old ſtanding: the method was, for the biſhop to go round it with his croſier, or paſtoral ſtaff, and to ſprinkle it with ſome conſecrated fluid. Lobineau ſays, the holy-water-pot was carried before him.

Antiently all were buried in *cœmeteries*; none in churches. From the bodies of martyrs, &c. being depoſited here, the Chriſtians choſe particularly to build their churches in them, when Conſtantine gave them the liberty: and hence Tillemont derives that cuſtom which ſtill obtains in the Romiſh church, never to conſecrate any altar, without depoſiting in it the relics of ſome martyr.

CŒNA *Domini*, *bull*. See the article BULL.

CŒNOBITE *, a religious who lives in a convent, or in community, under a certain rule; in oppoſition to anachoret, or hermit, who lives in ſolitude. See HERMIT, &c.

* The word comes from the Greek κοινος, *communis*, and βιος, *vita*, life.

Caſſian makes this difference between a *convent* and a *monaſtery*, that the latter may be applied to the reſidence of a ſingle religious, or recluſe; whereas the *convent* implies *cœnobites*, or numbers of religious living in common.

Fleury ſpeaks of three kinds of monks in Egypt; *anachorets*, who live in ſolitude; *cœnobites*, who continue to live in community; and *ſarabaites*, who are a kind of monks-errant, that ſtroll from place to place.

He refers the inſtitution of *cœnobites* to the times of the apoſtles, and makes it a kind of imitation of the ordinary lives of the faithful at Jeruſalem. Tho' St. Pachomius is ordinarily owned the inſtitutor of the *cœnobite* life; as being the firſt who gave a rule to any community.

CO-EQUALITY, a term expreſſing the relation of equality between two things. See EQUALITY.

The retainers to St. Athanaſius's doctrine of the Trinity hold the Son and Holy Spirit *co-equal* with the Father. The Arians, &c. deny the *co-equality*. See TRINITY, and ARIAN.

CO-ETERNITY is uſed among divines to denote the eternity of one being, equal to that of another.

The orthodox hold the ſecond and third Perſons in the Trinity *co-eternal* with the firſt.

COEUR, in heraldry,—*Party en* COEUR ſignifies a ſhort line of partition in pale, in the centre of the eſcutcheon, which extends but a little way, much ſhort of top and bottom; being met by other lines, which form an irregular partition of the eſcutcheon, as repreſented in *Tab. Herald. Fig.* 43.

CO-EXISTENCE, a term of relation, denoting two or more things to exiſt together at the ſame time, &c. See EXISTENCE.

COFFEE, in natural hiſtory, a ſeed, or berry, brought from Arabia Felix; uſed for the making a drink of the ſame name. See DRINK.

That from the Levant is moſt eſteemed, being greener, heavier, and appearing riper and plumper, than that from Mocha; which is larger, lighter, and whiter.

For *coffee-berries*, ſome ſubſtitute peas, beans, rye, and barley; which, roaſted, yield an oily matter, reſembling in flavour, but leſs agreeable, as well as much leſs ſtrong, than *coffee*.

COFFEE alſo denotes a kind of drink prepared from theſe berries; very familiar in Europe for theſe eighty years, and among the Turks for an hundred and fifty.

Its original is not well known: ſome aſcribe it to the prior o a monaſtery, who, being informed by a goatherd, that hi cattle, ſometimes browſing on the tree, would wake an caper all night, became curious to prove its virtue: accordingly, he firſt tried it on his monks, to prevent their ſleeping at matins. Others, from Sehehabeddin, refer the invention of *coffee* to the Perſians; from whom, they ſay, it w learned in the fifteenth century by Gemaleddin, mufti Aden, a city near the mouth of the Red-ſea; and who, ha ing tried its virtues himſelf, and found that it diſſipated th fumes which oppreſſed the head, inſpired joy, opened th bowels, and prevented ſleep, without being incommoded it; recommended it firſt to his derviſes; with whom uſed to ſpend the night in prayer.

Their example brought *coffee* into vogue at Aden; the pr feſſors of the law, for ſtudy, artiſans to work, travellers walk in the night, in fine, every body at Aden, drank co —Hence it paſſed to Mecca, where firſt the devotees, th the reſt of the people, took it. From Arabia Felix it pa to Cairo.

In 1511. Khaiae Beg prohibited it, from a perſuaſion that it inebriated, and that it inclined to things forbidden. But ſultan Cauſou immediately after took off the prohibition, and *coffee* advanced from Egypt to Syria and Conſtantinople.

The derviſes declaimed againſt it from the Alcoran, which declares that coal is not of the number of things created by God for food. Accordingly, the mufti ordered the *coffee-houſes* to be ſhut up; but, his ſucceſſor declaring *coffee* not to be coal, they were opened again.

During the war in Candia, the aſſemblies of news-mongers making too free with ſtate-affairs, the grand vizier Cuproli ſuppreſſed the *coffee-houſes* at Conſtantinople; which ſuppreſſion, though ſtill on foot, does not prevent the public uſe of the liquor there. Thevenot the traveller was the firſt who brought it into France; and a Greek ſervant, called *Paſqua*, brought into England by Mr. Dan. Edwards, a Turky merchant, in 1652. to make his *coffee*, firſt ſet up the profeſſion of *coffee-man*, and introduced the drink among us. Though ſome ſay Dr. Harvey had uſed it before.

The word *coffee* is originally Arabic: the Turks pronounce it *cahueh*, and the Arabs *cahuah*; which ſome authors maintain to be a general name for any thing that takes away the appetite; others, for any thing that promotes appetite; and others, again, for any thing that gives ſtrength and vigour.

The Mahometans, it is obſerved, diſtinguiſh three kinds of *cahuah*; the firſt is wine, or any liquor that inebriates; the ſecond is made of the pods that contain the *coffee-berry*; this they call the *Sultanas coffee*, from their having firſt introduced it, on account of its heating leſs than the berry, as well as its keeping the bowels open: the third is that made with the berry itſelf, which alone is uſed in Europe, the pods being found improper for tranſportation. Some Europeans, who imported the pods, called them the *flower of the coffee-tree*.

The deep brown colour of the liquor occaſioned its being firſt called *ſyrup of the Indian mulberry*; under which ſpecious name it firſt gained ground in Europe.

The preparation of *coffee* conſiſts in roaſting, or giving it a juſt degree of torrefaction, on an earthen, or metalline plate, till it have acquired a browniſh hue, equally deep on all ſides: it is then ground in a mill, as much of it as ſerves the preſent occaſion. A proper quantity of water is next boiled, and the ground *coffee* put in it. After it has juſt boiled, it is taken from the fire; and the decoction having ſtood a-while to ſettle, and fine, they pour, or decant it into diſhes.

The cuſtom is to drink *coffee* as hot as poſſible, with ſugar; though the Turks do not trouble themſelves to take off its bitterneſs with any ſugar: their grandees add to each diſh a drop of eſſence of ambergris; others boil it with a couple of cloves; others a little Indian aniſe; others cacouleh, or the grain of the cardamomum minus.—*Coffee* is one of the neceſſaries with which the Turks are obliged to furniſh their wives.

The ordinary method of roaſting *coffee* among us, is in a tin cylindrical box, full of holes; through the middle whereof runs a ſpit: under this is a ſemicircular hearth, wherein is a large charcoal fire: by help of a jack, the ſpit turns ſwift, and ſo roaſts the berries; being now-and-then taken up to be ſhaken. When the oil riſes, and it is grown of a dark brown colour, it is emptied into two receivers, made with large hoops, whoſe bottoms are iron plates, theſe ſhut into: there the *coffee* is ſhaken, and left till almoſt cold; and if it look bright and oily, it is a ſign it is well done.

Coffee is taken with very different, nay, frequently with directly oppoſite, intentions; ſome uſe it to prevent ſleep, others to promote digeſtion, *&c.*—Its more real virtues, owned by the phyſicians, conſiſt in this; that being an excellent drier, it carries off fumes and diſorders of the head, ariſing from too much moiſture, diſſipates megrims, and abſorbs acrimonies of the ſtomach, whence its uſe after a debauch of ſtrong liquors; and hence alſo its uſe in promoting watching, bracing the fibres, and rendering them too tenſe for the relaxation required in ſleep.

It likewiſe promotes circulation, but that beſt with people of a pretty corpulent habit; being found hurtful to thoſe who are thin, lean, dry, and of a bilious temperament; as it dries up the nerves, and inclines them to tremors: it is ſaid to be prejudicial likewiſe to thoſe who digeſt too faſt; where the circulation is too quick, or where there is a ſpitting of blood ariſing from the mouths of any of the veins and arteries being too open, or the blood too thin and ſharp.

The oily matter that ſeparates from the *coffee*, and appears on its ſurface when roaſted, and its particular ſmell which diſtinguiſhes it from peas, beans, rye, *&c.* which ſome ſubſtitute in lieu of *coffee*, are to be the real indications of its effects. If conſidered with regard to the oil drawn by the retort, this, as well as that, contains volatile principles, both ſaline and ſulphureous.

It is to the diſſolution of its ſalts, and the mixture of its ſulphurs in the blood, that its chief faculty of promoting watchfulneſs is to be attributed: hence alſo its property of promoting digeſtion, of precipitating foods, of preventing eructations, and of correcting acrimonies of the ſtomach, when taken after meals.

Hence alſo that fermentation in the blood, ſerviceable to corpulent people; hence alſo its diuretic virtue. By experience it is found of ſervice to drink a glaſs of water before *coffee*, to render it laxative; and to mix it with milk or cream, to extinguiſh its ſulphurs, embarraſs its ſaline principles, and render it nouriſhing.

S. Pauli, a Daniſh phyſician, maintains, that it enervates men, and renders them incapable of generation; and it is certain the Turks attribute the ſame effects to it; and from the immoderate uſe hereof, account for that thinneſs of inhabitants found in their provinces formerly the beſt peopled. But this opinion is refuted by Du Four.—F. Malebranche gave the royal academy of ſciences an account of a perſon cured of an apoplexy, by means of ſeveral clyſters of *coffee*.

The tree that produces the *coffee*, is a kind of Arabic jeſſamin: the berry, when ripe, is found as hard as horn; which gave occaſion to an opinion, that the people of the kingdom of Yemen in Arabia Felix, where it is cultivated, ſteeped in boiling water, or baked in a furnace, all the *coffee* they ſold abroad, to prevent its growing any-where elſe.

It is ſaid, it yields a revenue of upwards of five millions *per annum*. Nor will that appear any wonder, when we conſider, that in London alone, beſides the conſumption in private houſes, ſome have computed more than three thouſand *coffee-houſes*. In the three kingdoms are yearly expended one hundred tun of *coffee-berries*; in England alone ſeventy: which at 300*l.* *per* ton, a moderate price, amounts to 21000*l.* ſterling.

COFFER, *Capſa*, in architecture, a ſquare depreſſure, or ſinking, in each interval between the modillions of the Corinthian cornice; ordinarily filled up with a roſe, ſometimes with a pomgranate, or other enrichment.

Theſe ſinkings, called alſo *panels*, are of different figures in the compartiments of vaults and ſoffits.

COFFER, in fortification, denotes a hollow lodgment, athwart a dry moat, from ſix to ſeven feet deep, and from ſixteen to eighteen feet broad; the upper part made of pieces of timber raiſed two feet above the level of the moat; which little elevation has hurdles laden with earth for its covering; and ſerves as a parapet, with embraſures.

The *coffer* is nearly the ſame with the caponiere, abating that this laſt is ſometimes made beyond the counterſcarp on the glacis, and the *coffer* always in the moat, taking up its whole breadth, which the caponiere does not.

It differs from the traverſe, and gallery, in that theſe latter are made by the beſiegers, and the *coffer* by the beſieged.

The beſieged generally make uſe of *coffers* to repulſe the beſiegers, when they endeavour to paſs the ditch.—To ſave themſelves from the fire of theſe *coffers*, the beſiegers throw up the earth on that ſide towards the *coffer*.

COFFERER *of the King's Houſhold*, a principal officer in the court, next under the comptroller; who, in the compting-houſe, and elſewhere at other times, has a ſpecial charge and overſight of other officers of the houſe, for their good demeanour and carriage in their offices: to all whom he pays the wages. See HOUSHOLD.

COGGESHALL's *Sliding-Rule*, an inſtrument uſed in gauging, ſo called from its inventor: ſee the deſcription and uſe under SLIDING-RULE.

COGITATION, the act or operation of thinking. See THINKING.

COGNATION, in the civil law, the bond of relation between all the deſcendants from the ſame ſtock, both males and females—by which it is diſtinguiſhed from *agnation*, which only comprehends the deſcendants of the male ſex.

In France, for the ſucceſſion to the crown they follow *agnation*; in England, Spain, *&c.* *cognation*; women coming to the ſucceſſion, according to the degree of proximity, in default of males, or their deſcendants from branch to branch.

In the Roman law, the words COGNATIO and COGNATI are alſo taken in a more limited ſenſe; *cognatio* ſignifying only the bond of relation between the deſcendants from the ſame ſtock by women; and *cognati*, thoſe between whom there was ſuch a bond of relation ſubſiſting.

COGNISOR, or CONUSOR, is he that paſſeth, or acknowlegeth, a fine of lands and tenements to another. See FINE, and COGNIZANCE.

COGNIZANCE, or COGNISANCE, in heraldry. See CREST.

COGNIZANCE, or CONUSANCE, in law, is the acknowlegement of a fine; or the conceſſion of a thing done.—In which ſenſe, we ſay, *cognoſcens latro*, a thief that confeſſes.

COGNIZANCE is alſo uſed for a power, or juriſdiction.—Thus, *cognizance of pleas*, denotes an ability to call a plea out of another court; which no one but the king can do, unleſs he can ſhew a particular charter for it.

COGNIZANCE is ſometimes uſed alſo for an audience, or hearing of a matter judicially.—In which ſenſe, we ſay, *to take cognizance*, &c.

COGNIZANCE, again, is uſed for a badge on a waterman's, or ſerving-man's ſleeve, which is commonly the giver's creſt, whereby he is diſcerned to belong to this or that nobleman, or gentleman.

CO-HABITATION, implies a concubinage, or a copulation, or carnal knowlege, between two perſons; it is rarely uſed, except in a criminal ſenſe.

CO-HEIR, a perſon who ſhares an inheritance or eſtate with another. See HEIR.

COHERENCE, a ſchool-term, applied to propoſitions, diſcourſes, *&c.* which have a connexion, or dependence, on one another. See CONNECTION, *&c.*

COHESION, or COHÆSION, in phyſics, the action whereby the particles, or primary corpuſcles, whereof natural bodies conſiſt, are connected, or bound together, ſo as to form particles; and thoſe, again, kept together, ſo as to form ſenſible maſſes, or bodies.

The cauſe of this *coheſion*, or nexus materiæ, has extremely perplexed the philoſophers of all ages. In all the ſyſtems of phyſics, matter is ſuppoſed originally to be in minute, indiviſible atoms.

How, and by what principle, theſe ſeveral and diſtinct corpuſcles ſhould come firſt joined and combined into little ſyſtems; and how they ſhould come to perſevere in that ſtate of union; is a point of the moſt difficulty, and even of the moſt importance, of any in phyſics!

The moſt popular opinion, is that ſo ſtrenuouſly defended by J. Bernouilli *de gravitate ætheris*; who accounts for the *coheſion* of the parts of matter, from the uniform preſſure of the atmoſphere: confirming this doctrine from the known experiment of two poliſhed marble planes, which cohere very ſtrongly in the open air, but eaſily drop aſunder in an exhauſted receiver.

But though this theory might ſerve tolerably well to explain the *coheſion* of compoſitions, or greater collections of matter; yet it falls ſhort of accounting for that firſt *coheſion* of the atoms, or primitive corpuſcles, whereof the corpuſcles of hard bodies are compoſed.

Sir Iſaac Newton delivers his doctrine of *coheſion* thus: 'The 'particles of all hard, homogeneous bodies, which touch one 'another, *cohere* with a great force; to account for which, 'ſome philoſophers have recourſe to a kind of hooked atoms, 'which, in effect, is nothing elſe but to beg the thing in 'queſtion. Others imagine, that the particles of bodies are 'connected by reſt, *i. e.* in effect, by nothing at all; and 'others by conſpiring motions, *i. e.* by a relative reſt among 'themſelves. For myſelf, it rather appears to me, that the 'particles of bodies *cohere* by an attractive force, whereby 'they tend mutually toward each other: which force, in 'the very point of contact, is very great; at little diſtances 'is leſs; and at a little farther diſtance is quite inſenſible.

'Now, if compound bodies be ſo hard, as by experience we 'find ſome of them to be, and yet have a great many 'hidden pores within them, and conſiſt of parts only laid to'gether; no doubt thoſe ſimple particles which have no pores 'within them, and which were never divided into parts, 'muſt be vaſtly harder.

'For ſuch hard particles, gathered into a maſs, cannot 'poſſibly touch in more than a few points: and therefore 'much leſs force is required to ſever them, than to break a 'ſolid particle, whoſe parts touch throughout all their ſur'faces, without any intermediate pores or interſtices. But 'how ſuch hard particles, only laid together, and touching 'only in a few points, ſhould come to *cohere* ſo firmly as 'in fact we find they do, is inconceivable; unleſs there be 'ſome cauſe, whereby they are attracted and preſſed to'gether.

'Now, the ſmalleſt particles of matter may *cohere* by the 'ſtrongeſt attractions, and conſtitute larger, whoſe attract'ing force is feebler: and, again, many of theſe larger par'ticles *cohering*, may conſtitute others ſtill larger, whoſe 'attractive force is ſtill weaker; and ſo on for ſeveral ſuc'ceſſions, till the progreſſion end in the biggeſt particle, on 'which the operations in chymiſtry, and the colours of na'tural bodies, do depend; and which by *cohering* compoſe 'bodies of a ſenſible magnitude.'

The different degrees of *coheſion*, conſtitute bodies of different forms and properties.—Thus, the ſame great author obſerves, the particles of fluids, which do not *cohere* too ſtrongly, and are ſmall enough to render them ſuſceptible of thoſe agitations which keep liquors in a fluor, are moſt eaſily ſeparated and rarefied into vapour, and make what the chymiſts call *volatile bodies*; rareſying with an eaſy heat, and again condenſing with a moderate cold.

Thoſe whoſe particles are groſſer, and ſo are leſs ſuſceptible of agitation, or *cohere* by a ſtronger attraction, are not ſeparable without a greater degree of heat; and ſome of them not without fermentation: and theſe make what the chymiſts call *fixt bodies*.

COHOBATION, in chymiſtry, a repeated diſtillation of the ſame matter, with the liquor drawn from it; that liquor being again and again returned upon the matter left at the bottom.

The deſign of this operation is to open the pores, and ſeparate, and volatilize the ſpirituous part.

Cohobation is a kind of circulation; only differing from it in this, that the liquor is drawn off in *cohobation* as in common diſtillation, and thrown back again; whereas in circulation it riſes and falls in the ſame veſſel, without ever being carried out. See CIRCULATION.

COHORT, COHORS, among the Romans, a body of infantry, conſiſting of five or ſix hundred men; anſwering in moſt reſpects to our battalion. See BATTALION.

The *cohort* was divided into three manipules, or companies; the manipule into two centuries; and the century into an hundred men.

The firſt centurion in the firſt *cohort* was called *primipilus*; and had the charge of the eagle, or ſtandard of the legion. —A legion conſiſted of ten *cohorts*.

When the army was ranged in order of battle, the *cohorts* were diſpoſed in the following manner: the firſt *cohort* took up the right of the firſt line, as the companies of grenadiers do in our regiments; the reſt followed in their natural order; ſo that the third was in the centre of the firſt line of the legion, and the fifth on the left: the ſecond between the firſt and third; and the fourth between the third and fifth. The five remaining *cohorts* formed a ſecond line in their natural order: thus the ſixth was behind the firſt, and ſo of the reſt.

The firſt, third, and fifth *cohorts* were eſteemed the beſt; at leaſt it appears ſo from the poſts they took up, which were looked on by the Romans as the moſt important.

Marius is by ſome ſaid to have been the firſt who divided the Roman forces into *cohorts:* which opinion ſeems confirmed by Roſinus; *Non enim in tota Livii hiſtoria cohortium fit mentio. Ideoque docti viri ſentiunt a C. Mario primum cohortes eſſe inſtitutas.* Roſin. Corp. Antiq. l. 10. c. 5. But yet this is a great miſtake; for the *cohorts* are often mentioned in Livy, and particularly l. 27. c. 13. *Marcellus—cohortibus quæ ſigna amiſerant hordeum dari juſſit: centurioneſq; manipulorum quorum ſigna amiſſa fuerant diſtrictis gladiis diſtinctos deſtituit.*—This happened A. U. C. 543. and conſequently, ſeveral years before Marius was born.

COIF, the badge of a ſerjeant at law; who is hence alſo called *ſerjeant of the* COIF. See SERGEANT.

The *coif* is of lawn, and is worn on the head, under the cap, when they are created, and ever after.

The uſe of the *coif* was to cover the *tonſura clericalis*, or clerical crown; becauſe the crown of the head was originally cloſe ſhaved, and only a border of hair left around the lower part, which gave it the appearance of a crown. See CROWN, TONSURE, *&c.*

COIN, *Matrice*, in the manufacture of money, medals, and counters, is a piece of ſteel well tempered, four or five inches deep, ſquare at bottom, and round at top; whereon are engraved, dent-wiſe, with punchions, and other inſtruments, the ſeveral figures, marks, *&c.* to be ſtruck on the moneys, *&c.*

For the manner of engraving COINS; ſee ENGRAVING *on ſteel.*

COIN is more generally uſed for a piece of metal, converted into money, by the impreſſing of certain marks or figures thereon.

Coin may be defined, a ſpecies of money, ſtruck either with a hammer, or mill.

Hence, *coin* differs from money, as the ſpecies does from the genus. Money is any matter, whether metal, wood, leather, glaſs, horn, paper, fruits, ſhells, or kernels, which have courſe as a medium in commerce.

Coins are a particular branch of moneys, *viz.* ſuch as are made of metal, gold, ſilver, or copper, and ſtruck according to a certain proceſs, called *coinage*.

It is obſerved, under the article MONEY, that the preciſe epocha of the invention of money is not known; it is too antient for our annals: and if we might argue from the neceſſity and obviouſneſs of the thing, it muſt be nearly coeval with the world.

Whether *coins* be of equal antiquity, may admit of ſome doubt; eſpecially as moſt of the antient writers are ſo frequent and expreſs in their mention of leathern-moneys, paper-moneys, wooden-moneys, *&c.* Some, however, notwithſtanding all this, are of opinion, that the firſt moneys were of metal: the reaſons they give, are the firmneſs, neatneſs, cleanlineſs, durableneſs, and univerſality of metals; which, however, do rather conclude, that they ought to have been ſo, than they actually were ſo.

In effect, the very commodities themſelves were the firſt moneys, *i. e.* they were current for one another by way of exchange; and it was the difficulty of cutting, or dividing certain commodities, and the impoſſibility of doing it without great loſs, that firſt put men on the expedient of a general medium.

Indeed, thus much may be ſaid in behalf of *coins*, that, on this view, it was natural for men to have their firſt recourſe to metals; as being almoſt the only things whoſe goodneſs, and as it were integrity, is not diminiſhed by partition; beſides the advantages above expreſſed, and the conveniencies of melting, and returning them again into a maſs of any ſize or weight.

It was probably, then, this property of metals which firſt accuſtomed people, who trafficked together, to account them in lieu of quantities of other merchandizes in their exchanges; and at length to ſubſtitute them wholly in their ſtead: and thus aroſe money: as it was their other property to preſerve any mark or impreſſion a long time, which confirmed them in the right; and thus was the firſt riſe of *coins*.

In the firſt ages, each perſon cut his metal into pieces of different ſizes and forms, according to the quantity to be given for any merchandize, or according to the demand of the ſeller, or the quantity ſtipulated between them: to this end, they went to market, loaden with metal, in proportion to the purchaſe to be made, and furniſhed with inſtruments for proportioning it, and with ſcales for dealing it out, according as occaſion required.

By degrees it was found more commodious to have pieces ready weighed; and as there were different weights required, according to the value of the different wares, all thoſe of the ſame weight began to be diſtinguiſhed with the ſame mark, or figure: thus were *coins* carried one ſtep further.

At length, the growing commerce of money beginning to be diſturbed with frauds, both in the weights and the matter, the public authority interpoſed; and hence aroſe the firſt ſtamps, or impreſſions, of money: to which ſucceeded the names of the moneyers; and at length the effigy of the prince, the date, legend, and other precautions to prevent the alterations of the ſpecies: and thus were *coins* completed.

On the foot whereon money now ſtands, it is divided into real, or effective money; and imaginary money, or money of accompt.

Modern COINS, *or ſpecies current in* Europe, Aſia, Africa, *and* America.—All the current ſpecies in the four quarters of the earth, at this day, are either made of metals, or they are ſhells, and fruits.

The metals are, gold, ſilver, copper, tin, and lead; to which may be added billon, a mixture of ſilver and copper in a certain proportion.

In Europe none are uſed beſide gold, ſilver, copper, and billon: in ſome parts of the Eaſt-Indies they likewiſe uſe tin and lead: as to ſhells and fruits, they are the ſmall money of ſeveral nations in Aſia, Africa, and America.

Britiſh COINS.—In England, the current ſpecies of gold are, the guinea, half-guinea, jacobus, laureat, angel, and roſe-noble; the four laſt of which are now ſeldom met with, having been moſt of them converted into guineas, chiefly during the reigns of Charles II. and James II.

The *ſilver coins* are, the crown, half-crown, ſhilling, and ſixpence; the *copper coins* are, the half-peny, and farthing.

Value and proportions of the Engliſh COINS.

Farthing.

2	Half-peny.					
48	24	Shilling.				
120	60	2½	Half-crown.			
240	120	5	2	Crown.		
960	480	20	8	4	Pound Ac.	
1008	504	21	8⅓ & ⅕	4⅕	1$\frac{1}{20}$	Guinea, or piece.
The Jacobus		25	10	5	1¼	
The Carolus, or Laureat		23	9⅕	4½ & $\frac{1}{10}$		

In Scotland, by the articles of the union, it is appointed, that all the *coins* be reduced to the Engliſh, and the ſame accompts obſerved throughout. Till then the Scots had their pounds, ſhillings, and pence, as in England; but their pound was but twenty-pence Engliſh, and the others were in proportion: accordingly, their mark was 13⅓ *s.* Scotch, current in England at 13½ *d.* their noble in proportion.

Beſide theſe, they had their Turnoſer pence, and half-pence; their peny, $\frac{1}{12}$ of that of England; beſides baſe money of achiſons, babees, and placks: the bodle, ⅙ of the peny, ¼ of the achiſon, ⅓ of the babee, and ½ of the plack.

In Ireland, the *coins* are as in England; *viz.* ſhillings, pence, &c. with this difference, that their ſhilling, or harper, is but equal to nine-pence ſterling; whence their pound is only ¾ of ours, or 15 *s.*

French COINS.—The only gold *coin* now current in France is, the lewidore, or louis d'or, with its diviſions; which are, ½ and ¼, and its multiples; which are, the double and quadruple louis.—Till the year 1700. they had gold lys, and ecus, or crowns; but they are now no more.

The ſilver *coins* are, the ecus, crown, or white louis's, with their diminutions; *viz.* ½ and ¼; and pieces of ten ſols, and of ſix. See SOL, and CROWN.

The billon *coins* are of two kinds, each called *ſols*; ſome of 15 deniers, other of 21. To theſe may be added the deniers current in the Lionnois, Provence, Dauphiné, and other parts. Laſtly, the copper *coin* is the liard, equal to three deniers; and is ordinarily called the *double*.

Value and proportion of the French COINS.

Denier, equal to ¾ of a Farthing ſterling.

						l.	s.	d.
2	Double.							
3	1½	Liard.						
12	6	4	Sol *Paris*, is equal to			0	0	0½
240	120	8	20	Livre, *Acc.*		0	0	10½
723	360	240	60	3	Ecu, Crown.	0	2	7½

The louis d'or, or French piſtole, was firſt ſtruck at 10 livres; but has ſince riſen as high as 30. With us it is valued at 16 s. ſterling.

Spaniſh COINS.—In Spain, and the ſtates depending thereon, the gold *coin* is the piſtole; above which is the double piſtole, and piece of four piſtoles; and under it the half piſtole: to which muſt be added the caſtillans of gold. See PISTOLE.

The ſilver money are, the piaſtre, or piece of eight rials, and its diminutions; as alſo the ſimple rial, with its diminution. See RIAL.

The copper *coins* are, the ochavos, or octavos; which are of two kinds: the one equal to four maravedis, and ordinarily called *quarta*; the other double this, and called *double quarta*: laſtly, the maravedis. See MARAVEDIS.

It muſt be obſerved, that in Spain they have new money and old. The old, current in Sevil, Cadiz, Andaluſia, and ſome other places, is worth 25 *per cent.* more than the new, current at Madrid, Bilboa, St. Sebaſtian, &c. *i. e.* 100 pounds old is equal to 125 pounds new. This difference is owing to their king, Charles II. who, in 1668. to prevent the export of money abroad, raiſed it 25 *per cent.* which, however, he was only able to effect in part; ſeveral provinces ſtill retaining the antient rate.

Value and proportion of the Spaniſh COINS.

Maravedis old, nearly equal to half a farthing ſterling.

						l.	s.	d.
4	Quarta.							
8	2	Octavo, or double Quarta.						
64	3½	4½	Real, old plata, equal to			0	0	6¾
512	68	34	8	Pieces of Eight, or Piaſtre		0	4	6
2048	272	136	32	4	Piſtole.	0	17	6

Portugueſe COINS.—Thoſe of gold are, the milleray, or St. Stephen, and the moeda d'oro, or, as we call it, the moidore; which is properly their piſtole: above this are doppio moedas, or double piſtoles; and quadruple ſpecies equal to five piſtoles. See MOIDORE, DOUBLOON, &c.

Their ſilver *coins* are, the cruzada, pataca, or piece of eight; and the vintem, whereof they have two ſorts; the one ſilver, and the other billon.

The ree is of copper, which ſerves them in accompts, as the maravedis does the Spaniards.

Res, or Rez, equal to ⅔ of a Farthing ſterling.

							l.	s.	d.
20	Vintem.								
400	20	Cruzada.							
1000	50	2½	Mi-moeda, or half-piſtole, equals				0	13	6
2000	100	5	2	Moeda d'oro, or piſtole,			1	7	0
4000	200	10	4	2	Doppio moeda, or doub. piſt.		2	14	0
10000	500	25	10	6	2½	Ducat of fine gold.	6	15	0

Dutch COINS.—Thoſe of ſilver are, crowns, or dollars, ducatoons, florins, and ſhillings; each whereof has its diminution. The ſtiver, or common ſhilling, is of billon; the duyt, and peny, of copper.

Peny.

							l.	s.	d.
1	Duyt.								
6	4	Gros.							
12	8	2	Stuyver, or ſhilling common				0	0	1⅘
72	48	12	6	Scalin, or ſhilling groſs,			0	0	7
236	160	40	20	3⅓	Florin, or gilder,		0	2	0
708	480	120	60	10	3	Dollar, or ducatoon,	0	6	0

Flemiſh Coins.—Thoſe of gold are imperials, rides, or philips, alberts, and crowns.

Thoſe of ſilver are philips, rixdollars, patagons, ſcalines, and guldens; and thoſe of copper, patards.

Patard, or peny.

							l.	s.	d.
8	Groat.								
16	2	Single ſtiver, equal to					0	0	1¼
96	6	6	Shilling,				0	0	7½
288	18	20	3	Gulden,			0	2	0
720	90	50	2½	2¼	Rixdollar, dollar, patag.		0	4	6
2104			7½		2½	Imperial.	0	11	3

Note, *The rixdollar, dollar, and patagon, are nearly on the ſame foot with the crown, or piece of eight.*

German Coins.—Thoſe of gold are ducats, which are of various kinds; oboli of the Rhine, and florins: of this laſt kind there are ſome, likewiſe, of ſilver; beſide rixdollars and izelottes, which are all of that metal.

Thoſe of copper are, the creux, or kreutzer, and fenin.

Fenin, equal to ⅓ of a farthing ſterling.

								l.	s.	d.
8	Creux, or kreutzer.									
192	24	Dollar.								
348	43½	$1\frac{8}{10}$	Obolus.							
432	54	$2\frac{1}{10}$	$1\frac{2}{10}$	Izelotte.				0	2	9
480	60	$2\frac{3}{10}$	$1\frac{3}{10}$	$1\frac{1}{10}$	Gulden, or florin.			0	3	0
650	100	$3\frac{8}{10}$	$2\frac{1}{10}$	$1\frac{9}{10}$	$1\frac{6}{10}$	Rixdol. or dollar.		0	4	6
1068	133	$5\frac{8}{10}$	$2\frac{2}{10}$	$1\frac{2}{10}$	$2\frac{1}{10}$	$1\frac{3}{10}$	Ducat.	0	7	6

Italian Coins.—In Italy, the ſeveral ſtates have ſeveral current moneys: though there are ſome common to them all; ſuch as the piſtole of gold, and the ducatoon and florin of ſilver; which, being of various weights, fineneſs, and value; ſee under the articles Piſtole, Ducatoon, &c.

Thoſe peculiar to Rome are, the julios of ſilver, the pignatelle of billon; and the bayoco, demi-bayocos, and quadrine, of copper.—Venice has its ſequins of gold; its juſtins, or ducatoons, and derlingues, of ſilver.—Naples its carlins.—Mourgues its monacos, or crowns, and its louis's of ſix-ſols.—Genoa its croiſats.—Savoy and Piedmont its lys; all ſilver. This laſt ſtate has likewiſe papiroles, and cavales of billon.

	s.	d. ſter.	
Julio, equal to	0	$6\frac{7}{100}$	8½ make a French crown.
Bayoco, $\frac{1}{10}$ of the julio =	0	0½ peny and ⅕.	
Pignatelle, $\frac{1}{10}$ of the julio =	0	0½ of ¼ of a peny, or near (½ a farthing ſterling.	
Juſtine =	4	9	
Derlingue, ¼ of the juſtine =	1	2¼	
Carlin =	0	6	
Monaco =	4	4	
Sequin =	9	2	
Croiſat =	4	4	

Swiſs Coins are, ratzes, and blazes; of billon.—The ratze, equal to ¾ and ⅛ of a peny ſterling.—Blaze of Bern, nearly on the ſame footing with the ratze.

Poliſh Coins.—Beſide the rixdollars ſtruck here, which are common to other countries; the Poles ſtrike ſilver roups, abras, and groats.

	s.	d.
Roup	0	4¾
Abra	1	0⅕
Groch	0	0½ and ⅓.

Daniſh Coins are, the horſe, the marc lubs, and the ſcheſdal of ſilver.

	s.	d.
Horſe	1	1½
Marc lubs	1	6
Scheſdal, two marcs, or lubs	0	3

Swediſh Coins.—Thoſe of ſilver are, the chriſtines, carolines, and cavaliers. Thoſe of copper, the rouſtique, alleuvre, mark, and money.

	s.	d.
Chriſtine	1	1½
Caroline	1	5¼
Mark	0	2⅓
Rouſtique, ⅛ of the mark	0	0¼ and ⅛ of ⅓
Alleuvre, ½ of the rouſtique	0	0⅛ and $\frac{1}{16}$ of ⅓.

The Swediſh money, properly ſo called, is a kind of copper, very ſoft and malleable, cut in little ſquare pieces, or plates, about the thickneſs of three Engliſh crowns, and weighing five pounds and an half; ſtamped at the four corners with the Swediſh arms; and current in Sweden for a rixdollar, or piece of eight.

Muſcovite Coins.—There are two kinds of copecs in Muſcovy; the one of gold, the other of ſilver: the laſt called alſo denaing, or pence. Their

	s.	d.	
Copec, or kapeke, of gold, worth	1	$6\frac{1}{11}$	ſterl. but current
in the Czar's territories for	1	9	
Copec of ſilver, or denaing of an oval form, worth	0	1	ſterl. but curr. for ſomewhat more.
Poluſk, ½ of the copec	0	0½	
Moſtoffke, ¼ of the copec	0	0¼	

Turkiſh Coins.—The only gold ſpecies ſtruck in the grand ſeignior's territories, is the ſultanin, called alſo the ſcheriff, or ſequin. Their ſmall moneys are, the para, paraſi, called alſo parat; and the meidein, and the aſpre, both of ſilver.

	s.	d.	
Sultanin ſcherif, or ſequin, equal to the ducat of gold, or	9	0	
Para parat, or paraſi	0	1½	
Shakee of Aleppo and Scanderoon	0	3½	
Aſpre	0	0⅔	but ordinarily, by reaſon of the baſe alloy, no more than ½.

Coins *of the coaſts of Barbary.*—The current *coins* ſtruck here are, rubies, medians, ziams, and metecals: theſe are all of gold: the laſt of which are ſtruck at Morocco, the reſt at Fez, Algiers, and Tunis; which, beſide, have doublas of ſilver, and burbas of copper.—Tunis has its naſaras of ſilver, its blanquilles likewiſe of ſilver, and its felours of copper.

Other *coins* of Africa are, the merigal of gold, current in Sofala, and the kingdom of Monopotapa; and the pardo of ſilver, current in Moſambica.

	s.	d. ſterl.
Rubie, equal to 35 aſpres, or	1	9
Menian, 50 aſpres, or	2	7
Ziam, zian, or dian, two menians, or	5	2

Metecal, a kind of ducat of different fineneſs, conſequently of different value; whence very conſiderable difficulties in commerce. The difference ariſes hence, that there is no mint fixed, of regular coiners, at Morocco; but every Jew and goldſmith ſtrikes ducats, after his own manner, in open ſhop.

	s.	d. ſterl.
Doubla, equal to 80 aſpres, or	4	6
Burba, $\frac{1}{12}$ of an aſpre, or	0	$0\frac{1}{12}$
Blanquille	0	2¼
Felours, ⅛ of the blanquille, or	0	0¼ and $\frac{1}{12}$
Merigal, worth about	18	0
Pardo	1	3

Perſian Coins.—Theſe are either ſilver, or copper; gold they have none. Of the firſt kind are, the abaſſi, mamoudi, ſhahee, and biſti; of the ſecond, the kabeſqui, and half-kabeſqui: the tela, or cheraſis, indeed, is gold; but it is leſs a money than a medal, though it has ſome courſe in commerce.

	s.	d. ſterl.
Abaſſi, equal to	1	4½
Mamodi, half the abaſſi	0	8¼
Shakee, half the mamodi	0	4 and ⅛

Biſti, ſome relations make a *coin* worth about one peny halfpeny; but others only a term of accompt, ſignifying 10 dimars, or one thouſandth part of a toman. See Toman.

Caſbequi, or cabeſqui, equals $\frac{5}{12}$ of a peny ſterling.—Tela, or cheraſis, uſually ſtruck at the acceſſion of a new king, and at the beginning of each new year; its weight and worth various.

Chineſe Coins.—Throughout the kingdom of China and Tonquin, there are not properly any *coins* ſtruck: inſtead of theſe, they cut their gold and ſilver into little pieces of different weights. Thoſe of gold, the Dutch, from their figure, which reſembles a boat, call *golchuts*; thoſe of ſilver, the natives call *leam*; the Portugueſe, *taels*.—Their ſmall money is of copper: ten of theſe pieces make their ſhilling; and ten of thoſe their crown, or leam. Beſide theſe, they have a ſmall money of lead, mixed with the ſcum of copper, having holes in the middle to ſtring them on for the eaſe of numbering: this ſpecies is called caxa, cas, and pitis; and the ſtring, which uſually holds 200, is called ſanta. They are ſo very brittle, that they never fall without breaking into a great number of pieces; and, if left all night in ſalt water, they ſtick ſo cloſe together, that they cannot be ſeparated.

There are two kinds of golchuts; great and ſmall.—Golchut, an ingot, which, at 3*l.* 3*s.* *per* ounce, uſually amounts to 101*l.* 5*s.* ſterling.—Other golchuts only weigh half as much; their value is in proportion.

Tael, or leam, equal to 6*s.* 8*d.* ſterling.

Copper money one thouſandth part of the tael, or ſomewhat more than a quarter of a farthing.

Caxa, caſes, or pitis, one third of a farthing ſterling: 300000 of theſe are nearly equal to 56 Dutch livres.

Caxa larger, one thouſandth part of a piaſtre, or piece of eight.

Coins *of Japan.*—The Japoneſe ſtrike coupants, both of gold and ſilver; and copper pieces with holes in the middle, like thoſe of China: ſix hundred of theſe make the tael. Their other moneys, or quaſi-moneys, are, ingots, which they cut like the Chineſe at of different weights, chiefly three; the largeſt of the weight of ſix rials, *viz.* forty-eight taels, the tael equivalent to ſeventy-five Dutch ſtyvers. The ſecond equal to ſix taels and an half; and the third to $\frac{5}{8}$ of a rial, or one tael $\frac{1}{16}$.

Beſide theſe, they have a ſmall ſilver money, in form of round beans, of no determinate weight, but uſually weighed by maiſes; the common payment being by ten maiſes, which make one tael.

	l.	*s.*	*d.* Sterl.
Coupant of gold, weighing one ounce ſix drachms; its figure a long oval, the longeſt diameter about four inches, and the ſhorteſt half an inch.	6	12	6
Other coupants of gold, near $\frac{1}{3}$ of the former, amounting to about	2	4	2
Coupant of ſilver, current at	0	4	6
Copper money			$\frac{7}{15}$ of a farthing.

Coins *of* Siam.—In the dominions of Siam are ſtruck gold pieces five or ſix grains heavier than the half piſtole of Spain; but theſe are rather pieces of curioſity, than of uſe in commerce. Their ſilver *coin* is the tical, or baat; the diminutions whereof are the mayon, or ſeling, foang, and ſompayc. Theſe pieces are all ſtrangely ſtruck: in form they reſemble nuts, a little flatted at the extremities; and are ſome of them cloven like horſe-ſhoes: on two of the ſides there are ſome Siameſe letters.—Their copper money, called bia, is round and thick: beneath this is the cauris.

	s.	*d.* Sterl.
Gold ſpecies of Siam	7	0
Tayl	6	11 $\frac{1}{3}$
Mayam, or maſs $\frac{1}{16}$ of the tayl	0	5 $\frac{1}{4}$ and $\frac{1}{8}$
Foang, $\frac{1}{2}$ the mayam	0	2 $\frac{3}{4}$
Sompayc, $\frac{1}{2}$ the foang	0	1 $\frac{1}{4}$ and $\frac{1}{48}$
Copper *coin*, or farthing of Siam	0	0 $\frac{6}{10}$

Coins *of the coaſts and iſlands of the* Indies.—The principal, and thoſe moſt generally current, are pagodos, rupees, larins, fanos, or fanons, and coupans, each whereof are ſtruck both of gold and ſilver.

Beſide theſe general *coins*, there alſo are particular ones, *viz.* at Goa, S. Thomas's of gold.—Along the Perſian gulf, about Mecca, and throughout Arabia, the larin; along the coaſts of Malabar, and at Goa, the pardao and xeraphin of ſilver.—At Bantam, the fardos; at Malabar, the tare; at Siam the tayl, with its diminutions the mayam, foang, ſompayc, and demi-foang: all of ſilver.—At Surate, Agra, and the reſt of Indoſtan, the pecha, or peſſa, and doudous, all of copper.—The baſarucos and chedas, of tin.

	l.	*s.*	*d.* Sterl.
Pagodo, gold, denominated from its impreſſion, an Indian idol,	0	5	0
Pagodo, ſilver, its value very different; the ſmalleſt eight tangas, and the tanga ninety baſarucos; equal to	0	8	0
Rupee, gold	1	11	6

Rupee, ſilver, its fineneſs and value various: there are three kinds current, *viz.* the rupees ſiceas, the rupees of Surat, and rupees of Madras.

	s.	*d.* Sterl.
Rupees ſiceas, worth at Bengal	2	11
—— of Surat	2	3
—— of Madras	2	5 $\frac{1}{2}$

Note, This is to be underſtood of the new rupees; for as to the old ones, of each kind, their value is leſs: thoſe of Madras, *v. gr.* are but equal to 1 *s.* 11 *d.* ſterling, of thoſe Surat 2 *s.* and the ſiceas 2 *s.* 4 *d.*

	s.	*d.* Sterl.
Larin, in form of a round wire, or cylinder, equal to the barrel of a pen; bent in two, and a little flatted at each end, to receive the impreſſion of ſome Arabic, or Perſian characters.	0	9
Fanos, or fanon, gold, is of different fineneſs, weight, and value; the largeſt worth	0	11
The ſmalleſt	0	2 $\frac{1}{2}$
Fanos, ſilver,	0	1 $\frac{1}{4}$
Coupant, ſee Coins *of* Japan.		
S. Thomas, equal to	9	0
Xeraphin	2	1
Fardos	2	8 $\frac{1}{2}$
Tare	0	0 $\frac{1}{2}$
Ticil, ſee Coins of Siam.		
Pecha, or peſſa	0	0 $\frac{1}{2}$
Doudou, $\frac{1}{14}$ of fanos, or ſomewhat leſs than	0	0 $\frac{1}{2}$
Baſaruco or Budgerook, $\frac{1}{5}$ of a farthing.		
Cheda is of two kinds, the one octogonal, current at	0	1 $\frac{3}{4}$
The other round	0	0 $\frac{1}{3}$

Mogul Coins.—In the dominions of the Great Mogul, are roupies, mamoudas, and pechas; the firſt both of gold and ſilver; the ſecond of ſilver alone; and the third of copper.

There are others ſtruck by the princes tributary to him, and the powers bordering on him, but theſe are ſcarce current beyoud their reſpective territories: particularly a ſmall ſilver *coin* ſtruck by the king of Matoucha, whoſe territories lie to the north of Agra, of the value of the pecha of Mogul, but half as heavy again.—The Raja of Parta-jajamoula, to the north of Patua, likewiſe ſtrikes ſome little pieces, both of ſilver and copper; of ſmall value.—The Raja of Ogden, who commands between Brampour, Seronge, and Amadabath, a ſmall ſilver *coin*, equal to ſix-pence ſterling; and another of copper, equal to an halfpeny ſterling.—The king of Cheda and Pera, a tin-money called *cheda*.—The king of Achem, little ſlight gold pieces, worth about fifteen pence ſterling.—And tin pieces, eighty of which are equal to the Engliſh peny, current in the iſles of Sumatra.—The gold *coin* of the king of Macaſſer and Celebes, is taken by the Dutch for a florin.—The king of Camboyas ſtrike only pieces of ſilver and copper: his gold, wherein he abounds, is negotiated by weight.—The king of Java and Bantam, in the ſame iſland, and thoſe of the Molucca iſlands, ſtrike only copper *coins*: they allow foreign ſilver ſpecies to be current in their territories, but they coin none.

	s.	*d.* Sterl.
Roupia, ſee Coins *of the coaſts*, &c. of India.		
Mamouda, or mamotha, its value is not fixed: in the kingdom of Mazarate, the great mamouda is equal to	0	11
The ſmall, half the great one	0	5 $\frac{1}{2}$
Pecha, ſee Coins *of the iſles*, &c. *of* India.		
Silver piece of Matoucha	0	0 $\frac{1}{2}$
Silver piece of the king of Ogden	0	6
Copper piece of the ſame	0	0 $\frac{1}{2}$
Cheda, ſee Coins *of the iſles*, &c. *of* India.		
Gold piece of the king of Achem	1	3
Tin piece of the ſame	0	0 $\frac{1}{80}$
Gold piece of the king of Macaſſer, taken by the Dutch for a guilder	1	10 $\frac{1}{2}$

To the number of current *coins* which have diſtinct names to ſpecify them, may be added many more, both in Europe and Aſia, only denominated and known from their value: ſuch are thoſe called ſimply *pieces*, with the addition of their price; as in Spain, the piece of eight rials; in England, the piece of twenty-one ſhillings, or guinea; in France, the piece of four francs; piece of ten ſols, or ſhillings; piece of four ſols; piece of two ſols; or of ſix franks, of 30, 15, 6, 4, *&c.* deniers, or pence. See Piece.

Shells current for Coins.—Theſe ſerve in many places for money; and are brought from the Maldives, and called in the Indies *cowries*: on the coaſts of Africa they change their name, and are called *bouges*.

In America they take a third name, *viz. porcelains.* Indeed theſe laſt do not come from the Maldives; there being ſhells found in the Weſt-Indies much like thoſe of the Eaſt.

In the kingdom of Congo there is another kind of ſhells, called *zimbi*; though ſome will have them the ſame with the cowries.

Cowrie, coris, or bouges, are white ſhells, current particucularly in the ſtates of the Great Mogul; ſixty-five are uſually reckoned equivalent to the done, a ſmall copper *coin*, worth about an halfpeny ſterling; which brings each cowry to $\frac{1}{130}$ of a peny ſterling.

Porcelains are nearly on the ſame footing with the cowries. See Porcelain.

Zimbi, current particularly in the kingdoms of Angola and Congo. Two thouſand zimbis make what the negroes call a *maciute* or *macoute*; which is no real money, whereof there is none in this part of Africa, but only a manner of reckoning: thus, two Flemiſh knives they eſteem a macoute; a copper baſon, two pounds weight, and twelve inches diameter, three macoutes; a fuſy ten, *&c.*

Fruits current for Coins.—There are three kinds of fruits uſed for *coins*; two in America, particularly among the Mexicans; which are the cacao and maiſe: the other in the Eaſt-Indies, *viz.* almonds; brought thither from Lar, and growing in the deſarts of Arabia.

Cacao, fifteen of theſe are eſteemed equivalent to a Spaniſh rial, or ſeven pence ſterling. See Cacao.

Maiſe has ceaſed to be a common money ſince the diſcovery of America by the Europeans.

Almonds are chiefly uſed where the cauris are not current. As the year proves more or leſs favourable to this fruit, the value of the money is higher or lower: in a common year, forty almonds are ſet againſt a peſcha, or halfpeny ſterling; which brings each almond to $\frac{1}{20}$ of a farthing.

Antient Coins are thoſe chiefly which have been current among the Greeks, Jews and Romans.

For Jewiſh Coins, *their Values and Proportion ſtand thus:*

					l.	*s.*	*d.* Ster.
Gerah					00	00	1 $\frac{43}{160}$
10	Bekah				00	01	1 $\frac{11}{16}$
20	2	Shekel			00	02	3 $\frac{3}{8}$
1200	120	50	Maneh Mina Hebraica		05	14	0 $\frac{3}{4}$
60000	6000	3000	60	Talent	342	03	9
Solidus aureus, or ſextula, worth					00	12	0 $\frac{1}{2}$
Siclus aureus, worth					1	16	6
A talent of gold, worth					5475	00	0

Value and Proportion of the antient Grecian Coins.

											s.	d.	qrs. Sterl.
										Lepton	0	0	0 $\frac{31}{336}$
7										Chalcus	0	0	0 $\frac{31}{48}$
14	2									Dichalcus	0	0	1 $\frac{7}{24}$
28	4	2								Hemiobolium	0	0	2 $\frac{7}{12}$
56	8	4	2							Obolus	0	1	1 $\frac{1}{6}$
112	16	8	4	2						Diobolum	0	2	2 $\frac{1}{3}$
224	32	16	8	4	2					Tetrobolum	0	5	0 $\frac{2}{3}$
336	48	24	12	6	3	$1\frac{1}{2}$				Drachma	0	7	3
662	96	48	24	12	6	3	2			Didrachmon	1	3	2
1324	112	96	48	24	12	6	4	2		Tetradrach. ſtater	2	7	0
1660	384	120	60	30	15	$7\frac{1}{2}$	5	$2\frac{1}{2}$	$1\frac{1}{4}$	Pentadrach.	3	2	3

Note, Of theſe the drachma, didrachm, &c. were of ſilver, the reſt for the moſt part of braſs. The other parts, as tridrachm, triobolus, &c. were ſometimes coined.

Note alſo, the drachma is here, with the generality of authors, ſuppoſed equal to the denarius: though there is reaſon to believe, the drachma was ſomewhat the weightier. See Drachma, and Denarius.

	l.	s.	d. Sterl.
The Grecian gold *coin* was the ſtater aureus, weighing two Attic drachms, or half of the ſtater argenteus; and exchanging uſually for 25 Attic drachms of ſilver; in our money — — —	0	16	1 $\frac{3}{3}$
According to our proportion of gold to ſilver — — —	1	00	9
There were likewiſe the ſtater Cyzicenus, exchanging for 28 Attic drachms, or	0	18	1

Stater Philippicus, and ſtater Alexandrinus, of the ſame value.

	l.	s.	d.
Stater Daricus, according to Joſephus, worth 50 Attic drachms, or	1	12	3 $\frac{1}{2}$

Stater Crœſius, of the ſame value.

Value and Proportion of the Roman Coins.

						s.	d.	qrs. Sterl.
					Teruncius	0	0	0 $\frac{775}{1000}$
2					Semibella	0	0	1 $\frac{55}{100}$
4	2				Libella As	0	0	3 $\frac{1}{10}$
10	5	$2\frac{1}{2}$			Seſtertius	0	1	3 $\frac{3}{4}$
20	10	5	2		Quinarius Victoriatus	0	3	3 $\frac{1}{2}$
40	20	10	4	2	Denarius	0	7	3

Note, Of theſe the denarius, victoriatus, ſeſtertius, and ſometmes the as, were of ſilver, the reſt of braſs.

There were ſometimes alſo coined of braſs the triens, ſextans, uncia, ſextula, and dupondius.

	l.	s.	d. Ster.
The Roman gold *coin* was the aureus, which weighed generally double the denarius; the value of which, according to the firſt proportion of coinage, mentioned by Pliny, was — — —	1	4	3 $\frac{3}{4}$
According to the proportion that obtains now amongſt us, worth — — —	1	0	9
According to the decuple proportion, mentioned by Livy and Julius Pollux, worth — — —	0	12	11
According to the proportion mentioned by Tacitus, and which afterwards obtained, whereby the aureus exchanged for 25 denarii, its value — —	0	16	1 $\frac{3}{4}$

Coin, in architecture, a kind of dye, cut diagonal-wiſe, after the manner of the flight of a ſtaircaſe; ſerving at bottom to ſupport columns in a level; and at top to correct the inclination of an entablature, ſupporting a vault.

Theſe *coins* have alſo the ſame effect with round baluſters, which are not inclined according to any flight.

Coin is alſo uſed for a ſolid angle, compoſed of two ſurfaces inclined towards each other; whether that angle be exterior, as the *coin* of a wall, a tree, &c. or interior, as the *coin* of a chamber, or chimney: from the word *cuneus*, wedge. See Quoin.

COINAGE, or **Coining**, the art, or act, of making money.

Coining is either performed by the hammer, or the mill.—The firſt method is now little uſed in Europe, eſpecially in England, France, &c. though the only one known till the year 1553. when a new machine, or *coining* mill, was invented by an engraver, one Antoine Brucher, was firſt tried in the French king's palace at Paris, for the *coining* of counters: though ſome attribute the invention of the mill to Varin, a famous engraver, who, in reality, was no more than an improver of it; and others to Aubry Olivier, who had only the inſpection of it.

The mill has met with various fate ſince it firſt invention; being now uſed, and again laid by, and the hammer reſumed: but it has at length got that footing, by the neatneſs and perfection of the ſpecies ſtruck with it, that there appears no great probability of its ever being again diſuſed. See Mill.

In either kind of *coining*, the pieces of metal are ſtamped, or ſtruck with a kind of punchions or dyes, wherein are engraven the prince's effigies, with the arms, legend, &c. The manner of preparing and cutting of which, ſee under Engraving.

The firſt operations in *coining* are the mixing, and melting of the metal.—For the firſt, it is to be obſerved, that there are no ſpecies coined of pure gold or ſilver, but always a quantity of alloy of copper is mixed with them: the reaſons are partly the ſcarcity of thoſe two metals; partly the neceſſity of making them harder by ſome foreign admixture; and partly to defray the expences of *coining*.

Now there are two kinds of alloying, or mixing: the firſt where the gold or ſilver has not been uſed for money before: the other, where ſeveral kinds of ſpecies, or ingots of different ſtandards and values, are to be melted down into a new money. The proportioning of the alloy with the fine metal is eaſy in the firſt caſe; in the other it is more difficult: the arithmeticians make a long doctrine of it, which ſee under Alligation.

Yet it is readily effected by the following method, taken from the anonymous author of the treatiſe at the end of that of Mr. Boiſard; *viz.*

Write down the ſeveral matters to be melted, their quality, weight, and fineneſs, in two diſtinct articles; the one containing thoſe above the ſtandard, the other thoſe under it: by caſting up the firſt, you ſhall have the exceſs; by the latter, the defect. Then comparing the two ſums, you will find, by ſubtraction, how much alloy muſt be added to bring the ſeveral matters to the fineneſs required.

For the melting, if the metal be gold, it is done in earthen crucibles; if ſilver or copper, in pots or crucibles of iron.

There are two kinds of furnaces proper for the melting of the metals; thoſe with only a draught of wind, and thoſe with bellows. See each explained under the article Furnace.

When the gold and ſilver are in balneo, *i. e.* are intirely melted, they are to be ſtirred and brewed together; the ſilver and copper with an iron ſtirrer, the gold with one of baked earth. In this ſtate they are poured into moulds or frames, for caſting them into long flat bars: the method of doing which, is exactly the ſame with that uſed by the founders, in ſand; both with regard to the frame, the manner of working the earth, and that of ranging the models or patterns.

The models are flat plates of copper, about fifteen inches long, and nearly of the thickneſs of the ſpecies to be ſtruck. In each mould are placed eight of theſe to make bars or plates, ten for half guineas, five for crowns, &c. and in proportion for copper; all the difference between caſting the bars of gold, and thoſe of the other metals, conſiſting in this; that the latter are taken out of the crucibles with ladles, and poured into the aperture of the mould; and that for gold, the pot or crucible is taken off the fire with a kind of tongs, and thence poured into the mould.

Thus far the proceſs is the ſame, in *coining* either with the mill, or the hammer: when the bars are taken out of the moulds, the difference commences; ſo that here the article of *coining* divides into two branches.

Coining *by the Mill, or milled Money.*—The bars or pla being taken out of the moulds, and ſcraped, and bruſhed, ar paſſed ſeveral times through a mill, to flatten them further and bring them to the juſt thickneſs of the ſpecies to b coined; with this difference, however, that the plates of gol are heated again in a furnace, and quenched in water, befor they undergo the mill; which ſoftens and renders them mo ductile: whereas thoſe of ſilver paſs the mill juſt as th are, without any heating; and when afterwards they a heated, they are left to cool again of themſelves, withou water.

The plates, whether gold, ſilver, or copper, thus reduced near as poſſible to their thickneſs, are cut into round piec called *blanks* or *planchets*, near the ſize of the intended ſpec with a cutting inſtrument faſtened to the lower extremity an arbor, whoſe upper end is formed into a ſcrew; whic being turned by an iron handle, turns the arbor, and lets t ſteel, well ſharpened, in form of a punch-cutter, fall on t plates; and thus is a piece punched out.—See the cutt inſtrument repreſented in Tab. *Miſcellany*, fig. 3.

Theſe pieces are now given to be adjuſted, and brought filing, or raſping, to the weight of the ſtandard whereby th are to be regulated; and what remains of the plate betw the circles is melted again, under the denomination of *ſ* The pieces are adjuſted in a fine balance; and thoſe which p too light, are ſeparated from thoſe too heavy; the firſt to melted again, and the ſecond to be filed down. For it may be obſerved, that the mill through which the plates are paſſed, can never be ſo juſt, but there will be ſome inequality, whence will ariſe a difference in the blanks. And this inequality, indeed, may be owing to the quality of the matter, as well as of the machine; ſome parts being more porous than others.

When the blanks are adjuſted, they are carried to the blanching, or whitening-houſe, *i. e.* the place where the gold blanks have their colour given them, and the ſilver ones are whitened; which is done by heating them in the furnace, and, when taken out and cooled, boiling them ſucceſſively in two copper veſſels, with water, common ſalt, and tartar; and, after that, ſcouring them well with ſand, and waſhing them with common water, drying them over a wood fire, in a copper ſieve, wherein they are put when taken out of the boilers.

The whitening, or blanching, was formerly performed very differently from what it now is: and as the antient method is ſtill in uſe among goldſmiths, and other workmen who uſe gold and ſilver, we have made a diſtinct article of it. See BLANCHING.

Formerly the planchets, as ſoon as blanched, were carried to the preſs, to be ſtruck, and receive their impreſſions; but now they are firſt marked with letters or graining, on the edges, to prevent the clipping and paring of the ſpecies; which is one of the ways wherein the antient money uſed to be damaged.

The machine uſed to mark the edges is very ſimple, yet ingenious; it conſiſts of two plates of ſteel, in form of rulers, about the thickneſs of a line, on which the legend or edging is engraven, half on the one, and half on the other. One of theſe plates is immoveable, and ſtrongly bound with ſcrews to a copper plate; and that again to a ſtrong board, or table: the other is moveable, and ſlides on the copper plate, by means of a handle, and a wheel, or pinion of iron, the teeth whereof catch in a kind of other teeth, on the ſurface of the ſliding plate. Now, the planchet, being placed horizontally between theſe two plates, is carried along by the motion of the moveable one; ſo, as by that time it has made half a turn, it is found marked all round.

This machine is ſo eaſy, that a ſingle man is able to mark twenty thouſand planchets in a day: Savang pretends it was invented by the Sieur Caſtagin, engineer to the French king, and firſt uſed in 1685. But it is certain we had the art of lettering the edges in England long before that time; witneſs the crowns and half-crowns of Oliver Cromwell ſtruck in 1658. which for beauty and perfection far exceed any French *coins* we have ever ſeen.

Laſtly, the planchets, being thus edged, are to be ſtamped, *i. e.* their impreſſion is to be given them in a ſort of mill, or preſs, by the French called a *balancier*, invented towards the latter-end of the ſixteenth century. See its figure in *Tab. Miſcellany, Fig.* 4.

Its chief parts are a beam, ſcrew, arbor, *&c.* all contained in the body of the machine, except the firſt, which is a long iron bar, with a heavy ball of lead at each end, and rings, to which are faſtened cords which give it motion: this is placed horizontally over the body of the machine. In the middle of the beam is faſtened a ſcrew, which, by turning the beam, ſerves to preſs the arbor underneath it; to the lower extremity of which arbor, placed perpendicularly, is faſtened the dye or matrice, of the reverſe, or arm ſide, in a kind of box, or caſe, wherein it is retained by ſcrews: and under this is a box, or caſe, containing the dye of the image-ſide, firmly faſtened to the lower part of the engine. See MATRICE.

Now when a planchet is to be ſtamped, it is laid on the image-matrice, upon which two men draw, each on his ſide, one of the ropes of the beam, and turn the ſcrew faſtened in it; which by this motion lowers the arbor to which the dye of the arms is faſtened: by which means, the metal being in the middle, at once receives an impreſſion on each ſide, from either dye. As to the preſs formerly uſed; it has all the eſſential parts of a balancier, except the beam, which is here, as it were, divided, and only drawn one way.

The blanks having now all their marks and impreſſions, both on the edges and faces, become money; but they have not currency till they have been weighed and examined.

the COINING *of medals*, the proceſs is the ſame, in effect, with that of money: the principal difference conſiſts in this, hat money, having but a ſmall relievo, receives its impreſſion t a ſingle ſtroke of the engine; whereas, for medals, the eight of their relievo makes it neceſſary, that the ſtroke be epeated ſeveral times: to this end the piece is taken out from etween the dyes, heated, and returned again; which proeſs, in medallions, and large medals, is ſometimes repeated fteen or twenty times, before the full impreſſion be given; are being taken every time the planchet is removed, to take ff the ſuperfluous metal ſtretched beyond the circumference, ith a file.

Add to this, that medallions, and medals of high relievo, by aſon of the difficulty of ſtamping them in the balancier, or eſs, are uſually firſt caſt or moulded in ſand, like other works f that kind, and are only put in the preſs to perfect them; reaſon the ſand does not leave them clean, ſmooth, and ac- rate enough. Medals, therefore, receive their form and preſſion by degrees; money all at once.

The rule whereby they judge the metal to be ſufficiently ſtamped, is, when feeling it with the hand, it is found firm, and not to be ſhaken, as filling the dye equally everywhere.

COINING *with the hammer, or hammered money*.—In this method of making money, the bars or plates of gold, ſilver, or copper, being taken out of the moulds, or frames, as above, are heated and ſtretched by beating them on the anvil: when ſufficiently beaten, they are cut into pieces; which being again heated, flatted, and further ſtretched with the hammer, are adjuſted by cutting off the angles with ſheers: thus, by cutting and rounding them, they are reduced to the weight of the ſtandard: and their roundneſs finiſhed with another hammer, which beats down all the points and angles ſtill remaining on the edges. In this manner they are brought to the ſize of the ſpecies to be coined.

In this ſtate the pieces become blanks or planchets, and are carried to the blanching-houſe; where they undergo the ſame preparation as the milled money already deſcribed, and are given to the minter to ſtamp them with the hammer.

For this laſt operation, which finiſhes the money, they uſe two punchions, or matrices; the one called the *pile*, and the other the *truſs*, or *quiver*; each engraven dent-wiſe; the pile bearing the arms, and the truſs the image, or croſs; both their legend, date, *&c.*

The pile, which is about eight inches high, has a kind of talon or heel in the middle, and ends in a point: which figure it had, for the ſake of being more eaſily ſunk, and more firmly faſtened to the block whereon the money is ſtruck.

The minter, then, laying the planchet horizontally on the pile, and covering it with the truſs, which he holds ſteadily in his left hand, gives ſeveral ſmart blows on the truſs with an iron mallet held in the right; more or leſs, as the graving of the dyes is more or leſs deep. If after theſe firſt ſtrokes, the planchet be not ſufficiently ſtamped, it is returned again between the matrices, exactly in its former poſition, and the ſtrokes are repeated till the impreſſion be perfect.

Thus is the *coinage* finiſhed, and the planchets converted into money; which, after they have been examined as to their weight, become current.

Engliſh COINAGE.—Since the invention of milling money (the author whereof is not agreed on, nor even the country, where it took its riſe, though the French lay claim to both) it has been imitated by ſeveral other nations; but by none with ſucceſs equal to that of the Engliſh, who carried it to the utmoſt perfection; both by the beauty of their graving, and by their inventing the impreſſions on the edges, that admirable expedient, for preventing the alteration of the ſpecies, abovementioned.

Till the time of K. Charles II. the Engliſh money was generally ſtruck with the hammer, as that of other nations; and, in effect, it is but very late, *viz.* in the reign of king William III. that the hammered ſpecies ceaſed to be current. Ere they were put down, the Engliſh money was in a woful condition; having been filed and clipped by natives as well as foreigners, eſpecially the Dutch, ſo as to be ſcarce left of half the value: the retrieving this diſtreſſed ſtate of the Engliſh money is looked upon as one of the glories of king William's reign; for which we are obliged, in good meaſure, to the happy conduct of the late earl of Halifax.

The *coinage* of England is now performed wholly in the Tower of London; where there is a corporation for it under the title of the *mint*.

Formerly there were here, as there are ſtill in other countries, what we call the *rights of ſeignorage and braſſage*; but ſince the eighteenth year of king Charles II. there is nothing taken, either for the king, or for the expences of *coining*; it having been ſettled by act of parliament, that all money ſhould be ſtruck at the public expence: ſo that weight is returned for weight, to all perſons who carry their gold and ſilver to the Tower.

The ſpecies coined in England are eſteemed contraband goods, and not to be exported; all foreign ſpecies are allowed by act of parliament, made in 1673. to be ſent out of the realm; as well as gold and ſilver in bars, ingots, duſt, *&c.* Indeed, in the ſeſſion of parliament in 1718. endeavours were made to put a ſtop to this licence, which drains England of its richeſt metals; but in vain; the parliament having laid aſide the bill, without coming to any reſolution.

The Spaniſh COINAGE is eſteemed one of the leaſt perfect in Europe: it is ſettled at Sevil and Segovia, the only cities where gold and ſilver are ſtruck. It is true, there are brought from Mexico, Peru, and other provinces of the Spaniſh America, ſuch vaſt quantities of pieces of eight, and other ſpecies, both of gold and ſilver, that, in this reſpect, it muſt be owned, there is no ſtate in the world where ſo much money is coined, as in that of the king of Spain.

Muſcovite COINAGE.—The Czar ſtrikes no money but ſilver, and that only in the cities of Moſcow, Novogrod, Twere, and Pleſcou; to which may be now added Peterſburg, the favourite city of her Czarian majeſty. The *coinage* of each of theſe cities is let out to farm, and makes part of the royal revenue.

Perſian COINAGE.—All the money made in Perſia is ſtruck with the hammer: and the ſame may be underſtood of the reſt of Aſia and America, and the coaſts of Africa, and even

Muſcovy; the invention of the mill not being yet gone out of Europe, nor even eſtabliſhed in every part of it. The king's duty, in Perſia, is ſeven and a half *per cent.* for all the moneys coined; which are now reduced to ſilver and copper: there being no gold coined there, except a kind of medals at the acceſſion of a new ſophi.

The Coinage *of Fez and Tunis* is not under any diſcipline; each goldſmith, Jew, and even every private perſon, undertaking it at pleaſure: which renders their money exceedingly bad, and their commerce very unſafe.

COITION, the intercourſe between male and female in the act of generation.

It is obſerved that frogs are forty days in the act of *Coition.* Bartholine, &c. relate, that butterflies make 130 vibrations of the wings in one act of *Coition.*

Coition is alſo ſometimes uſed for that mutual attraction, or tendency toward each other, which is found between iron and the magnet.

COLARBASIANS, or Colorbasians, a ſect of heretics in the ſecond century; ſo called from their leader Colarbaſus, a diſciple of Valentinus; who, with Marcus, another diſciple of the ſame maſter, maintained the whole plenitude, and perfection, of truth and religion, to be contained in the Greek alphabet; and that it was upon this account that Jeſus Chriſt was called the *alpha* and *omega.*

COLARIN in architecture, the little friſe of the capital of the Doric column; placed between the aſtragal, and the annulets: called by Vitruvius, *Hypotrachelium*; by the French alſo *Gorgerin.* See Frize, Hypotrachelion, &c.

Colarin is alſo uſed for the orlo, or ring, a-top of the ſhaft of the column, next the capital; called alſo the *cincture.*

COLATURE. See the article Filtration.

COLCHESTER-PLOUGH. See the article Plough.

COLCOTHAR, in natural hiſtory, &c.—There are two kinds of *Colcothar, natural,* and *factitious.*

Natural Colcothar, otherwiſe called *chalcitis,* is a red vitriol, brought from Germany; formed from the common green vitriol, calcined naturally by ſome ſubterraneous fire.

Artificial Colcothar is a green vitriol, calcined a long time by an intenſe fire; and by that means reduced to the redneſs of blood.

Common ſulphur being mixed with iron filings, and expoſed to the air, the two unite, and form a *Colcothar* perfectly like that procured by calcination from vitriol. *Vid.* Hiſt. Acad. R. Scienc. *an.* 1730. p. 71.

Colcothar *Vitrioli,* is alſo uſed for the caput mortuum, or remains left at the bottom of the veſſel, after the diſtillation of vitriol.

COLD, ſomething devoid of heat, or which contains in it no particles of fire.

This definition is agreeable to the ſentiments of moſt of the modern philoſophers, who make *cold* a mere negative term; and ſuppoſe the thing to conſiſt in a privation, or diminution of heat. Others define *cold,* much on the ſame principle, to be that ſtate of the minute parts of a body, wherein they are more ſlowly and faintly agitated than thoſe of the organs of feeling.—In which ſenſe, *cold* is a mere term of relation; and hence the ſame body becomes liable to be perceived hot or cold, as its particles are in a greater or leſs degree of motion than thoſe of the ſenſible organs.

Heat is ſuppoſed to conſiſt in a particular motion of the parts of the hot body; and hence the nature of *cold,* which is its oppoſite, is eaſily deducible: for *cold,* we find, extinguiſhes, or rather abates heat; whence it ſeems to follow, that thoſe bodies are *cold,* which check and reſtrain the motion of the particles wherein heat conſiſts.

Now, there are three kinds of bodies which may do this; *viz.* either thoſe whoſe particles are perfectly at reſt; or thoſe whoſe particles are indeed agitated, but that leſs violently than thoſe of the hot body to which they are applied: or, laſtly, thoſe whoſe particles have a motion proper for exciting the ſenſation of heat, but which move with a different determination; ſo as to retain and change the motion of the particles of the organ.

Hence, there ariſe three different kinds of *cold,* or cold bodies: the firſt is, that *cold* common to all hard bodies, which conſiſts in the reſt of their parts. The ſecond is that which ariſes on plunging any part of our body in water; which conſiſts in this, that the parts of our præcordia, being more briſkly agitated than thoſe of the fluid, communicate part of their motion to it. The third, the *cold* felt on collecting even warm air with a fan, or in blowing hot breath out of our mouth, with the lips cloſe ſhut; which conſiſts in this, that the direct motion of the particles of air does, in ſome meaſure, change and rebate the motion and determination of the parts of the body: and hence it is, that a *cold* body cannot cool another without heating itſelf. Hence alſo it is, that the more parts of a frigid body are at reſt, the more muſt the particles of a warm body, applied to heat them, loſe of their motion, and by conſequence of their heat. Thus a marble, having more quieſcent parts than wood, which is full of pores and interſtices, is felt colder than wood. Hence alſo we ſee why air, near marble and other denſe bodies, feels ſomewhat colder than in other places.

On this principle, the two latter kinds of *cold* appear ſomewhat more than privations: the particles inducing the *cold,* may be eſteemed real frigorific corpuſcles; and the coldneſs be deemed a real quality as well as hotneſs.

Theſe particles do not only check the agitation of thoſe continually diffuſed from the inner parts of the animal to the outer; but, having an elaſtic power, they bend and hang about the filaments of the body, pinch and ſqueeze them; and hence that acute pungent ſenſation called *cold.*

That *cold* is more than a mere relation, or compariſon, is evident from its having real and poſitive effects; ſuch as freezing, congelation, condenſation, rarefaction, burſting, &c. See Freezing, &c.

Dr. Clarke takes *cold* to be owing to certain nitrous, and other ſaline particles, endued with particular figures proper to produce ſuch effects. Hence, ſal ammoniac, ſalt-petre, or ſalt of urine, and many other volatile and alkalizate ſalts, mixed with water, increaſe its degree of *cold* very ſenſibly. Hence alſo that popular obſervation, that *cold* prevents corruption; which, however, muſt not be admitted without an exception: ſince, if a hard, porous body have its interſtices filled with water, and this be too much dilated by freezing, the including body will be burſt. And thus it is, that *cold* proves deſtructive to the parts of ſome plants.

Potential Cold. See the article Potential.

Cold *Baths.* See the article Baths.

Cold *Diamargariton.* See the article Diamargariton.

Cold *Diatragacanth.* See the article Diatragacanth.

Cold *Diſtillations.* See the article Distillation.

COLIC, in medicine, a ſevere gnawing pain, felt in the lower venter; ſo called, becauſe the ordinary ſeat of the diſorder was antiently ſuppoſed to be in the inteſtine colon.

Phyſicians uſually diſtinguiſh three kinds of *colic,* the *bilious, windy,* and *nephritic.*—The *bilious* Colic has its riſe from certain ſharp, bilious, ſtimulating humours, which, being diffuſed through the inteſtines, vellicate their fibres, and occaſion a ſenſation of pain: though Willis takes the part here principally affected to be the meſentery.

Dr. Sydenham obſerves, that the *bilious colic* uſually attacks people about the beginning of ſummer; that it is generally attended with a vomiting of bilious green liquor; that the patient complains of exceſſive heat, great gripings, faintneſs, &c. and that if it be not ſoon remedied, it is apt to turn into the iliac paſſion.

Baglivi notes, that if the patient ſweat much, and be much enfeebled; the diſeaſe is apt to degenerate into a palſy. The cure, he ſays, depends on bleeding, gentle cathartics, and clyſters; and if it ariſe from a crapula, an emetic is to proceed: after which, the cure is to be completed with proper anodynes.

Wind Colic, is a vague pain, never ſtaying in any fixed place; being produced by windy vapours, which ſwell and diſtend the inteſtines they are incloſed in.

Nephritic Colic is that felt particularly in the reins, whence it has its name.

It uſually has its riſe from ſome ſtone, or gravel detached from the kidneys, and fallen into the pelvis. The pareira brav is ſaid to be a ſpecific for *nephritic caſes.*

S. Manouchi, a Venetian phyſician at the court of the gre Mogul, gives the following remedy as infallible in *nephriti* caſes: an iron ring, about an inch and half in diameter, an thick in proportion, is to be heated red-hot; then, laying th patient on his back, the red-hot ring is to be applied to hi navel, ſo as that the navel be in the centre of the ring: th patient will preſently feel the pain, which will occaſion him t ſhrink back very ſuddenly; and the ſudden revulſion thus oc caſioned in the lower venter, will, in a little time, diſſipa all his pains. The ſame author adds, that he can warrant th ſucceſs of this odd remedy.

In *colics* ariſing from flatulencies, carminative waters, oi aromatics, &c. are always to be added to the compoſitions and in *nephritic colics,* beſides emollient clyſters, ſolutions manna, cremor tartari, &c. in whey, &c. and proper ole ginous mixtures are to be exhibited to relax the fibres; af which, proper anodynes take place.

Some, particularly Sydenham, mention a *nervous colic,* mo ly incident to hyſteric and hypochondriac perſons; but t appears only a ſpecies of the *windy colic.*

Baglivi recommends camomile as an antidote againſt the co from what cauſe ſoever it ariſe. Where the diſeaſe is ob nate, much riding has been found of eſpecial ſervice.

Supplement, article Colic.

COLIR, an officer in China, who has an eye over what p in every court, or tribunal in the empire; and though hi ſelf not of the number, yet is aſſiſting at all aſſemblies, proceedings whereof are communicated to him.

He is properly what we may call an *inſpector*: he gives cret intelligences to the court; and even, on occaſion, cuſes the mandarins of their faults openly; and that only of faults in their public offices, but even in private To keep him impartial, he is kept independent; by ing the poſt for life. Theſe *Colirs* make even the prince the blood tremble.

COLISEUM *, or Colisæum, in the antient architecture, an oval amphitheatre, built at Rome by Veſpaſian, in the place where ſtood the baſon of Nero's gilded houſe.

* The word is formed from *coloſæum*, on account of the coloſſus of Nero, that ſtood near it; or, according to Nardini, from the Italian *coliſco*.

In this were placed ſtatues, repreſenting all the provinces of the empire; in the middle whereof ſtood that of Rome, holding a golden apple in her hand.—The ſame term, *coliſeum*, is alſo given to another amphitheatre of the emperor Severus.

In theſe *coliſea* were repreſented games, and combats of men and wild beaſts; but there are now little remaining of either of them; time and war having reduced them to ruins.

COLLAR, an ornament, worn by the knights of ſeveral military orders, hanging over their ſhoulder, on the mantle; and its figure drawn around their armories.

The *collar* ordinarily conſiſts of a chain of gold, enamelled; frequently ſet with cyphers, or other devices, and having the badge of the order ſuſpended at bottom.

The *collar* of the order of the garter conſiſts of SS, with roſes enamelled red, within a garter enamelled blue, the George at the bottom.

Maximilian is ſaid to have been the firſt of the emperors who put the *collar* of an order around his arms, upon his being made chief of that of the golden fleece.

Knights of the Collar, a military order in the republic of Venice; called alſo the *order of St.* Mark, or *the medal.*

It is the doge and the ſenate that confer this order: the knights bear no particular habit, only the *collar*, or chain, which the doge puts around the neck; with a medal, whereon is repreſented the winged lion of the republic.

COLLATERAL *, in geography, any thing, place, country, *&c.* ſituate by the ſide of another.

* The word is compounded of *con*, with, and *latus*, ſide.

Collateral *Points*, in coſmography, the intermediate points; or thoſe between the cardinal points. The *collateral points* are either *primary*, which are thoſe removed by an equal angle on each ſide from two cardinal points: or *ſecondary*; which, again, are either thoſe of the firſt, or ſecond order. —The firſt are thoſe equally diſtant from a cardinal and firſt primary; the latter equally diſtant from ſome cardinal or primary, and firſt ſecondary.

Collateral *Winds*, are thoſe blowing from *collateral* points. See Wind.

Such are the north-eaſt, ſouth-eaſt, north-weſt, ſouth-weſt, *&c.* with their ſubdiviſions.

Collateral, in matters of genealogy, is underſtood of thoſe relations which proceed from the ſame ſtock, but not in the ſame line of aſcendants, or deſcendants; but being, as it were, aſide of each other.

Thus, uncles, aunts, nephews, nieces, and couſins, are *collaterals*, or in the *collateral* line. Thoſe in a higher degree, and nearer the common root, repreſent a kind of paternity with regard to thoſe more remote; but there is a kind of equality between *collaterals* in the ſame degree.

Collateral deſcent ſtands in oppoſition to *direct deſcent* to poſterity; the former paſſing to brothers children, but the latter only from father to ſon.

Collateral *Aſſurance*, in law, is a bond, made over, and beyond the deed itſelf, for the performance of covenants between man and man; thus called, as being external, and without the nature and eſſence of the covenant.

Crompton ſays, that to be ſubject to the feeding of the king's deer, is *collateral* to the ſoil within the foreſt. It may be added, that liberty to pitch booths in a fair, or another man's ground, is *collateral* to the ground.

Collateral *Condition*. See the article Condition.

Collateralis *Penis*, in anatomy, a muſcle, otherwiſe called *erigens*, or *erector penis*. See Erector.

COLLATION, in canon law, the conferring, or beſtowing of a benefice by a biſhop, who has it in his own gift, or patronage.

Collation differs from *inſtitution*, in that the latter is performed by the biſhop, at the motion or preſentation of another: and the former on his own motion.

Collation alſo differs from *preſentation*, in that the latter is properly the act of a patron, offering his clerk to the biſhop, to be inſtituted into a benefice; whereas the former is the act of the biſhop himſelf. The *collator* can never confer a benefice on himſelf.

In the Romiſh church, the pope is the collator of all benefices, even elective ones, by prevention; ſetting aſide conſiſtorial benefices, and thoſe in the nomination of lay-patrons. Prelates and biſhops are called *ordinaries*, or ordinary collators.

If the ordinary collator neglect to exerciſe his right for ſix months, the ſuperior collator may collate by devolution. Thus, if the biſhop neglect, the metropolitan may confer; then the primate; and ſo on from degree to degree.

In France, the king is the collator of all the benefices whereof he is patron, excepting conſiſtorial ones, to which he has only the nomination, and the pope, by virtue of the concordat, is obliged to confer on whomſoever the king nominates. For the reſt, he is direct and abſolute collator; and may confer them, by virtue of a kind of prieſthood annexed to the royalty.

Other lay-patrons have ſeldom more than a mere preſentation; the *collation* properly belonging to the biſhop: yet there are ſome abbots who have the full right of *collation*.

The canoniſts reckon two kinds of *collation*; the one free and voluntary, the other neceſſary. The firſt depending on the mere will of the collator, who may chooſe whom he pleaſes to fill the vacancy. In the latter, the collator is not at his liberty: which is the caſe where a benefice has been reſigned, or changed, and that reſignation or permutation allowed of by the ſuperior; for here the collator is obliged to grant the proviſion to the reſignatory, or compermutant.

It is a maxim in the new canon law, *collationes ſunt in fructibus*; 'Thoſe who have the fruits of a benefice, have the 'collation.' But in that caſe, the word *collation* is uſed for preſentation.

Collation, in common law, is the compariſon, or preſentation of a copy to its original, to ſee whether or no it be conformable: or the report, or act of the officer who made the compariſon.

A collated act is equivalent to an original; provided all the parties concerned were preſent at the *collation*.

Collation is alſo uſed among the Romaniſts for the meal or repaſt made on a faſt-day, in lieu of a ſupper.

Only fruits are allowed in a *collation*: F. Lobineau obſerves, that antiently there was not allowed even bread in the *collations* in lent: nor any thing beſide a few comfits, and dried herbs, and fruits: which cuſtom, he adds, obtained till the year 1513.

Cardinal Humbert obſerves further, that in the middle of the eleventh century, there were no *collations* at all allowed in the Latin church in the time of lent; and that the cuſtom of *collations* was borrowed from the Greeks; who themſelves did not take it up till about the eleventh century.

Collation is alſo popularly uſed for a repaſt between dinner and ſupper.

The word *collation*, in this ſenſe, DuCange derives from *collocutio*, conference; and maintains, that originally, *collation* was only a conference, or converſation on ſubjects of piety, held on faſt-days in monaſteries; but that, by degrees, the cuſtom was introduced of bringing in a few refreſhments: and that by the exceſſes to which thoſe ſober repaſts were at length carried, the name of the abuſe was retained, but that of the thing loſt.

Collationis *forma*. See the article Contra.

COLLEAGUE, a companion, partner, or aſſociate in the ſame office, or magiſtrature. See Adjunct, and Associate.

The word is particularly uſed in ſpeaking of the Roman conſuls, and emperors.

COLLECT, Collection, a voluntary gathering of money, for ſome pious or charitable purpoſe.

Some ſay, the name *collect*, or *collection*, was uſed, by reaſon thoſe gatherings were antiently made on the days of *collects*, and in *collects*, *i. e.* in aſſemblies of Chriſtians; but it was more probably, *quia colligebatur pecunia*.

Collect is ſometimes alſo uſed for a tax, or impoſition, raiſed by a prince for any pious deſign.—Thus, hiſtories ſay, that in 1166, the king of England, coming into Normandy, appointed a *collect* for the relief of the Holy Land, at the deſire, and after the example, of the king of France.

Collect, in the liturgy of the church of England, and the maſs of the Romaniſts, denotes a prayer accommodated to any particular day, occaſion, or the like.

In the general, all the prayers in each office are called *collects*; either becauſe the prieſt ſpeaks in the name of the whole aſſembly, whoſe ſentiments and deſires he ſums up by the word *oremus*, let us pray, as is obſerved by pope Innocent III. or, becauſe thoſe prayers are offered when the people are aſſembled together; which is the opinion of Pamelius on Tertullian.

The congregation itſelf is in ſome antient authors called *collect*.

The popes Gelaſius and Gregory are ſaid to have been the firſt who eſtabliſhed *collects*. Deſpenſe, a doctor of the faculty of Paris, has an expreſs treatiſe on *collects*, their origin, antiquity, authors, *&c.*

COLLECTIVE, in grammar, a term applied to a word that expreſſes a multitude; though itſelf be ſingular.

Thus, troop, company, and army, are nouns *collective*.

COLLECTOR, a perſon nominated by the commiſſioners of any duty, the inhabitants of a pariſh, or the like, to raiſe or gather any tax, *&c.*

COLLEGATARY, in the civil law, a perſon to whom is left a legacy in common with one or more other perſons.

If the thing be bequeathed *in ſolido*, the portion of a deceaſed *collegatary* accrues to the reſt.

COLLEGE, an aſſemblage of ſeveral bodies, or ſocieties; or, even of ſeveral perſons into one ſociety.

College, *collegium*, among the Romans, was uſed for an aſſemblage of ſeveral perſons employed in the ſame functions, and as it were bound together to act, or ſerve in concert. It ſerved indifferently for thoſe employed in the offices of religion, of government, the liberal arts, and even mechanical arts, or trades: ſo that the word properly ſignified what we call a *corporation*, or *company*.

In the Roman empire, there were not only the *college of augurs*, and the *college of capitolini*; *i.e.* of thoſe who had the ſuperintendence of the capitoline games; but alſo *colleges* of artificers, *collegia artificum*; *college* of carpenters, *fabricorum*, or *fabrorum tignariorum*; of potters, *figulorum*; of founders, *ærariorum*; the *college* of lockſmiths, *fabrorum ferrariorum*; of engineers for the army, *tignariorum*; of butchers, *laniorum*; of dendrophori, *dendrophororum*; of centonaries, *centonariorum*; of makers of military caſaques, *ſagariorum*; of tent-makers, *tabernaculariorum*; of bakers, *piſtorum*; of muſicians, *tibicinum*, *&c.*

Plutarch obſerves, that it was Numa who firſt divided the people into *colleges*; which he did, to the end that each conſulting the intereſts of their *college*, whereby they were divided from the citizens of the other *colleges*, they might not enter into any general conſpiracy againſt the public repoſe.

Colleges were diſtinguiſhed from other ſocieties not formed into *colleges* by public authority, in this, that thoſe who compoſed a *college*, were qualified to treat of the common intereſts of their *college*, which was, as it were, a member of the ſtate, and had a common purſe, an agent to negotiate their affairs; ſent deputies to the magiſtrates when they wanted to treat with them; might make ſtatutes and by-laws for the adminiſtration of their *college*, &c.

There are various *colleges* on foot among the moderns, built on the model of thoſe of the antients; as the *three colleges of the empire*, viz. the *college of electors*, *college of princes*, and *college of cities*, &c.

College *of Electors*, is the body of electors, or their deputies, aſſembled in the diet at Ratiſbon. See Elector.

Antiently, the king of Bohemia had no deputy in this *college*; at preſent he has.

College *of Princes*, is the body of princes, or their deputies, at the diet of Ratiſbon.

College *of Cities*, is, in like manner, the body of deputies which the ſeveral imperial cities ſend to the diet.

College *of Cardinals*, or the *ſacred* College, is a body compoſed of the three orders of cardinals, *viz.* cardinal-biſhops, cardinal-prieſts, and cardinal-deacons.

Each order has its dean, or chief. The dean of the cardinal-biſhops is always the biſhop of Oſtia. See Cardinal.

College is alſo uſed for a public place, endowed with certain revenues, where the ſeveral parts of learning, both divine and human, are taught, in ſchools, halls, or claſſes, appointed for that purpoſe.

An aſſemblage of ſeveral of theſe *colleges* conſtitute an univerſity.

The univerſity of Oxford conſiſts of nineteen *colleges*, and ſix halls; that of Cambridge of twelve *colleges*, and four halls; and that of Paris of fifty-four *colleges*, ſuch as they are. In reality, there are but ten where there is *full exerciſe*, as it is called; for the reſt, the author of a late deſcription of Paris ſays it is needleſs to recite their names, ſince there is no teaching in them.

The erection of *colleges* is part of the royal prerogative, and is not to be done without the king's conſent.

Among the Greeks, the lyceum and academy were celebrated *colleges*; the latter of which has given its name to our univerſities, which in Latin are called *academiæ*. With them, the houſe, or apartment of each philoſopher, or rhetor, might be eſteemed a kind of *college* of itſelf.

The Romans came late into the inſtitution of ſuch *colleges*: they had, however, ſeveral, founded by their emperors; eſpecially in Gaul; the chief whereof were thoſe of Marſeilles, Lions, Beſançon, and Bourdeaux.

The Jews, and Egyptians too, have had their *colleges*; the chief of the firſt were thoſe of Jeruſalem, Tiberias, Nardea, Pompodita, Sura, and Babylon: this laſt is ſaid to have been inſtituted by Ezekiel, and to have ſubſiſted in the time of Mahomet.

Colleges of this kind have been generally in the hands of thoſe conſecrated to the offices of religion: the Magi in Perſia, the Gymnoſophiſts in the Indies, and the Druids in Gaul and Britain, had the care of educating youth in the ſciences.

After Chriſtianity became eſtabliſhed, there were almoſt as many *colleges* as monaſteries; Charlemaign, in his capitulars, injoining the monks to inſtruct youth in muſic, grammar, and arithmetic: but, this calling the monks from their ſolitude, and taking up too much of their time, the care of the *colleges* was at length put into the hands of thoſe who had nothing elſe to do.

In the canon law, it is ſaid, three perſons make a *college*, *tres collegium faciunt.*—The *colleges* in London, are,

Sion-College, or the *college* of the London clergy; which has been a religious houſe time out of mind, ſometimes under the denomination of a priory, ſometimes under that of a ſpital, or hoſpital: at its diſſolution under 31 Hen. VIII. it was called Elſyn's *Spital*, from the name of its founder, a mercer, in 1329.

At preſent, it is a compoſition of both, *viz.* a *college* for the clergy of London, who were incorporated in 1631. at the requeſt of Dr. White, under the name of the *Preſident and Fellows of* Sion-College; and an hoſpital for ten poor men, and as many women.

The officers of the corporation are the preſident, two deans, and four aſſiſtants; who are annually choſen from among the rectors and vicars of London; and are ſubject to the viſitation of the biſhop. They have a good library, built and ſtocked by Mr. Simſon, chiefly for the clergy of the city, without excluding other ſtudents on certain terms; and a hall, with chambers for ſtudents, generally filled with the miniſters of the neighbouring pariſhes.

College *of Civilians*, commonly called *Doctors Commons*; a *college* founded by Dr. Harvey, dean of the arches, for the profeſſors of the civil law reſiding in this city; where uſually, likewiſe, reſide the judge of the arches court of Canterbury, judge of the admiralty, of the prerogative court, *&c.* with other *civilians*; who all live, as to diet and lodging, in a collegiate manner, commoning together: whence the appellation of *Doctors Commons*.

Their houſe being conſumed in the great fire, they all reſided at Exeter-houſe in the Strand, till 1672.; when their former houſe was rebuilt, at their own expence, in a very ſplendid manner. To this *college* belong 34 proctors; who make themſelves parties for their clients, manage their cauſes, *&c.*

College *of Phyſicians*, a corporation of phyſicians, in London; who, by ſeveral charters, and acts of parliament of Henry VIII. and his ſucceſſors, have certain privileges, whereby no man, though a graduate in phyſic of any univerſity, may, without licence under the ſaid *college-ſeal*, practiſe phyſic, in, or within ſeven miles of, London; with power to adminiſter oaths, fine and impriſon offenders, in that and ſeveral other particulars: to ſearch the apothecaries ſhops, *&c.* in and about London, to ſee if their drugs, *&c.* be wholſome, and their compoſitions according to the form preſcribed by the ſaid *college* in their diſpenſatory.

By the ſaid charter they are alſo freed from all troubleſome offices; as to ſerve on juries, be conſtable, keep watch, provide arms, *&c.*

This ſociety had antiently a *college* in Knightrider-ſtreet, the gift of Dr. Linacre, phyſician to King Henry VIII. Since that, they have had a houſe built them by the famous Dr. Harvey, in 1652. at the end of Amen-ſtreet, which he endowed with his whole inheritance in his life-time; but this being burnt in the great fire in 1666. a new one was erected at the expence of the fellows, in Warwick-lane; with a noble library, given partly by the marquis of Dorcheſter, and partly by Sir Theodore Mayerne.

Of this *college* there are at preſent, four cenſors, and twelve electors: the cenſors have, by charter, power to ſurvey, govern, and arreſt, all phyſicians, or others practiſing phyſic, in, or within ſeven miles of, London; and to fine, amerce, and impriſon them, at diſcretion.

The number of fellows was antiently thirty, till king Charles II. increaſed their number to forty; and king James II. giving them a new charter, allowed the number of fellows to be enlarged, ſo as not to exceed fourſcore; reſerving to himſelf and ſucceſſors the power of placing and diſplacing any of them for the future.

The *college* is not very rigorous in aſſerting their privileges; there being a great number of phyſicians, ſome of very good abilities, who practiſe in London, *&c.* without their licence, and are connived at by the *college*: yet, by law, if any perſon, not expreſly allowed to practiſe, take on him the cure of any diſeaſe, and the patient die under his hand, it is deemed felony in the practiſer.

In 1696. the *college* made a ſubſcription, to the number of forty-two of their members, to ſet on foot a diſpenſatory for the relief of the ſick poor: ſince that, they have erected two other diſpenſatories.

Gresham-College, or College *of Philoſophy*; a college founded by Sir Thomas Greſham, and endowed with the revenue of the Royal Exchange: one moiety of this endowment the founder bequeathed to the mayor and aldermen of London, and their ſucceſſors, in truſt, that they ſhould find four able perſons to read, within the *college*, divinity, geometry, aſtronomy, and muſic; and to allow each, beſides lodging, fifty pounds *per ann.* The other moiety he left to the company of mercers, to find three more able perſons, to read civil law, phyſic, and rhetoric, on the ſame terms; with this limitation, that the ſeveral lecturers ſhould read in term-time, every day in the week, except Sundays; in the morning in Latin, in the afternoon the ſame in Engliſh: but that in muſic to be read only in Engliſh.

In this *college* formerly met the royal ſociety, that noble academy, inſtituted by King Charles II. and celebrated throughout the world, for their improvements in natural knowlege. See their hiſtory and policy, under Society.

College *of Heralds*, or College *of Arms*, a corporation founded by charter of King Richard III. who granted them ſeveral privileges; as, to be free from ſubſidies, tolls, offices, *&c.* See Herald.

They had a ſecond charter from King Edward VI. and a houſe built near Doctors Commons, by the earl of Derby, in the reign of King Henry VII. was given them by the duke of Norfolk, in the reign of queen Mary; which houſe is now rebuilt.

Of this collegiate ſociety, are three officers ſtiled *kings of arms* *regis armorum Anglicorum.* See KING *at arms.* Six heralds. See HERALD. And four purſuivants. See PURSUIVANT.

COLLEGES *of common law.* See INNS *of court*, and *chancery.*

COLLEGES *for diſabled ſoldiers, ſeamen,* &c. See HOSPITALS.

COLLEGIAL. See the article COLLEGIATE.

COLLEGIANS, COLLEGIANI, a religious ſect formed among the Arminians and Anabaptiſts in Holland; ſo called, becauſe of their *colleges*, or meetings, the firſt ſunday in each month; where every one has the ſame liberty of expounding the ſcripture, praying, *&c.*

They are ſaid to be all either Arians, or Socinians: they never communicate in the *college*, but meet twice a year from all parts of Holland at Rinſbourgh, a village two miles from Leyden, where they communicate together; admitting every one that preſents himſelf, without regard to his ſect or opinion. They have no particular miniſters, but each officiates as he is diſpoſed. They never baptize without dipping.

COLLEGIATE, or COLLEGIAL *churches*, are thoſe which have no biſhop's ſee, yet have the antient retinue of the biſhop, the canons, and prebends.

Such are, among us, Weſtminſter, Rippon, Windſor, *&c.* governed by deans and chapters. See DEAN, and CHAPTER.

Of theſe *collegiate* churches, there are two kinds; ſome of royal foundation, others of eccleſiaſtical foundation: each of them, in matters of divine ſervice, are regulated in the ſame manner as the cathedrals.

There are even ſome *collegiate* churches which have the epiſcopal rights. Some of theſe churches were antiently abbeys; which, in time, were ſecularized.

The church of St. Peter's, Weſtminſter, was antiently a cathedral; but the revenues of the monaſtery being, by act of parliament 1° Eliz. veſted in the dean and chapter, it commenced a *collegiate* church.—In ſeveral cauſes, the ſtiling it *cathedral*, inſtead of *collegiate church of* Weſtminſter, has occaſioned error in the pleadings.

COLLEGIATE *auditors.* See the article AUDITOR.

Vergers of COLLEGIATE *churches.* See VERGER.

COLLETICS*, COLLETICA, in medicine, ſuch remedies as join and glue together the ſeparated parts, or lips of a wound, or ulcer; and thus re-eſtabliſh them in their natural union. See AGGLUTINANT.

* The word comes from the Greek κολλητικ☉, ſomething that has the virtue of gluing together: of κολλα, *gluten.*

Colletics are more deſiccative than ſarcotics; but leſs ſo than epulotics. See SARCOTICS, and EPULOTICS.—Among *colletics* are ranked litharge, aloes, myrrh, *&c.*

COLLINS's *quadrant.* See the article QUADRANT.

COLLIQUATION, in pharmacy, the action of melting together two, or more ſolid ſubſtances; or rendering them liquid by fuſion, or diſſolution; as wax, mucilages, *&c.* by heat; gums, *&c.* by moiſture.

COLLIQUATION is alſo uſed to expreſs ſuch a temperament, and diſpoſition of the animal fluids, as proceeds from a too lax compages; whereby they flow off thro' the ſeveral glands, and particularly through thoſe of the ſkin, faſter than they ought; which occaſions fluxes of many kinds, but moſtly, profuſe, greaſy, clammy ſweats.

If this *colliquation* continue, it generally terminates in an hectic fever, and is uſually a concomitant of one.

The curative intention in this caſe is the giving a better conſiſtence to the juices by balſamics and agglutinants; and the hardening of the ſolids by ſubaſtringents. Hence,

COLLIQUATIVE *fever* is a fever attended with a diarrhœa, or profuſe ſweats, from too looſe a contexture of the fluids.

COLLISEUM. See the article COLISEUM.

COLLISION, the friction, or percuſſion of two bodies moving violently with different directions, and daſhing againſt each other. See PERCUSSION.

COLLUSION, a ſecret underſtanding between two parties, who plead, or proceed, fraudulently againſt each other, to the prejudice of a third.

In the canon law, *colluſion*, in matters of benefices, vacates the benefice, and incapacitates the perſon from holding any benefice at all.

COLLUM, in anatomy. See NECK, and CERVIX.

COLLI *interſpinales.* See the article INTERSPINALES.

COLLI *intertranſverſales.* See INTERTRANSVERSALES.

COLLI *tranſverſalis.* See the article TRANSVERSALIS.

COLLUTHIANS, a religious ſect, who roſe about the beginning of the fourth century; on occaſion of the indulgence ſhewn to Arius by Alexander patriarch of Alexandria.

Several people being ſcandalized at ſo much condeſcenſion; and, among the reſt, Colluthus, a prieſt of the ſame city; he hence took a pretence for holding ſeparate aſſemblies, and by degrees proceeded to the ordination of prieſts; as if he had been a biſhop: pretending a neceſſity for this authority, in order to oppoſe Arius. To his ſchiſm he added hereſy; teaching, that God did not create the wicked; that he was not author of the evils that befal men, *&c.*—He was condemned in a council held at Alexandria by Oſius, in the year 335.

COLLYRIDIANS, antient heretics, denominated from a little cake, called by the Greeks *collyridia*, which they offered to the virgin Mary.

This ſect, it ſeems, conſiſted chiefly of Arabian women; who, out of an extravagance of devotion to the virgin, met on a certain day in the year, to celebrate a ſolemn feaſt, and to render divine honours to Mary as to a goddeſs; eating the cake which they offered in her name.—St. Epiphanius, who relates the hiſtory of this ſuperſtitious ceremony, laughs at it.

COLLYRIUM*, in medicine, an external remedy, appropriated to diſeaſes of the eyes.

* The word comes from the Greek κολλȣριον; and that, according to Martinius, from κολλᾳν τον ρȣν; becauſe it glues up, and prevents defluxions.

There are two kinds of *collyriums*; the one *liquid*, the other *dry.*—*Liquid collyriums*, ὑγροκολλȣρια, are compoſed of ophthalmic powders in waters; as roſe-water, plantain-water, that of fennel, eyebright, *&c.* wherein they diſſolve tutty, white vitriol, or ſome other proper powder.

The *dry collyria*, ξηροκολλȣρια, are troches of rhaſis, ſugar-candy, iris, tutty prepared, *&c.* blown into the eye with a little pipe.

COLLYRIUM is alſo a name given to unguents uſed for the ſame purpoſe; as unguent of tutty, and ſeveral others.

COLLYRIUM is alſo a denomination given, though improperly, to ſome liquid medicines uſed againſt venereal ulcers.

COLOCYNTHIS. See the article COLOQUINTIDA.

COLON, in grammar, a point, or character, formed thus [:] ſerving to mark a pauſe, and to divide the members of a period. See POINTING; ſee alſo PERIOD, COMMA, and SEMICOLON.

Grammarians generally aſſign the uſe of a *colon* to be to mark the middle of a period; or to conclude a ſenſe leſs perfect than the dot, or period:—but a ſenſe leſs perfect than the period is an expreſſion extremely vague and indeterminate.

Others ſay, a *colon* is to be uſed when the ſenſe is perfect, but the ſentence not concluded—but neither is this over-clear and expreſs. Add to this, that in practice our beſt writers confound the *colon* with the ſemicolon.

F. Buffier attempts to fix the uſe of the *colon*; but he does not much diſtinguiſh it from the ſemicolon: he preſcribes the uſe of either, indifferently; and calls them by a common name, *intermediate pointings*; as being mediums between the comma, and full-point or period. Their uſe, according to this author, is to diſtinguiſh the ſupernumerary members of a period.

By ſupernumerary members are meant ſuch as the precedent ones do not raiſe any expectation of; *i. e.* ſuch parts, as have indeed a dependence on what goes before, even tho' what goes before has a complete ſenſe, independent hereon: v. gr. *The Auguſtan age was ſo eminent for good poets, that they have ſerved as models to all others: yet did it not yield any good tragic poets.* Where the ſupernumerary member, and the uſe of the *colon*, are obvious. The moſt obvious and ſenſible uſe of the *colon*, he adds, is, when the ſupernumerary member is diſtinguiſhed by ſome conjunction; as, *notwithſtanding, however, but, except that, unleſs, inaſmuch as, yet, ſince, the rather as, provided that,* &c. Some, indeed, uſe the *colon* in the middle of long periods, without any regard to ſupernumerary members: which cuſtom was probably introduced, to mark that the breath is here to be taken almoſt as much as in a common period, in the place where the ſupernumerary period commences. But this, at beſt, is arbitrary; and the intermediate pointings may always be omitted in a period, if there be no ſupernumerary member, *i. e.* if there be no ſubſequent member, but what is expected from the precedent.

As to the occaſions where the *colon* is to be uſed, rather than the ſemicolon, there is nothing preciſe to be ſaid of it; except that the *colon* ſhews the ſupernumerary member more detached, and ſets it at a greater diſtance from the reſt; and therefore marks a longer pauſe than the ſemicolon.

Accordingly it ſeems preferable to the ſemicolon before conjunctions adverſative, reſtrictive, conditional, *&c.* as, *nevertheleſs, but, excepting that, however, otherwiſe, provided that.* Again, where the ſupernumerary phraſes not only ſuppoſe the precedent, but depend on them for their regimen, and are, as it were, new parts thereof; there the ſemicolon ſeems preferable to the *colon*: v. gr. *You are regardleſs of the goodneſs of God, who firſt choſe you; a God who is only jealous of your heart for your own happineſs; a God who could be equally glorious in deſtroying you by his juſtice, as in ſaving you by his mercy.* Or thus: *The diſcourſe conſiſted of two parts; in the firſt was ſhewn the neceſſity of fighting; in the ſecond, the advantages that would redound from it.*

But this difference, it muſt be owned, has a dependence on ſomething that influences all the points, and ſways the whole doctrine of punctuation; *viz.* the length, or ſhortneſs, of the members and periods: for, when the phraſes are long, we point higher than when ſhort.

A later author, in an ingenious diſcourſe, *de ratione interpungendi*, marks the office of the *colon*, and wherein it differs from the ſemicolon, *&c.* more preciſely: a *colon*, on his principles, ſerves to diſtinguiſh thoſe conjunct members of a ſentence, which are capable of being divided into other members; whereof one, at leaſt, is conjunct.

Thus, in the ſentence, *As we cannot diſcern the ſhadow moving along the dial-plate, ſo the advances we make in knowlege are only* *perceived by the diſtance gone over*; the two members being both ſimple, are only ſeparated by a comma: in this, *as we perceive the ſhadow to have moved, but did not perceive it moving*; *ſo our advances in underſtanding, in that they conſiſt of ſuch minute ſteps, are only perceivable by the diſtance*; the ſentence being divided into two equal parts, and thoſe conjunct ones, ſince they include others; we ſeparate the former by a ſemicolon, and the latter by commas: but in this, *as we perceive the ſhadow to have moved along the dial, but did not perceive it moving*; *and it appears the graſs has grown, though nobody ever ſaw it grow*: *ſo the advances we make in knowlege, as they conſiſt of ſuch minute ſteps, are only perceivable by the diſtance.* The advancement in knowlege is compared to the motion of a ſhadow, and the growth of graſs; which compariſon divides the ſentence into two principal parts: but ſince what is ſaid of the movement of the ſhadow, and likewiſe of the growth of graſs, contains two ſimple members, they are to be ſeparated by a ſemicolon; conſequently a higher pointing is required to ſeparate them from the other part of the ſentence, which they are oppoſed to: and this is a *colon.*

Colon *, in anatomy, denotes the ſecond of the thick inteſtines.

* Some derive the word from κωλυειν, *to retard*; in regard it is in the folds of this inteſtine that the excrements are ſtopped and formed. Others fetch it from κοιλον; on account of its capacity: others again from κολαζεσθαι, *to be tormented*; in regard of the grievous pain it frequently undergoes.—It is from this part that the colic takes its name.

The *colon* is placed between the ilion and rectum, and is wider than either of them: in length it is eight or nine hands.—It begins where the ilion ends, *viz.* in the cavity of the os ilium, on the right ſide; whence, aſcending by the kidney on the ſame ſide, it paſſes under the concave ſide of the liver, to which it is ſometimes tied, as likewiſe to the gall-bladder, which tinges it yellow in that place: then it runs under the bottom of the ſtomach to the ſpleen in the left ſide, to which it is alſo knit; from thence it turns down to the left kidney; and thence paſſing in form of an S, it ends at the upper part of the os ſacrum in the rectum.

At the beginning of this gut, there is a valve formed by the production of the inmoſt coat of the inteſtines in this place; which hinders the excrements, when once fallen into the *colon*, from returning again to the ilium.

It has a ſtrong ligament, which running along its upper ſide, from the ilium to the rectum, ſtrengthens it againſt the weight of the excrements, and draws it together into cells; which, with the valvulæ conniventes, retard the paſſages of the excrements, that we may not be continually obliged to be going to ſtool.

The fleſhy fibres of its ſecond coat are greater and ſtronger than thoſe of the other inteſtines; becauſe a greater ſtrength is requiſite to cauſe the excrements to aſcend.

The chief deſign of the *colon*'s ſurrounding the abdomen, and, with the rectum, touching all the parts contained in it; ſeems to be, that by immediate fomentation with clyſters, they might be eaſed of their maladies.

Meſo-**Colon.** See the article **Meso-Colon.**

COLONEL *, an officer in the army, who has the command in chief of a regiment, either of horſe, foot, or dragoons.

* Skinner derives the word from *colony*; being of opinion, the chiefs of colonies, called *coloniales*, might give the name to chiefs of forces.

In the French and Spaniſh armies, *colonel* is confined to the infantry and dragoons: the commanding officer of a regiment of horſe they uſually call *meſtre de camp.*

Colonel-Lieutenant is he who commands a regiment of guards, whereof the king, prince, or other perſon of the firſt eminence, is *colonel.*

Theſe *colonels lieutenants* have always a *colonel*'s commiſſion, and are uſually general officers.

Lieutenant-Colonel is the ſecond officer in the regiment; who is at the head of the captains, and commands in the abſence of the *colonel.*

Lieutenant-colonel of horſe, or dragoons, is the firſt captain of the regiment. See **Captain.**

COLONNADE, a periſtyle of a circular figure; or a ſeries of columns diſpoſed in a circle, and inſulated within-ſide. See **Peristyle.**

Such is that of the little park at Verſailles, which conſiſted of 32 Ionic columns; all of ſolid marble, and without incruſtation.

A *polyſtyle* **Colonnade** is that whoſe number of columns is too great to be taken in by the eye at a ſingle view. Such is the *colonnade* of the place of St. Peter at Rome; which conſiſts of 284 columns of the Doric order, each above four feet and an half in diameter; all of Tiburtine marble.

COLONY *, **Colonia**, a company of people, of all ſexes and conditions, tranſported into a remote province, in order to cultivate and inhabit it.

* Originally the word *colony* ſignified no more than a farm; *i. e.* the habitation of a peaſant, *colonus*, with the quantity of land ſufficient for the ſupport of his family: *quantum colonus unus arare poterat.*

We may diſtinguiſh three kinds of *colonies*: thoſe ſerving to eaſe, or diſcharge the inhabitants of a country; where the people are become too numerous, ſo that they cannot any longer conveniently ſubſiſt.

The ſecond are thoſe eſtabliſhed by victorious princes and people, in the middle of vanquiſhed nations, to keep them in awe and obedience.

The third may be called *colonies of commerce*; becauſe, in effect, it is trade that is the ſole occaſion and object thereof.

It was by means of the firſt kind of *colonies*, that ſome ages after the deluge, the eaſt, firſt, and ſucceſſively all the other parts of the earth, became inhabited: and without mentioning any thing of the Phœnician and Grecian *colonies*, ſo famous in antient hiſtory, it is notorious that it was for the eſtabliſhment of ſuch *colonies*, that, during the declenſion of the empire, thoſe torrents of barbarous nations, iſſuing, for the generality, out of the north, over-ran the Gauls, Italy, and the other ſouthern parts of Europe; and after ſeveral bloody battles, divided it with the antient inhabitants.

For the ſecond kind of *colonies*, the Romans uſed them more than any other people; and that to ſecure the conqueſts they had made from the weſt to the eaſt. Every one knows how many cities in Gaul, Germany, Spain, and even in England, value themſelves on their having been of the number of Roman *colonies.*

Laſtly, the *colonies of commerce* are thoſe eſtabliſhed by the Engliſh, French, Spaniards, Portugueſe, and other nations, within theſe two laſt centuries, and which they continue ſtill to eſtabliſh, in ſeveral parts of Aſia, Africa, and America; either to keep up a regular commerce with the natives, or to cultivate the ground, by planting ſugar-canes, indigo, tobacco, and other commodities.

The principal of this kind of *colonies* are in the one and the other America, northern and ſouthern; particularly Peru, Mexico, Canada, Virginia, New-England, Carolina, la Louiſiane, l'Acadia, Hudſon's Bay, the Antilles iſlands, Jamaica, Domingo, and the other iſlands.—In Africa, Madagaſcar, Cape of Good Hope, Cape Verd, and its iſlands, and all thoſe vaſt coaſts extended thence as far as to the Red-ſea.—Laſtly, in Aſia, the famous Batavia of the Dutch; Goa, Diu, of the Portugueſe; and ſome other leſs conſiderable places of the Engliſh, French, and Danes.

There were two kinds of *colonies* among the Romans; thoſe ſent by the ſenate; and the military ones, conſiſting of old ſoldiers, broken and diſabled with the fatigues of war, who were thus provided with lands, as the reward of their ſervices.

The *colonies* ſent by the ſenate were either Roman, or Latin; *i. e.* they were compoſed either of Roman citizens, or Latin.—The *colonies* of Roman citizens had the right of ſuffrages; but had no part in the offices or honours of the republic. The inhabitants of Latin *colonies* had no right of ſuffrages without an expreſs permiſſion.

According to Ulpian *(l. 1. D. de Cenſ.)*, there were other *colonies*, which had little more than the name; only enjoying what they called *jus Italicum*, i. e. they were free from the tributes and taxes paid by the provinces.—Such were the *colonies* of Tyre, Berytus, Heliopolis, Palmyra, *&c.*

M. Vaillant has filled a volume in folio with medals ſtruck by the ſeveral *colonies*, in honour of the emperors who founded them. The ordinary ſymbol they engraved on their medals, was, either an eagle; as when the Veteran legions were diſtributed in the *colonies*: or a labourer, holding a plough drawn by a pair of oxen; as when the *colony* conſiſted of ordinary inhabitants. On all the medals are ſeen the names of the decemviri, who held the ſame rank, and had the ſame authority there, as the conſuls had at Rome.

COLOPHONY, a reſinous ſubſtance prepared of turpentine by boiling it in water. When cold, it becomes of a hard conſiſtence.

The chief uſe of this drug is in the cure of venereal ailings, ſeminal weakneſſes, the whites in women, *&c.* The apothecaries make it into pills, which they roll in liquorice-powder, or cover with gold-leaf, and call them *turpentine-pills.*

It is alſo uſed by muſicians, to rub the hairs of their bow withal; the effect whereof is, that the gum cleaving to the hairs, and communicating to them a tenacious quality, prevents their ſliding too eaſily over the ſtrings; and promotes that trembling which forms the ſound.

The common black *colophony*, or black reſin, is ſaid to be procured from the turpentine of the mountain pine. The oil being extracted from this by diſtillation, what remains in the ſtill is the *colophony.*

To be good, it muſt be ſhining and odoriferous; and when thrown on the fire, render a ſmoke like that of frankincenſe.

Pliny ſays, *colophony* took its name from *Colophon*, a city of Ionia, whence it was firſt brought.—It is now frequently called *Spaniſh wax*, or *Grecian reſin*, as it is brought from the one or the other of thoſe countries. It is found to warm, dry, ſoften, and agglutinate; and uſually enters the compoſition of plaiſters and unguents.

COLOQUINTIDA *, or **Colocynthis**, uſually called *bitter apple*; the fruit of a plant of the ſame name, brought from the Levant; about the bigneſs of a large orange.

* This word comes from the Greek κολοκυνθις, a name which was given it, in regard it κοιλιαν κινει, *moves the belly.*

Its colour is a ſort of golden brown: its inſide is full of kernels, which are to be taken out before the *colocynth* be uſed. The pulp is intolerably bitter.

Coloquintida is of conſiderable uſe in medicine, but moſtly in officinal compoſitions; the violence of its operation rendering it unſafe to be given inwardly in extemporaneous preſcriptions, except with great caution.

It enters, as an ingredient, in the confectio hamec, and moſt of the purging pills; and in ſuch caſes as require briſk purging, is attended with great ſucceſs. But it requires proper management, as it is one of the moſt violent purgative drugs known; inſomuch that it excoriates the paſſages to that degree, as ſometimes to bring away blood, and induce a ſuperpurgation. Sometimes it is taken boiled in water, or ſmall beer, in obſtructions of the menſes; which, in ſtrong conſtitutions, is often attended with ſucceſs. Some women have got a trick of taking it, in the ſame manner, in the beginning of pregnancy, to procure abortion; which it often effects by the violence of its operation. The powder of *coloquintida* is ſometimes uſed externally, with aloes, *&c.* in unguents, emplaſters, *&c.* with remarkable ſucceſs againſt worms; and ſome, for the ſame purpoſe, recommend decoctions of the pulp, given clyſterwiſe. In the iliac paſſion, clyſters of *coloquintida* have been found of ſervice, after moſt other medicines have failed.

Troches made of *colocynth* are called *troches of alhandal:* they are prepared by cutting the *coloquintida* very ſmall, and reducing it to a fine powder in a mortar, rubbed with oil of ſweet almonds; adding gum tragacanth, and maſtic afterwards.

COLORBASIANS. See the article COLARBASIANS,

COLORISATION, or COLORATION, in pharmacy, a term applied to the ſeveral changes of colour which bodies undergo in the various operations of nature, or art; as by fermentations, lotions, coctions, calcinations, *&c.*

OLOSSAL *column.* See the article COLUMN.

OLOSSUS, a ſtatue of enormous, or gigantic ſize.

The moſt eminent of this kind was the *coloſſus* of Rhodes, a ſtatue of Apollo, ſo high, that ſhips paſſed with full ſails betwixt its legs. It was the workmanſhip of Chares, a diſciple of Lyſippus; who ſpent twelve years in making it; it was at length overthrown by an earthquake, after having ſtood 1360 years. Its height was ſixſcore and ſix feet: there were few people who could fathom its thumb, *&c.*

Some critics obſerve, that the *coloſſus* of Rhodes gave its own name to the people among whom it ſtood; and that many, at leaſt among the antient poets, call the Rhodians, *Coloſſians:* hence they advance an opinion, that the Coloſſians in Scripture, to whom St. Paul directs his epiſtle, are, in reality, the inhabitants of Rhodes. Of this ſentiment are Suidas, Calepine, Munſter, *&c.*

When the Saracens became poſſeſſed of the iſland, the ſtatue was found proſtrate on the ground: they ſold it to a Jew, who loaded 900 camels with the braſs.

The baſis that ſupported it was of a triangular figure: its extremities were ſuſtained with ſixty pillars of marble. There was a winding ſtair-caſe to go up to the top of it; from whence one might diſcover Syria, and the ſhips that went into Egypt, in a great looking glaſs that was hung about the neck of the ſtatue. Among the antiquities of Rome, there are ſeven famous *coloſſus*'s: two of Jupiter, as many of Apollo, one of Nero, one of Domitian, and one of the Sun.

OLOSTRUM, or COLOSTRA, in medicine, the firſt milk in womens breaſts after delivery. See MILK.

The name is alſo given to a diſeaſe which this thick coagulated milk ſometimes occaſions.

OLOUR, COLOR, in philoſophy, a property inherent in light, whereby, according to the different ſizes or magnitudes of its parts, it excites different vibrations in the fibres of the optic nerve; which, propagated to the ſenſorium, affect the mind with different ſenſations.

r, *colour* may be defined a ſenſation of the ſoul, excited by the application of light to the retina of the eye; and different, as that light differs in the degree of its refrangibility, and the magnitude of its component parts.

the former view, therefore, light is the ſubject of *colour*; the latter it is the agent. *See its properties under the article* IGHT.

arious are the opinions of antient and modern authors, and the ſeveral ſects of philoſophers, with regard to the nature d origin of the phænomenon *colour:* the moſt popular opinion was long that of the Ariſtotelians; who maintain *colour* be a quality reſiding in the coloured body; and to exiſt, dependently of light.

he Carteſians come nearer the matter: they own, that as coloured body is not immediately applied to the organ, occaſion the ſenſation; and that as no body can affect the ſe but by immediate contact; the coloured body does not cite the ſenſation of itſelf, or contribute any thing to it, herwiſe than by moving ſome interpoſed medium, and by t the organ of ſight.

ey add, that, as we find that bodies do not affect the ſenſe the dark, light only occaſions the ſenſe of *colour*, by move the organ; and that coloured bodies are no further conned in this, than as they reflect the light with a certain dification: the differences in their *colours* ariſing from a difference in the texture of their parts, whereby they are diſpoſed to reflect the light with this or that modification.

But it is to Sir Iſaac Newton alone we are to refer for a ſolid and conſiſtent theory of *colours*; built on ſure experiments, and ſolving all the phænomena thereof: his doctrine is as follows.

It is found by experience, that rays, or beams of light, are compoſed of particles very heterogeneous, or diſſimilar to each other: *i. e.* ſome of them, as it is highly probable, are larger, and others leſs. For a ray of light, as FE (*Tab. Optics, Fig.* 5.), being received on a refracting ſurface, as AD, in a dark place, is not wholly refracted to L; but it is ſplit, as it were, and diffuſed into ſeveral radioli, or little rays, ſome whereof are refracted to L, and others to the other intermediate points between L and G; *i. e.* thoſe particles of the light which are the moſt minute, are of all others the moſt eaſily and moſt conſiderably diverted, by the action of the refracting ſurface, out of their rectilinear courſe towards L; and the reſt, as each exceeds another in magnitude, ſo is it with more difficulty, and leſs conſiderably, turned out of its right line to the points between L and G.

Now, each ray of light, as it differs from another in its degree of refrangibility, ſo does it differ from it in *colour:* this is warranted by numerous experiments. Thoſe particles, *v. gr.* which are moſt refracted, are found to conſtitute a ray of a violet *colour*; i. e. in all probability, the moſt minute particles of light, thus ſeparately impelled, excite the ſhorteſt vibrations in the retina; which are thence propagated by the ſolid fibres of the optic nerves into the brain, there to excite the ſenſation of violet *colour*; as being the moſt duſky and languid of all *colours.*

Again, thoſe particles which are the leaſt refracted, conſtitute a radiolus, or ray of a red *colour*; i. e. the largeſt particles of light excite the longeſt vibrations in the retina; ſo as to excite the ſenſation of red *colour*, the brighteſt and moſt vivid of all others.

The other particles, being in like manner ſeparated, according to their reſpective magnitudes, into little rays, excite the intermediate vibrations, and thus occaſion the ſenſations of the intermediate *colours*; much in the ſame manner as the ſeveral vibrations of the air, according to their reſpective magnitudes, excite the ſenſations of different ſounds.

To this it may be added, that not only the more diſtinct and notable *colours* of red, yellow, blue, *&c.* have thus their riſe from the different magnitude and refrangibility of the rays; but alſo the intermediate degrees or ſhades of the ſame *colour*; as of yellow up to green, or red down to yellow, *&c.*

Further, the *colours* of theſe little rays, not being any adventitious modifications thereof, but connate, primitive, and neceſſary properties; as conſiſting, in all probability, in the magnitudes of their parts; muſt be perpetual and immutable; *i. e.* they cannot be changed by any future refraction or reflexion, or any modification whatſoever.

This is confirmed by abundance of experiments; all endeavours having been uſed, after ſeparating a coloured ray from thoſe of other kinds, to change it into ſome other *colour*, by repeated refractions, but to no effect. Apparent tranſmutations of *colours*, indeed, may be effected; *viz.* where there is an aſſemblage, or mixture of rays of different kinds; the component *colours* never appearing in their natural hue in ſuch mixtures, but always allayed and tempered with each other: whence reſults a middling kind of *colour*, which, by refraction, may be ſeparated into the component ones: and thoſe after ſeparation, being remixed, return to their former *colour.*

Hence, the tranſmutations of *colours*, by mixing thoſe of different kinds, are not real; but mere appearances, or deceptions of the ſight; for the rays, being again ſevered, exhibit the ſame *colours* as at firſt. Thus, blue and yellow powders, well mixed, appear to the naked eye green; yet, without having paſſed any alteration; for, when viewed through a microſcope, the blue and yellow particles ſtill appear diſtinct.

Hence there ariſe two kinds of *colours*, the one *original*, and *ſimple*, produced by homogeneal light; or by rays that have the ſame degree of refrangibility, and the ſame magnitude of their parts: ſuch as red, yellow, green, blue, violet-purple, orange, and indigo; with all their intermediate teints and gradations.

The other kind of *colour* is *ſecondary*, or *heterogeneous*; compounded of the primary ones, or of a mixture of rays differently refrangible, *&c.*

There may alſo be ſecondary *colours* produced by compoſition, like the primary ones, or thoſe conſiſting of homogeneal light, as to the ſpecies or appearance of the *colour*; but not as to the permanency, or immutability thereof. Thus, yellow and blue make green; red and yellow, orange; orange and yellowiſh green, yellow: and in the general, if any two colours be mixed, which, in the ſeries of thoſe generated by the priſm, are not too far apart, from their mixture there reſults that *colour*, which in the ſaid ſeries is found in the mid-way between them: but thoſe ſituated at too great a diſtance do not ſo.

Indeed, the more any colour is compounded, the leſs perfect and vivid it is; by too much compoſition they may be diluted and weakened till they ceaſe. By compoſition there may likewiſe be produced *colours* not like any of thoſe of homogeneal light.

The moſt extraordinary compoſition is that of whiteneſs; for to this, all the primary *colours* above-mentioned are required; and theſe to be mixed in a certain degree. Hence it is that white is the ordinary *colour* of light; light being nothing elſe but a confuſed aſſemblage of rays of all *colours*.

If the rays of different *colours* do thus begin to be ſeparated by one refraction of one ſingle ſurface; that ſeparation is much promoted, ſo as even to become ſenſible to the eye by a double refraction. This is obſerved in the two ſurfaces of any glaſs; provided thoſe ſurfaces be not parallel: but, of all others, it is moſt ſenſible in the two faces of a triangular priſm; the phænomena whereof, as they are the touchſtone of all theories of *colours*; and as they contain the foundation of that here delivered; we ſhall lay down as follows.

1°, The rays of the ſun, tranſmitted through a triangular priſm, exhibit an image of various *colours* (the chief whereof are red, yellow, green, blue, and violet) on the oppoſite wall.

The reaſon is, that the differently coloured rays are ſeparated by refraction: for the blue rays, *v. gr.* marked with the dotted line (*Tab. Optics*, *Fig.* 6.), which begin to be ſeparated from the reſt by the firſt refraction in *d d*, of the ſide *c a* of the priſm *a b c* (as alſo in the firſt ſurface of the globe of water *a b c*, *Fig.* 7.), are ſtill farther ſeparated in the other ſide of the priſm *b c* (as alſo in their egreſs out of the globe *a b c*) by a ſecond refraction in *c e*, in the ſame direction as the former: whereas, on the contrary, in the plain glaſs *a b c f*, Fig. 9. (as alſo in the priſm *g l o*, Fig. 8. now placed in another ſituation) thoſe blue rays which begin to be ſeparated from the reſt in the firſt ſurface, in *d d*, by a ſecond refraction, the contrary way, paſs out parallel, *i. e.* remixed with all the *colours* of the other rays.

2°, This image is not round, but oblong; its length, when the priſm is an angle of 60 or 65 degrees, being five times its breadth. The reaſon is, that ſome of the rays are refracted more than others; and by that means, they exhibit ſeveral images of the ſun, extended lengthwiſe, inſtead of one.

3°, Thoſe rays which exhibit yellow, are turned farther from the rectilinear courſe, than thoſe which exhibit red; thoſe which exhibit green, farther than thoſe which exhibit yellow: but of all others, thoſe which exhibit violet the moſt: accordingly, if the priſm through which the light is tranſmitted be turned about its axis, ſo as the red, yellow, green, &c. rays be projected, in order, through a narrow aperture into another priſm, placed at the diſtance of about 12 feet; the yellow, green, &c. rays, though falling through the ſame aperture, in the ſame manner, and on the ſame point of the ſecond priſm, will not be refracted to the ſame place as the red, but to a point at ſome diſtance from it; on that ſide to which the rotation is made.

This is what Sir Iſaac Newton calls the *experimentum crucis*: being that which led him out of the difficulties into which the firſt phænomenon, &c. had thrown him; and plainly ſhewed a different degree of refrangibility, and a different *colour* correſponding thereto in the rays of light: and that yellow rays, *v. gr.* are more refracted than red ones, green ones more than yellow ones, and blue and violet ones moſt of all.

4°, The *colours* of coloured rays, well ſeparated by the priſm, are not at all changed or deſtroyed by paſſing an illuminated medium, nor by their mutual decuſſation, their bordering on a deep ſhadow, nor their being reflected from any natural body, or refracted through any one in a place howſoever obſcure.

The reaſon is, that *colours* are not modifications ariſing from refraction, or reflexion, but immutable properties; and ſuch as belong to the nature of the rays.

5°, An aſſemblage of all the kinds of coloured rays, collected either by ſeveral priſms, by a convex lens, or a concave mirror, or in any other manner, form what we call *whiteneſs*; yet each of theſe, after decuſſation, becoming ſeparated, again exhibits its proper *colour*: for, as the ray was white before its parts were ſeparated by refraction; ſo, the parts being remixed, it becomes white again: and coloured rays, when they meet together, do not deſtroy one another, but are only interſperſed.

Hence, a red, green, yellow, blue, and violet *colour*, being mixed in a certain proportion, appear whitiſh, *i. e.* they are of ſuch a *colour* as ariſes from white and black mixed together; and if there were not ſome rays abſorbed and loſt, they would be plainly white. In like manner, if a paper cut into a circle, be ſtained with each of thoſe *colours*, ſeparately, and in a certain proportion; then ſwiftly turned round its centre, ſo as the ſpecies of *colours* be mixed together in the eye, by the briſkneſs of the motion; the ſeveral *colours* will diſappear, and the whole paper appear of one continued *colour*; which will be a mean between white and black.

6°, If the rays of the ſun fall very obliquely on the inner ſurface of a priſm, thoſe that are reflected will be violet; thoſe tranſmitted, red.

For the rays were coloured before any ſeparation; and by how much they are the more refrangible, by ſo much they are the more eaſily reflected; and by that means are ſeparated.

7°, If two hollow priſms, the one filled with a blue fluid, the other with a red one, be joined together, they will be opake; though each, apart, be tranſparent.

For, the one tranſmitting none but blue rays, and the other none but red ones; the two together will tranſmit none at all.

8°, All natural bodies, eſpecially white ones, viewed through a priſm held to the eye, appear fimbriated, or bordered, on one ſide with red and yellow; and on the other with blue and violet. For thoſe fimbriæ are the extremes of intire images, which the rays of any kind, as they are more or leſs refracted, would exhibit, nearer, or at a greater diſtance from the real place of the object.

9°, If two priſms be ſo placed, as that the red of the one, and the purple of the other, meet together, in a paper fit for the purpoſe, encompaſſed with darkneſs; the image will appear pale: and if viewed through a third priſm, held to the eye at a proper diſtance, it will appear double; the one red, the other purple.

In like manner, if two powders, the one perfectly red, the other blue, be mixed; any little body covered pretty deeply with this mixture, and viewed through a priſm held to the eye, will exhibit a double image, the one red, and the other blue: in regard, the red and purple of blue rays are ſeparated by their unequal refraction.

10°, If the rays tranſmitted through a convex lens, be received on a paper before they meet in a focus; the confines or boundary of light and ſhadow will appear tinged with a red *colour*: but if they be received beyond the focus, with a blue one. Becauſe, in the firſt caſe, the red rays, being ſomewhat more refracted, are the higher; but, in the ſecond, after decuſſation in the focus, the blue ones.

11°, If the rays about to paſs through either ſide of the pupilla, be intercepted by the interpoſition of any opake body near the eye; the extremes of bodies, placed as if viewed through a priſm, will appear tinged with *colours*; though thoſe not very vivid.

For, then, the rays tranſmitted through the reſt of the pupil will be ſeparated by refraction into *colours*; without being diluted with the admixture of the intercepted rays, which would be refracted in a different manner.—And hence it is, that a body viewed through a paper pierced with two holes, appears double, and alſo tinged with *colours*.

Colours *of thin laminæ, or plates.*—As rays of different *colours* are ſeparated by the refraction of priſms, and other thick bodies; ſo are they ſeparated, though in a different manner, in the thin lamellæ, or plates of any pellucid matter, *v. gr.* in the bubbles raiſed in water, thickened by ſoap, &c. For all lamellæ, under a determinate thickneſs, tranſmit rays of all *colours*, without reflecting any at all: but, as they increaſe in thickneſs, in arithmetical proportion, they begin to reflect, firſt, blue rays; then, in order, green, yellow and red, all pure: then, again, blue, green, yellow, red, more and more mixed and diluted; till, at length, arriving at a certain thickneſs, they reflect rays of all *colours* perfectly intermixed, viz. white.

But, in whatſoever part a ſlender lamella reflects any one *colour*, *v. gr.* blue; in that part it always tranſmits the oppoſite *colour*, *v. gr.* red, or yellow.

It is found, by experiment, that the difference of *colour* of a plate does not depend on the medium that encompaſſes it; but the degree of vividneſs does: *cæteris paribus*, the *colour* will be more vivid, if the denſer medium be encompaſſed with the rarer. A plate, *cæteris paribus*, reflects more light as it is thinner; as far as a certain degree of thinneſs, beyond which it reflects no light at all.

In plates whoſe thickneſſes increaſe in the arithmetical proportion of the natural numbers 1, 2, 3, 4, 5, &c. If the firſt, or thinneſt, reflect any homogeneal ray, the ſecond will tranſmit it; the third, again, will reflect it: and thus is the ſame ray alternately reflected and tranſmitted; *i. e.* the plates correſponding to the odd numbers, 1, 3, 5, 7, &c. will reflect the ſame rays that thoſe correſponding to the even ones, 2, 4, 6, 8, &c. tranſmit. Hence, an homogeneous *colour* in a plate is ſaid to be of the *firſt order*, if the plate reflect all the rays of that *colour*. In a plate whoſe thinneſs is triple the firſt, it is ſaid to be of the *ſecond order*: in another, whoſe thinneſs is five times that the firſt, it is ſaid to be of the *third order*, &c.

A *colour* of the firſt order is the moſt vivid of any; and, ſucceſſively, the vividneſs of the *colour* increaſes, as the quantity of the order increaſes: the more the thickneſs of the plate increaſed, the more *colours* it reflects; and thoſe of more different orders. In ſome plates, the *colour* will vary as the poſition of the eye varies; in others it is permanent.

Colours *of natural bodies.* Bodies only appear of different *colours*, as their ſurfaces are diſpoſed to reflect rays of this or *colour* alone; or of this or that *colour* more abundantly than any other: hence bodies appear of that *colour* which ariſes from the mixture of the reflected rays. See Body.

All natural bodies conſiſt of very thin, tranſparent lamellæ; which, if they be ſo diſpoſed, with regard to each other, as there happen no reflexions or refractions in their interſtices; thoſe bodies become pellucid, or tranſparent: but if their intervals be ſo large, and thoſe filled with ſuch matter, or empty (with regard to the denſity of the parts themſelves) that there happen a number of reflexions and refractions within the body; the body, in that caſe, becomes opake. The rays which are not reflected from an opake body, pene

Into it ; and there, ſuffering innumerable reflexions and refractions, at length unite themſelves to the particles of the body itſelf.

Hence, an opake body grows hot the ſooner, as it reflects light leſs copiouſly : whence we ſee why a white body, which reflects almoſt all the rays that ſtrike upon it, heats much more ſlowly than a black one, which reflects ſcarce any.

To determine that conſtitution of the ſurface of bodies whereon their *colour* depends ; it muſt be obſerved, that the ſmalleſt corpuſcles, or firſt particles whereof ſurfaces are made up, are moſt thin and tranſparent, and ſeparated by a medium of a different denſity from the particles themſelves. In the ſurface, then, of every coloured body, are innumerable ſmaller thin plates, correſponding to thoſe of bubbles : wherefore, what has been obſerved of thoſe, may be underſtood of theſe. Hence we gather, that the *colour* of any body depends on the denſity and thickneſs of the parts of the body, between the pores of the ſurface : that the *colour* is more vivid and homogeneous, as the parts are thinner : that, *cæteris paribus*, the ſaid parts are the thickeſt when the body is red ; and the thinneſt when violet : that the parts of bodies are uſually much denſer, than the medium contained in their interſtices ; but that in the tails of peacocks, in ſome ſilks, and, generally, in all bodies whoſe *colour* varies according to the ſituation of the eye, it is leſs : and that the *colour* of a body is leſs vivid to the eye, as it has a denſer medium within its pores.

Now, of the ſeveral opake bodies, thoſe conſiſting of the thinneſt lamellæ are black ; thoſe conſiſting either of the thickeſt lamellæ, or of lamellæ very different from each other in thickneſs, and on that account fitted to reflect all *colours*, as the froth of water, &c. are white : thoſe, again, conſiſting of lamellæ, moſt of which are of ſome intermediate thickneſs, are blue, green, yellow, or red ; inaſmuch as they reflect the rays of that particular *colour*, much more copiouſly than that of any other *colour* ; moſt of which laſt they either abſorb and extinguiſh, by intercepting them, or elſe tranſmit. Hence it is, that ſome liquors, *v. gr.* an infuſion of lignum nephriticum, will appear red, or yellow, if viewed by reflected light ; and blue by tranſmitted light : and gold leaves yellow in the former circumſtances, but green or blue in the latter.

To this may be added, that ſome of the powders uſed by painters have their *colour* changed by being very finely ground ; which muſt be occaſioned by the comminution or breaking of their ſmaller parts into others ſtill ſmaller ; juſt as a lamella has its *colour* altered, by altering its thickneſs.

In fine, thoſe old phænomena ariſing from the mixture of liquors of different *colours*, can no-way be better accounted for, than from the various actions of the ſaline, &c. corpuſcles of one liquor, with the coloured corpuſcles of another : if they unite, the maſs will either ſwell or ſhrink, and thereby its denſity will be altered ; if they ferment, the ſize of the particles may be diminiſhed, and thereby coloured liquors may become tranſparent : if they coagulate, an opaque liquor may be produced out of two tranſparent ones.

Hence it is eaſy to ſee why a coloured liquid, in a glaſs of a conical figure, placed between the eye and the light, appears of a different colour in different parts of the veſſel ; there being more and more rays intercepted, as they paſs through a longer or a ſhorter ſection of the veſſel : till, at the baſe, they are all intercepted ; and none ſeen but thoſe reflected.

From the various *colours* of natural bodies, Sir Iſaac Newton obſerves, the bigneſs of their component parts may be eſtimated : for that the parts of bodies do properly exhibit the ſame *colour* with a lamella of equal thickneſs, provided the denſity in both be the ſame.

r the diſtinct properties, &c. *of the ſeveral* Colours ; ſee Black, White, Blue, &c. ſee alſo Rainbow, &c.

olour, in painting, is applied both to the drugs, and to the teints produced by thoſe drugs, variouſly mixed and applied.

The principal *colours* uſed by painters, are red, and white lead or ceruſs ; yellow okers ; ſeveral kinds of earth, as umber, &c. beſide orpiment, black lead, cinnabar, gamboge, lake, bice, verdeter, indigo, vermilion, verdegris, ivory black biſtre, lampblack, ſmalt, ultramarine, and carmine ; each of which, with the manner of preparing them, their uſes, &c. ſee under their reſpective heads.

Of theſe *colours*, ſome are uſed ground in oil, others only in freſco, others in water, and others only for mignature.

ark and light Colours. Under theſe two claſſes the painters reduce all the *colours* they uſe : under *light colours* are comprehended white, and all thoſe which approach neareſt it ; and under *dark colours*, black, and all thoſe which are obſcure and earthy, as umber, biſtre, &c.

mple and mineral Colours, is another diviſion among the painters : under *ſimple colours*, they range all thoſe uſed by limners, illuminers, &c. extracted from vegetables ; and which will not bear the fire : as the yellow made of ſaffron, of French berries, &c. lacca, and other tinctures extracted from flowers. The reſt are *mineral*, drawn from metals, &c. and able to bear the fire : theſe alone are uſed in enamelling.

hangeable and permanent Colours, is another diviſion of *colours* : by *changeable*, are meant thoſe which depend on the ſituation of objects with regard to the eye ; as that of taffetas, of a pigeon's neck, &c. The laſt, however, being attentively viewed with a microſcope, each fibre of the feathers appears compoſed of ſeveral little ſquares, alternately red and green ; ſo that they are really fixed *colours*.

Kircher tells us, that the *changeable colours* obſerved in the necks of pigeons, peacocks, &c. ariſe from the feathers being tranſparent, and of a figure reſembling a priſm ; and conſequently the light's being differently refracted from them. On the contrary, the fixed and *permanent colours* are not exhibited by refraction, but reflexion.

M. Mariotte obſerves, that there are two different gradations, or ſeries's of *colours*, from white to black ; the one white, yellow, red, and black ; the other white, blue, violet, and black.

Local Colours. See the article Local.

Water Colours. See the article Water.

Colour, in dyeing.—There are five ſimple, primary, or mother *colours*, uſed by the dyers ; from the mixture whereof all the other *colours* are formed : theſe are blue, red, yellow, brown, and black ; each of which ſee under their proper head, Blue, Red, &c.

Of theſe *colours*, variouſly mixed and combined, they form the following *colours*, *panſy*, *blue*, *red* : from the mixture of blue and ſcarlet, are formed *amaranth*, *violet*, and *panſy* : from the ſame mixture of blue and crimſon-red, are formed the *columbine*, or *dove-colour*, *purple*, *crimſon*, *amaranth*, *panſy*, and *crimſon-violet*. It may be obſerved, that they give the name *crimſon*, to all *colours* made with cochineel. See Crimson, Cochineel, &c.

Of blue, and red madder, they likewiſe make a good *purple*, a *pepper-colour*, *tan-colour*, and *dry roſe*. The ſame blue, with red half in grain, makes *amaranth*, *tan-colour*, and *dry roſe*. Blue, and half-red crimſon, compoſe *amaranth*, *tan colour*, *dry roſe*, a *brown panſy*, and *ſurbrun*.

Blue and yellow. Theſe two *colours*, mixed together, compoſe a *yellow green*, *ſpring green*, *graſs green*, *laurel green*, *brown green*, *dark green* ; as well as *ſea green*, *parrot green*, and *cabbage green*, &c. Theſe three laſt *colours* are to be leſs boiled than the firſt.

Note, with regard to green, there is no ſimple ingredient or drug in nature that will dye it ; but the ſtuffs are dyed twice ; firſt in blue, then in yellow.

Blue and brown. Theſe two *colours* are never mixed alone ; but with the addition of red, either of madder or cochineel, they form ſeveral *colours*.

Red and yellow. All the ſhades compoſed of theſe two *colours*, as *gold-yellow*, *aurora*, *marigold*, *orange*, *nacarat*, *granat-flower*, *flame-colour*, &c. are made with yellow, and red of madder ; ſcarlet being leſs proper, as well as too dear.

Red and brown. Of theſe two *colours* are formed *cinnamon-colour*, *cheſnut*, *muſk*, *bears-hair*, and even *purple* ; if the red be that of madder.

Yellow and brown. The *colours* formed from theſe two are all the ſhades of *feuille-morts* and *hair-colours*.

It may be obſerved, that though we ſay, there are no *colours*, or ſhades, made from ſuch and ſuch mixtures ; it is not that none can be made ; but only that they are more eaſily formed from the mixture of other *colours*.

Colour *Wine*. See the article Wine.

Colour, in heraldry.—The *colours* generally uſed in heraldry, are red, blue, black, green, and purple ; which, by the learned in that ſcience, are called *gules*, *azure*, *ſable*, *vert*, or *ſinople*, and *purpure*. *Tenne*, or *tawny*, and *ſanguin*, are not ſo common. See each *colour* under its proper article Gules, Azure, Vert, Sinople, &c.

As to yellow and white, called *or* and *argent*, they are metals, not *colours*.

Theſe *colours* and metals are ſometimes alſo expreſſed in blazon by the names of precious ſtones ; and ſometimes by thoſe of planets, or ſtars.—Thus, or is called *ſol*, and *topaz* ; argent, *luna*, and *pearl* ; gules, *mars*, and *ruby* ; azure, *jupiter*, and *ſapphire* ; ſable, *ſaturn*, and *diamond* ; vert, *venus*, and *emerald* ; purpure, *mercury*, and *amethyſt* ; tenne, the *dragon's-head*, and *hyacinth* ; and ſanguin, the *dragon's-tail*, and *ſardonyx*.

It is a general and fundamental rule in blazon, not to place *colour* upon *colour*, nor metal upon metal. That is, if the field be of a *colour*, the bearing muſt be of a metal : though this rule, on ſome occaſions, and in ſome circumſtances, is diſpenſed withal ; as in the diminutions and differences which diſtinguiſh the younger from the elder branches of families ; and in the extremities of animals tongues, claws, horns, &c. In which caſes *colour* may be on *colour*, and metal on metal, without falſe heraldry.

Oenomaus is ſaid to have firſt invented the diſtinction of *colours*, to diſtinguiſh the quadrillæ of combatants at the Circenſian games : the green for thoſe who repreſented the earth ; and the blue for thoſe who repreſented the ſea.

Hence the antient cavaliers took occaſion to diſtinguiſh themſelves in their tournaments, by habits, plumes, and ribbands of different *colours*; which were ordinarily thoſe of their miſtreſſes, and were the ſymbol of ſome paſſion or quality.—Hence alſo the origin of *colours* in liveries.

Colours, in the military art, include the banners, flags, enſigns, *&c.* of all kinds, borne in an army, a fleet, or the like. See Flag, and Standard.

Field-Colours. See the article Field.

Colours, are alſo uſed both in the Latin and Greek churches, to diſtinguiſh ſeveral myſteries and feaſts celebrated therein.

In the Latin Church are only regularly admitted five *colours*; *viz. white*, *red*, *green*, *violet*, and *black*: the *white* is for the myſteries of our Saviour, the feaſts of the Virgin, thoſe of the angels, ſaints, and confeſſors; the *red* for the myſteries and ſolemnities of the holy ſacrament, the feaſts of the apoſtles and martyrs; the *green* for the time between pentecoſt and advent, and from epiphany to ſeptuageſima; *violet* in advent, chriſtmas, in vigils, rogations, and in votive maſſes in time of war: laſtly, *black* for the dead, and the ceremonies thereto belonging. Cloths of gold and ſilver, and embroideries, ſerve indifferently for all ſolemnities.

In the Greek church the uſe of *colours* is almoſt obliterated, as well as among us: *red*, among them, was the *colour* for chriſtmas, and the dead; as black is ſtill for the laſt among us.

Colour, in law, is a probable, or plauſible plea; though in reality falſe at bottom; and only calculated to draw the tryal of the cauſe from the jury to the judge.

Thus, *e. gr.* in an action of treſpaſs for taking away the plaintiff's beaſts, the defendant urges, that before the plaintiff had any intereſt in them, he himſelf was poſſeſſed of them, as his proper goods; and delivered them to A. B. to deliver to him again, when, *&c.* and A. B. gave them to the plaintiff: and the plaintiff, ſuppoſing the property to be in A. B. at the time the gift, took them; and the defendant took them again from the plaintiff; whereupon the plaintiff brings his action.—This is a good *colour*, and even a good plea. Doct. and Stud.

Colour *of Office*, is when ſome unjuſt action is done, under countenance of office, or authority.

To **Colour** *ſtrangers goods*, is when a freeman allows a foreigner to enter goods at the cuſtom-houſe in his name.

Colourable *Title*. See the article Title.

COLOURING, in painting, the manner of applying, and conducting the colours of a picture; or the mixture of lights and ſhadows, formed by the various colours, employ'd in a painting.

The *colouring* is one of the principal branches in painting. M. Felibien divides the painter's art into three parts; the deſign, the compoſition, and the *colouring*. The *colouring* ſtrikes the moſt; but amongſt maſters it always gives place to exactneſs of deſign.

De Piles obſerves, that the word *colouring*, in its confined ſenſe, is chiefly applicable to a hiſtory-piece; ſcarce at all to a landſkip. He adds, that the term *colouring* relates more immediately to the carnations than any thing elſe.

The *colouring*, in its general ſenſe, takes in whatever relates to the nature and union of *colours*; their agreement or antipathy; as alſo how to uſe them to advantage in light and ſhadow, ſo as to ſhew a relievo in the figures, and a ſinking of the ground: what relates to the aereal perſpective, *i. e.* the diminution of colours by means of the interpoſition of air; the various accidents and circumſtances of the luminary and the medium; the different lights, both of the bodies illuminating and illuminated; their reflexions, ſhadows, different views, with regard either to the poſition of the eye, or the object: what produces ſtrength, boldneſs, ſweetneſs, *&c.* in paintings well coloured: the various manners of *colouring*, both in figures, landſkips, *&c.*

Doctrine of **Colouring.** *Colours* are conſidered, either in reſpect of their uſe, or their œconomy and diſpoſition.

1ſt, With regard to their uſe. They are either in oil, or water: thoſe in oil, again, may either be conſidered with a view to their preparation, or application.

In the preparation of oil-colours, care muſt be taken that they be ground fine; that in putting them on the pallet, thoſe which will not dry of themſelves, be mixed with drying oil, or other driers; and that the tinged colours be mixed in as ſmall quantities as poſſible.

For their *application*, it is conſidered either with regard to the kinds of painting, whether in works of various colours, or in thoſe of one ſingle colour.

For the *firſt*: in the larger pieces, the colours are either laid on full, ſo as they may be impaſted, or incorporated together, which makes them hold the more firmly.

Or elſe they mix thoſe more agreeable ones, which dry too hard, and too haſtily, with a little colour, and the cleareſt of the oil: but, in both caſes, the colours are to be laid on ſtrong at firſt; it being eaſy to weaken thoſe that are to be thruſt back, and to heighten the others: the touches to be bold, by the conduct of a free and ſteady pencil; that the work may appear the moſt finiſhed at a proper diſtance, and the figures animated with life and ſpirit.

For glazed colours, particular care muſt be taken that the under-colour be painted ſtrong, and that it be a body-colour, and laid ſmooth.

In finiſhed works, which are to be viewed near at hand, they proceed, either by applying each colour in its place; preſerving their purity, without fretting or tormenting them, but ſweetly ſoftening off their extremities: or by filling up all the great parts with one ſingle colour; and laying the other colours, which are to form the little things, upon it: which is the more expeditious way, but is more apt to decay.

For the *ſecond*: the kinds of pictures in one colour are two; *viz. camieux*, where the degradations of colours of objects afar off are uſually managed by lights, as with crayons; and *baſſo-relievo*, which is an imitation of ſculpture, of whatſoever matter and colour: in both theſe, the colours are wrought dry.

For water-colours; they are wrought various ways; *viz.* in *diſtemper*, as the painters expreſs it, where the colours are prepared in ſize; which method is uſed on all kinds of matter; in *freſco*, or painting on freſh morter; where the *colouring* muſt be quick, that the matter dry not; and with much care and neatneſs, laying each colour in its place, and intermingling them by parcels: in *agouache*, where the colours are mixed with gum, and the pencil dragged; as in paint and waſhings: in *miniature*, for ſmall and delicate works; where the colours are to be very fine and clean, mixed with gums, and wrought in dots or points.

But in all the kinds of painting, both in oil and diſtemper, eſpecially the latter, proper care muſt be taken, that the deſign be fixed, and all the parts marked out, ere any colours be applied. For the 2d part of *colouring*, or the œconomy and diſpenſing thereof in paintings; regard is either had, firſt, to the qualities of the colours, to appropriate them according to their value and agreement; or, ſecondly, to their effect, in the union and œconomy of the work.

For the *qualities*, it muſt be obſerved, that white repreſents light, and gives the briſkneſs and heightening: black, on the contrary, like darkneſs, obſcures and effaces the objects: again, black ſets off the light parts; and by that they ſerve each other to looſen the objects. A proper choice to be made of colours, and the too much charged manner to be avoided; both in carnations, where red colours are not to be effected, as rather reſembling the fleſh when flayed than the ſkin; and all bright glowing colours: the ſkin, how delicate ſoever, being always of a down colour. In the drapery, where the painter has his whole ſtock of colours to chuſe out of, to procure a good effect; and in the landſkip to diſpoſe thoſe colours near one another, which mutually aſſiſt and raiſe each other's force and briſkneſs; as red and green, yellow and blue.

To manage them ſo, as that they be accommodated to the effects of the great parts of light and colour: that the ſtrong colours lead to the ſoft ones, and make them more looked at; bringing them forwards, or keeping them back, according to the ſituation, and the degree of force required.

For the *effects of colours*, they either regard the union, or the œconomy: with reſpect to the firſt, care muſt be taken, that they be laid ſo as to be ſweetly united, under the briſkneſs of ſome principal one; that they participate of the prevailing light of the piece; and that they partake of each other by the communication of light, and the help of reflexion.

For the *œconomy in managing their degrees*, regard is to be had to the contraſt, or oppoſition intervening in the union of the colours, that by a ſweet interruption, the briſkneſs, which otherwiſe fades and palls, may be raiſed to the harmony, which makes the variety of colours agree; ſupplying and ſuſtaining the weakneſs of ſome by the ſtrength of others; neglecting ſome places, on purpoſe to ſerve as a baſis or repoſe to the ſight, and to enhance thoſe which are to prevail through the piece: to the degradation, where, the better to proportion the colours that fall behind, ſome of the ſame kind are to be preſerved in their purity, as a ſtandard for thoſe carried afar off to be compared by, in order to juſtify the diminution: regard being always had to the quality of the air, which, when loaded with vapours, weakens the colours more than when clear: to the ſituation of the colours, where care muſt be taken, that the pureſt and the ſtrongeſt be placed before, or in the front of the piece; and that by their force the compound ones, which are to appear at a diſtance, be kept back; particularly, the glazed colours to be uſed in the firſt rank: laſtly, to the expreſſion of the ſubject, and the nature of the matters, or ſtuffs, whether ſhining or dull, opake or tranſparent, poliſhed or rough.

Colouring *and* **Non-colouring** *drugs*: thus the dyers diſtinguiſh their materials; the firſt are applicative, and communicate their colours to the matters boiled in them, or paſſed through them; as woad, ſcarlet, green, cochineal, indigo, madder, turmeric, *&c.*

The ſecond ſerve to prepare and diſpoſe the ſtuffs, and other matters; and to extract the colour out of the *colouring* ingredients; as alum, ſalt, or cryſtal, of tartar, arſenic, realgar, ſaltpetre, common ſalt, ſal armoniac, ſal gemmæ, agaric, ſpirit of wine, bran, peas-flour, wheat, ſtarch, lime, and aſhes.

COLUMBINE, a kind of violet-colour, called alſo *dove-colour*. See Colour, and Dying.

COLUMBUS.—*Congregation of St.* Columbus is the name of a congregation of regular canons, formerly of great extent, having under it an hundred abbeys, or monaſteries, in the Britiſh iſlands. See Congregation, and Canon.

The principal monaſtery, or chief of the order, according to ſome, was at Armagh; according to others, at Londonderry: others will have it in the iſland of Huy, or Hi, or Iona, now called Ycolmkil, to the north of Ireland, not far from Scotland. There is a rule in Iriſh verſe, ſuppoſed to have been dictated by S. Columbus to his canons.

COLUMN, in architecture, a round pillar, made to ſupport, or adorn, a building.

The *column* is the principal, or reigning part, of an architectonical order.

The principal laws and properties of this eminent member of architecture are thus deduced.—Every fulcrum, or ſupport, is ſo much the more perfect, as it is the firmer, or carries the greater appearance of firmneſs: and hence all *columns*, or pillars, ought to have their baſe, or foot, broader than themſelves. See BASE.

Again, as a cylinder and a quadrangular priſm are more eaſily removed out of their place than a truncated cone, or a pyramid, on the ſame baſe, and of the ſame altitude; the figure of *columns* ought not to be cylindrical; nor, that of a pilaſter, pyramidal; but both the one, and the other, to be contracted, or diminiſhed; *i. e.* to grow leſs and leſs, like a truncated cone, and a truncated pyramid.

For the ſame reaſon, the loweſt parts of *columns* ought to be cylindrical; that of pilaſters, pyramidal: hence, again, as *columns* are more firm, if their diameter bears a greater proportion to their height, than if it bore a leſs; the greater ratio is to be choſen, where a large weight is to be ſuſtained; and leſs, where a leſſer. Further, as the deſign of a *column* is to ſupport a weight, it muſt never be ſuppoſed without an entablature: though a *column* raiſed on an eminent place, ſo as to leave no room to fear its being thruſt out of its place, needs no pedeſtal.

The intire *column*, in each order, is compoſed of three principal parts; the *baſe*, the *ſhaft*, and the *capital*. See the proportions of each, under its reſpective head; CAPITAL, &c.

Each of theſe parts, again, is ſubdivided into a great number of leſſer, called *members*, or *mouldings*: ſome whereof are eſſential, and found in all *columns*; others are only accidental, and found in particular orders.

Columns are different, according to the ſeveral orders they are uſed in; and likewiſe, not only with regard to their order, but alſo to their matter, conſtruction, form, diſpoſition, and uſe.—With regard to order, we have the

Tuſcan COLUMN, the ſhorteſt, and moſt ſimple, of all the *columns*. Its height, according to Vitruvius, Palladio, and Vignola, is ſeven diameters, or fourteen modules; according to Scamozzi, it is fifteen modules; to De Lorme, twelve; to Trajan's *column*, ſixteen.—Its diminution, according to Vitruvius, is one fourth of the diameter; according to Vignola, a fifth; and according to Trajan's *column*, a ninth.—Its ſeveral parts, mouldings, &c. ſee under their proper heads; and the intire figure, ſee repreſented in *Tab. Architecture*, *fig.* 24.

Doric COLUMN is ſomewhat more delicate: its ſhaft is adorned with flutings: its height, according to Vitruvius, is from fourteen to fifteen modules; to Scamozzi, ſeventeen; to Vignola, ſixteen; in the Coliſeum, nineteen; in the *theatre of* Marcellus, fifteen two thirds.—Its diminution, according to the *theatre of* Marcellus, twelve minutes; to the Coliſeum, four minutes and a half. See *Tab. Architecture*, *fig.* 28.

nic COLUMN is more delicate ſtill: it is diſtinguiſhed from the reſt by the volute in its capital, and by its baſe. See VOLUTE. Its height, according to Palladio, is ſeventeen modules one third; according to Vignola, eighteen.—Its diminution, in the temple of Concord, ten minutes and a half; of Fortuna virilis, ſeven and a half; Coliſeum, ten minutes. See *Tab. Architect.* *fig.* 32.

orinthian COLUMN is the richeſt and moſt delicate of all the *columns*.—Its capital is adorned with two rows of leaves, and with caulicoles; whence ſpring out little volutes.

Its height, according to Vitruvius, and many remains of antique porticos, temples, &c. is nineteen modules; according to Serlio, eighteen; to the Coliſeum, 17.07; to the three *columns* in the Campo vaccino, twenty; the baſilica of Antoninus, twenty.—Its diminution, according to the temple of Peace, is ſix minutes and a half; the Pantheon, ſix one eighth; temples of Sibyl and Fauſtina, eight; Conſtantine's arch, ſeven; portico of Septimius, ſeven and a half. See *Tab. Architect.* *fig.* 26.

mpoſite COLUMN has two rows of leaves in its capital, like the Corinthian; and angular volutes, like the Ionic. See COMPOSITE.

Its height, according to Vignola, and the arch of Titus, is twenty modules; to Scamozzi, and the temple of Bacchus, nineteen and a half; the arch of Septimius, 19.09.—Its diminution, according to Titus's and Septimius's arches, ſeven minutes; baths of Diocleſian, eleven minutes one third; temple of Bacchus, ſix and a half. See *Tab. Architect.* *fig.* 30.

It may be here obſerved, that there ſeems more of caprice than reaſon in that diverſity found in the heights of *columns* of the ſame order, in different authors; each of whom frequently takes the liberty of diſpenſing with his own rules.—Vitruvius, for inſtance, makes the Doric *columns* of temples ſhorter than thoſe of porticos behind theatres; Palladio gives a greater height to *columns* ſtanding on pedeſtals, than to thoſe which have none; and Serlio makes his *column* a third ſhorter, when inſulate, or detached, than when contiguous to a wall.

But notwithſtanding the diverſity of height in *columns* of the ſame order in different authors, they ſtill bear a like proportion in the ſeveral orders compared with each other; by which they go increaſing, as the orders are leſs maſſive.

But this augmentation is greater in ſome ordonnances than in others: for in the antique it is but of five modules, or ſemi-diameters, for the five orders: the ſhorteſt *column*, that is, the Tuſcan, being fifteen modules; and the longeſt, the Compoſite, twenty. In Vitruvius, this increaſe is alſo of five modules; but commences from fourteen modules, and ends at nineteen. The moderns uſually make it greater: Scamozzi makes it five modules and a half; Palladio and Serlio, ſix.

From the ſeveral proportions of *columns* aſſigned by ſeveral authors, M. Perrault has drawn a new one; which is a mean between the extremes of the reſt.—Thus, he makes the Tuſcan *column* fourteen modules two thirds; which is a kind of mean between the Tuſcan of Vitruvius, fourteen, and that of Trajan's *column*, eighteen: the height of the Doric *column* he makes ſixteen modules; which is a mean between the fourteen of Vitruvius, and the nineteen of the Coliſeum: the Ionic he makes ſeventeen modules one third; which is a mean between the ſixteen of Serlio, and the nineteen of Coliſeum: the Corinthian *column* he makes eighteen modules two thirds; as being a medium between the ſixteen modules ſix minutes of the temple of the Sibyl, and the twenty modules ſix minutes of the three *columns* of the Roman forum: laſtly, the Compoſite *column*, by the ſame rule, he makes twenty modules; that height being a mean between the arch of Titus, and the temple of Bacchus.

Indeed, the rule he proceeds by ſeems very reaſonable; *viz.* that the progreſſional advance of each *column* in the different orders is to be equal: ſo that having ſettled the whole progreſſion, from the Tuſcan to the Compoſite, at five modules ten minutes; this being a mean between the five modules of the antique, and the five and a half of the moderns; he divides this ſum, which is 160 minutes, into four equal parts, giving forty minutes to the progreſſion of each order: this makes the Tuſcan *column* fourteen modules twenty minutes; the Doric becomes ſixteen, the Ionic ſeventeen ten minutes, the Corinthian eighteen twenty minutes, and the Compoſite twenty modules.

For the diſtinguiſhing characters of each order of *columns*, ſee ORDER.—For the matter of *columns*, ſee STONE, MARBLE, &c.—For their uſe and application, ſee BUILDING.—For the ranging of *columns*, and the ſpaces to be obſerved between each; ſee INTERCOLUMNATION.

COLUMNS, *different with regard to their matter.*

Fuſible COLUMN. Under this term are comprehended, not only *columns* of various metals, and other fuſible matters, as glaſs, &c. but alſo thoſe of ſtone, ſaid to have been caſt; the ſecret of which ſome will have us believe to have been known to the antients.

Hydraulic COLUMN is that whoſe ſhaft appears to be of cryſtal; being formed by a number of little threads of water, falling from holes made in a girt of metal, at equal diſtances, by means of a pipe mounting through the middle thereof: as in the gardens at Verſailles.

Hydraulic COLUMN alſo denotes a *column* from whoſe top proceeds a jet d'eau, to which the capital ſerves as a baſon; whence the water deſcends by a little pipe, which turns ſpirally around the ſhaft.—Such are the Ionic *columns* of the caſcade of the Belvidera at Freſcati; and thoſe of the vineyard Matthei at Rome.

Moulded COLUMN is that made by impaſtation, of gravel and flints of divers colours, which are bound together with a cement, which grows perfectly hard, and receives a poliſh like marble.

The ſecret of making theſe, it appears, the antients were maſters of, by the *columns* lately diſcovered near Algiers; which are, doubtleſs, the ruins of the antient Julia Cæſarea: on all theſe is found the very ſame inſcription in antique characters, the contours, accents, and even faults, being repeated in every ſhaft: an inconteſtable proof of their being moulded.

Tranſparent COLUMN, any *column* made of tranſparent matter: as were thoſe of cryſtal in the theatre of Scaurus, mentioned by Pliny; and thoſe of tranſparent alabaſter, in the church of St. Mark, at Venice.

Water COLUMN is a ſort whoſe ſhaft is formed of a large jet d'eau; which, ſpouting out water violently from the baſe, drives it within the tambour of the capital, which is made hollow; whence, falling down again, it has the effect of a liquid cryſtal *column*. See FOUNTAIN.—An inſtance of this we have at Quinta d'Aveiro, near Liſbon.

COLUMN *of bands*, or *tambours*, that whoſe ſhaft is formed of ſeveral courſes of ſtone, or blocks of marble, leſs high than the diameter of the *column*: this is what Ulpian means by *columna ſtructilis*, or *adpacta*; which is oppoſite to the *columna ſolida*, or *integra*, *i. e.* of one piece.

COLUMNS *with regard to their conſtruction.*—COLUMN *of joinery* is that made of ſtrong timber-boards, joined, glued, and pinned together: it is hollow, turned in the lathe, and uſually fluted. Such are the *columns* in moſt altar-pieces.

COLUMN *of maſonry* is made of rough ſtone, well laid and covered with plaiſter; or of bricks moulded triangular-wiſe, and covered with ſtucco.

COLUMN *in truncheons*, or pieces, conſiſts of three, four, or five, pieces of ſtone, or metal; differing from the tambours, as being higher than the diameter of the *column*.

Geminated COLUMN, that whoſe ſhaft is formed of three ſimilar and equal ſides, or ribs of ſtone, fitted within one another; and faſtened at bottom with iron pins, and a-top with cramp-irons. This is to be fluted, that the joints may be the leſs diſcernible.

Incruſtated COLUMN is made of ſeveral ribs, or thin ſhells of fine marble, or ſome other rare ſtone, cemented upon a mould of ſtone, brick, or the like. This is done with deſign both to ſave the precious matter; as oriental jaſper, lapis lazuli, agat, &c. or to repreſent pieces of ſuch ſtones of an extraordinary ſize, by the neatneſs and cloſeneſs of the incruſtation, which renders the joints imperceptible.

Cabled, or *rudented* COLUMN, is a *column* having projectures in form of cables, or canes, in the naked of the ſhaft; each cable having an effect oppoſite to that of a fluting; and accompanied with a little liſt on each ſide.

Corolitic COLUMN, that adorned with foliages, or leaves and branches turned ſpirally around the ſhaft; or in form of crowns and feſtoons.

Theſe were uſed by the antients for erecting ſtatues on; which hence took the denomination of *corolitic*.—They are very ſuitable in triumphal arches, and decorations of theatres.

Coloſſal COLUMN, a *column* of enormous ſize, too large to enter any ordonnance of architecture; to be placed ſolitary, in the middle of a ſquare, &c.

Such is the Trajan *column*; whoſe proportions are Doric, and its profile Tuſcan; 12 feet and one eighth in diameter, and 100 in height, including the baſe and the capital: the pedeſtal of this *column* has 18 feet, and the crowning 16 and an half. It ſupports a brazen ſtatue of St. Peter, 13 feet high; the whole making 147 antient Roman feet.—It was built by Apollodorus; and conſiſts of 34 tambours, or blocks, or pieces of white marble, taking in the crowning.

The Antonine *column*, which is alſo of white marble, is inferior to the Trajan in beauty of ſculpture, but exceeds it in height; being 168 feet to the capital, beſides 7 feet of the pedeſtal under-ground. Laſtly, the London *column*, or monument, is of ſtone, 15 feet in diameter, and 202 high; taking in the pedeſtal and crowning.

Cylindrical COLUMN is that which has neither ſwelling nor diminution.

Diminiſhed COLUMN is that which has no ſwelling, but begins to taper, or diminiſh, from the baſe; in imitation of trees.

Such are moſt of the antique *columns* of granite; particularly the Corinthian ones in the porch of the Pantheon.

COLUMNS *denominated from their form.*—*Fluted* COLUMN, called alſo *channelled*, and *ſtriated column*; that whoſe ſhaft is adorned with flutes, or channellings; either from top to bottom, or only two thirds of its height.

Fluted and cabled COLUMN is that whoſe flutes are filled up with cables, reeds, or ſtaves; beginning from the bottom of the ſhaft, and reaching one third of its height.

Fluted COLUMN *inriched*, is that whoſe flutings are filled up with ornaments of foliages, rinds, ribbons, &c. inſtead of cables.

Gothic COLUMN, a round pillar, either too ſhort for its bulk, or too ſlender for its height; as having, ſometimes, 20 diameters; and this without either diminution, or ſwelling: yet its ornaments, and the characters of its work, being as far from thoſe of the antique, as its proportions.

Hermetic COLUMN, a kind of pilaſter, in manner of a terme; having the head of a man, in lieu of a capital. It had its name from a cuſtom, among the antients, of placing Mercury's head, whom the Greeks call *Hermes*, a-top of *columns*.

Maſſive COLUMNS are thoſe too ſhort for the order whoſe capital they bear; as the pillars in Gothic churches uſually are. See MASSIVE.

Under the term *maſſive* are, likewiſe, frequently comprehended *ruſtic* and *Tuſcan columns*.

Oval COLUMN, that whoſe ſhaft has a flatneſs; its plan being made oval, to reduce the projecture.

Paſtoral COLUMN, that whoſe ſhaft is formed in imitation of the trunk of a tree, with bark and knots.

This kind of *column*, in the Tuſcan proportion, may be uſed in the gates of parks and gardens; and in the decoration of paſtoral ſcenes, &c.

Polygonous COLUMN has ſeveral ſides, or faces: the moſt regular of theſe have eight faces.

This, with the oval and cylindrical *columns*, Daviler regards as abuſes in architecture.

Serpentine COLUMN, a *column* formed of three ſerpents, twiſted together; the heads whereof ſerve as a capital.

An inſtance of this is at Conſtantinople, in the ſquare called *Atmeidan*, antiently the hippodrome. P. Gyllius calls this the *Delphic column*; as imagining it antiently ſerved for the tripod of Apollo, in the temple at Delphos. It is now ordinarily called the *taliſman*, or *inchanted column*.

Swelled COLUMNS are thoſe which have a bulging, or ſwelling, in proportion to the height of the ſhaft.

Authors are much divided on the ſubject of this *ſwelling*: Sir H. Wotton treats it as a moſt ridiculous abuſe: yet the practice obtains among the modern architects; who generally make their *columns* a little bigger at one third of their height, than at the baſe; *i. e.* they diminiſh the *column* near the baſe; which makes the upper-part appear big, and occaſions a ſwelling at about one third of the height.

This ſwelling appears to have been unknown to the antients. M. Le Clerc obſerves, it ought not to exceed one minute and a half at moſt. He thinks it ought never to be uſed, excepting where there is a particular occaſion for it; as where *columns* are to be placed over one another.

Twiſted COLUMN is that whoſe ſhaft is twiſted round, in manner of a ſcrew, with ſix circumvolutions; being, ordinarily, of the Corinthian order: Vignola firſt found a method of drawing it by rule.

Twiſted fluted COLUMN is that whoſe flutes follow the contour of the ſhaft, in a ſpiral line throughout the whole length; whereof there are ſome antique ones of porphyry, and hard marble.

COLUMN *twiſted and inriched* is that, one third of whoſe ſhaft is fluted, and the reſt adorned with foliages and other inrichments: and which, being all of marble, is inriched with ſculpture from bottom to top.

Sometimes, again, the *twiſted column* is formed of two or three ſlender ſhafts, twiſted round, ſo as to leave a cavity in the middle. Sometimes the flutings are ſpiral, yet the ſhaft ſtrait; which ſucceeds very well in the more delicate orders.

COLUMNS *denominated from their diſpoſition.*—COLUMN *inſerted*, or *backed*, is that let into a wall, a third or fourth part of its diameter.

COLUMN *niched* is that whoſe ſhaft enters, with half its diameter, into a wall, which is hollowed for its reception; with its plane parallel to the projecture of the tore.

Such is that in the portal of St. Peter at Rome.

Angular COLUMN is an inſulated *column*, placed in the coin, or corner of a portico; or inſerted into the corner of a building: or, even a *column* that flanks an angle, either acute or obtuſe, of a figure of many ſides.

Attic COLUMN, according to Pliny, is a pilaſter inſulated; having four equal faces, or ſides; and of the higheſt proportion, *v. g.* Corinthian.

Cantoned COLUMNS are thoſe engaged in the four corners of a ſquare pillar, to ſupport four ſprings of an arch.

Coupled COLUMNS are thoſe diſpoſed, by two and two, ſo as almoſt to touch each other at their baſes, and capitals.

Doubled COLUMN is an aſſemblage of two *columns*, joined in ſuch a manner, as that the two ſhafts penetrate each other with a third of their diameter. Such are thoſe of the four angles in the court of the Louvre.

Flanked COLUMN, according to M. Blondel, is a *column* engaged with one half, or at leaſt one third of its diameter, between two demi-pilaſters.

Grouped COLUMNS are thoſe placed on the ſame pedeſtal, or ſocle; either by three and three, or by four and four.

Inſulated COLUMN is that ſtanding free, and detached on all ſides, from any other body.

Median COLUMNS. Vitruvius gives the name *columnæ median* to the two *columns* in the middle of a porch, which have thei intercolumniation larger than the reſt: that if theſe laſt, fo inſtance, be *pycnoſtyle*; the *Medianes* are *euſtyle*.

The term may alſo be applied to the middle row of *colum* in a frontiſpiece adorned with three orders.

COLUMNS *denominated from their uſe.*—*Aſtronomical* COLUM is a kind of obſervatory, in form of a very high tower; bu hollow, and with a ſpiral aſcent to an armillary ſphere place a-top, for obſerving the motions of the heavenly bodies.

Such is that, of the Doric order, erected at the Hotel de So ſons at Paris, by Catherine De Medicis, for the obſervations Orontius Fineus, a celebrated aſtronomer of that time.

Chronological COLUMN, that which bears ſome hiſtorical inſcri tion, digeſted according to the order of time; as by luſtr olympiads, faſti, epochas, annals, &c.—At Athens the were *columns* of this kind, whereon were inſcribed the wh hiſtory of Greece, digeſted into olympiads.

Funeral COLUMN is that which bears an urn, wherein are ſ poſed to be incloſed the aſhes of ſome deceaſed hero; whoſe ſhaft is ſometimes overſpread with tears, or fla which are ſymbols of grief, and of immortality.

Gnomonic COLUMN is a cylinder, whereon the hour of the is repreſented by the ſhadow of a ſtyle.

Of theſe there are two kinds: in the one, the ſtyle is fi and the hour-lines are no more than the projection of a v tical dial on a cylindrical ſurface.

In the other, the ſtyle is moveable; and the hour-lines drawn to the different heights of the ſun, in the different ſons of the year.

Hiſtorical COLUMN is that whoſe ſhaft is adorned with a b relievo, running in a ſpiral line its whole length, and co ing the hiſtory of ſome great perſonage. Such are the *Tr* and *Antonine columns*, at Rome.

Hiſtorical columns may likewiſe be divided by bands, or tamb into ſeparate baſſo-relievos, containing diſtinct ſubjects; by means, the ſame *columns* may likewiſe be made to anſw end of chronological ones.—This manner Vignola prefers to the former; which, he thinks, appears too much confuſed.

Hollow COLUMN, that which has a ſpiral ſtaircaſe within-ſide, for the convenience of aſcending to the top.—As the Trajan *column*, the ſtaircaſe whereof conſiſts of 185 ſteps, and is illumined by 43 little windows. See TRAJAN.—The Antonine *column* has 198 ſteps, with 56 windows; each of theſe is divided by tambours of white marble. The monument or *fire-column*, at London, has alſo a ſtair-caſe; but it does not reach to the top.—Theſe kind of *columns* are called alſo *columnæ coclides*, or *cochlideæ*.

Indicative COLUMN, that which ſerves to ſhew the tides, &c. along the ſea-coaſts. Of this kind, there is one at Grand Cairo, of marble, whereon the overflowings of the Nile are expreſſed: by this they form a judgment of the ſucceeding ſeaſon: when the water, for inſtance, aſcends to 23 feet, it is a ſign of great fertility in Egypt.

Inſtructive COLUMN, that raiſed, according to Joſephus, lib. I. cap. 3. by the ſons of Adam, whereon were engraven the principles of arts and ſciences.

Baudelot tells us, that the ſon of Piſiſtratus raiſed another of this kind, of ſtone; containing the rules and precepts of agriculture.

tinerary COLUMN, a *column* with ſeveral faces, placed in the croſs-ways in large roads; ſerving to ſhew the different routes, by the inſcriptions thereupon.

actary COLUMN, at Rome, according to Feſtus, was a *column* erected in the herb-market, which is now the place Montanara; which had a cavity in its pedeſtal, wherein young children, abandoned by their parents, out of poverty or inhumanity, were expoſed, to be brought up at the public expence.

egal COLUMN. Among the Lacedemonians, there were *columns* raiſed in public places, whereon were engraven the fundamental laws of the ſtate.

imitrophous, or *boundary* COLUMN, is that which ſhews the limits of a kingdom, or country conquered.—Such was that, which Pliny ſays Alexander the Great erected at the extremities of the Indies.

As to thoſe of Hercules, ordinarily called his *columns*, or *pillars*; they are two very ſteep mountains in the ſtreights of Gades, now Gibraltar.

uminous COLUMN, is a ſort of *column* formed on a cylindrical frame, mounted and covered over with oiled paper, or gawze; ſo that lights being diſpoſed in ranks within, over each other, the whole appears as on fire.

This ſort of *column* is likewiſe made with rows of lamps, or torches running round its ſhaft; either in horizontal belts, or bands; or in a ſpiral line, over a continued feſtoon of flowers.

anubiary COLUMN, from the Latin *manubiæ*, ſpoils of the enemy; a *column* adorned with trophies, built in imitation of trees, whereon the ſpoils of enemies were antiently hung.

emorial COLUMN, that raiſed on occaſion of any remarkable event; as the monument in London, built to perpetuate the memory of the burning of that city, in 1666.

It is of the Doric order, fluted, hollow, with a winding ſtaircaſe; and terminated at top with waving flames.

There is alſo another of the like kind, in form of an obeliſk, on the banks of the Rhine in the Palatinate, in memory of the famous paſſage of that river, by the great Guſtavus Adolphus, and his army.

enian COLUMN, any *column* which ſupports a balcony, or meniana.—The origin of this kind of *column*, Suetonius and Aſcanius refer to one Menias; who, having ſold his houſe to Cato and Flaccus, conſuls, to be converted into a public edifice, reſerved to himſelf the right of raiſing a *column* without-ſide, to bear a balcony; whence he might ſee the ſhews.

iliary COLUMN, was a *column* of marble, raiſed by order of Auguſtus, in the middle of the Roman forum; from whence, as a centre, the diſtances of the ſeveral cities, &c. of the empire were reckoned, by other *miliary columns* diſpoſed at equal diſtances, on all the grand roads.

This *column* was of white marble; the ſame with that which is now ſeen on the balluſtrade of the perron of the Capitol at Rome. Its proportion is maſſive; being a ſhort cylinder, ſupporting a ſymbol of the globe of the earth.

It was called *milliarium aureum*, as having been gilt, at leaſt the ball, by order of Auguſtus. It was reſtored by the emperors Veſpaſian and Adrian; as appears by the inſcriptions.

ilitary COLUMN, among the Romans, a *column* whereon was engraven a liſt of the forces in the Roman army, ranged by legions, in their proper order; with deſign to preſerve the memory of the number of ſoldiers, and of the order preſerved in any military expedition.

The Romans had another kind of *military column*, which they called *columna bellica*, ſtanding before the temple of Janus; at the foot whereof the conſul declared war, by throwing a javelin towards the enemies countries.

ſphorical COLUMN, a *light-houſe*; or a hollow *column*, built on a rock, or the tip of a mole, or other eminence, to ſerve as a lantern to a port.

ral COLUMN, that adorned with the beaks or prows of ſhips, and gallies, with anchors and grapplers; erected, either in memory of a naval victory; as the Tuſcan *column*, in the capitol: or, in honour of ſome admiral; as the Doric ones, at the entrance of the caſtle de Richelieu.

Sepulchral COLUMN, antiently, was a *column* erected on a tomb or ſepulchre; with an inſcription on its baſe. See TOMB, &c.

Thoſe over the tombs of perſons of diſtinction were very large; thoſe for the common people ſmall: theſe laſt are called *ſtelæ* and *cippi*.

Statuary COLUMN, that which ſupports a ſtatue. Such was that erected by pope Paul V. on a pedeſtal before the church of St. Maria major at Rome; to ſupport a ſtatue of the Virgin, which is of gilt braſs. See STATUE.

This *column* was dug up in the temple of peace; its ſhaft is a ſingle block of white marble 49 feet and an half high, and five feet eight inches diameter; of the Corinthian order, fluted.

The term *ſtatuary column*, may likewiſe be applied to Caryatides, Perſians, Termini, and other human figures, which do the office of *columns*; and which Vitruvius calls *Telamones*, and *Atlantes*.

Symbolical COLUMN, is a *column* repreſenting ſome particular country, by the attributes proper thereto: as that of the French order, ſet with flower-de-luces, in the frontiſpiece of the Jeſuits church at Rouen: or ſome memorable action; as the *Corvinian column*, on which was a crow; erected to Valerius Maximus, ſurnamed Corvinus, in memory of his defeat of a giant in the army of the Gauls, by the aſſiſtance of a crow.

Under the title of *ſymbolic columns*, may alſo be comprehended thoſe which ſerve for ſymbols. Such is that on a medal of Nero, which expreſſes the ſtability of the Roman empire. See SYMBOL.

Triumphal COLUMN, a *column* erected among the antients in honour of an hero; the joints of the ſtones, or courſes whereof, were covered with as many crowns, as he had made different military expeditions.

Each crown had its particular name: as Vallaris, which was beſet with ſpikes, in memory of having forced a paliſade. Muralis, adorned with little turrets, or battlements; for having mounted an aſſault. Navalis, of prows and beaks of veſſels; for having overcome at ſea. Obſidionalis, or Graminalis, of graſs; for having raiſed a ſiege. Ovans, of myrtle; which expreſſed an ovation or little triumph: and Triumphalis, of laurel; for a grand triumph.

Procopius tells us of a *column* of this kind, erected in the place called Auguſteum, before the imperial palace of Conſtantinople, ſupporting an equeſtrian ſtatue of the emperor Juſtinian.

Zoophoric COLUMN, a kind of ſtatuary *column*, whereon is placed a figure of ſome animal. Such is one of the two *columns* of the great gate of Venice; whereon is the lion of St. Mark, and the arms of the republic: or that at Sienna, which bears the wolf that ſuckled Romulus and Remus.

Scenography of a COLUMN. See the article SCENOGRAPHY.

COLUMN, in war, denotes a deep file, or row of troops: or diviſion of an army, which marches at the ſame time, and towards the ſame place, at intervals large enough to avoid confuſion.

An army marches in one, two, three, or more *columns*; according as the ground will allow, and the general ſees expedient.

The word is ſometimes alſo uſed in ſpeaking of veſſels at ſea, following each other in the ſame line.—It is difficult to form *columns* at ſea, unleſs the wind be in ſtern.

COLUMN, among printers, is half a page, when the page is divided into two parts, from top to bottom. See PRINTING.

COLUMNA *naſi*, is uſed by ſome writers of anatomy, for the fleſhy end of the noſe, jutting out over the upper lip. See NOSE.

COLUMNA *oris*, is ſometimes uſed for the uvula. See UVULA.

COLUMNÆ *carneæ*, in anatomy, called alſo *lacertuli*, and *columnæ cordis*; are ſeveral ſmall muſcles in the ventricles of the heart; derived, and, as it were, detached from the parietes of thoſe ventricles, and connected by tendinous extremities to the valves of the heart.

Theſe little *columns*, or pillars, being faſtened to the parietes of the heart on one ſide, and the tricuſpid and mitral valves on the other; do, by their contraction in the ſyſtole of the heart, draw out the valves; and by that means, not only ſhut the orifices of the veins, but more exactly cloſe their ventricles in their ſyſtole.

COLUMNIATED *winding ſtairs*. See the article STAIRS.

COLURES *, in geography and aſtronomy, are two great circles, imagined to interſect each other at right angles, in the poles of the world.

* The word is derived from the Greek κολος, *mutilus*, or *truncatus*, and ȣρα, *tail*; *q. d.* appearing with the tail cut off; becauſe never ſeen intire above the horizon.

The *colures* paſs, one of them through the ſolſtitial, and the other through the equinoctial point of the ecliptic: whence the firſt is denominated the *ſolſtitial*, and the ſecond the *equinoctial colure*.

The equinoctial *colure* determines the equinoxes; and the ſolſtitial, the ſolſtices.

By thus dividing the ecliptic into four equal parts, they alſo mark the four ſeaſons of the year.

COLYBA, or COLYBUS, a term in the Greek liturgy, ſignifying an offering of corn, and boiled pulſe, made in honour of the ſaints, and for the ſake of the dead.

Balſamon, P. Goar, Leo Allatius, and others, have written on the ſubject of *colybæ*: the ſubſtance of what they have ſaid, is as follows.

The Greeks boil a quantity of wheat, and lay it in little heaps on a plate; adding beaten peas, nuts cut ſmall, and grapeſtones, which they divide into ſeveral compartments, ſeparated from each other by leaves of parſley. A little heap of wheat thus ſeaſoned, they call κολυβα.

They have a particular formula for the benediction of the *colybæ*; wherein, praying that the children of Babylon may be fed with pulſe, and that they may be in better condition than other people, they deſire God to bleſs thoſe fruits, and thoſe who eat them, becauſe offered to his glory, to the honour of ſuch a ſaint, and in memory of the faithful deceaſed.—Balſamon refers the inſtitution of this ceremony to S. Athanaſius; but the Greek Synaxary to the time of Julian the apoſtate.

Many of the Latin divines having ſpoken injuriouſly of this ceremony, Gabriel archbiſhop of Philadelphia has written a diſcourſe in its vindication: wherein he endeavours to ſhew, that the deſign of the *colyba* is only to repreſent the reſurrection of the dead, and to confirm the faithful in the belief thereof.—The *colybæ*, he ſays, are ſymbols of a general reſurrection; and the ſeveral ingredients added to the wheat, ſignify ſo many different virtues.

COMA, in medicine, a ſort of ſleepy diſeaſe, otherwiſe called *cataphora*; always bringing on a violent propenſity to ſleep, whether ſleep enſue, or not.

If ſleep do enſue, the diſeaſe is called *coma ſomnolentum*, wherein the patient continues in a profound ſleep; and when awaked, immediately relapſes, without being able to keep open his eyes. If he do not ſleep, but is continually awaked with frightful dreams, it is called *coma vigil*: in this caſe alſo his eyes are ſhut, and he appears aſleep.

The cauſe of the *coma ſomnolentum* may be any thing that prevents the courſe of the ſpirits; as a cold humid temperature of the brain; hot putrid vapours aſcending into the head, and ſtopping the canals of the animal ſpirits; narcotic vapours, &c. The *coma vigil* is ſuppoſed to ariſe from the conflict, or jarring mixture of bile with pituita; the one urging to ſleep, the other to waking. Hence the patient ſleeps either not at all, or, at moſt, but for a moment; is uneaſy, ſtarts, riſes up, and ſometimes throws himſelf on the perſons near him; his eyes continuing all the time faſt cloſed.

The remedies for a *coma*, are thoſe which occaſion great evacuations, as violent clyſters, or vomitives; medicines that purge, and dry the brain; and thoſe which occaſion revulſion of humours; as veſicatories, cauteries, &c. to which may be added volatile ſpirits, ſalts, and moſt cephalics. See Supplement, article COMA.

COMA BERENICES, *Berenice's hair*, in aſtronomy, a modern conſtellation of the northern hemiſphere; compoſed of unformed ſtars near the Lion's tail.

The ſtars in the conſtellation *coma Berenices*, in Ptolemy's catalogue are three; in Tycho's thirteen; in the Britannic catalogue forty. The order, names, longitudes, latitudes, magnitudes, &c. whereof are as follow.

Names and Situations of the Stars.	Signs.	Longitude.			Latitude.			Magn.
		°	′	″	°	′	″	
	♍	16	53	24	20	21	46	7
		17	44	9	20	2	11	6
		21	14	30	16	27	0	6
		17	21	15	24	45	23	6
		19	56	6	19	59	7	6
5								
First of all in the circle of the hair, to the ſouth.		23	16	44	15	13	55	5
		19	18	19	23	28	33	4 5
		20	24	1	22	56	57	7
		17	56	28	27	34	35	6
		17	50	59	27	51	56	6
10								
		23	5	51	18	10	53	4 5
3d of the prec. from the cuſp, or point		19	45	29	25	57	32	5
2d of the preced.		20	2	23	26	11	47	5
That preced. in the cuſp		19	55	40	27	26	54	5
In the cuſp towards the north		19	32	24	28	24	2	4 5
15								
That under this		20	16	55	27	6	50	5
That following this		21	10	29	26	29	11	6
Firſt of 3 contiguous ones behind this		22	10	36	24	55	18	6
		23	43	26	22	2	38	6
Middle of the contiguous ones		22	18	15	25	29	10	4 5
20								
Subſeq. and leſs		23	1	59	25	29	11	7
Anoth. following all theſe, and more S.		24	7	1	24	7	9	4
That preced. ſeveral under the hair		26	7	23	20	17	57	5
		27	6	49	19	19	12	6
		25	48	38	23	8	10	5
25								
		29	34	59	19	48	42	5
	♎	1	16	5	17	12	57	6
		1	10	30	17	48	0	5
	♍	24	57	52	29	58	24	6
Preced. in the hair		25	30	24	30	12	24	5
30	♎	0	39	2	20	48	10	7
More ſouth in the hair	♍	28	59	44	24	42	42	4 5
	♎	2	3	55	21	46	56	5
	♍	25	43	4	33	56	36	5 6
	♎	2	42	23	21	45	14	6
35								
		2	5	7	25	55	56	5
		1	22	51	27	14	39	6
Former of 2 in extrem. of the hair	♍	29	1	29	31	49	22	5
	♎	4	38	35	22	59	12	4 5
Poſterior in the extremity of the hair		0	6	31	32	28	33	4
40								

All theſe ſtars Ptolemy ranks among the *informes* of Leo; and the cluſter of little ſtars, in form of a nebulous one, between the lion and bear, he calls ſimply πλοκαμον; as reſembling an ivy-leaf; the pointed part whereof is turned towards the north, and the ſides bounded by the 7th and 22d ſtars. Bayer, inſtead of hair, gives a ſheaf of corn.

COMBAT, in a general ſenſe, denotes an engagement; or a difference decided by way of arms.

Authors ſometimes diſtinguiſh in an army, between a *combat* and a battle; the latter expreſſing the general action of the whole army: the former only a particular ſkirmiſh, or engagement of a ſingle part: ſo that the *combat* is properly a part of a battle.

COMBAT, in law, or, *ſingle combat*, denotes a formal trial, between two champions, of ſome doubtful cauſe or quarrel, by the ſword, or batoons.

This form of proceeding was antiently very frequent; and obtained not only in criminal, but alſo in civil cauſes: being built on a preſumption, that God would never grant the victory, but to him who had the beſt right.

We find the *combat* as early as the time of Otho: the laſt admitted in England, was 6 Car. I. between Donald Lord Rhee, or Rey, and David Ramſey, Eſq; in the painted chamber.

The form and ceremony of the *combat*, is deſcribed in the grand Coutumier of Normandy: the accuſer, firſt, ſwore to the truth of his accuſation; the accuſed gave him the lye; upon which, each threw down a gage, or pledge of battle; and the parties were committed priſoners to the day of *combat*. See CHAMPION.

Hiſtorians tell us, that Alphonſus K. of Caſtile, deſiring to aboliſh the Moſarabic liturgy, and to introduce the Roman office; the people oppoſing it, it was agreed to terminate the difference by *combat*; and to leave the cauſe to the deciſion of heaven.

COMBAT is alſo uſed for the ſolemn games of the antient Greeks and Romans, performed in honour of their gods; as the Olympic games, Pythian, Iſthmian, and Nemæan games; the ludi Actiaci, Circenſes, &c. which ſee in their places, OLYMPIC, ISTHMIAN, &c.

The *combats* here celebrated, were *running*, *wreſtling*, *boxing*, *ceſtus*, &c.—The combatants, who were called *athletæ*, prepared themſelves for it from their youth, by conſtant exerciſe, and a very rigid regimen: they only eat certain things, and at certain hours; drank no wine, had no commerce with women: and both their labour and their reſt were regulated.

COMBATANT, is the heralds word for two beaſts, as lions, or boars, borne in a coat of arms in a fighting poſture, erect on their hinder feet, and affrontee, or with their faces toward each other.

COMBINATION, is properly underſtood of an aſſemblage of ſeveral things by two and two: but is more particularly uſed in mathematics to denote the variation, or alternation of any number of quantities, letters, ſounds, or the like, in all the different manners poſſible.

P. Merſenne gives us the *combinations* of all the notes and ſounds in muſic, as far as 64; the ſum whereof amounts to 90 figures, or places.

The number of poſſible *combinations* of the 24 letters of the alphabet, taken firſt two by two, then three by three, &c. according to Mr. Preſtet's calculation, amount to 13917242 8888725299942512849340220.

The words in the following verſe may be combined a thouſand twenty-two ſeveral ways.

Tot tibi ſunt dotes, virgo, quot ſidera cœlo.

F. Truchet, in the memoirs of the French academy, ſhews, that two ſquare pieces, each divided diagonally into two colours, may be arranged and *combined* 64 different ways, ſo as to form ſo many different kinds of chequer-work; which appears ſurpriſing enough, when one conſiders that two letters or figures, can only be combined twice.

This note may be of uſe to maſons, paviours, &c. See PAVEMENT.

Doctrine of COMBINATION.—*Any number of quantities being given, together with the number in each* combination; *to find the number of* combinations.

One quantity, we obſerve, admits of no *combination*; two, *a* and *b*, of one; of three, *a b c*, there are three *combinations*, viz. *ab*, *ac*, *bc*; of four, ſix, *a b*, *a c*, *b c*, *a d*, *b d*, *c d*; of five, ten, *a b*, *a c*, *b c*, *a d*, *b d*, *c d*, *a e*, *b e*, *c e*, *d e*.

Whence it appears, that the numbers of *combinations* proceed 1, 3, 6, 10, &c. *i. e.* are triangular numbers, whoſe ſide diff by unity from the number of given quantities: if that, *v. gr.* be q, the ſide of the number of *combinations* will be $q-1$; and therefore the number of *combinations* $\frac{q-1}{1}.\frac{q+0}{2}$.

If three quantities are to be combined, and the number in each *combination* be three, there will only be one *combination*, *abc*; if a fourth be added, the *combinations* will be found *abc*, *abd*, *bcd*, *acd*; if a fifth, ten, *abc*, *abd*, *bcd*, *acd*, *abe*, *bde*, *bce*, *ace*, *ade*; if a ſixth, twenty, *&c.* The numbers of *combinations*, therefore, proceed as 1, 4, 10, 20, *i. e.* they are the firſt pyramidal triangular numbers, whoſe ſides differ by two units from the number of given quantities. See PYRAMIDAL *number*.

Hence, if the number of given quantities be q, the ſide will be $q-2$; and therefore, the number of *combinations* $\frac{q-2}{1}.\frac{q-1}{2}.\frac{q+0}{3}$.

Hence is eaſily deduced a general rule of determining the number of *combinations* in any caſe: for, ſuppoſe the number of quantities to be combined, q, the exponent of the *combination*, will be the number of *combinations* $\frac{q-n+1}{1}.\frac{q-n+2}{2}.\frac{q-n+3}{3}.\frac{q-n+4}{4}.\frac{q-n+5}{5}$, *&c.* till the number to be added be equal to n.

Suppoſe, *v. gr.* the number of quantities to be combined $=6$; the exponent of the *combination* 4; the number of *combinations* will be $\frac{6-4+1}{1}.\frac{6-4+2}{2}.\frac{6-4+3}{3}.\frac{6-4+4}{4}=\frac{6-3}{1}.\frac{6-2}{2}.\frac{6-1}{3}.\frac{6+0}{4}=\frac{3}{1}.\frac{4}{2}.\frac{5}{3}.\frac{6}{4}=15$.

Coroll. If it be deſired to have all the poſſible *combinations* of the given quantities beginning with the *combinations* of the ſeveral two's, proceeding to threes, *&c.* there muſt be added $\frac{q-1}{1}.\frac{q+0}{2}.\frac{q-2}{1}.\frac{q-1}{2}.\frac{q+0}{3}.\frac{q-3}{1}.\frac{q-2}{2}.\frac{q-1}{3}.\frac{q+0}{4}$, *&c.*

Whence the number of *combinations* poſſible will be $\frac{q.q-1}{1\ 2}+\frac{q.q-1.q-2}{1.2.3}+\frac{q.q-1.q-2.q-3}{1.2.3.4}+\frac{b.q-1.q-2.q-3.q-4}{1.2.3.4.5}$, *&c.* which is the ſum of the unciæ of the binominal, raiſed to the power q, and abridged of the exponent of the power increaſed by unity, $q+1$. Wherefore, ſince thoſe unciæ come out $1+1$, by being raiſed to the power q; and ſince $1+1=2$; $2q-q-1$ is the number of all the poſſible *combinations*. *V. gr.* If the number of quantities be 5, the number of poſſible *combinations* will be $2^5-6=32-6=26$.

Any number of quantities being given, to find the number of changes and alternations, which thoſe quantities, combined in all the manners poſſible, can undergo.

Suppoſe two quantities, *a* and *b*: their variations will be 2; conſequently, as each of thoſe may be combined, even with itſelf, to theſe there muſt be added two variations. The whole number, therefore, will be $2+2=4$. If there were three quantities, and the exponent of the variation were 2; the *combination* will be 3, and the changes 9; to which if the three *combinations* of each quantity with itſelf *aa*, *bb*, *cc*, be added, we ſhall have the number of changes, $3+3+3=9$.

In like manner, it is evident, if the given quantities were 4, and the exponent 2, the number of changes would be 16; if 5, 25, *&c.* and, in general, if n, n^2.

Suppoſe the quantities 3, and the exponent of variation 3; the number of changes is found $27=3^3$; viz. *aaa*, *aab*, *aba*, *aa*, *abb*, *aac*, *aca*, *caa*, *abc*, *bac*, *bca*, *acb*, *cab*, *cba*, *acc*, *ac*, *cca*, *bba*, *bab*, *bbb*, *bbc*, *cbb*, *bcb*, *bcc*, *cbc*, *ccb*, *ccc*.

After the ſame manner, it will appear, if the quantities were 4, and the exponent 3, the number of changes would be $64=4^3$: nd, in general, if the number of quantities be $=n$, and the xponent 3, the number of changes will be n^3. By thus proceeding, it will be found, that if the number of quantities be , and the exponent n, the number of changes will be n^n: herefore, if all the antecedents be added, where the exponent is leſs, the number of poſſible changes will be found $^n+n^{n-1}+n^{n-2}+n^{n-3}+n^{n-4}+n^{n-5}+n^{n-6}$, *&c.* Till at length, the number ſubtracted from n leaves 1; becauſe he beginning is from ſingle quantities taken once.

ince then the number of poſſible changes is in a geometrical rogreſſion, whoſe firſt or ſmalleſt term is n^1, the greateſt n^n, nd the denominator n; it will be $=(n^{n+1}-n):(n-1.)$ uppoſe *v. gr.* $n=4$. the number of poſſible changes (4^5-4) $(4-1)=1020:3=340$. Suppoſe, again, $n=24$, the number of poſſible changes will be $(24^{25}-24):(24-1)=32006586444068189867779553482726600:23=139172428887252999425128493402200$. In ſo many various manners, therefore, may the 24 letters of the alphabet be varied and ombined among themſelves.

MBING *of wool*, in commerce, the drawing, or paſſing wool croſs the teeth of a kind of card, called a *comb*, to diſpoſe for ſpinning.

MBS *of bees.* See the article HONEY-COMB.

MBURENDO *hæretico.* See the article HÆRETICO.

MBUST, in aſtronomy. When a planet is in conjunction ith the ſun, or not diſtant from it above half their diſk; it ſaid to be *combuſt*, or in *combuſtion*.

According to Argol, a planet is *combuſt*, or in *combuſtion*, when not above eight degrees and thirty minutes diſtant from the ſun, either before or after him.

COME.—The ſmall fibres or tails of malt, upon its firſt ſhooting forth, is thus called.

COMEDY, in its proper ſenſe, a dramatic piece, repreſenting ſome agreeable and diverting tranſaction: or an allegorical repreſentation of ſomething in private life; for the amuſement and inſtruction of the ſpectators.

In this ſenſe, *comedy* is oppoſed to *tragedy*, the ſubjects whereof are grave, and violent; and the perſons of the firſt rank.

Scaliger defines *comedy*, a dramatic poem, very buſy, pleaſant in the concluſion, and written in a popular ſtyle.—Ariſtotle calls it an imitation of the worſt, or, rather, of the loweſt claſs of perſons, by way of ridicule: this definition Corneille finds fault with, and maintains, that the actions of kings themſelves may enter *comedy*; provided they be ſuch as are not very momentous, nor attended with any conſiderable danger. He adds, that a poem wherein the greateſt peril is the loſs of a miſtreſs, has no right to any higher appellation that that of *comedy*: but then he makes a diſtinction in *comedies*, and dignifies thoſe where great perſonages are introduced, with the epithet of *heroic comedies*, to diſtinguiſh them from the ordinary ones.

Mr. Congreve ſeems pretty much of the ſame ſentiment: he underſtands Ariſtotle's definition as meant of the worſt men; on which bottom it is ſufficient to conſtitute a *comedy*, that the action repreſented be that of ſome ill man brought on the ſtage to be expoſed.

M. Dacier is of a contrary opinion: he maintains, that *comedy* allows of nothing grave, or ſerious, unleſs it be turned to ridicule; and that raillery and ridicule are its only proper and genuine characteriſtics: in which opinion he is warmly ſeconded by Mr. Dennis.

Thus different are critics and comic authors on the nature of *comedy*: ſome diſtinguiſh it from tragedy by the lowneſs of the ſubject; others by the ridiculous light it is ſet in.

The accurate F. Boſſu fixes the notion of *comedy* much better: according to that critic, *comedy* differs from tragedy in this, that the comic writer invents both the names of his perſons, and the action which he preſents, whereas the tragic writers only invent the latter; the former they are to take from hiſtory. See ACTION.

Upon the whole, *comedy* may be defined an image, or repreſentation of the ordinary life of men: it exhibits their common actions and paſſions; expoſes and ridicules their failings, to preſerve the ſpectators from them, or to correct them. Cicero defines it the imitation of life, the mirror of cuſtom, and the image of truth.

There is a diſpute among critics, whether *comedy* be a poem, or a mere converſation? They who maintain the latter, do it on the foot of this general opinion, that a poem is a diſcourſe in verſe: F. Boſſu inſiſts on the former, and ſhews, that as *comedy* has the fable, or allegory, it has every thing eſſential to poetry.

Comedy and tragedy were originally one and the ſame thing: *their common origin ſee under* TRAGEDY.—M. Boileau ſays, *comedy* took its riſe at Athens, from the happy iſſues or concluſions of tragedies. On this principle, the cataſtrophe ſhould have been the proper criterion, or diſtinguiſhing mark between tragedy and *comedy*; and all other differences only accidental.

Des ſucces fortunez du ſpectacle tragique
Dans Athenes naquit la comedie antique.

After the grave and ſerious became ſeparated from the ridiculous, and tragedy and *comedy* were become two diſtinct arts; people applied themſelves to cultivate the former, and neglected the latter: ſo that *comedy* continued in its infancy, with little improvements, while tragedy grew up to a perfect art: this once arrived at its height, they began to think of cultivating *comedy*.

With regard to the various changes and revolutions *comedy* has undergone, it is commonly diſtinguiſhed into three kinds; *viz.* the *antient*, wherein there was nothing feigned; the *middle*, where the ſubject was real, but the names fictitious; the *new*, where both names and things are fictitious.

The *antient* was that firſt in uſe, when the ſupreme power was in the hands of the people; and when, on that account, the poets were at their full liberty to ſay what they pleaſed, and of whom they pleaſed; by name to rail at people in authority, and openly to charge magiſtrates with crimes; ſpareing no age, ſex, or quality.

This is very obſervable in the Frogs, and the Clouds of Ariſtophanes; where it is to be noted, that though the railing part was occaſionally diſtributed among all the actors, yet the chief of it was laid on the chorus.

When the Athenian liberties became ſunk up in the tyranny of a few, it was no longer ſafe for the poets to uſe their old licence; men of office being now to be ſcreened from reproach. The chorus, hereupon, became uſeleſs, and was therefore dropped; and thus commenced what we call *comœdia media*, μεση, or the *middle comedy*. See CHORUS.

Under this, the poets were not allowed to name the perſons; and therefore names were to be invented; but then the perſons were ſo well pointed out, that it was no difficult matter to know them.

At length, however, they were obliged to repreſs even this licence: and this reform gave occaſion to the *new comedy*; which only brought upon the ſtage feigned adventures, and imaginary names.

This laſt kind alone was received among the Romans; who yet made a new ſubdiviſion thereof into *antient*. *middle*, and *new*; according to the various periods of the commonwealth. Among the antient *comedies* were ranked thoſe of Livius Andronicus; among the *middle*, thoſe of Pacuvius; and among the *new* ones, thoſe of Terence.

Comedy, as well as tragedy, has its eſſential, and its integrant parts.—Its eſſential parts, in the language of the antients, are the *protaſis*, *epitaſis*, *cataſtaſis*, and *cataſtrophe*.

The *protaſis* is the beginning, or opening; where the ſubject is juſt entered upon, the character of the perſons ſhewn, and the intereſt, or part each has in the action, ſignified.

In the *epitaſis*, the intrigues begin: they are carried on, and heightened, in the *cataſtaſis*; and unravelled in the *cataſtrophe*.

The integrant parts are the five acts into which the *comedy* is divided, agreeable to that precept of Horace;

Neve minor quinto, neu ſit productior actu.

The acts are divided into ſcenes: the number whereof is not fixed, either by reaſon or experience, but depends on the buſineſs to be done in each act, and the number of perſons to be employed. See ACT, SCENE, *&c.* See alſo MANNERS, HUMOUR, *&c.*

Among the antient Romans, *comedies* were diſtinguiſhed according to the quality of the perſons repreſented, and the dreſs they wore, into *togatæ*, *prætextæ*, *trabeatæ*, and *tabernariæ*; which laſt were thoſe where the ſcene lay in colleges, or among people of the loweſt rank, agreeing pretty nearly with our farces.

In the repreſentation, *comedy* was diſtinguiſhed from tragedy by the *ſock* worn in the former, and the *buſkin* in the latter.

Among us, *comedy* is diſtinguiſhed from *farce*, in that the former repreſents nature as ſhe is; the other diſtorts or overcharges her. They both paint from the life, but with different views: the one to make nature known, the other to make her ridiculous.

COMET, a heavenly body, in the planetary region, appearing ſuddenly, and again diſappearing, and during the time of its appearance moving in its proper, though very eccentric orbit, like a planet.

Comets, properly called *blazing ſtars*, have this to diſtinguiſh them from the other ſtars, that they are uſually attended with a long train, or tail of light, always oppoſite to the ſun, and which is of a fainter luſtre, the farther it is from the body. Hence ariſes a popular diviſion of *comets* into three kinds; *viz.* *bearded*, *tailed*, and *hairy comets*; tho', in effect, this diviſion rather relates to the ſeveral circumſtances of the ſame *comet*, than to the phænomena of ſeveral.

Thus, when the *comet* is eaſtward of the ſun, and moves from it, the *comet* is ſaid to be *bearded*, *barbatus*; becauſe the light marches before it, in manner of a beard. See BEARD.

When the light is weſtward of the ſun, and ſets after it, the *comet* is ſaid to be *tailed*, *caudatus*; becauſe the train follows it, in manner of a tail. See TAIL.

Laſtly, when the *comet* and the ſun are diametrically oppoſite (the earth between them), the train is hid behind the body of the *comet*, excepting a little that appears around it, in form of a border of hair, hence called *crinitus*.

Nature of COMETS.—As to the nature of *comets*, the unfrequency of their appearing, together with the ſeeming irregularities of their phænomena, have left philoſophers much in the dark: thoſe who lived before Ariſtotle, accounted for them by ſuppoſing the heavenly ſpaces full of an infinite number of ſtars; and many of them too remote, or too ſmall, to have ever come under the notice of aſtronomers: theſe inviſible ſtars they further ſuppoſed to move by their own proper motion every way; finiſhing their courſes in very unequal times. Now, a *comet*, according to them, was a vaſt heap or aſſemblage of theſe little ſtars meeting together, by reaſon of the inequality of their motions, and uniting into a viſible maſs; which muſt again diſappear, as thoſe ſtars ſeparated, and each proceeded in its courſe.

But how theſe ſtars ſhould thus meet, coaleſce, and form a body, which in all poſitions of the ſun ſhould reſemble a tail, and again ſeparate, is a myſtery!

This opinion, therefore, Ariſtotle eaſily overturned; ſubſtituting another in its ſtead: according to him, *comets* were only a kind of tranſient fires, or meteors, conſiſting of exhalations raiſed to the upper region of the air, and there ſet on fire; far below the moon's courſe.

But neither is this hypotheſis more juſt than the other: for on this principle, the light of the *comet*, being independent of the ſun, would be diſperſed every way alike, without any appearance of a train, or tail, which is contrary to the phænomena. Beſides that the modern aſtronomers, who have meaſured the diſtance between the *comets* and the earth, find that the *comets* have no ſenſible parallax; which could not be, were they not much more remote than the moon, whoſe parallax is ſenſible. See PARALLAX.

Hevelius, from a great number of obſervations, propoſes it as his opinion, that the *comets*, like the ſolar maculæ or ſpots, which they pretty much reſemble, are formed and condenſed out of the groſſer exhalations of his body. In which notion he agrees nearly with Kepler, who maintains, that *comets* are generated in the æther in vaſt numbers, like fiſhes in the ocean; though they do not all become viſible, either becauſe of their ſmalneſs, or becauſe they lie a long time under the horizon.

But Sir Iſaac Newton has ſhewn the fallacy of this hypotheſis, by proving that the *comet* of 1680. in its paſſage through the neighbourhood of the ſun, would have been diſſipated, had it conſiſted of exhalations of the ſun and planets: for the heat of the ſun, it is allowed, is as the denſity of his rays, *i. e.* reciprocally as the ſquares of the diſtances of places from the ſun: wherefore, ſince the diſtance of that *comet* in its perihelion, December the 8th, was obſerved to be to the diſtance of the earth from the ſun, nearly as 6 to 1000; the ſun's heat in the *comet*, at that time, was to his heat with us at midſummer, as 1000000 to 36, or 28000 to 1.

And again, finding by experiment, that the heat of boiling water is little more than three times the heat of our dry earth, when expoſed to the midſummer's ſun; and aſſuming the heat of red-hot iron to be about three or four times as great as that of boiling water; he thence concludes, that the heat of the dried earth, or body of the *comet* in its perihelion, muſt be near 2000 times as great as that of red-hot iron. Such an immenſe heat once acquired in its perihelion, the *comet* muſt be a long time in cooling again. The ſame author computes, that a globe of red-hot iron, of the dimenſions of our earth, would ſcarce be cool in 50000 years. If then the *comet* be ſuppoſed to cool 100 times as faſt as red-hot iron; yet, ſince its heat was 2000 times greater, ſuppoſing it of the bigneſs of the earth, it would not be cool in a million of years.

James Bernouilli, in his *ſyſtema cometarum*, ſuppoſes ſome primary planet revolving round the ſun in the ſpace of four years and 157 days; and at the diſtance, from his body, of 2583 ſemidiameters of the magnus orbis: this planet, he concludes, either from its vaſt diſtance, or ſmalneſs, to be inviſible to us; but, however, to have, at various diſtances from him, ſeveral ſatellites moving round him, and ſometimes deſcending as low as the orbit of Saturn; and that theſe becoming viſible to us, when in their perigæum, are what we call *comets*.

Des Cartes advances another opinion: he conjectures that *comets* are only ſtars, formerly fixed, like the reſt, in the heavens; but which, becoming by degrees, covered with maculæ, or ſpots, and at length wholly robbed of their light, cannot keep their place, but are carried off by the vortices of the circumjacent ſtars; and, in proportion to their magnitude and ſolidity, moved in ſuch manner, as to be brought neare the orb of Saturn; and thus coming within reach of the ſun's light, rendered viſible.

But the vanity of all theſe hypotheſes abundantly appea from the phænomena of *comets*; the chief of which we ſhall enumerate: as being the teſt by which all theories are to b tried.

Firſt, then, thoſe *comets* which move according to the order o the ſigns, do all, a little before they diſappear, either advanc ſlowlier than uſual, or elſe go retrograde, if the earth be between them and the ſun; and more ſwiftly, if the earth be ſituate in a contrary part: on the contrary, thoſe which procee contrary to the order of the ſigns, proceed more ſwiftly tha uſual, if the earth be between them and the ſun; and mo ſlowly, or go retrograde, when the earth is in a contrary par

2°, So long as their velocity is increaſed, they move, nearl in great circles; but towards the end of their courſe, the deviate from thoſe circles; and as often as the earth procee one way, they go the contrary way.

3°, They move in ellipſis's, having one of their foci in t centre of the ſun; and by radii drawn to the ſun, deſcri areas proportionable to the times.

4°, The light of their bodies, or nuclei, increaſes in their r ceſs from the earth towards the ſun; and on the contrar decreaſes in their receſs from the ſun towards the earth.

5°, Their tails appear the largeſt and brighteſt, immediat after their tranſit through the region of the ſun.

6°, The tails always decline from a juſt oppoſition to the ſ towards thoſe parts which the bodies, or nuclei, paſs over, their progreſs through their orbits.

7°, This declination, *cæteris paribus*, is the ſmalleſt, w the heads, or nuclei, approach neareſt the ſun: and is l ſtill, near the nucleus of the *comet*, than towards the ext mity of the tail.

8°, The tails are ſomewhat brighter, and more diſtin defined in their convex, than in their concave part.

9°, The tails always appear broader at their upper extrem than near the centre of the *comet*.

10°, The tails are always tranſparent, and the ſmalleſt ſ appear through them.

Theſe are the chief phænomena of *comets*; which, how ill th conſiſt with the wild notions of the antients, and the weak co jectures of moſt of the moderns, is pretty evident. Inde there were ſome, Pliny tells us, among the antients, who 'h 'juſter notions, who took theſe ſtars to be perpetual, and b 'lieved they moved in their proper orbs; but were never ſe 'unl

‘ unleſs when left by the ſun:’ and more fully Seneca, *quæſt. nat.* lib. 7. ‘ I am not of the common opinion, nor do I take ‘ a *comet* to be a ſudden fire, but eſteem it among the eter‘ nal works of nature.’—*Quid autem miramur cometas, tam rarum mundi ſpectaculum, nondum teneri legibus certis, nec initia illorum fineſque innoteſcere, quorum ex ingentibus intervallis recurſus eſt?—Veniet tempus quo iſta quæ nunc latent, in lucem dies extrahat, & longioris ævi diligentia. Veniet tempus quo poſteri noſtri tam aperta nos neſciſſe mirentur.—Erit qui demonſtret aliquando, in quibus cometæ partibus errent; cur tam ſeducti a cæteris errent, quanti qualeſque ſint.*—

This prediction we have ſeen accompliſhed in our days, by the great Sir Iſaac Newton; whoſe doctrine is as follows:

The *comets*, he ſays, are compact, ſolid, fixed, and durable bodies; in one word, a kind of planets; which move in very oblique orbits, every way with the greateſt freedom; perſevering in their motions, even againſt the courſe and direction of the planets: and their tail is a very thin, ſlender vapour, emitted by the head, or nucleus of the *comet*, ignited or heated by the ſun.

This at once ſolves all the phænomena: for, 1°, ‘ It is evident, ‘ that thoſe which proceed according to the order of the ſigns, ‘ a little before they diſappear, muſt move more ſlowly, or ap‘ pear retrograde, if the earth be betwixt them and the ſun, and ‘ ſwifter, if the earth be in a contrary part: on the contrary, ‘ thoſe proceeding againſt the order of the ſigns, &c.’—For ſince this courſe is not among the fixed ſtars, but among the planets; as the motion of the earth either conſpires with them, or goes againſt them; their appearance, with regard to the earth, muſt be changed; and, like the planets, they muſt ſometimes appear ſwifter, ſometimes ſlower, and ſometimes retrograde.

2°, ‘ When the *comets* move the ſwifteſt, they muſt proceed in ‘ ſtrait lines, but in the end of their courſe decline, &c.’—Becauſe in the end of their courſe, when they recede almoſt directly from the ſun, that part of the apparent motion which ariſes from the parallax, muſt bear a greater proportion to the whole apparent motion.

3°, ‘ The *comets* muſt move in ellipſis’s, having one of their ‘ foci in the centre of the ſun.’—Becauſe they do not wander precariouſly from one fictitious vortex to another; but, making a part of the ſolar ſyſtem, return perpetually, and run a conſtant round.

Hence, their elliptic orbits being very long and eccentric, they become inviſible, when in that part moſt remote from the ſun.

From conſidering the curvity of the paths of *comets*, Sir Iſaac concludes, that when they diſappear, they are much beyond the orb of Jupiter; and that in their perihelion they frequently deſcend below the orbits of Mars, and the inferior planets.

4°, ‘ The light of their nuclei muſt increaſe in their receſs from ‘ the ſun, and *vice verſa*.’—Becauſe, as they are in the regions of the planets, their acceſs toward the ſun bears a conſiderable proportion to their whole diſtance.

From obſervations of the *comet* of 1680. Sir Iſaac Newton found that the vapour in the extremity of the tail, Jan. 25. began to aſcend from the head before December the 11th; and had therefore ſpent more than 45 days in its aſcent: but that all the tail which appeared December 10. aſcended in the ſpace of thoſe two days, then juſt paſt ſince its perihelion. The vapour, therefore, at the beginning, when the *comet* was near the ſun, aſcended prodigiouſly ſwift; and afterwards continued to aſcend with a motion retarded by the gravity of its particles; and by that aſcent increaſed the length of the tail: but the tail, notwithſtanding its length, conſiſted almoſt wholly of vapours, which had aſcended from the time of the perihelion; and the vapour which aſcended firſt, and compoſed the extreme of the tail, did not vaniſh, till it was too far from the ſun to be illumined by him, and off us to be viſible. Hence, alſo, the tails of *comets* that are ſhorter, do not aſcend with a quick and continual motion from the head, and then preſently diſappear; but are permanent columns of vapours and exhalations, gathered from the head by a very gentle motion, and in a great ſpace of time; which yet, by participating of that motion of their heads they had at the beginning, continue eaſily to move along with their heads through the celeſtial regions: whence alſo the vacuity of thoſe regions is argued. See VACUUM.

5°, ‘ Their tails muſt appear the largeſt and brighteſt imme‘ diately after their tranſit through the region of the ſun:’—becauſe, then, their heads being the moſt heated, will emit the moſt vapours.

From the light of the nucleus, or apparent ſtar, we infer their vicinity to the earth, and that they are by no means in the region of the fixed ſtars, as ſome have imagined; ſince, in that caſe, their heads would be no more illumined by the ſun, than the planets are by the fixed ſtars.

6°, ‘ The tails muſt ſtill decline from a ſtrict oppoſition to the ſun, towards thoſe parts which the heads paſs over, in their progreſs through their orbits:’—becauſe all ſmoke, or vapour, emitted from a body in motion, tends upwards obliquely, ſtill eceding from that part, towards which the ſmoking body roceeds.

°, ‘ That declination will be ſtill the leaſt near the nucleus of the *comet*; and when the *comet* is neareſt the ſun:’—becauſe the vapour aſcends more ſwiftly near the head of the *comet*, than in the higher extremity of its tail; and when the *comet* is at a leſs diſtance from the ſun, than when at a greater.

8°, ‘ The tail is brighter, and better defined in its convex part, ‘ than in its concave:’—becauſe the vapour in the convex part, which goes firſt, being ſomewhat nearer and denſer, reflects the light more copiouſly.

9°, ‘ The tail muſt appear broader towards the higher extre‘ mity of the *comet*, than towards the head:—becauſe the vapour in a free ſpace perpetually rarefies and dilates.

10°, ‘ The tails muſt be tranſparent:—becauſe conſiſting of infinitely thin vapour, &c.

Thus accurately does the hypotheſis tally to the phænomena.

Phaſes of COMETS.—The nuclei, which we alſo occaſionally call the *heads* and *bodies* of *comets*, viewed through a teleſcope, ſhew a very different face from thoſe of the fixed ſtars, or planets. Sturmius tells us, that, obſerving the *comet* of 1680. with a teleſcope, it appeared like a coal dimly glowing, or a rude maſs of matter illumined with a duſky fumid light, leſs ſenſible at the extremes than in the middle; rather than as a ſtar, which appears with a round diſk, and a vivid light.

Hevelius obſerved of the *comet* of 1661. that its body was of a yellowiſh colour, very bright and conſpicuous, but without any glittering light: in the middle was a denſe ruddy nucleus, almoſt equal to Jupiter, encompaſſed with a much fainter, thinner matter. Feb. 5. its head was ſomewhat bigger and brighter, of a gold colour; but its light more duſky than the reſt of the ſtars: here, the nucleus appeared divided into ſeveral parts. Feb. 6. the diſk was leſſened; the nuclei ſtill exiſted, though leſs than before: one of them, on the lower part of the diſk, on the left, much denſer and brighter than the reſt; its body round, and repreſenting a very lucid little ſtar: the nuclei ſtill encompaſſed with another kind of matter. Feb. 10. the head ſomewhat more obſcure, and the nuclei more confuſed, but brighter at top than bottom. Feb. 13. the head diminiſhed much, both in magnitude and brightneſs. March 2. its roundneſs a little impaired, its edges lacerated, &c. March 28. very pale, and exceeding thin; its matter much diſperſed; and no diſtinct nucleus at all appearing.

Weigelius, who ſaw the *comet* of 1664. the moon, and a little cloud illumined by the ſun at the ſame time, obſerved, that the moon, through the teleſcope, appeared of a continued luminous ſurface; but the *comet* very different; being perfectly like the little cloud in the horizon, illumined by the ſun. From theſe obſervations it was, that Hevelius concluded *comets* to be like maculæ, or ſpots formed out of the ſolar exhalations.

The lengths of the tails of *comets* are various: that of 1680, according to Sturmius, about the 20th of November, was but ſmall, at moſt, not exceeding 20 degrees in length: in a little time it grew to a length of 60 degrees, after which it dwindled very ſenſibly.

Formation of the tails of COMETS.—Sir Iſaac Newton ſhews, that the atmoſpheres of *comets* will furniſh vapour ſufficient to form their tails: this he argues from that wonderful rarefaction obſerved in our air, at a diſtance from the earth: a cubic inch of common air, at the diſtance of half the earth’s diameter, or 4000 miles, would neceſſary expand itſelf ſo as to fill a ſpace larger than the whole region of the ſtars. Since then the coma, or atmoſphere of a *comet* is ten times higher than the ſurface of the nucleus, counting from the center thereof; the tail, aſcending much higher, muſt needs be immenſely rare: ſo that it is no wonder the ſtars ſhould be viſible through it.

Now, the aſcent of vapours into the tail of the *comet*, he ſuppoſes occaſioned by the rarefaction of the matter of the atmoſphere at the time of the perihelion. Smoke, it is obſerved, aſcends the chimney by the impulſe of the air wherein it floats; and air, rarefied by heat, aſcends by the diminution of its ſpecific gravity, taking up the ſmoke along with it: why then ſhould not the tail of a *comet* be ſuppoſed to be raiſed after the ſame manner by the ſun? for the ſun-beams do not act on the mediums they paſs through, any otherwiſe than by reflexion and refraction.

The reflecting particles, then, being warmed by the action, will again warm the æther wherewith they are compounded; and this, rarefied by the heat, will have its ſpecific gravity, whereby it before tended to deſcend, diminiſhed by the rarefaction; ſo as to aſcend, and to carry along with it thoſe reflecting particles, whereof the tail of the *comet* is compoſed.

This aſcent of the vapours will be promoted by their circular motion round the ſun; by means whereof, they will endeavour to recede from the ſun, while the ſun’s atmoſphere, and the other matters in the celeſtial ſpaces, are either at reſt, or nearly ſo; as having no motion but what they receive from the ſun’s circumrotation.

Thus are the vapours raiſed into the tails of *comets* in the neighbourhood of the ſun, where the orbits are moſt curve; and, where the *comets*, being within the denſer atmoſphere of the ſun, have their tails of the greateſt length.

The tails thus produced, by preſerving that motion, and at the ſame time gravitating towards the ſun, will move round his body in ellipſes, in like manner as their heads; and, by this means, will ever accompany, and freely adhere to their head. In effect, The gravitation of the vapours towards the ſun will no more occaſion the tails of the *comets* to forſake their heads, and fall down towards the ſun, than the gravitation of their heads will occaſion them to fall off from their tails: but by their common gravitation, they will either fall down together to the ſun, or be together ſuſpended, or retarded. This gravitation, therefore, does not at all hinder, but that the heads and tails of *comets* may receive and retain any poſition towards each other, which either the above-mentioned cauſes, or any other, may occaſion.

The tails, therefore, thus produced in the perihelion of *comets*, will go off along with their head into remote regions; and either return thence, together with the *comets*, after a long ſeries of years; or, rather, be there loſt, and vaniſh by little and little, and the *comet* be left bare; till at its return, deſcending towards the ſun, ſome little ſhort tails be gradually and ſlowly produced from the heads; which afterwards, in the perihelion, deſcending down into the ſun's atmoſphere, will be immenſely increaſed.

The vapours, when they are thus dilated, rarefied, and diffuſed through all the celeſtial regions, the ſame author obſerves, may probably, by little and little, by means of their own gravity, be attracted down to the planets, and become intermingled with their atmoſpheres.

He adds, that for the conſervation of the water, and moiſture of the planets, *comets* ſeem abſolutely requiſite; from whoſe condenſed vapours and exhalations, all that moiſture which is ſpent in vegetations and putrefactions, and turned into dry earth, *&c.* may be reſupplied and recruited. For all vegetables grow and increaſe wholly from fluids; and, again, as to their greateſt part, turn, by putrefaction, into earth again; an earhly ſlime being perpetually precipitated to the bottom of putrefying liquors, Hence, the quantity of dry earth muſt continually increaſe, and the moiſture of the globe decreaſe, and at laſt be quite evaporated; if it have not a continual ſupply from ſome part or other of the univerſe. And I ſuſpect, adds our great author, that the ſpirit, which makes the fineſt, ſubtileſt, and beſt part of our air, and which is abſolutely requiſite for the life and being of all things, comes principally from the *comets*.

On this principle, there ſeems to be ſome foundation for the popular opinion of preſages from *comets*: ſince the tail of a *comet* thus intermingled with our atmoſphere, may produce changes very ſenſible in animal and vegetable bodies. See SPIRIT, and MEDIUM.

M. Facio has ſuggeſted, that ſome of the *comets* having their nodes ſo very near the annual orbit of the earth; ſhould the earth happen to be found in that part next the node, at the time of a *comet*'s paſſing by; as the apparent motion of the *comet* will be incredibly ſwift, ſo its parallax will become very ſenſible; and the proportion thereof to that of the ſun will be given: whence, ſuch tranſits of *comets* will afford the beſt means of determining the diſtance of the earth and ſun.

The *comet* of 1472. *v. gr.* had a parallax above twenty times greater than the ſun's: and if that of 1618. had come down in the beginning of March to its deſcending node, it would have been much nearer the earth, and its parallax much more notable. But, hitherto, none has threatened the earth with a nearer appulſe than that of 1680. for, by calculation, Dr. Halley finds, that November 11, 1h. 6 min. P. M. that *comet* was not above one ſemidiameter of the earth, to the northwards of the way of the earth; at which time, had the earth been in that part of its orbit, the *comet* would have had a parallax equal to that of the moon: what might have been the conſequence of ſo near an appulſe, a contact, or laſtly, a ſhock of the celeſtial bodies? —A deluge, Mr. Whiſton ſays! See DELUGE.

Motion of COMETS.—If the paths of *comets* be ſuppoſed directly parabolical, as ſome have imagined, it would follow, that being impelled towards the ſun by a centripetal force, they deſcend as from ſpaces infinitely diſtant; and by their falls acquire ſuch a velocity, as that they may again run off into the remoteſt regions; ſtill moving upwards, with ſuch a perpetual tendency as never to return.--But the frequency of their appearance, and their degree of velocity, which does not exceed what they might acquire by their gravity towards the ſun, ſeem to put it paſt doubt that they move, planet-like, in elliptic orbits, tho' thoſe exceedingly eccentric; and ſo return again, though after very long periods. See ELLIPTIC.

Apollonius Myndius declared, that he took *comets* for regular ſtars; and ventured to foretel, that one day the periods and laws of their motion would be diſcovered.

Aſtronomers, however, are ſtill divided on that head: Newton, Flamſteed, Halley, and the Engliſh aſtronomers, *&c.* ſeem ſatisfied of the return of *comets*: Caſſini, and others of the French, think it highly probable; but de la Hire, and others, oppoſe it.

Thoſe on the affirmative ſide ſuppoſe the *comets* to deſcribe circles prodigiouſly eccentric, inſomuch as we can only ſee them in a very ſmall part of their revolution: out of this, they are loſt in the immenſe ſpaces; hid not only from our eyes, but our teleſcopes. That little part of their circle next us, M. Caſſini, *&c.* have found to paſs between the orbits of Venus and Mars.

For the reaſons of the return of COMETS, M. Caſſini gives theſe that follow.—1. In conſidering the courſe of the *comets*, with regard to the fixed ſtars, they are found to keep a conſiderable time in the arch of a great circle, *i. e.* a circle whoſe plane paſſes thro' the centre of the earth: indeed, they deviate a little from it, chiefly towards the end of their appearance; but this deviation is common to them with the planets.

2°, *Comets*, as well as planets, appear to move ſo much the faſter as they are nearer the earth; and when they are at equal diſtances from their perigee, their velocities are nearly the ſame.

By ſubtracting from their motion the apparent inequality of velocity occaſioned by their different diſtance from the earth, their equal motion might be found; but we ſhould not be certain this motion were their true one: in regard they might have conſiderable inequalities, not diſtinguiſhable in that ſmall part of their orbit viſible to us. It is, indeed, probable, their real motion, as well as that of the planets, is unequal in itſelf; and hence we have a reaſon why the obſervations made during the appearance of a *comet*, cannot give the juſt period of their revolution. See PERIOD.

3°, There are no two different planets whoſe orbits cut the ecliptic in the ſame angle, whoſe nodes are in the ſame points of the ecliptic, and whoſe apparent velocity in their perigee is the ſame: of conſequence, two *comets* ſeen at different times, yet agreeing in all thoſe three circumſtances, can only be one and the ſame *comet*.

And this were the *comets* of 1577. and 1680. obſerved to do; and thoſe of 1652. and 1698. not that this exact agreement, in theſe circumſtances, is abſolutely neceſſary to determine them the ſame *comet*. M. Caſſini finds the moon herſelf irregular in them all: accordingly, he is of opinion, there are ſeveral which diſagree herein, and yet may be accounted the ſame.

The great objections againſt the return of COMETS, are, the rarity of their appearance, with regard to the number of revolutions aſſigned to them.

In 1702. there was a *comet*, or rather the tail of one, ſeen at Rome, which M. Caſſini takes to be the ſame with that obſerved by Ariſtotle, and that ſince ſeen in 1668. which would imply its period to be 34 years. Now, it may ſeem ſtrange, that a ſtar which has ſo ſhort a revolution, and of conſequence ſuch frequent returns, ſhould be ſo ſeldom ſeen.—Again, in April, of the ſame year, 1702. a *comet* was obſerved by Meſſ. Bianchini, and Maraldi, ſuppoſed by the latter to be the ſame with that of 1664. both by reaſon of its motion, velocity, and direction. M. de la Hire took it to have ſome relation to another he had obſerved in 1698. which M. Caſſini refers to that of 1652. On this ſuppoſition, its period appears to be 43 months; and the number of revolutions, between 1652. and 1698. fourteen: but it is hard to ſuppoſe, that in this age, wherein the heavens are ſo narrowly watched, a ſtar ſhould make 14 appearances unperceived; eſpecially ſuch a ſtar as this, which might appear above a month together; and of conſequence be frequently diſengaged from the crepuſcula.

For this reaſon M. Caſſini is very reſerved in maintaining the hypotheſis of the return of *comets*, and only propoſes thoſe for planets, where the motions are eaſy and ſimple, and are ſolved without ſtraining, or allowing many irregularities.

M. de la Hire propoſes one general difficulty againſt the whole ſyſtem of the return of *comets*, which would ſeem to hinder any *comet* from being a planet: and it is this; that, by the diſpoſition neceſſarily given to their courſes, they ought to appear as ſmall at firſt as at laſt; and always increaſe, till they arrive at their greateſt proximity to the earth: or, if they ſhould chance not to be obſerved, as ſoon as they become viſible, for want of attention thereto; at leaſt, it is impoſſible but they muſt frequently ſhew themſelves ere they have arrived at their full magnitude and brightneſs: but he adds, that none were ever yet obſerved till they had arrived at it.

But the appearance of a *comet* in the month of October, 1723. while at a great diſtance, ſo as to be too ſmall and dim to be viewed without a teleſcope, may ſerve to remove this obſtacle, and ſet the *comets*, ſtill, on the ſame footing with the planets.

Sir Iſaac Newton ſuppoſes, that as thoſe planets which are neareſt the ſun, and revolve in the leaſt orbits, are the ſmalleſt; ſ among the *comets*, ſuch as in their perihelion come neareſt the ſun, are the ſmalleſt, and revolve in leſſer orbits.

Dr. Halley has given us a table of the aſtronomical elements o all the *comets* that have been yet obſerved with due care; whereby, whenever a new *comet* ſhall appear, it may be determined by comparing it therewith, whether it be any of thoſe whic have yet appeared; and conſequently its period, and the ax of its orbit, be determined, and its return foretold.

There are many things in the *comet* of 1532. obſerved by Peter Apian, which intimate its being the ſame with that of 1607 obſerved by Kepler and Longomontanus; and which Dr. Hal himſelf again obſerved in 1682. All the elements agree, an there is nothing contradicts the opinion, but that inequality i the periodic revolution; which, however, he thinks, is n more than may be accounted for from phyſical cauſes: no mor in effect, than is obſerved in Saturn; the motion of which plan is ſo diſturbed by the reſt, eſpecially Jupiter, that its perio uncertain for ſeveral days together: to what errors then m not a *comet* be liable, which riſes to almoſt four times the height of Saturn; and whoſe velocity, if but a little increaſed, would change its elliptic orb into a parabolic one?

What further confirms the identity, is the appearance of another *comet* in the ſummer of 1456. which, though obſerved by none with accuracy, yet by its period, and the manner of its tranſit, he concludes to be the ſame: and thence ventures to foretel its return in the year 1758. See Whiſton's *Solar Syſtem, where the orbits of the ſeveral* comets *are delineated, and their periods, ſo many of them as are known, expreſſed.*

To determine the Place and Courſe of a COMET.—Obſerve the diſtance of the *comet* from two fixed ſtars, whoſe longitudes and latitudes are known: from the diſtances thus found, calculate the place of the *comet* by trigonometry, after the manner delivered under PLANET.—By repeating the obſervations and operations for ſeveral days ſucceſſively, the courſe of the *comet* will be had.

To determine the Courſe of a COMET *mechanically, and without any apparatus of inſtruments.*—The following ingenious method, by a thread, we owe to Longomontanus: Obſerve four ſtars round the *comet*, ſuch, as that the *comet* may be in the interſection of the right lines that join the two oppoſite ſtars; which is eaſily found by means of a thread placed before the eye, and extended over-againſt the ſtars and *comet*.

Suppoſe, *v. gr.* the *comet*'s place in the heavens A (*Tab. Aſtronomy, fig.* 23.) between the four ſtars, B, C, D, E; where the line joining the ſtars B and D paſſes through the body of the *comet*; and the like does the line paſſing through C and E.

On a globe, whereon theſe four ſtars are found, extend a thread through B and D, and another through C and E; the point of interſection will give the place of the *comet*. This practice being repeated for ſeveral days, the *comet*'s courſe will be had on the globe; which courſe will be found to be a great circle: from any two points whereof, it will be eaſy to find its inclination to the ecliptic, and the place of the nodes; only by obſerving where a thread ſtretched through the two points cuts the ecliptic.

To determine the Parallax of a COMET. See PARALLAX.

Trajectory of a COMET. See TRAJECTORY.

COMITATUS *Poſſe*. See the article POSSE.

COMITIA *, an aſſembly of the Roman people, either in the *Comitium*, or *Campus Martius*; meeting for the election of magiſtrates, or for conſulting on the important affairs of the republic. See FIELD *of Mars*, &c.

* The word comes from the verb *coeo*, or *comeo*, to go together.

There were certain days fixed for theſe aſſemblies, called *dies comitiales*; marked with a c in the calendar of Julius Cæſar.

Comitial aſſemblies, held for the election of conſuls, were called *conſular comitia*: in like manner, the other *comitia* took names from the officer to be created; whether a tribune, a pontiff, ædile, or the like.

There were three kinds of theſe *comitia*, viz. *curiata*, *centuriata*, and *tributa*; ſo diſtinguiſhed, from the manner wherein the people voted, and gave their ſuffrages, *viz.* by curiæ, or pariſhes, tribes, or centuries.

Authors make the difference between *comitia*, and *concilia*, to conſiſt in this; that in the former the whole people were called together, in the latter only a part.

The *Comitium*, or the place where the *comitia* were ordinarily held, was a large hall in the Roman forum: it was a long time open at top; on which account, the aſſemblies were often interrupted by the ill weather: it was firſt covered over in the time of the ſecond Punic war. See FORUM.

Roſinus obſerves, that the conſuls and tribunes were not created in the *Comitium*, but in the Campus Martius.

COMITIALIS *Morbus*, an antient term for the epilepſy, or falling-ſickneſs; ſo called, becauſe if any perſon was ſeized with it in the Roman *comitia*, the aſſembly was immediately diſſolved; this being eſteemed an unlucky omen: or, rather, becauſe thoſe liable to it were chiefly ſeized in the *comitia*, or great aſſemblies. See EPILEPSY.

OMMA *, Κομμα, in grammar, a point, or character formed thus [,]; ſerving to mark a ſhort ſtop, or pauſe; and to divide the members of a period.

* The word is Greek, formed of κοπτω, *ſeco*, I cut.

It is very difficult to fix the preciſe uſe of the *comma*; different authors define, and uſe it differently: the ordinary doctrine is, that the *comma* ſerves to diſtinguiſh nouns, verbs, adverbs, and the ſeveral parts of a period that are not neceſſarily joined together. But this conveys no clear, preciſe idea; for what is it *to diſtinguiſh the parts of a period not neceſſarily joined together?*

F. Buffier has carried the doctrine of the *comma* farther: according to him, the *comma* ſerves to diſtinguiſh thoſe members of a period, in each whereof is a verb, and the nominative caſe of the verb. Thus, *That ſo many people are pleaſed with trifles, is owing to a weakneſs of mind, which makes them love things eaſy to be comprehended.*

Beſides this, the *comma* is uſed to diſtinguiſh, in the ſame member of a period, ſeveral nouns ſubſtantives, or nouns adjectives, or verbs not united by a conjunction. Thus, *Virtue, wit, knowlege, are the chief advantages of a man*: or, *a man never becomes learned without ſtudying conſtantly, methodically, with guſt, application,* &c.

If thoſe words be united in the ſame phraſe by a conjunction, the *comma* is omitted: thus, *The imagination and the judgment do not always agree.* The *comma* may alſo be omitted between the phraſes that are very ſhort, eſpecially if they depend on the ſame regimen, and are united by a conjunction: thus, *Alexander conquered Aſia and eſtabliſhed the monarchy of the Greeks.*

The ingenious author of the tract *de ratione interpungendi*, printed with Voſſius's *Element. Rhetor.* Lond. 1724. lays down the uſe of a *comma* to be, *to diſtinguiſh the ſimple members of a period, or ſentence*; *i. e.* ſuch as only conſiſt of one ſubject, and one definite verb.—Thus Cicero, *Venio nunc ad voluptates agricolarum, quibus ego incredibiliter delector, quæ nec ulla impediuntur ſenectute, & mihi ad ſapientis vitam proxime accedere videntur.* See SENTENCE.

But this rule does not go throughout; the ſame author inſtancing many particular caſes, not included herein, where yet the *comma* is adviſable.

Sometimes, *e. gr.* a propoſition includes another, which may be called *partitive*, as being only a part of the intire phraſe; in which caſe, the two are to be divided from each other by *commas*. Thus, *He always ſays, as he tells us, the fineſt things in the world.*

The points, or pauſes in diſcourſe, it is obſerved, are in a kind of muſical proportion; the *comma* ſtops the reader's voice while he may privately tell one; the ſemicolon, two; the colon, three; and the period, or full-ſtop, four.

The antients only made uſe of two kinds of points, or pauſes, in a period; the larger they called *members*, the Greeks *cola*, marked thus [:] the ſmaller *inciſa*, the Greeks *commata*, thus [,].

The moderns, refining on their predeceſſors, have ſubdivided the firſt into a colon, and ſemicolon; ſome ſay, without any good foundation in nature; though others ſtand up for the uſefulneſs of the diviſion.

As the member, or colon, divides the period into two parts, each containing a ſenſe, though that imperfect: thus, *Antequam de republica, patres conſcripti, dicam ea quæ dicenda hoc tempore arbitror*; where the ſenſe does not reſt, nor is the period or ſentence perfect, without the addition of, *exponam vobis breviter & profectionis & reverſionis meæ*: the *comma* ſubdivides each member into intermediate diviſions, which, of themſelves, have no preciſe meaning at all; *v. gr. Nihil eſt, mihi crede, virtute formoſius, nihil pulchrius, nihil amabilius.*

Frequent *commas*, as on other occaſions they promote perſpicuity and diſtinctneſs, and eaſe the reader, both in the rehearſal and comprehenſion of his author; ſo, in oratory, are they of eſpecial uſe and effect; particularly where an adverſary is to be cloſely and pointedly attacked, upbraided, reprehended, wounded, *&c.* Witneſs that of Cicero againſt Verres; *Non enim nos color iſte ſervilis, non piloſæ genæ, non dentes putridi deceperunt: oculi, ſupercilia, frons, vultus denique totus, qui ſermo quidam tacitus mentis eſt, hic in fraudem, homines impulit: hic, eos, quibus erat ignotus, decepit, fefellit, in fraudem induxit: pauci tua iſta lutulenta vitia novimus; pauci tarditatem ingenii, ſtuporem, debilitatemque linguæ,* &c.

COMMA, in muſic, is the ſmalleſt of all the ſenſible intervals of tune.

The *comma* is about the tenth part of a tone: or it is the interval whereby a perfect ſemitone ſurpaſſes an imperfect one; or a perfect tone, an imperfect one. See TONE.

Mr. Sauveur ſays, a *comma* is the difference between a tone major and minor. It is ſeldom in uſe, except in the theory of muſic, to ſhew the juſtneſs of the concords; for in the practice, the diviſion is drowned and loſt. Each leſſer tone ordinarily contains ten *commas*.

Lancelot only divides his tone into nine parts, or *commas*; ſo that, according to him, a *comma* is the ninth part of a tone.

The proportion of the greater *comma*, in number, is as 80 to 81; that of the ſmaller, as 2025 to 2048.

COMMANDING *Ground*, in fortification, an eminence, or riſing ground, which overlooks any poſt, or ſtrong place.

Of this they reckon three ſorts: 1°, *A front commanding ground*; which is an height oppoſite to the face of the poſt, which plays upon its front.

2°, *A reverſe commanding ground*, which is an eminence that can play upon the back of any place or poſt.

3°, *An enfilade commanding ground*, or *curtin commanding ground*; which is an high place, that can with its ſhot ſcour all the length of a ſtrait line.

COMMANDMENT, in a legal ſenſe, has various uſes: as, *Commandment of the king*, when, on his own mere motion, and from his own mouth, he caſts a man into priſon.

Commandment of the juſtices, is either *abſolute*, or *ordinary*; *abſolute*, as when, on their own authority, and their own diſcretion, they commit a man to priſon for puniſhment.

Ordinary, as when they commit him rather for ſafe cuſtody, than puniſhment.—A man committed to an ordinary *commandment* is repleviſhable.

COMMANDMENT is alſo uſed for the offence of him who directs or wills another to tranſgreſs the law; as by murder, theft, and the like.

COMMANDRY, a kind of benefice, or fixed revenue belonging to a military order, and conferred on antient knights, who had done conſiderable ſervice to the order.

There are *ſtrict*, or *regular commandries*, obtained in order, and by merit: there are others of *grace* or *favour*, conferred at the pleaſure of the grand maſter.

There are alſo *commandries* for the religious in the orders of S. Bernard and S. Antony.—The kings of France have converted ſeveral of the hoſpitals for lepers into *commandries* of the order of S. Lazarus.

Commandries may be compared to conventual priories; which, at firſt, were no more than adminiſtrations of the revenue of certain places at a diſtance from the principal monaſtery: as there was a neceſſity for having monks diſpoſed in theſe houſes to take care of the effects; ſo there was the like neceſſity for ſending knights into thoſe places where the order had lands.

The commandries of Malta are of different kinds; for as the order conſiſts of knights, chaplains, and brothers ſervitors, there are peculiar *commandries*, or revenues, attached to each.

The knight to whom one of theſe benefices or *commandries* is given, is called *commander*: which agrees pretty nearly with the *præpoſitus* ſet over the monks in places at a diſtance from the monaſtery, whoſe adminiſtration was called *obedientia*: becauſe depending intirely on the abbot who gave him his commiſſion. Thus it is with the ſimple *commanders* of Malta, who are rather farmers of the order, than beneficiaries; paying a certain tribute, or rent, called *Reſponſio*, to the common treaſure of the order.

COMMEMORATION, the remembrance of any one; or ſomething done in honour of a perſon's memory.

Among the Romaniſts, it is a practice for dying perſons to leave a legacy to the church, for the rehearſing ſo many maſſes in *commemoration* of them.

The eucharift is a *commemoration* of the ſufferings of Jeſus Chriſt; and is not, therefore, Jeſus Chriſt himſelf.

COMMEMORATION is alſo the name of a religious feaſt, otherwiſe called *All-ſaints*, held on the firſt of November, in memory of all the faithful deceaſed; inſtituted in the XIth century, by Odilo abbot of Cluny. See FEAST.

The occaſion of its inſtitution is variouſly related; the moſt plauſible account is this: a religious knight, returning from a pilgrimage to the holy land, and loſing his road, met a hermit; who, hearing that he was a Franc, aſked him if he knew the monaſtery of Cluny, and the abbot Odilo: the pilgrim profeſſing his knowlege of both, the hermit told him, that God had diſcovered to him, that he was to have the credit of delivering ſouls from the pains they ſuffer in the other life; charging him, at his return, to exhort Odilo, and thoſe of his community, to continue their prayers and alms for the dead. See CLUNY.

COMMENDAM, in the canon-law, expreſſes the charge, truſt, and adminiſtration of the revenues of a benefice, given to a layman to enjoy, by way of depoſitum, for the ſpace of ſix months, in order to its being repaired, *&c.* or to another biſhop, or eccleſiaſtic, to perform the paſtoral offices thereof, till ſuch time as the benefice is provided of a regular incumbent. See BENEFICE.

Antiently, the adminiſtration of vacant biſhopricks belonged to the neareſt neighbouring biſhop; which is ſtill practiſed between the archbiſhoprick of Lyons, and the biſhoprick of Autun: on this account they were called *commendatory biſhops*.

This cuſtom appears to be very antient: S. Athanaſius ſays of himſelf, according to Nicephorus, that there had been given him *in commendam*, *i. e.* in adminiſtration, another church beſides that of Alexandria, whereof he was ſtated biſhop.

The care of churches, it ſeems, which had no paſtor, was committed to a biſhop, till they were provided of an ordinary: the regiſter of pope Gregory I. is full of theſe commiſſions, or *commendams*, granted during the abſence or ſickneſs of a biſhop, or the vacancy of the ſee.

Some ſay, that pope Leo IV. firſt ſet the modern *commendams* on foot, in favour of eccleſiaſtics who had been expelled their benefices by the Saracens; to whom the adminiſtration of the vacant churches was committed for a time, in expectation of their being reſtored: though S. Gregory is ſaid alſo to have uſed the ſame, while the Lombards deſolated Italy.

In a little time, the practice of *commendams* became exceedingly abuſed; and the revenues of monaſteries were given to laymen for their ſubſiſtence. The biſhops alſo procured ſeveral benefices, or even biſhopricks, *in commendam*, which ſerved as a pretext for holding them all without directly violating the canons. Part of the abuſe has been retrenched; but the uſe of *commendams* is ſtill retained; as an expedient to take off the incompatibility of the perſon, by the nature of the benefice.

When a parſon is made biſhop, his parſonage becomes vacant; but if the king give him power, he may ſtill hold it *in commendam.*

COMMENDAM, in Romiſh countries, is a real title of a regular benefice; as an abbey, or priory given by the pope to a ſecular clerk, or even to a layman, with power to diſpoſe of the fruits thereof during his life.

No benefice that has a cure of ſouls, *i. e.* no parſonage, or biſhoprick, can be given *in commendam.* This practice being intirely contrary to the canons, none but the pope, who has a power of diſpenſing with the canons, can confer it.

When the *commendam* becomes vacant by the death of the *commendatory*, it is not eſteemed vacant by his death; but as it was before the *commendam* was granted; that making no alteration in the thing: yet the pope gives the ſame benefice *in commendam* again, by a privilege which he ſtill continues.

By the pope's bulls, a *commendatory* abbot has the full authority of the regular abbot to whom he is ſubſtituted: this is expreſſed in plain terms, *curam monaſterii, ac regimen & adminiſtrationem, tibi in ſpiritualibus & temporalibus plene committendo.* For this reaſon, the bulls expreſly require, that he be a prieſt; or, that if he have not yet attained the age of a prieſthood, he ſhall take orders as ſoon as he has. But this is a mere formality, or matter of ſtyle; the thing is never executed.

Indeed, the ſpiritual direction of the abbey, while it is in *commendam*, is lodged wholly in the clauſtral prior. The *commendatary* abbots have not any authority over the religious *in ſpiritualibus*: they even cannot either appoint or ſet aſide the clauſtral priors, who are nominated in the bulls the adminiſtrators of the ſpiritualities; in which, however, this reſtriction is added, *viz.* till the abbot arrive at the age of 25 years, to aſſume the prieſthood. The bull given the prince of Neubourg for the abbey of Feſcamp, runs thus: *Et ne ob defectum ætatis primo-dictum monaſterium aliquod in ſpiritualibus patiatur detrimentum; priorem clauſtralem pro tempore exiſtentem, primo-dicti monaſterii in ſpiritualibus, donec tu 25 tuæ ætatis annum pervexeris duntaxat, conſtituimus ac deputamus.* The words *adminiſtration in ſpirituals*, are underſtood principally of the monaſtic rule, or diſcipline; from which the *commendatary* abbots are excluded, when they are promoted to the prieſthood, unleſs they become regulars.

The pope grants benefices *in commendam*, not only to clerks, by diſpenſing with their age, and other qualifications required; but they alſo diſpenſe with the clericate even in children yet in the cradle, till they become of age to take the tonſure: it being ſufficient to obtain a bull, that it be repreſented at Rome, that the child is deſtined for the eccleſiaſtical ſtate.

In this caſe there is an œconomus, or ſteward, appointed to take care of the temporal concerns. See OECONOMUS.

COMMENDATI. See AFFIDATUS.

COMMENSURABLE *quantities*, in geometry, are ſuch as have ſome common aliquot part, or which may be meaſured by ſome common meaſure, ſo as to leave no remainder in either.

Thus, a foot and a yard are *commenſurable*; there being a third quantity which will meaſure each, *viz.* an *inch*; which taken 12 times makes a *foot*, and 36 times a *yard*.

Commenſurables are to each other, either as units to a rational whole number; or as one rational whole number to another. In *incommenſurables* it is otherwiſe. The ratio of *commenſurables* therefore is rational; that of *incommenſurables* irrational: hence, alſo, the exponent of the ratio of *commenſurables* is a rational number.

COMMENSURABLE *numbers*, whether integers or fractions, are ſuch as have ſome other number which will meaſure or divide them without any remainder.

Thus, 6 and 8, $\frac{8}{12}$, and $\frac{3}{4}$, are reſpectively *commenſurable* numbers.

COMMENSURABLE *in power*. Right lines are ſaid to be *commenſurable in power*, when their ſquares are meaſured by one and the ſame ſpace, or ſuperficies.

COMMENSURABLE *ſurds*, are ſuch ſurds as, being reduced to their leaſt terms, become true figurative quantities of their kind; and are therefore as a rational quantity to a rational.

COMMENTARY, or COMMENT, a gloſs, or interpretation, affixed to ſome antient, obſcure, or difficult author, to render him more intelligible, or to ſupply what he has left undone. Sir Henry Savil has written a *commentary* of 300 pages in quarto, to explain the firſt eight propoſitions in Euclid.—S. Evremon obſerves, that commentators commonly ſpend a great part o their time in finding out beauties the author never dreamt of and in enriching him with their own thoughts.

COMMENTARY is alſo uſed for a ſort of hiſtory, written by a perſon who had a chief hand in the tranſactions related. Such are the *commentaries* of Cæſar, of Sleidan, of Montluc, &c.

The word is alſo uſed for certain books written on ſome parti cular ſubject: Kepler has an excellent book of *commentaries* o *Mars*, containing obſervations on the motion of that planet.

COMMERCE, the exchange of commodities; or, the buying ſelling, or trafficking of merchandize, money, or even pa per; in order to profit by the ſame.

There is no doubt but *commerce* is nearly as antient as th world itſelf: neceſſity ſet it on foot, the deſire of convenien improved it, and vanity, luxury, and avarice, have broug it to its preſent pitch. At firſt it only conſiſted in the e change of things neceſſary for life: the plowman gave his co and his pulſe to the ſhepherd, and received milk and wool i exchange: which method of *commerce* by exchange ſubſi ſtill in many places; as about the coaſts of Siberia, and th Daniſh, and Muſcovite Lapland; among ſeveral nations o the coaſts of Africa; among moſt of thoſe of America, a many of Aſia. See EXCHANGE.

It is not preciſely known when the *commerce* by buying and ſe ing firſt began; nor when coins, and the ſeveral ſpecies of go ſilver, and copper, had their riſe. The firſt moneys were wo leather, and iron; and even at this day, it is the cuſtom in ſo plac places of both Indies, to give a certain value in ſea-ſhells and coco-nuts, for merchandizes, drugs, *&c.* See MONEY, and COIN.

The firſt inſtance of this kind of *commerce* in the ſacred writeing, is in the time of the patriarch Abraham. For profane authors, they uſually fix its epocha to the reign of Saturn and Janus in Italy; and the antient authors, according to Cæſar, attribute its invention to the god Mercury.

The Egyptians, Phœnicians, and Carthaginians, who were a Tyrian colony, were the firſt, the moſt daring and expert traders of all antiquity: at leaſt, it is evident they were the firſt who ran the hazard of long voyages; and who ſet on foot a traffick by ſea between coaſts very remote.

Among the antients, *commerce* did not appear unworthy the application of perſons of the firſt rank: Solomon, we are told, frequently joined his merchant-fleets with thoſe of the king of Tyre, for their voyage to Ophir; and by this means rendered himſelf, though in a little kingdom, the richeſt king of his time in the univerſe. Under the Aſiatic and Grecian empires, antient hiſtory gives us from time to time the traces of a *commerce* cultivated by ſeveral nations: but it flouriſhed more conſiderably under the dominion of the Romans; as appears from that vaſt number of colleges and companies of merchants in the ſeveral cities mentioned in hiſtorians, and antient inſcriptions.

The deſtruction of the Roman empire by the irruptions of the barbarians, brought that of *commerce* along with it; or at leaſt ſuſpended its ordinary operation for ſome time: by degrees it began to recover itſelf, and made a new progreſs; eſpecially in Italy. Hence, the Piſans, Florentines, Genoeſe, and Venetians, who, abounding in ſhipping, took occaſion to ſpread themſelves through all the ports of the Levant and Egypt; bringing thence ſilk, ſpices, and other merchandizes; and furniſhing the greateſt part of Europe therewith. And thus was the modern *commerce* founded on the ruins of that of the antient Greeks and Romans to the ſame places: and thus did thoſe famous republics acquire their luſtre and power.

The Germans, however, had a long time carried on a ſeparate *commerce*; which was not borrowed from the Romans, nor did it fall with theirs. Towards the end of the twelfth century, the German cities ſituate on the coaſt of the Baltic, and the rivers that run into it, got into a conſiderable traffick with the neighbouring ſtates.

As their *commerce* was much interrupted by pirates, 72 of them united together for their mutual defence; and were thence called *Hanſeatic*, or *Hans towns*. See HANS *Towns*.

Thus they flouriſhed till the beginning of the ſixteenth or the end of the fifteenth century; when a diviſion ariſing among them, and about the ſame time a new paſſage to the Indies, by the Cape of Good Hope, being diſcovered by the Portugueſe; and ſettlements made on the coaſt of Africa, Arabia, and the Indies; the antient Italian and Hanſeatic *commerce* ſunk; and the chief trade came into the hands of the Portugueſe.

The Portugueſe had not poſſeſſed thoſe different trades above 100 years, when, about the beginning of the ſeventeenth century, the Dutch began to ſhare it with them; and in a little time diſpoſſeſſed them of almoſt the whole. The Engliſh, French, Danes, and Hamburghers, excited by their ſucceſs, have likewiſe made ſettlements in the Indies, and on the coaſts of Africa; though much leſs conſiderable ones, excepting thoſe of the Engliſh.

Laſtly, America, diſcovered by the Spaniards ſoon after the Portugueſe had diſcovered the new way to the Indies, likewiſe became the object of a new, vaſt, and moſt important *commerce*, for all the nations of Europe; whereof Cadiz and Sevil were made the centre.

It is true, the firſt conquerors of this new world ſtill poſſeſs the greateſt and richeſt part of it; and preſerve the *commerce* thereof to themſelves with a world of jealouſy: yet, beſides that the Engliſh, French, Portugueſe, and Dutch, have ſeveral rich and flouriſhing colonies, both in the iſlands and the continent; it is certain, that it is as much for other nations as themſelves that the Spaniards every year ſend their flota's for the treaſures of Peru and Mexico.

The trade of Europe was no ſufferer by this new one of America; the north and ſouth have ſtill the ſame mutual occaſion for each other as before.

The navigation from the Baltic to the Mediterranean was tedious and difficult: the ſituation of Flanders, and the manufactures which there flouriſhed from the tenth century, together with the free fairs of that country, engaged the merchants, both of the north and ſouth, to eſtabliſh their magazines firſt in Bruges, and then in Antwerp.

The eſtabliſhment of the republic of Holland, the favourable reception it gave to ſtrangers, and the refuge it afforded to religionaries, drew ſtore of manufacturers to it, as well as manufactures; and ſoon ſunk the *commerce* of Antwerp.

And the ſame reaſons, the convenience and multitude of the ports of England, the good of the wools, and the induſtry of the workmen, have brought thither a conſiderable part of the *commerce* of Europe.

In France, the nobles are allowed to exerciſe *commerce* without derogating from their nobility: by an ordonnance of Louis XIII. merchants are allowed to take on them the quality of nobles; and by another of Louis XIV. they are declared capable of being ſecretaries of ſtate, without laying aſide their *commerce*. It may be added, for the honour of trade, that ſome of the Italian princes, looking on themſelves as the chief merchants of their ſtates, do not diſdain to make their own palaces ſerve as magazines: and there are ſeveral kings in Aſia, as well as moſt of thoſe on the coaſts of Africa and Guiney, who negotiate with the Europeans by their factors, and frequently in perſon.

Commerce, on the foot it now ſtands, is divided into *commerce by land*, and *by ſea*; that by *long voyages*, and by *ſhort*; *inland* or *domeſtic*, and *foreign*; and by *wholeſale* and *retail*.

A great part of the foreign *commerce* of England is now carried on by collective companies: ſome incorporated by the king's charters, with an excluſive privilege, as the Eaſt-India and South-Sea companies; others only private aſſociations, as the Turky and Hamburgh companies. See COMPANY.

Chambers of COMMERCE. See the article CHAMBER.

Characters in COMMERCE. See the article CHARACTER.

COMMINATORY, a clauſe inſerted in a law, edict, patent, *&c.* importing a puniſhment wherewith delinquents are menaced; which, however, is not to be executed in its rigour.

Thus, in France, when an exile is injoined not to return on pain of death, it is deemed a *comminatory* penalty; ſince, if he do return, it is not ſtrictly executed; but a ſecond injunction is then laid on him, which is more than *comminatory*, and from the day of the date thereof, imports death without remedy.

COMMINUTION, the act of grinding, or breaking any matter into ſmaller particles.—The effect of chewing, or maſticating our food; is the *comminution* thereof.

COMMISSARY, an officer of the biſhop, who exerciſes eccleſiaſtical juriſdiction in thoſe parts of the dioceſe, which are ſo far remote from the ſee, that the chancellor cannot call the ſubjects thereof to the biſhop's principal conſiſtory, without their too great moleſtation.

This officer, called by the canoniſts *commiſſarius*, or *officialis foraneus*, is appointed to ſupply the biſhop's office in the outparts of the dioceſe, and in ſuch parts as are peculiar to the biſhop, and exempted from the juriſdiction of the archdeacon: for where the archdeacons have juriſdiction, as in moſt places they have, either by preſcription or compoſition, the *commiſſary* is ſuperfluous, and frequently vexatious.

COMMISSARY, in an army.—There are two ſorts of *commiſſaries*:

COMMISSARY-GENERAL *of the muſters*, or muſter-maſter general, takes an account of the ſtrength of every regiment, reviews them, ſees that the horſe be well mounted, and all the men well armed and accoutred.

COMMISSARY-GENERAL *of proviſions*, has the charge of furniſhing the army with all things of that kind.

COMMISSION, in common law, is the ſame with *delegation* among the civilians; and is taken for the warrant, or patent, which any man exerciſing juriſdiction, either ordinary or extraordinary, hath to authorize him to hear or determine any cauſe or action.

The term, however, is ſometimes extended farther than to matters of judgment; as in the *commiſſion* of purveyors, which ſeems to be null by the ſtatute for taking away purveyance, 12 Car. II. and the high *commiſſion court*, which was founded on the ſtatute 1 Eliz. and is alſo aboliſhed by act of parliament 17 Car. I. The perſons charged with a *commiſſion* are hence called *commiſſioners*; ſometimes *committees*.

COMMISSION *of anticipation*, was antiently a *commiſſion* given under the great-ſeal, to collect a ſubſidy before the day. See ANTICIPATION.

COMMISSION *of aſſociation*, is a *commiſſion* under the great-ſeal, to aſſociate two, or more learned perſons, with the ſeveral juſtices, in the ſeveral circuits and counties in Wales.

COMMISSION *of bankruptcy*, a *commiſſion* under the great-ſeal, directed to five or more commiſſioners, to inquire into the particulars of a man's circumſtances, who hath failed, or broke; and to act according to certain ſtatutes made in that behalf.

COMMISSION *of peace*. See JUSTICE *of peace*.

COMMISSION *of rebellion*, or *writ of rebellion*, is iſſued out when a man, after proclamation iſſued out of the chancery, or the exchequer, and made by the ſheriff, to preſent himſelf, under pain of his allegiance, to the court by a certain day; does not appear. See REBELLION.

This *commiſſion* is directed, by way of command, to certain perſons; three, two, or one of them; to apprehend, or cauſe to be apprehended, the party as a rebel; and to bring him to the court on a day aſſigned.

COMMISSION-*Officers*. See the article OFFICER.

Book of COMMISSIONS. See the article BOOK.

COMMISSION, in commerce. See FACTORAGE.

COMMISSIONER, he who has a *commiſſion*, *e. gr.* a patent, or other legal warrant, to execute any public office. See COMMISSION, WARRANT, *&c.*

Such are, *commiſſioners* of hawkers and pedlars, *commiſſioners* of alienation, *commiſſioners* of the ſtamps, *&c.*

COMMISSIONERS *of the Cuſtoms.* } See { CUSTOMS.
COMMISSIONERS *of Exciſe.* } { EXCISE.

COMMISSIONERS *of the Navy.* See the article NAVY.

Lords **COMMISSIONERS** *of the Treaſury.* See TREASURY, and EXCHEQUER.

COMMISSUM *Fidei.* See the article FIDEI.

COMMISSURE *, COMMISSURA, a term uſed by ſome authors, for the junctures, or for the ſmall meatus's, or interſtices of bodies; or the little clefts between the particles; eſpecially when thoſe particles are broadiſh and flat, and lie contiguous to one another, like thin plates, or lamellæ. See PORE.

COMMISSURE, in architecture, *&c.* denotes the joint of two ſtones; or, the application of the ſurface of the one to that of the other.

Among anatomiſts, *commiſſure* is ſometimes alſo uſed for a ſuture of the cranium, or ſkull.

COMMITTEE, in law, one or more perſons, to whom the conſideration of any matter is referred, either by a court, or by conſent of the parties concerned.

COMMITTEE *of Parliament*, is a board conſiſting of a certain number of members, appointed by the whole houſe, for the examining of a bill, or making report of an inquiry, or proceſs of the houſe, *&c.*

Sometimes, the whole houſe is reſolved into a committee; on which occaſion each perſon has a right to ſpeak, and reply as much, and as often, as he pleaſes: an expedient they uſually have recourſe to in extraordinary caſes, and where any thing is to be thoroughly canvaſſed.—When the houſe is not in a *committee*, each gives his opinion regularly, and is only allowed to ſpeak once.

COMMITTEE *of the King*, is uſed for a widow of one of the king's tenants: it is thus called, as being by the antient law of the realm *committed* to the king's care and protection. See WIDOW.

COMMODATE, COMMODATUM, in the civil juriſprudence, the loan, or free conceſſion of any thing moveable or immoveable, for a certain time, on condition of reſtoring again the ſame individual after a certain term.

The *commodate* is a kind of loan: there is this difference, however, between a loan and a *commodate*, that the latter is gratis, and does not transfer the property: the thing muſt be returned in eſſence, and without impairment: ſo that things which conſume by uſe, or time, cannot be objects of a *commodate*, but of a loan; in regard they may be returned in kind, though not in identity.

COMMODITIES *Staple.* See the article STAPLE.

COMMODORE, in the navy, an under-admiral, or perſon commiſſioned by an admiral to command a ſquadron of ſhips in chief. See ADMIRAL, and SQUADRON.

COMMON, COMMUNIS, ſomething that belongs to all alike; is owned or allowed by all; and is not confined to this more than that. See COMMUNIS.

In which ſenſe, *common* ſtands oppoſed to *proper*, *peculiar*, &c. Thus, the earth is ſaid to be our *common* mother; in the firſt, or golden age, all things were in *common*, as well as the ſun and elements: the name animal is *common* to man and beaſt; that of ſubſtance to body and ſpirit.

Philoſophers diſpute whether there be any ſuch thing as *common* notions, innate, or impreſſed on the mind by nature herſelf; or whether our ideas are all adventitious.

COMMON *Bench.* See the article *Common* PLEAS.

COMMON *Council.* See the article *Common* COUNCIL.

COMMON *Duct*, in anatomy. See DUCTUS *Communis.*

COMMON *Fine*, in law, a certain ſum of money which the reſiants within the liberty of ſome leets pay to the lord thereof; called, in ſome places, *head-ſilver*; in others, *cert-money*, or *certum letæ*, and *head pence.*

It was firſt granted to the lord towards the charge of his purchaſe of the court-leet; whereby the reſiants have now the conveniency of doing their ſuit-royal near home, without being compelled to go to the ſheriff's turn.

COMMON *Hunt*, the chief huntſman belonging to the lord mayor and aldermen of London.

COMMON *Intendment*, in law, the *common* underſtanding, meaning, or conſtruction of any thing; without ſtraining it to any foreign, remote, or particular ſenſe.

Bar to **COMMON** *Intendment*, is an ordinary or general bar, which commonly diſables the declaration of the plaintiff. See BAR, and INTENDMENT.

COMMON *Law*, that body of rules generally received, and held as law in this nation, before any ſtatute, or written law, was made to alter the ſame.

After the decay of the Roman empire, Britain became invaded by three kinds of German people, *viz.* the Saxons, Angles, and Jutes. From the Jutes deſcended the men of Kent, and thoſe of the Iſle of Wight; from the Saxons came the people called the Eaſt, South, and Weſt-Saxons; and from the Angles came the Eaſt-Angles, Mercians, and Northumbrians.

Now, as each people had its peculiar cuſtoms, ſo each inclined to different laws; whereof, thoſe of the Weſt-Saxons, and Mercians, who inhabited the midland countries, were, upon the diſſolution of the heptarchy, and eſtabliſhment of a monarchy, preferred to the reſt, and acquired the common appellation of *Jus Anglorum.* Their particular names were *Weſt Saxonlage*, and *Merchenlage.*

By theſe laws the nation was governed for ſeveral ages, till, being at length ſubdued by the Danes, the cuſtoms of thoſe people were introduced, and incorporated with the reſt; and thus a new form of *common* law aroſe, called *Danelage.*

The Danes being afterwards, in their turn, overcome by the Normans; the Conqueror, on a review of the ſeveral laws and cuſtoms that then obtained, abrogated ſome, and aboliſhed others; adding ſome of his own country laws: and the ſyſtem, or aſſemblage of theſe, is what we call the *common law.*

The *common law* of England is, properly, the common cuſtoms of this kingdom; which, by length of time, have obtained the force of laws

It is called *lex non ſcripta*, the *unwritten law*: not but that we have moſt of it written in the old Norman dialect, but becauſe it cannot be made by charter, or parliament: for thoſe are always matters of record; whereas cuſtoms are only matter of fact, and ſubſiſt no-where but in the memory of the people.

From the common reaſon of things, therefore, *common law* ſhould appear the beſt, moſt beneficial, and eaſy to the people; in regard it conſiſts of ſuch rules and practices as they themſelves ſpontaneouſly, and as it were by the impulſe and direction of their own intereſts, were led to: whereas the written laws, made in England by the king and parliament, are impoſed on the ſubject at once and without any trial, or foreknowlege how they ſhall anſwer; and whether or no they are like to prove beneficial to the nation, and agreeable to the nature of the people: excepting ſuch as are firſt made temporary; and, for their approved utility, afterwards perpetuated.

The firſt Saxon laws publiſhed in England, were thoſe of king Ethelbert in the ſixth century. 300 years after, king Alfred, whom our hiſtorians call *magnus juris Anglicani conditor*, having united the heptarchy, and rendered himſelf maſter of the whole nation, made a collection from among the ſeveral laws of the ſeveral provinces of his domains; and commanded them to be obſerved throughout his kingdom. This collection was denominated *folk-right*, and ſoon after, the *common law*; as being *common* to the whole nation.

Beſide the *common law* of England in general; there are in divers parts of the nation particular cuſtoms, and common uſages, which have the force of *common law* among thoſe people who have retained them: ſuch as the Borough-Engliſh, Gavelkind, *&c.*—Where the *common law* is ſilent, there the ſtatute-law ſpeaks. See STATUTE.

All trials at *common law* are by a jury of twelve men. See JURY, TRIAL, *&c.*

COMMON *Month.* } { MONTH.
COMMON *Motion.* } See the article { MOTION.
COMMON *Object.* } { OBJECT.

COMMON-PLACE *Book*, *Adverſaria*, among the learned, denotes a regiſter, or orderly collection of what things occur worthy to be noted, and retained in the courſe of a man's reading, or ſtudy; ſo diſpoſed, as that among a multiplicity of heads, and things of all kinds, any one may be eaſily found, and turned to at pleaſure.

Common-place books are things of great ſervice: they are a kind of promptuaries or ſtorehouſes, wherein to repoſit the choiceſt and moſt valuable parts of authors, to be ready at hand when wanted. Several perſons have their ſeveral methods of ordering them: but that which comes beſt recommended, and which many learned men have now given into is the method of that great maſter of order Mr. Locke. He has thought fit to publiſh it in a letter to M. Toiſnard; determined thereto, by the great conveniency and advantage he had found from it in 20 years experience; as well as by the recommendations and intreaties of many of his friends, wh had likewiſe proved it.

The ſubſtance of this method we ſhall here give the reader whereby he will be eaſily enabled to execute it himſelf.

The firſt page of the book you intend to take down the *common-places* in, is to ſerve as a kind of index to th whole; and to contain references to every place or matte therein: in the commodious contrivance of which inde ſo as it may admit of a ſufficient copia, or variety of m terials, without any confuſion; all the ſecret of the metho conſiſts.

In order to this, the firſt page, as already mentioned, or, more room, the two firſt pages that front each other, are be divided, by parallel lines, into 25 equal parts; whereo every fifth line is to be diſtinguiſhed, by its colour, or so other circumſtance. Theſe lines are to be cut perpendi larly by others, drawn from top to bottom; and in the veral ſpaces thereof, the ſeveral letters of the alphabet, bo capital and minuſcule, are to be duly written.

The form of the lines and diviſions, both horizontal and perp dicul dicular, with the manner of writing the letters therein, will be conceived from the following ſpecimen; wherein what is to be done in the book for all the letters of the alphabet, is here ſhewn in the firſt four, *A*, *B*, *C*, and *D*.

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* The word literally ſignifies *a joining*, or connecting of one thing to another.

A	*a*		*C*	*a*	
	e			*e*	
	i			*i*	
	o			*o*	
	u			*u*	
B	*a*		*D*	*a*	
	e	2. 3		*e*	
	i			*i*	
	o			*o*	
	u			*u*	

The index of the *common-place* book thus formed, matters are ready for the taking down any thing therein.

In order to this, conſider to what head, the thing you would enter is moſt naturally referred; and under which, one would be led to look for ſuch a thing: in this head, or word, regard is had to the initial letter, and the firſt vowel that follows it; which are the characteriſtic letters whereon all the uſe of the index depends.

Suppoſe, *e. gr.* I would enter down a paſſage that refers to the head *beauty*; *B*, I conſider, is the initial letter, and *e* the firſt vowel: then, looking upon the index for the partition *B*, and therein the line *e* (which is the place for all words whoſe firſt letter is *B*, and firſt vowel *e*; as *Beauty*, *Beneficence*, *Bread*, *Bleeding*, *Blemiſhes*, &c.), and finding no numbers already down to direct me to any page of the book where words of this characteriſtic have been entered, I turn forward to the firſt blank page I find, which in a freſh book, as this is ſuppoſed to be, will be page 2. and here I now write what I have occaſion for on the head *beauty*; beginning the head in the margin, and indenting all the other ſubſervient lines, that the head may ſtand out, and ſhew itſelf: this done, I enter the page where it is written, *viz.* 2. in the index, in the ſpace *B e*; from which time, the claſs *B e* becomes wholly in poſſeſſion of the 2d and 3d pages, which are conſigned to letters of this characteriſtic.

Had I found any page or number already entered in the ſpace *Be*, I muſt have turned to the page, and have written my matter in what room was left therein: ſo, if after entering the paſſage on beauty, I ſhould have occaſion for *benevolence*, or the like, finding the number 2 already poſſeſſed of the ſpace of this characteriſtic, I begin the paſſage on benevolence in the remainder of the page; which not containing the whole, I carry it on to page 3. which is alſo for *B e*; and add the number 3 in the index.

An example will make the method of writing down the heads obvious.

AUTY. ‘The power of perceiving the ideas of *beauty* is juſtly called a *ſenſe*, becauſe of its affinity to the other ſenſes in this, that the pleaſure does not ariſe from any knowlege of principles, proportions, cauſes, or of the uſefulneſs of the object; but ſtrikes us at firſt with the idea of *beauty*: nor does the moſt accurate knowlege increaſe this pleaſure of *beauty*; however, it may ſuperadd a diſtinct rational pleaſure from proſpects of advantage, or from the increaſe of knowlege. And further, the ideas of *beauty*, like other ſenſible ideas, are neceſſarily pleaſant to us, as well as immediately ſo; neither can any reſolution of our own, nor any proſpect of advantage or diſadvantage, vary the *beauty* or deformity of an object: for as in the external ſenſations, no view of intereſt will make an object grateful; nor detriment, diſtinct from immediate pain in the perception, make it diſagreeable to the ſenſe; ſo, propoſe the world as a reward, or threaten the greateſt evil, to make us approve a deformed object, or diſapprove a beautiful one; diſſimulation may be procured by rewards, or threatenings; or we may in external conduct abſtain from any purſuit of the beautiful, and purſue the deformed; but our ſentiments of the forms, and our perceptions, would continue invariably the ſame. Hence, it plainly appears, that ſome objects are immediately the occaſions of this pleaſure of *beauty*; and that we have ſenſes fitted for perceiving it; and that it is diſtinct from that joy which ariſes from ſelf-love, upon proſpect of advantage. Nay, do not we often ſee conveniency and uſe neglected to obtain *beauty*, without any other proſpect of advantage in the beautiful form, than the ſuggeſting the pleaſant ideas of *beauty*? Now this ſhews us, that however we may purſue beautiful objects from ſelf-love, with a view to obtain the pleaſures of *beauty*; as in architecture, gardening, *&c.* yet there muſt be a ſenſe of *beauty* antecedent to proſpects of even this advantage: without which ſenſe, theſe objects would not be thus advantageous; nor excite in us this pleaſure, which conſtitutes them advantageous.

‘Our ſenſe of *beauty*, from objects by which they are conſtituted good to us, is very diſtinct from our deſire of them, when they are thus conſtituted: our deſire of *beauty* may be counterbalanced by rewards and puniſhments, but never our ſenſe of it. Had we no ſuch ſenſe of *beauty*, houſes, gardens, dreſs, equipage, might be recommended to us as convenient, fruitful, warm, eaſy; but never as beautiful: and in faces, I ſee nothing that could pleaſe us, but livelineſs of colour, and ſmoothneſs of ſurface.—*Inquiry into the Original of our Ideas of Beauty*, &c. 8*vo*. Lond. 1725. p. 10, 11, 12.

BENEVOLENCE. ‘The true ſpring of all actions called *virtuous*, is ſome determination of our nature to ſtudy the good of others; or ſome inſtinct, antecedent to all reaſon from intereſt, which influences us to the love of others.—The ſame cauſe which determines us to purſue happineſs for ourſelves, determines us to eſteem and *benevolence* for others: even the very frame of our nature, or a generous inſtinct.—This univerſal *benevolence* towards all men, we may compare to that principle of gravitation, which extends to all bodies in the univerſe, but, like the love of *benevolence*, increaſes as the diſtance is diminiſhed; and is ſtrongeſt when bodies come to touch each other, *Id. ib.* p. 131. 143. 199.—As all men have ſelf-love, as well as *benevolence*; thoſe two principles may jointly excite a man to the ſame action: and then they are to be conſidered as two forces impelling the ſame body to motion: ſometimes they conſpire; ſometimes are indifferent to each other; and ſometimes are oppoſite. Thus, if a man has ſuch ſtrong *benevolence* as would have produced an action without any views to ſelf-intereſt; that ſuch a man has alſo in view private advantage, does no-way diminiſh the *benevolence* of the action. When he would not have produced ſo much public good, had it not been for proſpect of ſelf-intereſt; then the effect of ſelf love is to be deducted; and his *benevolence* is proportioned to the remainder of good, which pure *benevolence* would have produced. When a man's *benevolence* is hurtful to himſelf, then ſelf-love is oppoſite to *benevolence*; and the *benevolence* is proportioned to the ſum of the good produced, and the reſiſtance of the ſelf-love ſurmounted thereby.—The morality of any perſon, or the quantity of public good produced by him, is in a compound ratio of his *benevolence* and abilities: or (by ſubſtituting the initial letters for the words, as $M=$ moment of good, and $\mu=$ moment of evil) $M=B+A$. *Idem ib.* p. 130, 131. 143. 199.’

When the two pages deſtined for one claſs are full, look forwards for the next backſide that is blank; if it be that which immediately follows, write at the bottom of the margin of the page filled, the letter *v.* for *verte*, turn over; and the ſame at the top of the next page; and continue from this new page as before. If the pages immediately following be already filled with other claſſes; then write at the bottom of the page laſt filled the letter *v.* with the number of the next blank page; and at the top of that page, the number of the page laſt filled: then entering that head in this new page, proceed as before. By theſe two numbers of reference, the one at the top, and the other at the bottom of the page, the diſcontinued matters are again connected. It may not be amiſs, too, every time you put a number at the bottom of a page, to put it likewiſe in the index. Note, if the head be a monoſyllable beginning with a vowel, the vowel is at the ſame time both the initial letter and the characteriſtic vowel: thus, the word *art* is to be wrote in *A a*. Mr. Locke omits three letters of the alphabet in his index, *viz.* *K*, *Y*, and *W*; which are ſupplied by *C*, *I*, *U*, equivalent to them: and as for *Q*, ſince it is always followed by an *u*, he puts it in the fifth place of *Z*; and ſo has no *Z u*, which is a characteriſtic very rarely occurs. By thus making *Q* the laſt in the index, its regularity is preſerved, without diminiſhing its extent. Others chooſe to retain the claſs Z *u*, and aſſign a place for *Qu* below the index.

If any imagine, that thoſe hundred claſſes are not ſufficient to comprehend all kinds of ſubjects without confuſion, he may follow the ſame method, and yet augment the number to 500, by taking in one more characteriſtic to them.

But the inventor aſſures us, that in all his collections, for a long ſeries of years, he never found any deficiency in the index, as above laid down.

COMMON PLEAS, *Communia placita*, or *Bancus communis*, one of the king's courts, now conſtantly held in Weſtminſter-hall; but antiently moveable.

Gwyn obſerves, that till the granting of *magna charta* there were but two courts called the king's courts, *viz.* the exchequer, and the king's-bench; and that upon the grant of that charter the court of *common-pleas* was erected, and fixed to a place certain, *viz.* Weſtminſter-hall: whence the writs which before ran *coram me*, *vel juſticiariis meis*, ſimply; were now changed, and run *coram juſticiariis meis apud Weſtmon.*

All civil cauſes, both real, perſonal, and mixed, are tried in this court, according to the ſtrict law of the realm: Forteſcue repreſents it as the only court for real cauſes.

The chief-juſtice hereof is called the *lord chief-juſtice of the common-pleas*; who is accompanied with three or four his aſſociates, created by letters patent, and as it were judges inſtalled or placed on the *common bench* by the lord chancellor, and the lord chief-juſtice of the court.

The reſt of the officers belonging to this court, are the *cuſtos brevium*; three *prothonotaries*, or prænotaries: See PROTHONOTARY. *A chirographer*; *fourteen filazers*; *four exigenters*; *clerk of the warrants*; *clerk of the juries*, or *jurata writs*; *clerk of the treaſury*; *clerk of the king's ſilver*; *clerk of the eſſoigns*; *clerk of the outlawries*; *clerk of the errors*; whoſe ſeveral functions ſee in their places, CUSTOS *brevium*, CHIROGRAPHER, EXIGENTER, CLERK, &c.

COMMON *ray*. See the article RAY.

COMMON, in grammar, denotes the gender of nouns, which is equally applicable to both ſexes, male and female.

Such is that of *parens*, parent; which is either maſculine, or feminine, as it is uſed to ſignify either father, or mother.

The Latin grammarians, beſides this, which they call the *common of two*, do alſo make a *common of three*; which extends to maſculine, feminine, and neuter.

COMMON, in geometry, is applied to an angle, line, or the like, which belongs equally to two figures, or makes a neceſſary part of both.

COMMON *Center of Gravity*. See CENTER *of Gravity*.

COMMON *Diviſor*, is a quantity, or number, which exactly divides two, or more other quantities, or numbers, without leaving any remainder.

COMMON, in law, that ſoil, the uſe whereof lies open or common to the ſeveral inhabitants, or holders of a particular town, or lordſhip.

In which ſenſe, we ſay, *common* of paſture, *common* of fiſhing, *common* of turbary, *common* of eſtovers, &c.

Common of paſture, is divided into *common in groſs*, *common appendant*, *common appurtenant*, and *common by way of neighbourhood.*

COMMON *in groſs*, is a liberty to have *common* alone, that is, without any land or tenement in another man's land, granted either to a perſon for life, or to him, and his heirs. This is commonly paſſed by deed, or ſpecialty.

COMMON *appendant*, and COMMON *appurtenant*, are uſually confounded; both being defined to be a liberty of *common* appertaining to, or depending on ſuch or ſuch a freehold; which *common* muſt be taken with beaſts *commonable*; as horſes, oxen, &c. being accounted fitteſt for the ploughman; and not with goats, geeſe, and hogs.

Others diſtinguiſh between the two, thus: *common appurtenant* may be ſevered from the land whereto it appertains; but not *common appendant*, which, according to my Lord Coke, had its original in the following manner:

‘When a lord enfeoffed another in arable lands to hold of him in ſocage; the feoffee, to maintain the ſervice of his plough, had at firſt, by courteſy of his landlord, *common* in his waſtes, for neceſſary beaſts, to ear and compoſt his lands: and that for two cauſes; 1°, becauſe it was tacitly implied in the feoffment; by reaſon the feoffee could not till, or compoſt his paſture: by conſequence, therefore, the feoffee had, as a thing neceſſary, or incident, *common* in the waſtes, or lands of the lord. 2°, For the maintenance and advancement of tillage.’

COMMON *per Cauſe de Vicinage*, i. e. by reaſon of neighbourhood; is a liberty that the tenants of one lord in one town, have to *common* with the tenants of another lord in another town.

But it is to be obſerved, that thoſe who claim this kind of *common* (which is uſually called *intercommoning*) may not put their cattle into the *common* of the other two, for then they are diſtrainable; but, turning them into their own fields, if they ſtray into their neighbours *common*, they muſt be ſuffered. See INTERCOMMONING.

Tenants in COMMON. See the article TENANT.

COMMON *receptacle.* } See { RECEPTACLE.
COMMON *ſenſory.* } { SENSORY.

COMMON *time*. See the article TIME.

COMMON *year*. See the article YEAR.

COMMONER, is uſed for a ſtudent in ſome univerſities, entered in a particular rank.

The word is alſo applied to a member of the houſe of *commons*; in contradiſtinction to a *peer*.

COMMONS, in parliament, are the lower houſe, conſiſting of knights elected by the counties, and of citizens and burgeſſes by the cities and borough-towns.

In theſe elections, antiently, all the people had votes; but king Henry VI. to avoid tumults, firſt appointed, that none ſhould vote for knights but ſuch as were freeholders, did reſide in the county, and had 40 *s.* yearly revenue: the perſons elected for counties to be *milites notabiles*, at leaſt eſquires, or gentlemen fit for knighthood; native Engliſhmen, at leaſt naturalized; and 21 years of age: no judge, ſheriff, or eccleſiaſtical perſon, to ſit in the houſe for county, city, or borough.

All members of either houſe, with their menial ſervants, and neceſſary goods brought with them, are privileged from all attachments and impriſonments; except for treaſon, felony, or breach of peace, all the time of the ſeſſion, and till they arrive at home, *eundo*, *morando*, *ad propria redeundo.*

The *commons* ſit in their houſe promiſcuouſly; only the *ſpeaker* has a chair, or ſeat, fixed towards the upper end; and the clerk, with his aſſiſtant, ſits near him.

The members have no robes, as the lords ever had; excepting the ſpeaker and clerks; and ſometimes the profeſſors of law in term-time, and the members of the city of London.

On the firſt day of the new parliament, before any affair is meddled with, all the members take the oaths; uſually, before the lord ſteward, and in the court of wards. They then proceed to the choice of a ſpeaker. And after the election of a ſpeaker, they take the oaths a ſecond time. Se SPEAKER.

Privileges of the COMMONS. All bills for levying money o the ſubject, begin in the houſe of *commons*; in regard, it from them the greateſt part of the moneys ariſe: nor wi they allow the lords to make any alteration in a money-bill. They have the privilege to propoſe laws, and are, in effe the grand inqueſt of the realm; preſent public grievances impeach public delinquents, even the higheſt officers of th kingdom; and proſecute them before the houſe of lord who are a court of judicature, though the *commons* are not.

The *commons* are allowed their expences during parliamen time, *rationabiles expenſas*, as the words of the writ are *i. e.* ſuch allowance as the king, conſidering the prices things, ſhall think proper to impoſe on the people they r preſent. In 17 Edward II. the allowance was ten groats f knights, and five for burgeſſes, *per* day; afterwards it w raiſed to four ſhillings a day for dubbed knights, and tw ſhillings for all the reſt: but all allowance is now grown in diſuſe; and the courſe of the money turned the other way

COMMONS is alſo uſed in oppoſition to *nobles*, or *peers*, w for all ſorts of perſons under the degree of a baron; includi the orders of knights, eſquires, gentlemen, the ſons of nobility, and yeomen. *See each under its proper ar* ESQUIRE, GENTLEMAN, YEOMAN, &c.

Doctors COMMONS. See COLLEGE *of Civilians.*

Proctor of the COMMONS. See PROCTOR.

COMMONS is alſo uſed for the ſtated and ordinary diet, eating, of a college, inns of court, or other ſociety. INN, &c.

COMMONWEALTH. See REPUBLIC, and ROMAN.

COMMOTE, an antient term in Wales, denoting half a c tred, or hundred; containing 50 villages. See HUNDRE Wales was antiently divided into three provinces; each theſe ſubdivided into cantreds; and every cantred into *commotes* or half-hundreds.

Silveſter Girald, however, tells us in his *itinerary*, th *commote* is but a quarter of a hundred.

COMMOTION, an inteſtine motion, or luctation in parts of any thing.

In medicine, the term is chiefly uſed for a blow, or ſha the brain. A convulſion is a *commotion* of the fine medu fibres of the brain. A fall occaſions a *commotion*, wh frequently ariſes a counterſtroke on the oppoſite part; occaſions ſometimes a contrafiſſure, and at other times a ture of the veſſels, and an apoſthume, by ſhaking the maſs of the brain.

COMMUNAM *appropriare*. See the article APPROPRI

COMMUNE *rectum*. See the article RECTUM.

COMMUNIBUS *locis*, a Latin term, in frequent uſe a philoſophical, &c. writers; implying ſome medium mean relation, between ſeveral places.

Dr. Keil ſuppoſes the occean to be one quarter of a deep, *communibus locis*, *q. d.* at a medium, or taki place with another.

COMMUNIBUS *annis*, has the ſame import with regard to that communibus locis has with regard to places.

Mr. Derham obſerves, that the depth of rain, *communibus annis*, *i. e.* one year with another, were it to ſtagnate on the earth, would amount to, at Townly in Lancaſhire, 42½ inches; at Upminſter in Eſſex 19¼; at Zurick 32¼; at Piſa 43¼; and at Paris to 19 inches.

COMMUNICATING, in theology, the act of receiving the ſacrament of the euchariſt. See EUCHARIST.

Thoſe of the *reformed*, and of the Greek churches, *communicate* under both kinds; thoſe of the Romiſh only under one.

From the ſecond book of Tertullian to his wife, it appears, that antiently they *communicated* faſting. S. Auguſtine ſays expreſly, that in ſome churches, in his time, they *communicated* every day. Among the Greeks, M. Fleury obſerves, the laity ſtill *communicate* every ſunday; and that thoſe who omit it three ſundays together are excommunicated.

The oriental communicants receive the ſpecies of wine by a ſpoon; and antiently they ſucked it through a pipe, as has been obſerved by Beat. Rhenanus on Tertullian.

COMMUNICATION, the act of imparting a thing to another, or making him a ſharer with us therein.

Thus, God is ſaid to *communicate* his grace to us, by means of his ſacraments. The uſe of ſpeech is for the *communicating* of our ideas and ſentiments to each other.

Philoſophers are at a loſs as to the manner of the *communication*, or intercourſe between ſoul and body. See SOUL, CAUSE, &c.

COMMUNICATION is alſo uſed for the connexion of one thing with another; or the paſſage from one place to another.

Antiently, it was frequent to have ſubterraneous *communications* between one place and another. Such a gallery makes a *communication* between ſuch two apartments.

Bridge of COMMUNICATION. See the article BRIDGE.

Lines of COMMUNICATION, in war, called alſo ſimply *lines*; are trenches ſix or ſeven feet deep, and twelve broad, made between one fort, or work, and another; in order for a ſafe paſſage between one quarter and another; eſpecially in ſieges.—See *Tab. Fortification*, *fig.* 21, 22, &c.

COMMUNICATION *of idioms*, in theology, the act of imparting the attributes of one of the natures in Jeſus Chriſt, to the other.

The *communication of idioms* is founded on the union of two natures in the perſon of Chriſt: by this *communications of idioms* it is, that we ſay, God ſuffered, died, &c. which is ſtrictly underſtood of the human nature; and ſignifies that God ſuffered in his humanity, that he died as to his human nature, &c.

For the denominations which ſignify natures, or properties of nature, the ſchoolmen tell us, are denominations of *ſuppoſitums*, or perſons, and are to be attributed to them: thus, the two natures only ſubſiſting in Jeſus Chriſt by the ſole perſon of the Word, to this perſon muſt be attributed the denominations of both natures, and of their properties. But we may not by *communication of idioms* attribute to Jeſus Chriſt what would ſuppoſe him not to be God; ſince that would deſtroy the hypoſtatical union, which is the foundation of the *communication of idioms*. Thus, we may not ſay, that Jeſus Chriſt is mere man; that he is fallible, &c.

The Lutherans carry the *communication of idioms* ſo far, as to ſay, that Jeſus Chriſt is not only in his divine nature, and by reaſon of his divine perſon, but alſo really and properly in his humanity, immortal, immenſe, &c.

OMMUNICATION *of motion*, that act of a moving body, whereby another body at reſt is put by it in motion, or a body already in motion is accelerated.

F. Malebranche looks on the *communication of motion* as ſome-
thing metaphyſical; *i. e.* as not neceſſarily ariſing from any phy-
ſical principles, or any properties of bodies, but flowing from
he immediate agency of God: there being, according to him,
o more connexion, or dependence, between the motion or reſt
f one body, and that of another, than between the form, co-
our, magnitude, &c. of one body, and thoſe of another. The
otion of one body, therefore, on his principle, is not any
hyſical cauſe of that of another. See CAUSE.

ws *of the* COMMUNICATION *of motion.*—Action, and re-
ction, Sir Iſaac Newton demonſtrates, are equal and oppoſite;
o that one body ſtriking againſt another, and thereby occaſion-
g a change in its motion, does itſelf undergo the very ſame
ange in its own motion, the contrary way. See MOTION.

ence, a moving body ſtriking directly againſt another at reſt,
e one loſes juſt as much of its motion as it *communicates* to
e other; and they will proceed with the ſame velocity as if
ited into one maſs.

therefore, the body in motion be triple that at reſt againſt
ich it ſtrikes, it will loſe a fourth part of its motion; and
ereas, before, it would have run over (*v. gr.*) a line of 20
, in a given time, it will now only run over 15; *i. e.* it
l loſe a fourth part of its velocity.

he moving body ſtrike on another already in motion, the
will augment the velocity of the latter; but will loſe leſs
ts own motion, than had the latter been abſolutely at reſt.
us, *v. gr.* if a body in motion be triple of another at reſt,
ſtrike againſt it with 32 degrees of motion; it will *com-
icate* eight degrees of its motion to the other, and retain
to itſelf. If the other body had already four degrees of motion, the firſt would only *communicate* five, and retain 27; ſince thoſe five were ſufficient, in regard of the inequality of the bodies, to make them proceed with equal velocity.

After the ſame manner may the other laws of *communication* of motion in bodies perfectly hard, and void of all elaſticity, be determined. But all hard bodies, that we know of, have an elaſtic power; and in elaſtic bodies, the laws are different, and much more intricate. See ELASTICITY; and *the laws of percuſſion in elaſtic bodies*, ſee under PERCUSSION.

If a body, when moved by another, happen to decline out of the way, ſo as to leave a free paſſage to the body whereby it was moved; yet, that will only proceed with the velocity which it had after its *communication* to the other, not with that it had before: it being a rule, that every thing endeavours to perſevere, not in the ſtate wherein it was formerly, but in that wherein it is at that juncture: therefore, a body which has already loſt part of its motion, by its meeting with another; may loſe ſtill more by a ſecond and a third, ſo as at length to become perfectly quieſcent.

Hence, 1ſt, if two unequal homogeneous bodies move in a right line with the ſame velocity, the greater muſt perſevere in motion longer than the ſmaller: for the motions of both bodies are as their maſſes; but each *communicates* of its motion to the circumjacent bodies which touch its ſurface, in proportion to the magnitude of its ſurface; the larger body, therefore, though it has more ſurface than the ſmaller, yet having leſs, in proportion to its maſs or quantity of matter, than the ſmaller, will loſe a leſs portion of its motion every moment than the ſmaller.

Suppoſe, *e. gr.* a cube, A, to be two feet every way, and another B, one foot: the ſurfaces here will be as four to one, but their maſſes as eight to one. If therefore thoſe bodies move with the ſame velocity, the cube A will have eight times as much motion as the cube B (the quantity of motion being ever as the quantity of matter). That each of them, therefore, may become quieſcent at the ſame time, the cube A muſt loſe eight times as much motion every moment as the cube B: but that is impoſſible, becauſe as their ſurfaces are to each other as four to one; the bodies againſt which they ſtrike, will only be as four to one: therefore, when the cube B is become perfectly quieſcent, A will have half its motion.

Hence, 2dly, we ſee the reaſon why any long body, as a dart, thrown lengthwiſe, continues its motion longer than when thrown tranſverſly: it meeting fewer bodies in the way to *communicate* its motion to in the one caſe than in the other.

Hence alſo, 3dly, if a body be moved almoſt wholly within itſelf, ſo as to *communicate* little of its motion to the ambient bodies, it muſt continue its motion a long time. Thus, a ſmooth braſs ball of half a foot diameter, ſupported on a ſlender ſmooth axis, with a very weak impulſe, is found to revolve, for the ſpace of three or four hours.

COMMUNION, in theology, an uniform belief in ſeveral perſons; whereby they are united under one head, in one church. See UNITY, UNIFORMITY, CHURCH, &c.

In this ſenſe, the Lutherans, Calviniſts, &c. are ſaid to have been cut off from the Romiſh *communion*.

This is the primitive uſe of the word *communion*, as appears from the canons of the council of Elvira.

COMMUNION is alſo uſed for the act of *communicating* in, or participating of, the ſacrament of the euchariſt.

The fourth council of Lateran decrees, that every believer ſhall receive the *communion*, at leaſt, at Eaſter; which ſeems to import a tacit deſire, that they ſhould do it oftener; as, in effect, they did do it much oftener in the primitive days. Gratian, and the maſter of the ſentences, preſcribe it as a rule for the laity, to *communicate* three times a year, at Eaſter, Whitſuntide, and Chriſtmas. But in the thirteenth century, the practice was got on foot, never to approach the euchariſt except at Eaſter; and the council thought fit to injoin it then by a law, leſt their coldneſs and remiſſneſs ſhould go farther ſtill.

COMMUNION *under both kinds.*—In the eleventh century, the *communion* was ſtill received by the laity in both kinds; or, rather, the ſpecies of bread was dipped in the wine, as is owned by the Romaniſts themſelves. *Acta SS. Benedict. Sæc.* III. M. de Marca obſerves, that they received it at firſt in their hands, *Hiſt. de Bearn.* and believes the *communion* under one kind alone to have had its riſe in the Weſt under pope Urban II. in 1096. at the time of the conqueſt of the Holy Land. The twenty-eighth canon of the council of Clermont injoins the *communion* to be received under both kinds, diſtinctly: adding, however, two exceptions; the one of neceſſity, the other of caution, *niſi per neceſſitatem, & cautelam*; the firſt in favour of the ſick, the ſecond of the abſtemious, or thoſe who had an averſion for wine.

It was formerly a kind of canonical puniſhment, for clerks guilty of any crime, to be reduced to *lay communion*; *i. e.* only to receive it as the laity did, *viz.* under one kind.

They had another puniſhment of the ſame nature, tho' under a different name, called *foreign communion*; to which the canons frequently condemned their biſhops, and other clerks. This puniſhment was not any excommunication, or depoſition; but a kind of ſuſpenſion from the function of the order, and a degradation from the rank they held in the church.

It had its name becauſe the *communion* was only granted to the criminal on the foot of a foreign clerk, *i. e.* being reduced to the loweſt of his order, he took place after all thoſe of his rank as all clerks, *&c.* did in the churches to which they did not belong. The ſecond council of Agda orders every clerk that abſents himſelf from the church, to be reduced to foreign *communion*.

Communis *capſula*.	See	**Capsula**.
Communis *ductus choledochus*.		**Ductus**.
Communis *digitorum manus extenſor*.		**Extensor**.
Communis *labiorum depreſſor*.		**Depressor**.
Communis *labiorum elevator*.		**Elevator**.
Communis *miſericordia*.		**Misericordia**.

COMMUNITY, a ſociety or body of men united together under certain common laws, agreed on among themſelves, or impoſed by a ſuperior.

The Romans, who ſeem to have given the firſt hint of *communities* to the ſeveral nations into which their empire was divided, doubtleſs borrowed it from ſome rules of their neighbours: they called them *colleges*; which term, among them, had nearly the ſame ſignification with *community* among us.

Communities are of two kinds, *eccleſiaſtic* and *laic:* the firſt are either *ſecular*, as chapters of cathedral and collegiate churches; or *regular*, as convents, monaſteries, *&c.*

Lay communities are of various kinds; ſome contracted by a fixed abode of a year and a day in the ſame place; others formed by the diſcharge of the ſame office, the profeſſion of the ſame art, or attending the ſame place of worſhip; as thoſe of pariſhes, fraternities, *&c.*

Accordingly, the word is commonly underſtood of pious foundations for the ſupport of ſeveral perſons, either in a ſecular or regular life; *as colleges*, *abbies*, *convents*, *priories*, *ſeminaries*, *hoſpitals*, *inns*, &c.

Community is more particularly uſed in the French law, for the joint property in goods between the huſband and the wife: the reſult of which is, that during marriage they are equally intitled to all effects, and liable to all debts, contracted either before or under marriage.

Community, is a ſpecies of ſucceſſion, and the acceptance of *community* reſembles an *aditio hæreditatis*.

Community was ſet on foot in favour of the wives, to enter them as ſharers in their huſbands effects.

In countries where the civil law obtains, this *community* has no place; nor even in ſeveral cuſtomary countries; as being reputed a burden on the man.

Antiently, the woman's ſhare in the *community* was only one third: and this appears ſtill the ſenſe of the law among us; the widow, at the deceaſe of her huſband, being only intitled to one-third part of the moveables.

Community *continued*, in the French law, is that which ſubſiſts between the ſurvivor of two perſons joined in marriage, and the minor children of that marriage; when the ſurvivor has not made an inventory of the effects in poſſeſſion during marriage. The widow may either renounce *community* with her children, or continue it.

Community *tacit*, is a *community* contracted between a man and woman, by the mere mingling of their effects; provided they have lived together the ſpace of a year and a day: this *community*, being odious, is now aboliſhed.

COMMUTATION, in law, a change of a penalty, or puniſhment, *viz.* of a greater for a leſs, *&c.* as when death is commuted for, by baniſhment or perpetual impriſonment, *&c.* Some doubt whether the word be properly applied to any change but that of puniſhment: others will have it indifferently ſerve for the exchanging, or trucking of any thing.

Commutation, in aſtronomy. *Angle of* **Commutation**, is the diſtance between the ſun's true place ſeen from the earth, and the place of a planet reduced to the ecliptic. See **Place**.

Thus the angle ESR (*Tab. Aſtronomy*, *fig.* 25.), ſubtended between the ſun's true place E, viewed from the earth at S, and that of a planet reduced to the ecliptic, R, is the *angle of commutation*.

The *angle of commutation*, therefore, is found by ſubtracting the ſun's true place E, from the heliocentric place of the planet R; or contrarily.

COMPACT, in phyſics, denotes a body to be cloſe, denſe, and heavy; having few pores, and thoſe ſmall ones.

The heavieſt metals, as gold and ſilver, are the moſt *compact*. See **Gravity**.

Compact, in a legal ſenſe, ſignifies an agreement, or a contract, ſtipulated between ſeveral parties. See **Contract**.

Compact is alſo the name of a celebrated bull, confirmed by pope Paul IV. relating to the cardinals.

In virtue of the bull of *compacts*, cardinals can only confer benefices in their natural ſtate; *i. e.* regular benefices on regulars.

COMPANY *, a collective term, underſtood of ſeveral perſons aſſembled together in the ſame place, or with the ſame deſign. See **Society**.

Company, in commerce, is an aſſociation of ſeveral merchants, or others, who unite in one common intereſt, and contribute by their ſtock, their counſel, and ſtudy, to the ſetting on foot, or ſupporting, of ſome lucrative eſtabliſhment.

Though *company*, and ſociety, or fellowſhip, be, in effect, the ſame thing, yet cuſtom has made a difference between them; ſociety, or partnerſhip, being underſtood of two, or three dealers, or not many more; and *company* uſually of a greater number. See **Society**.

A ſecond difference between *companies* and ſocieties is, that the firſt, eſpecially when they have excluſive privileges, cannot be eſtabliſhed without the conceſſion of the prince; and need letters patent, charters, *&c.*

Whereas, for the latter, it is ſufficient to have the conſent of the members, fixed and certified by acts and contracts; and authorized by by-laws.

Laſtly, the word *company* ſeems more peculiarly appropriated to thoſe grand aſſociations, ſet on foot for the commerce of the remote parts of the world; as the Engliſh and Dutch Eaſt-India *company*, South-ſea *company*, Miſſiſſippi *company*, &c. The riſe and eſtabliſhment whereof, we ſhall here ſet before the reader.

Engliſh **Companies**.—*Eaſt-India* **Company** was formed towards the latter-end of the reign of queen Elizabeth; their charter being dated in 1599.

Their firſt fleet, ſent out in 1600. brought back ſo rich a cargo, that in a few years they numbered 20 ſhips. King James I. to ſhew how much he had its intereſt at heart, ſent ſeveral embaſſies to the great Mogul, the kings of Perſia, Japan, and other princes, to make treaties of commerce in his name, and that of the *company*; ſome of which ſubſiſt ſtill: the king of Perſia, in particular, granted the *company* ſeveral extraordinary favours, in recompence for the ſervice the Engliſh had done him, in aſſiſting him to expel the Portugueſe from Ormus; who, by means of their lodgment there, uſurped the whole commerce of the Perſian gulph.

But its chief favours the *company* received at the hands of king Charles II. who, by a charter in 1669. granted them the port and iſland of Bombay, with all the rights thereof, as ſurrendered to him by the Portugueſe: only reſerving to himſelf the ſovereignty and homage thereof, with a yearly acknowlegement of 10*l.* *per ann.* in gold.—By another charter in 1674. he alſo granted them, in like manner, the iſland of St. Helena, belonging to him by right of conqueſt, from the Dutch, who had before taken it from the Engliſh.—By a third charter, he granted them a power to erect a court of judicature, compoſed of a lawyer, and two merchants, in all their places, ſettlements, factories, *&c.* to judge of ſeizures, and all marine diſputes; as alſo about bargains, exchange, *&c.* and even of all crimes committed on the high ſeas, or in the countries and territories of the *company*, in Aſia, Africa, and America; the whole, however, agreeable to the uſages and cuſtoms o merchants, and the laws of England.

In 1662. the ſame prince granted the *company* a charter, whic contained a confirmation of the antient ones of king James I and queen Elizabeth; or rather, a new charter, grantin them abundance of privileges which they had not before enjoyed: this charter is properly the baſis of the *company*, an that whereon are founded all the rights, and the policy of th *new company*, afterwards eſtabliſhed in 1698. It conſiſts o twenty-eight articles: in the firſt, the king erects the *company* into a corporation, or body politic, under the name o the *governor and company of merchants trading to the Eaſt-Indies*. The third grants them a common ſeal: the fourth a governor, and twenty-four directors, or aſſiſtants, choſen out the proprietors, or ſtockholders. The ſixth, ſeventh, eighth, an ninth, regulate the order and policy of the *company*, ſettle th officers, manner of election, authority, general meetings, & The tenth fixes the extent of the grant; permits all thoſe of th *company*, their children of 21 years of age, and their apprentic factors, and domeſtics, to trade to the Indies, and any par Aſia, Africa, and America, beyond the Cape of Good Ho and the Streights of Magellan. The eleventh grants them po to make by-laws to be obſerved by the officers, factors, *&c.* to injoin penalties; provided thoſe laws be not contrary to ſtanding laws of England. By the twelfth, the paymen the duties, cuſtoms, *&c.* of goods imported or exported is layed; one half of it for half a year, the other half a whole providing, withal, that if the goods thus imported, be exp ed again in the ſpace of thirteen months, no duties ſha paid for ſuch export, provided it be done aboard Engliſh ve The thirteenth article grants them a power of exportin reign gold for their ſervice abroad, and even Engliſh gold co in the Tower; provided the ſum do not exceed 50000 po ſterling at a voyage. By the fourteenth and fifteenth, the allowed ſix large ſhips, and ſix pinks, to paſs freely throug the limits of their grant, without the king's being able to embargo on them on any occaſion. The ſixteenth grants them an excluſive privilege; to have the ſole right of dealing to the Indies; ordering the ſeizure and confiſcation of all veſſels, *&c.* which ſhall interfere. The nineteenth obliges them to bring, at leaſt, as much gold and ſilver into the kingdom, as they carry out each voyage. The twenty-firſt fixes the ſum in the capital ſtock, neceſſary to have a vote in the meetings, at 500*l.* ſterling; allowing, however, ſeveral of thoſe who have leſs, to join ſeveral together to form a voice. Laſtly, the twenty-ſixth allows them to ſend veſſels of war, and even to make peace and war with all the nations, not Chriſtian, in the extent of their grant.

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* The word is formed of the French *compagnie*, and that of *companio*, or *companies*, which, Chifflet obſerves, are found in the Salic law, Tit. 66. and are properly military words, underſtood of ſoldiers, who, according to the modern phraſe, are comrades, or meſs mates, *i. e.* lodge together, eat together, *&c.* of the Latin *cum*, with, and *panis*, bread. It may be added, that in ſome Greek authors under the Weſtern empire, the word κυμπανια occurs in the ſenſe of *ſociety:* but it is more probable, that the Greeks borrowed it from the French, or Italians.

All theſe four charters of king Charles II. were confirmed by king James II. eſpecially the laſt, which was enforced with new ſanctions; particularly, the article of excluſion; which, in the time of king Charles, had been but little regarded, but was now enforced, with ſuch rigorous prohibitions, that all interlopers ſeemed for ever excluded.

The ſhares, or ſubſcriptions of the *company*, were originally only of 50*l.* ſterling: but the directors, having a conſiderable dividend to make in 1676. it was agreed to join the profit to the original, inſtead of withdrawing it; and thus the ſhares were doubled, and became of 100*l.* ſterling.

The firſt capital was only 369891*l.* ſterling, and 5*s.* which, being thus doubled, amounted to 739782*l.* ſterling, and 10*s.* to which, if the profits of the company to the year 1685. *viz.* 9636639*l.* ſterling, be added, the whole ſtock will be 1703422*l.* ſterling.

The *company* had, from time to time, undergone great loſſes; firſt, in 1680. by the loſs of Bantam, out of which they were driven, and had their magazines plundered by the Dutch; under pretence of aſſiſting ſultan Agui againſt ſultan Agom, his father. Secondly, in 1682. when the great numbers of interlopers, to whom king Charles II. too eaſily granted permiſſions, lowered their ſhares *cent. per cent.* Thirdly, By the war, which the *company* maintained in the Indies, againſt the great Mogul; wherein it was obliged to abandon the factory of Surat, and to retire to Bombay. But ſtill ſhe repaired her ſtock, and ſupported the reputation of her commerce, till the revolution which happened ſoon after: when the war, and the incredible loſſes the *company* ſuſtained by the French privateers, *&c.* put it into ſo deſperate a condition, that appearing ſcarce poſſible to be ſupported, a new one was erected.

The charter of the _new_* East-India *company* was of the year 1698. its ſtock was ſo conſiderable, and the ſubſcriptions ſo very ready, that, in two years time, the *company* had 40 veſſels equipped in its ſervice; which was double of what the old one ever had; and ſent to the Indies (*communibus annis*) at leaſt a million ſterling in ſilver; whereas the former had never ſent above 500,000*l.* After the two *companies* had ſubſiſted a few years in a ſeparate ſtate, means were contrived to unite them, which was effected in 1702. when a new charter of union was granted them, under the name of the *United Company of Merchants of* England *trading to the* Eaſt-Indies: which, being ſince expired, another charter, with new powers, was granted them in 1730.

The cargo which the *company* ſends to the Eaſt-Indies, is chiefly ſilver, bullion, and pieces of eight; with cloth, either ſcarlet or blue: they alſo ſend ſome iron, and lead.

The returns from the Indies are chiefly ſilks, both raw and manufactured, cottons, callicoes, muſlins, drugs, tea, coffee, china-ware, rice, ſago, red wood, ſaltpetre, pepper, Carmania wool, indigo, *&c.*

For the œconomy and policy of the *united company*, all perſons, without exception, are admitted members of it, natives and foreigners, men and women; with this circumſtance, that 500*l.* in the ſtock of the *company* gives the owner a vote in the general courts, and 2000*l.* qualifies him to be choſen a director. The directors are twenty-four in number, including the chairman and deputy-chairman, but may be re-elected for four years ſucceſſively. They have a ſalary of 150*l. per ann.* and the chairman of 200*l.*—The meetings, or courts of directors, are to be held, at leaſt, once a week, but are commonly oftener; and they are ſummoned as occaſions require.

Out of the body of directors are choſen divers committees, who have the peculiar inſpection of certain particular branches of the *company*'s buſineſs: as, the committee of correſpondence, committee of buying, committee of treaſury, committee of warehouſes, committee of ſhipping, committee of accompts, committee of private trade, committee of houſe, and committee to prevent the growth of private trade.

Other officers of the *company* are—a ſecretary, and aſſiſtant, with ſix clerks: two caſhiers, with five clerks: a chief accomptant, with three aſſiſtants, and twenty-two clerks: a head accomptant of the freight accompts, with three clerks: a paymaſter, with two aſſiſtants, and one clerk: to which may be added, a ſurveyor of ſhips, and two aſſiſtants: a ſhip's huſband for receiving the *company*'s goods at the water-ſide, with an aſſiſtant, and three elders; a ſollicitor for law-affairs: beſides warehouſe-keepers, elders, and labourers, employed in the ſeveral warehouſes.

The warehouſes, or magazines of the *company*, are—that for Bengall goods, which is managed by a warehouſe-keeper, and his aſſiſtant, with three elders; under whom are a number of porters, employed at daily wages.—St. Helen's warehouſe for coaſt and Surat goods, in which are two warehouſe-keepers, and four elders, beſides labourers.—The drug warehouſe, for drugs and china-ware.—Pepper-warehouſe.—Laſtly, the private trade warehouſe, all officer'd much like the firſt.—The *company* has no ſhips of its own, except a few ſmall craft, uſed in the Indies. The reſt, whereby their commerce is carried on, belong to other perſons, who build and let them out on freight to the *company* for each voyage, according to the terms of a charter-party agreed on.—By the by-laws of the *company*, no veſſel is to be hired, wherein any director is concerned directly or indirectly, either as owner, or part-owner: a regulation, which, it is ſaid, is not over-ſtrictly obſerved.

No perſons are allowed to have any private trade, except the *company*'s officers, and ſeamen ſent to India on board their ſhips; who are regularly licenſed to carry out, and bring back commodities to a certain value, greater or leſs, according to their rank. But at their return, their cargoes are to be conſigned to the *company*, and ſold by them at their next ſale. The Jews alſo, and others dealing in diamonds, are allowed to trade for themſelves by the *company*'s ſhips, on allowing ſo much *per cent.* to the *company* for freight.

The *company* has three principal ſettlements, *viz.* Fort-William, in Bengall; Fort St. George, on the coaſt of Coromandel; and the iſland of Bombay: each of which has ſeveral ſubordinate factories.

The factories dependent on Fort-William, are Caſſimbuzar, Patna, Dacca, Ballaſore, and Jugdea.—Thoſe on Fort St. George, are Fort-Marlborough, Fort St. David, Vizagapatam, Ingeram, and Madipollam.—Thoſe on the iſland of Bombay, are Gombroon, Surat, Anjingo, and Tellicherry.

Royal African COMPANY, eſtabliſhed for the commerce of the coaſts of Guiney, is governed much like that of the Eaſt-Indies. Its privilege is excluſive: it ſends out yearly, ten or a dozen ſhips, of about 150 ton, loaden with old and new draperies, and with iron-works, ſciſſars, knives, muſquets, cottons, and other leſs conſiderable merchandizes.

The returns are in gold-duſt, elephants teeth, wax, and leathers: but the beſt article of its commerce is negroes, which it ſends to Jamaica, Barbados, and other Engliſh iſles in America; frequently, even to the ports of New Spain. See NEGRO, ASSIENTO, *&c.*

The firſt eſtabliſhment of this *company* was, by a charter granted 1661. in favour of the duke of York; ſecuring to him the commerce of all the country, coaſts, iſlands, *&c.* belonging to the crown of England, or not poſſeſſed by any other Chriſtian prince; from Cape Blanc in 20° nor. lat. to the Cape of Good Hope in 34° 30′ ſou. lat. The charter was ſoon after returned into the king's hands by the duke, and revoked, by conſent of the parties aſſociated with him in the enterprize; and a new charter was granted in 1663. with ampler privileges than the former. The principal adventurers here, were queen Catharine of Portugal, queen Mary of France, the duke of York, Henrietta Maria ducheſs of Orleans, prince Rupert; in brief, the whole court came into it. The other adventurers, *i. e.* thoſe who were to be charged with the management of affairs, were choſen from among the wealthieſt and ableſt merchants; eſpecially thoſe who had already dealt to thoſe countries. By this charter the grant was enlarged, and the *company* put in poſſeſſion of all the countries, *&c.* between the port of Sally in S. Barbary to the Cape of Good Hope, for a thouſand years; only reſerving to the crown the homage thereof, with the acknowlegement of two elephants to be preſented the king, or his ſucceſſors, every time any of them ſhould ſet foot within the countries and colonies within their grant.

The privileges granted by the charter, are, firſt, that the *company* ſhall be a corporation, or body politic; ſhall have a common ſeal, bearing on one ſide an elephant, ſupported by two negroes; on the other, the king's portrait: that the governor, with his deputy, and ſeven of the twenty-four aſſiſtants, be authorized to take on them the direction of affairs: that they may hold courts, make laws, inflict puniſhments, *&c.* provided, ſtill, they be equitable, and conſiſtent with the laws of England: that the adventurers may transfer their ſtock at pleaſure; provided the transfer be made in open court, and be regiſtred: that they may equip and ſend out what veſſels they pleaſe, for commerce, or war; but that they pay the duties and cuſtoms: that no veſſels, but thoſe of the *company*, and thoſe authorized by it, ſhall traffick within the limits of its grant, on pain of confiſcation: that the *company* may make war, in defence of its colonies, againſt invaders, *&c.* That it have the benefit of all the mines in its territory; the king only reſerving to himſelf two-thirds of the gold mines, upon bearing two-thirds of the expence. Laſtly, that the king reſerves for himſelf, and his ſucceſſors, the right of intervening, and being admitted at any time a ſharer in the ſtock, upon contributeing a proportionable ſum to the reſt.

This charter was confirmed by new letters patent in 1673. followed by a proclamation, enforcing the obſervance of the article of excluſion: but neither charter, nor proclamation, being able to ſecure them from interlopers, they had recourſe to the protection of king James II. who had been twice among the number of merchant-adventurers; of whom they obtained a moſt ſevere declaration on their behalf, in the year 1685.

On this foot the *company* has ſtood ever ſince, till the year

1720. when a *new African company*, being formed by the duke of Chandois, and others; and a charter purchaſed at the expence of 250,000*l.* ſterling; the two *companies* ſoon became united.

Hamburgh COMPANY, is the oldeſt trading eſtabliſhment in the kingdom; though not always known by that name, nor reſtrained to thoſe narrow bounds under which it is now confined. It was firſt called, the *Company of merchants trading to* Calais, Holland, Zealand, Brabant, and Flanders: then it acquired the general title of *Merchant-adventurers of* England; as being compoſed of all the Engliſh merchants who traded to the Low-Countries, the Baltic, and the German ocean. Laſtly, it was called *the Company of merchant-adventurers of* England *trading to* Hamburgh.

This *company*, as well as ſome others in England, built on its model, is very different from thoſe above-mentioned; and differs widely from the ordinary plan and ſyſtem of ſuch ſocieties. In effect, this is not a ſociety of dealers, each furniſhing a part of the ſum to conſtitute the capital ſtock of the *company*; but a mere aſſociation, or body of merchants, who have nothing in common, but the grant and privilege of trading to Hamburgh, and ſome other cities of Germany; each managing his own commerce, and trading on his own bottom: only obſerving a certain diſcipline, and ſome regulations, which none but the *company* can eſtabliſh, or change.

The firſt charter whereby the *Hamburgh company* was eſtabliſhed, was in 1406. under the reign of king Henry IV. It was afterwards confirmed, and augmented with divers privileges by many of his ſucceſſors; among the reſt, by Henry V. in 1413. Henry VI. in 1422. Henry VII. in 1493. 1505. and 1506. Henry VIII. in 1509. 1517. and 1536. Edward VI. in 1547. queen Mary, in 1553. Elizabeth, in 1564. and 1586. James I. in 1605. and Charles II. in 1661.

But of all theſe charters, there are, properly, none but thoſe of Henry IV. Henry VII. Elizabeth, James, and Charles, that are of any importance, or that give the *company* any thing new; the reſt being only confirmations.

Before the charter of Henry IV. all the Engliſh merchants, who trafficked out of the realm, were left to their own diſcretion; and managed their affairs with foreigners, as might be moſt for their reſpective intereſts; without any regard to the general commerce of the nation.

Henry, obſerving this diſorder, endeavoured to remedy it, by uniting all the merchants in his dominions into one body; wherein, without loſing the liberty of trading each for himſelf, they might be governed by a *company* ſtill ſubſiſting; and be ſubject to regulations, which ſhould ſecure the general intereſt of the national commerce, without prejudice to the intereſt of particulars.

With this view, he granted all the merchants of his ſtates, particularly thoſe of Calais, then in his hands, a power of aſſociating themſelves into a body politic, with directors and governors, both in England and abroad; to hold aſſemblies, both for the direction of buſineſs, and the deciding of controverſies among merchants; make laws; puniſh delinquents; and impoſe moderate duties and taxes on merchandizes, and merchants, to be employed in the ſervice of the corporation.

Theſe few articles of the charter of Henry IV. were afterwards much augmented by Henry VII. who firſt gave them the title of *Merchant-adventurers to* Calais, Holland, *&c.* gave them a power of proclaiming and continuing free fairs at Calais; and ordered, that to be reputed a member of the ſociety, each perſon pay twenty marks ſterling; and that the ſeveral members ſhould attend the general meetings, or courts, appointed by the directors, whether at London, Calais, or elſewhere.

The inexecution of this laſt article, and contempt of ſome of the reſt, occaſioning great inconveniencies to the *company*'s affairs, another charter was procured; whereby the pain of impriſonment was menaced, for thoſe who ſhould abſent themſelves from the meetings without lawful cauſe, or ſhould diſobey the laws.

A petition being made to queen Elizabeth, in 1564. for an explanation of certain articles in the charter of Henry VII. and a confirmation of the reſt granted by other kings; that princeſs, by a charter of the ſame year, declares, that to end all diſputes, they ſhall be incorporated anew, under the title of *the Company of merchant-adventurers of* England; that all who were members of the former *company*, ſhould, if they deſired it, be admitted members of this: that they ſhould have a common ſeal: that they ſhould admit into their ſociety what other perſons, and on what terms, they pleaſed; and expel them again on miſbehaviour: that the city of Hamburgh, and neighbouring cities, ſhould be reputed within their grant, together with thoſe of the Low-Countries, *&c.* in that of the former *company*: that no member ſhould marry out of the kingdom, nor purchaſe lands, *&c.* in any city beyond ſea: and that thoſe who do, ſhall be, *ipſo facto*, excluded for ever.

Twenty-two years after this firſt charter, queen Elizabeth granted them a ſecond; confirming the former, and further, granting them a privilege of excluſion; with a power of erecting in each city within their grant, a ſtanding council.

The woollen manufacture being the principal object of their application; they met with great oppoſition therein; firſt, from the Hanſe, who forced them frequently to change their mart, or ſtaple; and afterwards under king James I. who having erected a corporation in 1616. in favour of ſome private perſons, who offered to ſet up a manufacture for dying and preſſing cloths, *&c.* under pretence thereof, the *company* of merchant-adventurers were prohibited dealing therein. But that project not ſucceeding, and the charter being revoked two years afterwards, the merchant-adventurers, whoſe *company* had been diſſolved two years before, were reſtored in 1617. to their antient privileges, and a new charter was given them, confirming their excluſive right; and allowing them to have officers in the ſeveral cuſtom-houſes, to have an eye that they were not prejudiced in their woolens, under pretence of the like merchandizes, which others were allowed to ſend to other parts.

This charter of king James, is the laſt of thoſe confirmed by Charles II. in the grand charter of 1661.

The revolutions which had happened in the Low-Countries towards the end of the ſixteenth century, and which laid the foundation of the republic of Holland, having hindered the *company* from continuing their commerce with their antient freedom; it was obliged to turn it almoſt wholly to the ſide of Hamburgh, and the cities on the German ocean: from which change, ſome people took occaſion to change its name to that of the *Hamburgh company*; though the antient title of *Merchant-adventurers* is ſtill retained in all their writings.

Ruſſia COMPANY. This was firſt projected towards the end of the reign of king Edward IV. executed in the firſt and ſecond years of Philip and Mary; but had not its perfection, till its charter was confirmed by act of parliament, under queen Elizabeth, in 1566. It had its riſe from certain adventurers, who were ſent in three veſſels on the diſcovery of new countries; and to find out a north-eaſt paſſage to China: theſe, falling into the White Sea, and making up to the port of Archangel, were exceedingly well received by the Muſcovites; and, at their return, ſollicited letters patent to ſecure to themſelves the commerce of Ruſſia, for which they had formed an aſſociation.

The charter was promiſed them by Edward VI. but he dying, was firſt diſpatched by queen Mary, in 1555. By this charter, the aſſociation was declared a body politic, under the name of the *Company of merchant-adventurers of* England, *for the diſcovery of lands, territories, iſlands,* &c. *unknown, or unfrequented.* Their privileges were, to have a governor, four conſuls, and twenty-four aſſiſtants, for their commerce; for their policy, to make laws, inflict penalties, ſend out ſhips to make diſcoveries, take poſſeſſion of them in the king's name, ſet up the banner royal of England, plant them; and, laſtly, the excluſive privilege of trading to Archangel, and other ports of Muſcovy, not yet frequented by the Engliſh.

This charter, not being ſufficiently guarded, was confirmed by parliament in the eighth year of queen Elizabeth; wherein it was enacted, that in regard the former name was too long, they ſhould now be called *Company of* Engliſh *merchants for diſcovering new trades*; under which name, they ſhould be capable of acquiring and holding all kinds of lands, manors, rents, *&c.* not exceeding 100 marks *per ann.* and not held of her majeſty: that no part of the continent, iſland, harbour, *&c.* not known or frequented before the firſt enterprize of the merchants of their *company*, ſituate to the north, or north-weſt, or north-eaſt of London; nor any part of the continent, iſlands, *&c.* under the obedience of the emperor of Ruſſia, or in the countries of Armenia, Media, Hyrcania, Perſia, or the Caſpian ſea; ſhould be viſited by any ſubjects of England, to exerciſe any commerce, without the conſent of the ſaid *company*, on pain of confiſcation. The ſaid *company* ſhall uſe no ſhips in her new commerce, but thoſe of the nation; nor tranſport any cloths, ſerges, or other woolen ſtuffs, till they have been dyed and preſſed. That in caſe the *company* diſcontinue of itſelf to unload commodities in the road of the abbey of S. Nicolas, in Ruſſia, or ſome other port, on the north coaſts of Ruſſia, for the ſpace of three years, the other ſubjects of England ſhall be allowed to traffick to Narva, while the ſaid *company* diſcontinues its commerce into Ruſſia, only uſing Engliſh veſſels.

This *company* ſubſiſted with reputation almoſt a whole century; till the time of the civil wars. It is ſaid, the Czar then reigning, hearing of the murder of king Charles I. ordered all the Engliſh in his ſtates to be expelled: which the Dutch taking the advantage of, ſettled in their room. After the reſtoration, the remains of the *company* re-eſtabliſhed part of their commerce at Archangel, but never with the ſame ſucceſs as before; the Ruſſians being now well accuſtomed to the Dutch merchants, and merchandize.

This *company* ſubſiſts ſtill, nearly on the foot of that of Hamburgh, and the northern, and Turky *companies*; *i. e.* each member thereof trafficks for himſelf, and on his own bottom; only paying an acknowlegement of 12 or 13*l.* ſterling, beſides ſome other dues impoſed, from time to time, for the occaſions of the *company*, and the commerce in general.

North Sea COMPANY, or, as ſome, more agreeably to its charter, call it *Eaſtland Company*, is eſtabliſhed on the foot of that of Hamburgh; from whence it appears to have been diſmembered.

Its charter is dated in the year 1579. By the firſt article the *company* is erected into a body politic, under the title of the *Company of merchants of the Eaſt*; to conſiſt of Engliſhmen, all rea merchants, who have exerciſed the buſineſs thereof, and trafficked through the Sound, before the year 1568. into Norway, Sweden, Poland, Livonia, Pruſſia, Pomerania, *&c.* as alſo Revel, Coningſberg, Dantzick, Copenhagen, *&c.* excepting Narva, Muſcovy, and its dependencies. Moſt of the following articles gra them the uſual prerogatives of ſuch *companies*; as a ſeal, governor, courts, laws, *&c.*

The privileges peculiar to this *company* are, that none ſhall be admitted a member, who is already a member of any other *company*; nor any retail-dealer at all. That no merchant qualified, be admitted without paying ſix pounds, thirteen ſhillings, and ſix-pence. That a member of another *company*, deſiring to renounce the privileges thereof, and to be received into that of the eaſt, ſhall be admitted *gratis*; provided he procures the ſame favour for a merchant of the eaſt, willing to fill his place. That the merchant-adventurers who never dealt in the eaſt, in the places expreſſed in the charter, may be received as members of the *company* on paying forty marks: that, notwithſtanding this union of the *adventurers of* England with the *company of the eaſt*, each ſhall retain its rights and privileges. That they ſhall export no cloths but what are dyed and preſſed, except 100 pieces *per ann.* which are allowed them *gratis*.

This charter was confirmed by Charles II. in 1661. with this addition; that no perſon, of what quality ſoever, living in London, ſhould be admitted a member, unleſs he were free of the city.

Turky COMPANY, or *Levant* COMPANY. This *company* is eſtabliſhed on foot of the *Hamburgh company*, i. e. there is no common fund, wherein the adventurers depoſit their ſtock to make one ſingle commerce; but the commerce thither is free, each member trafficking for himſelf; but obſerving, withal, the rules and orders of the *company*; and all contributing, occaſionally, towards the common expences.

This flouriſhing body had its riſe under queen Elizabeth: James I. confirmed its charter in 1606. adding new privileges. During the civil wars, there happened ſome innovations in the government of the *company*; many perſons having been admitted members, not qualified by the charters of queen Elizabeth and king James, or that did not conform to the regulations preſcribed: Charles II. upon his reſtoration, endeavoured to ſet it upon its antient baſis; to which end, he gave them a charter, containing not only a confirmation of their old one, but alſo ſeveral new articles of reformation.

By this, the *company* is erected into a body politic, capable of making laws, *&c.* under the title of the *company of merchants of* England *trading to the ſeas of the Levant*. The number of members is not limited, but is ordinarily about three hundred. The principal qualification required is, that the candidate be a freeman of London, and a wholeſale merchant, either by family, or by ſerving an apprenticeſhip of ſeven years. Thoſe under 25 years of age, pay 25*l.* ſterling at their admiſſion; thoſe above, twice as much. Each makes oath, at his entrance, not to ſend any merchandizes to the Levant, but on his own account; and not to conſign them to any but the *company's* agents, or factors.

The *company* has a court, or board, at London, which is compoſed of a governor, deputy-governor, and twelve directors, or aſſiſtants; who are all actually to live in London, or the ſuburbs. They have alſo a deputy-governor in every city, and port, where there are any members of the *company*. The aſſembly at London ſends out the veſſels, regulates the tarif for the price at which the European merchandizes ſent to the Levant are to be ſold; and for the quality of thoſe returned. It raiſes taxes on merchandizes, to defray impoſitions, and the common expences of the *company*; preſents the embaſſador which the king is to keep at the porte, elects two conſuls for Smyrna and Conſtantinople, *&c.*

One of the beſt regulations of the *company* is, not to leave the conſuls, or even embaſſador, to fix the impoſition on veſſels for defraying the common expences (a thing fatal to the *companies* of moſt other nations); but to allow a penſion to the embaſſador, and conſuls, and even to the chief officers; as ſecretary, chaplain, interpreters, and janizaries; that there may not be any pretence for their raiſing any ſum at all on the merchants, or merchandizes.

In extraordinary caſes, the conſuls, and even embaſſador himſelf, have recourſe to two deputies of the *company*, reſiding in the Levant: or, if the affair be very important, they aſſemble the whole body. Here are regulated the preſents to be given, the voyages to be made, and every thing to be deliberated: and on the reſolutions here taken, the deputies appoint the treaſurer to furniſh the moneys, *&c.* required.

It is true, the embaſſador and conſul may act alone on theſe occaſions; but the penſion being allowed them on condition of declining them, they chooſe rather to ſit ſtill.

The ordinary commerce of this *company* employs from 20 to 25 veſſels, from 25 to 30 pieces of cannon.

The merchandizes exported thither are, cloths of all kinds and colours, pewter, lead, pepper, cochineel, and a great deal of ſilver, which they take up at Cadiz: the returns are in raw ſilk, galls, camlets, wools, cottons, Morocco leather, aſhes for making glaſs and ſoap, and ſeveral gums, and medicinal drugs.

The commerce of this *company* to Smyrna, Conſtantinople, and Scanderoon, is not eſteemed much leſs conſiderable than that of the Eaſt-India *company*; but is, doubtleſs, more advantageous to England; in regard, it takes off much more of the Engliſh manufactures than the other, which is chiefly carried on in money.

The places reſerved for the commerce of this *company* are, all the ſtates of Venice, in the gulph of Venice; the ſtate of Raguſa; all the ſtates of the grand ſeignior, and the ports of the Levant and Mediterranean; excepting Carthagena, Alicant, Barcelona, Valencia, Marſeilles, Toulon, Genoa, Leghorn, Civita Vecchia, Palermo, Meſſina, Malta, Majorca, Minorca, and Corſica; and other places on the coaſts of France, Spain, and Italy.

South-Sea COMPANY. Many take this *company*, eſtabliſhed towards the cloſe of the XVIIth century, to have been originally intended, rather as a political contrivance for raiſing a fund of money, to ſerve in the preſſing occaſions of the ſtate, than as a real eſtabliſhment for the ſake of commerce. For the nation being exhauſted of money by the long wars with France, it is no wonder the phantom of a new *company* ſhould be raiſed, to bring in the ſubſcriptions of the monied men; as the only expedient to be ſupplied with money, without diſſatisfying the people, already worn out with ſubſidies, *&c.*

Be this as it will, it is certain, the miniſtry never thought ſeriouſly, during the whole courſe of the war, about making any ſettlement on the coaſts of South America; which was the thing wherewith the people were firſt flattered: beſides, that the fund having been apparently perverted to defray the expences of the war, its value was ſo lowered, that it muſt, in all probability, have ſunk outright, but for the unexpected help it met with in 1713.

By the treaty of Utrecht, the buſineſs of the French Aſſienta *company*, which was to furniſh the Spaniſh Weſt-Indies with negroes, was reſigned to the Engliſh, in favour of the *South-Sea company*; which, by this turn, relieved itſelf from its languiſhing condition, and became in a condition to vie with the moſt flouriſhing *companies* of commerce in England.

The treaty of this *company* with the Spaniards, commences from May 1713. and was to hold 30 years; during which time, the *company* was to furniſh the Spaniſh America with 144000 negroes, of both ſexes, between fifteen and twenty-five years of age, ſound, *&c.* at the rate of 4800 *per annum*; and for all that they furniſh beſides, only to pay half the dues to the king of Spain, for the firſt 25 years of the farm, or Aſſienta. It may be added, that, in conſideration of 200000 piaſters, paid in advance to the king of Spain, to be reimburſed as the dues riſe during the firſt ten years, the *company* is only to pay dues for 4000: the king's due is 33 piaſters one third *per* head. See ASSIENTA.

The chief eſtabliſhment of the French Aſſienta *company* was at Buenos Ayres, a town of conſiderable trade on the coaſt of South America. The *South-Sea company*, who, without changing their name, took on them the Aſſienta, or farm of negroes, preſerves the ſame eſtabliſhment; and it is here their veſſels diſembark their negroes, which they had purchaſed through all the coaſts of Africa within their grant.

The *company*, it is certain, ſet out with good ſucceſs; and there was room to hope ſtill better; ſince, beſides that the value of their ſtock, the firſt five years, roſe faſter, in proportion, than that of any other *company*; his majeſty, after purchaſing 10000*l.* ſterling therein, was pleaſed to condeſcend to be their governor, or firſt director. For what remains of the hiſtory of this *company*, with that fatal train of romantic *companies* it drew after it, we chooſe to refer to the article BUBBLE.

Harborough COMPANY. This *company*, *anno* 1722. was in embryo: its deſign was, to ſet on foot an immediate commerce between the ſubjects of England, and thoſe of his majeſty's German territories. The firſt ſcheme was laid in 1717. a charter was obtained ſome time after.

Weſt-India COMPANIES, or thoſe of the Engliſh colonies in North America, are of a lower claſs than thoſe above-mentioned; and too numerous to be here deſcribed.

Their names are, the *Hudſon's Bay Company*, *Virginia Company*, *New England*, *New York*, *Penſylvania*, *New Scotland*, *Maſſachuſet*, *Connecticut*, *Bermudas*, *Tobago*, and *Carolina Companies*.

Scotch Darien COMPANY. This was eſtabliſhed with good proſpect at Edinburgh in 1699. for the commerce of S. America. They ſent an armament and a colony, which they endeavoured to eſtabliſh in the iſthmus of Darien, which parts N. and S. America: but the Engliſh miniſtry not thinking proper to avow and ſupport the firſt ſucceſſes of the *company*, which had alarmed Spain, ever jealous of this part of her territories, the Scotch colony was diſperſed by the Spaniards in 1700. and thus vaniſhed the beſt project, that ever was formed, for diſputing with that nation the poſſeſſion of thoſe countries, from which ſhe pretends to exclude all other nations.

Dutch Eaſt-India COMPANY had its riſe in the midſt of the ſtruggle which that people had for their liberty: for the Spaniards having forbid all commerce with them, and ſhut up all their ports; neceſſity inſpired ſome Zealanders to ſeek a new north-eaſt paſſage to China.

This enterprize proving unſucceſsful to three ſeveral armaments in 1594. 1595. and 1596. a ſecond *company* was formed, under the name of the *company of remote parts*; which, in 1595. took the ordinary route of the Portugueſe to the Indies, and returned, in two years and a half's time, with little gain, but good hopes.

This *company*, and a new one juſt eſtabliſhed at Amſterdam, being united, equipped other fleets; and theſe occaſioned other *companies* at Amſterdam, Rotterdam, in Zealand, &c. inſomuch that the ſtates ſoon began to apprehend they might be prejudicial to each other: under this concern, they called all the directors of the ſeveral *companies* together, who all conſented to an union, the treaty whereof was confirmed by the ſtates in 1602. a very remarkable epocha; as being that of the moſt ſolid and celebrated eſtabliſhment of commerce that ever was in the world.

Its firſt capital was ſix millions ſix hundred thouſand florins. It has 60 directors, divided into ſeveral chambers; 20 in that of Amſterdam, 12 in that of Zealand, 14 in that of Delpht and Rotterdam, and a like number in thoſe at Sluys and Horn. As each grant expires, the *company* is obliged to procure a new one, which it has already done four times ſince the firſt; *viz.* one in 1622. for 21 years, like the firſt; another for 21 years, commencing in 1647. and a third in 1665. for 25 years; a fourth in advance, commencing in 1698. to end in 1740. Each grant coſts the *company* a conſiderable ſum: that of 1647. coſt 1600000 livres, and the two following ones more: the laſt of 1698. was confirmed by a placard of the ſtates-general, granting them an excluſive privilege.

Their factories, reſidences, &c. in the Eaſt Indies, are almoſt infinite; reaching from the Perſian gulph to the coaſt of China: the principal is that of Batavia, the center of their commerce: here reſides their general, with the ſtate and ſplendor of a ſovereign prince; making war and peace with the eaſtern kings and emperors at pleaſure.

The other more conſiderable factories are, Taiouam on the coaſt of China, Nangiſac in Japan, Malaca, Surat, Amboyna, Banda, Siam, Moluccos, &c. ſeveral on the coaſt of Coromandel, and at Iſpahan, Cape of Good Hope, &c. in all, they number 40 factories, and 25 fortreſſes. They have the whole trade of the ſpicery in their own hands.

Dutch Weſt-India COMPANY, eſtabliſhed in 1621. with an excluſive privilege to trade 24 years along the coaſts of Africa, between the tropic of Cancer, and the Cape of Good Hope; and in America, from the ſouth point of Newfoundland, thro' the ſtreights of Magellan, that of Le Maire, or others, to the ſtreights of Anian, both in the north and ſouth ſea.

The directors are divided into five chambers (as in the Eaſt-India *company*); out of which, 19 are choſen for the general direction of affairs. In 1647. the *company* renewed its grant for 25 years; but it was ſcarce able to hold out the term, by reaſon of its great loſſes, and expences in taking the bay of Todos los Santos, Fernambuc, and the greateſt part of Braſil from the Portugueſe. The weakneſs of this *company*, which had ſeveral times in vain attempted to be joined to that of the Eaſt-Indies, occaſioned its diſſolution at the expiration of its grant.

In 1674. a new *company*, compoſed of the antient proprietors and their creditors, was ſettled in the ſame rights and eſtabliſhment with the former; and ſtill ſubſiſts with honour: their firſt capital was about ſix millions of florins. Its principal eſtabliſhments are, one at Cape Verd, another on the gold coaſt of Africa, at Tabago, Curaſſao, &c. in America.

Dutch North COMPANY has no excluſive privilege; the advantages of its patent being of another kind, and very inconſiderable.

There are alſo, in Holland, *companies* for the Baltic ſea, the fiſhery of Nova Zembla, Davis's Streights, and Greenland: yet none of their fiſheries are interdicted to private traders; all the difference between theſe and the *companies* conſiſting in this, that the former may not go aſhore to cut their fiſh in pieces, and melt their lard; but muſt bring their luggage to Holland.

Dutch Levant COMPANY. In ſtrictneſs, there is no Levant *company* in Holland: but the commerce of the private traders is ſo conſiderable, that the ſtate has taken the regulation thereof on itſelf.

To this end, they have eſtabliſhed a chamber of direction at Amſterdam, compoſed of ſix deputies, and a regiſter; who, under the burgomaſters, take care of every thing relating to the commerce of the Mediterranean; eſpecially that of Smyrna and Conſtantinople.

This *company* names the conſuls, appoints the number and ſtrength of convoys, terminates differences among the traders, and has alſo a right, on occaſion, to add new regulations to the old ones; though thoſe be of no force, till confirmed by the ſtates-general.

French Eaſt-India COMPANY was eſtabliſhed in 1664. with an excluſive privilege, to trade for 30 years in all the ſeas of the Eaſt-Indies and South-Sea: no adventurer to be admitted without 1000 livres in ſtock; and foreigners, who have 20000 livres in ſtock, to be reputed regnicoles.

The patent grants them the iſland of Madagaſcar; and the king to be at one fifth of the expence of the three firſt armaments, without intereſt; the principal to be refunded in ten years; or, if the *company* find it loſes on the whole, the loſs to fall on the king's ſide.

The capital fund of the *company*, which was moſtly furniſhed by the king, was ſeven or eight millions of livres, but was to have been 15 millions.

In effect, though no means were wanting to ſupport the *company*, yet it ſtill drooped, and ſtill ſtruggled; till, having ſubſiſted ten years without any change in its form, and being no longer able to diſcharge its engagements, there were new regulations concerted, but to little purpoſe. At length, things not being diſpoſed for a new Eaſt-India *company*, nor much good to be expected from the old one; in 1708. the miniſtry allowed the directors to treat with the rich traders of S. Malo, and reſign to them their privilege, under certain conditions. In the hands of theſe laſt, the *company* began to flouriſh.

Its chief factory is at Ponichery, or Pondichery, on the coaſt of Coromandel: this is the reſidence of the director-general; the other factories are inconſiderable. The merchandizes which the *company* brings into France are, ſilks, cottons, ſpices, coffee, rice, ſaltpetre; ſeveral kinds of gums and drugs, woods, wax, printed callicoes, muſlins, &c.

French Weſt-India COMPANY was eſtabliſhed in 1664. their charter gave them the property and ſeigniory of Canada, Acadia, the Antilles Iſlands, Iſle of Cayonne, and the Terra firma of America, from the river of the Amazons to that of Oroonoko; with an excluſive privilege for the commerce of thoſe places, as alſo of Senegal, and the coaſts of Guiney, for forty years, only paying half the duties.

The ſtock of the *company* was ſo conſiderable, that, in leſs than ſix months, 45 veſſels were equipped; wherewith they took poſſeſſion of all the places in their grant, and ſettled a commerce: yet this only ſubſiſted nine years. In 1674. the grant was revoked, and the countries above reunited to the king's dominions, as before; the king reimburſing the actions of the adventurers. This revocation was owing partly to the poverty of the *company*, occaſioned by its loſſes in the wars with England, which had neceſſitated it to borrow above a million; and even to alienate its excluſive privilege for the coaſts of Guiney: but alſo to its having in good meaſure anſwered its end; which was to recover the commerce of the Weſt-Indies from the Dutch, who had torn it from them: for the French merchants, being now accuſtomed to traffic to the Antilles, by permiſſion of the *company*, were ſo attached to it, that it was not doubted they would ſupport the commerce after the diſſolution of the *company*.

French Miſſiſſippi COMPANY was firſt eſtabliſhed in 1684. in favour of the chevalier De la Salle; who having projected it in 1660. and being appointed governor of the fort of Frontignac, at the mouth of that river, travelled over the country in the year 1683. and returned to France to ſolicit the eſtabliſhment. This obtained, he ſet ſail for his new colony, with four veſſels loaden with inhabitants, &c. but entering the gulph of Mexico, he did not, it ſeems, know the river that had coſt him ſo much fatigue; but ſettled on another river, unknown; where his colony periſhed, by degrees: ſo that, in 1685. there were not 100 perſons remaining. Making ſeveral expeditions to find the Miſſiſſippi, he was killed in one of them by a party who mutinied againſt him: whereupon the colony was diſperſed and loſt. M. Hiberville afterwards ſucceeded better: he found the Miſſiſſippi, built a fort, and ſettled a French colony there; but he being poiſoned, it is ſaid, by the intrigues of the Spaniards, who feared ſuch a neighbour; in 1712. M. Crozat had the whole property of trading to the French territories, called Louiſiane, granted him for 15 years.

COMPANY *of the Weſt*. In 1717. the ſieur Crozat ſurrendered his grant; and in the ſame year a new *company* was erected, under the title of *company of the weſt*: to which, beſides every thing granted to the former *company*, was added the commerce of caſtor, enjoyed by the Canada *company* from the year 1706. but expiring in 1717. In this eſtabliſhment, an equal view was had to the finances, and the commerce of the nation; and, accordingly, part of the conditions of its eſtabliſhment regarded the ſettling a colony, a trade, &c. the other the venting part of the bills, called *bills of ſtate*; which could no longer ſubſiſt on their preſent footing. The former are no more than are uſual in ſuch eſtabliſhments: for the latter, the actions are fixed at five hundred livres; each payable in bills of ſtate: the actions to be eſteemed as merchandize, and in that quality to be bought, ſold, and trafficked. The bills of ſtate, which make the fund of the actions, to be converted into yearly revenue. To put the finiſhing hand to the *company*, in 1717. its fund was fixed at an hundred millions of livres; which being filled, the caſh was ſhut up.

India COMPANY. The junction of the former *company* wi that of Canada, was immediately followed by its union wi that of Senegal; both in the year 1718. by an arret of council, which at the ſame time granted the new *company* the commerce of caſtor, and made it miſtreſs of the negro, or Guin trade, to the French colonies in America.

Nothing was now wanting to its perfection, but an uni with the Eaſt-India *company*, and with thoſe of China and Domingo, which was effected; with the two firſt in 171 and with the third in 1720. This union of the Eaſt-Ind and China *company* with the *company* of the weſt, occaſioned alteration of the name; and it was henceforth called the *Ind* *company*.

The reaſons of the union were the inability of the two form to carry on their commerce, the immenſe debts they had contracted in the Indies, eſpecially the Eaſt *Company* ; complaints whereof had been ſent to court by the Indians, which diſcredited the *company* ſo, that they durſt not appear any longer at Surat: laſtly, the little care they took to diſcharge their engagements ; and their having transferred their privilege to the private traders of S. Malo, in conſideration of a tenth in the profits of the returns of their ſhips.

The antient actions of the *company* of the weſt, which were not at par when this engraftment was projected, ere it was completed, were riſen to 300 *per cent.* which unexpected ſucceſs gave occaſion to conclude the new actions of the united *companies* would not bear leſs credit. The concourſe of ſubſcribers was ſo great, that in a month's time there were above fifty millions ſubſcribed for: the firſt twenty-five million actions which were granted to the India *company*, beyond the 100 millions of ſtock allowed the *company* of the weſt, being filled as ſoon as the books were opened ; to ſatisfy the earneſtneſs of the ſubſcribers, the ſtock was increaſed by ſeveral arrets to three hundred millions. Credit ſtill increaſing, the new actions roſe to 1200 *per cent.* and thoſe of the antient *company* of the weſt to 1900 *per cent.* an exorbitant price, to which no other *company* ever roſe.

Its condition was now ſo flouriſhing, that in 1719. it offered the king to take a leaſe of all his farms for nine years, at the rate of three millions five hundred thouſand livres *per annum* more than had been given before ; and alſo to lend his majeſty twelve hundred millions to pay the debts of the ſtate: theſe offers were accepted: and the king, in conſideration hereof, granted them all the privileges of the ſeveral grants of the *companies* united to that *company*, to the year 1770. on condition, however, of diſcharging all the debts of the old Eaſt-India *company*, without any deduction at all. The loan of twelve hundred millions not being ſufficient for the occaſions of the ſtate, was augmented, three months afterwards, with three hundred millions more ; which, with the former loan, and another of one hundred millions before, made ſixteen hundred millions: for which the king was to pay intereſt at the rate of three *per cent.*

The duke of Orleans, in February 1720. did the *company* the honour to preſide in their aſſembly, where he made ſeveral propoſals to them on the part of the king: the principal of theſe was, that they ſhould take on them the charge and adminiſtration of the royal bank. This was accepted of, and Mr. Law, comptroller-general of the finances, was named by the king, *Inſpector-General of the India Company and Bank united.*

This union, which, it was propoſed, ſhould have been a mutual help to both thoſe famous eſtabliſhments, proved the fatal point from whence the fall of both commenced: from this time, both the bank-bills and the actions of the company began to fall: in effect, the firſt periſhed abſolutely, and the other had been drawn along with it, but for the prudent precautions taken for its ſupport.

The firſt precaution was the revoking the office of inſpector-general, and the obliging Mr. Law to quit the kingdom: the antient directors were diſcarded, and new ones ſubſtituted ; and, to find the bottom of the *company*'s affairs, it was ordered, they ſhould give an account of what they had received, and diſburſed, both on the account of the *company*, and of the bank, which they had had the management of near a year. Another precaution to come at the ſtate of the *company*, was by endeavouring to diſtinguiſh the lawful actionaries from the Miſſiſſippi extortioners ; whoſe immenſe riches, as well as their criminal addreſs in realizing their actions, either into ſpecies or merchandize, were become ſo fatal to the ſtate ; in order, if poſſible, to ſecure the honeſt adventurers their ſtock. To this end, an inquiſition was made into their books, &c. by perſons appointed by the king: and the new directors, or, as they were called *regiſſeurs*, began ſeriouſly to look about for their commerce abroad.

The French have had ſeveral other *companies* ; ſome whereof have fallen of themſelves, the reſt upon the expiration of their grants: as, the

Baſtion COMPANY *of France*, which was, at firſt, only a ſimple aſſociation of two merchants at Marſeilles in the XVth century, for fiſhing of coral in the gulph of Stora-Courcoury on the coaſt of Barbary, on the frontiers of Algiers and Tunis. Having obtained leave of the ſultan Solyman II. to make an eſtabliſhment, and having likewiſe treated with the Mooriſh princes of the country ; in 1561. they built a little fort, called the *Baſtion of France*, whence the *company* took its name.

The firſt undertakers not being ſucceſsful, a new grant was obtained of Mahomet III. in 1604. to new undertakers: in 1628. it began to flouriſh, and the colony conſiſted of 800 people: but the death of their governor in 1633. gave them a blow they never recovered.

Several of the *companies* have ſince endeavoured to ſet the fiſhing of coral on its antient foot, but hitherto in vain.

uiney COMPANY, was eſtabliſhed in 1685. its grant expired in 1705. but it continued its trade of negroes, by the king's permiſſion, under the name of Aſſiento *company*, to the year 1713. when, by the treaty of Utrecht, that trade was ſurrendered to the Engliſh South-Sea *company* ; which ſee.

enta COMPANY. See *Guiney* COMPANY, and ASSIENTA.

pe Verd COMPANY, the ſame with that *of Senegal*, under another name: it was eſtabliſhed in 1664. before the *company* of the weſt ; but the coaſts of Africa being included in the grant of this laſt, we hear no more of the Cape Verd *company* till the year 1673. when it roſe afreſh under the title of *company of Senegal.*

French South-Sea COMPANY, is the ſame with the Aſſienta *company*. See ASSIENTA.

Canada COMPANY, eſtabliſhed in 1628. for the commerce of caſtor-ſkins, &c. Its grant expiring in 1717. it was united to the *company* of the weſt ; which ſee.

Acadie COMPANY, eſtabliſhed in 1683. Its grant expiring in 1703. and the war, &c. preventing a new one, the colony was neglected ; and was taken by the Engliſh in 1710. and confirmed to them by the treaty of Utrecht.

French Levant COMPANY, eſtabliſhed in 1670. but its privilege revoked in 1684.

French North COMPANY, eſtabliſhed in 1669. and expiring with its grant in 1690.

S. Domingo COMPANY, eſtabliſhed in 1698. for fifty years ; carried on with honour to the year 1720. and then united to the India *company*.

Daniſh North COMPANY, was eſtabliſhed at Copenhagen in 1647. its eſtabliſhments are very conſiderable in Norway ; beſides which, it ſends veſſels to Waranger, whence they convey their merchandizes by land into the Daniſh Lapland ; and by ſledges drawn by rein-deer, into the Muſcovite Lapland. It alſo ſends others for Borandai and Siberia ; where its agents take them up, and convey them, in like manner, on ſledges to Panigorod, the capital of this part of the Muſcovite empire.

The commodities it ſends thither are rixdollars, tobacco, and linens ; it returns nothing but furs and ſkins.

Daniſh Iceland COMPANY, eſtabliſhed in the ſame year with the north *company*: its chief factory is Kirkebar, a large town in that iſland.

Daniſh Eaſt-India COMPANY, eſtabliſhed in the middle of the XVIIth century ; their chief factory is at Tranquebar, whither they ſend two or three veſſels every year.

Levant COMPANY *of the Genoeſe*, eſtabliſhed in 1664. and confirmed by the Porte ; notwithſtanding the oppoſition of the French.

Its chief commerce was to be in pieces of 5 ſols, which the Genoeſe had before furniſhed the Turks withal, though in the French name, and under their banner: they were now to do it under their own banner ; and accordingly, while the humour of theſe pieces laſted, as they ſerved not only for money, but were likewiſe uſed by the Greek and Turkiſh women of the iſlands, as ornaments in their head-dreſs, at the bottom of their veſts or petticoats, which were covered with them ; the company ſucceeded well enough: but that money being afterwards decried in 1670. the company has languiſhed ever ſince ; and can now ſcarce ſupport a miſerable commerce.

COMPANY *of Ships*, is uſed for a fleet of merchant-veſſels, who make a kind of charter-party among themſelves ; whereby, under ſeveral clauſes and conditions tending to their common ſafety, they engage not to quit one another, but to defend each other reciprocally, during their voyage.

Theſe aſſociates, in the Mediterranean, are called *conſerves.* The chief conditions of the charter-party, are, that ſuch and ſuch ſhall be owned admiral, vice-admiral, and rear-admiral ; that thoſe which bear no guns, ſhall pay ſo much *per cent.* of their cargo, for the expences of the admiral ; that ſuch and ſuch ſignals ſhall be obſerved ; that if they be attacked, the damages ſhall be reimburſed by the *company* in general, &c.

Rule of COMPANY, or *Fellowſhip*, in arithmetic, is a rule whereby we diſcover, or aſcertain, the ſhare of the profits, or loſſes, belonging to the ſeveral partners, or aſſociates, in any enterprize, in proportion to the ſtock each contributed thereto, and the time that ſtock was in bank.

COMPANY, in war, denotes a little body of infantry, commanded by a captain.

The French uſe the word indifferently for the horſe, or foot ; but the Engliſh appropriate the term troop to a *company* of horſe. See TROOP.

The number of men in a *company* is uncertain ; in the ordinary regiments it is 50 centinels, beſides 3 ſerjeants, 3 corporals, and 2 drums, &c.—A *company* in the guards is 80 private men. See REGIMENT, and GUARDS.—In the French guards the *company* is 120, in the Swiſs guards 200.

Companies not imbodied into regiments, are called *independent companies.*—The French alſo have their *free companies*, who never enter the body of any regiment ; and *companies of ordonnance*, who in like manner never enter the body of a regiment ; but conſiſt of the gendarmes and light-horſe. They were inſtituted by Charles VII. who choſe out fifteen captains, under each of whom were to be 100 lances, or men at arms, each man at arms to receive pay for ſix perſons, himſelf among the number ; the reſt to be three archers on horſeback, a cutler, and a ſervant.

Artillery COMPANY. See the article ARTILLERY.

COMPARATES, COMPARATA, in logic, the terms or ſubjects of a compariſon ; or the two things compared to each other. See COMPARISON.

COMPARATIONE—*Punctum ex* COMPARATIONE. See PUNCTUM.

COMPARATIONIS *Homogeneum.* See the article HOMOGENEUM.

COMPARATIVE *Anatomy*, is that branch of anatomy which conſiders the ſame parts of different animals, with relation to the particular ſtructure, and formation, which is beſt ſuited to their ſeveral manners of living, and the neceſſities of every creature.

Thus, in the *comparative* anatomy of ſtomachs, for inſtance, it is remarkable, that thoſe creatures which have the opportunities of frequent feeding, have their ſtomachs very ſmall, in compariſon to ſome creatures of prey, which, probably, may be under a neceſſity of faſting a long time; and therefore have ſtomachs large enough to hold food ſufficient for ſuch a time.

However, in the common uſe of the term, *comparative* anatomy is underſtood of any anatomy of brutes; whether with immediate reference of their ſtructure to that of other animals, or not.

COMPARATIVE *Degree*, in grammar, is an inflexion between poſitive and ſuperlative degrees; whoſe effect is, to ſet a thing above or beneath the level of another.

The Latins expreſſed their *comparative degree* by a particular termination of their adjectives, and participles; wherein they are followed by the Engliſh, though by few other of the modern languages.

The French form moſt of their *comparatives*, by adding the participles *plus*, *moins*, and *auſſi*; the Italians by *piu*, *meno*, &c. as the thing is to be raiſed, lowered, or equalled to another.

COMPARISON, the relation of two perſons or things, conſidered as oppoſed, or ſet againſt each other, in order to find wherein they agree or differ; or wherein one has the advantage of the other.

COMPARISON *of Ideas*, an act of the mind, whereby it *compares* its ideas one with another, in reſpect of extent, degree, time, place, or any other circumſtances. See IDEA.

This operation of the mind is the ground of relations. See RELATION.

Brutes ſeem not to have this faculty in any great degree: they have, probably, ſeveral ideas diſtinct enough; but cannot compare them farther than as to ſome ſenſible circumſtances annexed to the objects themſelves: the power of *comparing* general ideas, which we obſerve in men, we may probably conjecture they have not at all.

COMPARISON, in rhetoric, is a figure, or rather place, in ſpeech, whereby two things are conſidered with regard to ſome third, which is common to them both. See FIGURE, and PLACE.

Thus, Cicer. *Topic. Catoni licuit ſequi bellum civile, igitur & Ciceroni licebit. It was allowed Cato to engage in the civil wars, therefore it may be allowed Cicero:* where, to engage in the civil wars, is common to both.

There are three kinds of *compariſon*; the firſt *à majori, i. e.* from the major to the minor, as that of Cicero againſt Antony, *Q id feceris domi tuæ, cum alienæ tam ſis inſolens?* Or that of Terence; *Quem feret, ſi parentem non fert ſuum?* From the the ſame place, Ovid endeavours to appeaſe Cæſar.

> *Cur ego poſſe negem leniri Cæſaris iram,*
> *Cum videam mites hoſtibus eſſe Deos?*

The ſecond *à minori, i. e.* from the minor to the major: thus Cicero, *Majores noſtri ſæpe mercatoribus, ac naviculatoribus injurioſius tractatis, bella geſſerunt; vos tot civium Romanorum millibus uno nuntio atque uno tempore necatis, quo tandem animo eſſe debetis?*

The third *à pari*; as when we contend, that what obtains in one thing, ought to obtain in another of the ſame kind: thus, *It was a law, that he who killed his father ſhould be ſewed up in a ſack, and thrown into a river; therefore, he who killed his mother deſerves the ſame puniſhment.*

> *Capto tuam, pudet heu, ſed capto, Maxime, cœnam:*
> *Tu capis alterius; jam ſumus ergo pares.*
> *Mane ſalutatum venio, tu diceris iſſe,*
> *Ante ſalutatum: jam ſumus ergo pares, &c.*
>
> Mart. *Lib.* II.

COMPARTIMENT, or COMPARTMENT, a deſign compoſed of ſeveral different figures, diſpoſed with ſymmetry; to adorn a parterre, a ceiling, panel of joinery, or the like.

A COMPARTMENT *of Tiles*, is an arrangement of white and red tiles varniſhed, for the decoration of the covering of a roof.

The term of *compartiment* is alſo uſed in painting. The Turkiſh and Mooriſh paintings are only *compartiments*: the fine bindings of books are in *compartiments*, &c.

Alley of COMPARTIMENT. See the article ALLEY.

COMPARTIMENT, in heraldry. See the article PARTITION.

COMPARTITION, in architecture, the uſeful and graceful diſtribution of the whole ground-plot of an edifice, into rooms of office, and of reception, or entertainment.

Compartition makes one of the great diviſions of the art of building. See BUILDING.

COMPASS. The mariner's, or nautical *compaſs*, is an inſtrument uſed by pilots, to direct the courſe of their ſhips. It conſiſts of a box which includes a magnetical needle, that always turns to the north; excepting for a little declination, which is various in various places, and even, at various times, in the ſame place.

In the middle of the box is fixed a perpendicular pivot, which bears a card, or paſtboard, on whoſe upper ſurface are deſcribed ſeveral concentric circles; the outmoſt of which is divided into 360 degrees; the other into 32 points, anſwering to the 32 winds.

In the centre of this card is fitted a braſs cone, or cap, a little concave, which plays at liberty on the pivot; and along, in the thickneſs of the card, is fitted the needle, which is covered over with a glaſs, that its motions may be obſerved: the whole is incloſed in another box; where it is ſuſtained by braſs hoops, to keep the needle horizontal. See it repreſented, Tab. *Navigation*, fig. 1. The needle, which is, as it were, the ſoul of the *compaſs*, is made of a thin plate of ſteel, in form of a lozenge: the middle being cut out, ſo as to leave nothing but the extremities and an axis in the middle, to which the cap is fitted. To animate, or touch it, it muſt be rubbed on a good loadſtone: that end intended for the north point, on the north pole of the ſtone; and that for the ſouth point, on the ſouth pole. In rubbing it, care muſt be taken to begin firſt in the middle of the lozenge, drawing it gently to the acute angle of the lozenge intended for the north; never ſuffering it to ſtay at the end when arrived there, nor drawing it back again from the end to the middle, but rubbing it a ſecond, and even a third time, in the ſame manner as the firſt, only beginning a little farther and farther from the north point: ſome ſay, the ſtone and needle ſhould be ſo diſpoſed, as that the line of the rub be in the direction of the meridian.

The invention of the COMPASS is uſually aſcribed to Flavio de Melfi, or Flavio Gioia, a Neapolitan, about the year 1302. and hence it is, that the territory of Principato, which makes a part of the kingdom of Naples, where he was born, bears a *compaſs* for its arms.

Others ſay, that Marcus Paulus, a Venetian, making a journey to China, brought back the invention with him in 1260. what confirms this conjecture, is, that at firſt they uſed the *compaſs* in the ſame manner as the Chineſe ſtill do; *i. e.* they let it float on a little piece of cork, inſtead of ſuſpending it on a pivot. It is added, that their emperor Chiningus, a celebrated aſtrologer, had the knowlege of it 1120 years before Chriſt. The Chineſe only divide their *compaſs* into twenty-four points.

Fauchet relates ſome verſes of Guyot de Provence, who lived in France about the year 1200. which ſeem to make mention of the *compaſs* under the name of *marinette*, or *mariner's ſtone*; which ſhews it to have been uſed in France near 100 years before either the Melphite or Venetian. The French even lay claim to the invention, from the flower de lis, wherewith all nations ſtill diſtinguiſh the north point of the card.

With as much reaſon Dr. Wallis aſcribes it to the Engliſh, from its name *compaſs*, whereby moſt nations call it; and which he obſerves is uſed in many parts of England to ſignify a circle.

The uſe of the Sea- COMPASS *is obvious.* For, the courſe a ſhip is to ſail in, being known by the chart; and the *compaſs* ſo placed, as that the two parallel ſides of the ſquare box be diſpoſed according to the length of the ſhip, *i. e.* parallel to a line drawn from the head to the ſtern; the rudder is to be directed accordingly; *v. gr.* if the courſe be found on the chart between the ſouth-weſt and ſouth-ſouth-weſt, *i. e.* ſouth-weſt ¼ to the ſouth; turn the ſtern ſo as that a line from the ſouth-weſt, ¼ ſouth, exactly anſwer the mark on the middle of the ſide of the box. This is all that is required.

COMPASS is alſo an inſtrument of conſiderable uſe in ſurveying land, dialing, &c. See SURVEYING.

Its ſtructure, in the main, is the ſame with that of the *mariner's compaſs*; conſiſting, like that, of a box and needle: the principal difference conſiſts in this, that inſtead of the needle being fitted into the card, and playing with it on a pivot, it here plays alone; the card being drawn on the bottom of the box, and a circle divided in 360 degrees on the limb. See Tab. *Surveying*, fig. 15. This inſtrument is of obvious uſe to travellers, to direct them in their road; and to miners, to ſhew them what way to dig, &c. but it has other uſes, though leſs eaſy, yet more conſiderable.

1. *To take the declination of a wall by the* COMPASS. Apply the ſide of the *compaſs* whereon the north is marked along the ſide of the wall; the number of degrees over which the nor end of the needle fixes, will be the declination of the wa and on that ſide: *v. gr.* if the north point of the needle ten towards the north; that wall may be ſhone on by the ſun noon; if it fix over fifty degrees, counting from the nor towards the eaſt, the declination is ſo many degrees fr north towards eaſt.

But ſince the needle itſelf declines from the north towards weſt, with us, 13°; it muſt be noted, that to retrieve th irregularity, 13° are always to be added to the degrees the by the needle, when the declination of the wall is tow the eaſt: on the contrary, when the declination is tow the weſt, the declination of the needle to be ſubtracted.

2. *To take an angle with the* COMPASS. Suppoſe the angle required be DAE (*Tab. Surveying, Fig.* 11.); apply that ſide of the *compaſs* whereon the north is marked to one of the lines, AD; when the needle reſts, obſerve the degrees at which its north point ſtands, which ſuppoſe 80: ſo many degrees does the line decline from the meridian.

In the ſame manner take the declination of the line AE, which ſuppoſe 215°; ſubtract 80° from 215, the remainder is 135; which ſubtracted from 180, there will remain 45°; the quantity of the angle required.

But if the difference between the declination of the two lines exceed 180°; in that caſe, 180° muſt be ſubtracted from that difference: the remainder then is the angle required.

For the method of laying this down on paper; ſee PLOTTING.

Note, In meaſuring angles by the *compaſs*, there needs not any regard be had to the variation; that being ſuppoſed the ſame in all the lines of the angles.

3. *To take the plot of a field by the* COMPASS. Suppoſe the field A, B, C, D, E (*Fig.* 12.); for the greater accuracy, let there be two ſights fitted to the meridian line of the *compaſs*, place it horizontal, and through the ſights look along the ſide AB, or a line parallel to it; applying the eye to the ſight at the ſouth point of the *compaſs*. Draw a rough ſketch of the field by the eye, and on the correſponding line enter down the degree to which the needle points, which ſuppoſe 90; meaſure the length of the ſide, and enter that too, which ſuppoſe 10 chains.

In this manner proceed with all the reſt of the ſides and angles of the field; the ſides, which ſuppoſe 70, 65, 70, 50, 94 chains; and the angles, which ſuppoſe 30, 100, 130, 240, 300 degrees. To protract the field, ſet down the ſeveral angles obſerved, one after another, and ſubtract the leſſer from the next greater: thus will you have the quantity of the ſeveral angles, and the length of the lines that include them. For the reſt, ſee PLOTTING, and PROTRACTING.

Note, All the angles of the figure taken together muſt make twice as many right angles, abating two; if no miſtake have been committed.

The azimuth COMPASS differs from the common ſea *compaſs* in this; that there is faſtened, on the round box wherein the card is, a broad circle AB (*Tab. Navigation, Fig.* 2.), one half whereof is divided into 90 degrees, and thoſe ſubdivided diagonally into minutes: *bc* is an index moveable on *b*, having a ſight, *ba*, erected thereon, and moving on a hinge. From the upper part of the ſight, to the middle of the index, is faſtened a fine hypothenuſal luteſtring *ae*, to give a ſhadow on a line in the middle of the index. The circle AB is croſſed at right angles with two threads, from the extremities whereof are drawn four lines on the inſide of the round box: there are alſo four lines drawn at right angles to each other on the card. The round box fitted with its card, graduated circle, and index, is hung in the braſs hoops BB, and thoſe hoops faſtened to the ſquare box CC.

The uſe of the azimuth COMPASS is for finding the ſun's magnetical azimuth, or amplitude; and thence the variation of the *compaſs*. If the obſervation be for an amplitude at ſun-riſing, or for an azimuth before noon; apply the centre of the index *bc* on the weſt point of the card, within the box; ſo that the four lines on the edge of the card, and thoſe on the inſide of the box, may meet. If the obſervation be for the ſun's amplitude ſetting, or an azimuth in the afternoon, turn the centre of the index right againſt the eaſt point of the card, and make the lines within the box concur with thoſe on the card: the inſtrument thus fitted for obſervation, turn the index *bc* towards the ſun, till the ſhadow of the thread *ae* fall directly on the ſlit of the ſight, and on the line that is along the middle of the index; then will the inner edge of the index cut the degree and minute of the ſun's magnetical azimuth from the north or ſouth. But note, that if, when the *compaſs* is thus placed, the azimuth is leſs than 45° from the ſouth, and the index *bc* turned towards the ſun, it will paſs off the diviſions of the limb: the inſtrument, therefore, in this caſe, muſt be turned juſt a quarter of the *compaſs*, i. e. the centre of the index muſt be placed on the north or ſouth point of the card, according as the ſun is from you; and then the edge will cut the degree of the magnetic azimuth, or the ſun's azimuth from the north, as before. See AMPLITUDE.

The ſun's magnetical amplitude thus found, the variation of the needle is thus determined.

Being out at ſea the 15th of May 1715. in 45° nor. lat. the tables give me the ſun's latitude 19° north, and his eaſt amplitude 27° 25′ north: by the *azimuth compaſs*, I find the ſun's magnetical amplitude at his riſing and ſetting; and find he riſes, *v. gr.* between the 62d and 63d degree, reckoning from the north towards the eaſt point of the *compaſs*, i. e. between the 27th and 28th degree, reckoning from the eaſt.

The magnetical amplitude, therefore, being here equal to the true one, the needle has no variation: but if the ſun at his riſing ſhould have appeared between the 52d and 53d degree from the north towards the eaſt; his magnetical amplitude would then have been between 37 and 38 degrees, *i. e.* about 10 degrees greater than the true amplitude: therefore, the needle would vary about 10 degrees north-eaſterly.

If the magnetical eaſt amplitude found by the inſtrument ſhould be leſs than the true amplitude, their difference would ſhew the variation of the needle eaſterly.

If the true eaſt amplitude be ſouthward, as alſo the magnetical amplitude, and this laſt be the greater; the variation of the needle will be north-weſt: and *vice verſa*.

What has been ſaid of north-eaſt amplitudes, holds alſo of ſouth-weſt amplitudes. And what of ſouth-eaſt amplitudes, holds of north-weſt amplitudes.

Laſtly, If amplitudes be found of different denominations, *v. gr.* if the true amplitude be ſix degrees north, and the magnetical amplitude five degrees ſouth; the variation, which in this caſe is north-weſt, will be equal to the ſum of the magnetical and true amplitudes: underſtand the ſame for weſt amplitudes.

The variation may likewiſe be found from the azimuth: but in that caſe, the ſun's declination, latitude of the place, and his altitude, muſt be given, that his true azimuth may be found.

COMPASS *of proportion*. See the articles SECTOR, and PROPORTION.

COMPASS *dials* are ſmall dials, fitted in boxes, for the pocket; to ſhew the hour of the day by direction of the needle; which indicates how to place them right by turning the dial about, till the cock or ſtyle ſtand directly over the needle, and point to the northward: but theſe can never be very exact, becauſe of the variation of the needle itſelf. See DIAL.

COMPASS *ſaw*. See the article SAW.

COMPASSES, or *pair of* COMPASSES, a mathematical inſtrument, uſed for the deſcribing of circles, meaſuring lines, &c.

The common *compaſſes* conſiſt of two branches, or legs, of iron, braſs, or other metal, pointed at bottom; and a top joined by a rivet, whereon they move, as on a centre.

The invention of *compaſſes* is aſcribed to Talaus, nephew of Dædalus by his ſiſter, whom, the poets ſay, Dædalus killed out of envy. We have *compaſſes* now of various kinds and contrivances, accommodated to the various uſes they are intended for: as,

COMPASSES *of three legs*. Their ſtructure is like that of the common *compaſſes*, ſetting aſide the exceſs of a leg: their uſe is to take three points at once; and ſo to form triangles; to lay down three poſitions of a map to be copied at once, &c.

Beam COMPASSES conſiſt of a long branch, or beam, carrying two braſs curſors; the one fixed at one end, the other ſliding along the beam, with a ſcrew to faſten it, on occaſion. To the curſors may be ſcrewed points of any kind; whether ſteel, for pencils, or the like. It is uſed to draw large circles, to take great extents, &c.

Caliber COMPASSES. See the article CALIBER.

Clock-makers COMPASSES are very ſubſtantial, ſerving to cut paſtboard, braſs, &c. jointed like the common *compaſſes* with a quadrant, or bow, as the *ſpring compaſſes*, only its uſe different; as ſerving here to keep the inſtrument firm at any opening.

Cylindrical and ſpherical COMPASSES, uſed in taking the diameter, thickneſs, or caliber of round, or cylindric bodies; ſuch as cannons, pipes, &c. They conſiſt of four branches joined in a centre; two of them circular, and two flat, a little bent at the ends.

To uſe them, one of the flat points is put within the cannon, the other without: the two oppoſite points ſhew the thickneſs. See CALIBER *compaſſes*.

There are alſo *ſpherical compaſſes*, differing in nothing from the common ones, but that their legs are arched; ſerving to take the diameters of round bodies, &c.

Elliptic COMPASSES. Their uſe is to draw ellipſes, or ovals of any kind: they conſiſt of a beam AB (*Tab. Geometry, Fig.* 2.), about a foot long, bearing three curſors; to one of which may be ſcrewed points of any kind: to the bottom of the other two are riveted two ſliding dove-tails, adjuſted in grooves made in the croſs branches of the beam. The dove-tails having a motion every way, by turning about the long branch, go backwards and forwards along the croſs: ſo that when the beam has gone half-way about, one of theſe will have moved the whole length of one of the branches; and when the beam has got quite round, the ſame dove-tail has got back the whole length of the branch. Underſtand the ſame of the other dove-tail.

Note, the diſtance between the two ſliding dove-tails is the diſtance between the two foci of the ellipſis; ſo that by changing that diſtance, the ellipſis will be rounder or ſlenderer. Under the ends of the branches of the croſs are placed four ſteel points to keep it faſt.

The uſe of this *compaſs* is eaſy; by turning round the long branch, the ink, pencil, or other point, will draw the ellipſis required. Its figure ſhews both its uſe and conſtruction.

German COMPASSES, whoſe legs are a little bent outwards towards the top; ſo that, when ſhut, only the points meet.

Hair COMPASSES, ſo contrived within-ſide, as to take an extent to a hair's-breadth.

Lapidary's COMPASSES, a piece of wood in form of the ſhaft of a plane, cleſt a-top, as far as half its length; wherewith they meaſure the angles, &c. of the precious ſtones, as they cut them. In the cleſt is a little braſs rule, faſtened there, at one end, by a pin; but ſo that it may be moved in manner of a bevel: with this kind of ſquare they take the angles of the ſtones, laying them on the ſhaft as they cut them.

Proportional COMPASSES conſiſt of two branches (*Tab. Geometry, Fig.* 3.), each pointed at either end with ſteel: the length of the branches is cut thro', for a curſor to ſlide up and down; in the middle of which curſor is a ſcrew, ſerving to join the branches, and to fix them at any point required.

On the one leg are diviſions, ſerving to divide lines into any number of equal parts, for reducing of figures, &c. On the other are numbers, for the inſcribing any regular polygon in a circle propoſed.

The uſe of the firſt is eaſy: Suppoſe, *v. gr.* a right line required to be divided into three equal parts; puſh the curſor till the ſcrew be juſt on the figure 3; where fixing it, take the length of the given line between the longeſt parts of the legs: the diſtance between the two ſhorteſt will be one third of the given line. In the ſame manner may the line be divided into any other number of parts.

For the uſe of the line of polygons: Suppoſe, *v. gr.* a pentagon required to be inſcribed in a circle; puſh the curſor till the middle of the ſcrew be againſt 5, the number of ſides in a pentagon; between the ſhorteſt parts of the legs take the ſemidiameter of the circle: the legs thus opened, the diſtance between the points of the longeſt parts will be the ſide of the pentagon to be inſcribed in the circle. And thus for a figure of any other number of ſides.

Proportional COMPASSES *with the ſector lines.* The ſtructure of theſe is ſo like that of the common *proportional compaſſes*, only a little nicer, that it needs no particular deſcription. See *Tab. Geometry, Fig.* 4.

The lines on the firſt face are the line of lines, marked *lines*: it is divided into 100 unequal parts, every tenth numbered: and the line of chord, which goes to 60°, and is marked *chords*. On the other face are a line of ſines to 90°, and a line of tangents to 45°. On the firſt ſide are the tangents from 45° to 71°. 34'; on the other, ſecants from 0° to 70°. 30'.

For the uſe of theſe compaſſes. 1. To divide a line into any number of equal parts, leſs than 100: divide 100 by the number of parts required, ſlip the curſor till the line on the ſliding dove-tail be againſt the quotient on the line of lines: then, the whole line being taken between the points of the *compaſſes* moſt remote from the centre; the aperture of the other will ſhew the diviſion required. 2. A right line given, ſuppoſed to be divided into 100 parts, to take any number of thoſe parts: ſlip the line on the ſliding dove-tail to the number of parts required: the whole line being taken between the points fartheſt from the centre, the aperture of the other two will include the number of diviſions required. 3. The radius being given, to find the chord of any arch under 60°: ſlip the line on the ſliding dove-tail to the degrees required on the line of chords: the radius being taken between the points fartheſt from the centre of the curſor; the aperture of the other line will be the chord required, provided the number of degrees be greater than 29: if it be leſs, the aperture taken from the radius will leave the chord required. 4. If the chord of an arch under 60° be given, and the radius required; ſlip the line on the dove-tail to the degrees given on the line of chords: the given chord being taken between the two points next the curſor, the aperture of the other will be the radius required. 5. The radius being given, to find the ſine of any number of degrees. Slip the line on the dove-tail to the degree on the line of ſines whoſe ſine is required: the radius taken between the points furtheſt from the curſor; the aperture of the other will give the ſine of the angle required. But if the ſine ſought be leſs than 30°, the difference of the apertures of the oppoſite points will be the ſine required. 6. The radius being given, to find the tangent of any number of degrees under 71: if the tangent required be under 26°. 30', then ſlip the line on the dove-tail to the degree propoſed on the tangent line; the radius taken between the points fartheſt from the curſor; the aperture of the others will be the tangent of the degrees required: if the tangent required be above 26°. 30', but under 45°; the line on the curſor muſt be ſlipped to the degrees given on the tangent line: then the radius being taken between the points furtheſt from the curſor; the aperture of the others will be the tangent. If the tangent required be greater than 45°, but leſs than 56°. 20'; ſlip the notch on the tangent ſide of the turned cheek to the degree 0 in the tangent line on the ſide of the *compaſs*: the radius taken between the points fartheſt from the curſor; the difference between the aperture of the other, and theſe, added together, will be the tangent required. Thus, for the tangents of other degrees under 71.—After the like manner may the ſecant of any number of degrees under 71 be found. See PROPORTIONAL.

Spring COMPASSES, or *dividers*, made of hardened ſteel, the head arched: which, by its ſpring, opens the *compaſſes*; the opening being directed by a circular ſcrew, faſtened to one leg, and let through the other, worked with a nut.

Triangular COMPASSES. See the article TRIANGULAR.

Triſecting COMPASSES, the invention of M. Tarragon, for the triſection of angles, geometrically.

The inſtrument conſiſts of two central rules, and an arch of a circle of 120 degrees, immoveable, with its radius: the radius is faſtened with one of the central rules, like the two legs of a ſector, that the central rule may be carried thro' all the points of the circumference of the arch. The radius and rule to be as thin as poſſible, and the rule faſtened to the radius hammered cold, to acquire an elaſticity: the breadth of the other central rule to be triple the bradth of the radius. In this rule to be a groove, with a dove-tail, to be faſtened on it, for its motion: in the centre of each rule muſt likewiſe be a hole. See the *Journ. des Scavans*, *Sept.* 1688.

Turn-up COMPASSES, a late contrivance to ſave the trouble of changing the points: the body is like the common *compaſſes*; towards the bottom of the legs, without-ſide, are added two other points, beſides the uſual ones; the one carrying a drawing pen-point, the other a port-craion; both adjuſted ſo as to turn round, and ſo be in the way of uſe, or out of it, as occaſion requires.

The points of ſmall *compaſſes* are tempered by a lamp and blow-pipe, heating them red-hot; when cold, they are hard: the larger are tempered by a charcoal-fire and a blow-pipe, heating them to a cherry-colour, then plunging them in water.

COMPATIBLE, ſomething that may ſuit, or conſiſt with another. See INCOMPATIBLE.

COMPENDIUM, an abſtract, epitome, or reduction of a large matter into a little compaſs. See EPITOME.

COMPENSATION, an action whereby any thing is admitted as an equivalent to another.

COMPENSATION, in the civil law, is a kind of right, whereby a debtor purſued by his creditor, for the payment of a debt, demands that the debt may be *compenſated* with what is owing him by the creditor.—*Compenſation* is equivalent to payment.

COMPETENCE, or COMPETENCY, in law, the authority, or right, of a judge for taking cognizance of any matter. See JURISDICTION.

COMPITALIA*, or COMPITALITIA, feaſts held among the antients in honour of the *lares*.

* The word comes from the Latin *compitum*, a croſs-way; by reaſon the feaſt was held in the meeting of ſeveral roads.

The *compitalia* are more antient than the building of Rome. Dionyſius Halicarnaſſeus, and Pliny, indeed, ſay, that they were inſtituted by Servius Tullus; but this only ſignifies, that they were then introduced into Rome.

Notwithſtanding what Dion relates, that the *compitalia* were celebrated a little after the Saturnalia; and that the Roman calendar fixes them on the 12th of January; it appears that they had not any fixed day; at leaſt, not in the time of Varro, as is obſerved by Caſaubon.

The feaſt being thus moveable, the day whereon it was to be obſerved, was proclaimed every year. It was ordinarily held on the 4th of the nones of February, *i. e.* on the ſecond of that month. Macrobius obſerves, that they were held not only in honour of the *lares*, but alſo of *mania*, madneſs. The prieſts who officiated at them were ſlaves and liberti; and the ſacrifice was a ſow. They were re-eſtabliſhed, after a long neglect, by Tarquin the Proud, on occaſion of an anſwer of the oracle, *That they ſhould ſacrifice heads for heads*, i. e. that for the health and proſperity of each family, children were to be ſacrificed: but Brutus, after expelling the kings, in lieu of thoſe barbarous victims, ſubſtituted the heads of garlick and poppy; thus ſatisfying the oracle, which had injoined *capita*, heads, at an eaſier rate.

During the celebration of this feaſt, each family placed at the door of their houſe, the ſtatue of the goddeſs *Mania*: they alſo hung up at their doors figures of wool, repreſenting men and women; accompanying them with ſupplications that the lares and Mania would be contented with thoſe figures, and ſpare the people of the houſe.

As for ſlaves, in lieu of the figures of men, they offered balls, or fleeces of wool. Servius Tullus ordered, that the ſlaves who aſſiſted at the *compitalia*, ſhould be free during the whole time of the feaſt. Auguſtus ordered the ſtatues of the lares, placed in the croſs-ways, to be adorned with flowers twice a year.

COMPLAINANT, in law, a plaintiff, or one who prefers a *complaint* againſt another, to be relieved by juſtice, or equity. See PLAINTIFF.

COMPLEMENT, in geometry, is what remains of a quadrant of a circle, or of ninety degrees, after any certain arch has been retrenched from it.

Thus, if an arch or an angle be 30 degrees, we ſay its co*plement* is 60 degrees, ſince 60+30=90.

The arch and its *complement* are relatives; and are only uſ with regard to each other.

The ſine of the *complement* of an arch is called the *co-ſine*; a tangent, the *co tangent*, &c.

We ſometimes alſo ſay the *complement of an angle*; meani ſo much as it wants of a right angle, or of 90 degrees.

COMPLEMENT *of the courſe*, in navigation, is the number points the courſe wants of 90 degrees, or eight points; o of a quarter of the compaſs.

COMPLEMENT, in aſtronomy, is uſed for the diſtance of a from the zenith; or the arch comprehended between place of the ſtar above the horizon, and the zenith.

COMPLEMENT *of the curtin*, in fortification, that part of interior ſide thereof which makes the demigorge. See Cu TIN, and DEMIGORGE.

COMPLEMENT *of the line of defence* is the remainder of the of defence, after you have taken away the angle of the fla See DEFENCE, and ANGLE.

Complements *of a Parallelogram*, are the two leſſer parallelograms, made by drawing two right lines parallel to each ſide of a parallelogram, through a given point in the diagonal.

Such are the parallelograms C and M (*Tab. Geometry, Fig.* 5. *n.* 2.)—It is demonſtrated, that in every parallelogram, the *complements* C and M are equal: for $Z+C+o=R+M+x$; as making up on each ſide the great triangles, made $=$ by the diagonal; of which, $Z=R$, and $o=x$ (becauſe the diagonal makes them ſo); wherefore, the remaining parallelogram $C=M$. See Parallelogram.

Arithmetical **Complement.** See Arithmetical.

COMPLEX, a term ordinarily uſed as ſynonymous with *compound*; though, ſtrictly ſpeaking, there is ſome difference between them.

Complex is properly applied where a thing contains divers others: or conſiſts of divers parts, not really diſtinct from one another; but only imaginarily, or in our conception.

In which ſenſe, the ſoul may be ſaid to be *complex*, in reſpect of the underſtanding and will, which are two things our reaſon alone diſtinguiſhes in it.

Complex *Object.* See the article Object.

Complex *Oppoſition.* See the article Opposition.

Complex *Term*, or *Idea*, is a term or idea compounded of ſeveral ſimple, or incomplex ones. See Term, and Idea.

Thus, in the propoſition, *A juſt God cannot leave crimes unpuniſhed*; the ſubject of this propoſition, *viz. a juſt God*, is a *complex term*, or ſtands for a *complex idea*, compoſed of two ſimple, or *incomplex* ones, *viz. God* and *Juſt*.

Complex *Propoſition*, is either that which has at leaſt one of its terms *complex*, as that juſt mentioned; or ſuch an one as contains ſeveral members, as cauſal propoſitions. *E. gr. If God be Almighty, the wicked can never eſcape him.*

Mr. Locke obſerves, that though the mind be perfectly paſſive in the formation of ſimple ideas; yet it exerts ſeveral actions of its own about them, when once formed: and that by this means it is, that they become the materials and foundation out of which all our knowlege is framed.

Theſe acts are chiefly three, *viz.* 1°, The combining of ſeveral ſimple ideas into one compound one: and thus it is that all *complex* ideas are made.

2°, The bringing two ideas, whether ſimple or *complex*, together; ſetting them by each other, and ſo viewing them, without uniting them into one: by which it gets its ideas of relation. See Relation.

3°, The ſeparating ſeveral ideas from all other ideas that accompany them in their real exiſtence: and thus all its general ideas are formed.

As ſimple ideas are obſerved to exiſt in ſeveral combinations united together; ſo the mind may conſider them as united, not only as they are really united in external objects, but as itſelf has joined them: ideas thus made up of ſeveral ſimple ones put together, we call *complex*; as man, beauty, army, gratitude, *&c.*

Complex ideas, however compounded and decompounded, tho' their number be infinite, and their variety endleſs, may be all reduced under theſe three heads, *viz. modes, ſubſtances*, and *relations*; *which ſee under their proper heads*, Mode, Substance, and Relation.

COMPLEXIO, **Complexion**, in metaphyſics, the union, or coalition of ſeveral things different from each other; either really, or only in our conception. See Complex.

Complexio, in logics, is ſometimes applied to the ſecond operation of the mind, *viz.* the judgment; conſidered as it affirms or denies any thing; ſuch affirmation, *&c.* neceſſarily importing a combination of ſeveral things.

Complexio is ſometimes alſo uſed by logicians in the ſenſe of dilemma.

Complexio, in rhetoric, *&c.* is a figure including a repetition, and a converſion at the ſame time; the ſentence both beginning, and ending, with the ſame word.

Thus Tully: *Quis legem tulit? Rullus. Quis majorem partem populi ſuffragiis privavit? Rullus. Quis comitiis præfuit? Rullus.*

COMPLEXION, in phyſics, is uſed for the temperature, habitude, or natural diſpoſition of the body.

Some philoſophers diſtinguiſh four general and principal *complexions* in man, *viz.* the *ſanguine complexion*, which, according to them, anſwers to the air; having the qualities thereof, as being hot, and moiſt. It takes its name from *ſanguis*; becauſe the blood is there ſuppoſed to be predominant.

The *phlegmatic complexion* takes its name from the pituita, or phlegm, in which it abounds; and correſponds to water; being cold, and moiſt.

The *bilious*, or *choleric complexion*, takes its name from the bile, or choler: it is ſuppoſed of the nature of fire, hot and dry.

Laſtly, the *melancholic complexion* partakes of the nature of earth, being cold and dry. But this ſort of reaſoning is now out of doors.

COMPLEXUS, or *Par* **Complexum**, in anatomy, is a pair of muſcles, ariſing with ſix thin ſmall tendons from the tranſverſe proceſſes of the vertebræ of the neck and thorax; growing fleſhy in its aſcent; again becoming tendinous about the middle; and again fleſhy, where it is inſerted laterally into the upper part of the os occipitis, and the hind part of the proceſſus maſtoides.—See *Tab. Anatomy* (Myol.), *Fig.* 7. *n.* 5.

When they act together, they pull the head directly backwards; but, either of them acting alone, it draws it obliquely back.

COMPLICATION *of diſeaſes*, a mixture, or combination of ſeveral diſeaſes; eſpecially where they have any affinity to one another; as the dropſy, aſthma, and jaundice, happening together.

What much perplexes the phyſicians is, when with a fever there is a *complication* of ſome other diſorder.

COMPONE, or **Componed**, or *Gobony*, in heraldry.—A bordure *compone*, is that formed or compoſed of a row of angular parts, or chequers of two colours.—See *Tab. Heraldry, Fig.* 19.

Componed, or **Composed**, is alſo uſed in the general for a bordure, a pale, or a feſs, compoſed of two different colours, or metals, diſpoſed alternately, ſeparated and divided by fillets, excepting at the corners; where the junctures are made in the form of a goat's foot.

Compos *Mentis.*	See the articles	Non-Compos.
Composed *Baſtion.*		Bastion.

COMPOSITE *Order*, in architecture, the laſt of the five orders of columns; ſo called, becauſe its capital is *compoſed* out of thoſe of the other orders.—See *Tab. Architecture, Fig.* 30.

It borrows a quarter-round from the Tuſcan, and Doric; a double row of leaves, from the Corinthian; and volutes from the Ionic: its cornice has ſingle modillions, or dentils.

The *compoſite* is alſo called the *Roman* and the *Italic* order; as having been invented by the Romans; conformably to the reſt, which are denominated from the people among whom they had their riſe.

Moſt authors rank this after the Corinthian; either as being the richeſt, or as the laſt that was invented: Scamozzi alone places it between the Ionic and Corinthian; out of a view to its delicacy and richneſs, which he eſteems inferior to that of the Corinthian; and therefore makes no ſcruple to uſe it under the Corinthian: wherein he is followed by M. le Clerc. See Corinthian.

The proportions of this order are not fixed by Vitruvius; he only marks its general character, by obſerving that its capital is compoſed of ſeveral parts taken from the Doric, Ionic, and Corinthian: he does not ſeem to regard it as a particular order; nor does he vary it at all from the Corinthian, except in its capital. In effect, it was Serlio who firſt added the *compoſite* order to the four of Vitruvius, forming it from the remains of the temple of Bacchus, the arches of Titus, Septimius, and the goldſmiths: till then, this order was eſteemed a ſpecies of the Corinthian, only differing in its capital.

The order being thus left undetermined by the antients, the moderns have a kind of right to differ about its proportions, *&c.* Accordingly Scamozzi, and after him M. le Clerc, make its column 19 modules and an half; which is leſs by half a module than that of the Corinthian: as, in effect, the order is leſs delicate than the Corinthian. Vignola makes it 20; which is the ſame with that of his Corinthian: but Serlio, who firſt formed it into an order, by giving it a proper entablature and baſe, and after him M. Perrault, raiſe it ſtill higher than the Corinthian.

This laſt does not think different ornaments and characters ſufficient to conſtitute a different order, unleſs it have a different height too: agreeably, therefore, to his rule of augmenting the heights of the ſeveral columns by a ſeries of two modules in each; he makes the *compoſite* 20 modules, and the Corinthian 18; which, it ſeems, is a medium between the arches of Titus and the temple of Bacchus.

For the parts of the Order, ſee Column, Entablature, Capital, Base, Freeze, Pedestal, *&c.*

M. Perrault, in his Vitruvius, diſtinguiſhes between *compoſite* and *compoſed* order.—The latter, he ſays, denotes any compoſition whoſe parts and ornaments are extraordinary, and unuſual; but have, withal, ſomewhat of beauty; both on account of their novelty, and in reſpect of the manner, or genius of the architect: ſo that a *compoſed* order is an arbitrary, humorous compoſition, whether regular or irregular.

The ſame author adds, that the Corinthian order is the firſt *compoſite* order, as being compoſed of the Doric and Ionic; which is the obſervation of Vitruvius himſelf, Lib. 4. cap. 1.

COMPOSITION, in a phyſical ſenſe, is the uniting or joining of ſeveral different things, ſo as to form one whole, called a *compound*.

The ſchoolmen diſtinguiſh two kinds of *compoſition*; the one *entitative*, which is between things of the ſame nature, *e. gr.* two or more drops of water: the other *eſſential*, when things of different kinds are joined, and thus conſtitute new things, or eſſences, different from any of the parts: and thus, ſay they, from the matter and the form of wood, ariſes wood; whoſe eſſence is very different from either of thoſe ingredients taken ſeparately.

Composition *of Ideas*, is an operation of the mind, whereby it combines ſeveral of its ſimple ideas into complex ones. See Complex *Idea*.

Under the ſame operation may likewiſe be reckoned that of enlarging; whereby we put ſeveral ideas together of the ſame kind, as ſeveral units to make a dozen.

In this, as in others, brutes come far ſhort of men: for tho' they take in and retain ſeveral combinations of ſimple ideas; as poſſibly, a dog does the ſhape, ſmell, and voice of his maſter; yet theſe are rather ſo many diſtinct marks whereby he knows him, than one complex idea, made out of thoſe ſimple ones.

Composition, in grammar, denotes the joining of two words together; or prefixing a particle to another word, to augment, diminiſh, or change its ſignification. See Word, *&c.*

Composition, in oratory, the order and coherence of the parts of a diſcourſe.

To *compoſition* belong, both the artful joining of the words, whereof the ſtyle is formed, and whereby it is rendered ſoft and ſmooth, gentle and flowing, full and ſonorous; or the contrary: and the order, which requires things firſt in nature and dignity, to be put before thoſe of inferior conſideration.

Composition, in painting, includes the invention as well as diſpoſition of the figures, the choice of attitudes, *&c.*

Compoſition, therefore, conſiſts of two parts; one of which finds out, by means of hiſtory, proper objects for a picture; and the other diſpoſes them to advantage.

Composition, in muſic, is the art of diſpoſing muſical ſounds into airs, ſongs, *&c.* either in one, or more parts; to be ſung with the voice, or played on inſtruments.

Zarlin defines *compoſition* to be the art of joining and combining concords together, which are the matter of muſic: but this definition is too ſcanty; in regard, diſcords are always uſed with concords in the *compoſition* of parts. See Concord, and Discord.

Under *compoſition* are comprehended the rules, 1°, of *melody*, or the art of making a ſingle part; *i. e.* of contriving and diſpoſing the ſimple ſounds, ſo as that their ſucceſſion and progreſs may be agreeable. 2°, Of *harmony*, or the art of diſpoſing and concerting ſeveral ſingle parts ſo together, that they may make one agreeable whole.

It may be here obſerved, that melody being chiefly the buſineſs of the imagination, the rules of *compoſition* ſerve only to preſcribe certain limits to it; beyond which, the imagination, in ſearching out the variety and beauty of airs, ought not to go: but, harmony being the work of judgment, its rules are more certain, extenſive, and more difficult in practice.

In the variety and elegance of the melody, the invention labours a great deal more than the judgment; ſo that method has but little place: but in harmony it is otherwiſe; the invention, here, has nothing to do; and the *compoſition* is conducted from a nice obſervation of the rules of harmony, without any aſſiſtance from the imagination at all.

Composition, in logic, is a method of reaſoning, wherein we proceed from ſome general ſelf-evident truth, to other particular and ſingular ones.

The method of *compoſition*, called alſo *ſyntheſis*, is juſt the reverſe of that of *reſolution*, or *analyſis*.

Reſolution is the method whereby we ordinarily ſearch after truth; *compoſition*, that whereby a truth found, is diſcovered and demonſtrated to others: reſolution is the method of inveſtigation, *compoſition* of demonſtration.

The method of *compoſition* is that uſed by Euclid, and other geometricians; reſolution that uſed by algebraiſts and philoſophers. The two methods differ, juſt as the methods of ſearching a genealogy; which are either by deſcending from the anceſtors to the poſterity, or by aſcending from the poſterity to their anceſtors: each have this in common, that their progreſſion is from a thing known, to another unknown.

The method of *compoſition* is beſt obſerved by the mathematicians: the rules hereof are, 1°, To offer nothing but what is couched in clear expreſs terms; and to that end, to begin with definition. 2°, To build only on evident and clear principles; to that end, to proceed from axioms or maxims. 3°, To prove demonſtratively all the concluſions that are drawn hence; and to this purpoſe, to make uſe of no arguments or proofs, but definitions already laid down, axioms already granted, and propoſitions already proved; which ſerve as principles to things that follow.

Composition *of motion*, is an aſſemblage of ſeveral directions of motion, reſulting from powers acting in different, though not oppoſite lines.

If a point move or flow according to one and the ſame direction; whether that motion be equable or not, yet it will ſtill keep the ſame right line; the celerity alone being changed, *i. e.* increaſed, or diminiſhed, according to the forces with which it is impelled. If the directions be oppoſite, as one, *e. gr.* directly downward, the other upward, *&c.* yet ſtill the line of motion will be the ſame.

But if the compounding motions be not according to the ſame line of direction, the compound motion will not be according to the line of direction of any of them, but in a different one from them all; and this either ſtrait or crooked, according as the direction or celerities ſhall require.

If two compounding motions be each of them equable, the line of the compound motion will ſtill be a ſtrait line; and this, though the motions be neither at right angles one to another, nor equally ſwift, nor (each to itſelf) equable; provided that they be but ſimilar; that is, both accelerated and retarded alike.

Thus, if the point *a* (*Tab. Mechanics*, *Fig.* 4.) be impelled equally with two forces; *viz.* upwards, towards *b*, and forwards, towards *d*; it is plain, that when it is gone forwards as far as *a c*, it muſt of neceſſity be gone upwards as far as *r e*; ſo that were the motions both equable, it would always go on in the diagonal *a r c*.

Nay, ſuppoſe the motions unequal as to celerity, ſo, *v. gr.* as that the body move twice as faſt upwards as forwards, *&c.* yet ſtill it muſt go on in the diagonal *a c*; becauſe the triangles *a e c*, *a e c*, &c. and *a c d* will ſtill be ſimilar, being as the motions are.

But, if the motions be diſſimilar, then the *compound* motion muſt be a curve.

Thus, if a body, as *b* (*Fig.* 5.), be impelled or drawn by three different forces, in the three different directions *b a*, *b c*, and *b d*, ſo that it yields to none of them; but continues *in æquilibrio*; then will thoſe three powers or forces be to one another, as three right lines drawn parallel to thoſe lines, expreſſing the three different directions, and terminated by their mutual concourſes.

Let *b e* repreſent the force by which the body *b* is impelled from *b* to *a*; then will the ſame right line *b e* repreſent alſo the contrary equal force, by which it is impelled from *b* to *e*: but by what hath been ſaid before, the force *b e* is reſolvable into the two forces acting according to the two directions *b d* and *b c*, to which the other impelling from *b* to *e*, is as *b e* to *b d*, and *b c* or *d e*, reſpectively.

So likewiſe two forces, acting without the directions *b d*, *b c*, and being equipollent to the force acting without the direction *b e*, from *b* to *e*; will be to the force acting according to the direction *b e*, from *b* to *e*, as *b d*, *b c*, to *b e*: and therefore the forces acting in the directions *b d*, *b c*, and equipollent to the force acting in the directions *b c*, are to the force acting in the direction, as *b d*, *b c*, or *d c*, to *b e*: that is, if a body be urged by three different equipollent powers in the directions *b a*, *b d*, and *b c*; theſe three forces ſhall be to one another as *b e*, *b d*, and *d e*, reſpectively. *Q. E. D.*

This theorem, with its corollaries, Dr. Keill obſerves, is the foundation of all the new mechanics of M. Varignon: by help hereof, may the force of the muſcles be computed, and moſt of the mechanic theorems in Borelli, *de motu animalium*, be immediately deduced.

Composition-*of Proportion.*—If there be two ratio's, wherein the antecedent of the firſt is to its conſequent, as the antecedent of the other is to its conſequent: then, by *compoſition* proportion; as the ſum of the antecedent and conſequent of the firſt ratio, are to the antecedent, or the conſequent, of the firſt; ſo is the ſum of the antecedent and conſequent of the ſecond ratio, to the antecedent, or the conſequent, of the ſecond. *E. gr.* If $A : B :: C : D$; then by *compoſition*, $A + B :$ $(B) :: C + D : C\ (D)$.

Composition, in pharmacy, the art, or act, of mixing div ingredients together into a medicine; ſo as they may aſſi each other's virtues, ſupply each other's defects, or corre any ill qualities thereof. See Pharmacy.

Composition, in printing, ordinarily called *compoſing*, is th arranging of ſeveral types or letters in the compoſing-ſtic in order to form a line; and of ſeveral lines ranged in ord in the galley, to make a page; and of ſeveral of thoſe to mak a form. See Printing, *&c.*

The *compoſing-ſtick* is made of iron generally, ſometimes braſ or wood; of more or leſs length or depth, according to th page to be compoſed, or the compoſitor's fancy: it hath tw ſliding pieces, to be faſtened by means of a nut and ſcre which are ſlipped forwards or backwards, at the pleaſure the compoſitor, and according to the ſpace which the lin notes, *&c.* are to take up. See *Tab. Miſcellany*, *Fig.* 9.

The *compoſing-ſtick* ordinarily contains ſeven or eight lines a middle-ſized letter; theſe, when ſet, are taken out, by he of a thin ſlip of braſs, termed a rule, and diſpoſed in the g ley; and others compoſed, till a page be formed. The p being compoſed, is tied up, and ſet by; and the reſt of t pages of the ſheet prepared in the ſame manner: when do they are carried to the impoſing or correcting-ſtone; th ranged in order, and diſpoſed in a chaſe, or iron frame, fi with wooden furniture; then, the quoins being ſtruck in, is carried to the preſs to be printed.

Composition, in commerce, a contract between an inſolv debtor and his creditors; whereby the latter agree to acc of a part of the debt, in compenſation for the whole, and g a general acquittance accordingly.

COMPOSSIBLES, **Compossibilia**, in logic, ſuch th as are compatible, or capable of ſubſiſting together. Compatible.

COMPOST, in agriculture and gardening, a compound, or m ture, of earths, dungs, *&c.* applied, by way of manure, fo meliorating and improving of ſoils, and aſſiſting the na earth in the work of vegetation. See Manuring.

The gardeners have magazines, or layſtalls of *compoſts*, ad to the different ſorts of ſoil. Light looſe land requires a *compoſt* of a heavy nature; ſuch as the ſcouring of ditches, ponds, &c. mixed with earth, dung, &c. A heavy, clayey, or cloddy land requires a *compoſt* of a more ſprightly and active kind, to inſinuate into the heavy, lumpy clods; as dungs, ſand, aſhes, and natural mould.

Mr. Bradley preſcribes ſeven different ſorts of *compoſts*, to forward the growth of trees; *viz.* a quantity of ſtiff ſoil, broken, and mixed with ſharp ſand, and aſhes of burnt furzes, weeds, &c. or ſtiff ſoil with ſand and burnt graſs-turf, and rotten-wood; or ſtiff ſoil with ſand and rape-ſeed, after the oil is preſſed out, with burnt turf; or ſtiff ſoil with ſand and malt-grains; or ſheeps dung, with wood-aſhes and loam, or mother-earth. See SOIL.

The ſame author recommends a mixture or preparation of ſoils anſwering to loam, or mother-earth, as greatly preferable for planting or ſowing foreſt-trees in, to any of theſe richer *compoſts*; which, tho' they haſten the growth of the tree, will not make the timber near ſo firm and durable.

OMPOUND, the reſult or effect of a compoſition of different things; or that which ariſes therefrom.

Strictly ſpeaking, every new *compoſition* does not produce a new *compound*; but only that from which a new eſſence ariſes. Thus, when one drop of water is added to another, there does not ariſe a new phyſical *compound*; the eſſence being the ſame now, as before the union.

OMPOUND differs from *complex*, and ſtands oppoſed to *ſimple*. See COMPLEX, and SIMPLE.

We ſay, the ingredients of a *compound*; apothecaries are great dealers in *compounds*; they prepare a *compound* diacodium, *compound* diamargariton, *compound* diamorum, *compound* diaprunum, *compound* oxymel, *compound* fomentations, *compound* waters, &c.

OMPOUND *flowers*, called alſo *compoſite*, and *aggregate* flowers; are ſuch as conſiſt of many little flowers, concurring to make up one whole one; each of which has its ſtyle, ſtamina, and adhering ſeed, but all are contained within one and the ſame calyx, or perianthium.

This *compound* flower diſtinguiſhes a large genus of plants, which Mr. Ray divides thus.—Herbs having *compounded* or *aggregated* flowers are,

1°, Such as have a *plain-leaved* flower naturally, and for the moſt part full: and having the whole body milky (yielding a milky juice on cutting them); and theſe have their ſeeds.

Firſt, Pappous, or winged; that is, having a little lanugo adhering to each ſeed, by which the wind can eaſily carry it from place to place: ſuch are the Lactuca, Tragopogon, Scorzonera, Dens Leonis, Hieracium, and the Piloſella.

Secondly, Such as have a ſolid ſeed, without any pappus or down upon them; as the Eryngium Luteum, Cichorium, Lampſana.

2°, Such as have a *diſcous* flower; *i.e.* one compoſed of many hort, thick, compaſſed, ſmall floſculi (which ſome, by miſake, call *ſtamina*) ſet together, ſo as to make one flat, or hollowiſh ſuperficies: and theſe are alſo either ſuch as have their ſeeds;

Firſt, Pappous, as the Tuſſilago, Petaſites, Carlina, Helenium, Doronicum, Conyza, Aſter, Virga Aurea, Jacobæa, Stœchas Citrina, Jacea, Senecio, Eupatorium Avicennæ, Cacalia Vulgaris, Gnaphalium Maritimum, and Monſpelienſe.

econdly, Such whoſe ſeeds are ſolid, and not pappous; as he corymbiferous herbs.

MPOUND *force.*	See the articles	FORCE.
MPOUND *forms.*		FORMS.
MPOUND *foſſils.*		FOSSILS.
MPOUND *fractions.*		FRACTIONS.
MPOUND *gland.*		GLAND.
MPOUND *harmony.*		HARMONY.

MPOUND *intereſt*, called alſo *intereſt upon intereſt*, is that hich is reckoned not only upon the principal, but upon the ntereſt itſelf forborn; which hereby becomes a ſort of ſeondary principal. See INTEREST.

MPOUND *machine*. See the article MACHINE.

MPOUND *maſonry*. See the article MASONRY.

MPOUND *motion*, that motion which is effected by ſeveral onſpiring powers.

owers are ſaid to conſpire, if the direction of the one be not irectly oppoſite to that of the other; as when the radius of a ircle is conceived to revolve about a centre; and at the ſame me a point to move ſtrait along it.

ll curvilinear motion is *compound*.

is a popular theorem, in mechanics, that in an unirm *compound* motion, the velocity produced by the coniring powers, is to that of either of the powers ſepatery, as the diagonal of a parallelogram, according to the rection of whoſe ſides they act ſeparately, to either of the des.

POUND *numbers* are thoſe which may be meaſured, or actly divided, by ſome other number beſide unity. ch is 15; which is meaſured by 3, and alſo by 5.

POUND *pendulum*, in mechanics, that which conſiſts of ſeral weights conſtantly keeping the ſame diſtance, both from each other, and from the centre about which they oſcillate. See PENDULUM.

COMPOUND *propoſition*. See the article PROPOSITION.

COMPOUND *quantities*, in algebra, are ſuch as are connected together by the ſigns + and —: thus, $a+b-c$, and $bb-b$ are *compound* quantities.

COMPOUND *ratio* is that which the product of the antecedents of two or more ratios has to the product of their conſequents.

Thus, 6 to 72 is in a ratio *compounded* of 2 to 6, and 3 to 12. See PROPORTION.

COMPOUND *rule of three*. See the article RULE *of three*.

COMPOUND *ſounds.*	See the articles	SOUND.
COMPOUND *ſurd.*		SURD.
COMPOUND *taſte.*		TASTE.
COMPOUND *ulcer.*		ULCER.
COMPOUND *words.*		WORD.

COMPREHENSION, in metaphyſics, is that act of the mind, whereby it apprehends, or knows, any object preſented to it, on all the ſides, whereon it is capable of being apprehended, or known.

To comprehend a thing, is defined by the ſchoolmen, *rem aliquam totam & totaliter cognoſcere*: and, in this ſenſe, it is a popular point of controverſy among ſchool-divines, *Whether the bleſſed in heaven* comprehend *God?* The more orthodox maintain the negative, by reaſon ſuch knowlege muſt be infinite.

COMPREHENSION, in rhetoric, a trope, or figure, whereby the name of a whole is put for a part; or that of a part for a whole: or a definite number of any thing for an indefinite.

COMPRESS *, in chirurgery, a bolſter of linen cloth, folded in ſeveral doubles, and laid under the bandage, to prevent a wound from bleeding or ſwelling; or to retain the medicines applied thereto.

* The word comes from *comprimere*, to preſs hard.

Scultetus, in his *arſenal of chirurgery*, obſerves, that the antients compoſed their *compreſſes* of carded flax, or of feathers, ſewed between two linens; and called them *pillows*, or *plumages*, *pulvini*, or *pulvilli*, &c.

COMPRESSION, the act of preſſing, or ſqueezing ſomething, ſo as to ſet its parts nearer each other, and make it poſſeſs leſs ſpace.

Compreſſion properly differs from *condenſation*, in that the latter is performed by the action of cold, the former by ſome external violence.

Pumps, which the antients imagined to act by ſuction, do, in reality, act by *compreſſion*; the embolus, or ſucker, in going and returning in the narrow pipe, *compreſſes* the air incloſed therein, ſo as to enable it by the force of its elaſticity to raiſe the valve, and make its eſcape: upon which, the balance being deſtroyed, the preſſure of the atmoſphere on the ſtagnant ſurface, drives up the water in the pipe thus evacuated of its air. See PUMP.

Water is incapable of *compreſſion*: after the air has been purged out of it, no art or violence is able to bring its parts cloſer, or make it take up leſs compaſs. In an experiment made by the academy de'l Cimento, water, when violently ſqueezed, made its way through the infinitely fine pores of a ball of gold, rather than it would undergo *compreſſion*.

The compreſſion of the air, by its own weight, is ſurpriſingly great: it appears, by calculation, that the common air we breathe, near the ſurface of the earth, is *compreſſed* by the weight of the ſuperincumbent atmoſphere, into $\frac{1}{13789}$ part of the ſpace it would take up, were it at liberty.

But the air may be ſtill further *compreſſed* by art; and it appears from Mr. Boyle's experiments, that the ſpace which the air takes up, when at its utmoſt dilatation, is to that it takes up when moſt *compreſſed*, as five hundred and fifty thouſand to one.

This immenſe *compreſſion* and dilatation, Sir Iſaac Newton obſerves, cannot be accounted for from ſuppoſing the particles of the air elaſtic and branched, or in form of ſlender twigs interwoven into circles; nor any other way, but by a repelling force, wherewith they are endued; by virtue whereof, when at liberty, they mutually fly each other. See ATTRACTION.

This repelling power, he adds, is ſtronger and more ſenſible in air, than in other bodies; in regard air is generated out of very fixed bodies, but not without great difficulty, and the help of fermentation: now thoſe particles always recede from each other with the greateſt violence, and are *compreſſed* with the greateſt difficulty, which, when contiguous, cohere the moſt ſtrongly.

That there is ſuch a repelling power, appears from this; that flies walk on the water without wetting their feet; that the object-glaſſes of teleſcopes laid on each other do not touch; that dry duſt is not brought to touch or cohere without difficulty, *v. gr.* unleſs either liquified by fire, or wet with water; and that two poliſhed pieces of marble, which as often as they touch cohere, are yet very hardly preſſed ſo cloſely, and joined ſo aptly, as to cohere. See REPELLING *force*; ſee alſo COHESION, DILATATION, &c.

COMPRISE *nient*. See the article Nient.

COMPROMISE, a treaty, or contract, whereby two contending parties eſtabliſh one or more arbitrators, to judge of and terminate their differences in an amicable way.

The regular way of appointing a *compromiſe* is by a writing, expreſſing the names of the arbitrators, the power of chooſing an umpire, or ſuper-arbitrator, in caſe of need, a time limited for the arbitrage, and a penalty on the party who does not abide by the deciſion.

By the civil law, a ſlave cannot make a *compromiſe* without the leave of his maſter, nor can a pupil without the authority of his guardian, or a wife without that of her huſband. So a ſlave, a deaf or dumb man, a minor, and the perſon who is a party in the cauſe, are incapable of being choſen arbitrators in a *compromiſe*.

The occaſions on which a *compromiſe* is not allowed of, are reſtitutions, marriage-cauſes, criminal affairs, queſtions of ſtate; and, generally, any thing wherein the public intereſt is more concerned than that of private perſons.

In our law, *compromiſe* is not of ſo much extent: Weſt defines it the faculty, or power of pronouncing ſentence between perſons at controverſy, given to arbitrators by the parties mutual private conſent, without public authority.

Compromise is alſo uſed in beneficiary matters; where it ſignifies an act, whereby thoſe who have the right of election, transfer it to one or more perſons, to elect a perſon capable of the office or dignity.

We have ſeen members of parliament elected by *compromiſe*; when the electors, not being able to agree among themſelves, give the power of electing, at leaſt of nominating, to two perſons; obliging them by oath, or otherwiſe, to chooſe ſuch as they think the moſt capable, and beſt diſpoſed.

COMPTING, or **Counting-house**, an office in the king's houſhold, under the direction of the lord ſteward; ſo called, becauſe the accompts for all expences of the king's houſhold are there taken daily by the lord ſteward, comptroller, cofferer, maſter of the houſhold, the two clerks of the green-cloth, and the two clerks comptrollers. They alſo there make proviſion for the houſhold, and make payments, and orders for the good government thereof.

In the *compting-houſe* is the board of *green-cloth*. See Green-cloth.

COMPTROL. See Control.

COMPTROLLER. See Controller.

COMPULSOR*, an officer under the Roman emperors, diſpatched from court into the provinces, to compel the payment of taxes, &c. not paid within the time preſcribed.

* The word is Latin, formed of the verb *compellere*, to oblige, conſtrain.

Theſe were charged with ſo many exactions, under colour of their office, that Honorius caſhiered them by a law in 412.

The laws of the Viſigoths mention military *compulſors*; which were officers among the Goths, whoſe buſineſs was to oblige the tardy ſoldiers to go into the fight, or to run to an attack, &c.

Caſſian mentions a kind of monaſtic *compulſors*, whoſe buſineſs was to declare the hours of canonical office, and to take care the monks went to church at thoſe hours.

COMPUNCTION*, in theology, an inward grief in the mind, for having offended God.

* The word comes from *compungere*, of *pungere*, to prick.

The Romaniſts own their confeſſion inſignificant, unleſs attended with *compunction*, or pricking of heart. See Confession.

Among ſpiritualiſts, *compunction* carries a more extenſive ſignification; and implies not only a grief for having offended God, but alſo a pious ſenſation of grief, ſorrow, and diſpleaſure, on other motives.—Thus, the miſeries of life, the danger of being loſt in the world, the blindneſs of the wicked, &c. are to pious people motives of *compunction*.

COMPURGATOR, in law, one that by oath juſtifies, or clears, another's innocence.

COMPUTATION, the manner of accounting and eſtimating time, weights, meaſures, and moneys.

The word is ſometimes alſo uſed among mathematicians in the like ſenſe as calculation. See Calculation.

Computation *of a planet's motion*. See Planet.

Computation is particularly uſed in law in reſpect of the true account, or conſtruction of time, ſo underſtood, as that neither party do wrong to the other, nor the determination of time be left at large, or be taken otherwiſe than according to the judgment and intention of law.

If indentures of demiſe be ingroſſed, bearing date May 11. 1679. to have and to hold the land in S. for three years from henceforth; and the indentures be delivered the 4th of June following: in this caſe, *from henceforth* ſhall be computed from the day of the delivery, and not from the date. And if the indentures be delivered at four of the clock in the afternoon, the ſaid 4th of June, the leaſe ſhall end the third day of June in the third year: the law, in ſuch *computation*, rejecting all fractions or diviſions of the day, on account of that uncertainty which is the mother of contention.—In writings, ordered by the ſtat. 27 Hen. VIII. to be inrolled within ſix months; if ſuch writings have date, the ſix months ſhall be accounted from the date, and not from the delivery: if they want date, it ſhall be accounted from the delivery. Coke, lib. 5.

If a deed be ſhewed to a court at Weſtminſter, it ſhall remain in court (by judgment of law) all the term in which it is ſhewed: for all the term is but as one day in law. Coke, ibid.—If a church be void, and the patron does not preſent within ſix months, the biſhop of the dioceſe may collate his chaplain: but theſe ſix months ſhall be computed according to twenty-eight days of the month; and not according to the calendar. See Calendar.

COMPUTO, a writ, thus called from its effect, which is to compel a bailiff, chamberlain, or receiver, to yield his accompts. See Account.

The ſame lies for executors of executors; and againſt the guardian in ſocage, for waſte made in the minority of the heir.

Computo *vicecomitis habendo reſpectu*. See Respectu.

CONARION, or **Conoides**, a name for the *pineal gland*; a ſmall gland, about the bigneſs of a pea, placed in the upper part of that hole in the third ventricle of the brain called the *anus*; and tied by ſome fibres to the nates.

It is compoſed of the ſame ſubſtance as the reſt of the brain; and has this peculiar, that it is ſingle; whereas all the other parts are double: Hence, Des Cartes takes occaſion to ſuppoſe it the immediate place, or ſeat of the ſoul.

CONATUS, *endeavour*, a term frequently uſed in philoſophical and mathematical writers; nearly equivalent to *niſus*.

Conatus ſeems to be the ſame, with reſpect to motion, that a point is with reſpect to a line; at leaſt, the two have this in common, that as the point is inceptive of the line, or the term from which it commences; ſo is the beginning of all motion called the *conatus*. Add, that as in mathematical demonſtrations, the extenſion of the point is conceived as if it were nothing at all; ſo, in the *conatus* of motion, there is no regard to the time wherein, or the length which, it advances. See *Laws of* Nature.

Hence, ſome define *conatus* to be a quantity of motion no capable of being expreſſed by any time or length.—Accordingly, all motion tends preciſely the ſame way wherein th moveable is acted on, or determined by the moving powe See Motion.

CONCATENATION, in philoſophy, a connexion of thing in manner of a *chain*.

The *concatenation* of ſecond cauſes is an effect of providenc See Cause, Providence, &c.

CONCAVE is applied to the inner ſurface of a hollow body especially if it be circular.

Concave is particularly underſtood of mirrors and lenſes: co *cave lenſes* are either *concave* on both ſides, called *conca* *concave*; or *concave* on one ſide, and plane on the othe called *plano-concave*; or *concave* on one ſide, and convex o the other, called *concavo convex*, or *convexo-concave*, as t one or the other ſurface is a portion of a leſs ſphere.

The property of all *concave* lenſes is, that the rays of lig in paſſing through them, are deflected, or made to rec from one another; as in convex lenſes they are inflected t wards each other; and that the more, as the concavity a convexity are portions of leſs circles.

Hence, parallel rays, as thoſe of the ſun, by paſſing throu a *concave* lens, become diverging; diverging rays are ma to diverge the more, and converging rays are either made converge leſs, or become parallel, or go out diverging.

Hence, objects viewed through *concave* lenſes appear di niſhed; and the more ſo, as they are portions of leſs ſphere and this in oblique, as well as in direct rays.

Concave mirrors have the contrary effect to lenſes: they refl the rays which fall on them, ſo as to make them appro more to, or recede from, each other than before; and th the more as the concavity is greater, or the ſpheres where they are ſegments, leſs.

Hence, *concave* mirrors magnify objects preſented to them and that in a greater proportion, as they are portions greater ſpheres.

Hence alſo, *concave* mirrors have the effect of burning obje when placed in their focus. See Burning-glass.

CONCEALERS*, in law, ſuch as find out concealed la *i. e.* lands kept privily from the king, by common perſ having nothing to ſhew for their title, or eſtate therein.

* They are thus called *per antiphraſin*, *à concelando*; as *à movendo*, &c. My Lord Coke calls them *turbidum ho* *genus*.

CONCENTRATION, the retiring, or withdrawing of a th inwards, towards the centre, or middle.

External cold is ſaid to *concentrate* the heat within bod after meals, the natural warmth retires, and as it were *centrates*, to promote the digeſtion.

Concentration is alſo uſed by Dr. Grew for the hi degree of mixtion, *viz.* that wherein two or more ato particles touch, by a reception, and intruſion of the within the other. See Mixtion.

This he takes to be the caſe of all fixed bodies without t or ſmell; their conſtitution being ſo firm, that till the p cles be detached from each other by ſome extraordinary means, they cannot affect thoſe ſenſes.

CONCENTRIC, in geometry and aſtronomy, ſomething that has the ſame common centre with another.

The word is principally uſed in ſpeaking of round bodies, and figures, *viz.* circular, elliptical ones, &c. but may be likewiſe uſed for polygons, drawn parallel to each other, upon the ſame centre.

Concentric ſtands oppoſite to *excentric.* See EXCENTRIC, and EXCENTRICITY.

Nonius's method of graduating inſtruments conſiſts in deſcribing with the ſame quadrant 45 *concentric arches*, dividing the outermoſt into 90 equal parts, the next into 89, &c.

CONCEPTION, in logics, the ſimple apprehenſion, or perception, which we have of any thing, without proceeding to affirm, or deny, any thing about it.

The ſchoolmen uſually make two kinds of *conception*; the one *formal*, the other *objective.*

The *firſt* is defined to be the immediate and actual repreſentation of any thing propoſed to the mind: on which footing, it ſhould be the ſame thing to the underſtanding, that a word or voice is to the ear; whence ſome alſo call it *verbum mentis.*

The *ſecond* is the thing itſelf repreſented by a formal *conception.* But others explode the notion of an *objective conception*, as being, in reality, no *conception* at all; excepting where the mind contemplates its own acts, &c.

Formal, or *proper conceptions*, are ſubdivided into *univocal*, where ſeveral things are diſtinctly repreſented as under ſome common ratio, or in the ſame degree of perfection; *analogous*, where ſeveral things are repreſented as under ſome proportional likeneſs; and *equivocal*, where they are repreſented immediately as ſuch, without regard to any common ratio or likeneſs.

CONCEPTION, in medicine, denotes the firſt formation of the embryo, or fœtus, in the womb.

Conception is no other than ſuch a concourſe and commixture of the prolific ſeed of the male with that of the female, in the cavity of the uterus, as immediately produces an embryo. See EMBRYO.

The ſymptoms of *conception*, or pregnancy, are, when in a few days after the conjugal act, a ſmall pain is perceived about the navel, and is attended with ſome gentle commotions in the bottom of the abdomen; and within one, two, three, or even four months, the menſes ceaſe to flow, or prove in leſs quantity than uſual. Upon the firſt failure of this kind, the woman begins to count the ſeries of her weeks, without taking any notice of the time before elapſed: after this, or between the ſecond or third months, but generally about the third, the motions of the embryo become perceivable to the mother; who hereupon becomes troubled with a nauſea, vomiting, loathing, longing, &c. About this time the breaſts begin to ſwell, grow hard and painful, and contain a little milk; the nipples alſo become larger, firmer, and darker-coloured, a livid circle appearing round them: the eyes ſeem ſunk and hollow. During the two firſt months pregnancy, the woman grows thinner, and ſlenderer; the abdomen being alſo depreſſed; though it afterwards diſtends, and grows gradually larger.

The manner wherein conception is effected is thus laid down by the modern writers: in the ſuperficies of the ovaries of women, there are found little pellucid ſpherules, conſiſting of two concentric membranes, filled with a lymphatic humour, and connected to the ſurface of the ovaria, underneath the integument, by a thick calix, contiguous to the extremities of the minute ramifications of the fallopian tubes.

Theſe ſpherules, by the uſe of venery, grow, ſwell, raiſe, and dilate the membrane of the ovary into the form of papillæ; till, the head propending from the ſtalk, it is at length ſeparated from it; leaving behind it a hollow cicatrix, in the broken membrane of the ovary; which, however, ſoon grows [illegible] again.

Now, in theſe ſpherules, while ſtill adhering to the ovary, fœtus's have been frequently found: whence it appears, that theſe are a kind of ova, or eggs, deriving their ſtructure from the veſſels of the ovary, and their liquor from the humours prepared therein.

Hence, alſo, it appears, that the fallopian tubes being ſwelled, and ſtiffened by the act of venery, with their muſcular fimbriæ, like fingers, may embrace the ovaries, compreſs them, [illegible] by that compreſſion expand their own mouths: and thus the eggs, now mature, and detached as before, may be [illegible] into their cavities; and thence conveyed into the cavity of the uterus; where they may either be cheriſhed and retained, as when they meet with the male ſeed; or, if they want that, again expelled.

Hence the phænomena of falſe *conceptions*, abortions, fœtus's found in the cavity of the abdomen, the fallopian tubes, &c.

[illegible] in coition, the male ſeed, abounding with living animalcules, agitated with a great force, a briſk heat, and, probably, [illegible] a great quantity of animal ſpirits, is violently impelled through the mouth of the uterus, which on this occaſion is [illegible], and through the valves of the neck of the uterus, which on this occaſion are laxer than ordinary, into the uterus itſelf; which now, in like manner, becomes more active, turgid, hot, inflamed, and moiſtened with the flux of its lymph and ſpirits, by means of the titillation excited in the nervous papillæ by the attrition againſt the rugæ of the vagina.

The ſemen thus diſpoſed in the uterus, is retained, heated, and agitated, by the convulſive conſtriction of the uterus itſelf; till meeting with the ova, the fineſt and moſt animated part enters through the dilated pores of the membranula of the ovum, now become glandulous, is there retained, nouriſhed, dilated, grows to its umbilicus, or navel; ſtifles the other leſs lively animalcules: and thus is *conception* effected.

Hence, it appears, that *conception* may happen in any part where the ſemen meets with an ovum: thus, whether it be carried through the fallopian tube to the ovary, and there caſt upon the ovum; or whether it meet with it in ſome receſs of the tube itſelf; or, laſtly, whether it join it in the cavity of the uterus; it may ſtill have the ſame effect; as it appears from obſervation it actually has. But it is probable, that *conception* is then moſt perfect, when the two, *viz.* the ſemen and ovum, are carried at the ſame time into the uterus, and there mixed, &c.

Other anatomiſts chooſe to ſuppoſe the male ſeed taken up, ere it arrive in the uterus, by the veins which open into the vagina, &c. and thus mixed with the blood; by which, in the courſe of circulation, it is carried, duly prepared, into the ovary, to impregnate the eggs. See GENERATION.

CONCEPTION *immaculate* of the holy virgin, is a feaſt eſtabliſhed in honour of the holy virgin; particularly with regard to her having been conceived and born *immaculate*, i. e. without original ſin; held in the Romiſh church on the 8th of December.

Allatius, in his *prolegomena* on Damaſcenus, endeavours to prove this feaſt to have been celebrated by ſeveral churches in the eaſt, as early as the eighth century.

The *immaculate conception* is the great head of controverſy between the Scotiſts and Thomiſts; the former maintaining, and the latter impugning it.

The Dominicans eſpouſed the party of S. Thomas, and held out a long time in defence of the virgin's being conceived in original ſin: they were condemned by pope Clement VII. in 1308. at the proſecution of the univerſity of Paris, and were obliged to retract. The council of Trent, *ſeſſ.* v. in the decree *of original ſin*, declares it not to be the intention of the council to include the virgin under it; her *conception* it calls *immaculate*; and appoints the conſtitutions of Sixtus IV. to be obſerved with regard thereto.

Some authors have obſerved ſeveral paſſages diſperſed in the editions of St. Thomas's works, which aſſert the *immaculate conception* in expreſs terms; but many of them are corrupted in the later editions, ſay ſome: though others will have the corruption lie on the ſide of the old ones.

In the three Spaniſh military orders of S. James of the ſword, calatrava, and alcantara; the knights take a vow, at their admiſſion, to defend the *immaculate conception.* This reſolution was firſt taken in 1652.

Peter d'Alva and Aſtorga has publiſhed forty-eight huge volumes in folio, on the myſteries of the conception.

Religious of the order of CONCEPTION; ſee THEATINS.

CONCERT, or CONCERTO, a number, or company of muſicians playing, or ſinging the ſame ſong, or piece of muſic, together.

The word *concert* may be applied where the muſic is only melody, *i. e.* where the performers are all either in uniſon, or only at the interval of an octave; but it is more properly, as well as more uſually, underſtood of harmony, or where the muſic conſiſts of divers parts, as baſs, tenor, &c.

CONCESSI, a term much uſed in conveyances, &c. its effect is to create a covenant, as *dedi* does a warranty. See COVENANT.

CONCESSION, in rhetoric, a figure whereby ſomething is granted, or allowed to the adverſary, either to prevent being detained by unneceſſary incidents, or to make ſome advantage of. *I will not conteſt with you the reality of the contract; what I plead for is relief againſt the injuſtice of it—True, ſhe is fair; but ought ſhe not to ſhew her acknowlegements to heaven for the favour, by making a virtuous uſe of her beauty?*

CONCHA *, in anatomy, a name given the ſecond, or inward cavity of the auricle, or external ear; reaching to the entrance of the auditory duct. See EAR.

Some alſo give the ſame name to the firſt cavity of the inward ear, which others call the *drum*; and others to the veſtibulum of the labyrinth, which is the ſecond cavity of the internal ear.

CONCHOID, or CONCHILIS, in geometry, a curve line which always approaches nearer a ſtrait line to which it is inclined, but never meets it.

It is deſcribed thus: draw a right line BD (*Tab. Analytics, Fig.* 1.), and another AC, perpendicular to it in E; draw any number of right lines, as CM, CM, cutting BD in Q; make QM=QN=AE=EF; the curve wherein the points MM are found, is the *conchilis*, or *conchois prima*; ſo called by its inventor Nicomedes. The others, wherein the points N N are found, is the *conchois ſecunda*; the right line B D the *rule*, the point C the *pole*. The inventor alſo contrived an inſtrument, whereby the firſt *conchois* may be deſcribed mechanically: thus, in the rule A D (*Tab. Analytics, Fig.* 2.) is a chanel or groove cut, ſo as a ſmooth nail, firmly fixed in the moveable rule C B, in the point F, may ſlide freely within it: into the rule E G is fixed another nail in K, for the moveable rule C B to ſlide upon.

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* The word has its origin from a reſemblance this cavity bears to a *ſea-ſhell*, called in Latin *concha*.

If then the rule B C be ſo moved, as that the nail F paſſes along the canal A D; the ſtyle, or point in C, will deſcribe the firſt *conchoid*.

Now let $AP = x$ (*Fig.* 1.); $AE = a$; $PE = MR = a - x$; wherefore, as x increaſes, $a - x$ or MR will decreaſe; and therefore the curve continually approaches nearer to the rule B D.

In the ſame manner it appears, that the right line N O muſt continually decreaſe; and therefore that the ſecond *conchoid*, alſo, muſt continually approach nearer the rule.

But inaſmuch as between each *conchoid* and the right line B D, there will ſtill be the right line Q M or Q N, equal to A E; neither of the *conchoids* can concur with the right line B D: conſequently, B is an aſymptote of each *conchoid*. See Asymptote.

There will be other kinds of *conchoids* produced, if $CE : CQ :: QM : AE$; or indefinitely, if $CE^m : CQ^m :: QM^m : AE^m$: wherefore, if $CE = b$, $EA = a$, $CQ = x$, $QM = y$; then, $ab = xy$: and for infinite *conchoids*, $a^m b^m = x^m y^m$.

CONCILIO—*Querelam coram rege* & Concilio. See Querela.

CONCINNOUS *intervals*, in muſic.—Diſcords are diſtinguiſhed into *concinnous* and *inconcinnous* intervals: the *concinnous* are ſuch as are fit for muſic, next to, and in combination with concords; being neither very agreeable nor diſagreeable in themſelves; but having a good effect, as by their oppoſition they heighten the more eſſential principles of pleaſure; or as, by their mixture and combination with them, they produce a variety neceſſary to our being better pleaſed.

The other diſcords, that are never uſed in muſic, are called *inconcinnous*.

Syſtems are alſo divided into *concinnous* and *inconcinnous*. A ſyſtem is ſaid to be *concinnous*, or concinnouſly divided, when the parts thereof, conſidered as ſimple intervals, are *concinnous*; and are, beſides, placed in ſuch an order, between the extremes, as that the ſucceſſion of ſounds from one extreme to the other, may have an agreeable effect.

Where the ſimple intervals are inconcinnous, or ill-diſpoſed between the extremes, the ſyſtem is ſaid to be *inconcinnous*.

CONCLAVE, an aſſembly, or meeting of all the cardinals that are at Rome, ſhut up for the election of a pope. See Pope, and Election.

The *conclave* had its riſe in the year 1270. and on this occaſion: Clement IV. being dead at Viterbo, in 1268. the cardinals were two years without being able to agree on the election of a ſucceſſor: in effect, things were carried to ſuch paſs, that they were upon the point of breaking up, without coming to any concluſion at all.

The inhabitants of Viterbo, then, being appriſed of their deſign, by the advice of S. Bonaventure, then at Viterbo, ſhut the gates of their city, and locked up the cardinals in the pontifical palace adjoining to the cathedral, till they were brought to a better underſtanding.

Hence aroſe the cuſtom which has ſince prevailed, of ſhutting up the cardinals in a ſingle palace, till they have elected the pope.

Such was the origin of the *conclave*, as related by Onuph. Panvinius, Ciaconius, and Papebroch.

Conclave is alſo uſed for the place wherein the election of the pope is performed; which is, now, at St. Peter's in the Vatican; tho' Gregory X. and Clement V. appointed it ſhould always be held in the place where the laſt pope ſhould die.

While the affair is in hand, if it be in winter, the walls and windows are all mured up, excepting only a ſingle pane, to give a little light: in ſummer the windows are not cloſed; but the great door of the hall is ſecured with four locks, and four bolts; an aperture being, however, left, to ſupply the impriſoned prelates with victuals through.

In the hall, which is very ample, there are cells or ſtalls erected for as many cardinals as are to be preſent at the election; the cells being only ſeparated by deal boards.

The cells are marked with letters of the alphabet, and are diſtributed to the cardinals by lot: each cardinal puts his arms on the cell that falls to his ſhare.

After the aſſembly has continued three days, they are only allowed one diſh for a meal; and after five days, only bread and water: though this rule is not over-religiouſly regarded.

Each cardinal is allowed two *concláviſts*, or ſervants to attend him, and to be ſhut up with him.

Matthew Paris ſays, the word *conclave* antiently ſignified the pope's wardrobe.

It is a popular proverb in Italy, *chi entra papa, eſce cardinale*; he who enters pope, comes out cardinal; *q. d.* he who according to common report will be elected pope, ordinarily is not.

CONCLUSION, in logic, the laſt part of an argument; or the conſequence drawn from ſomething either aſſumed or proved before.

The *concluſion* of an argument contains two parts: the *conſequent*, which is the matter of it; and the *conſequence*, which is its form, and which, of a ſimple abſolute propoſition, renders the *concluſion* relative to the premiſes whence it is drawn.

The queſtion, and *concluſion*, ſay the ſchoolmen, are the ſame ideas, only conſidered in different views, or relations: in the queſtion they are conſidered as doubtful; in the *concluſion* as void of doubt.

Conclusion, in oratory, conſiſts of two parts; the *recapitulation* or *enumeration*, and the *paſſions*.

The recapitulation conſiſts in a repetition of the principal arguments. See Recapitulation.

CONCLUSIVE *Conjunctions*. See the article Conjunction.

CONCOCTION, in medicine, the change which the food undergoes in the ſtomach, &c. to become chyle.

This change conſiſts in deſtroying the texture and coheſion of the parts of the food; preparing part of it for ſome particular ſervice of the animal frame, and the reſt to be carried off as excrements, by proper emunctories.

The antients gave the term *coction*, or *concoction*, to what we now ordinarily call *digeſtion*; from a notion of the food's being, as it were, boiled in the ſtomach; and its nutritious juice expreſſed by the heat of the adjacent parts.

They aſſigned two *concoctions*, viz. one in the ſtomach, and a ſecond in the ſmall inteſtines, &c. which latter they attributed to the admixture of the bile and pancreatic juice.

The ſeveral *concoctions* in the body, with regard to the propagation of the ſpecies, and the preſervation of the individual, have been ſince reduced to five: theſe are *chyloſis* for chyle, *chymoſis* for chyme, *hæmatoſis* for blood, *pneumatoſis* for ſpirits, and *ſpermatoſis* for ſeed. See Chylosis, Chymosis, Hæmatosis, &c. ſee alſo Coction.

CONCOMITANT, in theology, ſomething that accompanies, or goes along with, another.

Concomitant grace, is that which God affords us during th courſe of our actions to enable us to perform them; and a the Romiſh ſchoolmen ſay, to render them meritorious.

Concomitant grace differs, at leaſt with regard to its effe from preventing grace: the latter is given us to prevent a action, the former to accompany it.

According to the Romiſh doctrine, the blood of Jeſus Chri is under the accidents of wine, as his body is under the ac dents of bread, by *concomitance*.

Concomitant *Neceſſity*. See the article Necessity.

CONCORD, in grammar, that part of ſyntax, or conſtru tion, whereby the words of a ſentence agree among themſelve *i. e.* whereby nouns are put in the ſame caſe, number, ge der, &c. and verbs in the ſame number and perſon, w nouns and pronouns.

The rules of *concord* are generally the ſame in all languag as being of the nature of what is in uſe almoſt every-where the better diſtinguiſhing of diſcourſe.

Thus, the diſtinction of the two numbers ſingular and plu obliges us to make the adjective agree with the ſubſtantive number; that is, to put the one either in this or that numb according as the other is: for the ſubſtantive being the th confuſedly, tho' directly, marked by the adjective; if the ſ ſtantive word mark ſeveral, there are ſeveral ſubjects of form marked by the adjective, and of conſequence this ſho be in the plural; as *homines docti*, &c.

Again, the diſtinction of maſculine and feminine, rende neceſſary to put the ſubſtantive and adjective in the ſ degree.

And verbs ſhould have *concord* or agreement with nouns pronouns in number and perſon.

If any thing occur apparently contrary to thoſe rules, it a figure; *i. e.* ſomething is implied, or the ideas are con ed more than the words themſelves.

Concord, in law, is the agreement between two parties intend the levying a fine of lands to one another, how a what manner it ſhall paſs.

Concord is alſo an agreement made upon any treſpaſs co ted (betwixt two, or more); and is divided into *concor cutory*, and *concord executed*.

Plowden obſerves, that the firſt binds not, being imp but the latter is perfect, and binds the party.

Others are of opinion, that *concords* executory are p and bind no leſs than thoſe executed.

Concord, in muſic, denotes the relation of two ſounds t always agreeable to the ear, whether applied in ſucce conſonance.

If two ſingle ſounds be in ſuch a relation, or have ſuc ference of tune, as that, being ſounded together, the a mixture, or compound ſound, which affects the e pleaſure; that relation is called *concord*: and whate ſounds make an agreeable compound in conſonance ſame will always be pleaſing, in ſucceſſion, or wi each other agreeably.

The reverſe of a *concord*, is what we call a *diſcord*; a denomination of all the relations or differences of t have a diſpleaſing effect. See Discord.

Concord and harmony are, in effect, the ſame thing; though cuſtom has applied them differently. As *concord* expreſſes the agreeable effect of two ſounds in conſonance: ſo harmony expreſſes the ſame ſort of agreement in a greater number of ſounds in conſonance: add, that harmony always implies conſonance; but *concord* is ſometimes applied to ſucceſſion: tho' never but when the terms will make an agreeable conſonance: whence it is that Dr. Holder, and ſome other writers, uſe the word *conſonance* for what we call *concord*.

Uniſonance, then, being the relation of equality between the tunes of two ſounds, all uniſons are *concords*, and in the firſt degree: but an interval being a difference of tune, or a relation of inequality between two ſounds, becomes a *concord* or diſcord, according to the circumſtances of that particular relation. Indeed, ſome reſtrain *concord* to intervals, and make a difference of tune eſſential thereto; but that is precarious: and Mr. Malcolm thinks, that as the word implies *agreement*, it is applicable to uniſon in the firſt degree.

It is not eaſy to affirm the reaſon or foundation of *concordance*: the differences of tune, we have elſewhere obſerved, take their riſe from the different proportions of the vibrations of the ſonorous body, *i. e.* of the velocity of thoſe vibrations in their recourſes; the frequenter thoſe recourſes are, the more acute will be the tune, and *vice verſa*.

But the eſſential difference between *concord* and diſcord lies deeper: there does not appear any natural aptitude in the two ſounds of a *concord*, to determine it to give us a pleaſing ſenſation, more than in the two ſounds of a diſcord: theſe different effects are merely arbitrary, and muſt be reſolved into the divine good pleaſure.

We know by experience what proportions and relations of tune afford pleaſure, and what do not; and we know alſo how to expreſs the difference of tune by the proportion of numbers; we know what it is pleaſes us, though we do not know why: we know, *v. gr.* that the ratio of 1 : 2 conſtitutes *concord*, and 6 : 7 diſcord; but on what original grounds agreeable or diſagreeable ideas are connected with thoſe relations, and the proper influence of the one on the other, is above our reach!

By experience we know, that the following ratios of the lengths of chords are all *concord*; viz. 2 : 1, 3 : 2, 4 : 3, 5 : 4, 6 : 5, 5 : 3, 8 : 5; that is, take any chord for a fundamental, which ſhall be repreſented by the number 1, and the following diviſions thereof will be all *concord* with the whole; *viz.* $\frac{1\ \ 2\ \ 3\ \ 4\ \ 5\ \ 3\ \ 5}{2.\ 3.\ 4.\ 5.\ 6.\ 5.\ 8.}$

So that the diſtinguiſhing character between *concords* and diſcords muſt be looked for in theſe numbers, expreſſing the intervals of ſound; not abſtractedly, and in themſelves, but as expreſſing the number of vibrations.

Now, uniſons are in the firſt degree of *concord*, or they have the moſt perfect likeneſs or agreement in tune; and therefore have ſomething in them acceſſory to that agreement which is found, leſs or more, in every *concord*: but it is not true, that the nearer two ſounds come to an equality of tune, the more agreement they have; therefore, it is not in the equality or inequality of the numbers that this agreement lies.

Further, if we conſider the number of vibrations made in any given time by two chords of equal tune; on the principle laid down, they are equal: and therefore the vibrations of the two chords coincide, or commence together as frequently as poſſible, *i. e.* they coincide at every vibration; in the frequency of which coincidence, or united mixture of the motions of the two chords, and of the undulations of the air occaſioned thereby, it is, that the difference of *concord* and diſcord muſt be ſought.

Now, the nearer the vibrations of two ſtrings approach to a coincidence as frequent as poſſible, the nearer they ſhould approach that condition, and conſequently the agreement, of uniſons; which is confirmed by experience.

For if we take the natural ſeries 1, 2, 3, 4, 5, 6, and compare each number to the next, as expreſſing the number of vibrations in the ſame time of two chords, whoſe lengths are reciprocally as thoſe numbers; the rule will be found exact, for 1 : 2 is beſt, then 2 : 3; after 6 the conſonance is unſufferable; the coincidences being too rare: tho' there are other ratios that are agreeable, beſides thoſe found in that continued order; *viz.* :5, and 5 : 8, which, with the preceding five, are all the *concording* intervals within, or leſs than an octave, or 1 : 2; that is, whoſe acuteſt term is greater than half the fundamental.

On this principle, 3 : 5 will be preferable to 4 : 5; becauſe thoſe being equal in the number of vibrations of the acuter term, there is an advantage on the ſide of the fundamental in the ratio 3 : 5, where the coincidence is made at every third vibration of the fundamental, and every fifth of the acute term: ſo alſo the ratio 5 : 8 is leſs perfect than 5 : 6; becauſe, though the vibrations of each fundamental that go to one coincidence are equal; yet in the ratio 5 : 6, the coincidence at every ſixth of the acute term, and only at every eighth in the other caſe.

Thus, we have a rule for judging of the preference of *concords*, from the coincidence of their vibrations: agreeable to which they are diſpoſed into the order of the following table; in which the names of the *concords* in practice, the ratio of their vibrations, the lengths of the chords, and the number of coincidences in the ſame, are expreſſed.

Ratio's, or vibrations.	*Grave Term.*		*Acute Term.*	Coincid.
Uniſon —	— 1	:	1	
Octave, 8ve	— 2	:	1	60
Fifth, 5th —	— 3	:	2	30
Fourth, 4th	— 4	:	3	20
Sixth, gr. —	— 5	:	3	20
Third, gr. —	— 5	:	4	15
Third, leſſer	— 6	:	5	12
Sixth, leſſer	— 8	:	5	12
	Grave		*Acute Lengths.*	

Though this order be ſettled by reaſon, yet it is confirmed by the ear. On this bottom, *concords* muſt ſtill be the more perfect, as they have the greateſt number of coincidences, with regard to the number of vibrations in both the chords; and where the coincidences are equal, the preference will fall on that interval, whoſe acuteſt term has feweſt vibrations to each coincidence: which rule, however, is in ſome caſes contrary to experience; and yet it is the only rule yet diſcovered.

F. Merſenne, indeed, after Kircher, gives us another ſtandard for ſettling the comparative perfection of intervals with regard to the agreement of their extremes in tune: and it is this.

The perception of *concordance*, ſay they, is nothing but the comparing of two or more different motions which in the ſame time affect the auditory nerve: now we cannot make a certain judgment of any conſonance, till the air be as oft ſtruck in the ſame time by two chords, as there are units in each member expreſſing the ratio of that *concord*; v. gr. we cannot perceive a fifth, till two vibrations of the one chord, and three of the other, are accompliſhed together; which chords are in length as 3 to 2: the rule then is, that thoſe *concords* are the moſt ſimple and agreeable, which are generated in the leaſt time; and thoſe, on the contrary, the moſt compound and harſh, which are generated in the longeſt time.

For inſtance, let 1, 2, 3, be the lengths of 3 chords, 1 : 2 is an octave; 2 : 3 a fifth; and 1 : 3 an octave and fifth compounded, or a twelfth. The vibrations of chords being reciprocally as their lengths, the chord 2 will neceſſarily vibrate once, while the chord 1 vibrates twice, and then exiſts an octave; but the twelfth does not yet exiſt, becauſe the chord 3 has not vibrated once, nor the chord 1 thrice, which is neceſſary to form a twelfth.

Again, for generating a fifth, the chord 2 muſt vibrate thrice, and the chord 3 twice; in which time, the chord 1 will have vibrated 6 times; and thus the octave will be thrice produced, while the twelfth is only produced twice; the chord 2 uniting its vibrations ſooner with the chord 1, than with the chord 3; and they being ſooner conſonant than the chord 1 or 2 with that 3. Whence, that author obſerves, many of the myſteries of harmony, relating to the performance of harmonious intervals, and their ſucceſſion, are eaſily deduced.

But this rule, upon examining it by other inſtances, Mr. Malcolme has ſhewn defective, as it does not anſwer in all poſitions of the intervals with reſpect to each other; but a certain order, wherein they are to be taken, being required: and there being no rule, with reſpect to the order, that will make this ſtandard anſwer to experience in every caſe: ſo that at laſt we are left to determine the degrees of *concord* by experience and the ear.

Not but that the degrees of *concord* depend much on the more or leſs frequent uniting the vibrations, and the ear's being more or leſs uniformly moved, as above; for that this mixture or union in motion is the true principle, or, at leaſt, the chief ingredient in *concord*, is very evident: but becauſe there ſeems to be ſomething farther in the proportion of the two motions, neceſſary to be known, in order to fix a catholic rule for determining all the degrees of *concord*, agreeable to ſenſe and experience.

The reſult of the whole doctrine is ſummed up in this definition.—*Concord* is the reſult of a frequent union, or coincidence of the vibrations of two ſonorous bodies, and, by conſequence, of the undulating motions of the air, which, being cauſed by theſe vibrations, are like and proportionable to them; which coincidence, the more frequent it is, with regard to the number of vibrations of both bodies, performed in the ſame time, *cæteris paribus*, the more perfect is that *concord*: till the rarity of the coincidence, in reſpect of one or both the motions, commence diſcord. *See ſome of the remarkable phænomena of ſounds accounted for from this theory, under the word* UNISON; ſee alſo INTERVAL, *&c.*

M. Carre, in the memoirs of the royal academy of ſciences, lays down a new general propoſition, to determine the proportion which cylinders are to have, in order to form the *concords* or conſonances of muſic. And it is this—that the ſolid cylinders, whoſe ſounds yield thoſe *concords*, are in a triplicate and inverſe ratio of that of the numbers which expreſs the ſame *concords*. Suppoſe, *e. gr.* two cylinders, the diameters of whoſe baſes and lengths are as 3 to 2; it is evident their ſolidities will be in the ratio of 27 to 8, which is the triplicate ratio of 3 to 2: we ſay then, that the ſounds of thoſe two cylinders will produce a fifth, which is expreſſed by thoſe numbers; and that the biggeſt and longeſt will yield the grave ſound, and the ſmalleſt the acute one.—And the like of others.

Concords are divided into *ſimple*, or original, and *compound*.

A *ſimple*, or *original concord*, is that whoſe extremes are at a diſtance leſs than the ſum of any two other *concords*.

On the contrary, a *compound concord* is equal to two or more *concords*.

Other muſical writers ſtate the diviſion thus: an octave 1 : 2 and all the inferior *concords* above expreſſed, are all ſimple and original *concords:* and all greater than an octave, are called *compound concords*; as being compoſed of, and equal to the ſum of one or more octaves, and ſome ſingle *concord* leſs than an octave; and are uſually, in practice, denominated from that ſimple *concord*.

As to the compoſition and relations of the original concords, by applying to them the rules of the addition and ſubtraction of intervals, they will be divided into *ſimple* and *compound*, according to the firſt and more general notion; as in the following table.

Simple *Concords.*	Compound *Concords.*			
5 : 6 a 3d leſſ.	5th	3d g. and 3d l.	8ve. compoſed of	5th 4th or 6th g. 3d l. or 3d g. 3d l. 4th.
4 : 5 a 3d gr.	6th l.	4th 3d l.		
3 : 4 a 4th.	6th g.	4th 3d g.		

The octave is not only the firſt *concord* in point of perfection, the agreement of whoſe extremes is greateſt, and the neareſt to uniſon; inſomuch that, when ſounded together, it is impoſſible to perceive two different ſounds; but it is alſo the greateſt interval of the ſeven original *concords*; and, as ſuch, it contains all the leſſer, which derive their ſweetneſs from it, as they ariſe more or leſs directly out of it; and which decreaſe gradually, from the octave to the leſſer ſixth, which has but a ſmall degree of *concord*.

What is very remarkable, is the manner wherein theſe leſſer *concords* are found in the octave, which ſhews their mutual dependencies.

For, by taking both an harmonical and arithmetical mean between the extremes of the octave, and then both an harmonical and arithmetical mean betwixt each extreme, and the moſt diſtant of the two means laſt found; *viz.* betwixt the leſſer extreme and the firſt arithmetical mean, and betwixt the greater extreme and the firſt harmonical mean; we have all the leſſer *concords*.

Thus, if betwixt 360 and 180 the extremes of octave, we take an arithmetical mean, it is 270; and an harmonical mean is 240: then, betwixt 360 the greateſt extreme, and 240 the harmonical mean, take an arithmetical mean, it is 300; and an harmonical mean, is 288. Again, betwixt 180 the leſſer extreme of the octave, and 270 the firſt arithmetical mean, it is 225, and an harmonical one 216.

Thus have we a ſeries of all the *concords*, both aſcending towards acuteneſs from a common fundamental, 360; and deſcending towards gravity from a common acute term 180: which ſeries has this property, that taking the two extremes, and any other two at equal diſtances, the four will be in geometrical proportion.

The octave, by immediate diviſion, reſolves itſelf into a fourth and fifth; the fifth, again, by immediate diviſion, produces the two thirds; the two thirds are therefore found by diviſion, though not by immediate diviſion: and the ſame is true of the two ſixths. Thus do all the original *concords* ariſe out of the diviſion of the octave; the fifths and fourths immediately and directly, the thirds and ſixths mediately.

From the perfection of the octave ariſes this remarkable property, that it may be doubled, tripled, &c. and yet ſtill will perſevere a *concord*, i. e. the ſum of two or more octaves are *concord*; though the more compound will be gradually leſs agreeable: but it is not ſo with any other *concord* leſs than octave; the doubles, &c. whereof are all diſcords.

Again, whatever ſound is *concord* to one extreme of the octave is *concord* to the other alſo: and if we add any other ſimple *concord* to an octave, it agrees to both its extremes; to the neareſt extreme it is a ſimple *concord*, and to the fartheſt a compound one.

Another thing obſervable in this ſyſtem of *concords*, is, that the greateſt number of vibrations of the fundamental cannot exceed five; or that there is no *concord* where the fundamental makes more than five vibrations, to one coincidence with the acute term. It may be added, that this progreſs of the *concords* may be carried on to greater degrees of compoſition, even *in infinitum*; but ſtill the more compound, the leſs agreeable.

So a ſingle octave is better than a double one, and that than a triple one; and ſo of fifths, and other *concords*. Three or four octaves is the greateſt length we go in ordinary practice: the old ſcales went but to two; no voice or inſtrument will well go above four. See Third, Fourth, and Fifth.

CONCORDANCE, a dictionary or index to the bible, wherein all the words, uſed in the courſe of the inſpired writings, are ranged alphabetically; and the various places where they occur referred to; to aſſiſt in finding out paſſages, and comparing the ſeveral ſignifications of the ſame word.

Cardinal Hugo de St. Charo is ſaid to have employed 500 monks at the ſame time in compiling a Latin *concordance:* beſide which, we have ſeveral other *concondances* in the ſame language; one, in particular, called the *concordance* of England, compiled by J. Darlington of the order of predicants; another more accurate one, by the Jeſuit de Zamora.

R. Mordecai Nathan has furniſhed us with a Hebrew *concordance*, firſt printed at Venice in 1523. containing all the Hebrew roots branched into their various ſignifications, and under each ſignification all the places in ſcripture wherein it occurs: but the beſt and moſt uſeful Hebrew *concordance* is that of Buxtorf, printed at Baſil in 1632.

The Greek *concordances* are only for the New Teſtament: indeed we have one of Conr. Kircher's on the old; but this is rather a concordantial dictionary than a *concordance*; containing all the Hebrew words in an alphabetical order; and underneath, all the interpretations or ſenſes the ſeventy give them; and in each interpretation, all the places where they occur in that verſion.

Calaſius, an Italian Cordelier, has given us *concordances* of the Hebrew, Latin, and Greek, in two columns: the firſt, which is Hebrew, is that of R. Mordecai, word for word, and according to the order of the books and chapters: in the other column is a Latin interpretation of each paſſage of ſcripture quoted by R. Mordecai: this interpretation is Calaſius's own; but in the margin he adds that of the ſeventy and the vulgate, when different from his. The work is in four volumes folio, printed at Rome in 1621.

CONCORDANT *verſes*, ſuch as have ſeveral words in common; but which, by the addition of other words, convey an oppoſite, at leaſt, a different meaning. Such are thoſe,

$$\textit{Et}\left\{\begin{matrix}\textit{Canis}\\ \textit{Lupus}\end{matrix}\right\}\textit{in ſilva}\left\{\begin{matrix}\textit{venatur}\\ \textit{nutritur}\end{matrix}\right\}\ \&\ \textit{omnia}\left\{\begin{matrix}\textit{ſervat.}\\ \textit{vaſtat.}\end{matrix}\right.$$

CONCORDAT, in the canon law, denotes a covenant, or agreement concerning ſome beneficiary matter, as a reſignation, permutation, promotion, or the like.

The council of Trent, ſeſſ. vi. *de reform.* cap. 4. ſpeaking of *concordats* made without the authority and approbation of the pope, calls them *concordias quæ tantum ſuos obligant auctores, non ſucceſſores*. And the congregation of cardinals, who have explained this decree, declares alſo, that a *concordat* cannot be valid ſo as to bind ſucceſſors, unleſs confirmed by the pope.

Concordat is alſo uſed, abſolutely, among the French, for an agreement concluded at Bologna in 1516. between pope Leo X. and Francis I. of France, for regulating the manner of nominating to benefices.

The *concordat* ſerves in lieu of the pragmatic ſanction, which had been abrogated; or, rather, it is the pragmatic ſanction ſoftened and reformed.

There is alſo a German *concordat*, made between pope Nicolas V. and the emperor Frederic III. and the princes of Germany, in 1448. relating to beneficiary matters.

CONCOURSE, or **Concurrence**, the reciprocal action of divers perſons, or things, co-operating toward the ſame effect, or end.

Divines generally hold, that the actions and operations of all creatures are continually dependent on the immediate *concurrence* of the Divine Mind: for ſecond cauſes to act, or produce effects, God himſelf muſt *concur*, and by his influence give them the efficacy they themſelves are deſtitute of: if they did not need the immediate *concurrence* of God to make them act, they would have a ſort of independency, which muſt be injurious to the immediate Creator to ſuppoſe. See Cause.

The ſchoolmen diſtinguiſh two kinds of *concurrence*; viz. *mediate*, which conſiſts in giving a power or faculty to act; and *immediate*, which is a cotemporary influence of one cauſe along with another, to produce an effect.—Thus, the grandfather *concurs mediately* to the production of a grandſon, as he originally gives the power of generating to the father: but the father *concurs immediately* with the mother to the production of the ſame child. Now it is allowed, that God *concurs mediately* with all his creatures, to enable them to act: but whether this be ſufficient; or whether it be farther required, that he *concur* with them *immediately* by a new influence, for the production of every act, in the ſame manner as the father concurs with the mother toward producing the child, is controverted!—The generality of ſcholaſtic writers are for the affirmative; Durandus and his followers maintain the negative.

Point of **Concourse**. See the article Focus.

CONCRETE, in the ſchool-philoſophy, an aſſemblage, o compound. See Compound.

Phyſical **Concrete**, or a **Concrete** *body*, may denote an mixed body, or body compoſed of different principles; a conſequently, all ſenſible bodies whatever, as all bodies ari from a coalition of divers elements, or at leaſt of dive principles, matter and form.

But, in ſtrictneſs, *concrete* is only uſed for thoſe compoun wherein the ingredients ſtill retain their diſtinct natures, no are wholly converted into any new common nature.

Authors diſtinguiſh *natural concretes* and *artificial* ones: timony is a *natural concrete*, and ſoap a *factitious concrete*.

Logical **Concrete**, or a **Concrete** *word*, called alſo *paronym* is that which has a compound ſignification, as denoting both th ſubje ſubject, and ſome quality or accident of the ſubject, which gives it its denomination.

Such, *e. gr.* are, *man*, *learned*, *white*; for *man* ſignifies as much as *having human nature*; *learned*, as much as *having learning*, &c. Hence, the word *concrete* is chiefly uſed to expreſs the union of qualities or quantities with the bodies or ſubjects, without any ſeparation, even in idea.

The oppoſite term, whereby things are ſeparated in thought, is *abſtract*.

Concrete properly ſignifies a ſubject accompanied with its form or quality; as *pious*, *hard*, *white*: *abſtract*, on the contrary, expreſſes the form and quality without the ſubject, as *piety*, *hardneſs*, *whiteneſs*.

CONCRETE *numbers* are thoſe which are applied to expreſs or denote any particular ſubject; as, two men, three pounds, two thirds of a ſhilling, *&c.*

Whereas, if nothing be connected with a number, it is taken abſtractedly or univerſally: thus, three ſignifies only an aggregate of three units; let thoſe units be men, pounds, or what you pleaſe.

CONCRETION, the act whereby ſoft bodies are rendered hard: or, an inſenſible motion of the particles of a fluid or ſoft body, whereby they come to a conſiſtence.

The word is uſed indifferently for *induration*, *condenſation*, *congelation*, and *coagulation*.

CONCRETION is alſo uſed for the coalition of ſeveral little particles into a ſenſible maſs, called a *concrete*; by virtue of which union, the body acquires this or that figure, and theſe or thoſe properties. See CONCRETE.

CONCUBINAGE ſometimes expreſſes a criminal, or prohibited commerce between the two ſexes; in which ſenſe it comprehends *adultery*, *inceſt*, and *ſimple fornication*.

In its more reſtrained ſenſe, *concubinage* is uſed for a man's and a woman's cohabiting together in the way of marriage; without having paſſed the ceremony thereof.

Concubinage was antiently tolerated: the Roman law calls it an allowed cuſtom, *licita conſuetudo*. When this expreſſion occurs in the conſtitutions of the Chriſtian emperors, it ſignifies what we now call a *marriage in conſcience*.

The *concubinage* tolerated among the Romans in the time of the republic, and of the heathen emperors, was that between perſons not capable of contracting marriage together: nor did they even refuſe to let inheritances deſcend to children which ſprung from ſuch a tolerated cohabitance.

Concubinage between ſuch perſons they looked on as a kind of marriage, and even allowed it ſeveral privileges: but then this *concubinage* was confined to a ſingle perſon, and was of perpetual obligation, as much as marriage itſelf.

Hottoman obſerves, that the Roman laws had allowed of *concubinage* long before Julius Cæſar made that law whereby every one was allowed to marry as many wives as he pleaſed. The emperor Valentinian, Socrates tells us, allowed every man two. See MARRIAGE.

ONCUBINAGE is alſo uſed for a marriage performed with leſs ſolemnity than the formal marriage; or a marriage with a woman of inferior condition, and to whom the huſband does not convey his rank, or quality.

Cujas obſerves, that the antient laws allowed a man to eſpouſe, under the title of *concubines*, certain perſons, ſuch as were eſteemed unequal to him, on account of the want of ſome qualities requiſite to ſuſtain the full honour of marriage. He adds, that though *concubinage* was beneath marriage, both as to dignity, and to civil effects; yet was *concubine* a reputable title, very different from that of *miſtreſs* among us.

The commerce was eſteemed ſo lawful, that the *concubine* might be accuſed of adultery in the ſame manner as a wife.

This kind of *concubinage* is ſtill in uſe in ſome countries, particularly in Germany, under the title of a *half-marriage*, *morgengabic marriage*, or *marriage with the left-hand*; alluding to the manner of its being contracted, *viz.* by the man's giving the woman his left-hand inſtead of the right. See MARRIAGE.

This is a real marriage, tho' without ſolemnity: the parties are both bound for ever; tho' the woman be thus excluded from the common rights of a wife, for want of quality or fortune.

ONCUBINE, a woman whom a perſon takes to cohabit with him, in the manner, and under the character, of a wife, without being authorized thereto by a legal marriage. See CONCUBINAGE.

ONCUBINE is alſo uſed for a real, legitimate, and only wife, diſtinguiſhed by no other circumſtance, but a diſparity of birth or condition between her and the huſband.

Du Cange obſerves, that one may gather from ſeveral paſſages in the epiſtles of the popes, that they antiently allowed of ſuch *concubines*. The ſeventeenth canon of the firſt council of Toledo declares, that he, who with a faithful wife, keeps a *concubine*, is excommunicated; but that if the *concubine* ſerved him as wife, ſo that he had only one woman, under the title of *concubine*, he ſhould not be rejected from communion: which ſhews that there were legitimate wives under the title of *concubines*.

In effect, the Roman laws did not allow a man to eſpouſe whom he pleaſed; there was required a kind of parity, or proportion, between the conditions of the contracting parties: but a woman of inferior condition, who could not be eſpouſed as a wife, might be kept as a *concubine*; and the laws allowed of it, provided the man had no other wife.

The children of *concubines* were not reputed either legitimate or baſtards, but natural children, and were capable only of donations.

They were deemed to retain the low rank of the mother; and were on this ground unqualified for inheriting the effects of the father.

It is certain the patriarchs had a great number of wives, and that theſe did not all hold the ſame rank; ſome being ſubaltern to the principal wife; which were what we call *concubines*, or half-wives. The Romans prohibited a plurality of *concubines*, and only had regard to the children iſſuing from a ſingle *concubine*, becauſe ſhe might become a legitimate wife. Solomon had 700 wives, and 300 *concubines*: the emperor of China has ſometimes two or three thouſand *concubines* in his palace. Q. Curtius obſerves, that Darius was followed in his army by 365 *concubines*, all in the equipage of queens.

CONCUPISCENCE, among divines, an irregular deſire, appetite, or luſt after carnal things, inherent in human nature ever ſince the fall.

F. Malebranche defines *concupiſcence* to be a natural effort, which the traces or impreſſions of the brain make on the mind, in order to attach it to ſenſible things. The dominion or prevalence of *concupiſcence*, according to him, is what we call *original ſin*. See ORIGINAL *ſin*.

The origin of *concupiſcence* he aſcribes to thoſe impreſſions made on the brain of our firſt parents at their fall; which are ſtill tranſmitted and continued on thoſe of their children: for as animals produce their like, and with like traces in the brain (whence the ſame ſympathies and antipathies in the ſame kind; and whence the ſame conduct on the ſame occaſions); ſo our firſt parents, after their fall, received ſuch deep traces in the brain, by the impreſſion of ſenſible objects, that they might well be ſuppoſed to communicate them to their children.

The ſchoolmen uſe the term *concupiſcible appetite* for the deſire we have of enjoying any good; in oppoſition to *iraſcible appetite*, whereby we eſchew what is evil.

CONCURRENCE. See the article CONCOURSE.

COND, CON, or CONN, in the ſea-language, ſignifies to guide or conduct a ſhip in her right courſe.

He that *conds* her, ſtands aloft with a compaſs before him, and gives the word of direction to the man at helm how he is to ſteer. See STEERING.

If the ſhip go before the wind, or, as they call it, betwixt the ſheets, the word is either *ſtarboard*, or *port the helm*; according as the *conder* would have the helm put to the right or left ſide of the ſhip, upon which the ſhip always goes the contrary way.

If he ſays, *helm a mid-ſhip*, he would have the ſhip go right before the wind, or directly between her two ſheets.

If the ſhip ſail by a wind, or on a quarter wind, the word is, *aloof*, *keep your luff*, *fall not off*, *veer no more*, *keep her to*, *touch the wind*, *have a care of the lee-latch*: all which expreſſions are of the ſame import, and imply that the ſteerſman ſhould keep the ſhip near the wind.

On the contrary, if he would have her ſail more large, or more before the wind, the word is, *eaſe the helm*, *no near*, *bear up*.

If he cries *ſteady*, it means, keep her from going in and out, or making yaws (as they call it), howſoever ſhe ſails, whether large, or before a wind: and when he would have her go juſt as ſhe does, he cries, *keep her thus*, *thus*, &c.

CONDEMNATION, the act of paſſing, or pronouncing ſentence, or giving judgment, againſt a man; whereby he is ſubjected to ſome penalty or puniſhment; either in reſpect of fortune, reputation, or life. See SENTENCE, and PUNISHMENT.

CONDEMNATION *to the galleys*. See GALLEY.

CONDENSATION, the act whereby a body is rendered more denſe, compact, and heavy.

Condenſation conſiſts in bringing the parts cloſer to each other, and increaſing their contact: in oppoſition to *rarefaction*; which renders the body lighter and looſer, by ſetting the parts farther aſunder, and diminiſhing their contact, and of conſequence their coheſion.

Wolfius, and ſome of the more accurate writers, reſtrain the uſe of the word *condenſation* to the action of cold: what is done by external *application*, they call *compreſſion*.

Air eaſily *condenſes*, either by cold, or by art: water congeals, but never *condenſes*; can never be brought into a leſs ſpace, but will even penetrate the moſt ſolid body, even gold, rather than loſe of its bulk.—A ſyrup *condenſes* in ebullition.

It was found, in the obſervatory of France, during the great cold of the year 1670. that the hardeſt bodies, even metals, glaſs, and marble itſelf, were ſenſibly *condenſed* by the cold, and became much harſher, and more brittle, than before; till their former ſtate was retrieved by the enſuing thaw.

Water alone ſeems to expand by cold; inaſmuch as when congealed, the ice takes up more ſpace than the water did before. But this muſt be rather owing to the intromiſſion of ſome foreign matter, as the nitrous particles of the ambient air, than to any proper rarefaction of the water by the cold.

The Carteſians, indeed, taking it for granted that there is no vacuum, deny that there can be any ſuch thing as proper *condenſation*, or rarefaction. According to them, when a body takes up more ſpace than it did before, its parts are diſtended by the detruſion of a ſubtile matter through its pores: and when its bulk, again, is reduced into leſs ſpace, this is owing to the extruſion or egreſs of that matter through the ſame pores; by virtue whereof, the parts of the body, though not the parts of matter, come nearer each other.

For as extenſion and matter, according to them, are the ſame thing; a body can never take up more or leſs place, any otherwiſe than by the acceſſion or diminution of matter: and thus they conclude there is no vacuum.

Now, that, in the rarefactions of groſs bodies, their parts are diſtended by the acceſſion of air, is frequently manifeſt; but this does not follow from the plenitude of the world, but from the fluid and elaſtic nature of air; or from its gravity and preſſure. That there is ſuch a thing as *condenſation*, without the loſs of any matter, is evident from Galileo's experiment: a cock, being with a female ſcrew fitted to a hollow braſs ball, or cylinder, ſo as that a ſyringe, by means of a male ſcrew, may be applied to it; by working the ſyringe, the air will be forced into the ball, and turning the cock, it will be retained; inſomuch that, upon examining the veſſel by the balance, its weight will be found increaſed. If the cock be re-turned, the air will burſt out with violence, and the ball will ſink to its former weight.

From the experiment it follows, 1°, That air may be crouded into a leſs volume and bulk than it ordinarily takes up, and is therefore compreſſible.—*For the quantity of its compreſſion*, ſee Compression.

2°, That from the recovery of its weight, juſt ſo much air is expelled as was injected; and that, therefore, compreſſed air returns to its primitive expanſion, if the compreſſing force be removed; and it has therefore an elaſtic force.

3°, That it is a certain ſign of compreſſion, if, upon opening the orifice of a veſſel, any portion of air be obſerved to fly out.

4°, That ſince the weight of the veſſel is increaſed by injecting air; the aerial maſs muſt have a niſus downwards, in lines perpendicular to the horizon; and is therefore heavy, and preſſes ſubject bodies in lines perpendicular to the horizon; according to the conditions of gravity.

Condenſed air has effects juſt oppoſite to thoſe of rarefied air; birds, &c. appear briſker and more lively therein than in the common air, &c. See Vacuum, Rarefaction, &c.

CONDENSER, a pneumatic engine, whereby an unuſual quantity of air may be crouded into a given ſpace. See Air.

They can by this throw in 2, 3, 4, 5, or 10 atmoſpheres into the *condenſer*, i.e. twice, thrice, four, &c. times as much air as there would be in the ſame compaſs without the engine. See Condensation.

CONDERS, in our cuſtoms, are perſons who ſtand on high places near the ſea-coaſt, in time of herring-fiſhing, to make ſigns with boughs, &c. to the fiſhers which way the ſhoal of herrings paſſes: their courſe being more diſcernible to thoſe who ſtand on high cliffs, by means of a blue colour they cauſe in the water, than to thoſe aboard the veſſels. They are alſo called *huers*, *balkers*, *directors*, &c.

CONDIGNITY.—*Merit of* Condignity. See Merit.

CONDITION, in the civil law, an article of a treaty, or contract; or a clauſe, charge, or obligation, ſtipulated in a contract, or added in a donation, legacy, teſtament, &c.

The donee does not loſe his donative, if it be charged with any diſhoneſt or impoſſible *conditions*. Lawyers diſtinguiſh three kinds of *conditions*, under which a legacy or donation may be made: theſe are the *caſual*, which depends merely on chance; the *poteſtative*, which is abſolutely in our power; and the *mixed condition*, which is both caſual and poteſtative together.

Condition, in common law, is a manner, quality, or reſtriction, annexed to an act; qualifying or ſuſpending the ſame; and making it precarious and uncertain, whether or no it ſhall take effect.

In a leaſe there may be two ſorts of *conditions*, *condition collateral*, and *condition annexed to the rent*.

Collateral **Condition** is that annexed to a collateral or foreign act; as, *v. gr.* that the leſſee ſhall not go to Paris.

Condition is alſo divided into *condition in deed*, and *condition implied*.

Condition *in deed*, is that knit and annexed by expreſs words to the feoffment, leaſe, or grant, either in writing, or without.—As if I infeoffe a man in lands, reſerving a rent to be paid at ſuch a feaſt; *upon condition*, if the feoffee fail of payment, it ſhall be lawful for me to re-enter.

Condition *implied*, called alſo *condition in law*, is when a man grants to another the office of a ſteward, bailiff, keeper of a park, &c. for life: though there be no *condition* expreſſed in the grant, yet the law makes one covertly; which is, that if the grantee do not juſtly execute all things belonging to his office, it ſhall be lawful for the granter to diſcharge him.

Condition *without which*, *ſine qua non*, is uſed in philoſophy, in ſpeaking of ſome accident or circumſtance, which is not eſſential to the thing, but is yet neceſſary to its production. Thus, light is a *condition without which* a man cannot ſee objects, though he have good eyes; and thus fire, though conſidered in itſelf, may burn without wood; yet is its preſence a *condition without which* the wood cannot be burnt.

CONDITIONAL, ſomething not abſolute, but ſubject to limitation and conditions. See Condition.

Conditional legacies are not due till the conditions are accompliſhed. The right of conqueſt does not ſuppoſe any *conditional* conſent on the part of the people.

The Arminian divines maintain, that all the decrees of God, relating to the ſalvation and damnation of man are truly *conditional*; and the Calviniſts, that they are all abſolute. See Arminian, &c.

In logic, *conditional propoſitions* admit of all kinds of contradictions; *v. gr.* if my Tranſalpin mule flew, my Tranſalpin mule had wings.

Conditional *conjunctions*, in grammar, are thoſe which ſerve to make propoſitions conditional.—As, *if*, *unleſs*, *provided that*, *in caſe of*, &c.

Conditional *propoſitions*, are ſuch as conſiſt of two parts, connected together by a conditional particle.

Of theſe, the firſt, wherein the condition lies, is called the *antecedent*, and the other the *conſequent*.

Thus, if the ſoul be ſpiritual, it is immortal; is a *conditional propoſition*, wherein, *if the ſoul*, &c. is the antecedent, and *is immortal* the conſequent.

Conditional *eſtate*. } See articles { Estate.
Conditional *reſignations*. } See articles { Resignation.

Science of **Conditionals**, *i.e.* of *conditional truths*, imports that knowlege which God has of things, conſidered, not according to their eſſence, their nature, or their real exiſtence; but under a certain ſuppoſition, which imports a condition never to be accompliſhed.

Thus, when David aſked of God whether the people of Keilah would deliver him up to his enemies; God, who knew what would befal, in caſe David ſhould continue at Keilah, told him that they would deliver him: which he knew by the *ſcience of conditionals*.

Some of the ſchoolmen deny, that God has the *knowlege of conditionals*: the Thomiſts maintain, that God's knowlege of *conditionals* depends on a predeterminating decree: others deny it.

F. Daniel obſerves, that the truths which compoſe the knowlege of *conditionals*, being very different from thoſe which compoſe the knowlege of intuition, and that of underſtanding; a third claſs muſt be added, and the knowlege of God be divided into *intuitive*, *intellective*, and *conditional*. See Knowlege.

CONDORMIENTES, religious ſectaries, whereof there have been two kinds.—The firſt aroſe in Germany, in the thirteenth century; their leader was a native of Toledo. They held their meetings near Cologne; where they are ſaid to have worſhiped an image of Lucifer, and to have received anſwers and oracles from him: the legend adds, that an eccleſiaſtic having brought the euchariſt to it, the idol broke into a thouſand pieces; which put an end to the worſhip. They had their name from their *lying all together*, men and women, young and old.

The other ſpecies of *condormientes*, were a branch of Anabaptiſts in the ſixteenth century; ſo called, becauſe they lay ſeveral of both ſexes, in the ſame chamber; on pretence of evangelical charity.

Safe-**CONDUCT**. See Safe-*Conduct*.

CONDUCTOR, the name of a ſurgeon's inſtrument, which being put up into the bladder, ſerves to guide or conduct the knife, in the operation of cutting for the ſtone. See Lithotomy.

CONDUCTOS *ad proficiſcendum*. See Capias.

CONDUIT, a canal, or pipe, for the conveyance of water or other fluid matter. See Tube, &c.

In the earth are ſeveral ſubterraneous *conduits*, through which the waters paſs that form ſprings; and through which alſo paſs the vapours, which form metals and minerals. See Spring, Metal, &c.

Artificial conduits for water are made of lead, ſtone, caſt iron, potters earth, &c. See Pipe, and Plumbery.

In the province of New Mexico, there is ſaid to be a ſubterraneous *conduit*, in form of a grotto, extending 600 miles in length. See Duct.

CONDYLOMA, in anatomy. See Condylus.

Condyloma *, in medicine, is a ſoft, painleſs tumour, of the œdematous kind, ariſing on the internal coat of the anus, and the muſcles of that part, or in the neck of the matrix.

* The word comes from κονδυλος; in regard the *condyloma* has uſually *rugæ*, or wrinkles, like the joints of the body.

The *condyloma*, by long continuance, grows fleſhy, and, ſhooting out as from a ſtalk, takes the denomination *ficus*. See Ficus.

Condylomata are frequently the effect of venereal ailments, and if neglected, ſometimes prove cancerous: their cure depends on mercurial unctions, and proper eſcharotics to conſume them, though extirpation either by ligature or inciſion, if the nature of the part will admit, is the moſt expeditious.—A ſalivation is often neceſſary, in order to facilitate and complete the cure.

CONDYLUS, Κονδυλος, a name which anatomiſts give to a little round eminence, or protuberance at the extremity of a bone.—See Tab. *Anatomy* (Oſteol.), fig. 2. lit. n.

Such is that of the lower jaw, received within the cavity of the os petroſum.

When this eminence is large, it is called the head of the bone.

CONE, in geometry, a ſolid body, having a circle for its baſis, and terminated a-top in a point, or vertex.—See Tab. *Conics*, fig. 2.

The *cone* is generated by the motion of a right line, KL, round an immoveable point K, called its *vertex*, along the circumference of a plane, called its *baſe*, MN: or it may be conceived as generated by the revolution of the triangle KLM, about the right line KL, which is called the *axis* of the *cone*, and KM its latus, or ſide. See Axis, *&c.*

If the axis be perpendicular to the baſe, it is ſaid to be a *right cone*: and if inclined, or oblique, a *ſcalenous cone*.—*Scalenous cones* are again divided into *obtuſe-angled*, and *acute-angled.*

Euclid defines a *cone* a ſolid figure, whoſe baſe is a circle, as CD (fig. 3.) and is produced by the intire revolution of the plane of a right-angled triangle CAB, about the perpendicular leg AB.

If this leg, or axis, be greater than CB, half the baſe; the ſolid produced is an *acute-angled cone*: if leſs, it is an *obtuſe-angled cone*; and, if equal, a *right-angled cone*.

But, Euclid's definition only extends to a *right cone*: that is, to a *cone* whoſe axis is at right angles to the baſe; and not to oblique ones, whoſe axis is not at right angles to the baſe.

For a more general and comprehenſive deſcription of a *cone*, which may take in both right and oblique ones, ſuppoſe an immoveable point A (fig. 4.) without the plane of the circle BDEC; and ſuppoſe a right line AE, drawn through that point, and produced infinitely both ways, to be moved quite about the circumference of the circle; the two ſuperficies that will ariſe from this motion, are each called *conic ſuperficies*; but, taken conjunctly, they are called *ſuperficies vertically oppoſite*, or only *oppoſite ſuperficies*. See Opposite. The immoveable point A, common to both the ſuperficies, is called the *vertex*; the circle BDEC the *baſe*; the right line AC, drawn through the vertex A and C, the *centre of the baſe*; and if infinitely produced, the *axis*; and the ſolid comprehended under the *conical* ſuperficies and the baſe, is a *cone*.

Properties of the Cone.—1°, *The area or ſurface of every right* cone, *excluſive of its baſe, is equal to a triangle whoſe baſe is the periphery, and its height the ſide of the* cone.

Or, the curve ſuperficies of a right *cone* is, to the area of its circular baſe, as AC (fig. 3.), the length of the hypothenuſe of the right-angled triangle deſcribing it, is to CB, the baſe of the ſame triangle: that is, as the ſlant height of the *cone*, to the ſemidiameter of the baſe.

Hence, the ſurface of a right *cone* is equal to a ſector of a circle deſcribed on the ſide of the *cone*, as a radius; whoſe arch is equal to the periphery of the *cone*; and has therefore the ſame proportion to its periphery, which the diameter of the baſe has to the ſide of the *cone*.

Hence we have a method of deſcribing a rete or cage that ſhall juſt cover a cone.—Thus, with the diameter of the baſe AB (Tab. *Conics*, fig. 6.) deſcribe a circle, and produce the diameter to C, till AC be equal to the ſide of the *cone*. To 2 AC and AB, determined in numbers, and 360°, find a fourth proportional; and with the radius CA, on the centre C, deſcribe an arch DE equal to the number of degrees found: the ſector CDE with the circle AB will be a rete for the right *cone*.

If, then, the ſide of a truncated *cone* be ſet off from A to F, and an arch GH be deſcribed with the radius CF; by finding a fourth proportional to 360°, to the number of degrees of the arch GH, and to FC; and thence determining the diameter of the circle IF; we ſhall have a net or cover or the truncated *cone*.

For CDBAE is a net for the intire *cone*; CGFIH for the *cone* cut off; therefore, DBEHIG for the truncated *cone*.

2°, *Cones and pyramids, having the ſame baſes and altitudes, are equal to each other.*

Now, it is ſhewn, that every triangular priſm may be divided into three equal pyramids; and therefore, that a triangular pyramid is one third of a priſm, ſtanding on the ſame baſe, and having the ſame altitude.

Hence, ſince every multangular body may be reſolved into triangular ones, and every pyramid is a third part of a priſm having the ſame baſe and altitude; ſince a *cone* may be eſteemed an infinite-angular pyramid, and a cylinder an infinite-angular priſm; a *cone* is a third part of a cylinder, which has the ſame baſe and altitude.

Hence we have a method of meaſuring the ſurface and ſolidity of a cone and a cylinder.—Thus, *for the ſolidity*: find the ſolidity of a priſm, or cylinder, having the ſame baſe with the *cone*, or pyramid. Which found, divide by 3: the quotient will be the ſolidity of a *cone*, or a pyramid.—Thus, *v. gr.* if the ſolidity of a cylinder be 605592960, the ſolidity of the *cone* will be found 201864320.

For the ſurfaces; that of a right *cone* is had by multiplying the ſemi-periphery of the baſe into the ſide, and adding the product to the baſe.

Suppoſe, *e. gr.* the diameter of the *cone* NM (fig. 2.) 56, its periphery will be $17584''$, and the baſe $246176'''$. Suppoſe, the altitude of the axis KL, $246''$; ſince $LM = \frac{1}{2} NM = 28'$, and $KM^2 = KL^2 + LM^2 = 60516 + 784 = 61300$, $KM = 2474'''$. Conſequently, the ſuperficies of the *cone*, excluſive of the baſe, is $4° \, 310' \, 28'' \, 16'''$; and the whole together 455645760.

As to the meaſure of the ſurface, and ſolidity, of a truncated cone, ABCD (*fig.* 7.). Its altitude CH, and the diameters of its baſes AB and CD, being given, find their circumferences: to the ſquare of the altitude CH, add the ſquares of the ſemi-difference of the radii AH, and from the aggregate extract the ſquare root, which will give the ſide AC: the ſemi-ſum of the peripheries, multiplied by that ſide, gives the ſuperficies of the *truncated cone*.

To find the ſolidity: As the difference of the ſemidiameter AH is to the altitude of the truncated *cone* CH, ſo is the greater ſemidiameter AF, to the altitude of the intire *cone* FE. This being found, ſubtract the altitude of the truncated *cone* GF, which will leave that of the *cone* taken off EG.

Find the ſolidity of the *cone* CED and AED; ſubtract the other from this; the remainder will be the ſolidity of the truncated *cone* ACDB.

For the ſections of the Cone, ſee Conic *ſection.*—*For the ratio of* Cones *and cylinders*, ſee Cylinder.—*For the centers of gravity and of oſcillation of a* Cone, ſee Center.

Cones *of the higher kinds* are thoſe whoſe baſes are circles of the higher kinds; and are generated by ſuppoſing a right line fixed in a point, on high, though conceived capable of being extended more or leſs, on occaſion; and moved or carried round a circle.

Cone *of rays*, in optics, includes all the ſeveral rays which fall from any point of a radiant, on the ſurface of a glaſs. See Ray.

CONFARREATION, a ceremony, among the antient Romans, uſed in the marriage of perſons whoſe children were deſtined for the honour of the prieſthood.

Confarreation was the moſt ſacred of the three manners of contracting marriage among that people; and conſiſted, according to Servius, in this, that the pontifex maximus and flamen dialis joined and contracted the man and woman, by making them eat of the ſame cake of ſalted bread.

Ulpian ſays, it conſiſted in the offering up of ſome pure wheaten bread; rehearſing, withal, a certain formula, in preſence of ten witneſſes. Dionyſius Halicarnaſſeus adds, that the huſband and wife did eat of the ſame wheaten bread, and threw part on the victims.

CONFECTION, in pharmacy, a kind of compound remedy of the conſiſtence of a ſoft electuary.

There are ſeveral electuaries, which bear the name of *confections*; ſome whereof, in the phyſicians language, are *corroborative*, and others *purgative*.

Of the number of the corroborative *confections* are thoſe of *alkermes*, of *hyacinth*, and the *anacardine*: a purgative one is the *confection hamech*. The *confection of alkermes* has its name from the principal ingredient therein; which is the *kermes*, or *alkermes*, or ſcarlet-grain.—The other ingredients are, pearls, muſk, cinnamon, ambergris, leaf-gold, juice of pippins, and roſe-water.—It is ranked among the beſt cardiacs, and is frequently uſed for the palpitation of the heart, or ſyncope; and ſometimes in the ſmall-pox and meaſles.

The *confection of hyacinth* has nearly the ſame virtues with that of *alkermes*; but, beſide, it is frequently uſed as an aſtringent.—It conſiſts of near triple the number of drugs; whereof the precious ſtone, called the *hyacinth*, is eſteemed the principal; the chief of the reſt are, red coral, bole armoniac, terra ſigillata, myrrh, the ſantals, burnt hartſhorn, camphire, ſapphire, emerald, topaz, and moſt of the ingredients of the *confection* of *alkermes*.

The *anacardine confection*, now diſuſed in England, is compoſed chiefly of *anacardiums*; whence the name.—The other drugs are, long pepper, black pepper, moſt kinds of myrobalans, caſtoreum, *&c.*—It is uſed to purge the blood, and is proper in cold diſeaſes.

The *confection hamech* takes its name from that of its inventor, an Arabian phyſician.—Its ingredients are, polypody, myrobalans, agaric, ſenna, tamarinds, red roſes, manna, colocynth, *&c.* It is applied as a draſtic for the purging of the groſſer humours and viſcidities; it is alſo of ſome reputation in vertigoes and cancers.

CONFECTOR, among the antient Romans, a ſort of gladiator, hired to fight in the amphitheatre againſt beaſts; thence alſo denominated *beſtiarius*. See Gladiator.

The *confectores* were thus called *à conficiendis beſtiis*, from their diſpatching and killing beaſts.

The Greeks called them Παραβολοι, *q. d.* daring, raſh, deſperate; whence the Latins borrowed the appellations *parabolani*, and *parabolarii*. See Parabolani.

CONFECTS, or Confits, a denomination given to fruits, flowers, herbs, roots, and juices, when boiled and prepared with ſugar, or honey, to diſpoſe them to keep, or render them more agreeable to the taſte.

The antients only *confited* with honey; at preſent, ſugar is more frequently uſed.—*Confects half-ſugared*, are thoſe only covered with a little ſugar, to leave more of the natural taſte of the fruit.

Confects are reduced to eight kinds, *viz. liquid confects*, *marmalades*, *jellies*, *paſts*, *dry confects*, *conſerves*, *candies*, and *dragees*, or *ſugar-plumbs*.

Liquid confects, are thoſe whoſe fruits, either whole, in pieces, in ſeeds, or in cluſters, are *confited* in a fluid tranſparent ſyrup, which takes its colour from that of the fruits boiled in it.—There is a good deal of art in preparing theſe well; if they be too little ſugared, they turn; and if too much, they candy. The moſt eſteemed of the liquid *confects* are plums, eſpecially thoſe called mirabels, berberries, quinces, apricots, cherries, orange-flowers; little green citrons from Madeira, green caſſia from the Levant, myrobalans, ginger, cloves, *&c.*

Marmalades are a kind of paſts, almoſt liquid, made of the pulp of fruits, or flowers, that have ſome conſiſtence; ſuch as apricots, apples, pears, plums, quinces, oranges, and ginger.—Marmalade of ginger is brought from the Indies by way of Holland: it is eſteemed good to revive the natural heat in old men. See MARMALADE.

Jellies are juices of ſeveral fruits, wherein ſugar has been diſſolved, and the whole, by boiling, reduced into a pretty thick conſiſtence; ſo as, upon cooling, to reſemble a kind of thin tranſparent glue, or ſize. *Jellies* are made of various kinds of fruits, eſpecially gooſberries, apples, and quinces: there are other jellies made of fleſh, fiſh, hartſhorn, *&c.* but they are not to be kept, being very ſubject to corrupt.

Paſts are a kind of marmalades, thickened to that degree by a proper boiling, as to aſſume any form, when put into little molds, and dried in the oven. The moſt in uſe are thoſe of gooſberries, quinces, apples, apricots, and orange-flowers: thoſe of piſtachoes are much eſteemed; thoſe of ginger are brought from the Indies. *Dry confects*, are thoſe whoſe fruits, after having been boiled in the ſyrup, are taken out again, drained, and put to dry in an oven.—Theſe are made of ſo many kind of fruits, that it would be hard to explain them all: the moſt conſiderable are citron and orange-peel, plums, pears, cherries, apricots, *&c.*

Conſerves are a kind of dry *confects*, made with ſugar, and paſts of flowers or fruits, *&c.* the moſt uſual among theſe are thoſe of roſes, mallows, roſmary; of heps, of orange-flowers, violets, jeſſamin, piſtachoes, citrons, and ſloes.

Note, the apothecaries, under the title of *conſerves*, comprehend all kind of *confects*, both dry and liquid: whether of flowers, fruits, ſeeds, roots, barks, or leaves, prepared with ſugar or honey, to preſerve, *&c.*

Candies are ordinarily intire fruits, candied over with ſugar, after having been boiled in the ſyrup; which renders them like little rocks, cryſtallized; of various figures and colours, according to the fruits incloſed within them.—The beſt candies are brought from Italy. See CANDY.

Sugar-plums, are a kind of little dry *confects*, made of ſmall fruits, or ſeeds, little pieces of bark, or odoriferous and aromatic roots, *&c.* incruſtated and covered over with a very hard ſugar, ordinarily very white.—Of theſe there are various kinds, diſtinguiſhed by various names: ſome made of raſberries, others of berberries, melon-ſeeds, piſtachoes, filberds, almonds, cinnamon, orange-peel, corianders, aniſeed, caraways, *&c.*

CONFEDERACY, an alliance or league between divers princes and ſtates.

CONFEDERACY, in law, is when two or more perſons combine to do any damage to another, or to commit any unlawful act.

Confederacy is puniſhable, though nothing be put in execution: but then it muſt have theſe four incidents; 1°, That it be declared by ſome matter of proſecution; as by making of bonds or promiſes to one another: 2°, That it be malicious, as for unjuſt revenge: 3°, That it be falſe, *i. e.* againſt the innocent: and laſtly, that it be out of court, voluntary.

CONFESSION, in a civil ſenſe, a declaration, or acknowlegement of ſome truth, though it be againſt the intereſt of the party who makes it; whether it be in a court of juſtice, or out of it. It is a maxim, that in civil matters, the *confeſſion* is never to be divided; but always taken intire. And that a criminal is never condemned on his ſimple *confeſſion*, without other collateral proofs: nor is a voluntary extrajudicial *confeſſion* admitted as any proof.—A perſon is not admitted to accuſe himſelf, according to that rule in law, *non auditur perire volens*.

CONFESSION, in a theological ſenſe, is a declaration of a perſon's ſins, made to a prieſt, in order to obtain abſolution for the ſame. The Romiſh church makes *confeſſion* a part of the ſacrament of penance.

Confeſſion was antiently public and general, in the face of the church; though the Romaniſts have ſince altered it, and made it private and auricular.

Confeſſions are to be buried in eternal ſilence, under pain of the laſt puniſhment to the prieſt who reveals them.

Bellarmin, Valentia, and ſome other Romiſh controverſy-writers, endeavour to trace up auricular *confeſſion* to the earlieſt ages; and thus contend for a point given up by the reſt. M. Fleury owns that the firſt inſtance of auricular *confeſſion* he can meet with, is that of S. Eloi, who being grown old, made a *confeſſion* to a prieſt of all his ſins from his youth upwards.

The Indians, according to Tavernier, have a kind of *confeſſion*; and the ſame may be ſaid of the Jews: theſe laſt have formulas for thoſe who are not capable of making a detail of all their ſins: the ordinary form is in alphabetical order, each letter containing a capital ſin. This they uſually rehearſe on mondays and thurſdays, and on faſt-days, and other occaſions; ſome, every night and morning. When any of them find themſelves near death, he ſends for ten perſons, more or leſs, one of them a rabbin; and in their preſence recites the *confeſſion*. See Leo de Modena.

CONFESSION *of faith*, denotes a liſt, or enumeration and declaration of the ſeveral articles of belief, in a church.

The Augsburg *confeſſion* is that of the Lutherans; it was preſented to Charles V. in 1530.

In the council of Rimini, the catholick biſhops found fault with dates in a *confeſſion of faith*, and obſerved that the church never uſed to date them.

CONFESSIONAL, or CONFESSIONARY, in church-hiſtory, a place in churches, uſually under the main altar, wherein were depoſited the bodies of deceas'd ſaints, martyrs, and confeſſors.

CONFESSIONAL is alſo uſed in the Romiſh church for a little box, or deſk in the church, where the confeſſor takes the confeſſions of the penitent.

CONFESSO.—*Pro* CONFESSO. See the article PRO.

CONFESSOR, a Chriſtian who has made a ſolemn, and reſolute profeſſion of the faith, and has endured torments in its defence.

A mere ſaint is called a *confeſſor*, to diſtinguiſh him from the roll of dignified ſaints; ſuch as *apoſtles*, *martyrs*, &c.

In eccleſiaſtical hiſtory, we frequently find the word *confeſſors* uſed for martyrs: in after-times, it was confined to thoſe, wh after having been tormented by the tyrants, were permitted t live and die in peace. And at laſt it was alſo uſed for thoſe, who after having lived a good life, died under an opinion o ſanctity. According to S. Cyprian, he who preſented himſel to torture, or even to martyrdom, without being called thereto was not called a *confeſſor*, but a *profeſſor*: and if any ou of a want of courage abandoned his country, and became voluntary exile for the ſake of the faith, he was called *extorris*.

CONFESSOR is alſo a prieſt, in the Romiſh church, who has power to hear ſinners in the ſacrament of penance, and t give them abſolution.

The church calls him in Latin *confeſſarius*, to diſtinguiſh hi from *confeſſor*, which is a name conſecrated to ſaints.

The *confeſſors* of the kings of France, from the time of Hen IV. have been conſtantly Jeſuits: before him the Dominica and Cordeliers ſhared the office between them. The *confeſſ* of the houſe of Auſtria have alſo, ordinarily, been Dominica and cordeliers, but the latter emperors have all taken Jeſuits.

CONFIGURATION, the exterior ſurface, that bounds b dies, and gives them their particular figure.

That which makes the ſpecific difference between bodies, is th different *configuration*, and the different ſituation of their par A ſhort, or a long ſight, depend on the different *configurati* of the cryſtalline.

CONFIGURATION *of the planets*, in aſtrology, is a certa diſtance, or ſituation of the planets in the zodiac whereby they are ſuppoſed to aid, or oppoſe each other. S ASPECT.

CONFIRMATION, the act of ratifying or rendering a tit claim, pretenſion, report, or the like, more ſure and ind putable.

CONFIRMATION, in law, is particularly uſed for the ſtreng ening or homologating an eſtate of one already in poſſeſſion it by a voidable title.

Thus, if a biſhop grant his chancellorſhip by patent, for te of the patentee's life; this is no void grant: yet it is voidab by the biſhop's death, except it be ſtrengthened alſo by t dean and chapter's *confirmation*.

CONFIRMATION, in rhetorick, is the third part of an oratio wherein the orator undertakes to prove, by laws, reaſons, thorities, and other arguments, the truth of the propoſitio advanced in his narration.

Confirmation is either *direct*, or *indirect*: the firſt conf what the orator has to urge for ſtrengthening his own cau the ſecond, properly called *confutation*, refels the oppoſite guing of the adverſaries. The two parts together are ſo times placed under the head or title of *contention*.

The *confirmation* is, as it were, the life and ſoul of the tion: in this the main ſtreſs of the argumentation Whence Ariſtotle, properly enough, calls it πιςις, *fides*.

CONFIRMATION, in theology, the ceremony of laying on hands, for the conveyance of the Holy Ghoſt.

The antients called it *chriſma* and *unction*; among the was conferred immediately after baptiſm; and was eſtee in ſome meaſure, to be a part thereof: whence the fa call it the *accompliſhment* of baptiſm.

Among the Greeks, and throughout the Eaſt, it ſtill acc panies baptiſm; but the Romaniſts make it a diſtinct pendent ſacrament.

It appears that *confirmation* has all along been ordinarily conf by the biſhop: S. Cyprian, and moſt of the fathers, ſpeak in ſuch terms as imply it to have been confined to the b alone; and Fleury, and moſt of the moderns, from them, down as a diſtinguiſhing character between the offices of a or deacon, and that of a biſhop, that the former might baptize, but the latter alone might anoint and *confirm*; by virtue of their ſucceſſion to the apoſtles, to whom it originally belonged. But from ſome paſſages in St. Gregory, &c. others gather, that the prieſts, on occaſion, had likewiſe the power of *confirming*.

It is certain, among the Greeks, the prieſt who baptizes, alſo *confirms*: which practice, Lucas Holſtenius ſhews, is of ſo old a ſtanding among them, that it is now generally looked on as belonging properly, and of right, to the prieſt: though ſome will have it to have been borrowed by them from the biſhops.

Hence, ſome of the Latin divines acknowlege, that though the biſhop be the ordinary miniſter of *confirmation*, yet, that the prieſt, in his abſence, may alſo confer it, in quality of miniſter extraordinary.

The council of Rouen, held in 1072. decrees, that *confirmation* muſt be conferred faſting, both on the ſide of the giver, and that of the receiver.

CONFISCATE*, in law, is applied to goods forfeited to the exchequer, or public treaſury.

* The word is derived from *fiſcus*, a hamper, panier, or baſket, wherein the emperor's money uſed to be kept.

The title to goods which are not claimed by any other, is given by law to the king. If a man, indicted for ſtealing the goods of another, in which caſe they become, in effect, the proper goods of him indicted, be aſked about them in court, and diſclaim them; he thereby loſes the goods, though he be afterwards acquitted of the theft, and the king ſhall have them as *confiſcate*: but otherwiſe, had he not diſclaimed them.

CONFISCATION, a legal adjudication of goods or effects to the fiſc, or treaſury.

Thus, the bodies and effects of criminals, traitors, &c. and merchandizes that are contraband, prohibited, or brought aboard or aſhore without paying the duties, when ſeized, are *confiſcated*.

It is an axiom in law, that he who *confiſcates* the body, *confiſcates* alſo the effects, to the profit of the king, or the lord of the fee; *i. e.* he who is condemned to loſe his life, muſt alſo loſe his goods: yet the widows of criminals do not loſe their dowries, nor their ſhare in the goods of the community, by the forfeiture of their huſbands.

CONFLAGRATION, a general burning of a city, or other conſiderable place.—In which ſenſe, Nero is ſaid to have procured the Chriſtians to be accuſed of the *conflagration* of Rome; which was done by his own order.

But the word is more ordinarily reſtrained to that grand period, or cataſtrophe, of our world, wherein the face of nature is to be changed by a deluge of fire, as it was antiently by that of water.

The antient Pythagoreans, Platoniſts, Epicureans, and Stoics, appear to have had a notion of the *conflagration*; though whence they ſhould derive it, unleſs from the Sacred books, is difficult to conceive; except, perhaps, from the Phœnicians, who themſelves had it from the Jews.

Seneca ſays expreſly, *Tempus advenerit quo ſidera ſideribus incurrent, & omni flagrante materia uno igne, quicquid nunc ex depoſito lucet, ardebit.* This general diſſolution the Stoics call ἐκπύρωσις, *ecpyroſis*. Mention of the *conflagration* is alſo ſeveral times made in the books of the Sibyls, Sophocles, Hyſtaſpes, Ovid, Lucan, &c.

Dr. Burnet, after F. Tachard, and others, relate, that the Siameſe believe, that the earth will at laſt be parched up with heat; the mountains melted down; and the earth's whole ſurface reduced to a level, and then conſumed with fire. And the bramins of Siam do not only hold, that the world ſhall be deſtroyed by fire; but, alſo, that a new earth ſhall be made out of the cinders of the old. Various are the ſentiments of authors on the ſubject of the *conflagration*; the cauſe whence it is to ariſe, and the effects it is to produce.—Divines ordinarily account for it metaphyſically; and will have it take its riſe from a miracle, as a fire from heaven. Philoſophers contend for its being produced from natural cauſes; and will have it effected according to the laws of mechanics: ſome think an eruption of the central fire ſufficient for the purpoſe; and add, that this may be occaſioned ſeveral ways; *viz.* either by having its intenſion increaſed; which, again, may be effected either by being driven into leſs ſpace by the incroachments of the ſuperficial cold, or by an increaſe of the inflammability of the fewel whereon it is fed: or by having the reſiſtance of the impriſoning earth weakened; which may happen, either from the diminution of its matter, by the conſumption of its central parts; or by weakening the coheſion of the conſtituent parts of the maſs by the exceſs or the defect of moiſture.

Others look for the cauſe of the *conflagration* in the atmoſphere; and ſuppoſe, that ſome of the meteors there ingendered in unuſual quantities, and exploded with unuſual vehemence, from the concurrency of various circumſtances, may be made to effect it, without ſeeking any further.

The aſtrologers account for it from a conjunction of all the planets in the ſign Cancer; as the deluge, ſay they, was occaſioned by their conjunction in Capricorn.

Laſtly, Others have recourſe to a ſtill more effectual and flaming machine; and conclude the world is to undergo its *conflagration* from the near approach of a comet, in its return from the ſun. Thoſe wandering bodies do indeed ſeem to menace us a little; being able, both by their tranſverſe motion acroſs the earth's way, by the hugeneſs of their ſize, and the intenſe fire wherewith they glow in their receſs from the perihelion, to produce the moſt ſignal changes and revolutions in the ſyſtem of things. See Comet.

Mr. Whiſton has ſhewn, that they are extremely well fitted to produce the phænomena of the deluge; and has gone a good way towards proving, that the comet of 1668. was the very body to which that event was owing; as being then in its approach toward the ſun, and its atmoſphere crouded with the watery vapours it had gathered in thoſe inconceivable cold regions, into which it had fled off in its aphelion.

This ſame comet, Sir Iſaac Newton has calculated, when in its perihelion, December the 8th, was heated, by the vicinity of the ſun, to a degree 2000 times more hot than red-hot iron: he ſhews, likewiſe, that it would ſcarce be cool again in 50000 years.

This ſame comet, again, Dr. Halley obſerved November 11. was not above a ſemidiameter of the earth from the earth's way: ſo that had the earth, at that time, been in that part of its orbit, ſomething very extraordinary might have been apprehended; but whether in the way of fire, or water, may, perhaps, to ſome, leave room to doubt: to us it is none; it being ſcarce conceivable, that the comet ſhould bring any vehement degree of heat, out of thoſe bleak regions it comes from, whatever heat it might carry thither.

CONFLUENCE, Conflux, the place where two rivers join, and mix their waters. See River.

CONFLUENT, in medicine, an epithet given to that ſpecies of ſmall-pox wherein the puſtules run into one another. See *Small*-Pox.

CONFORMATION, the particular texture and conſiſtence of the parts of any body, and their diſpoſition to make a whole.

We ſay, light of different colours is reflected from bodies according to their different *conformation*; in oppoſition to the Carteſians, who pretend, that reflected light becomes of different colours, according to the different *conformation* of the bodies that reflect it. The *conformation* of the members of an embrio is not perfect enough to allow of diſſection.

Conformation, in medicine, is uſed to expreſs that make and conſtruction of the human body which is peculiar to every individual.

Hence, a *mala conformatio* ſignifies ſome fault in the firſt rudiments; whereby a perſon comes into the world crooked, or with ſome of the viſcera, or cavities, unduly framed, or proportioned.—Many are ſubject to incurable aſthma's, from a too ſmall capacity of the thorax, and the like original vitious *conformations*.

CONFORMITY, in the ſchools, is the congruency, or relation of agreement between one thing and another: as between the meaſure, and the thing meaſured; the object, and the underſtanding; the thing, and the conception; the thing, and the diviſion thereof, &c. See Congruency.

Occaſional Conformity. See Occasional *Conformity*.

CONFRONTATION, the act of bringing two perſons, in preſence of each other, to diſcover the truth of ſome fact which they relate differently.

The word is chiefly uſed in criminal matters; where the witneſſes are *confronted* with the accuſed; the accuſed with one another, or the witneſſes with one another.

CONFUSED *Notion*. See the article Notion.

CONFUSION, in a general ſenſe, is oppoſed to *order*; in a perturbation whereof, *confuſion* conſiſts: *e. gr.* when things prior in nature do not precede; or poſterior do not follow, &c. See Order.

In a logical ſenſe, *confuſion* is oppoſed to *diſtinctneſs*, or *perſpicuity*; and may happen, either in words, as when miſconſtrued or miſapplied; or in ideas, as when the idea of any thing preſents ſomething along with it, which does not properly belong to that thing.

In a phyſical ſenſe, *confuſion* is a ſort of union, or mixture by mere contiguity.—Such is that between fluids of contrary nature; as oil and vinegar, &c. See Union, and Mixtion.

CONFUTATION, in rhetoric, &c. a part of an oration, wherein the orator ſeconds his own arguments, and ſtrengthens his cauſe, by refelling and deſtroying the oppoſite arguments of the antagoniſt.

Confutation makes a branch of what we call the *confirmation*.—The confirmation and *confutation* are ſometimes called *contention*. See Confirmation.

CONGE*, in the French law, a licence, or permiſſion, granted by a ſuperior to an inferior, which gives him a diſpenſation from ſome duty to which he was before obliged.

* The word is French: Menage derives it from the Latin *commiatus*, uſed for *commeatus*, and *commeare*, often ſeen among antient writers: the Italians ſay, *congedo*.

A woman cannot obligate herſelf without the *conge* or the licence of her huſband: a monk cannot go out of his convent, without the *conge* of his ſuperiors.

Conge *d'Elire* is the king's permiſſion royal to a dean and chapter, in time of a vacancy, to chooſe a biſhop. See Chapter, Canon, and Collation.

Gwyn obſerves, that the king of England, as ſovereign patron of all biſhoprics and other benefices, had antiently the free appointment of all eccleſiaſtical dignities; inveſting, firſt, *per* *baculum & annulum*; and afterwards by letters patent: but that, in proceſs of time, he made the election over to others, under certain forms and conditions; as, that they ſhould at every vacancy, ere they choſe, demand of the king *congé d'élire, i. e.* leave to proceed to election; and after election to crave his royal aſſent, *&c.*—He adds, that king John was the firſt who granted this; which was afterwards confirmed by *ſtat. Weſtm.* and again in the *articuli cleri.*

CONGE, in architecture, denotes a moulding either in form of a quarter-round, or of a cavetto; which ſerves to ſeparate two members from one another.—See *Tab. Archit. fig.* 6.

Such is that which joins the ſhaft of the column to the cincture, called alſo *apophyge*; which, in Greek, ſignifies eſcape; the column ſeeming to ſpring hence: by the Latins it is called *ſcapus*, the ſhaft of the column.

CONGELATION, *freezing*; the act of fixing the fluidity of any liquid, by cold, or the application of cold bodies: in which it differs from *coagulation*, which is produced by other cauſes.

Salt-petre *congeals* water in ſummer. See ICE. Metals and minerals are ſaid to be juices *congealed*, in the veins of the earth, by their mixing with one another, or with other heterogeneous bodies, or by the conſumption and evaporation of their fineſt parts.

Rock cryſtal was by the antients held to be nothing but water *congealed* in the mountains. See CRYSTAL.—The bites of aſpics become mortal, by the ſudden *congelation* which they induce on the blood, which ſtops its circulation.

CONGERIES, a Latin word, ſometimes uſed for a collection or heap of ſeveral particles, or bodies, united into one maſs, or aggregate.

CONGESTION, in medicine, a maſs, or collection of humours, crouded together, and hardened, in any part of the body; and there forming a preternatural tumor.

Congeſtion is effected by little and little; in which it differs from *defluxion*, which is more ſudden.

CONGIARIUM*, CONGIARY, among medaliſts, a gift, or donative, repreſented on a medal.

* The word comes from the Latin *congius*; in regard, the firſt preſents made the people of Rome conſiſted in wine and oil, which were meaſured out to them in *congii*. See CONGIUS.

The *congiary* was properly a preſent made by the emperors to the people of Rome.—Thoſe made the ſoldiers were not called *congiaries*, but *donatives*.

The legend on medals repreſenting *congiaries* is, CONGIARIUM, or LIBERALITAS.

Tiberius gave a *congiary* of three hundred pieces of money to each citizen: Caligula twice gave three hundred ſeſterces a head: Nero, whoſe *congiaries* are the firſt that we find repreſented on medals, gave four hundred. See SESTERCE.

CONGIUS, an antient Roman meaſure for things liquid; containing ſix ſextaries; equal to ſeven pints Engliſh wine meaſure.

The *congius* has alſo been uſed in England, as appears by a charter of king Edmund in 946.

CONGLOBATE *Glands*, in anatomy, thoſe glands whoſe ſubſtance is not divided, but firm, intire, and continued; and their ſurface ſmooth and uniform.

They are thus called, in oppoſition to *conglomerate* glands.

Conglobate glands have each of them an artery which brings them blood, a vein which carries it back again, after the proper juice has been filtrated, and ſeveral excretory ducts.

Some of them have a cavity in the middle, with lymphatic veſſels, which diſcharge themſelves into a common reſervoir, or canal. See LYMPHATICKS.

CONGLOMERATE *Glands* are thoſe which are compoſed of ſeveral little ones; or they are ſeveral glandulous bodies joined together under the ſame common membrane. See GLAND.

Such are the ſalival glands, lachrymal glands, the pancreas, *&c.* which ſee under their proper articles.

The *conglomerate glands*, beſides their arteries, veins, and nerves, are alſo each furniſhed with an excretory veſſel, ramified throughout their own ſubſtance; by means whereof they diſcharge the liquors they have filtrated into reſervoirs.

CONGLUTINATION, the act of gluing, or faſtening, two bodies together, by the intervention of ſome third, whoſe parts are unctuous and tenacious, in the nature of a glue, *gluten*; from whence the word is formed.

In the animal œconomy, the parts of the body are ſaid to be *conglutinated* by means of their natural moiſture; by the help of bandages, as in ſeveral caſes of ſurgery; or by the ſupply of viſcid particles.—In which laſt acceptation, *conglutination* differs little from *accretion*, or *nutrition*.

CONGREGATION, an aſſembly of ſeveral eccleſiaſtics, united ſo as to conſtitute a body.

The term is principally uſed for aſſemblies of cardinals, appointed by the pope, and diſtributed into ſeveral chambers, for the diſcharge of certain functions and juriſdictions, after the manner of our offices and courts.

The firſt is the *congregation* of the holy office, or the inquiſition: the ſecond, that of juriſdiction over biſhops and regulars: the third, that of councils; this has power to interpret the council of Trent: the fourth, that of cuſtoms, ceremonies, precedences, canonizations, called the *congregation* of *rites*: the fifth, that of St. Peter's fabric, which takes cognizance of all cauſes relating to piety and charity, part whereof is due to the church of St. Peter: the ſixth, that of waters, rivers, roads: the ſeventh, of fountains and ſtreets: the eighth, that of the index, which examines the books to be printed, or corrected: the ninth, that of the government of the whole ſtate of the church: the tenth, *de bono regimine*; of which two laſt, the cardinal-nephew is chief: the eleventh, that of money: the twelfth, that of biſhops; wherein thoſe who are to be promoted to biſhopricks in Italy are examined: this is held before the pope: the thirteenth, that of conſiſtorial matters; the chief whereof is the cardinal-dean. There is alſo a *congregation* of alms, which takes care of every thing that relates to the ſubſiſtence of Rome, and the ſtate of the church.

CONGREGATION is alſo uſed for a company or ſociety of religious, cantoned out of this or that order; and making, as it were, an inferior order, or a ſubdiviſion of the order itſelf.

Such are the *congregations* of the oratory, and thoſe of Cluny, *&c.* among the Benedictins.

The word is alſo uſed for aſſemblies of pious perſons, in manner of fraternities; frequent among the jeſuits, in honour of the virgin, *&c.*

CONGREGATION *of Penitence.* } See { PENITENCE.
CONGREGATION *of the holy Trinity.* } See { TRINITY.

CONGREGATION *of the immaculate Conception.* See the article IMMACULATE.

CONGREGATION *of the Lateran.* See the article LATERAN.

CONGREGATION, in phyſics, is uſed by Dr. Grew for the leaſt and loweſt degree of mixtion; or that wherein the parts of the mixt do not conſiſt with, or adhere to, each other, but only touch in one point.

That author declares himſelf of opinion, that the particles of all fluids only touch in this manner; or that their coheſion only amounts to a *congregation*. See FLUID, and COHESION.

CONGRESS, CONGRESSUS, is uſed for an aſſembly of commiſſioners, deputies, envoys, *&c.* from ſeveral courts, meeting to concert matters for their common good.

The *congreſs* at the Hague, which held during the courſe of th war terminated in 1697. by the treaty of Reſwick, was compoſed of the envoys of all the princes in the confederac againſt France.

CONGRESS is alſo uſed, in an obſcene ſenſe, for an eſſay, or trial made by appointment of a lay, or a ſpiritual judge, in the preſence of chirurgeons and matrons, to prove, whether or no man be or be not impotent; in order for the diſſolving of marriage. See IMPOTENCE.

Neither the civil nor canon law make any mention of this tr al of virility by *congreſs*: it had its origin in France, from th boldneſs of a young fellow, who, in open court, being ha preſſed by his wife, demanded the *congreſs*. The judge, ſu priſed with the novelty of the demand, found, it could no be denied; as being the ſureſt evidence the caſe could adm of.

In time it became a branch in the French juriſprudence, a was authorized by decrees and arrets: it obtained for about th ſpace of 120 years, and was annulled by an arret of parliame in 1677. as being found precarious; ſome having failed und the experiment out of mere modeſty and ſhame, which found to have the ſame effect with actual impotency.

CONGRUITY, or CONGRUENCY, in the ſchools, a ſuitabl neſs or relation of agreement between things; whereby w come at the knowlege of what may be expected therefrom.

The ſyſtem of *congruity* in matters of grace conſiſts in thi that God, who knows perfectly the nature of grace, and t diſpoſitions of the will in all the circumſtances that ſhall b fal a man, give graces, wherewith, by virtue of their c *gruity* with the will of man, conſidered in thoſe circumſtanc man will always infallibly, but not neceſſarily, do, what G would have him do: in regard, the will, in the language the *congruiſts*, does always infallibly, though voluntari chooſe what appears beſt.

CONGRUITY, in geometry, is applied to figures, lines, *&c.* whi exactly correſpond when laid over one another; as having ſame terms, or bounds.

Thoſe things between which there is a *congruity*, are eq and ſimilar.

Euclid, and, by his example, moſt other geometricians, monſtrate all their elements from the ſole principle of c *gruency*: M. Leibnitz, and after him Wolfius, ſubſtitute notion of ſimilitude in lieu of that of *congruency*. See SI LITUDE.

CONGRUITY, in a lax ſenſe, is uſed to expreſs an aptitude ſome bodies, to unite, or incorporate; by reaſon of ſom militude or fitneſs of their figures: as *incongruity* denote unfitneſs of their ſurfaces for joining together.

Thus, quickſilver will unite with gold, and many other me but will roll off from wood, ſtone, glaſs, *&c.* and water, w will wet ſalt, and diſſolve it, will ſlip off from tallow wit adhering to it; as alſo from a duſty ſurface, and from feathers of water-fowl.

Two drops of water, or of mercury, will, on contact, im diately join and coaleſce; but oil of tartar, poured upon q ſilver, and ſpirit of wine and oil of turpentine on that, an over all, will remain in the ſame veſſel without any manner of union, or mixture with each other.

And the cauſe hereof is, that the figures of ſome bodies will not admit other bodies near enough to be within their ſpheres of attraction, whence they cannot join, and cohere; but where their fitneſs of figure will let them approach near enough to feel each other's attractive power, then they cloſe, and hold together. See Cohesion.

CONIC *Section*, a curve line ariſing from the ſection of a *cone* by a plane.

The *conic ſections* are three, *viz.* the *ellipſis*, *hyperbola*, and *parabola*; beſide the *circle*, and the *triangle*, which though they ariſe from the ſection of a cone, are not uſually conſidered in that capacity[*].

Though the equations, geneſis, and many of the properties, with the ratio's, dimenſions, &c. of each of the *conic* ſections, be ſeparately given under their reſpective articles in this work, Ellipsis, Hyperbola, and Parabola; yet, to make the doctrine of *conics*, which is ſo conſiderable a part of the higher geometry, and of ſuch frequent uſe in the new aſtronomy, the motion of projectiles, &c. more complete, we ſhall here put the whole in a new light, and bring it together into one contracted view.

The common interſection, then, of any plane with a *conic* ſuperficies, we obſerve, is called a *conic ſection*: and this ſection varies, and acquires a different name, according to the different inclinations of the cutting plane. For,

1ſt, If a cone be any way cut by a plane, through the vertex; and again by another plane parallel to the former plane: then the ſection, made in the ſuperficies thereof, is called an *hyperbola*; the plane of which, being produced to meet the oppoſite ſuperficies, will make another ſection, which is likewiſe called an *hyperbola*: and both of theſe, conjunctly, are called *oppoſite ſections*.

2dly, If through the vertex of a cone a plane paſſes without the ſuperficies thereof, that is, neither cutting nor touching it; and the cone be again cut by another plane parallel to the former; the ſection made in the ſuperficies thereof, is called an *ellipſis*.

3dly, If a plane touch the ſuperficies of a cone, and the cone be cut by a plane, the ſection is a *parabola*.

But inſtead of conſidering theſe curves as ariſing by ſection of the cone itſelf, their deſcription, nature, and properties, are found more eaſy of conception, when conſidered as drawn on a plane: for which reaſon, after Des Cartes, and moſt of the later writers, we ſhall rather chooſe to lay them down in this ſecond manner.

Geneſis, or conſtruction of the Ellipſis.—To conceive the production and nature of an ellipſis, let H and I (*fig.* 13.) be two points, nails, or little pegs, about which put a thread BHI; then putting your finger to the thread, and keeping the ſame always in an equal tenſion, move the finger round from the point B, till you return to the ſame point B again.

By this revolution of the point B, will be deſcribed the curve line called the *ellipſis*; which differs from the delineation of a circle only in this, that a circle hath only one centre, but the ellipſis two: though if the points H and I ſhould come together, into one, the elliptic curve would become perfectly circular.

But by how much greater the diſtance is betwixt thoſe points, the ſame length of the thread ſtill remaining; by ſo much the farther is this figure removed from the circular: ſo that, according to the diverſe proportion of the diſtance HI to the thread BHI, or to the line DK, which is equal to the ſame thread, diverſe ſpecies of ellipſes will be deſcribed.

But then, if the length of the thread be increaſed or diminiſhed, in the ſame proportion as the diſtance of the points H and I is increaſed, or diminiſhed, there will indeed be deſcribed divers ellipſes, but all of the ſame ſpecies: whence it appears, that ellipſes are not only innumerable in magnitude, but in ſpecies alſo; and reach from a circle to a right line: for, as when the points H and I meet together, the ellipſis becomes a circle; ſo, when they are removed from each other half the length of the thread, it becomes a right line, both ſides meeting together.

Whence alſo it appears, that every ſpecies of ellipſes is no leſs different from any other, than the extremes of them are different on this ſide from a circle, and on that from a right line. It alſo appears from this delineation, that if from a point taken at pleaſure in the elliptic periphery, as the point B, you draw two lines to the two central points; theſe two lines BH and BI, taken together, will be equal to the greateſt diameter DK; and conſequently, that the ſum of them is always given.

In the ellipſis DFKR (*fig.* 14.) the point C is called the *centre*, the points H and I the *foci*; DK *the greater axis*, or *tranſverſe axis*, or the *principal diameter*, or *latus tranſverſum*; and FR the *leſſer axis*; all the right lines paſſing through the centre C are *diameters*; and all right lines terminated at the periphery, and divided into two equal parts by any diameter, are called *ordinates*. That part of every diameter intercepted betwixt the vertex thereof, and the ordinate, as $M\mu$, is called the *abſciſs* thereof. A line drawn from the vertex of the diameter, parallel to the ordinates thereof, as $\eta\theta$, is a *tangent* to the ellipſis in that vertex. A diameter parallel to the ordinates of another diameter, is termed a *conjugate diameter*; and the ordinate to the greater axis, which paſſes through either of the foci, as MA (*fig.* 13.), is termed the *principal latus rectum*, or the *parameter* of the greater axis. See Centre, Focus, Axis, Diameter, Ordinate, Parameter, &c.

Properties of the Ellipſis.—1°, The ordinates of every diameter are demonſtrated to be parallel to each other.

2°, The ordinates of the diameters or axes are perpendicular to the axes themſelves; but the ordinates of the reſt of the diameters are oblique to their diameters; and, in ellipſes of divers ſpecies, are ſo much the more oblique, at equal diſtance from the axis, by how much the proportion of the greater axis to the leſſer is the greater; but in the ſame ellipſis, ſo much the more oblique, by how much the more remote the diameters are from the axes.

3°, There are only two conjugate diameters, which are equal each to other; *viz.* thoſe whoſe vertices are at equal diſtances from the vertices of the axes; thus, the diameter VT (*fig.* 14.) is conjugate, and equal to that other GM; where VF is equal to MF, and VD equal to MK.

4°, The obtuſe angle VCM of theſe two diameters, which are conjugate and equal, is greater, and the acute angle VCG is leſs, than every other angle contained under the reſt of the diameters that are conjugate to each other.

5°, If the lines μP and νB be ſemiordinates to any diameter, as MG, the ſquare of the ſemiordinate μP is to the ſquare of the ſemi-ordinate νB, as is the rectangle $M\mu \times \mu G$, to the rectangle $M\nu \times \nu G$; that is, νPq is to the rectangle comprehended under the two parts, into which the diameter is divided by the ordinate KP, as νBq is to the rectangle under the parts of the diameter made by the ordinate AB.

6°, The parameter, or latus rectum of any diameter, is a third proportional to that diameter, and its conjugate: that is (in *fig.* 13.), if the diameter DK is to its conjugate diameter EF, as EF is to Y; then Y is the parameter or latus rectum of the diameter DK: whence AM, an ordinate to the axis through the focus, is, as above, equal to the principal parameter, and is a third proportional to the greater and leſſer axis.

7°, The ſquare of every ſemiordinate, as MI, is always leſs than the rectangle made of any abſciſs whatever, as IK drawn into the latus rectum of its own diameter, or than $IK \times Y$. And in figure 14. $P\mu q$ is leſs than the rectangle made of the abſciſs $M\mu$, and the latus rectum of MG: from which defect, or ελλειψις, this ſection hath its name.

8°, If from any point, as B, in figure 13. you draw he right lines BH and BI to the foci, the ſum of them will be equal to the greater axis, as was ſhewed above: and if the angle IBH, comprehended by thoſe lines, be biſected by the right line *ba*, the line *a* is perpendicular to the tangent VB in the point B; that is, to the curve in the point of contact.

9°, The diſtance of a body turned round in an ellipſis, about the focus H, from the ſame focus, is the greateſt of all in the point K; leaſt of all in the point D; and mean in the points E and F; and that mean diſtance HF is equal to the greater half-axis DC or CK; as is manifeſt from the production of the ellipſis.

10°, The vaniſhing ſubtenſe of the angle of contact, parallel to the diſtance from the focus, at an equal perpendicular interval from that diſtance, always remains given and unvaried in the ſame ellipſis, yea, and in the ſame parabola and hyperbola too. Thus, if dZ be always given, gd alſo will always remain given in a diſtance infinitely ſmall.

11°, The area of the ellipſis is to the area of the circle circumſcribed, as the leſſer axis is to the greater; and ſo are all correſpondent parts whatſoever among themſelves, as MIK, *m* IK: and the ordinates to the greater axis, as MI, are divided by the elliptic periphery always in the ſame proportion, ſo that MI is to *m* I always in the ſame proportion; to wit, that of the leſſer axis to the greater. And we are to reaſon in the ſame manner concerning a circle inſcribed in an ellipſis.

12°, All parallelograms deſcribed about the conjugate diameters of the ellipſis, and comprehending the ellipſis, are equal. Thus, the parallelogram $\alpha\beta\gamma\delta$, *fig.* 14. is equal to the other parallelogram $\varepsilon\zeta\eta\theta$: and thus it is every-where.

13°, If a right line always paſſing through one of the foci be ſo moved, that the elliptic area, deſcribed by the ſame, is proportional to the time; the angular motion of a right line drawn from the other focus to the former line, will be almoſt equable: thus, in figure 13. if the angular motion of the line HB be ſo tempered, that the ſame, being according to the reciprocal proportion of the diſtance accelerated or retarded, deſcribes the area DHB, proportional to the time; the angular motion KIB about the other focus I, will be almoſt proportional to the time, and conſequently without any notable acceleration or retardation, and nearly equable; that is to ſay, where the ellipſis does not differ much from a circle.

Geneſis of the Parabola.—Let DI be an infinite right line, and IL another perpendicular to it (*fig.* 15.); then, taking in the line DI, any point, F, let the line FI be biſected in the point T; and let there be taken two threads joined together in the point T, one TI, the other TF: and let a pin fixed to the threads in the point T be moved to the right and left, in ſuch a manner, that when the pin is in any other poſition, as in P, the thread TI, which here becomes PL, be always perpendicular to IL; or, which is the ſame thing, parallel to DI, but equal to the thread TF; which in this caſe becomes PF, ever paſſing through the point F.

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[*] That the triangle is a *conic ſection*, as well as the other four, is ſhewn by Apollon. in Con. l. 1. p. 3. For the circle; it ariſes either from the ſection of a cone by a plane parallel to the baſis, or from the ſubcontrary ſection of the ſcalene cone.—Vid. Apoll. Con. lib. 1. prop. 5.

The curve thus generated by the pin, infinitely produced both ways, is a parabola: in which *g* P *i* T *s* R *o*, is called the *periphery*; ID the *axis*, or *principal diameter*; F the *focus*; the point T the *principal vertex*.

An ordinate to the axis through the focus is equal to the principal latus rectum: all right lines *n i*, or RZ, parallel to the axis, are diameters, as dividing the lines *i b* and KT, which are parallel to the tangents at their vertices, into two equal parts; and they are called diameters belonging to the vertices in which they terminate, as T, *i*.

Properties of the Parabola.—1°, Every diameter, or right line parallel to the axis, biſects all the lines within the figure, which are parallel to the tangent of the vertical point: and theſe biſected lines are called *ordinates*.

2°, The ordinates of the axis are perpendicular thereto; but the ordinates of the reſt of the diameters are oblique to their diameters; and ſo much the more oblique, by how much the vertex of the diameter is further removed from the principal vertex of the parabola.

3°, The latus rectum, or parameter to every diameter, is a third geometrical proportional to any abſciſs, and its ſemiordinate; that is, if the latus rectum of the diameter *in*, or that of the vertex *i*, be *y*; then, as the abſciſs *iq* is to the ſemiordinate *qk*, ſo is that ſemiordinate *q k* to *y*.

4°, The principal latus rectum, or that belonging to the axis, is equal to the ordinate *bi* paſſing through the focus; and quadruple of FT, the leaſt diſtance of the focus from the principal vertex.

5°, The latus rectum, belonging to any vertex or diameter, is alſo quadruple of the diſtance of that vertex from the focus: thus, the latus rectum of the vertex *s* is quadruple F*s*, and ſo it is every-where.

6°, The diſtance of any vertex or point in the parabola whatever, from the focus, is equal to the leaſt diſtance of the ſame from the line LL, which is perpendicular to the axis; and is diſtant from the principal vertex, by a quarter of the principal latus rectum.

7°, The ſquare of every ſemiordinate, as *qk*, is equal to a rectangle made of the latus rectum, of the ſame vertex as Y, and *iq* the abſciſs of the diameter of the vertex. And from the equality of the παραβολη, or compariſon in the figure, betwixt the rectangle and the ſquare of the ſemiordinate, without any exceſs or defect, the name of the ſection is derived.

8°, Since therefore the latus rectum in any diameter is given, the abſciſſes will be as the ſquares, or in the duplicate ratio of the ſemiordinates. Thus, TF is to TG as *i*F*q* is to *g*G*q*, and ſo likewiſe is *iq* to *ir*, as the ſquare of *q*T is to the ſquare of *rl*: and thus every-where. From whence, alſo, when the abſciſs of the axis is equal to the principal latus rectum, or fourfold of the diſtance from the vertex, it will be equal to its ſemiordinate.

9°, The angle, comprehended by any tangent whatever, and a line from the focus, is equal to an angle comprehended by the ſame tangent, and any diameter, or the axis. Thus, the angles I*i*F, and *pin* are equal: whence, by the way, all the rays of light which fall on the concave part of the ſurface, produced by the convolution of the parabola about the axis, which fall, we ſay, on the ſame parallel to the axis; will be reflected from a concave paraboloid figure to the focus F, and there beget a moſt vehement burning: from which property, the point F has the name *focus*, and has communicated the ſame to the like points in the hyperbola and ellipſis.

10°, A parabola, like an hyperbola, does not incloſe a ſpace, but ſtretches out *in infinitum*.

11°, A parabolic curve always tends more and more, *in infinitum*, to a paralleliſm with its diameters; but can never arrive thereat.

12°, If two parabolas be deſcribed, with the ſame axis and vertex; the ordinates to the common axis will be cut off by the parabola in a given proportion; and the areas comprehended by the ſame axis and ordinate, and the reſpective curves, will be in the ſame given proportion to one another.

13°, Every parabolic ſpace comprehended betwixt the curve and the ordinate, is to the parallelogram made of the ſame baſe and altitude, in a ſubſeſquialteral proportion; that is, as 2 is to 3; and to the external ſpace in a duplicate proportion, or as 2 is to 1: ſo *qi*T is to *qi*I, as 2 is to 3; and to *i*IT as 2 is to 1. From whence it becomes eaſy to ſquare the parabola.

14°, The diſtance between the vertex of the axis, and the point where any tangent interſects it, as I, is equal to the abſciſs of the axis which belongs to the ordinate applied from the point of contact: ſo TI is equal to TF; and thus it is every-where.

15°, All parabolas are like, or of the ſame ſpecies; as are alſo all circles.

16°, If a diameter be continued through the point of concourſe of two tangents; this diameter will biſect the line that joins the contacts: which property of the parabola may likewiſe be underſtood of the ellipſis, and hyperbola.

Geneſis of the Hyperbola.—Suppoſe a ſtaff or rule of a ſufficient length, as IB (*fig.* 16.): let I and H be two central points, anſwering to the foci of an ellipſis, in which let nails be faſtened; then, there being tied to one end of the ſtick a rope or thread as long again as the ſtick, let the other end thereof be bored through, and ſo fixed upon the nail I; and fix the other end of the rope, by a knot, upon the other nail H: which done, laying your finger on the point B, where the rope and ſtaff are tied together, let your finger deſcend ſo long, till you have thereby applied, and joined the whole rope to the ſtaff, or rule; the ſtaff having been in the mean while, as it needs muſt, wheeled about the centre I. Thus, with the point B, the vertex of the angle HBI, you will have deſcribed a curve line XBD, which is part of an hyperbola; the whole conſiſting of that curve which will reſult from the curve XBD, which hath added to it the curve YD, the produce of the rule and work, as turned to the other ſide.

Further, transferring the hole, or knot of the rope to the nail I, and faſtening the end of the ſtaff on the nail H, you will deſcribe another hyperbola, vertically oppoſite to the former, which will be altogether like and equal thereto. But if, without changing any thing in the rule and nails, you only apply a longer rope; you will have an hyperbola of a different ſpecies from the former: and if you ſtill lengthen the rope, you will have ſtill other ſorts of hyperbolas; till at length, making the rope double the length of the rule, you will have the hyperbola changed into a right line.

But if you alter the diſtance of the nails, in the very ſame proportion in which you change the difference betwixt the length of the rope, and that of the ſtick; in this caſe you will have hyperbolas marked out, which are altogether of the ſame ſpecies, but have their ſimilar parts differing in magnitude.

Laſtly, if the length of the rope and rule be equally increaſed, their difference in the mean while, and the intervals of the nails, remaining the ſame; not a different hyperbola, either as to ſpecies or magnitude, will be deſcribed, nor any other than a greater part of the ſame hyperbola.

It muſt be owned, however, that many properties of an hyperbola are better known from another manner of generating the figure, which is as follows: Let LL and MM (*fig.* 17.) be infinite right lines interſecting each other at any angle whatever, in the point C: from any point whatever, as D or *e*, let D*c* D*d* be drawn parallel to the firſt lines; or *ec*, *ed*; which, with the lines firſt drawn, make the parallelograms, as D*c*C*d*, or *ec*C*d*. Now, conceive two ſides of the parallelogram, as D*c* D*d*, or *eced*, to be ſo moved, this way and that way, that they always keep the ſame paralleliſm; and that at the ſame time the areas always remain equal; that is to ſay, that D*c* and *ec* remain always parallel to MM; and D*d* or *ed* always parallel to LL; and that the area of every parallelogram be equal to every other, one ſide being increaſed in the ſame proportion wherein the other is diminiſhed: by this means, the point D or *e* will deſcribe a curve line within the angle comprehended by the firſt lines; which is altogether the ſame as that deſcribed above. So alſo in the angle vertically oppoſite will be deſcribed a like and equal hyperbola; if the parallelogram C*c* K*d*, equal to the former, be ſuppoſed to be moved, in the ſame manner as before: which hyperbolas are, as was ſaid before, called *oppoſite ſections*, or *oppoſite hyperbola's*.

In each figure, DK is the *tranſverſe axis*, or *tranſverſe diameter of the hyperbola*, or *the oppoſite ſections*; the point C the *centre*; H and I the *foci*. In the latter figure, all the lines paſſing through the centre C, as *i b*, are *diameters*: but if hyperbola's be deſcribed in the following angles, as LCM, MCL, thoſe ſections will be called *following ſections*: and if the diſtance of the primary vertex of thoſe hyperbola's from the common centre C, as Cβ, or Cγ, be equal to the ſemitangent K*ν* or K*ω*, at the primary vertex of theſe, thoſe ſections are called *conjugate ſections*: and all the figures together form the *hyperbolic ſyſtem*.

Further, *i b* the ordinate to the axis through the focus, equal to the principal latus rectum, or the parameter of the axis; and an indeterminate diameter, which is parallel to the ordinates of any determinate diameter, is called the *conjugate diameter* of the ſame.

Properties of the Hyperbola.—1°, Any diameter, or right line paſſing through the centre, biſects all its ordinates; that is, all the right lines which are terminated on both ſides by the hyperbolic periphery.

2°, The ordinates of the axis are perpendicular to ſame; but the ordinates of the reſt of the diameters oblique to their diameters: and ſo much the more in ſpecies, at equal diſtances from the axis, by how the difference of the angles including the hyperbola's greater: and in the ſame hyperbola, ſo much the oblique, by how much the daimeters are farther from the axis.

3°, If any lines, as H*b* and Q*s*, be ſemiordinates diameter whatever, as KD; the ſquare of the H*b*, is to the ſquare of the ſemiordinate QS, as the angle KHDH is to the rectangle KQDQ: and ſo the *bn* is to the ſquare *a*K, as the rectangle *ibpb*, is to angle *iaba*: and thus every-where.

TAB: CONICKS

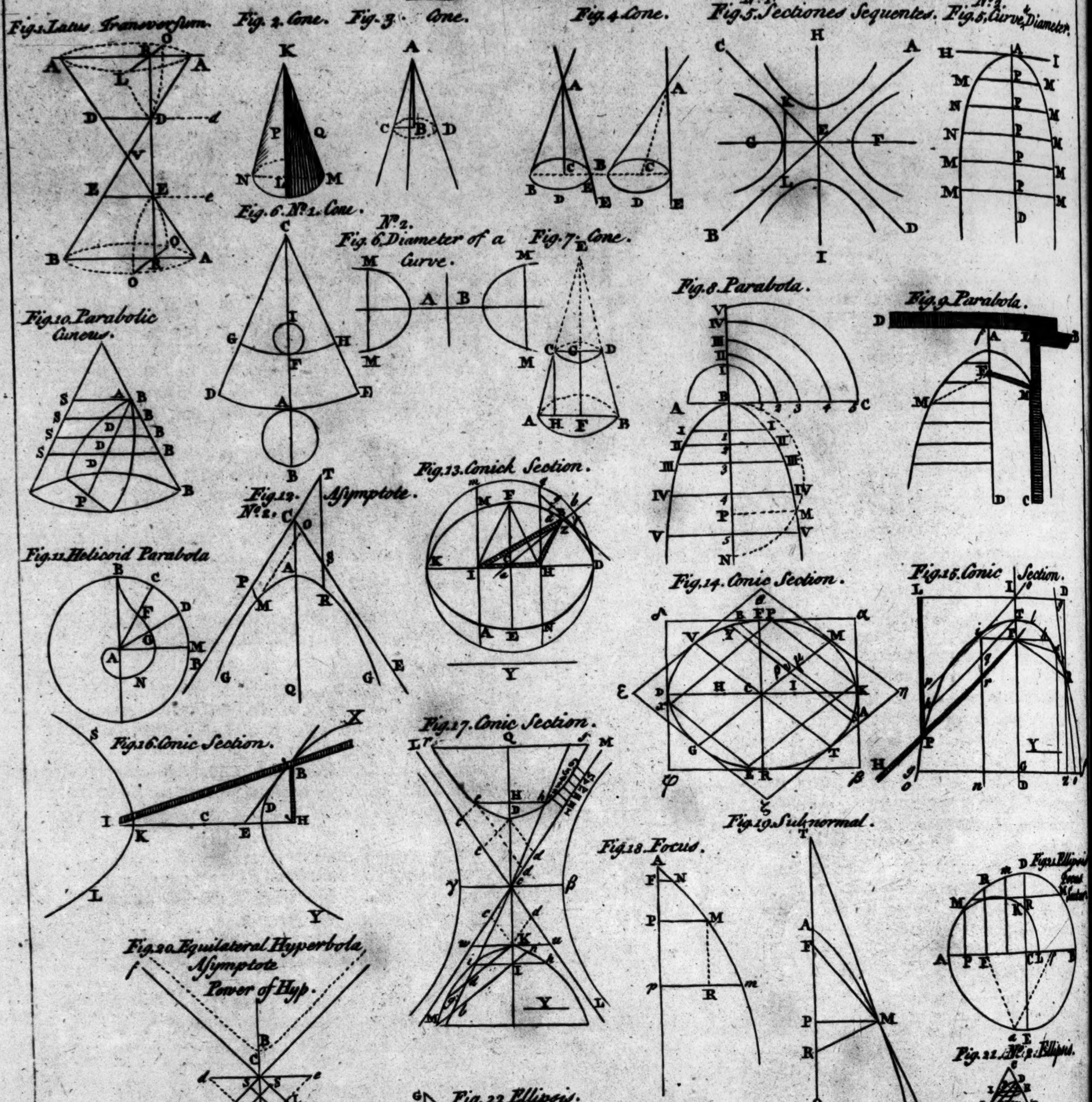

Fig. 1. Latus Transversum.
Fig. 2. Cone.
Fig. 3. Cone.
Fig. 4. Cone.
Nº 1. Fig. 5. Sectiones Sequentes.
Nº 2. Fig. 5. Curve, Diameter.
Fig. 6. Nº 1. Cone.
Nº 2. Fig. 6. Diameter of a Curve.
Fig. 7. Cone.
Fig. 8. Parabola.
Fig. 9. Parabola.
Fig. 10. Parabolic Cuneus.
Fig. 11. Helicoid Parabola
Fig. 12. Nº 1. Asymptote.
Fig. 13. Conick Section.
Fig. 14. Conic Section.
Fig. 15. Conic Section.
Fig. 16. Conic Section.
Fig. 17. Conic Section.
Fig. 18. Focus.
Fig. 19. Subnormal.
Fig. 20. Equilateral Hyperbola, Asymptote, Power of Hyp.
Fig. 21. Ellipsis
Fig. 21. Nº 2. Ellipsis.
Fig. 22. Ellipsis.
Fig. 24. Ellipsis.
Fig. 25. Ellipsis.
Fig. 26. Ordinate.
Nº 2. Fig. 27. Hyperbola.
Fig. 27. Hyperbola.
Fig. 28. Hyperbola.
Fig. 29. Hyperbola.
Fig. 30. Hyperbola.
Fig. 31. Axis.
Fig. 32. Axis of the Hyperbola.
Fig. 33. Asymptote.

4°, The latus rectum, or parameter of every diameter, is a third geometrical proportional to the diameter, and the conjugate thereof (or its tangent, which is equal to it): that is, if the latus rectum of any diameter, as D K, be *y*; then, as the diameter D K is toits conjugate *β v*, or its equal *ω v*; ſo is that conjugate *β γ*, or that tangent *ω v*, to *y*. And as the ordinate to the axis through the focus is the principal latus rectum, ſo it is more than double of the leaſt diſtance of the focus from the vertex.

5°. The ſquare of any ſemiordinate, as Q *r*, is greater than a rectangle made of the abſciſs D Q, drawn into the latus rectum of its own diameter, as *y*: and, in like manner, the ſquare of the ſemiordinate *b n* is greater than the rectangle of the abſciſs *i b*, into the latus rectum of the diameter *h i*. From which ὑπερβολη, or exceſs, this ſection hath its name.

6°, If from any point of the hyperbola, as B (*fig.* 16.), there be drawn right lines to both the foci, as B H, B I, the difference of theſe lines will always be equal to the axis D K; as will eaſily appear from the delineation itſelf.

7°, If the angle H B I, comprehended by lines drawn to the foci, be biſected by the right line E B, that right line will a tangent to the hyperbola in the point B.

8°, The right lines L L and M M (*fig.* 17.), which incloſe the hyperbola's, are aſymptotes of the hyperbola's; that is, they are ſuch, to which, on both ſides, the curve approaches nearer and nearer, but is never able to touch or coincide therewith.

9°, The ſpecies of hyperbola's are various, according to the different magnitude of the angle LCM, comprehended by the aſymptotes; but that angle remaining the ſame, the ſpecies of the hyperbola remainsunchanged: yet, according to the different magnitudes of the parallelograms, by which hyperbola's are deſcribed, hyperbola's of divers magnitudes do ariſe: if the angle contained by the aſymptotes be a right angle, the hyperbola is called *equilateral*, or *rectangular*; and the latus rectum of all the diameters will (as in a circle) be equal to the diameters. Laſtly, if hyperbola's be deſcribed about the ſame axis in divers angles of the aſymptotes, the right lines perpendicular to the axis will be cut off in a given proportion by them all; and the ſpaces likewiſe incloſed by the right lines, or ordinates, the produced axis, and the curves, will be in the ſame given proportion.

10°, If the diſtances from the centre of the hyperbola, be taken in a geometrical proportion in one of the aſymptotes, ſo that C I, CII, CIII, CIV, CV, CVI, be in continued geometrical proportion; and if from thoſe points there be drawn parallel to the other aſymptote the lines, I 1, II 2, III 3, IV 4, V 5, VI 6; the ſpaces I 2, II 3, III 4, IV 5, V 6, will be equal among themſelves. And conſequently, if that aſymptote C M be ſuppoſed to be divided, according to the proportion of number exceeding one another in a natural ſeries, thoſe ſpaces will be proportional to the logarithms of all thoſe numbers.

ommon properties of all the Conic *ſections.*—From the whole it may be gathered, 1°. That the *conic ſections* are in themſelves a ſyſtem of regular curves, naturally allied to each other; and that one is changed into another perpetually, when it is either increaſed, or diminiſhed, *in infinitum*.

Thus, the circle, the curvature thereof being never ſo little increaſed or diminiſhed, paſſes into an ellipſis; and the ellipſis, its centre going away infinitely, and the curvature being by that means diminiſhed, is turned into a parabola; and when the curvature of the parabola is never ſo little changed, there ariſeth the firſt of the hyperbola's; the ſpecies whereof, which are innumerable, will all of them ariſe orderly by a gradual diminution of the curvature; till the curvature vaniſhing away, the laſt hyperbola ends in a right line perpendicular to the axis. From whence it is manifeſt, that every regular curvature, like to that of a circle, from the circle itſelf to a right line, is a conical curvature, and is diſtinguiſhed with its peculiar name, according to the divers degrees of that curvature.

2°, That the latus rectum of a circle is double to the diſtance from the vertex: that all the latera recta of ellipſes are in all proportions to that diſtance betwixt the double and quadruple, according to their different ſpecies: that the latus rectum of the parabola is juſt quadruple of that diſtance: and, laſtly, that the latera recta of hyperbola's are in all proportions beyond the quadruple, according to their various kinds.

3°, That all diameters in a circle and ellipſis interſect one another in the centre of the figure within the ſection: that in the arabola they are all parallel amongſt themſelves, and to the xis; but that in the hyperbola they interſect one another, ut this without the ſection, in the common centre of the ppoſite ſections.

, That the curvature, with reſpect to the focus, in all theſe gures, is increaſed or diminiſhed proportionably.

NICS, that part of the higher geometry, or geometry of urves, which conſiders the cone, and the ſeveral curve lines iſing from the ſections thereof. See Geometry.

lar Conic *ſections*. See the article Similar.

NIFEROUS, a term applied to ſuch trees, ſhrubs, or herbs, bear a ſquammous or ſcaly fruit, of a woody ſubſtance, and figure approaching to that of a cone; in which there are ually many ſeeds; and, when they are ripe, the ſeveral cells partitions in the cone gape or open, and the ſeeds drop out. Of this kind are the firr, the pine, beech, and the like.

CONJOINT, or Conjunct, is applied in the antient muſic, in the ſame ſenſe as *conſonant*, to two or more ſounds heard at the ſame time. See Consonance.

Conjoint *degrees*, two notes which immediately follow each other in the order of the ſcale; as *ut* and *re*.

Conjoint *tetrachords*, are two tetrachords, where the ſame chord is the higheſt of the one, and the loweſt of the other. See Chord.

CONISOR, or Cognisor, in law, is uſed in the paſſing of fines, for him that acknowleges the fine. See Fine.

He to whom the fine is acknowleged, is called the *cognizee*, or *coniſee*.

CONJUGATE *diameter*, or *axis*, in conics, is a right line biſecting the tranſverſe diameter. See Diameter, Conic *ſection*, and Axis.

Conjugate *axis*, of an ellipſis, is the ſhorteſt diameter, or axis, biſecting the longer, or tranſverſe axis.–Such is F F, Tab. *Conics*, fig. 31.

It is demonſtrated, 1°, That in an ellipſis, the *conjugate* axis is a mean proportional between the tranſverſe axis and the parameter. 2°, The ſquare of the *conjugate* axis is to that of the tranſverſe, as the ſquare of the ſemiordinate is to the rectangle of the ſegments of the axis. 3°, That a right line drawn from the focus to the extremity of the ſemi-*conjugate* axis, is equal to the tranſverſe ſemi-axis.

Hence, the *conjugate* axes being given, the focus is eaſily determined. See Focus. And the ellipſis thence eaſily deſcribed.

Conjugate *axis*, in an hyperbola, is a mean proportional between the tranſverſe axis and the parameter.

It is thus called, becauſe the *conjugate* axis of an ellipſis has the ſame ratio.—In an hyperbola, the ſquare of the *conjugate axis* is to the ſquare of the tranſverſe, as the parameter to the tranſverſe axis.

CONJUGATION, in grammar, an orderly diſtribution of the ſeveral parts or inflexions of verbs, in their different moods and tenſes, to diſtinguiſh them from each other.

The Latins have four *conjugations*, diſtinguiſhed by the terminations of the infinitive, *are*, *ere*, *ere*, *ire*; and moſt of the French grammarians reduce the *conjugations* of their language to the ſame number; ending in *er*, *re*, *ir*, and *oir*.

In Engliſh, where the verbs have ſcarce any natural inflexions, but derive all their variations from additional particles, pronouns, &c. we have hardly any ſuch thing as ſtrict *conjugations*. See Mood.

Conjugation, in anatomy, is underſtood of a pair of nerves; or two nerves, ariſing together, and ſerving for the ſame operation, ſenſation, or motion; there being ſcarce any nerve in the body without its fellow. See Nerve.

The antient phyſicians only knew of ſeven pairs, or *conjugations* of nerves; the moderns have diſcovered thirty new ones. See Conjunct. See the article Conjoint Pair.

Conjunct *ſentence*. See the article Sentence.

CONJUNCTION, in aſtronomy, the meeting of two ſtars, or planets, in the ſame optical point of the heavens, *i. e.* in the ſame degree of the zodiac.

If the two bodies meet both in the ſame degree of longitude and latitude, a right line drawn from the eye through the centre of one of them paſſes through that of the other; and the *conjunction* is ſaid to be *true*.

If the lower hides the upper, the *conjunction* is ſaid to be *corporal*; and if the ſame right line, continued back from the two centres through the eye, do alſo paſs through the centre of the earth, the *conjunction* is ſaid to be *central*.

If the line paſs wide of the centre of the earth, the *conjunction* is ſaid to be *partile*.

If the bodies do not meet preciſely in the ſame degree, but are joined with ſome latitude, the *conjunction* is ſaid to be *apparent*. —Thus, when a right line, ſuppoſed to be drawn through the centres of two planets, does not paſs through the centre of the earth; but through the eye of the ſpectator; it is ſaid to be an *apparent conjunction*.

Conjunctions are alſo divided into *great* and *greateſt*: *great conjunctions* are thoſe which only happen at conſiderable diſtances of time from each other; as that of Saturn and Jupiter, which happens every twenty years.

Greateſt conjunctions are thoſe which happen in times very remote; as the *conjunction* of the three ſuperior planets, Mars, Jupiter, and Saturn, which only return once in 500 years. But this diviſion has little place in aſtronomy; being founded on the notion of the particular influences, &c. of the heavenly bodies in ſuch and ſuch aſpects.

Aſtrologers maintain, that the deluge was owing to a *conjunction* of all the planets in Capricorn; and that the conflagration will be occaſioned by their *conjunction* in Cancer: whence they pretend to foretel the end of the world.

The *conjunction* is the firſt, or the principal, of all the aſpects; and that whence the other aſpects commence; as oppoſition is the laſt, where they terminate.

The moon is in *conjunction* with the ſun every month. See Moon, and Month.—Her *conjunctions* and oppoſitions are called by a general name, *ſyzygies*.

Eclipſes of the ſun never happen, but when there is a *conjunction* of the ſun and moon in the nodes of the ecliptic.

CONJUNCTION, in grammar, a particle which expreſſes a relation or dependence between words, and phraſes; thus called, becauſe ſerving to join or connect the parts or members of a diſcourſe.

The *conjunction* is the ſixth of the eight vulgar parts of ſpeech.

Conjunctions render the diſcourſe more ſmooth and fluent; and ſerve very good purpoſes in the argumentative, and narrative ſtyle; but they muſt ever be omitted where a perſon ſpeaks with emotion, as only ſerving to weaken and enervate it. Boileau obſerves, that nothing gives more warmth and life to a diſcourſe, than to drop the *conjunctions* or copulatives: a paſſion, adds he, embarraſſed with *conjunctions*, and uſeleſs particles, loſes all the fire and vehemence it would get in its progreſs.

Conjunctions are of various kinds.—*Copulative* or *conjunctive* CONJUNCTIONS, are thoſe which expreſs a relation of union or compariſon between things: as, *and*, *et*; *only*, *tantum*; *as much as*, *tantum quantum*; *in the ſame manner as*, *quemadmodum*; *neither more nor leſs*, *tantundem*; *inaſmuch as*, *quippe*; *not only*, *but alſo*, *non modo*, *ſed etiam*, &c.

CONJUNCTIONS *adverſative*, thoſe which expreſs a reſtriction, or contrariety.—As, *but*, *ſed*; *nevertheleſs*, *tamen*; *although*, *etiamſi*; *far from*, *adeo non*.

CONJUNCTIONS *cauſal*, thoſe which ſhew, that the reaſon of ſomething is brought.—As, *for*, *nam*; *becauſe*, *quia*; *ſeeing*, *quippe*; *the rather ſince*, *eo magis quo*; *inaſmuch as*, *quatenus*.

CONJUNCTIONS *concluſive*, thoſe which denote a conſequence drawn.—As, *for which reaſon*, *quapropter*; *but then*, *atqui*; *of conſequence*, *ideoque*; *ſo that*, *ita ut*, &c.

CONJUNCTIONS *conditional*, are thoſe which import a condition.—As, *if*, *ſi*; *if not*, *ſi minus*; *on condition that*, *ea lege ut*; *provided that*, *dummodo*; *in caſe of*, *ſi vero*.

CONJUNCTIONS *continuative*, thoſe which expreſs a ſucceſſion, or continuation of the diſcourſe.—As, *in effect*, *reipſa*; *even*, *etiam*; *whatever it be*, *quicquid ſit*.

CONJUNCTIONS *disjunctive*, thoſe which expreſs a relation of ſeparation or diviſion.—As, *neither*, *nec*; *whether*, *ſive*; *or*, *vel*. See DISJUNCTIVE.

CONJUNCTIONS *dubitative*, thoſe which expreſs ſome doubt, or ſuſpenſion of opinion.—As, *if*; *that is to ſay*, *if*, &c.

Exceptive CONJUNCTIONS are, *if it be not*, *niſi ſi*; *unleſs that*, *niſi*, &c.

CONJUNCTIVA, *tunica*, *adnata*, or *albuginea*, in anatomy, the outermoſt coat, or membrane, of the eye; ſo called, becauſe it incloſes all the reſt; or becauſe it faſtens the eye in its orbit.

It is very ſmooth, when ſound, and is of a white colour, like alabaſter; whence it is ordinarily called the *white of the eye*.

It is ſaid to have its riſe from the pericranium, and to be only a continuation or extenſion thereof.

It does not inveſt the globe of the eye intire; but terminates at the edge of the ſclerotica.

It is covered with a vaſt number of fine veins and arteries, which never appear, unleſs when the motion of the blood is more than uſually rapid, as in ophthalmia's; or when the veſſels are more full and diſtended than ordinary, as in drunkenneſs.

CONJURATI *fratres*. See the article FRATRES.

CONJURATION, magic words, characters, or ceremonies, whereby evil ſpirits, tempeſts, &c. are ſuppoſed to be raiſed, or driven away.

The Romiſh prieſts pretend to expel devils, by preparing holy water in a particular manner, and ſprinkling it over the poſſeſſed, with a number of *conjurations*, and exorciſms.

Some authors make the difference between *conjuration* and *witchcraft* to conſiſt in this; that the former effects its end by prayers, and invocation of God's name, &c. to compel the devil to do what is deſired; ſo that the conjurer is ſuppoſed to be at war with the devil, and that evil ſpirit to act merely out of conſtraint: whereas the latter attains its end by an immediate application to the devil himſelf; and the devil's complaiſance is ſuppoſed to be the conſequence of ſome compact between them: ſo that the devil and the witch have a good underſtanding with one another.

But theſe, again, differ from *inchantment* and *ſorcery*; in that theſe latter are pretended to operate ſecretly, and ſlowly, by ſpells, charms, &c. without ever calling on the devil, or having any conference with him. See CHARM, &c.

CONN, in the ſea-language. See COND.

CONNECTION, or CONNEXION, a relation whereby one thing adheres to, or depends on another.

Euclid's propoſitions have ſuch a *connection* among themſelves, that the latter cannot ſubſiſt without the former.—Philoſophers are at a loſs as to the manner of the *connection* between ſoul and body; between cauſes and effects, &c.

CONNECTION, or *continuity*, in the drama, conſiſts in the joining of the ſeveral ſcenes together.

When the ſcenes of an act ſucceed one another immediately, and are ſo joined as that the ſtage is never left empty, the *connection* is ſaid to be obſerved.

CONNER.—ALE-CONNER. See the article ALE-CONNER.

CONNIVENTES *valvulæ*, in anatomy, wrinkles, or corrugations in the inner coat, or membrane, of the two large inteſtines, the jejunum and ileum.

They are formed as the rugæ of the ſtomach, *viz.* by the inner coat's being larger than the outer.

Theſe folds, or corrugations, ſome anatomiſts imagine in ſome meaſure to do the office of valves; by ſtreightening the paſſages, and conſequently impeding the motion of their contents: by which means, the lacteals have the more time to imbibe the chyle. See LACTEAL, CHYLE, and DIGESTION.

CONNOISSEUR, a French term of late uſed in Engliſh: it literally denotes a perſon well ſeen and verſed in any thing; being formed of the verb *connoitre*, *to know*, *underſtand*.—Hence it comes to be uſed in our language for a critic, or perſon who is a thorough judge, or maſter in any way; particularly in matters of painting and ſculpture.

CONOID, CONOIDES, in geometry, a ſolid body, reſembling a cone, except in this, that, inſtead of a perfect circle for its baſe, it has an ellipſis, or ſome other curve approaching thereto.

The *conoid* is produced by the intire circumvolution of a conic ſection around its axis; and according to the denomination of the ſection from whence it is generated, it is differently denominated: if, *v. gr.* the ſolid be produced by the motion of a parabola, it is called a *parabolic conoid*; if by that of an hyperbola, an *hyperbolic conoid*; and an *elliptic conoid*, or a *ſpheroid*, when produced by the rotation of an ellipſis around one of its axes.

The famous ſolid of the leaſt reſiſtance, Sir Iſaac Newton, M. Fatio, and the marquis de l'Hôpital, have demonſtrated to be a *conoid*.

CONOIDES, or CONARIUM, is a name given by anatomiſts to a gland found in the third ventricle of the brain, reſembling a pine-apple; whence M. Des Cartes called it *pinealis*; and has fixed there the ſeat of the rational ſoul. See PINEAL *gland*.

CONSANGUINITY, the relation of kinſhip, between perſons of the ſame blood, or ſprung from the ſame root.

Marriage is prohibited by the church to the fourth degree of *conſanguinity*, incluſive; but, by the law of nature, *conſanguinity* is no obſtacle to marriage, except it be in the direct line.

Conſanguinity terminates in the ſixth and ſeventh degree, excepting in the ſucceſſion to the crown; in which caſe, *con-ſanguinity* is continued to infinity.

The civilians call *fratres conſanguinei*, thoſe born of the ſam father; in oppoſition to *fratres uterini*, who are only born o the ſame mother.

According to the common opinion, thoſe were not allowed t complain of an inofficious teſtament, *i. e.* of being diſinherite without cauſe; excepting from the turpitude of the perſo appointed heir in their place. But Van Water endeavours t ſhew the contrary; and urges, that the *conſanguinei* migh plead inofficioſity, even where the teſtament was not ma in favour of a perſon incapable.

CONSCIENCE, CONSCIOUSNESS, in ethics, a ſecret teſti mony or judgment of the ſoul, whereby it gives its appr bation to things it does that are naturally good; and r proaches itſelf for thoſe that are evil.

Or, *conſcience* is a dictate of the underſtanding power, co cerning moral actions; conſidered as it has the knowlege laws; and conſequently as conſcious of what is to be do or not done, with regard to the legiſlator.

In the more popular ſenſe of the word, *conſcience* is a judgme either true or falſe, whereby we pronounce a thing good or e

This makes what we call the *inner forum*, or tribunal.

Some divines maintain, that *conſcience* is infallible; and ho to be that immutable law whereby God will judge men: deny that the underſtanding can be the ſource of errors, lay them all at the door of the will. A man, ſay they, ſecure himſelf from error, by forbearing to judge of th till he have a clear and diſtinct perception thereof.

Some of the ſchoolmen diſtinguiſh between the *conſcience* a cedent to an action, and that conſequent thereto: the f called *antecedent conſcience*, determines what is good, and evil; and conſequently preſcribes what is to be done, what avoided.

Conſequent conſcience is a kind of ſecondary or reflex judgm with regard to the goodneſs, &c. of things already do committed.

The *rule of conſcience* is the will of God, ſo far as it is known to us, either by the light of nature, or by that o velation.

With reſpect to the knowlege of this rule, *conſcience* is be *rightly informed*, or *miſtaken*; *firm*, or *wavering*, or *ſcr lous*, &c.—With reſpect to the conformity of our actions t rule when known, *conſcience* is ſaid to be *good*, or *evil*, Philoſophers, in lieu of the word *conſcience*, which ſeem propriated to theological matters, ordinarily uſe that o *ſciouſneſs*; whereby they mean an inner ſentiment of a whereof one may have a clear and diſtinct notion.—I ſenſe, they ſay, that we do not know our own ſoul, n aſſured of the exiſtence of our own thoughts, otherwiſe by *ſelf-conſciouſneſs*.

CONSCRIPT, Conscriptus, a popular term in the Roman hiſtory, uſed in ſpeaking of ſenators, who were called *conſcript fathers*, *patres conſcripti*; by reaſon that their names were written in the regiſter, or catalogue of the ſenate.

Livy, *l.* 1. *c.* 1. tells us, that when Brutus filled up the places of the ſenators cut off by Tarquin, witn others choſen out of the equeſtrian order, thoſe new ſenators only had the appellation given them of *patres conſcripti*. But it is certain, that, in after-times, all the ſenators were called *patres conſcripti* without any diſtinction.

CONSECRATION, the act of converting, or ſetting apart, any profane, or common thing, to a pious purpoſe; with certain ceremonies, prayers, benedictions, *&c.* appropriate thereto.

Conſecration is the reverſe of ſacrilege and profanation, which conſiſt in perverting a thing ſet apart for a pious purpoſe, to a profane and popular one.

The biſhop *conſecrates* a church, or a chalice; the pope *conſecrates* medals, Agnus Dei's, *&c.* and grants indulgences to thoſe who bear them about them with devotion.

The *conſecration* or dedication of a church is an epiſcopal ceremony, conſiſting in a great number of benedictions, with aſperſions and unctions of chriſm, *&c.* on the walls, both withinſide and without.

The cuſtom of *conſecrating* perſons, temples, altars, veſtments, utenſils, *&c.* is very antient; and all the ceremonies thereof are preſcribed under the old law. Under the new law, when thoſe *conſecrations* relate to men, and are performed by appointment of Jeſus Chriſt, they are properly caled *ordinations*; excepting thoſe performed to biſhops and kings, which ſtill retain the name of *conſecration*.

Thoſe which only conſiſt in a ceremony inſtituted by the church, are more properly called *benedictions*. See Benediction,

When they regard churches, altars, veſſels, *&c.* they are properly called *dedications*. See Dedication.

Consecration is particularly uſed for the benediction of the elements in the euchariſt.

The Romaniſts define it, the converſion of the bread and wine into the real body and blood of Jeſus Chriſt: and that this is the ſentiment of their church, is evident from the prieſt's elevating the hoſt immediately after *conſecration*, for the people to adore it. See Elevation, *&c.*

There is a great controverſy between the Latin and Greek churches, touching the words of *conſecration*: the common opinion among the Romaniſts, agreeable to St. Thomas and the ſchoolmen, is, that the *conſecration* of the bread and wine conſiſts in theſe words, *This is my body*; *this is my blood.*

The Greeks, on the contrary, attribute the change of the elements to a certain prayer, which they call the *invocation of the Holy Ghoſt*, rehearſed after the words *This is my body*; *this is my blood*; which the Greeks maintain are only neceſſary in the proceſs of the *conſecration*, as they contain the hiſtory of the inſtitution; not as they contribute any thing to the change.

Consecration, among medaliſts, is the ceremony of the apotheoſis of an emperor; or his tranſlation into heaven, and reception among the gods: the proceſs whereof, ſee under Apotheosis.

On medals, the *conſecration* is thus repreſented; on one ſide is the emperor's head, crowned with laurel, ſometimes veiled; and the inſcription gives him the tile of *divus*: on the reverſe is a temple, a buſtum, an altar, or an eagle taking its flight towards heaven, either from off the altar, or from a cippus: at other times the emperor is ſeen in the air, borne up by the eagle; the inſcription always, Consecratio.

Theſe are the uſual ſymbols: yet on the reverſe of that of Antoninus, is the Antonine column.—In the apotheoſis of empreſſes, inſtead of an eagle there is a peacock.

For the honours rendered theſe princes after death, they were explained by the words *conſecratio*, *pater*, *divus*, and *deus*.—Sometimes around the temple or altar are put, *memoria felix*, or *memoriæ æternæ*: for princeſſes, *æternitas*, and *ſideribus recepta*; on the ſide of the head, *dea*, or Θεα.

CONSECTARY, a propoſition that follows, or is deduced, from ſome preceding definition, lemmata, axioms, concluſions, or the like.—Some rather chooſe to call it a *conſequence*; and others a *corollary*, &c.

CONSECUTIVELY, Consecutive, in the ſchool-philoſophy, is ſometimes uſed in oppoſition to *antecedently*, and ſometimes to *effectively*, or *cauſally*.

Thus, ſay the ſchoolmen, the corruption of one thing is the generation of another, not *effectively*, but *conſecutively*: that is, ſince matter cannot be without form, it is neceſſary, that the generation of one thing follow upon the corruption of another.

CONSENT *of parts*, in the animal œconomy, a certain agreement, or ſympathy, by means whereof, when one part is immediately affected, another, at a diſtance, becomes affected in like manner.

This mutual accord, or *conſent*, is doubtleſs effected by the commerce of the nerves, and their artful diſtribution and ramification throughout the body.

The effect is ſo ſenſible, as even to come under the phyſicians cognizance: thus, the ſtone in the bladder, by vellicating the fibres there, will pain and draw them ſo much into ſpaſms, as to affect the coats of the bowels in the ſame manner, by the intermediation of nervous threads, and make a colic there; and alſo extend their twitches ſometimes as far as the ſtomach, and occaſion grievous vomitings: the remedy, therefore, in ſuch caſes, is to regard the part originally affected, how remote and grievous ſoever may be the conſequences and ſymptoms in other places.

The fifth conjugation of nerves branched to the parts of the eye, the ear, thoſe of the mouth, cheeks, præcordia, and parts adjacent, *&c.* is ſuppoſed by naturaliſts to be the inſtrument of that particular and extraordinary *conſent* between thoſe parts. Hence it is, that a ſavoury thing ſeen or ſmelt excites the appetite, and affects the glands and parts of the mouth; that a ſhameful thing ſeen or heard affects the cheeks with bluſhes; on the contrary, if it pleaſe, it affects the præcordia, and excites the muſcles of the mouth and face to laughter; if it grieve, it affects the glands of the eyes, ſo as to occaſion tears, and the muſcles of the face, putting them into an aſpect of crying.

Dr. Willis, quoted by Mr. Derham, imputes the pleaſure of kiſſing, and its effects in exciting love, and even lechery, to this pair of nerves; which being branched both to the lips and the genital parts, when the former are affected, an irritation is occaſioned in the latter: and Dr. Sachs judges it to be from the *conſent* of the labia uteri with the labia oris, that a breeding lady, frighted with the ſight of ſcabby lips, had puſtules of the like kind broke out in the labia uteri.

CONSEQUENCE, in philoſophy, the concluſion of a reaſoning, or argument.

The two premiſes of a ſyllogiſm being granted, the *conſequence* muſt alſo be granted.

In a more reſtrained ſignification, *conſequence* is uſed for the relation or connexion between two propoſitions, whereof one follows, or is inferred, from the other.—Thus: *It is an animal, and therefore feels.*

CONSEQUENT, the laſt propoſition of an argument; being ſomething deduced or gathered from a preceding argumentation. An enthymeme only contains two propoſitions, the *antecedent*, and *ſequela*, or *conſequent*: if the antecedent be abſurd, the *conſequent* muſt be ſo too.

Consequent, in a more preciſe ſenſe, is uſed for the propoſition which contains the concluſion, conſidered in itſelf, and without any regard to the antecedent: in which ſenſe, the *conſequent* may be true, though the conſequence be falſe.

For inſtance; virtue ought to be rewarded; therefore temperance is a virtue.

Consequent *of a ratio*, in arithmetice, the latter of the two terms of a ratio; or that to which the antecedent is referred. See Ratio, and Proportion.

Thus, in *a* : *b*, or *a* to *b*, *b* is the *conſequent*, *a* the antecedent.

CONSERVATIVE *ſuture*. See the article Suture.

CONSERVATOR, an officer eſtabliſhed for the ſecurity and preſervation of the privileges granted ſome cities, and communities; or, a perſon who has a commiſſion to judge of, and decide, the differences ariſing among them.

In moſt catholic univerſities, there are two *conſervators*; the *conſervator* of royal privileges, or thoſe granted by kings; and the *conſervator* of apoſtolical privileges, or thoſe granted by the pope.

The firſt takes cognizance of perſonal and mixed cauſes between the regents, ſtudents, *&c.* and the latter of ſpiritual matters between eccleſiaſtics.

Antiently there were appointed *conſervators* of treaties of peace between princes; which *conſervators* became judges of the infractions made on a treaty, and were charged with the procuring ſatisfaction to be made. Theſe were uſually the feudatories of the ſeveral powers.

In lieu of *conſervators*, princes now have recourſe to other indifferent princes to guarantee their treaties. See Guarantee.

Conservator *of the peace*, in our antient cuſtoms, was a perſon who had an eſpecial charge, by virtue of his office, to ſee the king's peace kept.

Till the erection of juſtices of the peace by king Edward III. there were ſeveral perſons who by common law were intereſted in keeping the ſame: ſome having that charge as incident to other offices; and others ſimply, or of itſelf, called *cnſtodes*, or *conſervators of the peace*. See Justice.

The chamberlain of Cheſter is ſtill a *conſervator* in that county; and petty conſtables are, by the common law, *conſervators*, &c. in the firſt ſenſe.

CONSERVATORY, in gardening. See Green-*houſe*.

CONSERVE, in pharmacy and confectionary, a dry confect, or form of medicine, or food, contrived to preſerve the flowers, leaves, roots, peels, or fruits of ſeveral ſimples, as near as poſſible to what they were when freſh-gathered; and to give them an agreeable taſte.

Phyſicians, under the name of *conſerves*, commonly comprehend all kinds of confects of flowers, fruits, roots, ſeeds, barks, *&c.* both liquid and dry.

Conſerves are made by beating up the thing to be preſerved, with ſugar; *viz.* a triple quantity thereof to thoſe which are moſt moiſt, and corruptible, and a double quantity to ſuch as are leaſt ſo.

Thus, *e. gr.* to make *conſerve* of roſes, roſemary-flowers, ſage-flowers, or the like; they pound them in a ſtone mortar, and when pounded, put to them fine ſugar, and beat the whole well together. For ſruits, as currans, *&c.* they ſet them on the fire to make them yield their juice, then drain and ſtrain them, and thicken what comes from them over the fire, and add to it the ſugar. This laſt ſort of *Conſerve* is particularly called a jelly.

CONSIDERATION, in law, the material cauſe, or *quid pro quo* of any contract, and without which no contract is obligatory or binding.

This *conſideration* is either *expreſſed*; as if a man bargain to give ten guineas for a horſe: or *implied*, when the law itſelf enforces a *conſideration*; as if a man coming into an inn, take meat, drink, and lodging for himſelf and horſe, the law preſumes he intends to pay for them, though there be no expreſs contract between him and his hoſt; and if he diſcharge not the houſe, the hoſt may ſtop his horſe.

CONSIGNMENT, or CONSIGNATION, the depoſiting any ſum of money, bills, papers, or commodities, in ſure hands; either by order of a court of juſtice, in order to their being delivered to the perſons to whom they are adjudged; or voluntarily, in order to their being remitted to the perſons they belong to, or ſent to the places they are deſtined for.

CONSIGNMENT *of Goods*, is the delivering, or making them over to another.—Thus, goods are ſaid to be *conſigned* to a factor, when they are ſent to him to be ſold, *&c.* or when a factor ſends back goods to his principal, they are ſaid to be *conſigned* to him. See FACTOR.

CONSIMILI *Caſu.* See the article CASU.

CONSISTENCE, a ſtate of reſt, wherein things capable of growth, or decreaſe, continue for ſometime at a ſtand, without either.

The term is particularly uſed with regard to trees, for the acme, or age beyond which they do not grow, and yet at which they do not decline.

Thus we diſtinguiſh three ſtates or ſtages of a tree; its growth, *conſiſtence*, and return: and theſe are common to all trees, even fruit-trees.

The *conſiſtence* of an oak, is from 50 to 160 years: ſome, however, hold, that their *conſiſtence* only commences from 100 years; aſſerting that they grow till that time, and that they continue in that ſtate of perfection to 200 years of age.

CONSISTENCE, in phyſics, is that ſtate of a body wherein its component particles are ſo connected, or intangled among themſelves, as not to ſeparate or recede from each other.

Conſiſtence only differs from *continuity* in this, that *conſiſtence* implies a regard to motion or reſt, which continuity does not; it being ſufficient to denominate a thing *continuous*, that its parts are contiguous to each other.

CONSISTENCE is particularly uſed with regard to bodies conſidered as they are more ſoft, or more hard, more liquid, or more dry.

Forms of medicines, as electuaries, lambatives, bolus's, ſyrups, unguents, *&c.* differ chiefly in *conſiſtence.*

CONSISTENT *Bodies*, is a term much uſed by Mr. Boyle for ſuch as we ordinarily call *firm*, or *fixt bodies*; in oppoſition to *fluid* ones.

That author has a particular eſſay of the *atmoſphere of conſiſtent bodies*; wherein he ſhews, that all, even ſolid, hard, ponderous, and fixed bodies, do exhale or emit effluvia to a certain ſpace all around them.

CONSISTORIAL *Advocate.* See the article ADVOCATE.

CONSISTORY *, or *Roman* CONSISTORY, denotes the college of cardinals; or the pope's ſenate, and council, before whom judiciary cauſes are pleaded.

> * Du Cange derives the word from *conſiſtorium*, i. e. *locus ubi conſiſtitur*; uſed chiefly for a veſtible, gallery, or antechamber, where the courtiers wait for admiſſion; and called *à conſiſtente multitudine.*

The *conſiſtory* is the firſt court, or tribunal of Rome: it never meets but when the pope pleaſes to convoke it: the pope preſides in it in perſon, mounted on a magnificent throne, and habited in his pontificalia; on the right are the cardinal-biſhops and prieſts, and on the left the cardinal-deacons. See CARDINAL.

The place where it is held, is a large hall in the apoſtolical palace, where princes and embaſſadors of kings are received.

The other prelates, protonotaries, auditors of the rota, and other officers, are ſeated on the ſteps of the throne; the courtiers ſit on the ground; embaſſadors on the right, and *conſiſtorial* and fiſcal advocates behind the cardinals.

Beſides the public *conſiſtory*, there is alſo a private one, held in a retired chamber, called the chamber of *papegay*; the pope's throne here being only raiſed two ſteps high.

Nobody is here admitted but the cardinals, whoſe opinions are collected, and called *ſentences.* Here are firſt propoſed and paſſed all bulls for biſhopricks, abbeys, *&c.*

Hence biſhopricks, and abbeys, are ſaid to be *conſiſtorial benefices*; in regard, they muſt be propoſed in the *conſiſtory*, the annates be paid to the pope, and his bulls taken.

Antiently they were elective; but by the concordat, which aboliſhes elections, they are appointed to be collated by the pope alone, on the nomination of the prince.

CONSISTORY was alſo the name of a court under Conſtantine, where he ſat in perſon, and heard cauſes: the members of this court were called *comites.* See COUNT.

CONSISTORY is alſo uſed among the reformed, for a council or aſſembly of miniſters and elders, to regulate their affairs, diſcipline, *&c.*

CONSISTORY, or *Court Chriſtian*, in the Engliſh laws, is a council of eccleſiaſtical perſons, or the place of juſtice in an eccleſiaſtical or ſpiritual court.

Every archbiſhop and biſhop has a *conſiſtory-court*, held before his chancellor or commiſſary, either in his cathedral, in ſome chapel, iſle, or portico belonging thereto; or in ſome other convenient place of his dioceſe, for eccleſiaſtical cauſes.

The ſpiritual court was antiently, in the time of the Saxons, joined with the county or hundred court: and the original of the *conſiſtory* court, as divided from thoſe courts, is found in a law of the Conqueror, quoted by my lord Coke.

CONSOLATION, one of the places in rhetoric, wherein the orator endeavours to abate, and moderate, the grief or concern of another.

In *conſolation*, a principal regard is to be had to the circumſtances and relations of the parties. Scaliger conſiders this exceeding well, *de arte poetica*: 'The *conſolator*, ſays he, 'is either a ſuperior, an inferior, or an equal; with regard, 'either to preferment, honour, wealth, wiſdom, or age. 'Livia is therefore to comfort Ovid, in a manner very different from that wherein Ovid comforts Livia. Thus, as 'to authority, a father and ſon, Cicero and Pompey, are to 'conduct their *conſolations* very differently: ſo in wealth; 'as if a client ſhould undertake to comfort Craſſus: in wiſdom; as when Seneca comforts Polybius and his mother: 'as to age, there need no examples.

'A ſuperior may interpoſe his authority, and may even chide: 'a wiſe man may even diſpute; ſentences will become him. 'An inferior is to ſhew reſpect and affection, and own he 'had this from ſome wiſe or learned perſon: an equal to appeal to their common friendſhip.'

CONSOLE *, in architecture, a part or member projecting in manner of a bracket, or ſhoulder-piece; ſerving to ſupport a corniche, buſt, baſe, beam, little vault, or the like. See *Tab. Architecture*, *Fig.* 51.

> * The word is derived from the French *conſolider*, to reunite, join, *&c.* agreeable to the office of this member.

Conſoles are alſo, upon occaſion, called *mutules*, *modillions*, &c. according to their form.

Some of them are ſtriated or fluted; others in form of cartouches; others have drops, in the manner of triglyphs.

Vitruvius calls all thoſe of gates *prothyrides*; of *thyra*, gate. See PROTHYRIS.—Thoſe made of the end of a plank of wood, cut triangular-wiſe, are called *ancones.*

Conſoles are frequently uſed as keys of arches, projecting out, to ſupport a vaſe, or other ornament.

CONSOLIDATION *, in law, the combining and uniting two benefices into one.

> * The term is borrowed from the civil law; where it properly ſignifies an union of the poſſeſſion, or occupation, with the property.—Thus, if a man have by legacy *uſumfructum fundi*, and afterwards buy the property, or fee-ſimple, of the heir; this is called a *conſolidation.*

CONSOLIDATION, in medicine, expreſſes the action of uniting broken bones, or the lips of wounds, by means of *conſolidating remedies*, as they are called; which, cleanſing with a moderate heat and force, taking corruption out of the wounds, and preſerving the temperature of the parts, cauſe the nouriſhment to be fitly applied to the part affected. See WOUND, and FRACTURE.

CONSONANCE, in muſic, is ordinarily uſed in the ſame ſenſe with *concord*, viz. for the union or agreement of two ſounds produced at the ſame time, the one grave, the other acute; which, mingling in the air, in a certain proportion, occaſion an accord agreeable to the ear.

Dr. Holder, on this principle, defines *conſonancy*, 'A paſſage of ſeveral tunable ſounds through the medium, frequently mixing and uniting in their undulated motions, 'cauſed by the well-proportioned commenſurate vibrations 'of the ſonorous bodies, and conſequently arriving ſmooth, 'and ſweet, and pleaſant to the ear; as, on the contrary, '*diſſonancy*, he maintains to ariſe from diſproportionate motions of ſounds, not mixing, but jarring and claſhing as 'they paſs, and arriving in the ear grating and offenſive.'

Which notion of a *conſonance*, exactly quadrates with that we have already laid down for a *concord.* Accordingly, moſt authors confound the two together: though ſome of the more accurate diſtinguiſh them; making *conſonance* to be what the word implies, a mere *ſounding of two or more notes together*, or *in the ſame time*; in contradiſtinction to the motion of thoſe ſounds *in ſucceſſion*, or one after the other.

In effect, the two notions coincide; for two notes, thus played in *conſonance*, conſtitute a concord; and two notes that pleaſe the ear in *conſonance*, will likewiſe pleaſe it in ſucceſſion. Notes in *conſonance* conſtitute harmony, as notes in ſucceſſion conſtitute *melody*.

In the popular ſenſe, *conſonances* are either *ſimple*, or *compound*, &c. The moſt perfect *conſonance* is uniſon; though many, both among the antients and moderns, diſcard it from the number of *conſonances*; as conceiving *conſonance* an agreeable mixture of different ſounds, grave and acute; not a repetition of the ſame ſound.

The ſecond *conſonance* is the octave; then the fifth, the fourth, the thirds, and the fixths: the reſt are multiples, or repetitions of theſe.

Consonance, in grammar, denotes a like cadence, or cloſe of words, periods, &c.

Conſonances are ordinarily faults in diſcourſe, eſpecially in Engliſh proſe: though the antients make a figure of them, which they call ὁμοιοτελευτον. Too great a *conſonancy* in the rhymes has always an ill effect.

CONSONANT *, a letter which produces no ſound alone, or without ſome other letter, either vowel or *conſonant*, joined along with it.

* And hence the name *con-ſonant*, q. d. *quæ ſonant cum alia*.

A *conſonant*, conſidering it philoſophically, is nothing elſe but the modification of a ſound, produced by means of the organs of the voice, not a production of ſound itſelf: thus, *v. gr.* the ſounds ſignified by the characters *a*, *e*, *i*, *o*, *u*, &c. are differently modified when we ſay *ab*, than when we ſay *ac* or *ca*, *ad* or *da*; and thoſe modifications are called *conſonants*.

The letters of the alphabet are divided into vowels and *conſonants*. *Conſonants*, again, are divided into *ſingle*, as *b*, *h*, *m*, *q*, &c. and *double*, as *x* in *axillary*, correſponding to the ξ of the Greeks.

Conſonants, again, are divided into *liquid*, as *l*, *r*, *m*, *n*; and *mute*, as *b*, *d*, and the reſt: theſe laſt make no ſound at all without a vowel.

But the moſt natural diviſion of *conſonants* is that of the Hebrew grammarians; who have been imitated therein by the grammarians of other oriental languages: theſe divide the *conſonants* into five claſſes, with regard to the five principal organs of the voice; which all contribute, it is true, but one more notably than the reſt, to certain modifications, which make five general kinds of *conſonants*. Each kind, or claſs, comprehends ſeveral *conſonants*, which reſult from the different degrees of the ſame modification, or from the different motions of the ſame organs.

Theſe organs are the *throat*, *palate*, *tongue*, *teeth*, and *lips*; whence the five claſſes of *conſonants* are denominated *guttural*, *palatal*, *lingual*, *dental*, and *labial*.

We account ſixteen *conſonants* in the Engliſh alphabet, *viz.* *b*, *c*, *d*, *f*, *g*, *k*, *l*, *m*, *n*, *p*, *q*, *r*, *ſ*, *t*, *x*, *z*; to which there are three others to be added, *viz.* the *h*, and *j conſonants*, and *v conſonant*, which makes the whole number of *conſonants* nineteen: one whereof is *guttural*, viz. the aſpirate *h*; five *palatal*, viz. *c*, as when pronounced before *a*, *o*, and *u*, as in *cavern*, *corn*, *curioſity*; *g*, as in *geneva*; *j conſonant* in *julep*; *k* in *kernel*; and *q* in *query*.

The four *lingual conſonants* are *d*, *l*, *n*, *t*; the four *dental*, are *r*, *s*, *x*, *z*, the three laſt whereof are hiſſers: and five *labial*, *b*, *f*, *m*, *p*, and *v conſonant*.

With regard to which diviſion, it may be obſerved, that tho' the *g* be modified in three different manners, as it comes before an *a*, an *o*, or a *u*; yet it is ſtill a *conſonant* of the palate; that the *j conſonant* differs in nothing but its figure from the *g* before *e* or *i*; that *k* has the ſame pronunciation with the *c*; that *x* comprehends the ſound of two letters in its ſound, *viz.* *c* or *k*, and *ſ* or another *c*, as in Alexander, and Alexis, which we pronounce as if wrote Alecſander, and Aleccis, or Alecſis; and that the *c* before an *e* or *i*, is no *conſonant* of the palate, becauſe in that caſe it loſes its proper ſound, and aſſumes the hiſſing ſound of the *ſ*.

The abbot Dangeau thinks the nature of the diviſion of the Hebrew grammarians to be very reaſonable; but he does not acquieſce in the diſtribution they have made of them: to find a natural and juſt diviſion of the *conſonants*, he obſerves, no regard muſt be had to the characters that repreſent them; nor any thing be conſidered but their ſound, or the modification they give the ſound.

On this principle, the ſame author finds in the French, five *labial conſonants*, *b*, *p*, *v*, *f*, and *m*; five *palatal* ones, *d*, *f*, *g*, *k*, *n*; four *hiſſers*, *s*, *z*, *j*, *ch*; two *liquids*, *l* and *r*; two that run into and mix with each other, as *ll*, and *gn*; which laſt, however, is peculiar to the French language; and the *h* aſpirate.

He adds, 1°, That *m* and *n* are properly two naſal *conſonants*; the *m*, a *b* paſſed through the noſe, and the *n* a *d*, in like manner, pronounced through the noſe; and in effect, people in a cold pronounce *barket* for *market*, *deed* for *need*, &c. 2°, That among the *conſonants*, ſome are *weak*, others *ſtrong*; their difference conſiſting in this, that the former are preceded with a ſmall emiſſion of the voice, which ſoftens them; which the latter have not. The weak are *b*, *c*, *d*, *g*, *z*, *j*; the ſtrong, *p*, *f*, *t*, *k*, *ſ*, *ch*.

It may be here obſerved, that when we ſpeak of a perſon's talking *through the noſe*, it muſt be underſtood in a ſenſe quite different from what the words ſeem naturally to import: ſince the noſe in this caſe concurs leſs to the pronunciation than when we do not ſpeak through the noſe; in regard the air, not being able to make its way through the noſe, is returned into the mouth, where it forms a dull obtuſe ſound, called *naſal*.

From the whole we may conclude, that the exceſs of *conſonants* in one language above another only conſiſts in this, that there are more modifications of ſound received and eſtabliſhed in the one than in the other: for all men, having the ſame organs, may form the ſame modifications; ſo that it is intirely owing to cuſtom, nothing to nature, that the Engliſh have not the ϑ of the Greeks, the *ain* and *heth* of the Hebrews, the *ch* of the Germans, the *gn* of the French, the *gl* of the Italians, the *ll* of the Welſh, &c.

Alſo, that the Chineſe have no *r*, the Iroquois no labial *conſonants*, the Hurons have abundance of aſpirates, and the Arabs and Georgians abundance of double *conſonants*: which laſt is owing to this, that they make ſeveral organs concur ſtrongly and equally to the modification of a ſound; whereas, in the reſt, only one organ is moved very ſtrongly and ſenſibly, and the reſt weakly.

It is hence alſo viſible, that in all languages the aſpirates, or guttural letters, are real *conſonants*; ſince the throat modifies the ſound as much as the palate, tongue, or lips.

Laſtly, to find all the *conſonants* that may be formed in any language; there needs nothing but to obſerve all the modifications that the ſounds of ſpeech will admit of, by which we ſhall have all the *conſonants* practicable.

CONSORT, in muſic. See the article Concert.

Queen-Consort. See the article Queen.

CONSPIRACY, in law, is taken for a combination or confederacy to do ſomething evil, or illegal: though in the original ſenſe of the word, and in its uſe in other languages, it ſignifies merely an agreement, whether for good, bad, or matters indifferent. See Confederacy.

In our ſtatutes and law-books, *conſpiracy*, in a general ſenſe, is frequently confounded with *maintenance*, and *champarty*.

Conspiracy, in its ſpecial ſignification, is uſed for a confederacy of two, at leaſt, falſly to indict one, or procure one to be indicted of felony.

The puniſhment of this *conſpiracy*, at the king's ſuit, antiently was: that the party attainted loſe his frank-law; to the end that he may not be impanelled on juries, and the like; that his lands, goods, and chattels, be eſtreated; his trees raſed, and his body committed to priſon.

Even *conſpiracies*, or combinations in caſes of leſs moment, as thoſe of victuallers, touching ſelling of victual, ſhall be grievouſly puniſhed. 37 Hen. VIII.

CONSPIRING *powers*, in mechanics, are all ſuch as act in directions not oppoſite to one another. See Power, and Motion.

CONSTABLE *. *Lord High* Constable, is an antient officer of the crown, now diſuſed in England, but ſtill ſubſiſting in France, where the *conſtable* commands the marſhals, and is the firſt officer in the army.

* Some derive the word from the Saxon, and make it originally ſignify the *ſtay*, or hold, of the *koning*, or king: others, with more probability, derive it from *comes ſtabuli*, the maſter of the ſtables, or perhaps of the horſe; and ſuppoſe that the dignity, which at firſt was civil, in time became military, and the maſter of the ſtables was made general of the army.

The function of the *conſtable* of England conſiſted in the care of the common peace of the land, in deeds of arms, and matters of war. To the court of the *conſtable* and that of the marſhals, belonged the cognizance of contracts, deeds of arms without the realm, and combats, blaſonry of arms, &c. within it.

The firſt *conſtable* of England was created by the conqueror: the office continued hereditary till the thirteenth of Hen. VIII. when it was laid aſide, as being ſo powerful as to become troubleſome to the king. Since that time, the *conſtable* is only created occaſionally.

From thoſe mighty magiſtrates, the *conſtables* of England, are derived thoſe inferior ones, ſince called the *conſtables of hundreds and franchiſes*: theſe were firſt ordained in the thirteenth year of Edward I. by the ſtatute of Wincheſter; which for the conſervation of the peace, and view of armour, appointed that two *conſtables* ſhould be choſen in every hundred and franchiſe.

Theſe are what we now call *conſtabularii capitales*, or *high conſtables*; in regard, continuance of time, and increaſe of people, &c. have occaſioned others of like nature, but inferior authority, in every town, called *petty-conſtables*, or *ſub-conſtabularii*.—The appointing of a *petty-conſtable* belongs to the lords of divers manors, *jure feudi*.

Beſides theſe, we have *conſtables* denominated from particular places, as *conſtable of the Tower*, *of Dover-caſtle*, *of Windſor-caſtle*, *of the caſtle of Caernarvan*, and many other of the caſtles of Wales; whoſe office is the ſame with that of the caſtellani, or governors of caſtles.

Provoſt of the Constable. See Provost.

CONSTANT *winds*. See the article Wind.

CONSTANT, in law, a certificate given out of the court of exchequer, of all that there is upon record relating to any matter in queſtion.

It is alſo uſed for an exemplification, or copy of the inrolment of letters patent.

CONSTELLATION, in aſtronomy, an aſſemblage or ſyſtem of ſeveral ſtars, expreſſed and repreſented under the name and figure of ſome animal, or other thing: this aſſemblage is by ſome called alſo an *aſteriſm*.

The antients portioned out the firmament into ſeveral parts, or *conſtellations*; reducing a certain number of ſtars under the repreſentation of certain images, in order to aid the imagination, and the memory, to conceive and retain their number, diſpoſition, and even to diſtinguiſh the virtues which they attributed to them: in which ſenſe a man is ſaid to be born *under a happy conſtellation*, i. e. under a happy configuration of the heavenly bodies.

The diviſion of the heavens into *conſtellations* is very antient; and, for aught that appears, as old as aſtronomy itſelf; at leaſt, it was known to the moſt antient authors extant, whether ſacred or profane. In the moſt antient book of Job, mention is made of the names of ſome of them; witneſs that ſublime expoſtulation, *Canſt thou reſtrain the ſweet influence of the* Pleiades, *or looſen the bands of* Orion? And the ſame may be obſerved of the oldeſt among the heathen writers Homer and Heſiod.

The diviſion of the antients only took in the viſible firmament, or ſo much as came under their notice: this they diſtributed into 48 *conſtellations*; twelve whereof took up the zodiac: the names they gave them are *Aries*, *Taurus*, *Gemini*, *Cancer*, *Leo*, *Virgo*, *Libra*, *Scorpius*, *Sagittarius*, *Aquarius*, *Capricornus*, *Piſces*: from whence the ſigns of the ecliptic and zodiac take their names; though now no longer contiguous to the *conſtellations* which denominate them. See Sign.

The other ſtars, on the northern ſide of the zodiac, were diſpoſed into 21 *conſtellations*; viz. *Urſa major* and *minor*, *Draco*, *Cepheus*, *Bootes*, *Corona Septentrionalis*, *Hercules*, *Lyra*, *Cygnus*, *Caſſiopeia*, *Perſeus*, *Andromeda*, *Triangulum*, *Auriga*, *Pegaſus*, *Equuleus*, *Delphinus*, *Sagitta*, *Aquila*, *Ophiuchus* or *Serpentarius*, and *Serpens*: to which have been ſince added *Antinous*, and *Coma Berenices*.

The ſtars on the ſouthern ſide of the zodiac, were diſtributed into 15 *conſtellations*; their names are, *Cetus*, *Eridanus fluvius*, *Lepus*, *Orion*, *Canis major* and *minor*, *Argo*, *Hydra*, *Crater*, *Corvus*, *Centaurus*, *Lupus*, *Ara*, *Corona meridionalis*, and *Piſcis auſtralis*: to which have been ſince added twelve others; *viz. Phœnix*, *Grus*, *Indus*, *Pavo*, *Piſcis auſtralis*, *Piſcis volans*, *Toucan*, *Hydrus*, and *Xiphias*. *See each* conſtellation, *and the ſtars contained in it*, *under its proper head*, Aries, Taurus, &c.

Of theſe *conſtellations*, the 15 laſt, with the greateſt part of *Argo navis*, *Centaurus*, and *Lupus*, are not viſible in our horizon.

The other ſtars, not comprehended under theſe *conſtellations*, yet viſible to the naked eye, the antients called *informes*, or *ſporades*, ſome whereof the modern aſtronomers have ſince reduced into new figures, or *conſtellations*. See Informes, and Sporades.

Thus, *Hevelius*, *v. gr.* between *Leo* and *Urſa major*, makes *Leo minor*; and between *Urſa minor* and *Auriga*, over *Gemini*, makes *Lynx*; under the tail of *Urſa major*, *Canes venatici*, &c.

In theſe *conſtellations*, the ſtars are ordinarily diſtinguiſhed by that part of the image wherein they are found. Bayer diſtinguiſhes them farther by the letters of the Greek alphabet: and many of them, again, have their peculiar names, as *Arcturus*, between the feet of *Bootes*; *Gemina*, or *Lucida*, in the *Corona ſeptentrionalis*; *Palilitium*, in the *Bull*'s eye, *Pleiades* in the back, and *Hyades* in the forehead of the *Bull*: *Caſtor* and *Pollux* in the heads of *Gemini*; *Capella*, with the *Hœdi*, in the ſhoulder of *Auriga*; *Regulus*, or *Cor Leonis*; *Spica Virginis* in the hand, and *Vindemiatrix* in the ſhoulder, of *Virgo*; *Antares*, or *Cor Scorpii*; *Fomahaut*, in the mouth of *Piſcis auſtralis*; *Regel*, in the foot of *Orion*; *Sirius*, in the mouth of *Canis major*; and the *Pole-ſtar*, the laſt in the tail of *Urſa minor*.

The Greek and Roman poets, from the antient theology, give us wild and romantic fables about the origin of the *conſtellations*; which may be ſeen in Hyginus, Natalis Comes, and Ricciolus. Hence, ſome out of a vain zeal, rather than any love for the ſcience, have been moved to alter either the figures of the *conſtellations*, or at leaſt their names.

Thus, venerable Bede, inſtead of the profane names and figures of the twelve *conſtellations* of the zodiac, ſubſtituted thoſe of the twelve apoſtles; whoſe example being followed by Julius Schillerius, in 1627. he completed the reformation, and gave ſcripture-names to all the *conſtellations* in the heavens.

Thus, *Aries*, or the ram, became converted into St. Peter; *Taurus*, or the Bull, into St. Andrew; *Andromeda* into the ſepulchre of Chriſt; *Lyra* into the manger of Chriſt; *Hercules* into the Magi coming from the Eaſt; *Canis major* into David, &c. Weigelius, profeſſor of mathematics in the univerſity of Jena, made a new order of *conſtellations*; converting the firmament into a *cœlum heraldicum*; and introducing the arms of all the princes in Europe, by way of *conſtellations*.

Thus, *Urſa major*, he transformed into the elephant of the kingdom of Denmark; the *Swan* into the Ruta with ſwords of the houſe of Saxony; *Ophiuchus* into the croſs of Cologne; the *Triangle* into the compaſſes, which he calls the *ſymbol of artificers*; and the *Pleiades* into the *Abacus Pythagoricus*, which he calls that of merchants, &c.

But the more knowing among aſtronomers never approved of theſe innovations; as ſerving no purpoſe but to introduce quarrels and confuſion into aſtronomy. The old *conſtellations*, therefore, are ſtill retained; both becauſe better could not be ſubſtituted, and likewiſe to keep up the greater correſpondence and uniformity between the old aſtronomy and the new.

CONSTIPATION, in medicine, a hardneſs of the alvus, or belly, with a difficulty of diſcharging the ſame; otherwiſe called *coſtiveneſs*.

Riding poſt, eating of medlars, or quinces, ſeveral preparations of milk, hard-roaſted eggs, &c. *conſtipate* the belly.

A *conſtipation* of the belly, if it continue long, ſometimes degenerates into the iliac paſſion, or twiſting of the guts.

Moſt perſons of a hot and dry conſtitution are afflicted with a coſtiveneſs, or *conſtipation*: but this is ſeldom attended with any ill conſequences.

The proper remedy for a *conſtipation* is a clyſter; if this fail, lenient cathartics; and when they alſo fail, others muſt be exhibited of a more draſtic or powerful nature.

CONSTITUTION, an eſtabliſhment, ordinance, deciſion, regulation, or law, made by authority of a prince, or other ſuperior, eccleſiaſtical or civil. See Law, &c.

The *conſtitutions* of the Roman emperors make a part of the civil law. See Civil *law*.—The *conſtitutions* of the church make a part of the canon law. See Canon *law*. Some of the papal *conſtitutions* are in form of bulls, others of briefs.

Apoſtolical Constitutions, denote a collection of regulations attributed to the apoſtles, and ſuppoſed to have been collected by S. Clement, whoſe name they likewiſe bear.

Theſe are divided into eight books; conſiſting of a great number of rules and precepts, relating to the duties of Chriſtians, and particularly to the ceremonies and diſcipline of the church.

Authors are divided about their genuineneſs: the generality hold them ſpurious, and endeavour to prove them poſterior to the apoſtolic age; maintaining they were unknown till the fourth century: which, if ſo, ſhews S. Clement had no hand in them. Mr. Whiſton has ventured to oppoſe the general opinion; and with ſome reaſon, much learning, and more warmth, aſſerted the *apoſtolical conſtitutions* to be one of the ſacred writings, dictated by the apoſtles in their meetings, written down from their mouths by S. Clement, and intended as a ſupplement to the New Teſtament; or, rather, as a ſcheme and ſyſtem of Chriſtian faith and polity. See his *Eſſay on the apoſtolical conſtitutions*, and his *hiſtorical preface*; wherein the ſeveral ſteps he made in his fanſied diſcovery are traced.

What makes the *conſtitutions* more ſuſpected by the orthodox, is, that they ſeem to ſavour of Arianiſm.

Constitution is alſo uſed, in a phyſical ſenſe, for the temperament of the body, or for that diſpoſition of the whole arising from the quality and proportion of its parts.

Phyſicians conſider the *conſtitution*, as depending chiefly o the humours or juices of the body; and hence, as this o that humour is ſuppoſed to predominate, the bile, *e. gr.* o the blood, phlegm, choler, or ſpirit; the perſon uſed to b denominated of a *bilious*, *ſanguine*, *phlegmatic*, *choleric*, o *mercurial conſtitution*.

CONSTRICTION *, the act of binding, or drawing the part of a thing cloſe together.

* The word is compounded of *con*, together; and *ſtringere*, t tie or cloſe up.

CONSTRICTOR *labiorum*, or *orbicularis*, a muſcle proper t the lips.—See *Tab. Anat.* (myol.) *Fig.* 1. n. 8. See alſo th article Lip. Its fibres make a kind of *(orbis)* ring about th mouth (whence it is alſo called *orbicularis)*; and ſerve to con ſtringe, and draw up the lips, as in kiſſing, &c. whenc ſome call it *baſiator*, and *oſculatorius*.

This, Verheyen will not have to be one muſcle, but a pai whoſe fibres meet and join at both corners of the mouth; eac acting on one lip only, though concurrently.

Other authors are unanimous in calling it one muſcle; a will have it of the ſphincter kind; tho', Dr. Drake think improperly: in regard, it is not like the other ſphincters constant action, but at the command of the will; the d ſtinguiſhing mark between a ſphincter and another muſc See Sphincter.

Constrictor *palpebrarum*. See Orbicularis.

Constrictores *naſi*, a pair of muſcles common to the a of the noſe, and the upper lip.

They ariſe fleſhy from the forepart of the fourth bone of t upper jaw; and after a ſtrait aſcent, are inſerted into t roots of the alæ naſi, and ſuperior parts of the upper lip.

Their uſe is to draw the alæ downwards, nearer each oth and at the ſame time draw the upper lip alſo down wards: an action which we uſe in taking of ſnuff, or in ſmelling at any thing.

CONSTRUCTION, in geometry, the art or manner of drawing, or [illegible]ing a figure, ſcheme, the lines of a problem, or the like. The equality of the lines of ſuch a triangle, &c. is demonſtrated from their *conſtruction*.

CONSTRUCTION *of equations*, is the method of reducing a known equation into lines, and figures; whereby the truth of the rule, canon, or equation, may be demonſtrated geometrically. See EQUATION.

The method of *conſtructing* equations is different, according to the diverſity of equations. For ſimple and quadratic equations, the methods ſhall be here ſubjoined: as to cubic equations, geometrical *conſtructions* are of no uſe, in practice; their intent being much better anſwered by the method of extracting roots by approximation.

To conſtruct a ſimple equation: the whole myſtery conſiſts in this; that the fractions, to which the unknown quantity is equal, be reſolved into proportional terms: the method of which will be better ſhewn by examples than it can be taught by many rules.

1°, Suppoſe $x = \frac{ab}{c}$; then will $c : a :: b : x$, to be determined by the method of finding a fourth proportional.

2°, Suppoſe $x = \frac{abc}{dc}$; let $d : a :: b : \frac{ab}{d}$. This fourth proportional found, being called g; $x = \frac{gc}{e}$ which is therefore found as in the former caſe.

3°, Suppoſe $x = \frac{aa - bb}{c}$. Since $aa - bb = (a+b)(a-b)$; $c : a+b :: a-b : x$.

4°, Suppoſe $x = \frac{a^2b - bcc}{ad}$. By the firſt caſe we find $g = \frac{ab}{d} = \frac{a^2b}{ad}$ and $b = \frac{bc}{d}$; again, by caſe 1. $i = \frac{hc}{d}$ and $x = g - i$, the difference of the lines g and i.

5°, Suppoſe $x = \frac{ab}{c} + \frac{adc}{bc}$. Find, as in the preceding caſe, $g = \frac{ab}{c}$, and $f = \frac{adc}{bc}$. Then will $x = g + f$ be the ſum of the lines g and f.

6°, Suppoſe $x = \frac{a^2b + bcd}{af + cg}$. Seek $\frac{cg}{a}$, and let $f + \frac{cg}{a} = h$; then will $af + cg = ah$; conſequently, $x = \frac{a^2b + bcd}{ah}$. Thus is the preſent caſe brought to the preceding one.

7°, Suppoſe $x = \frac{a^2b - bad}{af + bc}$. Find $\frac{af}{b}$, and make $\frac{af}{b} + c = h$; then will $af + bc = bh$. Hence, $x = \frac{a^2b + bad}{bh} = \frac{a^2 - ad}{h}$. Conſequently, $h : a :: a - d : x$.

8°, Suppoſe $x = (a^2 + b^2) : c$. Conſtruct the triangle A B C (Tab. *Algebra*, fig. 1.), whoſe ſide $AB = a$, $BC = b$; then will $AC = \sqrt{(a^2 + b)}$. Let $AC = m$; then will $a^2 + b^2 = m^2$. And therefore $x = \frac{m^2}{c}$; conſequently, $c : m :: m : x$.

9°, Suppoſe $x = \frac{a^2 - b^2}{c}$. On AB (fig. 2.) $= a$ deſcribe a ſemicircle, and therein ſet off $AC = b$. Since the triangle A C B is rectangular; $CB = \sqrt{a^2 - b^2}$. Let $CB = m$; then will $x = \frac{m^2}{c}$; conſequently, $c : m :: m : x$.

10°, Suppoſe $x = \frac{a^2b + bcd}{af + bc}$. Say, $b : a :: f : \frac{fa}{b}$; and let $\frac{fa}{b} + c = h$; then will $bc + af = bh$. Hence, $x = \frac{a^2b + bcd}{bh} = (a^2 + cd) : h$. Find betwixt $AC = c$ (fig. 3.), and $CB = d$, a mean proportional $CD = \sqrt{cd}$. Let $CE = a$; then will $DE = \sqrt{(a^2 - cd)}$. Call this m; then will $x = \frac{m^2}{h}$; conſequently, $h : m :: m : x$.

To conſtruct a quadratic equation geometrically. Since quadratic equations may be reduced to ſimple ones (ſee EQUATION); thoſe may likewiſe be *conſtructed* from the methods already laid down: for if the equation be pure, $x^2 = ab$; then will $a : x :: x : b$; wherefore, we ſhall find $x = \sqrt{ab}$; if between $AC = a$, and $BC = b$, we find a mean proportional D C. If the equation be adfected, $x^2 . ax = b^2$; then will $x = \frac{1}{2}a (\sqrt{\frac{1}{4}a^2 b^2})$; that is, either $x = \frac{1}{2}a + \sqrt{(\frac{1}{4}a^2 + b^2)}$ or, $x = \sqrt{(\frac{1}{4}a^2 + b^2)} - \frac{1}{2}a$, or, $x = \frac{1}{2}a + \sqrt{(\frac{1}{4}a^2 - b^2)}$ or, $x = \frac{1}{2}a - \sqrt{(\frac{1}{4}a^2 - b^2)}$.

The whole myſtery, therefore, of *conſtructing* quadratics comes to this: that the value of $\sqrt{\frac{1}{4}a^2 + b^2}$, and alſo the value of $\sqrt{\frac{1}{4}a^2 - b^2}$, be found; both of which are ſhewn in the preceding article. For, if in the rectangular triangle (fig. 1.) $AB = \frac{1}{2}a$ and $BC = b$; then will $AC = \sqrt{(\frac{1}{4}a^2 + b^2)}$. But if on $AB = \frac{1}{2}a$ (fig. 2.) be deſcribed a ſemicircle; and therein applied $AC = b$; $CB = \sqrt{\frac{1}{4}a^2 - b^2}$, as was ſhewn in the article preceding. See EQUATION; ſee alſo CURVE.

CONSTRUCTION, in grammar, *ſyntax*; or the arranging and connecting the words of a ſentence, according to the rules of the language.

The *conſtruction* is generally more ſimple, eaſy, and direct in the modern tongues than in the antient: we have very few of thoſe inverſions which occaſion ſo much embarras and obſcurity in the Latin; our thoughts are uſually delivered in the ſame order wherein the imagination conceives them: the nominative caſe, for inſtance, always precedes the verb, and the verb goes before the oblique caſes it governs.

The Greeks and Latins, M. St. Evremont obſerves, uſually end their periods, where, in good ſenſe and reaſon, they ſhould have begun them; and the elegance of their language conſiſts, in ſome meaſure, in this capricious arrangement, or rather in this tranſpoſal and diſorder of the words.

Conſtruction is either *ſimple* or *figurative*.—*Simple*, is that wherein all the terms, or parts of the diſcourſe, are placed in their natural order.

Figurative conſtruction, is that wherein we recede from this ſimplicity, and uſe certain expreſſions, ſhorter, and more elegant, than nature affords.

The ſyntax, or *conſtruction* of words is diſtinguiſhed into two parts, *concords*, and *regimen* or *government*. See CONCORD, and REGIMEN.

CONSUALIA, feaſts which were held among the antients, in honour of the god *Conſus*, *i. e.* *Neptune*; different from thoſe other feaſts of the ſame deity called *Neptunalia*.

They were introduced with a magnificent cavalcade, or proceſſion on horſeback; by reaſon *Neptune* was reputed to have firſt taught men the uſe of horſes; whence his ſurname of Ἱππιος, *equeſtris*.

Evander is ſaid to have firſt inſtituted this feaſt: it was re-eſtabliſhed by Romulus, under the name of *Conſus*; in regard it was ſome god under the denomination of *Conſus*, that ſuggeſted to him the rape of the Sabines.

It is ſaid, that it was with a view to this rape, that he made that eſtablimment. This, however, is certain, that it was to this feaſt all his neighbours were invited; when, taking advantage of the ſolemnities and ſacrifices, he ſeized the women. To draw the greater concourſe of people, he gave out, that he had found an altar hid under-ground, which he intended to conſecrate, with ſacrifices to the god to whom it had been originally erected.

Thoſe who take upon them to explain the myſteries of the heathen theology, ſay, that the altar hid under ground, is a ſymbol of the ſecret deſign of Romulus to ſeize his neighbours wives.

The *conſualia* were of the number of feaſts called *ſacred*; as being conſecrated to a divinity.—Originally they were not diſtinguiſhed from thoſe of the circus: whence it is, that Valerius Maximus ſays, that the rape of the Sabines was effected at the games of the circus.

Plutarch obſerves, that during the days of this ſolemnity, horſes and aſſes were left at reſt, and were dreſſed up with crowns, &c. on account of its being the feaſt of Neptunus Equeſtris.—Feſtus ſays, the cavalcade was performed with mules; it being an opinion, that this was the firſt animal uſed to draw the car.

Servius gives us to underſtand, that the *conſualia* fell on the 13th of Auguſt; Plutarch in Romulo places them on the 18th, and the old Roman calendar on the 21ſt of that month.

CONSUBSTANTIAL, in theology, a term of like import with *co-eſſential*; denoting ſomething of the ſame ſubſtance with another.

The orthodox believe the Son of God to be *conſubſtantial* with the Father.

The term ὁμοουσιος, *conſubſtantial*, was firſt adopted by the fathers of the councils of Antioch and Nice, to expreſs the orthodox doctrine the more preciſely, and to ſerve as a barrier and precaution againſt the errors and ſubtilties of the Arians; who owned every thing excepting the *conſubſtantiality*.

The Arians declared, that the word was God, as having been made God; but they denied that he was the ſame God, and of the ſame ſubſtance, with the Father: accordingly, they exerted themſelves to the utmoſt, to aboliſh the uſe of the word. The emperor Conſtantine uſed all his authority with the biſhops, to have it expunged out of the ſymbols; but it ſtill maintained itſelf, and is at this day, as it was then, the diſtinguiſhing criterion between an Athanaſian and an Arian.

Sandius will have it, that the word *conſubſtantial* was unknown till the time of the council of Nice; but it is certain it had been before propoſed to the council of Antioch, wherein Paulus Samoſatenus had been condemned; though it had there the fortune to be rejected. Curcellæus, on the other hand, maintains, that it was an innovation in doctrine in the council of Nice, to admit an expreſſion, the uſe whereof had been aboliſhed by the council of Antioch.

According to S. Athanaſius, the word *conſubſtantial* was only condemned in the council of Antioch, inaſmuch as it implied the idea of a pre-exiſtent matter, prior to the things formed thereof: now, in this ſenſe, it is certain, the Father and the Son are not *conſubſtantial*, there having been no pre-exiſtent matter.

CONSUBSTANTIATION, a tenet of the Lutheran church, with regard to the manner of the change made in the bread and wine in the euchariſt.—The divines of that profeſſion maintain, that, after conſecration, the body and blood of our Saviour are ſubſtantially preſent, together with the ſubſtance of the bread and wine; which is called *conſubſtantiation*, or *impanation*. See IMPANATION, TRANSUBSTANTIATION, and LUTHERANISM.

CONSUETUDINIBUS & *ſervitiis*, in law, a writ of right, which lies againſt the tenant that deforceth his lord of the rent, or ſervice, due to him.

CONSUL, the chief magiſtrate of the Roman commonwealth.

The *conſuls* were the head of the ſenate; they commanded the armies of the republic, and were ſupreme judges of the differences between the citizens. In regard, however, that they had made ſome abuſe of this power, it was allowed, by the Valerian law, for the party aggrieved to appeal from their tribunal to the people; eſpecially in caſes where the life of a Roman citizen was concerned.

In progreſs of time, the *conſuls* being too much taken up with the grand affairs of ſtate, or at the heads of armies, there were other magiſtrates created for the diſtribution of juſtice to the people, in lieu of the *conſuls*.

After the Romans had expelled their kings, they were governed by two *conſuls*, eſtabliſhed in the year of Rome 240. having their name *à conſulendo*. Brutus and Collatinus were the firſt, elected by an aſſembly of the people: their office was to hold a year; and if either of them died in the courſe of the year of their *conſulate*, a new one was to be elected.

To be elected *conſul*, it was regularly required, that the candidate ſhould be at leaſt 43 years old; though we meet with ſome few exceptions from this rule. The election was held in the month of January, in the campus Martius; and afterwards in the capitol.

Conſuls were even continued under the emperors, after the republic was deſtroyed: but *conſul* was here little more than an honourable title; which, however, the people were fond of keeping up; as eſteeming it ſome remain of their antient liberty. It dwindled for a long time; and, at laſt, became abſolutely extinct in the time of Juſtinian: after whom, no emperor either created any *conſul*, or aſſumed the dignity himſelf.

Baſil is the laſt in the conſular liſt, for the year 541. By this time, the dignity was depreciated to that degree, that it was conferred on the meaneſt perſons: indeed, Juſtinian endeavoured to retrieve it 25 years after, and created himſelf *conſul*, but without effect.

From the eſtabliſhment of the republic, and the *conſulate* under L. Jun. Brutus and L. Tarq. Collatinus, to the *conſulate* of Baſil, *i. e.* from the year of Rome 244. or 245. 509 years before Jeſus Chriſt, to the year of Rome 1294. the ſpace of 1049 years, the years were accounted by the *conſuls*: but from the time of Baſil, in the year of Chriſt 541. we find no mention made of *conſuls*, or *conſulates*; but the time was then computed by the years of the emperors reigns, and the indictions.

Indeed, for ſome time after the *conſulate* of Baſil, the years are marked thus; *poſt conſulatum Baſilii*, 1, 2, 3, &c. See the *faſti conſulares* of M. D'Almeloveen. That author reckons 1060 pairs of *conſuls*, beſide the ſubſtitute *conſuls*, *ſuffecti*, elected to ſupply vacancies by death; and yet there were but 1049 years, and conſequently only ſo many *conſulates*.

The perpetual *conſulates* of the eaſtern emperors, which compoſe the faſti Bizantini, commenced in the year of Chriſt 567. and ended in 668. in the laſt year of Conſtans.

Conſtantine Pogonatus would have the *conſulate* inſeparable from the empire; which it continued to be till the time of Conſtantine Porphyrogenetus.

In this form of government, the empire and *conſulate* were ſo cloſely united, that the empreſs Irene would needs aſſume the *conſulate*, when ſhe was only regent of the empire.

But the French kings, thoſe of Italy, and the Saracen princes who commanded in Spain, taking on them the title of *conſuls*, as well as emperors of Conſtantinople; theſe laſt deſpiſed it, and laid it aſide: ſo that the name was only continued to the magiſtrates of ſome cities, and certain other officers, as is ſhewn by F. Pagi.

Under the emperors there were *ordinary conſuls*, *honorary conſuls*, and *ſuffecti*; which laſt were alſo on foot in the time of the republic.

In the middle age, we find the word *conſul* uſed for *comes*, count, and proconſul, or viconſul, for viſcount; as is obſerved by Spelman, and De Marca. See COUNT.

CONSUL, at preſent, is uſed for an officer eſtabliſhed by virtue of a commiſſion from the king, and other princes, in the ports and factories of the Levant, on the coaſts of Africa, Barbary, Spain, and other foreign countries of any conſiderable trade; to facilitate and diſpatch buſineſs, and protect the merchants of the nation.

Theſe commiſſions are never granted to perſons under the age of thirty years. When the *conſulate* is vacant, the moſt antient of the deputies of the nation are to diſcharge the function thereof, till the vacancy be filled up by the king.

The *conſuls* are to keep up a correſpondence with the miniſters of England reſiding in the courts whereon their *conſulates* depend. Their buſineſs is, to ſupport the commerce and the intereſt of the nation; to diſpoſe of the ſums given, and the preſents made, to the lords and principals of places; to obtain their protection, and prevent the inſults of the natives on the merchants of the nation. There are alſo *conſuls* of other nations eſtabliſhed in the Levant, eſpecially French and Dutch.

CONSULS alſo denote judges, elected among merchants and dealers, in ports and trading towns chiefly in France; to terminate, *gratis*, and on the ſpot, without any proceſs, ſuch differences and demands as may ariſe relating to their merchandizes, bills of exchange, and other articles of commerce.

The firſt juriſdiction of *conſuls* eſtabliſhed in France, is that of Tholouſe; the edict of whoſe eſtabliſhment bears date 1549. under the reign of king Henry II. that of Paris followed fourteen years afterwards. By degrees, they were eſtabliſhed in moſt of the conſiderable trading towns in that kingdom.

CONSUL*, in our antient law-books, ſignifies an *earl* or *count*, *comes*. See EARL, and COUNT.

CONSULAR *comitia*. See the article COMITIA.

CONSULAR *Medals*. See the article MEDAL.

CONSULTATION, in law, a writ whereby a cauſe, formerly removed by prohibition from the eccleſiaſtical court to the king's court, is returned thither again.

If the judges of the king's court, upon comparing the libel with the ſuggeſtion of the party, find the ſuggeſtion falſe, or not proved; and therefore the cauſe to be wrongfully called from the court-chriſtian: then, upon ſuch deliberation, or *conſultation*, they decree it to be returned again: and the writ obtained hereon is called a *conſultation*.

CONSUMMATION, the end, period, or completion, of any work.—Thus, we ſay, the *conſummation* of all things; meaning the end of the world. By the incarnation, all the prophecies are ſaid to be *conſummated*.

Conſummation of marriage, denotes the laſt act of marriage, which makes its accompliſhment; or the moſt intimate union between the married pair.

CONSUMPTION, *tabes*, in medicine, a diſeaſe ariſing from a defect of nouriſhment; or, a preternatural decay of the body, by a gradual waſte of muſcular fleſh.

It is frequently attended with an hectic fever; and is divided by phyſicians into ſeveral kinds, according to the variety of its cauſes: as *univerſal*, or *ſcorbutic conſumption*; where it ariſes from a cacochymia, or ſcorbutic habit; and *pulmonic conſumption*, or *conſumption of the lungs*, where it ariſes from ſome cauſe in the lungs, properly called a *phthiſis*. See PHTHISIS, SCORBUTUS, &c.

A *conſumption* may either be *accidental*, *natural*, or *hereditary*.—*Accidental conſumptions* may ariſe, 1°, From ulcers, chalky ſtones, or polypus's in the lungs, cauſed by ſomething that obſtructs the circulation in the pulmonary veſſels, or renders the blood viſcid, as a ſuppreſſion of any natural evacuation. 2°, From intemperance, occaſioning either a cacochymia, or plethora. 3°, From peripneumonies, pleuriſies, aſthma's, coughs, catarrhs, diarrhœas, venereal diſorders, and exceſs of venery. 4°, From grief, hard ſtudy, &c.

Natural conſumptions may ariſe from the ſtreightneſs of the thorax, or an ill conformation of the parts.

An *hereditary conſumption* may be communicated from the parents, without any other viſible cauſe.

A *conſumption* uſually begins with flying pains, and ſtitches; a troubleſome pain at the pit of the ſtomach, or in the diaphragm; frequent ſpitting, loſs of appetite, a quick pulſe, a ſweetneſs or ſaltneſs in the ſaliva, heat and fluſhings in the face and palms of the hands after meals, an hectic fever toward the evening, heavineſs, faintneſs, night-ſweats; and, where the lungs are firſt diſordered, a cough, catarrh, or aſthma, uſually precede it.

When theſe ſymptoms are violent, it is confirmed; and then comes on an expectoration of purulent or bloody matter, and the vomica pulmonum; at length, the feet ſwell, the expectoration ſtops, a diarrhœa comes on; and then the facies Hippocratica, and death. The cure of an *univerſal*, or *muſcular conſumption*, depends principally upon removal into a proper ai and the uſing of a regular nouriſhing diet: the appetite is to b excited by proper bitters, and other ſtomachics.

In a *pulmonary conſumption*, or *phthiſis*, balſamics, and ole ginous medicines, are uſually added.

Dr. Wainwright, indeed, takes the particles of oily medicin to be too groſs and viſcid to enter the ſmall orifices of the lacteals; and thinks, that their operation or effect being confined to the firſt paſſages, they are not only of no ſervice in t cure, but are apt to pall the appetite, occaſion obſtructions the mouths of the lacteals, and diarrhœas.

But this ſeems contrary to common experience: that their particles are ſmall enough to enter the lacteals, is evident, from t ſudden relief nephritic perſons find in violent paroxyſms of t ſtone by the paſſages being relaxed ſoon after their exhibitio That diarrhœas, and blunting the appetite, in ſome conſtitutio will be the conſequence of their continuance, or exhibition in great quantities, muſt be allowed; but then this is either accidental to ſome kinds of conſtitutions, or ariſes from ſome error in uſing them.

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* According to ſome, what we now call a *county*, *comitatus*, was by the antient Britons named *conſulate*, *conſulatus*; and thoſe now called *vicounts*, *vicecomites*, were then called *vice-conſuls*.

As to the lacteals being obſtructed by their uſe, it ſeems a mere notion, and as much unſupported by experience as that other hypotheſis, which a late author, Dr. Quincy, has been fond of aſſerting; *viz.* that the uſe of butter is apt to foul the glands. See Supplement, article PHTHISIS.

CONTACT, the relative ſtate of two things that touch each other, or whoſe ſurfaces join to each other without any interſtice. The *contact* of two ſpherical bodies, is only in one point; and the ſame holds of a tangent and the circumference of a circle.—Hence, becauſe very few ſurfaces are capable of touching in all points, and the coheſion of bodies is in proportion to their *contacts*; thoſe bodies will ſtick faſteſt together, which are capable of the moſt *contact*.

Angle of **CONTACT** is the angle H L M (*Tab. Geometry, fig.* 43.), formed by the arch of a circle M L, with the tangent H L, at the place of the *contact*.

Euclid demonſtrates, that the right line H L, ſtanding perpendicular on the radius C L, touches the circle only in one point: nor can there be any other right line drawn between the tangent and the circle.

Hence, the angle of *contact* is leſs than any rectilinear one; and the angle of the ſemicircle between the radius C L and the arch M L, is greater than any rectilinear acute angle.

This paradox of Euclid has exercised the wits of mathematicians: it was the ſubject of a long controverſy between Peletarius and Clavius; the firſt of whom maintained the angle of *contact* heterogeneous to a rectilinear one; as a line is heterogeneous to a ſurface: the latter maintained the contrary. Dr. Wallis has a formal treatiſe on the *angle of contact*, and of the ſemicircle; where, with other great mathematicians, he approves of the opinion of Peletarius. See TANGENT.

CONTAGION, *infection*, or the communicating, or transferring, a diſeaſe from one body to another.

Contagion, in ſome diſeaſes, is only effected by an immediate contact, or touch: as the madneſs of a dog, which is communicated by biting; and the venom of the pox, which is tranſmitted from the infected perſon in the act of copulation.

In others it is conveyed by infected clothes; as the itch.—In others the *contagion* is tranſmitted through the air to a great diſtance, by means of ſteams, or effluvia, expiring from the ſick; as in the plague, and other peſtilential diſtempers: in which caſe, the air is even ſaid to be *contagious*, *i. e.* full of *contagious* particles. See PLAGUE, and POISON.

CONTEMPLATION, an act of the mind, whereby it applies itſelf to conſider, reflect on, and admire, the wonderful works of God, nature, *&c.*

CONTEMPLATION, among myſtic divines, is defined, a ſimple, amorous view of God, as preſent to the ſoul.—This *contemplation* is ſaid to conſiſt in acts ſo ſimple, ſo direct, ſo uniform and peaceful, that there is nothing for the mind to take hold on, whereby to diſtinguiſh it.

In the *contemplative* ſtate, the ſoul is to be intirely paſſive, with regard to God; to be in a continual repoſe, without any perturbation, or motion; free from the activity of unequal minds, which muſt agitate themſelves, to have their operation ſenſible.—Hence, ſome call *contemplation* a prayer of ſilence and quietude.

Contemplation, is not a raviſhment, or an ecſtatic ſuſpenſion of all the faculties of the ſoul; but it is ſomething paſſive, it is peace and infinite pliantneſs; leaving it perfectly diſpoſed to be moved by the impreſſions of Divine grace, and the fitter to follow the Divine impulſe.—*Contemplation* is the height of perfection of the myſtic divines.

CONTEMPORARY, or **COTEMPORARY**, a perſon, or thing, of the ſame time, or that exiſted in the ſame age, with another.—Socrates, Plato, and Ariſtophanes, were *contemporaries*: the beſt hiſtories are thoſe of *contemporary* authors.

CONTENEMENT, a word, in our antient law-books, about whoſe ſignification authors are not rightly agreed.—According to ſome, it ſhould ſignify the countenance, credit, or reputation, a perſon has, from and by reaſon of his freehold. In which ſenſe it is uſed in the ſtat. 1 Edw. III. *&c.* where it ſtands as ſynonymous with *countenance*.

Others will have it ſignify what is neceſſary for the ſupport and maintenance of men, according to their ſeveral qualities, conditions, or ſtates of life.—Thus, Spelman, *Contenementum eſt æſtimatio, & conditionis forma, qua quis in republica ſubſiſtit.*

CONTENT, in mathematics, a term frequently uſed for the capacity of a veſſel, or the area of ſpace; or the quantity of any matter, or ſpace, included in certain bounds.

The *content* of a tun of round timber is 43 ſolid feet. A load of hewn timber contains 50 cubic feet: in a foot of timber are contained 1728 cubic or ſquare inches, and as often as 1728 inches are contained in a piece of timber, be it round, or ſquare; ſo many feet of timber are contained in the piece. See TIMBER.

In gauging, the gallon for beer and ale is allowed to contain 282 cubic inches, and the wine gallon 231; the gallon of dry meaſure 272.

Hence, as oft as 282 cubic inches are contained in any veſſel, round or ſquare; ſo many gallons of ale or beer it holds: and the like may be obſerved of the other meaſures.

Multiply, therefore, one ſide of a ſquare, or oblong, into the other; and divide by one of thoſe numbers, according to the quality of the liquor; the quotient gives the area in gallons, upon an inch deep.

Though the work may be conſiderably ſhortened by only multiplying the ſides of ſquares, or the diameters of rounds, into themſelves; the product is the number of gallons, and parts, the veſſel contains, upon an inch in depth: and when that receives an augmentation, by being two, three, or four, inches deep; it then commences a ſolid body, and contains as many gallons, and parts, as it is inches and parts deep.

A cubic foot contains ſix gallons, and almoſt a pint, of ale and beer; and ſeven gallons, two quarts, of wine. A cubic foot of dry meaſure contains ſix gallons and an half, and ſomething more. A buſhel of ſalt contains 56 pounds averdupoiſe.

CONTENTIOUS *juriſdiction*, in law, *forum contentioſum*, denotes a court, or aſſembly, which has a power to judge and determine differences between contending parties.

The lords chief juſtices, judges, *&c.* have a *contentious juriſdiction*; but the lords of the treaſury, the commiſſioners of cuſtoms, *&c.* have none; being merely judges of accompts, and tranſactions.

CONTEXT, among divines and critics, that part of ſcripture, or other writing, which lies about the *text*, before or after it, or both. See TEXT.

To take the full ſenſe of the text, the *context* ſhould be regarded.

CONTIGNATION, in the antient architecture, the art or act of flooring, by laying tigna, rafters, together. See FLOORING, and RAFTER.

CONTIGUOUS, a relative term, underſtood of things diſpoſed ſo near each other, that they join their ſurfaces, or touch.

The houſes in antient Rome were not *contiguous*, as ours are, but all inſulated.

CONTIGUOUS *angles*, in geometry, are ſuch as have one leg common to each angle; otherwiſe called *adjoining angles*.—In contradiſtinction to thoſe produced by continuing their legs through the point of contact, which are called *oppoſite* or *vertical* angles. See ANGLE.

CONTINENT, in geography, a terra firma, main-land, or a large extent of country, not interrupted by ſeas: ſo called, in oppoſition to *iſland*, *peninſula*, &c. See EARTH, OCEAN, *&c.*

Sicily is ſaid to have been antiently torn from the *continent* of Italy; and it is an old tradition, which ſome of our antiquaries have ſtill a regard to, that Britain was formerly a part of the *continent* of France.

The world is ordinarily divided into two grand *continents*; the old, and the new: the old comprehends Europe, Aſia, and Africa; the new the two America's, north and ſouth.

The antient *continent* is alſo called the *upper continent*; from a vulgar opinion, that it poſſeſſes the upper-part of the globe.

It is doubted whether Japan be an iſland, or joined to the *continent*: the ſame may be ſaid of California.—Some authors are of opinion, the two grand *continents* are, in reality, no more than one; imagining the northern parts of Tartary to run out and meet thoſe of N. America.

CONTINENT *cauſe* of a diſtemper is that whereon the diſeaſe depends ſo immediately, that it continues ſo long as that remains, and no longer.

Thus, a ſtone in the bladder may be the *continent cauſe* of a ſuppreſſion of urine.

CONTINENT *fever* is that which goes on to a criſis without either intermiſſion, or remiſſion. See FEVER.

CONTINGENT, ſomething caſual, or uncertain. See CHANCE.

Future **CONTINGENT**, in logic, denotes a conditional event, which may, or may not, happen, according as circumſtances fall out.

The Socinians maintain, that God cannot foreſee future *contingents*; becauſe depending on the free motions of the will of man. See PRESCIENCE.

CONTINGENT is alſo a term of relation for the quota that falls to any perſon upon a diviſion.

Each prince of Germany, in time of war, is to furniſh ſo many men, ſo much money and munition for his *contingent*. By the new treaty of Hanover it is ſtipulated, that, in caſe of a rupture with the emperor, the kings of Great Britain and Pruſſia may furniſh their *contingents*, as feifs of the empire, at the ſame time they are at war therewith.

CONTINGENT *uſe*, in law, is an uſe limited in a conveyance of land, which may, or may not, happen to veſt, according to the *contingency* expreſſed in the limitation of ſuch uſe.

CONTINGENT *line*, or *line of* **CONTINGENCY**, in dialling, is a line that croſſes the ſubſtile at right angles. See SUBSTILE, and DIALLING.

CONTINGENTS are ſometimes alſo uſed by mathematicians in the ſame ſenſe as *tangents*. See TANGENT.

CONTINUAL *claim*. See *Continual* CLAIM.

CONTINUANCE, in law, is much the ſame as *prorogation* among the civilians. See PROROGATION, and DISCONTINUANCE.

CONTINUANCE *of a writ*, or *action*, is its holding in force from one term to another, in a caſe where the ſheriff has not returned, or executed, a former writ iſſued out in the ſame action.

CONTINUANCE *of aſſiſe*. If a record in the treaſury be alleged by one party, and denied by the other; a certiorari ſhall be ſued to the treaſury and chamberlain of the exchequer: who, if they certify not that the ſaid record is there, or likely to be in the tower; the king ſhall then ſend to the juſtices, repeating the certificate, and will them to *continue the aſſiſe*.

CONTINUANDA *aſſiſa*. See the article ASSISA.

CONTINUANDO, in law, a term uſed where a plaintiff would recover damages for ſeveral treſpaſſes in the ſame action.

To avoid multiplicity of ſuits, a man may in one action of treſpaſs recover damages for forty, or more, treſpaſſes; laying the firſt to be done with a *continuance* to the whole time wherein the reſt of the treſpaſſes were done: which is done in this form; *continuando tranſgreſſionem prædictam*, &c. *à prædicto die*, &c. *uſque*, &c.

CONTINUANDO *Proceſſum*. See the article PROCESSUM.

CONTINUANS *Punctum*. See the article PUNCTUM.

CONTINUATION *of motion*. See MOTION, and PROJECTILE.

CONTINUATIVE *conjunctions*. See the article CONJUNCTION.

CONTINUED, or CONTINUAL *fever*, is ſuch an one as ſometimes remits, but never intermits, or goes intirely off, till its period. See FEVER.

A *continual* fever may be defined to be the continuance of an increaſed velocity in the circulation of the blood, beyond what is natural to the conſtitution. See BLOOD, and CIRCULATION.

If this velocity often decreaſes, and riſes again to the ſame height, it is called a *continual periodical fever*.

And if it intirely ceaſe in the ſpace of a day, or two, it is called an *ephemeris*.

A *continual* fever, then, may remit, or abate, and increaſe again, alternately; but not intermit, which would conſtitute it an intermitting fever, or ague.

CONTINUED *Quantity*.
CONTINUED *Body*, &c.
} See CONTINUUM, CONTINUITY; and QUANTITY.

CONTINUED, or *thorough*, *baſs*, in muſic, is that which continues to play conſtantly; both during the recitatives, and to ſuſtain the choir, or chorus.

CONTINUED *Proportion*, in arithmetic, is that wherein the conſequent of the firſt ratio is the ſame with the antecedent of the ſecond—as 3 : 6 :: 6 : 12. See PROPORTION.

On the contrary, if the conſequent of the firſt ratio be different from the antecedent of the ſecond, the proportion is ſaid to be *diſcrete*: as, 3 : 6 :: 4 : 8. See DISCRETE.

Attic CONTINUED.
CONTINUED *Community*.
CONTINUED *Pedeſtal*.
CONTINUI *Solutio*.
} See the articles { ATTIC. COMMUNITY. PEDESTAL. SOLUTIO.

CONTINUITY is uſually defined, among ſchoolmen, the immediate coheſion of parts in the ſame *quantum*.—Others define it, a mode of body, whereby its extremes become one: and others, a ſtate of body reſulting from the mutual implication of its parts.

There are two kinds of *continuity*; *mathematical*, and *phyſical*.—The firſt is merely imaginary, and fictitious; ſince it ſuppoſes real or phyſical parts where there are none.

Phyſical continuity is, ſtrictly, that ſtate of two or more parts, or particles, wherein they appear to adhere, or conſtitute one uninterrupted quantity, or *continuum*; or between which we perceive no intermediate ſpace.

The ſchoolmen diſtinguiſh two other ſorts of *continuity*; *viz.* *homogeneous*, and *heterogeneous*.—The firſt, where our ſenſes do not perceive the bounds, or extremes, of the parts; and this agrees even to air, water, *&c.*—The ſecond, where our ſenſes do indeed perceive the extremes of certain parts, yet at the ſame time obſerve the ſame parts cloſely linked to each other; either in virtue of their ſituation, or figure, *&c.* and this is chiefly attributed to the bodies of animals and plants.

The *continuity* of bodies is a ſtate merely relative to our ſight and touch: *e. gr.* if the diſtance of two ſeparate objects be ſuch, as that the viſual angle they ſubtend is inſenſible to the eye, which it will be if leſs than 16 ſeconds, the two ſeparate bodies will then appear *contiguous*.

Now, the reſult of ſeveral *contiguous* objects is a *continuity*: ſo that any number of viſible objects, being placed ſo as that their diſtances ſubtend angles of leſs than 16 ſeconds, they will appear to form one *continuum*.

And hence, as we can determine the diſtance at which any given magnitude becomes inviſible; it is eaſy finding at what diſtance any two bodies, however remote from each other, will appear as contiguous; and ſeveral, as forming one *continuum*.—*For the phyſical cauſe of* continuity, *or coheſion*, ſee COHESION.

CONTINUUM, or CONTINUED *Quantity*, in phyſics, denotes a quantity, or coextenſion, whoſe parts are not divided, but joined and connected together; ſo as to leave no room to determine where one begins, and another ends. See CONTINUITY.

It is controverted, among philoſophers, whether a *continuum* be infinitely diviſible, *i. e.* diviſible into infinite proportionable parts?

The antients attributed the riſe of water, in pumps, to the love of *continuity*, and the abhorrence of a vacuum; in regard the weight and preſſure of the air was not then known. See VACUUM.

Mathematicians divide quantity into *continued*, and *diſcrete*. See QUANTITY.

Continued quantity is that expreſſed by lines, and makes the ſubject of geometry.

Diſcrete quantities are thoſe expreſſed by numbers, which make the ſubject of arithmetic

In medicine and chirurgery, wounds, ulcers, fractures, *&c.* are expreſſed by the phraſe, *ſolutio continui*, or *ſolution of continuity*.

In a critical ſenſe, we ſay, there ought to be a *continuity*, i. e. a connexion, between the parts of a diſcourſe.

In the epic poem, particularly, the action ſhould have a *continuity* in the narration, though the events, or incidents, be not continued. As ſoon as ever the poet has opened his ſubject, and brought his perſons on the ſtage, the action is to be *continued* to the end; every character muſt be at work, and no ſuch thing as an idle perſon to be ſeen.

F. Boſſu obſerves, that, by retrenching dull languiſhing incidents, and intervals void of action, which break the *continuity*, the poem acquires a *continued* force, which makes it run equally throughout.

CONTOBABDITES, Κοντοβαβδῖται, a ſect of heretics in the VIth century.—Their firſt leader was Severus of Antioch, who was ſucceeded by John the grammarian, ſurnamed Philoponus, and one Theodoſius; whoſe followers were alſo called *Theodoſians*.

Part of them, who were willing to receive a book compoſed by Theodoſius on the Trinity, made a ſeparate body, and were called *Contobabdites*, from I know not what place, which Nicephorus does not mention, but which muſt apparently have been the place where they held their aſſemblies.

The *Contobabdites* allowed of no biſhops; which is the only circumſtance that hiſtorian gives us concerning them.

CONTORSION, the action of twiſting, or wreſting, a member of the body out of its natural ſituation.

Rope-dancers accuſtom themſelves to *contorſions* of their limbs from their youth, to render the fibres of their articulations lax, and ſupple, to all kinds of poſtures.

CONTORSION is alſo uſed, paſſively, for the ſtate of a thing; *v. gr.* for a member that is awry.

The *contorſion of the neck* is uſually occaſioned, according to Nucke, by a relaxation, or paralyſis, of one of the maſtoidal muſcles: for hence it happens, that its antagoniſt, whoſe power is now no longer balanced, contracting with its proper force, draws the head towards that ſide.

He adds, that this diſorder cannot be remedied too ſpeedily; and preſcribes, from the beginning, liniments capable of relaxing and ſoftening the fibres, to be uſed, not only to the muſcle in contraction, but alſo, and principally, to the paralytic muſcle, which is the ſeat of the diſorder.

CONTOUR, *outline*; that which terminates and defines a figure.

A great part of the ſkill of the painter conſiſts in managing the *contours*.

The *contour* of a figure makes what we call the *draught*, or *deſign*. The *contour* of a face, the Italian painters ordinarily call the *lineaments* thereof.

CONTOURNE, in heraldry, is uſed when beaſts are repreſented ſtanding, or running, with their faces to the ſiniſter-ſide of the eſcutcheon; they being always ſuppoſed to look to the dexter-ſide, unleſs it be otherwiſe expreſſed.

CONTOURNIATED, a term applied, among antiquaries, t a kind of medallions which have a broad riſing rim on eac ſide; and figures that have ſcarce any relievo, in compariſo with the true medallions.

They have their name from their edges; which appear as i turned in the lathe.—All we have remaining of theſe contour *niated* medals, ſeem to have been ſtruck about the ſame tim F. Hardouin conjectures them not to be earlier than th XIIIth century: other antiquaries go back as far as th fifth; and others find inſtances of them as antient as the tim of Nero.

This ſort of work ſeems to have had its origin in Greece, an to have been appropriated to honour the memories of gr men; principally, thoſe who had borne away the prize at th ſolemn games: ſuch are thoſe remaining of Homer, Solo Euclid, Pythagoras, Socrates, Apollonius Tyaneus, and ſ veral athletæ, whoſe victories are expreſſed on them by pal and chariots, either bigæ, or quadrigæ.

CONTRA, or COUNTER, in compoſition. See COUNTER

CONTRA *formam collationis* is a writ that lies where a ma has given lands, in perpetual alms, to a religious houſe, hoſpi ſchoo ſchool, or the like, and the governor or managers, have alienated the lands, contrary to the intention of the donor.

CONTRA *formam feoffamenti*, is a writ for a tenant, who is infeoffed by the lord's charter, to make certain ſuit and ſervice to his court; and is afterwards diſtrained for more than is contained therein.

CONTRABAND *, in commerce, a prohibited commodity; or, a merchandize bought or ſold, imported or exported, in prejudice, and contrary, to the laws and ordinances of a ſtate, or the public prohibitions of the ſovereign.

* The word comes from the Italian *contrabando*, of *contra*, and *bando*, q. d. contrary to edict, or publication of prohibition.

Contraband goods are not only liable to confiſcations themſelves; but do alſo ſubject all other allowed merchandizes found with them in the ſame box, parcel, or bale, together with the horſes, waggons, *&c.* which conduct them to the ſame.

There are *contraband* goods, which, beſides confiſcation, are prohibited on pain of death; as, *v. gr.* in France, India, and China ſtuffs, linens, *&c.*

In England there are two principal *contrabands* for exportation, wools and live ſheep, which all ſtrangers are prohibited from carrying out, on pain of having the right hand cut off; the other, that of ſheep-ſkins and calf-ſkins, which all foreigners are in like manner prohibited from exporting, on pain alſo of having the right hand cut off: yet, the ſubjects of England are allowed to tranſport the ſame from France to England.

Other *contrabands* for exportation are raw horns, white aſhes, ſtocken-looms, or any part thereof, fullers earth, and all raw hides, or ſkins.

Of goods *contraband* as to the import, there are above 50 in the liſts made in 1662. and yet there are 25 of them which now ſtand in the tariff; the non-execution of the acts of parliament, whereby they were impoſed, ſeeming to have reſtored them to the freedom of importation.

The chief of thoſe ſtill *contrabanded*, and not tariffed, are woolen caps, woolen cloths, ſaddles, and harneſs, dice, biliaards, all ſorts of tanned, or dreſſed hides, dreſſed furs, all ſorts of ſhoemakers ware, locks, and divers ſorts of cutlers ware; all painted goods, except paper; wires, buckles, gold and ſilver leaf, and horns for lanterns.

Since the year 1662. ſeveral other commodities have been made *contraband*; particularly, ſilk and galloons, laces, embroidery, fringes, buttons, and other ſilk and thread manufactures; black taffaties, called *alamodes*, or luteſtring.

In 1719 and 1720. an attempt was made in parliament to paſs a bill for putting gold and ſilver, whether in coined ſpecies, or otherwiſe, among the number of *contraband* goods for exportation; but in vain, by reaſon of the ſtrong oppoſition made by thoſe who enrich themſelves by the export of theſe metals; which, by the laws of the kingdom, are allowed to be ſent away, upon entering them, paying the duty of the export, and making oath of their being foreign, *i. e.* of their not being the coin, or the plate of the kingdom, melted down.

It may be judged whether thoſe who promoted the bill, were for the intereſt of the nation, from this, that, in the ſingle month of September, 1720. there were entered at the cuſtomhouſe, in London, 468119 ounces of gold, and 28988 ounces of ſilver; *viz.* 34302 ounces of gold, and 4000 ounces of ſilver for Holland; 12320 ounces of gold for France; 197 ounces of gold, and 5648 ounces of ſilver for Portugal; and 19340 ounces of ſilver for the Eaſt-Indies: excluſive of what was exported fraudulently, by private perſons, without paying the duty.

This ſhews, indeed, the plenty of gold and ſilver in England; but it ſhews, at the ſame time, the danger it is in of being, at length, exhauſted.

CONTRACT, a mutual conſent of two, or more, parties, who promiſe and oblige themſelves voluntarily, to do ſomething, pay a certain ſum, or the like.

Sales, exchanges, donations, leaſes, *&c.* are ſo many different ſpecies of *contracts*. See EXCHANGE, and DONATION.

CONTRACT is particularly uſed, in common law, for an agreement or covenant between two, with a lawful conſideration, or cauſe.

As, if I ſell my horſe for money; or covenant, in conſideration of 20*l.* to make you a leaſe of a farm; theſe are good *contracts*, becauſe there is quid pro quo.

ude CONTRACT. } See the articles { NUDE.
uaſi CONTRACT. } { QUASI *Contract.*

ſurious CONTRACT, is a *contract* to pay more intereſt for money than the laws allow.

It is a devaſtavit in executors to pay a debt upon an uſurious *contract*.

In marriage, the Romaniſts diſtinguiſh the civil *contract*, which is the conſent of the parties, from the ſacrament, which is the benediction of the prieſt.

Thoſe *contracts* are ſaid to be *null*, which the law prohibits the making of; ſuch are all *contracts* between perſons incapable of *contracting*, as minors, religious, lunatics, wives without conſent of their huſbands, *&c.*

CONTRACT is alſo uſed for the inſtrument in writing, which ſerves as a proof of the conſent granted, and the obligation paſſed between the parties.

Among the antient Romans, *contracts*, and all voluntary acts, were written, either by the parties themſelves, or by one of the witneſſes, or by a domeſtic ſecretary of one of the parties, whom they call a *notary*; but who was no public perſon, as among us.

The *contract*, when finiſhed, was carried to the magiſtrate, who gave it a public authority by receiving it *inter acta*, into the number of the acts under his juriſdiction; giving each of the parties a copy thereof, tranſcribed by his clerks, or domeſtic regiſters, and ſealed with his ſeal.—Which practice paſſed into France, where it obtained a long time. See ACT, *&c.*

CONTRACTILE *Force*, that property, or power, inherent in certain bodies, whereby, when extended, they are enabled to draw themſelves up again, to their former dimenſions.

For the cauſe of this property, which is of the utmoſt conſequence to a right underſtanding of the animal œconomy; ſee FIBRE.

CONTRACTION, in logics, a ſpecies of reduction, wherein the thing that reduces, does alſo abridge, or bring the thing reduced into a leſſer compaſs.

The deſign of *contraction* is to bring things, which before were too lax and diffuſive, nearer together; that ſo their mutual relation may appear the more clearly, and they may better ſtrengthen and ſupport each other.

Thus, the following argumentation, '*From that propoſition, 'therefore, now I am ſtanding, follows this other, therefore, now 'I am exiſting*;' may be thus *contracted: ex ſto ſequitur ſum, ſtanding implies exiſting.*

To this head are referred the arguments, as they are called, of poems and orations; the titles and ſummaries of chapters, *&c.*

CONTRACTION, in phyſics, denotes a diminiſhing of the extent, or dimenſions, of a body; or a bringing of its parts cloſer to each other: upon which it becomes heavier, harder, *&c.* See CONDENSATION.

Contraction, in this ſenſe, ſtands oppoſed to *dilatation*.

All bodies *contract* by cold, and dilate, or rarefy, by heat. See COLD, HEAT, and RAREFACTION.

CONTRACTION is frequently uſed, by anatomical writers, to expreſs the ſhrinking up of a fibre, or an aſſemblage of fibres, when extended.

Convulſions and ſpaſms proceed from a preternatural *contraction* of the fibres of the muſcles of the part convulſed.

On the contrary, paralytic diſorders generally proceed from a too great laxneſs of the fibres of the parts affected; or from the want of that degree of *contraction* neceſſary to perform the natural motion or action of the part.

In the firſt, therefore, the animal ſpirits are ſuppoſed to flow, either in too great a quantity, or irregularly; and, in the laſt, the animal ſpirits are either denied a free paſſage into the part affected, or the tenſion of the fibrillæ is ſuppoſed inſufficient to promote the circulation.

Contraction evidently appears to be the true natural ſtate of all the muſcles: for, if a muſcle be at any time freed from the power of its antagoniſt, it is immediately found to *contract*; and is not, by any diction of the will, or the ſpirits, to be reduced to a ſtate of dilatation.

CONTRACTION *of the Heart*, *Arteries*, *Lungs*, &c. See SYSTOLE, HEART, ARTERY, PULSE, *&c.*

CONTRACTION, in grammar, the reduction of two vowels, or ſyllables, into one: as, *mayn't*, for *may not*; *ſhouldſt*, for *ſhouldeſt*, &c.

The Greeks abound in *contractions*, both in their verbs, and their nouns; as, ποιω of ποιεω, *facio*; βοω, of βοαω, *clamo*; χρυσω of χρυσοω, *inauro*; πατω of πατεω, *ambulo*; πατεις of πατεεις, *ambulas*; Δημοσθενης of Δημοσθενεος.

The French have ſomething like it too, at leaſt, in their pronunciation; as, in *ſaouler*, *baailler*, *paon*, which they pronounce *ſouler*, *bailer*, *pan*.

CONTRADICENTE. See NEMINE *contradicente*.

CONTRADICTION, a ſpecies of direct oppoſition, wherein one thing is found diametrically oppoſite to another.

The ſchoolmen uſually define it, *oppoſitio inter ens, & non-ens, medio carens*: where, by *ens*, and *non-ens*, are underſtood any two extremes, whereof one affirms, and the other denies: and it is ſaid to be *medio carens*, to diſtinguiſh it from the other ſpecies of compoſition; the extremes, here, neither agreeing in ſubject, as is the caſe in privation; nor in eſſence and kind, as in contrariety. See PRIVATION, and CONTRARIETY.

Freedom of CONTRADICTION. See the article FREEDOM.

Imply a CONTRADICTION. See the article IMPLY.

CONTRADICTORY, in a legal ſenſe, a perſon who has a right or title to contradict, or gainſay.

An inventory of the effects of a minor ought to be made in preſence of his guardian, or truſtee, who is the legal *contradictor*: a decree againſt a farmer has no effect on the landlord, the firſt not being the legitimate *contradictor*.

CONTRADICTORY *Propoſitions*, are oppoſites, one of which imports a mere, and naked, denial of the other.

Of theſe, therefore, one muſt be poſitive, and the other negative;

gative; as ſitting, and not ſitting; white, and not white.—*Contradictory* propoſitions mutually deſtroy each other.

To have two propoſitions truly *contradictory*, they muſt be oppoſite, both in quantity and quality, *i. e.* one muſt be univerſal, and the other particular, which makes the oppoſition of quantity; and the one affirmative, and the other negative, which makes the oppoſition in quality.—Thus, *v. gr.* *All uſe of wine and ſilver is evil*; falſe: *Some uſe of wine and ſilver is not evil*; true. To this it is neceſſary, that the one deny, and the other affirm, the ſame thing, of the ſame ſubject, conſidered in the ſame circumſtances: unleſs the queſtion be about an eſſential attribute, in which caſe, no regard is had to circumſtances; every thing having always its own eſſence.—This the logicians expreſs by *affirmare & negare idem, de eodem, ſecundum idem.*

There may likewiſe be *contradictory* propoſitions on a particular ſubject; *e. gr.* an individual.—Theſe are called *ſingle contradictory propoſitions:* as, *Peter is innocent*; *Peter is not innocent*, or *is a criminal.* Now, to have theſe propoſitions *contradictory*, Peter muſt be conſidered at the ſame time; without which they may be both true: ſince there may be a time wherein Peter was innocent, and another wherein he was a criminal.

CONTRA-FISSURE, CONTRA-FISSURA, Απηχημα, in medicine, a term applied to that ſpecies of fracture, or fiſſure, in the ſkull, where the ſide, oppoſite to that where the blow was received, is cracked.

The ſpecies of fracture is taken notice of by Celſus, *l.* 8. *c.* 4. yet Ægineta denies the poſſibility of it; and is herein followed by Gorræus, and many of the moderns. Their chief argument is, that the ſkull is not one uniform continuous bone, but is divided by ſeveral ſutures, which prevent the effects of a ſtroke from being communicated to the oppoſite part, and confine the miſchief to the part ſtrucken.—Here, ſay they, if a ſkull be found crack'd on the oppoſite ſide, or any-where but in the place where the blow is immediately received, this muſt proceed from a 2d or 3d blow, which, perhaps, the patient, being ſtunned, does not remember.—But there are ſo many cogent inſtances on the other ſide of the queſtion, that the reality of *contra-fiſſures* is now generally allowed. Vid. *à Meckren. Obſ. Medic. Chirug. c.* 1. *p.* 20. *Dion. ap. Bibl. Anat. Med. T.* 1. *p.* 560.

The uſual ſymptoms attending a *contra-fiſſure*, are a delirium, ſometimes a bleeding at the noſe and mouth, ſtupidity, and involuntary paſſing of the urine and excrements, and convulſions. If theſe happen, and after ſearch made in the part where the injury was received, no fracture, or depreſſion of the ſkull be found, there is a ſuſpicion of a *contra-fiſſure*; eſpecially if the patient be apt to point to that part.

If the ſymptoms be by intervals, and not to a great degree, or there be reaſon to believe the fiſſure to have reached only through one of the tables, it is ſufficient to bare the bone, and uſe a raſpatory; then to fill the rima, or crack, with proper powders, as of iris, gum, myrrh, powder of diapente, &c. and above all, apply a pledget, dipped in the tincture of euphorbium, or of equal parts of ſpirit of wine, and honey of roſes.—If theſe fail, the trepan muſt be had recourſe to.

CONTRA-HARMONICAL *Proportion*, that relation of three terms, wherein the difference of the firſt and ſecond is to the difference of the ſecond and third, as the third is to the firſt.

Thus, *e. gr.* 3, 5, and 6, are numbers *contra-harmonically* proportional; for 2 : 1 :: 6 : 3.

To find a mean contra-harmonically *proportional to two given quantities:* the rule is, divide the ſum of the two ſquared numbers by the ſum of the roots; the quotient is a *contra-harmonically* mean proportional between the roots.

CONTRA-INDICATION, is an indication which forbids that to be done which the main ſcope of a diſeaſe points out. See INDICATION.

Suppoſe, *e. gr.* in the cure of a diſeaſe a vomit were judged proper; if the patient be ſubject to a vomiting of blood, it is a ſufficient *contra-indication* as to its exhibition.

CONTRAMANDATIO *Placiti*, in our antient law-books, ſignifies a reſpiting, or giving the defendant farther time to anſwer: or, an imparlance, or countermanding of what was formerly ordered. See COUNTERMAND.

CONTRAMANDATUM, a lawful excuſe, which the defendant, by his attorney, allegeth for himſelf, to ſhew that the plaintiff has no cauſe to complain, *ſi dies placiti ſit contramandatus.* 11 Hen. I. See COUNTERMAND.

CONTRAMURE, in fortification, an outwall, built about the main wall of a city. See WALL, and RAMPART.

CONTRAMURE, in civil architecture. See COUNTER-MURE.

CONTRAPOSITION, in logics. See CONVERSION.

CONTRARIENTUM *Rotulus.* See the article ROTULUS.

CONTRARIETY, that which denominates two things *contrary* to each other.

Contrariety conſiſts in this, that one of the terms imports a negation of the other, either mediately or immediately; ſo that *contrariety* may be ſaid to be the contraſt, or oppoſition of two things, one of which implies the abſence of the other.

Freedom of CONTRARIETY. See the article FREEDOM.

CONTRARIES, are poſitive oppoſites: which being of the ſame kind, or ſame common nature, and ſubſiſting by turns in the ſame ſubject, are as remote from each other as poſſible, and mutually expel each other.—Such are whiteneſs and blackneſs, cold and heat, &c. See OPPOSITES.

Hence, properly ſpeaking, only qualities can be *contraries*: *contrariety*, in effect, only agrees to qualities *per ſe*; to other things it agrees *per accidens*, or *in ordine ad qualitatem.*

CONTRARY, however, is often uſed in a more extenſive ſignification, *viz.* for any inconſiſtence or difference between the nature and qualities of things.—It is a popular maxim in philophy, that *contraria juxta ſe poſita magis eluceſcunt*; *contraries* ſet off one another. In this ſenſe is the word *contrary* uſed in the ſchools: and hence an argument *à contrario*: *e. gr.* if bodies, whoſe ſurfaces are rugged, do not reflect any light, poliſhed bodies muſt, by the rule of *contraries*, reflect it.

This method of improving things *è contrario*, is much uſed, and with good ſucceſs, by F. Bourdaloue in his ſermons.

The ſchools alſo uſe the word *contraries* in a more preciſe ſignification, as implying two poſitive things which cannot ſubſiſt together in the ſame ſubject, but deſtroy or expel each other; as, heat and cold, drineſs and moiſture.

CONTRARY, in rhetoric. F. de Colonia lays down three kinds of *contraries* in rhetoric, *viz.* *adverſatives*, *privatives*, and *contradictories.*

Adverſatives are thoſe that differ much in the ſame thing, as virtue and vice, war and peace: thus Tully, *Si ſtultitiam fugimus, ſapientiam ſequamur*; *& bonitatem, ſi malitiam.* And Quintilian, *malorum cauſa bellum eſt, erit emendatio pax.* Drances argues thus in Virgil, *Nulla ſalus bello: pacem te poſcimus omnes.*—*Privatives* are habits, and their privations. *Contradictories* are thoſe, one whereof affirms, and the other denies, the ſame thing, of the ſame ſubject.

Point of CONTRARY *flexure.* See the article POINT.

CONTRAST *, in painting and ſculpture, expreſſes an oppoſition, or difference of poſition, attitude, &c. of two or more figures; contrived to make a variety in a painting, &c.

* The word comes from the Italian *contraſtare*, to oppoſe, or thwart; and that, according to M. Huet, from the Latin *contra ſtatio.*

Thus, when in a group of three figures, one appears in front, another ſhews his hind-parts, and a third is placed ſidewiſe, there is ſaid to be a *contraſt.*

M. de Piles defines *contraſt* an oppoſition between the lines which form the objects; by means whereof they tend to ſet off one another.

A *contraſt*, well managed, is one of the greateſt beauties of a painting.—The *contraſt* is not only to be obſerved in the poſition of ſeveral figures, but alſo in that of the ſeveral members of the ſame figure: thus, if the right arm advance the fartheſt, the right leg is to be hindmoſt; if the right eye be directed one way, the right arm is to go the contrary way, &c. The *contraſt* muſt be purſued, even into the drapery.

To CONTRAST, in architecture, is to avoid the repetition of the ſame thing, in order to pleaſe by variety; as is done in the great gallery of the Louvre, where the pediments are, alternately, arched and angular.

CONTRAST-*Wheel*, in clock-work. See WHEEL; ſee alſo CLOCK, and WATCH.

CONTRAVALLATION. *Line of* CONTRAVALLATION, in fortification, is a trench, guarded with a parapet; made by the beſiegers, betwixt them and the place beſieged, to ſecure themſelves on that ſide, and ſtop the ſallies of the gariſon.

It is without muſquet-ſhot of the town, and ſometimes goes quite round it, ſometimes not, according as the general finds occaſion.

The army, forming a ſiege, lies between the lines of *circumvallation* and *contravallation.* See CIRCUMVALLATION.

CONTRAVENTION, a man's failure of performing or diſcharging his word, obligation, or duty, or the laws and cuſtoms of the place.—The penalties impoſed in caſes of *contravention*, only paſs for comminatory.

In a more limited ſenſe, *contravention* implies the non-execution of an ordinance, or edict.

Contravention is ſuppoſed to be a degree below prevarication; and to be only the effect of negligence or ignorance. See PREVARICATION.

CONTRA-YERVA, a root brought from Peru, eſteemed a very great alexiterial, and a ſovereign antidote againſt poiſon.

It is ſaid to take its name from *yerva*; which in the Spaniſh ſignifies white hellebore, a plant, whoſe juice is a violent poiſon, and is uſed by the Peruvians to poiſon their arrows withal: in which ſenſe *contra-yerva* ſignifies *counter-poiſon.*

The root is ſmaller than that of the iris, rediſh without, and white within, knotty and fibrous. To be good, it muſt be new, heavy, and of a duſky red colour. In ſmell it reſembles figleaves; its taſte is aromatic, accompanied with ſomewhat of acrimony.

There is an officinal compoſition, which takes its name from this root, prepared with it, mixed with the teſtaceous powders, called *lapis contra-yervæ.* Both the root and lapis are of great efficacy in the ſmall pox, meaſles, fevers, and in all caſes whe either a diaphoreſis or perſpiration is required; its ſucceſs bei much more to be depended on than the Gaſcoign's powder, which, among the more knowing, is now very much deſpiſed.

It is agreed on by the generality of writers, that the c *yerva* root is one of the beſt anti-epidemics yet known. D Hodges, in his treatiſe of the laſt London plague, has a rece which he ſays was attended with great ſucceſs, and of whi this root was one of the chief ingredients. See PLAGUE.

There is another kind of *contra-yerva*, brought from Virginia, more ordinarily called *ſerpentaria:* this is very aromatic; it is but ſeldom preſcribed ſingly, though ſaid to have the ſame ſucceſs againſt poiſons and venoms with the *contra-yerva* of Peru. See SERPENTARIA.

CONTRE-BEND, in heraldry. The bar is called a *contre-bend*, or *counter-band*, becauſe it cuts the ſhield contrary, and oppoſite ways.

They alſo ſay, *contre-chevron*, *contre-pal*, &c. when there are two ordinaries of the ſame nature oppoſite to each other; ſo as colour be oppoſed to metal, and metal to colour. And the coat is ſaid to be *contre* or *counter-paled*, *counter-bended*, *counter-feſſed*, *counter-componed*, or *counter-barred*, when ſo divided.

Counter-quartered, is when one of the quarters is quartered again: hence alſo *counter-flowered*, *counter-coloured*, &c.—Animals are ſaid to be *counter-paſſant*, when one paſſes on one ſide, and another on another.

CONTRECOMPONE′,	in heraldry. See	COUNTER-COMPONED.
CONTRE-CHANGE′,		COUNTER-CHANGED.
CONTRE-BANDE′,		COUNTER-BEND.
CONTRE-BARRE′,		COUNTER-BARRED.
CONTRE-CHEVRONNE′,		COUNTER-CHEVRONED.
CONTRE-ERMINE′,		ERMINE.
CONTRE-ESCARTELE′, *&c.*		COUNTER-QUARTERED.

CONTRIBUTION, the payment of each perſon's quota, or the part he is to bear in ſome impoſition, or common expence.

Contributions are either *involuntary*, as thoſe of taxes and impoſts; or *voluntary*, as thoſe of expences for carrying on ſome undertaking for the intereſt of the community.

CONTRIBUTIONS, in a military ſenſe, are impoſitions paid by frontier countries to ſecure themſelves from being plundered, and ruined by the enemy's army.

The peaſants till their ground under the faith of *contributions*, as ſecurely as in time of profound peace.

CONTRIBUTIONE *facienda*, a writ which lies where ſeveral perſons are jointly bound to the ſame thing, and one or more of them refuſe to *contribute* their ſhare.

If tenants in common, or joint, hold a mill *pro indiviſo*, and equally ſhare the profits thereof; the mill falling to decay, and one or more of them refuſing to *contribute* to its reparation, the reſt ſhall have the writ *de contributione facienda* to compel them. And if there be three coparceners of land that owe ſuit to the lord's court, and the eldeſt performs the whole; then may ſhe have this writ to compel the refuſers to a *contribution*.

CONTRITION, in theology, expreſſes a real ſorrow, reſulting from the thought of having offended God; from the ſole conſideration of his goodneſs; without any regard to the puniſhment the ſin is intitled to.

Some of the Romiſh doctors avow, notwithſtanding the practice of their church, that *contrition* is valid, and carries with it every thing neceſſary to obtain pardon, without the ceremony, or, as they call it, the *ſacrament* of confeſſion and abſolution.

And in this they make the difference between *contrition* and attrition to conſiſt. See ATTRITION.—This doctrine was lately maintained by F. Seguenot upon St. Auguſtine; but it was cenſured by the faculty of Paris.

CONTROL, COMPTROL, or CONTROLE, is, properly, a double regiſter, kept of acts, iſſues, *&c.* of the officers or commiſſioners in the revenue, army, *&c.* in order to perceive the true ſtate thereof, and to certify the truth, and the due keeping of the acts ſubject to that enregiſterment. See REGISTER. Hence,

CONTROLLER, or COMPTROLLER, an officer eſtabliſhed to *control*, or overſee public accounts, and to certify, on occaſion, whether things have been *controlled*, and examined, or not.—Thus, we have a CONTROLLER *of the king's houſhold*, or of the accounts of the board of green cloth. *Controller-general* of the cuſtoms. *Controller* of the navy. *Controller* of the mint. *Controller* of the exciſe, *Controller* of the accounts of the army, of the chamber, *&c.* See CHAMBER.

CONTROLLER *of the hanaper*, is an officer in chancery, attending the lord chancellor daily in term and ſeal time.

This officer is to take all things ſealed from the clerk of the hanaper, incloſed in bags of leather, and to note the juſt number and effect thereof; to enter them in a book, with all the duties belonging to the king and other officers for the ſame, and ſo charge the clerk of the hanaper with them. See HANAPER.

CONTROLLER *of the pipe*, an officer of the exchequer, who writes out ſummons twice a year, to levy the farms and debts of the pipe. See PIPE, and EXCHEQUER.

He was antiently called *duplex ingroſſator*.

CONTROLLERS *of the pells*, are officers of the exchequer, whereof there are two, *viz.* two chamberlains clerks, who keep a *control* of the pell of receipts, and goings out: originally they took notes of other officers accounts, in order to diſcover if they did amiſs. See EXCHEQUER, *&c.*

CONTROVER, in law, he who of his own head deviſes or invents falſe, or feigned news.

CONTROVERSIAL *divinity*. See POLEMICAL *divinity*.

CONTUMACY, in law, a refuſal to appear in court when legally ſummoned; or a diſobedience to the rules and orders of a court having power to puniſh ſuch offence.

The word is uſed in civil, as well as criminal matters; but more rarely in the firſt, wherein the words *default*, and *contempt*, ordinarily ſupply its place: the refunding of the charges of a contempt, judged at the hearing, is alſo the penalty of *contumacy*.

In a criminal ſenſe, the *contumacious* is condemned, not becauſe the crime is proved on him, but becauſe he is abſent.

By the Roman laws, there was no proceſs in caſe of *contumacy*, during the firſt year of abſence: they only took an inventory of the goods of the fugitive, and, if he died in the year, he died *integri ſtatus*; but, after the year was expired, he was deemed culpable.

In England, *contumacy* is to be proſecuted to outlawry.—In France, all *contumacies* are annulled, if the accuſed make his appearance in five years; if he die in that time, his relations are permitted to purge his memory.

CONTUSION, *bruiſe*, in medicine, a ſolution of continuity, either in fleſh or bone, occaſioned by a fall, a blow, or a violent preſſure, whereby the fleſh is damaged, but without any external rupture, or any manifeſt loſs of ſubſtance; and an effuſion of blood enſues, from ſeveral little broken veſſels, ſo as to diſcolour the ſkin, though it do not make its way through the pores thereof.

Or, *contuſions* may be defined a particular ſort of tumors, attended with a ſtagnation of the blood in the part affected; and, generally, with an inflammation, diſcoloration, and pain.

Contuſions are either *internal*, or *external*. When from any external injury, there proceeds an internal diſorder, *e. gr.* an aſthma, ſpitting of blood, or the like, the *contuſion* is ſaid to be *internal*. If only external ſymptoms appear, as a tumor, blackneſs, *&c.* it is termed *external*.

In caſe of inward *contuſions*, bleeding the patient is always neceſſary, and balſamics muſt be given internally; ſuch are ſperma ceti, powder of rhubarb, Iriſh ſlate, oleaginous and pectoral medicines, *&c.* Externals, proper for *contuſions*, are liniments, or ointments of marſhmallows, oil of ſweet almonds, ſpirit of wine, with camphire; proper fomentations, and ſtrengthening emplaſters, as that of oxycroceum, *&c.* according as the nature of the *contuſion*, and part *contuſed*, requires.

CONVENT *, a monaſtery of religious, of the one or the other ſex. See MONASTERY.

* The word comes from the Latin *conventus*, meeting, of *convenire*, to come together.

CONVENTA *pacta*. See the article PACTA.

CONVENTICLE, a diminutive of *convent*; denoting, properly, a cabal, or ſecret aſſembly, of a part of the monks of a *convent*, to make a brigue in the election of an abbot.

From the ill uſe of theſe aſſemblies, the word is come into diſrepute; and now ſtands for any miſchievous, ſeditious, or irregular aſſembly.—F. Doucine obſerves, the occidentals always eſteemed the fifth general council an unlawful *conventicle*. See COUNCIL.—The term *conventicle* is ſaid, by ſome, to have been firſt applied in England, to the ſchools of Wickliff; it at preſent is applied to the meetings of nonconformiſts.

CONVENTION, a treaty, contract, or agreement, between two or more parties.

Every *convention* between men, provided it be not contrary to honeſty, and good manners, produces a natural obligation, and makes the performance a point of conſcience.

Every *convention* has either a name, and a cauſe or conſideration, or it has none: in the firſt caſe, it obliges civilly and naturally; in the latter only naturally. See CONTRACT, and CONSIDERATION.

CONVENTION is much uſed both in antient and modern pleadings for an agreement, or covenant.

In the book of rolls of the manor of Hatfield in Yorkſhire, we have a record of a pleaſant *convention*, *Anno* 11 Ed. III. between Robert de Roderham and John de Ithen; the latter of whom ſold the devil in a ſtring for three-pence halfpeny to the former, to be delivered on the fourth day after the *convention*: when, the purchaſer making his demand, the ſeller refuſed to give him livery; to the great loſs (as the record repreſents it) of forty ſhillings to the purchaſer, *&c.* But it appearing to the court, that ſuch a plea does not lie among Chriſtians; the parties were adjourned to hell for judgment.

CONVENTION is alſo the name given to an extraordinary aſſembly of parliament, or of the ſtates of the realm, held without the king's writ.

The *convention* of eſtates, in 1688, after the retreat of king James II. upon mature deliberation, came to a concluſion, that king James, by his practices here, and his flight hence, had abdicated the kingdom; and that the throne was vacant; and therefore devolved upon king William and queen Mary. Upon this, their aſſembly expired as a *convention*, and was converted into a parliament. See ABDICATION.

There was a *convention* of the like kind in Scotland, and with the like effect.

CONVENTIONAL *ſubrogation*. See SUBROGATION.

CONVENTIONE *facienda*, in law, is a writ which lies for the breach of any covenant in writing. Fitzherbert calls it a writ of *covenant*.

CONVENTUAL, ſomething belonging to a convent. See Convent, and Coenobite.

Conventual, is particularly uſed for a religious who actually reſides in a convent; in contradiſtinction to thoſe who are only gueſts, or are entertained there, or are in poſſeſſion of benefices depending on the houſe.

Conventual *prior*, differs from a *clauſtral prior*, in that the former has the full right and authority of an abbot; the only difference between them being in the name: whereas the clauſtral prior is a dependent of the abbot, and derives all his authority from him.

The *conventual* prior is obliged to take prieſts orders in a year, or at moſt in two years, from the day of his admiſſion: in default whereof, the benefice becomes vacant.

Some priories are actually *conventual*, *i. e.* they are ſtocked with religious; others are only *conventual in habitu*, *v. gr.* where there have been no religious during the ſpace of 40 years: the continuance of one ſingle religious, keeps the priory *conventual actu*; for, in default of one, the priory becomes ſimple.

By a declaration of the king of France, in 1680, it is decided, that a *conventuality* never degenerates, or ceaſes, while there are regular places ſubſiſting in it for twelve religious, with revenues for their ſupport. See Priory.

Conventual *auditors*. See the article Auditor.

CONVERGING, or Convergent *lines*, in geometry, are thoſe which continually approximate, or whoſe diſtance becomes continually leſs and leſs.

In oppoſition to *divergent* lines, whoſe diſtance becomes continually greater. Lines that *converge* one way, diverge the other.

Converging *rays*, in dioptrics, are thoſe rays which in their paſſage out of one medium, into another of a different denſity, are refracted towards one another; ſo, as if far enough continued, they will meet in a point, or focus.

All convex lenſes make the rays *converge*, and concave ones diverge, *i. e.* the one inflects them towards a centre, and the other deflects them from it; and the more, as ſuch lenſes are portions of ſmaller ſpheres. On which properties, all the effects of lenſes, microſcopes, teleſcopes, *&c.* depend.

Rays coming *converging* out of a denſer medium into a rarer, become more *convergent*, and concur ſooner, than if they were to continue their motion through the firſt. See Medium.

Rays coming *converging* out of a rarer into a denſer medium, *converge* leſs, and concur later, than if they had continued their motion through the firſt medium.

Parallel rays, paſſing from a denſer into a rarer medium, *v. gr.* from glaſs into air, the ſurface of the glaſs being towards the air, will become *convergent*, and concur in a focus. See Parallel.

Diverging rays, or rays coming from a point, under the ſame circumſtances, become *converging*, and meet in a focus; and as the radiant point comes nearer, the focus recedes farther off: if the radiant be near, the focus will be infinitely diſtant; *i. e.* the rays will be parallel: and if the point be brought nearer ſtill, the rays will diverge.

Converging *ſeries*, in mathematics. See the article Series.

CONVERSE, in geometry, *&c.* A propoſition is ſaid to be the *converſe* of another, when, after drawing a concluſion from ſomething firſt ſuppoſed, we proceed to ſuppoſe what had been before concluded, and to draw from what it had been ſuppoſed.

Thus, it is demonſtrated in geometry, that if the two ſides of a triangle be equal; the two angles oppoſite to thoſe ſides are equal alſo: the *converſe* of the propoſition is, that if the two angles of a triangle be equal, the two ſides oppoſite to thoſe angles are equal alſo.

In aſtrology, Converse *direction* is uſed in oppoſition to *direct* direction; *i. e.* by the latter, the promoter is carried to the ſignificator, according to the order of the ſigns: by the former it is carried from eaſt to weſt, contrary to the order of the ſigns.

CONVERSION, in a moral ſenſe, a return from evil to good; reſulting from a ſenſe, either of the natural deformity of the one, and amiableneſs of the other; or of the advantages and diſadvantages that await the one, and the other.

Or, it is a change of the heart, with regard to the morals, paſſions, deſires, and purſuits; and of the mind, with regard to the ſentiments, *&c.* See Regeneration.

Conversion, Conversio, in logics, a circumſtance or affection of propoſitions, wherein the order of the terms, or extremes, is changed; ſo that the ſubject comes into the place of the predicate, and the predicate into that of the ſubject; without any alteration in the quality of either.

As, *No virtue is vice*; *No vice is virtue*: in which we ſee the ſubject of the former, made the predicate of the latter, and the predicate the ſubject; yet both true.

Converſion is uſually defined a due change of the order of the extremes, *i. e.* under ſuch a habitude and coherence with reſpect to each other, that the one is rightly inferred from the other.

Hence, in every legitimate *converſion* two things are required; 1°, A communication, or reciprocation of terms; not in reſpect of words, but of order. 2°, The inference of one propoſition from the other.

Ariſtotle makes two kinds of *converſion*; the one *ſimple*, by others called *univerſal*; wherein nothing is changed beſide the order of extremes, *i. e.* the terms are tranſpoſed, without altering either the quality or quantity thereof: as, *No mind is body*, *No body is mind.*

The ſecond, *per accidens*, called alſo *particular*; wherein, beſide changing the places of the terms, there is a change of an univerſal ſign into a particular one: as, *Every good man ſtudies the welfare of his country*; *ſome man that ſtudies the welfare of his country is good.*

To theſe, ſome of Ariſtotle's followers add a third kind of *converſion*, called *by contrapoſition*: as, *Every man is an animal, every no-animal is no-man.*

Conversion, in rhetoric, *&c.* is underſtood of arguments which are returned, retorted, and ſhewn on oppoſite ſides, by changing the ſubject into the attribute, and the attribute into the ſubject.

There are *converſions* of arguments, from one figure to another, and alſo from general propoſitions to particular ones. —Thus Cicero againſt Antony; *Doletis tres exercitus* P. R. *interfectos? interfecit Antonius. Deſideratis clariſſimos cives? eoſque vobis eripuit Antonius. Auctoritas hujus ordinis afflicta eſt? afflixit Antonius.*

Conversion, in war, is when the ſoldiers are ordered to preſent their arms to the enemy who attack them in flank, whereas they were before ſuppoſed to be in front: the evolution neceſſary thereto is called *converſion*, or *quarter-wheeling*. See Quarter-wheeling.

Conversion *of equations*, in algebra, is when the quantity ſought, or any part thereof, being in fractions, the whole is reduced to one common denomination; and then, omitting the denominators, the equation is continued in the numerators only.

Thus, ſuppoſe $a-b=\frac{aa+cc}{d}+b+b$; multiply all by d, and it will ſtand thus, $da-db=aa+cc+db+db$.

In arithmetic, we uſe the term *proportion by converſion of ratio*, for a compariſon of the antecedent, and conſequent, in two equal ratios.

Thus, as there is the ſame ratio between two and three, as between eight and twelve; it is concluded there is the ſame ratio between two and one, as between eight and four.

Center of Conversion, in mechanics. See Center.

CONVERSOS. See the article Convert.

CONVERT, a perſon who has undergone a *converſion*. See Conversion.

Convert is chiefly uſed in reſpect of changes from one religion, or religious ſect, to another.

Converts with relation to the religion turned to, are denominated *apoſtates*, with regard to that they have relinquiſhed.

The Jews formerly converted to Chriſtianity in England, were called *converſos*. Henry III. built them a houſe in London, and allowed them a competent ſubſiſtence for their lives; which houſe was called *domus converſorum*. But the number afterwards increaſing, they grew a burden to the crown; upon which they were diſtributed among the monaſteries: and after the expulſion of the Jews under Edward III. the *domus converſorum* was given for keeping of the rolls.

Converts, in a monaſtic ſenſe, are lay-friers, or brothers, admitted for the ſervice of the houſe; without orders, and not allowed to ſing in the choir.

Till the eleventh century, the word was uſed for perſons who embraced the monkiſh life at the age of diſcretion; by which they were diſtinguiſhed from thoſe devoted in their childhood by their parents, called *oblati*.

But in the eleventh century, when they began to receive into monaſteries illiterate perſons, incapable of being clerks, and only deſtined for bodily labour; the ſignification of the wor was neceſſarily changed. F. Mabillon obſerves, that it wa John firſt abbot of Vallombroſa, who firſt introduced the *brothers-converts*, diſtinguiſhed by their ſtate from the monk of the choir, who were then either clerks, or capable of becoming ſo.

CONVEX.	See the articles	Convexity.
Convex *freeze*.		Freeze.
Convex *lens*.		Lens.
Convex *mirrour*.		Mirrour.
Convex *ſuperficies*.		Superficies.

CONVEXITY, the exterior ſurface of a *convex*, *i. e.* gibbo and globular thing; in oppoſition to *concavity*, or the inn ſurface, when hollow or depreſſed.

The word is of particular import in catoptrics, and dioptric where it is applied to mirrours and lenſes.

A *convex mirrour* repreſents its images ſmaller than the o jects; as a concave one repreſents them larger: a con mirrour reflects the rays from it, diverging; and theref diſperſes and weakens their effect: as a concave one flects them converging, ſo as they concur in a point, have their effect increaſed: and by how much the mir is a portion of a ſmaller ſphere, by ſo much does it minish the objects, and diſperſe the rays, the more. Mirrour.

A *convex lens* is either *convex* on both ſides, called a conc *convex*; or it is plain on one ſide, and *convex* on the other, called a *plano-convex:* or concave on one ſide, and *convex* on the other, called a *convexo-concave*, or *concavo convex*, as the one or the other ſurface prevails; *i. e.* as this or that is a portion of a ſmaller ſphere. All *convex* lenſes inflect the rays of light in their paſſage, *i. e.* ſend them out from their *convex* ſurface converging; ſo as that they concur in a point, or focus.

Hence, all *convex* lenſes magnify, *i. e.* repreſent their images larger than their objects; and this the more, as they are portions of ſmaller ſpheres. See LENS, and REFRACTION.

CONVEYANCE, in law, a deed, or inſtrument, by which lands, *&c.* are *conveyed*, or transferred by the proprietor, or owner thereof, to ſome other perſon. See DEED.

CONVICT, in common law, one who is found guilty of an offence, by the verdict of a jury.

According to Crompton, a perſon is alſo a *convict*, or ſaid to be *convicted*, when, after having been outlawed, he appears and confeſſes.—*Conviction* and attainder are frequently confounded. See ATTAINDER, and ATTAINTED.

CONVICT *recuſant*, he who has been legally preſented, indicted, and *convicted*, for refuſing to come to church to hear the common-prayer, according to the ſtatutes 1 and 31 Eliz. and 3 Jac. I.

This is commonly underſtood to be a popiſh recuſant; tho' any others who refuſe coming to church on the ſame account are as properly denominated *recuſants*. See RECUSANT.

CONVICTION, in theology, expreſſes the firſt degree of repentance; wherein the ſinner becomes ſenſible of his guilt, of the evil nature of ſin, and of the danger of his own ways.

CONVICTION, in law. See the article CONVICT.

CONVIVIUM, *banquet*, in our antient cuſtoms, and law-books, ſignifies the ſame thing among the laity as *procuratio* among the clergy; *viz.* when the tenant was obliged, in virtue of his tenure, to provide meat and drink for his lord once, or oftener, in the year. See PROCURATION.

CONVOCATION, a general aſſembly of the clergy of a province, ſummoned by the king's writ to conſult of the more weighty affairs of the church, as oft as a parliament is convoked to conſult of thoſe of the ſtate.

The king's writ is directed to the archbiſhop of each province, requiring him to ſummon all biſhops, deans, archdeacons, cathedral and collegiate churches, *&c.*

Upon which, the archbiſhop directs his mandate to his dean provincial, firſt citing him peremptorily; then willing him, in like manner, to cite all the biſhops, deans, *&c.* and all the clergy of his province; but directing, withal, that one proctor ſent for each cathedral and collegiate church, and two for the body of the inferior clergy of each dioceſe, may ſuffice: which the dean accordingly does.

The place where the *convocation* of the province of Canterbury has been uſually held is St. Paul's church; whence, of late, they have been prorogued to St. Peter's in Weſtminſter, in the chapel of Henry VII. or the Jeruſalem-Chamber, where there is an upper and lower houſe. Chamberlayne.

The *upper* houſe, in the province of Canterbury, conſiſts of 22 biſhops, whereof the archbiſhop is always preſident; all, at the opening of a *convocation*, are in their ſcarlet robes and hoods.

The *lower* houſe conſiſts of 22 deans, 24 prebendaries, 54 archdeacons, and 44 clerks, repreſenting the dioceſan clergy.

Things are firſt uſually propoſed in the upper houſe; then communicated to the lower. All the members of both houſes have the ſame privileges for themſelves, and menial ſervants, as the members of parliament have.

The archbiſhop of York, at the ſame time, holds a *convocation* of the clergy of his province, after the like manner, at York; and, by conſtant correſpondence, debates and concludes of the ſame matters as are debated by that of Canterbury. Not that the northern province is obliged to follow what the ſouthern one does.

The Engliſh clergy, antiently, had their repreſentatives in the lower houſe of parliament; as appears by the record much prized by my lord Coke.

ONVOLUTION, a winding or turning motion, proper to the trunks of ſome plants; as the convolvulæ, or bindweeds, and the claſpers of vines, and briony.

Dr. Grew thinks, that all thoſe plants whoſe roots are twiſted, have ſuch a *convolution:* and he aſſigns two great efficient cauſes of this winding motion, the ſun and the moon.

It is very eaſy to try whether there be any ſuch *convolution* or not in the trunks of plants; which may be done, as he hints, by tying a little bit of paper to any of the branches which are exactly north, ſouth, *&c.* and then ſeeing whether it will change its poſition, or not, in reſpect of the point of the compaſs.

NVOY, *eſcort*, a ſea-term, ſignifying one, or more veſſels of war, intruſted with the conducting of a fleet of merchants; ſerving as a watch, and a ſhelter from the inſults of the enemies of the ſtate, or of pirates.

NVOY is alſo uſed in ſpeaking of military affairs by land; where t ſignifies a body of forces ſent to guard a ſupply of proviſions, rms, or ammunition, going to a camp, or the like.

ONUSANCE. } See the articles { COGNISANCE.
NUSOR. } { COGNISOR.

CONVULSION, *ſpaſmus*, in medicine, a continued involuntary contraction of ſome parts of the body, otherwiſe accuſtomed to move according to the direction of the will.

It owes its origin to a contraction of the muſcles of the part, occaſioned by a too copious and violent influx of the nervous juice: of which there may be infinite cauſes in the blood, arteries, meninges, brain, nerves, muſcles, cranium, *&c.*

If the *convulſion* be univerſal, attended with violent motions, foaming at the mouth, and periodical; it is uſually called an *epilepſy*. See EPILEPSY.

The uſual evacuations and medicines proper for the cure of *convulſions*, are phlebotomy, emetics, cathartics, epiſpaſtics, and proper cephalics; as ſal volat. oleoſ. ſpirit of lavender, ſpirit of hartſhorn, tincture of caſtor, cinnabar of antimony, caſſumanar root, valerian root, volatile ſalt of amber, *&c.* given in different forms.—In periodical univerſal *convulſions*, a ſalivation ſometimes anſwers, after other courſes have failed.

Women and children are particularly liable to *convulſions:* women after delivery; as upon a ſtoppage of the lochia, or a violent extraction of the placenta. See Supplement, article SPASM.

CONVULSIVE, in medicine, is applied to thoſe motions, which, naturally, ſhould depend on the will; but which, by ſome external cauſe, become involuntary.

A *convulſive* motion is a contraction made by fits and intervals; wherein it differs from a *convulſion*, which is a continued contraction.

Convulſive motions ariſe from a diſorder in the origin of the nerves. A *convulſive* tenſion of the ſolids is one of the principal cauſes which deſtroy the equilibrium that ſhould obtain between the ſolids and the fluids. *Journ. de ſcav.*

CONVULSIVE is alſo uſed for any thing that occaſions a *convulſion*, or *convulſive motion*.

Wounds of nerves are ſaid to be *convulſive*; white hellebore is *convulſive*.—Children are very liable to *convulſive* diſorders from various cauſes; as repletion, curdling of the blood in the ſtomach or inteſtines, worms, dentition, *&c.*—The cramp is a *convulſive* contraction of ſome muſcular part of the body. See CRAMP.

CONVULSIVE *aſthma*. See the article ASTHMA.

COOK-ROOM, in a ſhip, is where the cook and the mate dreſs and deliver out the meat, *&c.*—See *Tab. Ship. Fig.* 2. n. 32.

COOLERS, in medicine, remedies ſo called: which may be conſidered under theſe two diviſions:—1°, Thoſe which produce an immediate ſenſe of cold; which are ſuch as have their parts in leſs motion than thoſe of the organs of feeling. 2°, Such as by a particular viſcidity, or groſſneſs of parts, give a greater conſiſtency to the animal fluids than they had before; whereby they are diſabled from moving ſo faſt, and will therefore have leſs of that inteſtine force on which their heat depends.

Of the former kind are fruits, and all acid liquors.—To the latter belong cucumbers, and all ſubſtances producing viſcidity.

COOM, a term for ſoot that gathers over an oven's mouth: alſo for that black greaſy ſubſtance which works out of the wheels of carriages.

Coom, or ſoot, is ſometimes uſed in medicine, infuſed in wine with other ingredients, as an antihyſteric, and againſt palpitations of the heart, *&c.*—The ſpirit of ſoot is alſo uſed for the ſame intentions, and in cephalic caſes.

COOMB, or COMB *of corn*, is a dry meaſure, containing four buſhels, or half a quarter. See MEASURE; ſee alſo BUSHEL, *&c.*

CO-OPERIRE *pallio*. See PALLIO.

CO-ORDINATE, ſomething of equal order, rank, or degree, with another. See ORDER, *&c.*

CO-ORDINATION, in reſpect of cauſes, denotes an order of cauſes, wherein ſeveral of the ſame kind, order, and tendency, concur to the production of the ſame effect.

COPAL, a gum, or reſin, of an agreeable ſmell, reſembling that of frankincenſe; it is brought from New Spain, where it ouſes out from inciſions made in the bark of a large tree; much after the manner in which the vine yields its ſap, when cut in the ſpring.

The Indians uſe it to burn on their altars: among the Europeans, it is uſed againſt diſorders of the breaſt, having a warming, reſolving, and humectating power. It is very rare; when good, it is of a fine tranſparent yellow; and melts eaſily, either in the mouth, or on the fire.

In defect of this is brought another kind from the Antilles, which is almoſt the only one known among the druggiſts; and its chief conſumption is in the making of varniſh.

COPARCENARY, the ſhare, or quota of a *coparcener*. See COPARCENERS.

COPARCENERS, or *parceners*, ſuch as have equal portions in the inheritance of their anceſtor.

Coparceners are ſo either by *law*, or *cuſtom*. *Coparceners by law* are the iſſue female; which, in default of a male heir, come equally to the lands of their anceſtor.

Coparceners by cuſtom are thoſe who, by ſome peculiar cuſtom of the country, challenge equal parts in ſuch lands; as in Kent, by the cuſtom of gavelkind.—The crown of England is not ſubject to *coparcenary*.

COPE, an eccleſiaſtical ornament, uſually worn by chantors and ſub-chantors, when they officiate in the church-ſolemnity. It is alſo worn by the Romiſh biſhops, and other ordinaries: it reaches from the ſhoulders to the feet. The antients called it *pluviale*.

S. Martin's **Cope** was a relic formerly in great eſteem among the French kings; and was often carried with them to war as their ſtandard.

COPERNICAN *ſphere*. See the article Sphere.

Copernican *ſyſtem*, or *hypotheſis*, is that ſyſtem of the world, wherein the ſun is ſuppoſed at reſt in the centre; and the planets with the earth, to move in ellipſes round him. See System.

The heavens and ſtars are here ſuppoſed at reſt; and that diurnal motion which they appear to have from eaſt to weſt, is imputed to the earth's motion from weſt to eaſt.

This ſyſtem was aſſerted by many of the antients; and particularly Ecphantus, Seleucus, Ariſtarchus, Philolaus, Cleanthes Samius, Nicetas, Heraclides Ponticus, Plato, and Pythagoras; from which laſt it was antiently denominated the *Pythagoric ſyſtem*.

It was alſo held by Archimedes, in his book *de granorum arenæ numero*; but after him it became neglected, and even forgotten, for many ages; till about 250 years ago, when Copernicus revived it; from whom it took the new name of the *Copernican ſyſtem*.

Nic. Copernicus, now a name ſo popular, was born at Thorn, in Poliſh Pruſſia, in the year 1472. according to Junctinus, or 1473. according to Mœſtlinus. After the uſual domeſtic education, he was ſent to the univerſity of Cracow; where he applied himſelf to philoſophy and phyſic, and at length commenced doctor in medicine. In the mean time, having a ſtrong propenſity to mathematics, he diligently attended the lectures of Albert. Brudzevius, and even learnt of him at home. After he had here attained to the uſe of the aſtrolabe, and was entering upon aſtronomy, he took Regiomontanus for his guide: tho' he ran thro' all the mathematics of the age, yet he ſeemed moſt taken with perſpective; on occaſion whereof he learned painting, in which he is ſaid to have excelled. When 23 years of age, being at Bologna, he became acquainted with that eminent mathematician Dom. Maria Ferrarienſis; and was admitted to ſhare with him in making of aſtronomical obſervations. Here, in the year 1497. Copernicus firſt obſerved an occultation of Palilitium by the moon. Going on to Rome, he taught publicly, and made ſome conſiderable obſervations; and at his return to Cracow, he was made canon of the church of Wermelant, or Ermeland, and at length vicar-general.

The courſe he took in proſecuting aſtronomy, which has rendered his name immortal, was as follows: Obſerving how the aſtronomers of thoſe times were gravelled to make the planets move equably in circular orbits, *viz.* to ſuppoſe them to move, not about their own centre, but that of the equant; and that they could no-way make out a tolerably regular ſyſtem, out of all their ſhifts and hypotheſes; he reſolved to try what he could do. With this view he peruſed the writings of all the philoſophers and aſtronomers extant; and picked out of each what appeared probable and elegant. In this review he was chiefly taken with two almoſt ſimilar opinions (the one attributed to Martianus Capella, the other to Apollonius Pergæus): which give a very good account of the motions of Venus and Mercury; and explain the cauſe of their directions, ſtations, and retrogradations, very happily: the latter, withal, performing the ſame in the three ſuperior planets. But then, in both theſe hypotheſes, the earth is ſuppoſed the centre: Copernicus choſe rather to adopt the opinion of the Pythagoreans; to remove the earth out of the centre of the world, and to give it, not only a diurnal motion round its own axis; but alſo an annual one round the ſun.

On this footing he began to obſerve, calculate, compare, *&c.* and at length, after a long, ſolicitous diſquiſition, found himſelf in a condition to account for the phænomena and motions of all the planets; and to make an orderly arrangement, or diſpoſition of the whole heavens: wherein nothing could be altered, or diſplaced, without bringing the utmoſt confuſion into the whole.

Theſe things he began to write down about the year 1507. He then proceeded to furniſh himſelf with ſome new apparatus; particularly a parallactic inſtrument, and ſome Ptolemaic rulers, wherewith to obſerve the altitude of the ſtars, and determine the periods of the ſun and moon: and without other means, compoſed his ſix books *de orbium cæleſtium revolutionibus*; containing the whole of aſtronomy, delivered after the example of Ptolemy, in a geometrical method. We have already obſerved, that he began it in 1507. he finiſhed it in 1530. Five years after, he poliſhed and improved it. He died of a dyſentery, and a palſy on his right ſide, in the year 1543.—*See the order and diſpoſition of the heavenly bodies*, as laid down by him, compared with thoſe in the other ſyſtems, under the head System.

COPERNICUS is the name of an aſtronomical inſtrument, contrived, by Mr. Whiſton, for the calculation and exhibition of eclipſes, and of the motions of the planets, both the primary and ſecondary ones, *&c.*

It was ſo called by the inventor, as being built on the *Copernican* ſyſtem; or as repreſenting the heavenly bodies agreeable thereto. It conſiſts of ſeveral concentrical circles of wood; upon which are inſcribed numbers, transferred hither from the aſtronomical tables: by the various diſpoſitions of theſe circles, which are made ſo as to ſlide within each other, queſtions are ſolved; and thus long calculations are ſaved, and the work of many hours brought into a few minutes.

For the exhibition of eclipſes, there is a peculiar apparatus, conſiſting of a terreſtrial globe, ſo diſpoſed, as that, being turned round its axis, the light of the ſun, or a candle, is projected through a glaſs plane, marked out into concentric circles, expreſſing digits of the eclipſe: and thus is the path of the eclipſe, with its degree or quantity in any part of its path, agreeably and accurately repreſented.

The inſtrument not being very common, a particular deſcription were ſuperfluous. The author of it has written a book expreſly to explain it.

COPHTI*, **Cophts**, or **Copti**, a name given to the Chriſtians of Egypt; who are of the ſect of Jacobites.

* The critics are extremely divided about the origin and orthography of the word: ſome write it *Gophti*, others *Cophtites*, *Cophtitæ*, *Copts*, &c. Scaliger derives the name from *Coptos*, an antiently celebrated town of Egypt, the metropolis of the Thebaid. Kircher refutes this opinion, and maintains, that the word originally ſignifies *cut*, and *circumciſed*; and was given theſe people by the Mahometans, by way of reproach, in regard of their practice of circumciſing: but P. Sollier, another Jeſuit, refutes this opinion. Scaliger afterwards changed his opinion, and derived the word from Αιγυπτος, the antient name of Egypt, by retrenching the firſt ſyllable: but this opinion, too, P. Sollier diſputes. John de Leo and others ſay, that the Egyptians antiently called their country *Elchibth*, or *Cibth*, from Cibth their firſt king, whence *Cophtite*, &c. others ſay from Cobtim ſecond king of Egypt. Vanſleb derives the word *Copht* from Copt ſon of Miſraim, grandſon of Noah.—All theſe etymologies P. Sollier rejects; on this principle, that were they true, the Egyptians ought all equally to be called *Cophti*; whereas, in effect, none but the Chriſtians, and among thoſe none but the Jacobites, bear the name; the Melchites not being comprehended under it.—Hence he chooſes to derive the word from the name *Jacobite*, by retrenching the firſt ſyllable; whence *cobite*, *cobia*, *copta*, and *cophta*.

The *Cophts* have a patriarch, who reſides at Cairo, but he takes his title from Alexandria: he has no archbiſhop under him; but eleven or twelve biſhops. The reſt of the clergy, whether ſecular or regular, is compoſed of the orders of S. Antony, S. Paul, and S. Macarius, who have each their monaſteries.

Beſide the orders of prieſts, deacons, and ſubdeacons, the *Cophts* have likewiſe archimandrites, the dignity whereof they confer with all the prayers and ceremonies of a ſtrict ordination.

This makes a conſiderable difference among the prieſts; and beſides the rank and authority it gives them with regard to the religious, it comprehends the degree and functions of archprieſts. By a cuſtom of 600 years ſtanding, if a prieſt elected biſhop be not already archimandrite, that dignity muſt be conferred on him before epiſcopal ordination.

The ſecond perſon among the clergy, after the patriarch, is the titular patriarch of Jeruſalem, who alſo reſides at Cairo, by reaſon of the few *Cophts* at Jeruſalem; he is, in effect, little more than biſhop of Cairo: only he goes to Jeruſalem every Eaſter, and viſits ſome other places in Paleſtine near Egypt, which own his juriſdiction. To him belongs the government of the *Cophtic* church, during the vacancy of the patriarchal ſee.

To be elected patriarch, it is neceſſary the perſon have lived all his life in continence; and even that he be a virgin: it is he confers the biſhopricks. To be elected biſhop, the perſon muſt be in the celibate; or, if he have been married, it muſt not be above once.

The prieſts and inferior miniſters are allowed to be married before ordination; but are not obliged to it, as Ludolphus miſtakingly obſerves. They have an infinity of deacons, and even confer the dignity frequently on children. None but the loweſt rank among the people commence eccleſiaſtics; whence ariſes that exceſſive ignorance found among them: yet the reſpect of the laity towards the clergy is very extraordinary.

Their office is longer than the Roman office, and never changes in any-thing: they have three liturgies, which they vary occaſionally.

The monaſtic life is in great eſteem among the *Cophts*: to be admitted into it, there is always required the conſent of the biſhop. The religious *Cophts* make a vow of perpetual chaſtity; renounce the world, and live with great auſterity in deſerts: they are obliged to ſleep in their cloaths and their girdle, on a mat ſtretched on the ground; and to proſtrate themſelves every evening 150 times, with their face and breaſt on the ground. They are all, both men and women, of the ſcum of the people; and live on alms. The nunneries are properly hoſpitals; and few enter but widows reduced to beggary.

F. Roderic reduces the errors and opinions of the *Cophts* to the following heads: 1°, That they put away their wives, and eſpouſe others while the firſt are living. 2°, That they have ſeven ſacraments; *viz.* baptiſm, the euchariſt, confirmation, ordination, faith, faſting, and prayer. 3°, That they deny the Holy Spirit to proceed from the Son. 4°, That they only allow of three œcumenical councils; that of Nice, Conſtantinople, and Epheſus. 5°, That they only allow of one nature, will, and operation, in Jeſus Chriſt after the union of the humanity with the divinity. For their errors in diſcipline, they may be reduced, 1°, To the practice of circumciſing their children before baptiſm, which has obtained among them from the twelfth century. 2°, To their ordaining deacons at five years of age. 3°, To their allowing of marriage in the ſecond degree. 4°, To their forbearing to eat blood: to which ſome add their belief of a baptiſm by fire, which they confer by applying a hot iron to their forehead or cheeks.

Others palliate theſe errors, and ſhew that many of them are rather abuſes of particular perſons, than doctrines of the ſect. This ſeems to be the caſe with regard to their polygamy, eating of blood, marrying in the ſecond degree, and the baptiſm of fire: for circumciſion, it is not practiſed as a ceremony of religion; nor as of any divine appointment, but merely as a cuſtom which they derive from the Iſhmaelites; and which, perhaps, may have had its origin from a view to health and decency in thoſe hot countries.

The *Cophts*, at different times, have made ſeveral re-unions with the Latins; but always in appearance only, and under ſome neceſſity of their affairs. In the time of pope Paul IV. a Syrian was diſpatched to Rome from the patriarch of Alexandria, with letters to that pope; wherein he acknowleged his authority, and promiſed obedience; deſiring a perſon might be diſpatched to Alexandria, to treat about a re-union of his church to that at Rome: purſuant to which, Pius IV. ſucceſſor to Paul, choſe F. Roderic, a Jeſuit, whom he diſpatched in 1561. in quality of apoſtolical nuntio.

But the Jeſuit, upon a conference with two *Cophts* deputed for that purpoſe by the patriarch, was made to know, that the titles of *father of fathers*, *paſtor of paſtors*, and *maſter of all churches*, which the patriarch had beſtowed on the pope in his letters, were no more than mere matters of civility and compliment; and that it was in this manner the patriarch uſed to write to his friends: they added, that ſince the council of Chalcedon, and the eſtabliſhment of ſeveral patriarchs independent of one another; each was chief, and maſter of his own church. This was the anſwer the patriarch gave the pope, after he had received a ſum of money remitted to him from Rome, by the hands of the Venetian conſul.

COPHTIC, or COPTIC, the language of the Cophts.

This is the antient language of the Egyptians, mixed with a great deal of Greek; the characters it is written in being all Greek.

F. Kircher is the firſt who publiſhed a grammar, and vocabulary of the *Cophtic*. There is not known any book extant in the *Cophtic*, except tranſlations of the holy Scriptures, or of eccleſiaſtical offices; or others that have relation thereto, as dictionaries, *&c.*

The antient *Cophtic* is now no longer found, but in books: the language now uſed throughout the country is Arabic.

The old *Cophtic*, which Kircher maintains to be a mother-tongue, and independent of all others, had been much altered by the Greek: for beſides that it has borrowed all its characters from the Greek, with a very little variation, a great number of the words are pure Greek.

Voſſius, indeed, aſſerts that there was no *Cophtic* language till after Egypt became ſubject to the Arabs. The language, according to him, is a mixture of Greek and Arabic: the very name thereof not being in the world till after the Arabs were maſters of the country. But this, M. Simon obſerves, proves nothing; except that what was antiently called *Egyptian*, has ſince by the Arabs been called *Cophtic*, by a corruption of ſpeech. There are, it is true, Arabic words in the *Cophtic*; yet this by no means proves but that there was a language before that time, either *Cophtic* or Egyptian. Pietro de la Valle obſerves, that the Cophts have intirely loſt their antient tongue; that it is now no longer underſtood among them; that they have nothing extant therein but ſome ſacred books; and that they ſtill ſay maſs in it: *ſolo hanno in eſſa alcuni libri ſacri, dicendo ancora la maſſa in quella lingua.*

All their other books have been tranſlated into Arabic, which is their vulgar tongue; and this has occaſioned the originals to be loſt: it is added, that they rehearſe the epiſtles and goſpels in the maſs, twice; once in Arabic, and once in *Cophtic.*

Indeed, if we believe F. Vanſleb, the *Cophts* ſay the maſs in Arabic, all but the epiſtles and goſpels, which they rehearſe both in that and *Cophtic*; *La maſſa celebrano in lingua Arabica, eccetto l'Evangelio & alcune altre coſe che ſogliano leggere nella lingua Copta & Araba.*

OPHTIC *bible.* See the article BIBLE.

OPIA *libelli deliberanda*, a writ which lies in caſe where a man cannot get the copy of a libel at the hands of the eccleſiaſtical judge.

ornu COPIA. See CORNUCOPIA.

OPIATA, under the weſtern empire, a *grave-digger.*—In the firſt ages of the church, there were clerks deſtined for this employment. In the year 357. Conſtantine made a law in favour of the prieſts *copiatæ*; i. e. of thoſe who had the care of interrments; whereby he exempts them from the luſtral contribution which all other traders paid.

It was under him alſo that they firſt began to be called *copiatæ*, *q. d.* clerks deſtined for bodily labour, from κοπος, of κοπτω, *ſcindo, cædo, ferio*, I cut, beat, *&c.* Before that time they were called *decani* and *lecticarii*; perhaps, becauſe they were divided by decads or tens, each whereof had a bier or litter for the carriage of the dead bodies. Their place among the clerks was the next in order before the chantors.

COPING *of a wall*, the top or cover of a wall, made ſloping to carry off the wet.

COPING *over*, in carpentry, a ſort of hanging over, not ſquare to its upright, but bevelling on its under ſide till it end in an edge.

COPIVI, CAPIVI, COPAYBA, or CUPAYBA, a balm or balſam, ouſing out of inciſions made in a tree of Brazil; not taken notice of but by very late writers; at leaſt, not under this name.

It is of a thinner conſiſtence than common turpentine, but much more fragrant, and deterſive. It is extremely quick in paſſing off by urine, and mightily cleanſes thoſe paſſages; by which it has obtained very much in gonorrhœas, ſeminal weakneſſes, the whites, and all obſtructions, and ulcerations of thoſe parts. It is likewiſe a powerful balſamic, and is good in many diſtempers of the breaſt, eſpecially in catarrhs, tickling coughs, ſpitting of blood, *&c.* In dyſenteries and diarrhœas of long continuance, where the mucus that lines the inteſtines is by the acrimony of the humours abraded, it is of great ſervice in ſupplying its place by its balſamic quality. It mixes intimately with the yolk of an egg.—The Jews uſe it to ſtop the flux of blood after circumciſion.

COPPEL, COPEL, or CUPPEL, a veſſel uſed by refiners, and aſſayers, to try, and purify their metals.

The *coppel of aſſay*, is a little flat veſſel, made of vegetable aſhes, and bones of ſheeps feet, calcined and lixiviated, to ſeparate the ſalts, which would otherwiſe make it crack. At the bottom of the veſſel is a little cavity filled with a kind of white varniſh, compoſed of hartſhorn, or pike-bones, calcined and diluted in water: the uſe of this liquor is, that the gold or ſilver to be aſſayed may be more conveniently lodged, and that the button of the aſſay may be ſeparated the more eaſily.

Note, Though metals may be tried otherwiſe than by *coppelling*; and though the touchſtone, graver, *&c.* are of ſome ſervice to the goldſmith in judging of their purity; yet, without the *coppel*, it is difficult, not to ſay impoſſible, to know their preciſe degree of purity.

The refiner's coppel, is a large freeſtone veſſel, lined withinſide with a kind of plaſter made of aſhes well lixiviated, cleanſed, dried, beaten, and ſifted.

In this kind of *coppel* it is that they purify their gold and ſilver, by adding lead to it, and expoſing the whole to a violent fire. See Supplement, article COPPEL.

COPPER, a hard, heavy, ductile metal; found in mines, in ſeveral parts of Europe, but moſt abundantly in Sweden.

Copper is of all metals the moſt ductile and malleable after gold and ſilver; and it abounds very much in vitriol and ſulphur.

The chymiſts call it *venus*; as ſuppoſing it to have ſome more immediate relation to that planet. By an analyſis it appears compoſed of a ſulphur ill digeſted, a yellowiſh mercury, and a red ſalt.

Copper is found in glebes or ſtones of various forms and colours; which are firſt beaten ſmall and waſhed, to ſeparate them from the earthy, *&c.* parts wherewith they are mixed.

After waſhing they are ſmelted, and the melted matter run into a kind of moulds, to form large blocks, by ſome called *ſalmons*, and by others *cakes of copper.* This is the ordinary *copper.*

To render it more pure and beautiful, they melt it again once or twice; ſome of its coarſe earthy parts being left behind at each fuſion, and a quantity of tin and antimony added in each. In this ſtate it is called *roſe copper*, in Latin *æs peloſum.*

Copper is ſometimes alſo found native and pure in the mines, either in form of threads, or in flakes, plates, grains, or other maſſes and lumps.—This is called *virgin copper.*

Of a mixture of *copper* and lapis calaminaris, is formed braſs, which the French call *cuivre jaune*, *yellow copper*, in contradiſtinction to natural *copper*, which they call *cuivre rouge*, *red copper.* See BRASS.

Copper melted together with 22 or 23 pounds of fine tin *per* quintal, makes bell metal. See BELL *metal.*

Copper and braſs melted in equal quantities, make what the French call *bronze*, uſed for figures, ſtatues, *&c.*

Copper turns white by an unction of ſpirit of wine and orpiment. Pliny ſays there is a *copper* naturally white, found underneath the ſilver mines. See Supplement, article CUPRUM.

Engraving on COPPER. } See the articles { ENGRAVING.
Refining of COPPER. } { REFINING.

Chymiſts give the denomination *ſaffron of copper*, or *crocus veneris*, to a preparation of *copper* plates ſtratified with decrepitated ſalt, in a crucible; after having extinguiſhed them in water, and ſcraped them with iron inſtruments. It is very red, and is uſed in emplaſters to cleanſe wounds, and ulcers.

Some chymiſts have pretended, that the ſpirit of *copper* is real alkaheſt, capable of diſſolving wholly pearls, corals, crabs eyes, *&c*, without any diminution of its force; but experience has ſhewn the contrary.

Æs uſtum, ſometimes alſo called *ſaffron of venus*, is nothing but *copper* calcined in a violent fire.

Verdigreaſe is a ruſt of *copper*. See VERDIGREASE.—Becher obſerves, that the drinking of acid liquors, even out of common ſilver plate, is very unwholſome, by reaſon of the mixture of *copper* therein; much more is it ſo out of veſſels of *copper*.

COPPERAS, a name given to vitriol, particularly to vitriol of iron.

Copperas is purified and prepared in the ſame manner as alum and ſalt-petre, by paſſing through ſeveral lixiviums, till it be wholly reduced to cryſtal.

Some make *copperas* to be the chalcitis of the antients. But the more common opinion is, that their chalcitis was a ſtone, not a pure ſalt.

There is *copperas* of England, of Piſa, Germany, Cyprus, Hungary, and Italy, which differ from each other in colour, richneſs, and perfection.

White copperas, is a vitriol of iron, with a mixture of ſome other mineral, brought from Germany in cakes of 40 or 50 pounds each: ſuch are thoſe brought from Goſlar in Saxony.

The Engliſh *copperas* is of a fine green; that of Cyprus and Hungary is of a ſky blue, and has copper for its baſis. It is in pieces cut like the point of a diamond. That of Piſa and Italy is likewiſe green; and the laſt as tranſparent as glaſs.

The Engliſh green *copperas* is of conſiderable uſe in many preparations; but eſpecially in dyeing. The hatters alſo uſe it in their dye; and this and galls are the ingredients that compoſe writing ink.

The ordinary Engliſh *copperas* is made of a kind of ſtones found on the ſea-ſhore in Eſſex, Hampſhire, and ſo weſtward, ordinarily called *gold ſtones*, from their colour: they abound much in iron.

To prepare the *copperas* from them, they are expoſed to the weather in beds above-ground, and receive the rains and dews, which in time break and diſſolve the ſtones: the liquor that runs off is pumped into boilers, in which is firſt put old iron, which in boiling diſſolves. When the boiling is finiſhed, the liquor is drawn off into coolers, where it ſhoots into cryſtals.

The works at Deptford for making it are known to moſt people.—Many chymiſts diſſolve this, and ſhoot it again, to ſell it for the common ſalt of ſteel.

COPPICE, or COPSE, a little wood, conſiſting of under-woods; and ſuch as may be raiſed either by ſowing, or planting.

COPULA, in logic, a verb that connects any two terms in a propoſition, either negative or affirmative: as, *A roſe is ſweet*; where *is* is the *copula*.

COPULATION. See the articles COITION, CONGRESS, and CONSUMMATION.

COPULATIVE *Propoſitions*, are thoſe which include ſeveral ſubjects, or ſeveral attributes joined together by an affirmative or negative conjunction.

Thus, *v. gr. power and riches do not make a man happy*. Where *and* is the conjunction that couples *power* and *riches*.

Conjunction COPULATIVE. See CONJUNCTION.

COPY, in a law-ſenſe, a tranſcript of a writing or inſtrument, made for the uſe and ſatisfaction of ſome of the parties concerned; or in order to preſerve the memory thereof. See COPIA.

Such a *Copy* was taken from the original; has been collated with the original. Antient documents do now few of them ſubſiſt otherwiſe than in *copies*.

COPY is alſo uſed for an imitation of any original work; particularly a painting, draught, figure, &c.

COPY, among printers, denotes the manuſcript, or original of a book given to print from.

In this ſenſe, they ſay, the preſs ſtands ſtill for want of *copy*: ſuch an author's *copy* is good, *i. e.* it is fair, legible, orderly, &c. and ſuch another's otherwiſe.

In the bookſellers language, a *good copy* is that which produces a ſaleable book.

To caſt off a copy, is to make a computation of the number of ſheets a manuſcript will make in print.

Tenant by COPY *of court-roll*. See TENANT.

COPY-HOLD, is a tenure for which the tenant has nothing to ſhew but the *copy* of the roll made by the ſteward of the lord's court.

The ſteward of the court is, among other things, to enroll and keep a regiſter of all ſuch tenants as are admitted to any parcel of land, or tenement, belonging to the manor; and the tranſcript is called the *copy of the court-roll*, which the tenant keeps as his own evidence.

This tenure is called a *baſe tenure*, becauſe the tenant holds, in ſome ſort, at the will of the lord. Fitzherbert ſays, it was formerly called *tenure in villenage*; and that *copy-hold* is but a modern name. However, it is not ſimply at the lord's will, but according to the cuſtom of the manor; ſo that if the *copy-holder* doth not break that cuſtom, and forfeit his tenure, he ſeems not to ſtand at the lord's courteſy.—Theſe cuſtoms are infinite; varying in one point or other almoſt in every manor.

Copy-holders, upon admittance, pay a fine to the lord; which fines are in ſome manors certain, in others not; but yet, if the lord exceeds two years value, the court of chancery, king's-bench, &c. have, in their ſeveral juriſdictions, power to reduce the fine.

In many places, the *copy-holds* are a kind of inheritance, and termed *cuſtomary*, becauſe the tenant dying, and the hold becoming void, the next of blood paying the cuſtomary fine, as two ſhillings an acre, or the like, may not be denied his admiſſion. Some *copy-holders* have by cuſtom the wood growing upon their own land; ſome, again, hold by the verge in antient demeſne, ſo that though they hold by *copy*, they are yet accounted a kind of freeholders: laſtly, ſome others hold by common tenure, called *mere copy-hold*; whoſe land, upon felony committed, eſcheats to the lord of the manor.

This is the land which the Saxons called *folkland*, as being held *ſine ſcripto*, in contradiſtinction to *bockland*, or charter-land, *terra ex ſcripto*, and now free-land. See CHARTER-LAND, and FREE-HOLD.

COPY-HOLDER, is defined by Weſt, a perſon admitted tenant of any lands, or tenements, within a manor, which, time out of mind, by the uſe and cuſtom thereof, have been deviſable to ſuch as will take the ſame by *copy* of court-roll, according to the cuſtom of the ſaid manor.

COQ. *ad med. conſumpt.* an abbreviature among phyſicians, ſignifying that the thing is to be boiled till half of it be conſumed.—*Coq. in S. Q. Aq.* implies it to be boiled in a ſufficient quantity of common water.

COR, in anatomy. See the article HEART.

COR *Caroli*, in aſtronomy, an extra-conſtellated ſtar in the northern hemiſphere, ſituated between the coma Berenices and urſa major; ſo called by Dr. Halley in honour of king Charles.

COR *hydræ*, in aſtronomy, a ſtar of the ſecond magnitude, in the heart of the conſtellation hydra; the twelfth in order in Ptolemy's catalogue; the eleventh in Tycho's; and the twenty-fifth in the Britannic. Its longitude is 22° 57′ 59″. its latitude 22° 24′ 32″ ſouth.

COR *leonis*, or *regulus*, a fixed ſtar of the firſt magnitude, in the conſtellation *leo*. See LEO.

CORACOBRACHIALIS, a muſcle which ariſes from the proceſſus coracoides of the ſcapula, by a tendinous beginning; and paſſing over the articulation of the humerus, is inſerted into the middle and internal part of that bone, and with the deltoides and ſupra-ſpinatus, lifts the arm upwards; and alone, obliquely outwards.—See *Tab. Anat.* (*myol.*) *Fig.* 1. n. 23.

CORACOHYOIDÆUS *, in anatomy, a muſcle which has its origin from the proceſſus coracoides of the omoplate; or rather, according to Keil, from the upper edge of the ſcapula, near its neck; whence aſcending obliquely under the maſtoidæus, it is inſerted into the os hyoides; which it ſerves to pull obliquely downwards.—See *Tab. Anat.* (*myol.*) *Fig.* 2. lit. o. *Fig.* 1. n. 17. See alſo HYOIDES.

* The word is formed from *coracoides* and *hyoides*, the two parts.

It is alſo called *digaſtricus*, as having two bellies at its two extremities, and a tendon in the middle to give room for the paſſage of the carotid and inner jugular artery. See DIGASTRIC.

CORACOIDES *, in anatomy, a ſmall, ſharp proceſs of the ſcapula; ſo called from its reſembling a crow's bill.—See *Tab. Anat.* (*Oſteol.*) *Fig.* 3. n. 5. 5. See alſo PROCESS, and SCAPULA.

* The word comes from the Greek κοραξ, κορακος, *corvus*; and ειδος, *imago*.

The *coracoides* is placed in the upper part of the neck, and projects over the head of the bone of the arm.—It ſerves to ſtrengthen the articulation of the ſhoulder; and gives origin to one of the muſcles of the arm.

CORAL, in natural hiſtory, a production of the ſea, uſually ranked among the number of marine plants *.

* The nature of *coral* muſt needs be very difficult to determine: for the antients, without heſitation, took it for ſtone; moſt of the moderns hold it a vegetable; of late days, M. de Reaumur maintains it partly plant, partly ſtone; while another curious and able naturaliſt, who has much ſtudied the productions of the ſea, almoſt ranks it in the number of animals, as imagining it the work of certain ſea inſects. *Vid.* Hiſt. Acad. R. Scienc. *an.* 1728. *p.* 50. *mem. p.* 378.

The opinion of its being a vegetable, is, however, now ſ well eſtabliſhed, that all other ſentiments ſeem almoſt pre cluded. P. Kircher ſuppoſes intire foreſts of it, at the bot tom of the ſea; and M. Tournefort, an able botaniſt, main tains that it evidently multiplies by ſeed; and the count d Marſigli has even diſcovered ſome parts therein which ſee to ſerve the purpoſe of ſeeds and flowers.

Coral, then, being eſtabliſhed a plant, has, in that qualit roots, wherewith it is faſtened to the rock whereon it grows these roots are covered with a bark, often beſet with ſtarr pores, which traverſe them from top to bottom. Abo the roots is the ligneous part of the plant, if we may call a ſubſtance that rather ſeems to reſemble ſtone than woo It is divided into branches like other plants; having wh ſtreaks therein, which ſeem to repreſent a kind of fibre The extremities of the plant are rounded with litt bowls, ordinarily divided into ſix cells, filled with a hu mour ſomewhat like milk, fatty, ſharp, and aſtringe

Laſtly, that nothing may be wanting to conſtitute a real plant, theſe bowels are eſteemed a kind of pods, or capſulæ, containing the ſeed of the *coral*. It is even ſaid, that in what place, or on what matter ſoever this juice be ſhed, it carries fecundity with it, and produces a plant of *coral*: whence it is, that in the cabinets of the curious, we find ſome of it on dead mens ſkulls, pieces of earthen ware, and other kinds of ſolid bodies, which chance and the working of the ſea have thrown into ſome of F. Kircher's foreſts. *Coral*, M. le Comte de Marſigli obſerves, grows chiefly in grottos whoſe mouth or aperture is towards the ſouth, and their vault or concave arch nearly parallel to the ſurface of the earth. For its growth, it is neceſſary the ſea be as quiet as a pond: it vegetates the contrary way to all other plants; its foot adhering to the top of the grotto, and its branches ſhooting downwards. The foot takes the exact form of the ſolid it grows to, and even covers it, like a plate, to a certain extent; which M. de Marſigli thinks a proof that its ſubſtance was originally fluid: and what confirms the thought, is, that the ſame ſubſtance ſhall ſometimes line the inſide of a ſhell, which it could never have entered but in form of a fluid.

Upon a nice examen of the ſeveral parts of *coral*, M. de Marſigli gathers, that all its organiſm, with regard to vegetation, conſiſts in its rind; that the tubules of this rind filtrate juice which fills the cellules, and runs along the canals as far as the extremities of the branches *; and that this juice being petrified, both in the cells encompaſſing the *coralline* ſubſtance, and in thoſe of the extremities of the branches whoſe ſubſtance is not yet formed, makes the plant grow both in height and bulk.

The antients believed, that *coral* was ſoft while it continued at the bottom of the water; and that it only became hard and ſolid by the impreſſion of the air. But the moderns are convinced of the contrary from experience; and know that there was more of imagination than truth in the name *gorgonium*, which they gave it, to ſhew that Meduſa's head did not convert objects into ſtone more ſurely, than *coral* became petrified as ſoon as it appeared in the air.

There are, properly, but three kinds of *coral*, *red*, *white*, and *black*: the black is the rareſt, and moſt eſteemed; but it is the red that is ordinarily uſed in medicine. It muſt be choſen thick, ſmooth, and ſhining, and of a beautiful red, not covered with any tartareous matter.

There is a kind of white *coral* pierced full of holes, and a black *coral*, named *antipates*; appearing of a different nature from the reſt: but theſe are of no uſe.—The chymiſts draw a magiſterial tincture from *coral*, and a ſalt.

Coral gives title to an officinal compoſition, called *ſyrup of coral*, ſometimes preſcribed by phyſicians; as is likewiſe the powder of *coral* finely ground, and afterwards levigated on a marble, and made up into a proper form. But there are few, except thoſe who are fond of medicines with gems in them, that make uſe hereof. By means of its exceeding hardneſs, it is ſuſpected to take away with it a great deal of the levigating ſtone.

The virtues attributed to *coral* and its preparations, are, that it is aſtringent, and therefore of uſe in diarrhœas, too large fluxes of the menſtrua, and floodings; of ſervice in the fluor albus, and to prevent miſcarriages; beſides its uſe in common as a teſtaceous powder in childrens diſeaſes, *&c.*

Some alſo attribute to *coral* the immediate ſtopping of blood, the ſecuring of houſes from thunder-bolts, the keeping away of evil ſpirits, and the promoting of dentition. It is added, that *coral* appears redder wore on a man than on a woman; that it becomes pale and livid when wore by a ſick perſon; and that the changes in the plant correſpond with thoſe in the diſeaſe. But for theſe, and many more fancies of the ſame kind, *credat Judæus apella.*—Its chief uſe we know of, is in chaplets, beads, and other toys.

RAL-*Fiſhery*. The time for fiſhing *coral* is from April to July: he places are the Perſian Gulf, Red Sea, coaſts of Africa towards the Baſtion of France, the iſles of Majorca and Cor-ica, and the coaſts of Provence and Catalonia.

he method of fiſhing is nearly the ſame in all places; that ſed at the Baſtion of France, where there is an eſtabliſhed ſhery, under the direction of a company at Marſeilles, is as ollows,

even or eight men go in a boat, commanded by the patron or proprietor; the caſter throws his net, if we may ſo call the machine wherewith he uſes to tear up the *coral* from the bottom of the ſea; and the other ſix manage the boat. The net is compoſed of two beams tied acroſs, with a leaden weight to preſs them down: to the beams is faſtened a great quantity of hemp looſely twiſted round, among which they mix ſome ſtrong nets.

In this condition the machine is let down into the ſea; and when the *coral* is pretty ſtrongly embarraſſed in the hemp and the nets, they draw it out by a rope; which they unwind according to the depth, and which ſometimes requires half a dozen boats to draw. If the rope happen to break, the fiſhermen are in great danger of drowning.

Before the fiſhermen go out, they agree on the price of the *coral*, which is ordinarily at the rate of 4*s.* 6*d.* *per* pound.

When the fiſhery is over, which in a ſeaſon uſually amounts to 25 quintals of *coral* each boat; it is divided into 13 parts; the patron whereof, or maſter *coraller*, has four, the caſter two, and each of the ſix companions one: the 13th being reſerved for the company, *&c.*

Artificial CORAL is made of cinnabar well beaten; a layer whereof is applied on a piece of wood well dried, and poliſhed, firſt moiſtened with ſize: the whole is then again poliſhed; and, for varniſh, rubbed over with the white of an egg.

CORALLINE, *ſea-moſs*; a plant found adhering to rocks, ſhells, and even to *coral*.—It has no ſtem, but its branches ſhoot immediately out of the root. Its uſe in medicine is not very conſiderable; yet it is ſuppoſed of ſome effect to deſtroy worms in children, when taken in powder; and is alſo uſed as an ornament in rock-work. The beſt is greeniſh; the worſt aſh-coloured; the red is not much better.

CORALLINUM *Arcanum*. See the article ARCANUM.

CORAM *non Judice*, in law, is when a cauſe is brought into a court whereof the judges have no juriſdiction.

CORBAN, a Scripture term, ſignifying an oblation, or offering, to God on the altar.

CORBAN alſo denotes a ceremony in uſe among the Mahometans, yearly performed at the foot of mount Ararat in Arabia, near Mecca.—It conſiſts in ſlaying a great number of ſheep, and diſtributing them among the poor.

CORBEILS, in fortification, little baſkets, about a foot and an half high, eight inches wide at the bottom, and twelve at the top; which, being filled with earth, are frequently ſet one againſt another upon the parapet, or elſewhere; leaving certain port-holes, from whence to fire upon the enemy under covert, without being ſeen by them.

CORBEL, in architecture, the repreſentation of a baſket, ſometimes ſeen on the heads of Caryatides.

The word is alſo uſed for the vaſe, or tambour, of the Corinthian column; ſo called from its reſemblance of a baſket, or becauſe it was firſt formed on the model of a baſket.

CORBEL, or CORBIL, is alſo uſed, in building, for a ſhort piece of timber placed in a wall, with its end ſticking out ſix or eight inches, as occaſion ſerves, in manner of a ſhouldering-piece.

The under-part of the end, thus ſticking out, is ſometimes cut into the form of a boultin; ſometimes of an ogee, and ſometimes of a face, *&c.* according to the workman's fancy; the upper-ſide being plain and flat.

Theſe *corbels* are uſually placed for ſtrength immediately under the ſemi-girders of a platform, and ſometimes under the ends of chamber-beams: in which latter caſe, they are commonly placed a foot or two below the beam, and have a piece of timber ſtanding upright cloſe to the wall from the *corbel* to the beam.

CORBEL is alſo uſed by ſome architects for a niche, or hollow, left in walls for images, figures, or ſtatues, to ſtand in.

CORD*, or CHORD, an aſſemblage of ſeveral threads of hemp, cabled or twiſted together by means of a wheel.

CORD *of S. Francis*, a kind of rope adorned with knots, wore by the brothers of the fraternity inſtituted in honour of that ſaint. Some, as the cordeliers, capuchins, minorites, and recolets, wear it white; others, as the pique-puces, black.—Its deſign is to commemorate the bonds wherewith Jeſus Chriſt was bound.

The ſociety of the CORD includes a great number of people beſides religious. To obtain indulgences, they are only obliged to ſay five paters, five ave mary's and gloria patri's, and to wear this rope, which muſt have been firſt bleſſed by the ſuperiors of the order.

CORD *of Wood*, a certain quantity of wood for burning; ſo called, becauſe formerly meaſured with a *cord*.

It is now meaſured between two ſtakes of wood, four foot high, and eight foot apart; and is to be four foot broad, or deep.

CORD-*wood* is properly new wood; and ſuch as, when brought by water, comes aboard a veſſel; in oppoſition to that which is floated. All burning wood, not exceeding 18 inches circumference, is deemed *cord-wood*.

CORD, in geometry, muſic, *&c.* See CHORD.

CORDAGE, in the ſea language, is uſed in general for all the ropes and *cords*, big and ſmall, uſed in the rigging and fitting out of a veſſel. See ROPE, and RIGGING.

The word is alſo uſed for the art of preparing and manufacturing the ropes, *&c.*

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* It was held a paradox in 1710. to aſſert, that all that appears organical in *c ral*, with regard to vegetation, conſiſted in its rind, and in the ſurface of the proper coralline ſubſtance immediately covered with this rind.—But M. de Reaumur has lately adopted and fortified this opinion.—He takes for a plant the coarſe viſible rind of *coral*, which is very different from what we properly call *coral*; and alſo another much finer rind, which the eyes do not diſtinguiſh from the proper coralline ſubſtance covered by it: and all the reſt, that is, almoſt the whole coralline ſubſtance, he takes for a mere ſtone without any organization. There are many plants which cannot grow without being ſupported: this is under the ſame neceſſity. But whereas others go out in ſearch of ſupports, and meet with foreign bodies already formed; *coral* forms itſelf a ſupport within itſelf, and inveſts it with its own ſubſtance. Hiſt. Acad. R. Scienc. An. 1727. p. 51.

* The word comes from the Greek χορδὴ, which properly ſignifies an inteſtine, or gut, whereof *cords* may be made. See CHORD.

The *cordage* is ſaid to be *baked*, when, having paſſed a ſtove, or other hot place, it is drained of all its moiſture.

White cordage is that not yet pitched.—*Cordage pitched in the ſtove* is that which is paſſed through hot pitch as it comes out of the ſtove. Each quintal of *cordage* may take up about 20 pounds of pitch. The *cordage* is ſometimes pitched in the thread.

When a rope is ſaid to be of *ſix inches*, it is underſtood of ſix inches around, or in circumference. The commerce of *cordage* is very conſiderable at Amſterdam: that made of Coningſberg hemp is valued at 20 *per cent.* more than that of Muſcovy hemp. They are ſold by weight.

The number of ropes required in fitting out a veſſel, is almoſt inconceivable: each has its particular name and uſe.

The Spaniards make a kind of ſhoes of *cordage*, which they call *alpargates*, whereof they uſe great quantities at home, and yet drive a very conſiderable commerce to the Indies; ſo as to ſend away whole ſhip-loads thereof.—The Indians make their *cordage* of the bark of cocos, maguay, and other trees.

As to the ſtrength of ropes, or CORDAGE, M. Reaumur takes occaſion, in the Memoirs of the Royal Academy, to conſider the queſtion, whether a rope compoſed of ſeveral twiſts, or ſtrands, interwoven, *v. gr.* ten, have more ſtrength to ſuſtain a weight, than the ten twiſts would have ſeparately, placed parallel over one another: or, which is the ſame thing, whether, if each twiſt be capable of ſuſtaining the weight of a pound, the whole *cord* be able to ſuſtain more than ten?

There, indeed, appears no great difficulty in the queſtion: the evidence ſeems ſtrong on the ſide of the affirmative. For, 1°, By virtue of the twiſting, the diameter of the rope is made larger than are thoſe of the ten twiſts together; but it is apparently by its thickneſs that a rope ſuſtains a weight, or reſiſts a fracture. 2°, Twiſted ſtrands have not all, as when parallel, a vertical direction with regard to the weight: ſeveral of them, and even the greateſt part, have oblique directions, and of conſequence do not bear all the ſhare of the burden they would otherwiſe bear. In effect, they are inclined planes that are only preſſed with a part of the load.

Hence it would follow, that the ſurplus of the ſtrength of the twiſts might be employed in raiſing a larger weight.

On the other hand, it is true, that, in twiſting the ſtrands, ſome are ſtretched, and others left more looſe; and the new tenſion given the former, ſerves to weaken them, and has of itſelf the effect of a weight: thus they become leſs able to ſuſtain one ſo large. Thoſe more lax, on the contrary, evade, in ſome meaſure, the action of weight: for the action is diſtributed equally on the ten ſuppoſedly equal twiſts; and if ſome, by reaſon of their particular diſpoſition, receive leſs than their quota, the weight will act more forcibly on the reſt, and will break them firſt, as being more tenſe; after which, it will eaſily diſpatch the reſt, as not being in ſufficient number to oppoſe it.

This is the ſum of what can be urged for and againſt the twiſting: to decide between them, M. Reaumur had recourſe to experiment. The reſult was, that, contrary to all expectation, he ſtill found the twiſting diminiſhed the ſtrength of the rope: whence it is eaſily inferred, that it diminiſhes it the more, as the rope is the thicker. For inaſmuch as the twiſting diminiſhes; the more twiſting, the more diminution.

The reſiſtance or friction of CORDAGE is very conſiderable; and by all means to be conſidered in calculating the power of machines. M. Amontons obſerves, in the Memoirs of the Royal Academy, that a rope is ſo much the more difficult to bend, 1°, As it is ſtiffer, and more ſtretched by the weight it draws. 2°, As it is thicker; and, 3°, As it is to be more bent; *i. e.* as it is to be coiled, for inſtance, into a ſmaller ring.

The ſame author has thought of ways to prove, in what proportion theſe different reſiſtances increaſe: that ariſing from the ſtiffneſs or rigidity occaſioned by the weight which draws the rope, increaſes in proportion to the weight; and that ariſing from its thickneſs, in proportion to the diameter. Laſtly, That ariſing from the ſmalneſs of the gyres, or pulleys, about which it is to be wound, is indeed greater for ſmaller circumferences than large ones, but does not increaſe ſo much as in the proportion of thoſe circumferences.

On this footing, the loſs a machine ſuſtains by the *cordage*, being eſtimated in pounds; becomes, as it were, a new weight, to be added to that which the machine is to raiſe. This augmentation of weight will render the *cords* ſtill the more ſtiff; which exceſs is to be computed as before.

Thus we ſhall have ſeveral ſums ſtill decreaſing; which are to be added together, as in the article of friction: and it will be ſurpriſing to ſee what a ſum they will amount to. See FRICTION.

Where ropes are uſed in a machine, all the reſiſtance reſulting from their ſtiffneſs is to be put together; and all that occaſioned by the friction; which will make ſo conſiderable an augmentation to the difficulty of the motion, that a power which to raiſe a weight of 3000 pounds, by means of a fixed and a moveable pulley, needed only 1500 pounds; muſt, according to M. Amontons, have 3942 pounds, on account of the frictions, and the reſiſtance of the *cordage*.

CORDED, in heraldry. *A croſs* CORDED, ſome authors take for a croſs wound or wrenched about with *cords*: though others, with more probability, take it for a croſs made of two pieces of *cord*.

CORDELIER, a Franciſcan, or religious, of the order of S. Francis. See CORD.

The *cordeliers* are clothed in thick grey cloth, with a little cowl, a chaperon, and cloak, of the ſame; having a girdle of rope, or *cord*, tied with three knots: whence the name. See CORD.

The *cordeliers* are otherwiſe called *minor friers*, their original name. The denomination *cordelier* is ſaid to have been firſt given them in the war of S. Louis againſt the Infidels; wherein the *friers minor* having repulſed the Barbarians, and that king having inquired their name; it was anſwered, they were people *cordeliez*, tied with ropes.—The *cordeliers* are, to a man, profeſſed Scotiſts. See SCOTIST.

CORDIAL, *Cardiac*, in medicine, a comforting, or refreſhing, remedy, that gives a ſudden ſtrength, and chearfulneſs, by raiſing the ſpirits when depreſſed by too much exerciſe, ſome diſeaſe, or the like cauſe.

Cordials act by giving a ſpringineſs and force to the fibres, and by ſome of their fine particles directly entering the tubuli, or pores, of the nerves and minute veſſels, and ſo mixing immediately with the fluids.

Thus, ſome of the particles of the ſpirit of lavender, when dropped into ſugar, and taken, are ſuppoſed to enter the nerves of the palate directly. Spirituous liquors, as brandy, cinnamon-water, *&c.* are ſuppoſed alſo to act immediately on the palate; but eſpecially on the nervous coat of the ſtomach, and not by the common current of the circulation: by which means they often prove an immediate *cordial*.

In faintings, where the circulation of the blood is languid, ſal volatile oleoſum, or ſpirit of hartſhorn dropt in cold water, and drank immediately, occaſion a contraction of the fibrillæ, the laſt by its coldneſs, and the firſt by entering the ſmall veſſels; and thus they inſtantly augment the circulation, or, in other words, prove *cordial*.—In officinal compoſitions, the four *cordial* flowers are, burrage, bugloſs, roſes, and violets.

The four *cordial* waters are, thoſe of burrage, bugloſs, endive, and chicory; ſome add, thoſe of carduus benedictus and ſcorzonera, ſcabioſa, ſorrel, *&c.*

CORDIS *Capſula.* CORDIS *Fovea.* CORDIS *Mucro.* CORDIS *Septum.*	See the articles	CAPSULA. FOVEA. MUCRO. SEPTUM.

CORDON, in fortification, a row of ſtones jutting out between the rampart and the baſis of the parapet, like the tore of a column. The *cordon* ranges round the whole fortreſs, and ſerves to join the rampart, which is aſlope, and the parapet, which is perpendicular, more agreeably together.

In fortifications raiſed of earth, this ſpace is filled up with pointed ſtakes, inſtead of a *cordon*.

CORDWAINERS*, or CORDINERS, the term whereby th ſtatutes denominate *ſhoe-makers*.

* The word is formed from the French *cordonnier*, which Menage derives from *cordouan*, a kind of leather brought from Cordou whereof they formerly made the upper-leathers of their ſhoes. Others derive it from *corde*, rope, becauſe antiently ſhoes wer made of cords; as they ſtill are in ſome parts of Spain, und the name of *alpargates*. See CORDAGE. But the former etymology is better warranted: for, in effect, the French workmen who prepare the *cordoua's* are ſtill called *cordouanniers*.

In Paris they have two pious ſocieties, under the titles of *fre* *cordonniers*, brothers ſhoemakers; eſtabliſhed by authority towards the middle of the XVIIth century; the one under th protection of S. Criſpin, the other of S. Criſpianus, two ſai who had formerly honoured the profeſſion. They live in community, and under fixed ſtatutes and officers; by which th are directed both in their ſpiritual and ſecular concerns.

The produce of their ſhoes goes into a common ſtock, to furniſh neceſſaries for their ſupport; the reſt to be diſtribut among the poor.

Benedict Baldwin, a native of Amiens, the ſon of a *cordwain* and himſelf a workman in his father's ſhop, has, among oth learned writings, publiſhed a treatiſe *De calceo antiquo & myſti* to do honour, as he himſelf owns, to his antient trade. Jo Battiſta Gallo, a ſhoemaker of Florence, has publiſhed ſo fine pieces in the Italian language; and, among others, di logues in imitation of Lucian.

CORED *herrings*. See the article HERRING.

CORIANDER, the ſeed of a plant of the ſame name.

Both the taſte and the ſmell of the ſeed is very agreeable; both in the plant are extremely nauſeous. Beſides the co ctions made of the *coriander-ſeed*, it is of uſe in medicine a carminative, and a corrective to ſome ſorts of cathartics. is much uſed by the brewers, both in England and Hol to give a flavour to their ſtrongeſt beer. The antients ha notion, that the juice of *coriander* would deprive people of th ſenſes, and even of life.

CORIDOR*, or CORRIDOR, in fortification, a road, or w along the edge of the ditch, withoutſide; incompaſſing whole fortification.

* The word comes from the Italian *coridore*, or the Spaniſh

It is alſo called the *covert-way*; becauſe covered with a gl or eſplanade, ſerving it as a parapet. See COVERT w The *corridor* is about 20 yards broad.

Cor**r**idor is alſo uſed, in architecture, for a gallery, or long iſle, around a building, leading to ſeveral chambers at a diſtance from each other.

CORINTHIAN *order*, the fourth, or, as Scamozzi and M. Le Clerc make it, the fifth, and laſt, of the orders of architecture; being the nobleſt, richeſt, and moſt delicate, of them all. See *Tab. Archit. fig.* 26.

The invention of this order moſt of the moderns, after Vitruvius, aſcribe to Callimachus, a Corinthian ſculptor; who, paſſing by the grave of a young lady, over which her nurſe had placed a baſket with ſome of her play-things, and covered it up from the weather with a tile; the whole having been placed on a root of acanthus; as it ſprung up, the branches incompaſſed the baſket; and, bending down atop under the corners of the tile, formed a kind of volutes. Hence, Callimachus took his hint: the baſket he imitated in the vaſe of his column; the leaves in the volutes, and the tile in the abacus of his order. See Abacus, Acanthus, &c.

Villalpandus treats this ſtory of Callimachus as a fable; and will have the Corinthian capital to have taken its origin from an order in Solomon's temple, the leaves whereof were thoſe of the palm-tree.

The *Corinthian* order has ſeveral characters whereby it is diſtinguiſhed from the reſt: its capital is adorned with two rows of leaves, between which riſe little ſtalks, or caulicoles, whereof the volutes are formed which ſupport the abacus, and which are in number ſixteen.

It has no ovolo, nor even abacus, properly ſpeaking; for the member which goes by that name, is quite different from the abacus in the other orders; being cut with a ſweep, in the middle of which is carved a roſe, or other ornament.

Vitruvius obſerves, that the *Corinthian* order has no particular ordonnance for its cornice, or any of the other ornaments of its entablature; nor does he give it any other proportions than thoſe of the Ionic order: ſo that if it appears higher than the Ionic, it is purely owing to the exceſs of the height of its capital.

He alſo makes the reſt of the entablature the ſame; and the Attic baſe he uſes indifferently for the one and the other.

But Vitruvius differs widely, in this order, from all the examples now remaining of antiquity; the moſt beautiful whereof have a particular baſe, and the whole order twenty modules in height; whereas the Ionic has but eighteen. Again, its capital is higher than that of Vitruvius by one third of a module; and its entablature, which has modillions, and ſometimes dentils together with modillions, is very different from the Ionic entablature.

Moſt of the modern architects ſet aſide Vitruvius's Corinthian ordonnance, and follow that of the antient buildings; ſelecting from them according to their ſeveral taſtes: ſo that the modern *Corinthian* is a kind of compoſite; differing from any of the antient buildings, and much more from Vitruvius's rules.

Vignola and M. Le Clerc make the *Corinthian* order 20 modules high: yet Serlio only makes it 18, and M. Perrault 18 $\frac{2}{3}$; retrenching ſomething from the 19 of Vitruvius.

The height of the ſhaft M. Perrault makes leſs than that of the Ionic, by reaſon of the exceſs of its capital. See Column.

ORINTHIAN *braſs*. See the article Brass.

ORK, the bark of a tree of the ſame name, a ſpecies of the ilex or holm oak.

Its leaves are green above, and white underneath; and its fruit a real acorn, which feeds much more than that of the oak. It is found in great abundance in Spain, Italy, France, &c.

To take off the bark they make an inciſion from the top to the bottom of the tree, and at each extremity another round the tree, perpendicular to the firſt. When ſtripped from the tree, hich does not therefore die, the bark is piled up in a pond, or itch, and loaden with heavy ſtones to flatten it, and reduce it into tables: hence it is taken, to be dried; and, when ſufficiently dry, put in bales for carriage.—If care be not taken to rip the bark, it ſplits and peels off itſelf; being puſhed up by nother bark formed underneath.

he bark of *cork*, as well as the acorn, are of ſome uſe in meicine; being both reputed aſtringents, after being burnt and owdered, when uſed externally; but the chief employ of the ormer is, to put in ſhoes, ſlippers, &c. and to ſtop bottles.—he Spaniards burn it to make that light kind of black we ll *Spaniſh black*, uſed by painters.

RN, a plant, or rather genus of plants, which produce a ain fit for bread, the ordinary food of man.

N is alſo uſed for the grain, or ſeed, of that plant, ſeparated om the ſpica, or ear.

n the commerce of grain, they diſtinguiſh three kinds; *viz.* rn properly ſo called, or *wheat*; *rye*, which is a ſpecies very fferent, and of a quality far inferior; and a third kind relting from a mixture of the two, and called *maſlin*.

he farmers, indeed, rank among the number of *corns* ſeveral the grains ſowed in March; as barley, oats, and even puls; peas, vetches, &c. which, however, they ſometimes dinguiſh by the denomination, *ſmaller corn*. Maiſe and ſarraſin are numbered among the *corns*; the firſt called *Turky* and *Indian corn*, the ſecond *French*, or *black corn*.

Europe, in every part of it; Egypt, and ſome other cantons of Africa, particularly the coaſts of Barbary; and ſome parts of America cultivated by the Europeans, particularly New-England, New-France, and Accadia; are the places which produce *corn*. Other countries have maiſe and rice, in lieu of it; and ſome parts of America, both in the iſlands and continents, ſimple roots; ſuch as potatoes, and manioc.

Egypt was antiently the moſt fertile of all other countries in *corn*; as appears both from ſacred and profane hiſtory. It furniſhed a good part of the people ſubject to the Roman empire, and was called the dry nurſe of Rome and Italy. England, France, and Poland, ſeem now in the place of Egypt, and with their ſuperfluities ſupport a good part of Europe.

For the firſt diſcovery and culture of corn, authors are much divided: the common opinion is, that in the firſt ages men lived on the ſpontaneous fruits of the earth; as acorns, and the nut, or maſt, produced by the beech; which, they ſay, took its name, *fagus*, from the Greek φαγω, *I eat*. It is added, that they had not either the uſe of *corn*, nor the art of preparing, or making it eatable. See Baking.

Ceres has the credit of being the firſt that ſhewed the uſe of *corn*; on which account ſhe was placed among the gods: others give the honour to Triptolemus; others ſhare it between the two; making Ceres the firſt diſcoverer, and Triptolemus the firſt planter and cultivater of *corn*.

Diodorus Siculus aſcribes the whole to Iſis; in which, Polydore Virgil obſerves, he does not differ from the reſt; Iſis and Ceres being, in reality, the ſame. The Athenians pretend, it was among them the art began; and the Cretans, or Candiots, Sicilians, and Egyptians, lay claim to the ſame. Some think, the title of the Sicilians beſt ſupported; that being the country of Ceres: and authors add, ſhe did not teach the ſecret to the Athenians, till ſhe had firſt inſtructed her own countrymen. Others ſay, Ceres paſſed firſt into Attica, thence into Crete, and, laſt of all, into Sicily: many of the learned, however, maintain, it was in Egypt the art of cultivating *corn* firſt began; and it is certain, there was *corn* in Egypt and the Eaſt, long before the time of Ceres.

For the preſervation of corn: It muſt be well dried and cleaned; the granary muſt have its openings to the north or eaſt, and vent-holes a-top: for the firſt ſix months it muſt be well ſtirred every fifteen days; afterwards it will be ſufficient to ſift it once *per* month: after two years, it heats no more; nor is there any thing to fear, but from the air and foreign moiſture.

A little time after the ſiege of Metz, under Henry II. of France, the duke D'Eſpernon laid up vaſt ſtores of *corn* in the citadel; which was preſerved in good plight to the year 1707. when the French king and his retinue, paſſing that way, eat bread baked thereof.

The chief thing that contributes to the preſervation of *corn* is, a cruſt which forms on its ſurface, by the germination of the grain next underneath, to the thickneſs of an inch and half. On that at Metz people walked, without its giving the leaſt way. At Sedan was a granary cut in a rock, wherein a heap of *corn* was preſerved 110 years: it was covered with a cruſt a foot thick. At Chalons they have granaries where they ſtill keep *corn* thirty or forty years: over the heap they ſtrew quicklime, in fine duſt, to the thickneſs of three inches, and ſprinkle this over with water; whence ariſes a cruſt. The grain near the ſurface ſprouts to the height of a foot and half: theſe the winter kills; and the heap is left untouched till neceſſity obliges them to it. See Supplement, article Granary.

Corn-*meaſure*.	See the articles	Measure.
Sharping Corn.		Sharping.
Trug Corn.		Trug-*corn*.
Wood-Corn.		Wood-*corn*.

CORNACHINE *powder*, a purging powder, called alſo *earl of* Warwick's *powder*, and *pulvis de tribus*.

It is compoſed of equal parts of antimonium diaphoreticum, diagrydium, and cream of tartar.

CORNAGE, an antient tenure, the ſervice whereof was to blow a horn, when any invaſion of the Scots was perceived. See Service.

This tenure was very frequent in the northern counties, near the Picts wall: but by ſtat. 12 Car. II. all tenures are converted into free, and common ſocage.

An old rental calls *cornage*, *newtgeldt*, q. d. *neat-geld*. My lord Coke ſays, in old books it is called *horngeld*.

CORNEA, *horny*: from *cornu*, a horn.

Cornea *tunica*, in anatomy, the ſecond coat of the eye; ſo called from its ſubſtance reſembling the horn of a lantern.

It is ſituated in the fore-part; and is ſurrounded by the ſclerotica. It has a greater convexity than the reſt of the globe of the eye, and is compoſed of ſeveral parallel laminæ, which are nouriſhed by many blood-veſſels, ſo fine, as not to hinder even the ſmalleſt rays of light from entering the eye. It has a moſt exquiſite ſenſe, to the end that, upon the leaſt pain, the tears may be ſqueezed out of the lachrymal gland, to waſh off any filth, which, by ſticking to the cornea, might render it cloudy, or dim.

In the Memoirs of the Royal Academy, M. Gandolphe gives us an inſtance of inciſions deſignedly made in the *cornea*, to diſcharge a quantity of blood ſettled there by a violent blow on the eye, by means whereof the ſight had been almoſt intirely extinguiſhed.

The extravaſated blood, it ſeems, was in too great a quantity to be diſſipated by topical medicines; beſides, that the proceſs would have been ſo tedious, that the aqueous humour would have been in danger of being quite ruined in the mean time.—The *cornea*, therefore, was opened by three inciſions, all made acroſs; the blood was diſcharged; the eye bound up with compreſſes ſteeped in a mixture of four ounces of plantain-water, and two of vulnerary water. In eight days the eye reſumed its natural tranſparency, and there remained no ſcar after the inciſions.—After the cure, the pupil of that eye continued dilated much beyond its natural dimenſions. See **Eye**.

CORNELIAN *, or **Carnelian**, **Carneolus**, a precious ſtone, ordinarily red, bordering on orange; called alſo *ſardius*, or the ſardian ſtone.

* The *cornelian* is otherwiſe called *carneola* and *corneola*: the Italians call it *corniolos*; it is ſaid, from *corno*, horn; on account of the reſemblance it bears to horn in its tranſparence.

It cuts eaſily; and we find moſt of the fine gravings of antiquity, whether in relievo, or indented, are on this ſtone.

It bears the fire admirably. The fineſt *cornelians* are thoſe brought from near Babylon; the next are thoſe of Sardinia; the laſt thoſe of the Rhine, Bohemia, and Sileſia.—To give theſe ſtones the greater luſtre, in ſetting them they uſually lay a piece of ſilver-leaf underneath.

The principal uſe made of *cornelians* is, in ſeals; by reaſon they grave well, and take a fine poliſh.—The author of the book uſually, but falſely, attributed to Albertus Magnus, gives the *cornelian* virtues which, were they real, would make it ineſtimable. See Supplement, article **Sarda**.

CORNER-TYLES. See the article **Tyle**.

CORNET, **Cornu**, a horn, or muſical inſtrument, uſed by the antients in their wars.

Vegetius informs us, that the legions had trumpets, *cornets*, and buccinæ: that when the *cornets* ſounded, only the enſigns regarded; none of the ſoldiers: that when the enſigns were to march alone without the ſoldiers, the *cornet* alone was ſounded; as, on the contrary, when the ſoldiers were to move without the enſigns, the trumpets alone were ſounded: that the *cornets* and buccinæ ſounded the charge and retreat; and the *cornets* and trumpets during the courſe of the battle.

Cornet, in the modern war, denotes an officer in the cavalry, who bears the enſign, or colours, of a troop.

The *cornet* is the third officer in the company, and commands in the abſence of the captain and lieutenant. He takes his title from his enſign, which is ſquare, and is ſuppoſed to be called by that name, from *cornu*; becauſe placed on the wings, which form a kind of points, or horns, of the army.

Others derive the name from *coronet*; alleging, that it was the antient cuſtom for theſe officers to wear coronets, or garlands, on their heads.

CORNICHE *, **Cornish**, or **Cornice**, in architecture, the uppermoſt member of the entablature of a column; or that which crowns and finiſhes the order.

* The word is formed from the Latin *co onis*, a crowning.

The *corniche* is the third grand diviſion of the trabeation, commencing from the freeze, and ending with the cymatium.

The *corniche* is different in the different orders: in the Tuſcan order it is the moſt plain. Vignola makes it to conſiſt of an ovum, or quarter-round; an aſtragal, or baguette; a reglet, or fillet; a larmier, and a talon.—See *Tab. Archit. fig.* 24.

In the Doric, he uſes capitals to the triglyphs of the freeze with their bandelettes, a talon, mutules, or dentils; a larmier with its guttæ underneath, a talon, fillet, cavetto, and reglet.—See *Tab. Archit. fig.* 28.

In the Ionic, the members are in moſt reſpects the ſame as in the Doric; except that they are frequently inriched with carving, and there are always dentils.—See *Tab. Archit. fig.* 32.

In the Compoſite there are dentils; its mouldings are carved, and there are channels under the ſoffit.—See *Tab. Archit. fig.* 30.

The Corinthian *corniche* is the richeſt; and is diſtinguiſhed by having both modillons and dentils: contrary to the opinion of Vitruvius, who looks on thoſe two ornaments as incompatible; and of M. Le Clerc, who regards the dentils as peculiar to the Ionic.—See *Tab. Archit. fig.* 26.

For the heights and projectures of the corniches in the ſeveral orders; Goldman makes the height of the Tuſcan $1\frac{1}{3}$, and its projecture $2\frac{2}{3}$ modules; the height of the Doric $1\frac{1}{3}$, its projecture $2\frac{2}{3}$; height of the Ionic $1\frac{2}{3}$, its projecture $2\frac{2}{3}$; height of the Compoſite $1\frac{2}{3}$, projecture $2\frac{1}{3}\frac{3}{8}$; height of the Corinthian $1\frac{2}{3}$, projecture $2\frac{2}{3}\frac{3}{8}$.

Architrave **Corniche** is that immediately contiguous to the architrave; the freeze being retrenched.

Mutilated **Corniche** is that whoſe projecture is omitted, or elſe interrupted, right to the larmier, or reduced into a platband with a cimatium.

Cantaliver **Corniche**, a term uſed, by the workmen, for a *corniche* that has cantalivers underneath it. See **Cantaliver**.

Modillion **Corniche**, a *corniche* with modillions under it. See **Modillion**.

Coving **Corniche**, a *corniche* which has a great caſement, or hollow, in it; ordinarily lathed and plaſtered upon compaſs, ſprokets, or brackets.

Corniche is alſo uſed, in the general, for any little projecture, either of maſonry, or joinery; even where there are no columns.—Thus, we ſay, the *corniche* of a chimney, a buffet, *&c.*

Corniche is alſo applied to the crownings of pedeſtals.—See *Tab. Archit. fig.* 24. 26. 28. 30. and 32.

This *corniche* is different in the different orders: in the Tuſcan, according to M. Perrault, it has a platband which ſerves as a corona, and a cavetto with its fillet; in the Doric, it has a cavetto with a fillet, which bears a drip crowned with a ſquare; in the Ionic, a cavetto with its fillet above, and a drip or pendent ſquare crowned with an ogee and its fillet; in the Corinthian, an ogee with its fillet, a cymatium under the corona, which it hollows to make a drip, a corona, and an ogee, with its fillet: laſtly, in the Compoſite, a fillet with a ſweep over the dye, an aſtragal, cyma with its fillet, corona, and ogee with its fillet. See each in its place.

Glacis of the **Corniche**. See the article **Glacis**.

Corniche *ring* of a piece of ordnance, is that which lies next the trunnion ring; or the next ring from the muzzle backwards. See **Ordnance**.

CORNICULARIS *proceſſus*, the proceſs, or knob, of the ſhoulder-bone; thus called, as reſembling the figure of a crow's beak.

CORNICULARIUS, in antiquity, an officer in the Roman army, whoſe buſineſs was, to aid and aſſiſt the military tribune in quality of lieutenant.

The *cornicularii* went the rounds in lieu of the tribune, viſited the watch, and were nearly what the aids major are in the French army.

The denomination *cornicularius* was given them from a little horn, called *corniculum*, which they uſed in giving orders to the ſoldiers: though Salmaſius derives it from *corniculum*, the creſt of an head-piece; it being an obſervation of Pliny, that they wore iron or braſs horns on their helmets; and that theſe were called *cornicula*. In the *Notitia imperii* we find a kind of ſecretary, or regiſter, of the ſame name *: his buſineſs was, to attend the judge, and enter down his ſentences and deciſions.

* The criticks derive the word, in this ſenſe, from *corniculum*, a little horn to put ink in.

CORNICULATE *flowers*. See the article **Flower**.

Corniculate *plants* are ſuch as, after they have blown into flower, produce many diſtinct and horned pods, or ſeed-veſſels, called *ſiliquæ*; for which reaſon, the plants are alſo, by ſome, denominated *ſiliquous plants*.

Such are, the ſedum, or ſempervivum, telephium, juncus floridus, helleborus niger, pæonia, caltha paluſtris, althæa lutea, *&c.*

CORNISH. See the article **Corniche**.

Cornish *hug*. See the article **Hug**.

CORNU *ammonis*, in natural hiſtory, an extraordinary kind of ſtone, ſome of which in vinegar, juice of lemons, *&c.* have a motion like that of an animal.

It is rough, knotty, of an aſh-colour, and twiſted in manner of a ram's horn; ſuch as thoſe wherewith the antients repreſented Jupiter Ammon: whence its name.

It is diſputed, among naturaliſts, whether it be a native foſſil, a nautilus, or a rock-plant? Camerarius maintains the firſt; urging, that it is frequently dug out of the tops of mountains; and that it is ſeldom found near the ſea-ſhore.

Dr. Woodward aſſerts it a ſhell, and of the number of the nautili, formed in the ſea, and carried thence, by the waters of the deluge, into the countries whence it is dug. He argues, that, if it be rarely found on the ſea-coaſts, it is becauſe ſhells and other bodies lying in the bottom of the ſea, as moſt kinds of the *cornua ammonis* muſt do, are only to be torn thence, and driven aſhore by tempeſts: but the moſt violent tempeſts never move the bottom of the ſea, as the divers have put paſt doubt; ſo that it is no wonder if none of theſe *cornua* be thrown up: but in the overturning of the earth by the deluge, theſe, with a thouſand more productions of the ſea, might be thrown from the bottom of the waters to the places where they are now found.

The *cornua ammonis* are of different thickneſſes and lengths; ſome of them weigh twenty pounds. They are found in ſeveral places in Germany, and elſewhere. From ſome experiments that have been made, ſome of them are found to contain a little quantity of gold, which ſinks to the bottom upon pounding them ſmall, and ſtirring them in a running water, till all the earthy parts be carried off.

Mr. Beaumont's account of them is this: 'The ſtone called
'*cornu ammonis* is frequent in the clay wherein the trochites and
'entrochi are found: the largeſt I have is ſeven inches in
'length, and four in circumference at the big end, and two
'and an half at the ſmaller; the tip being broke off. Tracing
'its origin, I find ſome little ones about the bigneſs of a young
'cock's ſpur, and very much like it: I have ſome in raw
'clay; and one growing of a white cawky ſtone. They
'generally become at laſt a whitiſh ſpar, and ſome milk-white,
'as ſome of the trochites are.
'There are of all intermediate proportions between theſe two;
'though very few of any bigneſs are to be found intire, but all
'broken

‘ broken and imperfect pieces. The texture of the ſtone is ‘ thus: ſome have a maſſy ſpar in their inſides, which takes ‘ up three parts of the ſtone; then from the ſharp top there ‘ grow thin flat cells, or ſmall pipes of ſpar ſet edgewiſe, one ‘ cloſe to the other, which ſhoot towards the broad end, and ‘ appear outwardly like ſmall ridges, or ſeams. There are ‘ likewiſe rings running round it, tending in their growth to‘wards the broad end, as in a ram's horn. Moſt of the ‘ leſſer ſtones have very little ſpar within them, and ſome none; ‘ but have cells coming down inwardly from the top of the ‘ ſtone, reſembling thoſe in the flowers of coral, that termi‘nate its branches.’ Mr. Beaumont, in *Philoſoph. Tranſact.* N° 129. See Supplement, article CORNU AMMONIS.

CORNU *cervi*, *hartſhorn*, in medicine, makes one of the teſtaceous powders. See TESTACEOUS.

Among chymiſts, the ſame name is uſed for the mouth of an alembic.

CORNUA *Uteri*. See the article UTERUS.

CORNUCOPIA, among the antient poets, a horn out of which proceeded plenty of all things; by a particular privilege which Jupiter granted his nurſe, ſuppoſed to be the goat Amalthea.

The real ſenſe of the fable is this; that in Libya there is a little territory ſhaped not unlike a bullock's horn, exceeding fertile, given by king Ammon to his daughter Amalthea, whom the poets feign to have been Jupiter's nurſe.

In architecture, and ſculpture, the *cornucopia*, or horn of plenty, is repreſented under the figure of a large horn, out of which iſſue fruits, flowers, *&c.*—On medals, F. Joubert obſerves, the *cornucopia* is given to all deities, genii, and heroes.

CORNUTUM *argumentum*. See the article DILEMMA.

CORONA, *crown*, or *crowning*, in architecture, a large, flat, maſſive member of the corniche; ſo called, becauſe it crowns not only the corniche, but the entablature, and the whole order.—See *Tab. Archit. fig.* 9.

The French call it *larmier*, our workmen the *drip*, as ſerving by its great projecture, to ſcreen the reſt of the building from the rain.

Some Latin authors call it *ſupercilium*; but that, as it ſhould ſeem, by miſtake for *ſtillicidium*. Certain French writers call it *mouchette*; and certain Latin ones, *mentum*, chin; from its keeping off the weather from the parts underneath, as the chin does the ſweat, *&c.* out of the neck.

Some call it abſolutely the *corniche*, as being the principal member thereof. Vitruvius frequently uſes the word *corona* for the whole corniche.

The *corona* is itſelf crown'd, or finiſh'd with a reglet, or fillet.—There are ſometimes two *corona*'s in a corniche; as in the Corinthian of the Rotonda.

CORONA *Borealis*, *northern crown*, or *garland*, in aſtronomy, a conſtellation of the northern hemiſphere; whoſe ſtars in Ptolemy's catalogue are 8; in Tycho's as many; in the Britannic catalogue 21. The order, names, longitudes, latitudes, magnitudes, *&c.* whereof are as follow:

Names and ſituations of the ſtars.	Signs.	Longitud.			Latitude North.			Magn.
		°	′	″	°	′	″	
	♏	2	5	16	45	57	52	6 7
That preced. the *corona*, without ſide.		2	44	45	46	49	30	5
That next the lucida, towards the n.		4	45	53	46	4	40	4
Another following this, and more nor.		5	5	20	48	34	50	4 5
Lucida of the *corona*.		7	55	56	44	21	17	2 3
5.								
1ſt of the informes over the crown.		0	58	43	55	48	50	5
Second.		3	58	22	53	59	32	4
That following the lucida to the ſouth.		10	31	50	44	32	18	4
Nor. in the circumfer. of the *corona*.		7	50	41	50	30	3	5
Sou. in the circumfer. of the *corona*.		12	40	33	44	48	22	4
10.								
3d of the informes over the crown.		8	17	34	53	59	43	5
4th of the informes.		3	49	7	60	15	50	6
5th over the *corona*.		8	18	21	56	25	32	5
3d of thoſe following the lucida ſouth.		14	46	15	46	6	27	4 5
Laſt of all in the *corona*.		14	39	38	49	11	21	5 6
15.								
6th over the *corona*.		12	48	24	52	30	42	6
North. of thoſe following the *corona*.		13	42	50	55	57	53	6
Preced. of the middle.		17	4	43	53	52	41	6
South of thoſe following the *corona*.		19	51	15	49	28	4	6
Poſterior of the middle ones.		20	54	10	51	27	0	5
20.								
Another following them all.	♏	19	40	31	54	16	36	5

Lucida CORONA. See the article LUCIDA.

CORONA *Clericalis*. See CROWN; ſee alſo COIF.

CORONÆ *Jus*. } See { JUS.
CORONÆ *Placitorum Cuſtos*. } See { CUSTOS.

CORONALE *os*, in anatomy, the bone of the forehead; called alſo *os frontis*, *os oppis*, and *verecundum*. See *Os* FRONTIS.

CORONALIS, denotes the firſt ſuture of the cranium, or ſkull. See SUTURE.

The *coronal* ſuture reaches tranſverſly from one temple to the other; and joins the os frontis, with the oſſa parietalia.—See *Tab. Anat.* (Oſteol.) *fig.* 1. *lit. g.* and *fig.* 2. *lit. n.*

It is open, the breadth of a finger or two, in the middle, in young children, but grows cloſer with age; though ſometimes, by convulſion-fits, or a bad conformation, it not only cloſes in children, but the edges ſhoot over one another; which is what the women call *head-mould-ſhot*; after which they ſeldom live long.

CORONARIA *Vaſa*, CORONARY *Veſſels*, the arteries and veins which ſurround the heart to nouriſh and ſupply it with blood, *&c.*—See *Tab. Anat.* (Splanch.) *fig.* 12. *lit. c c.* See alſo CORONARY *Arteries*, &c.

CORONARY *arteries*, are two arteries ſpringing out of the aorta, ere it leaves the pericardium; and ſerving to carry the blood into the ſubſtance of the heart.

They are called *coronary*, becauſe of their ſpreading into branches, and encompaſſing the baſis of the heart, in manner of a crown, or garland.—In their progreſs, they ſend out ſeveral branches lengthwiſe of the heart; and, as Ruyſch obſerves, to the auricles, and into the very ſubſtance of the heart: after encompaſſing the baſis, and meeting again, they inoſculate with each other.

CORONARY *vein*, is a vein diffuſed over the exterior ſurface of the heart.—It is formed of ſeveral branches ariſing from all parts of the viſcus, and terminates in the vena cava, whither it conveys the remains of the blood brought by the *coronary* arteries.

At its riſe out of the heart, there is a valve to hinder the reflux of the blood; firſt diſcovered by B. Euſtachio, a native of San Severino.

Stomachic CORONARY, is a vein inſerted into the trunk of the ſplenic vein; which, by uniting with the meſenteric, forms the vena porta. See PORTA.

CORONE, in anatomy, a ſharp-pointed eminence, or proceſs of a bone.—See *Tab. Anat.* (Oſteol.) *fig.* 2. *lit. m.* See alſo BONE.

Of theſe there are ſeveral in the body, diſtinguiſhed, according to their figures, by different names; *e. gr.* one of the os petroſum, called *ſtyloides*, as being ſloped like a bodkin: another called *maſtoides*, from its reſembling a nipple; another of the omoplata, called *coracoides*, as being of the figure of a crow's bill: laſtly, another of the os ſphenoides, called *pterygoides*, from its ſhape, which reſembles the wings of a bat.

CORONER, an officer, whereof there are two in every county, whoſe buſineſs is to inquire, by a jury of twelve neighbours, how, and by whom, any perſon came by a violent death; and to enter the ſame upon record.

This being matter criminal, and a plea of the crown, it is hence they are called *crowners*, or *coroners*.—They are choſen by the freeholders of the county, by virtue of a writ out of chancery.

This officer, by the ſtatute of Weſtminſter, ought to be a knight; and there is a writ in the regiſter, called *niſi ſit miles*, whereby it appears to be a ſufficient cauſe for removal of a *coroner* choſen, if he were not a knight, and had not 100 ſhillings *per ann.* freehold. Mention is made of this officer as early as the time of king Athelſtan, *anno* 925.

The lord chief juſtice of the king's bench is the ſovereign *coroner* of the whole realm, or wherefoever he abides.

There are alſo certain *ſpecial coroners* within divers liberties, as well as the ordinary officers in every county; and ſome colleges and corporations are impowered by their charters, to appoint the *coroner* within their own precincts.

CORONET *electoral*. See ELECTORAL *coronet*.

COROPITÆ. See AGONISTICI.

CORPORA *cavernoſa*, in anatomy, two ſpongious bodies, called alſo *corpora nervoſa*, and *corpora ſpongioſa*. See CAVERNOSA *corpora*, &c.

CORPORA *olivaria*. See OLIVARIA *corpora*.

CORPORA *pyramidalia*, are two protuberances of the under-part of the cerebellum, about an inch long; ſo called from their reſemblance to a pyramid. See CEREBELLUM.

CORPORA *ſtriata*, two protuberances of the crura of the medulla oblongata. See MEDULLA *oblongata*.

CORPORA *habeas*, in law. See the article HABEAS.

CORPORAL *, an inferior officer in a company of foot, who has charge over one of the diviſions; he places and relieves centinels, and keeps good order in the *corps de garde*; receiving, withal, the word, of the inferior rounds that paſs by his *corps de garde*.—There are uſually three *corporals* in each company.

* The word comes from the Italian *caporale*, which ſignifies the ſame thing; and that from *caput*, head, chief; the *corporal* being the firſt of the company.

CORPORAL *of a ſhip*, is an officer who hath the charge of ſetting the watch and centries, and relieving them; and who ſees that all the ſoldiers and ſailors keep their arms neat and clean: he alſo teaches them how to uſe their arms, and hath a mate under him.

CORPORAL *oath*. See the article OATH.

CORPORAL, CORPORALE, is alſo an antient church-term, ſignifying the ſacred linen ſpread under the chalice in the euchariſt and maſs, to receive the fragments of the bread, if any chance to fall. Some ſay, it was pope Euſebius who firſt injoined the uſe of the *corporal*; others aſcribe it to S. Silveſter. It was the cuſtom to carry *corporals*, with ſome ſolemnity, to fires, and to heave them againſt the flames, in order to extinguiſh them. Philip de Comines ſays, the pope made Louis XI. a preſent of the *corporale*, whereon my lord S. Peter ſung maſs.

CORPORATE *county*. See the article COUNTY *corporate*.

CORPORATION, a body politic, or incorporate; ſo called, becauſe the ſeveral members thereof are formed into one body; and are qualified to take, purchaſe, grant, have a common ſeal, ſue and be ſued, *&c.* in their joint capacity. See INCORPORATION.

A *corporation* may be eſtabliſhed three ways, *viz.* by preſcription, by letters patent, and by act of parliament.

Corporations are either *eccleſiaſtical*, or *lay*.—*Eccleſiaſtical* are either *regular*, as abbeys, priories, chapters, *&c.* or *ſecular*, as biſhopricks, deanries, archdeaconries, parſonages, *&c.* to which add, univerſities, colleges, hoſpitals, *&c.* ſee alſo HOSPITAL, *&c.*—*Lay*, as thoſe of cities, towns, mayoralties, bailiwicks, companies, or communities of commerce, *&c.*

Again, a *corporation* is either *ſole*, or an aggregate of *many*; which laſt is what the civilians call a *college*. See COLLEGE; ſee alſo COMMUNITY.

CORPOREAL. See the article INCORPOREAL.

CORPOREAL *qualities*. See the article QUALITY.

CORPOREITY, the quality of that which is *corporeal*, or has body; or that which conſtitutes or denominates it ſuch.

The *corporeity* of God was the capital error of the Anthropomorphites. Some authors reproach Tertullian with admitting a *corporeity* in the Deity; but it is manifeſt, by *body* he means no more than *ſubſtance*.

The Mahometans reproach the Samaritans at this day, with a belief of the *corporeity* of God. Many of the antients believed the *corporeity* of angels.

Form of CORPOREITY. See the article FORM.

CORPORIFICATION, in chymiſtry, the operation of recovering ſpirits into the ſame body, or at leaſt into a body nearly the ſame, with that which they had before their ſpiritualization.

CORPS *de garde*, a poſt in an army, ſometimes under covert, ſometimes in the open air, to receive a body of ſoldiery, who are relieved from time to time, and are to watch in their turns, for the ſecurity of a quarter, a camp, ſtation, *&c.*

The word is alſo uſed for the men who watch therein.

It is uſual to have, beſide the *great*, a *little corps de garde*, at a good diſtance before the lines; to be the more readily advertiſed of the approach of the enemy.

CORPS *de Bataille*, is the main body of an army, drawn up for battle. See LINE, and GUARD.

CORPS, in architecture, is a term borrowed from the French, ſignifying any part that projects or advances beyond the naked of a wall; and which ſerves as a ground for ſome decoration, or the like.

CORPULENCY, in medicine, the ſtate of a perſon too much loaded with fleſh, and fat.

Corpulency amounts to the ſame with what phyſicians call *obeſitas*, and we popularly *fatneſs*.

Etmuller defines it to be ſuch an increaſe both of the venter and limbs, as impedes the actions of the body, eſpecially motion and reſpiration.

Corpulency, or *obeſity*, Boerhaave obſerves, does not conſiſt in the ſolids of the body being increaſed, but in their being diſtended to a greater pitch by the abundance of humours collected in them.

Corpulency, or *fatneſs*, ariſes from a laudable, copious, oily, ſoft blood, containing leſs than its ſhare of ſalt.

Such a conſtitution of blood occaſioning but a feeble fermentation, there is leſs conſumed, than is made; the lymph, which ſeems to be the matter of nutrition, preſerves its viſcid conſiſtence longer; and by that means adheres the more plentifully to the divers parts of the body. Add, that there is more fat ſeparated from the blood, than can well be depoſited in the adipoſe cells. Hence the body grows very conſiderably, and the parts ſometimes diſtend to a monſtrous bulk.

Corpulency is promoted by any thing that tempers and ſoftens the blood, and renders it leſs ſharp, and ſaline; ſuch is want of exerciſe and motion, an indolent life, too much ſleep, nouriſhing foods, *&c.* It is prevented, or removed, by the contrary cauſes; and particularly by the uſe of ſaline and acid meats, and drinks.

Corpulency is the occaſion of divers diſeaſes, and particularly the apoplexy.—It was held infamous among the antient Lacedæmonians.

Etmuller affirms, that there is no better remedy againſt exceſſive fatneſs, than acetum ſcilliticum. Borelli recommends the chewing of tobacco; which Etmuller however diſſuades, leſt it induce a conſumption.

Sennertus mentions a man that weighed ſix hundred pounds; and a maid, 36 years of age, who weighed 450. Chiapin Vitelli, marquis of Cerona, a noted Spaniſh general in his time, from an exceſſive *corpulency*, is ſaid to have reduced himſelf, by drinking of vinegar, to ſuch a degree of leanneſs, that he could fold his ſkin ſeveral times round him.

CORPUS, *body*, in anatomy, is applied to ſeveral parts in the animal ſtructure; as *corpus calloſum*, *corpus glanduloſum*, *corpus reticulare*, &c.

CORPUS *calloſum*, is the upper-part, or covering of the two lateral ventricles of the brain, appearing immediately under the proceſs of the dura mater, below the depth of all the circumvolutions; being formed by the union of the medullary fibres of each ſide. See BRAIN.

CORPUS *cavernoſum urethræ*. See CAVERNOSUM.

CORPUS *glanduloſum*. See PROSTATA.

CORPUS *pampiniforme*. } See the articles { PAMPINIFORME.
CORPUS *pyramidale*. } See the articles { PYRAMIDALE.

CORPUS *reticulare*. See RETICULARE *corpus*.

CORPUS is alſo uſed in matters of learning, for ſeveral works of the ſame nature, collected, and bound together.

Gratian made a collection of the canons of the church, called *corpus canonum*. The *corpus* of the civil law is compoſed of the digeſt, code, and inſtitutes; ſee alſo CODE, and DIGEST.

We have alſo a *corpus* of the Greek poets; and another of the Latin poets. See BODY.

CORPUS *cum cauſa*, in law, a writ iſſuing out of chancery, to remove both the body, and record, touching the cauſe of any man lying in execution upon a judgment for debt, into the king's-bench, *&c.* there to lie till he has ſatisfied the judgment.

CORPUS *cepi*. } See the articles { CEPI.
CORPUS *habeas*. } See the articles { HABEAS.

CORPUSCLE, in phyſics, a diminutive of *corpus*, uſed to expreſs the minute parts, or particles, that conſtitute natural bodies.

Corpuſcles amount to much the ſame with what the antients called *atoms*; and differ both from the elementary and hypoſtatical principles of the chymiſts, and the materia ſubtilis of the Carteſians.

Sir Iſaac Newton ſhews a method of determining the ſizes of the *corpuſcles*, whereof the particles that compoſe natural bodies conſiſt, from their colours.

CORPUSCULAR *philoſophy*, that ſcheme or ſyſtem of phyſics, wherein the phænomena of bodies are accounted for, from the motion, reſt, poſition, arrangement, *&c.* of the minute *corpuſcles*, or atoms, whereof bodies are compoſed.

The *corpuſcular philoſophy*, which now flouriſhes under the title of the *mechanical philoſophy*, is exceedingly antient. Leucippus and Democritus were the firſt who taught it in Greece; from them Epicurus received it, and improved it, inſomuch that it came at length to be denominated from him, and was called the *Epicurean philoſophy*.

Leucippus, again, is ſaid to have received it from Mochus, a Phœnician phyſiologiſt, before the time of the Trojan war, and the firſt who philoſophized about atoms: though Gale, who borrows all profane philoſophy from the ſacred philoſophy in the books of Moſes, is of opinion that he might take the hint from the Moſaic hiſtory of the formation of man out of the duſt of the earth.

Indeed, Caſaubon takes Μόσχος, or Μοχος, to be the name of a Tyrian, who among his own countrymen was called משה, *Moſche*, or according to the method of writing which then obtained, Moſes: whence it is conjectured that the *Moſche*, or *Moſchus* of the Tyrians, was, in effect, the Moſes of the Hebrews.

This appears to be the ſentiment of Selden, Arcerius, *&c.* But the opinion of Bochart is more probable, who from Poſidonius, and others, takes Mochus for an inhabitant of Sidon, and his philoſophy to be nothing elſe but a phyſiological or natural hiſtory of the creation.

After Epicurus, the *corpuſcular philoſophy* gave way to the peripatetic, which became the popular ſyſtem.

Thus, in lieu of atoms, were introduced ſpecific and ſubſtantial forms, qualities, ſympathies, *&c.* which amuſed the world till Gaſſendus, Charleton, Des Cartes, Boyle, Newton, and others, retrieved the old *corpuſcularian* hypotheſis; which is now become the baſis of the mechanical, and experimental philoſophy.

Mr. Boyle reduces the principles of the *corpuſcular philoſophy* to the four following heads.

1°, That there is but one catholic, or univerſal matter, which is an extended, impenetrable, and diviſible ſubſtance, common to all bodies, and capable of all forms.

This, Sir Iſaac Newton finely improves on: ‘ All things conſidered, ſays that great author, it appears probable to me, that ‘ God, in the beginning, created matter in ſolid, hard, impenetrable, moveable particles; of ſuch ſizes and figures, and ‘ with ſuch other properties, as moſt conduced to the end for ‘ which he formed them: and that theſe primitive particles ‘ being ſolids, are incomparably harder than any of the ſenſible porous bodies compounded of them; even ſo hard as never to wear, or break in pieces: no other power being able to ‘ divide what God made one in the firſt creation. While the ‘ *corpuſcles* remain intire, they may compoſe bodies of one and ‘ the ſame nature and texture in all ages: but ſhould they wear ‘ away, or break in pieces, the nature of things depending on ‘ them would be changed: water and earth, compoſed of old ‘ worn particles, and fragments of particles, would not be of ‘ the ſame nature and texture now, with water and earth ‘ compoſed of intire particles at the beginning. And therefore ‘ that nature may be laſting, the changes of corporeal things ‘ are to be placed only in the various ſeparations, and new ‘ aſſociations, of theſe permanent *corpuſcles*. *Optics.*

2°, Th

2°, That this matter, in order to form the vaſt variety of natural bodies, muſt have motion, in ſome, or all, its aſſignable parts; and that this motion was given to matter by God, the creator of all things: and has all manner of directions and tendencies.

‘ Theſe *corpuſcles*, ſays Sir Iſaac Newton, have not only a vis
‘ inertiæ, accompanied with ſuch paſſive laws of motion as na-
‘ turally reſult from that force; but alſo are moved by certain
‘ active principles; ſuch as that of gravity, and that which
‘ cauſes fermentation, and the coheſion of bodies.’

3°, That matter muſt alſo be actually divided into parts; and each of theſe primitive particles, fragments, or atoms of matter, muſt have its proper magnitude, figure, and ſhape.

4°, That theſe differently ſized and ſhaped particles, have different orders, poſitions, ſituations, and poſtures from whence all the variety of compound bodies ariſes.

CORRECTED *calendar*. See CALENDAR.

CORRECTION, in printing, the act of retrenching the faults in a work; or the reading, which the maſter, or, in his place, the corrector, gives the firſt proofs, to point out and amend the faults, to be rectified, in the forms, by the compoſitor.

The *corrections* are placed on the margin of each page, right againſt the line where the faults are found. There are different characters uſed to expreſs different *corrections*, *v. gr.* Ɗ or ∂ *dele* for any thing to be effaced, or left out. When any thing is to be inſerted, the place is marked in the line with a caret ^, and the inſertion added in the margin. When a word, ſyllable, &c. is to be altered, it is eraſed out of the proof, and that to come in its room written in the margin; always obſerving, if there be ſeveral in the ſame line, that they be ſeparated by little bars or ſtrokes, |. If a ſpace be omitted, its place is marked with a caret, and the thing expreſſed on the margin with # If a letter be inverted, it is expreſſed on the margin with Ↄ. If any thing be tranſpoſed, it is marked thus; *The ſhorteſt* ⌊*are the*⌋ *follies beſt*; for *The ſhorteſt follies are the beſt:* and in the margin is added *tr* in a circle. If *Roman* characters are to be changed for *Italic*, or *vice verſa*, a line is drawn under them thus, and *Roman* or *Italic* added in the margin.

CORRECTION, in rhetoric, a figure, whereby a perſon in a paſſion, fearing he has not expreſs'd a thing fully, or ſtrongly enough, calls it back again, as it were, by a ſtronger phraſe, and *corrects* the error.

CORRECTION, in pharmacy, the qualifying of a medicine, in order either to moderate the two great violence of its action; as when glaſs of antimony is calcined with a little ſalt-petre: or, to prevent its raiſing ſome diſorder in the body; as when ſalt of tartar is diſſolved in an infuſion of ſenna, to prevent its giving the gripes.

CORRECTORS, in medicine, ſuch ingredients in a compoſition as guard againſt, or abate, the force, or dangerous qualities, of others.

Thus, lixivious ſalts prevent the grievous vellications of reſinous purges, by dividing their particles, and preventing their adheſions to the inteſtinal membranes, whereby, when given alone, they ſometimes occaſion intolerable gripings: and thus ſpices, and carminative ſeeds alſo, aſſiſt in the eaſier operation of ſome cathartics, by diſſipating collections of wind.

In the making of medicines, likewiſe ſuch things are called *correctors*, as deſtroy or diminiſh a quality in it that could not otherwiſe be diſpenſed with: thus, turpentine may be called the *corrector* of quickſilver, by deſtroying its fluxility, and making it thereby capable of mixture: and thus rectified ſpirit of wine breaks off the points of ſome acids, ſo as to make them become ſafe and good remedies, which before were deſtructive.

CORRELATIVE, ſomething oppoſed to another in any certain relation.

Thus, Father and Son are *correlatives*; *pater & filius ſibi mutuo reſpondent*. Light and darkneſs, motion and reſt, are *correlative* and oppoſite terms.

CORRIVAL, a relative term, ſignifying, originally, a perſon who derived water from the ſame ſource, or ſpring, with another; by means of ſome common canal, which carried it to both their lands; and which proved the occaſion of frequent diſputes. Hence the word came to be uſed for thoſe who have the ſame pretenſions; whether to glory, to love, or the like: but uſe has abridged the word; and we now both write and pronounce, *rival*.

CORROBORANTS. See the article STRENGTHENERS.

CORROBORATIVE, in medicine, any thing that increaſes ſtrength, or gives new force.

The word is likewiſe frequently applied to ſuch medicines as are of uſe in particular weakneſſes; as the fluor albus, gonorrhœas, &c. Such are terebinths, &c.—All cardiacs are *corroborative*.

CORROSION, the act of *corroding*, or gnawing away, by little and little, the continuity of the parts of bodies.

Acids *corrode* moſt natural bodies; and arſenic only kills, becauſe it *corrodes* the bowels with its ſharp-pointed particles.

CORROSION is uſed both in chymiſtry, medicine, and natural philoſophy; where it ſtands for a particular ſpecies of diſſolution, by an acid, or ſaline menſtruum. See DISSOLUTION.

What *corroſion* has peculiar to it, is, that it is moſtly deſigned for the reſolution of bodies the moſt ſtrongly compacted, as bones and metals; ſo that the menſtruums employed require an uncommon moment, or force.

Now *corroſive* liquors, whether acid or urinous, are nothing but ſalts diſſolved in a little phlegm: therefore theſe, being ſolid, and conſequently containing a conſiderable quantity of matter, do both attract one another the more, and are alſo more attracted by the particles of the body which is to be diſſolved. And as their attractions at equal diſtances are proportional to their bulks, *cæteris paribus*; ſo when the more ſolid bodies are put into ſaline menſtruums, the attraction is ſtronger than in other ſolutions; and the motion, which is always proportional to the attraction, is more violent.

Hence we eaſily conceive, how they ſhould drive thoſe ſalts, like ſo many darts, into the pores of the bodies, and open and looſen the coheſion of them, though ever ſo firm. See ACID.

Again, we know, the more minute the particles of the menſtruum are, the ſooner they penetrate, and with the greater force: the motion produced by attraction being always greateſt in the leaſt corpuſcles, and next to nothing in the large ones.

Add to this another advantage gained by this minuteneſs of the particles; *viz.* that they approach nearer the body to be diſſolved; without which the attractive force would be inſenſible. Hence, thoſe very ſalts, which, diſſolved in water, will hardly touch metals, if once turned into acid ſpirits, eaſily penetrate them: for in diſtillation, not only a greater quantity of water remains, but the ſaline bodies are ſo minutely broken and divided by the fire, as to make them more readily capable of being moved by an attractive force; and therefore ſuch a diſtilled menſtruum is much more efficacious than any ſolution of ſalt made with water. See MENSTRUUM.

CORROSIVE *ſublimate of mercury*. See MERCURY.

CORRUGATOR*, or CORRUGENS *ſupercilii*, a muſcle ariſing from the great canthus of the orbit of the eye, and terminating in the ſkin about the middle of the eyebrows. See the article EYE.

* Its name declares its uſe; being formed of *con*, together; and *ruga*, wrinkle.

Some reckon this muſcle only a prolongation of the frontales.

CORRUGENT *muſcle*, the ſame as *corrugator ſupercilii*.

CORRUPTIBLE. See the article INCORRUPTIBLE.

CORRUPTICOLÆ, a ſect of antient heretics, who roſe out of the Eutychians in Egypt about the year 531. under their chief, Severus, the pretended patriarch of Alexandria.

Their diſtinguiſhing doctrine, whence they derived their name, was, that the body of Jeſus Chriſt was *corruptible*; that the fathers had owned it; and that to deny it, was to deny the truth of our Saviour's paſſion.

On the other hand, Julian of Halicarnaſſus, another Eutychian, a refugee as well as Severus, in Alexandria, maintained that the body of Jeſus Chriſt had been always incorruptible; that to ſay it was corruptible, was to make a diſtinction between Jeſus Chriſt and the Word, and by conſequence to make two natures in Jeſus Chriſt.

The people of Alexandria were divided between the two opinions; and the partiſans of Severus were called *corrupticolæ*, q. d. worſhipers of ſomething *corruptibile:* ſometimes they were denominated *corruptibiles*; and the adherents of Julian *incorruptibles*, or *phantaſiaſtæ*.—The clergy and ſecular powers favoured the firſt; the monks and the people the latter.

CORRUPTION, the extinction of any thing; or the act whereby it ceaſes to be what it was.

Thus, wood is juſtly ſaid to be *corrupted*, when we do not ſee it remain wood any longer, but find fire in its ſtead. And thus the egg is *corrupted*, when it ceaſes to be an egg, and we find a chicken in its room.—Hence that axiom in philoſophy, *The corruption of one thing is the generation of another.*

Corruption differs from *generation*, as two contraries differ from each other.

It differs from *alteration* as a leſs from a greater, or a part from the whole; a thing being ſaid to be *altered*, when it is not ſo far changed but it may be known, and ſtill keeps its old name; both which it loſes by *corruption*.

But, as in generation, no matter is produced that did not before exiſt; ſo in *corruption*, nothing is loſt, but that particular modification which conſtituted its form, and made it to be of ſuch a ſpecies.

Dr. Drake accounts for *corruption* in animal and vegetable bodies thus: ‘ The principle of *corruption* is, perhaps, the ſame
‘ which in a ſtate of circulation is the principle of life, *viz.*
‘ the air, which is found mixed in conſiderable quantities
‘ with all ſorts of fluids; as neceſſary to vegetable, as to ani-
‘ mal life. Now this air has two motions, *viz.* an expanſive
‘ one, from its natural elaſticity, by means whereof it com-
‘ municates that inteſtine motion which all juices have, and
‘ by which the containing parts are gradually extended and
‘ grow; and a circulatory or progreſſive motion, which is
‘ not eſſential to it, but is occaſioned by the reſiſtance of the
‘ ſolid parts of thoſe bodies, which obliges it to take that
‘ courſe which is moſt free and open, which is through the
‘ veſſels of animals and plants.

‘ Now, this courſe being ſtopped, the expanſive motion ſtill
‘ remains, and continues to act, till, by degrees, it has ſo far
‘ overcome the including bodies, as to bring itſelf to an equal
‘ degree of expanſion with the external air; which it cannot
‘ do, without deſtroying the texture and continuity, or ſpecific
‘ degree of coheſion, of thoſe ſolids: which is that we call a
‘ *ſtate of corruption.*
‘ This expanſive or deſtructive quality of the air in bodies, may
‘ be promoted two ways; and, therefore, *corruption* may be
‘ accelerated in as many, *viz.* either by weakening the tone
‘ or coheſion of the including parts, and ſo facilitating the
‘ work of the air; as is the caſe when fruit is bruiſed, which is
‘ found to corrupt much ſooner there than in any other part:
‘ or, by extending the expanſive force of the air itſelf, by
‘ heat, or ſome other co-operating circumſtance; and ſo help-
‘ ing it to overcome the reſiſtance the ſooner.’

Corruption *of blood*, in law, an infection accruing to a man's ſtate, attainted of felony, or treaſon, and to his iſſue.

For, as he loſes all to the prince, or other lord of the fee, ſo his heirs cannot be iſſue to him, or to any other anceſtor by him: and if he were noble, or a gentleman, he, and his heirs, are thereby ignobled and ungenteeled. See Escheat.

The king's pardon cleanſes the *corruption* of blood in thoſe children born after the pardon, not in thoſe born before it; theſe latter continuing ſtill incapable of inheriting the land of their father, purchaſed before the time of the pardon.

But note, there are ſeveral offences, now made treaſon by act of parliament, which do not *corrupt* the blood; nor ſhall the criminal forfeit any thing thereby, beſide what he has for life.

CORSAIR*, a pirate, or perſon who ſcours the ſeas, eſpecially the Mediterranean, with a veſſel armed for war, without commiſſion from any prince, or power; to plunder merchant-veſſels.

* The word comes from the Italian *corſare*, of *corſo*, or *à curſibus*, by reaſon of their courſes, or excurſions.

A *corſair* is diſtinguiſhed from a *privateer* in this, that the latter does it under a commiſſion, and only attacks the veſſels of thoſe at war with the ſtate whence his commiſſion is derived.

The puniſhment of a *corſair* is to be hanged, without remiſſion; whereas privateers are to be treated as priſoners of war.—All *corſair* veſſels are good prizes. See Prize.

CORSELET, a little cuiraſſe, according to ſome; and, according to others, a coat, or cover for the whole trunk, antiently worn by the pikemen; commonly placed in the front and flanks of the battle, for the better reſiſtance of the enemies aſſaults, and the ſurer guard of the ſoldiers placed behind, or within them. See Cuirasse.—Vaugelas obſerves, that the ſeamen were antiently armed with *corſelets*.

CORSEPRESENT*, in our antient authors, denotes a *mortuary*.

* The word is formed of the French, *corps preſent*; and the reaſon of the denomination is probably this: that where a mortuary, after a man's death, became due, the beſt, or ſecond beſt beaſt was offered, or *preſented* to the prieſt, and carried along with the *corpſe*.

CORSNED *Bread*, a ſuperſtitious manner of tryal, uſed among our Saxon anceſtors, by a piece of barley-bread, firſt execrated by the prieſt, then offered the ſuſpected criminal to be ſwallowed, by way of purgation; from an opinion that a guilty perſon could not ſwallow a piece of bread ſo accurſed, or if he did, that it would choke him.

The ceremony was accompanied with a prayer, beſeeching God, ‘ That the criminal's jaws might be ſhut, his throat ſo
‘ narrow, that he might not ſwallow, and that he might caſt
‘ it out of his mouth.’

CORTES, a term purely Spaniſh, properly ſignifying the *courts*, *i. e.* the ſtates, or aſſembly of the ſtates, at Madrid.

CORTEX, a Latin name, denoting the bark, or outer coat of a tree, or ſhrub. See Bark.

Cortex *Peruvianus*, called alſo *quinquina*, *kinkinna*, *quinaquina*, *pulvis patrum*, and popularly the *jeſuit's bark*; is the bark of a tree, growing in the Weſt-Indies, called by the Spaniards *palo de calenturas*, q. d. *fever-wood*; by reaſon of its extraordinary virtue in removing all kinds of intermitting fevers and agues. See Fever.

The Indians commonly call it the *fuddling tree*, from the property it has of intoxicating fiſhes, when either its wood or bark is beaten, and ſteeped in the water where they are.

The tree that yields this noble ſpecific, is only found in Peru; in the province of San Franceſco de Quitto, or Quinto, near the city of Loxa: though ſome ſay it is alſo found in that of Potoſi; and F. Labat, in the iſland of Guadeloupa.—The bark, while on the tree, is ſtreaked, of a whitiſh yellow without ſide, and a pale tan colour within.

It is about 80 years ſince this noble febrifuge was firſt known in England. It was firſt introduced into uſe by the cardinal de Lugo; whence, in France, it was firſt called from the name of that cardinal. Afterwards it became known by the name of the *jeſuit's powder*, and the *jeſuit's bark*; becauſe ſold by the jeſuits, to whom that cardinal, who had been of their ſociety, left great quantities of it.

When firſt introduced, it is ſaid to have been ſold for about eight ſhillings ſterling the doſe; which great price, with the little effects found from it, by reaſon of their ignorance of the manner of preparing and preſcribing it, occaſioned its being diſuſed, till about the year 1679. that Mr. Talbor, an Engliſh practitioner in phyſic, brought it into vogue again, by the great number of cures wrought about the court and city of Paris with this powder, prepared after his manner: the ſecret whereof was ſoon after made public by the munificence of Louis XIV. who rewarded Talbor for the communication, with 5000 crowns.

The *quinquina* is ſold, either in bark, or in powder: thoſe who buy it in the bark, muſt chooſe it very dry and compact; ſuch as has never been moiſtened, and which is not too eaſily reduced into powder by breaking. The ſmall, fine, quilled barks, ſhagreened without, and rediſh within, of a bitter diſagreeable taſte, are the moſt eſteemed.—For the powder, it muſt be well ſifted, and care be taken it be bought of perſons that may be truſted; it being very eaſy to ſophiſticate it, and difficult to find it out.

The *cortex* is a bitter, abſorbent, and aſtringent, or ſtyptic: from its bitterneſs, M. Reneaume obſerves it becomes fit to ſoften ſour acrimonious juices; for a ſour and a bitter make a ſweet. Again, as an abſorbent, it blunts the points of acids, and prevents their action; and, of conſequence, preſerves the fluidity of the juices, which acids would coagulate. As a ſtyptic, it muſt have earthy parts to abſorb ſeroſities, by which the parts before moiſtened, and relaxed, will contract themſelves: and, by this means, the *cortex* augments the ſpring and tenſion of the fibres. As a bitter, it warms; and it facilitates perſpiration, by warming and augmenting the fluidity of the juices. On theſe properties it is that its medicinal uſes are aſcertained.

Its chief uſe is in curing of agues, and intermitting fevers; for which purpoſe it is applied in all ages, and moſt conſtitutions. Dr. Cockburn ſays, it produces this effect better than any other medicine of the ſame intention, in the ratio of 365 to 1. It is uſual to give a gentle emetic of ipecacuanha before the exhibition of the *cortex*: by thus preparing the paſſages, the *cortex* has not only more ſucceſs, but alſo is not ſubject to cauſe thoſe indiſpoſitions, *viz.* ſwelling in the belly, nauſea's, &c. which often ariſe when ſuch preparation is neglected.

The *cortex* muſt never be exhibited in the paroxyſm of an ague, or intermitting fever; but given in ſuch a quantity, at times, between the paroxyſms, as to prevent a return of the fit.

The *cortex*, exhibited in continual fevers, is held dangerous; and care muſt be taken, that the remiſſion of a continual fever be not miſtaken for its intermiſſion: when there is a remiſſion, it uſually happens indifferently at any time; whereas an intermiſſion happens at particular, or ſtated times.

The *cortex* is given ſeveral ways, *viz.* in powder, in form of electuary, bolus, infuſion, tincture, &c. The arcanum Talborianum is about two ounces of the *cortex* in powder, digeſted in a ſand-heat, with about a quart of red wine: after digeſtion, the wine muſt be poured off, and two or three ounces given every three or four hours between the paroxyſms, till the intention is anſwered. If the bark take downward, Venice treacle, diaſcordium, conſerve of roſes, terra Japonica, doſes of laudanum, &c. muſt be added to its preparations. When there happens to be an obſtruction of the menſes from the exhibition of the *cortex*, or to prevent it, it is adviſeable to add to its preparations the black hellebore, æthiops mineral, cinnabar, &c.—The *cortex* is often uſed for young children in agues, by way of clyſter; and alſo applied to the wriſts, and ſoles of the feet, wrought up into a ſtiff maſs, with turpentine, Venice treacle, &c. which uſually anſwers the purpoſe.

Dr. Helvetius, phyſician to the king of France, above 20 years ago, wrote a book intirely upon the ſubject of curing agues by giving the *cortex* clyſter-wiſe; in which he pretends, that this is more ſafe, and no leſs certain, than the *cortex* given by the mouth. Dr. Cockburn, in his treatiſe of *ſea-diſeaſes*, aſſerts the contrary: he alleges, that the *cortex* given inwardly is as ſafe, and by much more certain and expeditious; and notes, that we know how to remedy all the inconveniencies the *cortex* may occaſion.

Dr. Sydenham, and after him M. Reneaume, and others, have preſcribed the *cortex*, with ſucceſs, in melancholic and hyſteric affections, commonly called *vapours*.

Cortex *Winteranus*, or *Winteri*, the bark of a tree brought from the ſtreights of Magellan, by captain Winter, in his voyage with Sir Francis Drake.—Cluſius calls the tree, *Magellanica aromatica arbor*.

The bark is aromatic, and found of good uſe at ſea againſt the ſcurvy: half a dram of it, boiled with ſome carminative ſeeds, ſweats, and relieves, ſcorbutic patients. It has alſo proved an antidote againſt a poiſonous ſort of ſeal, called a *ſea lion*, frequent in thoſe parts.

The bark ſold in the ſhops under the name of *cortex Winteranus*, or wild cinnamon, Dr. Sloane obſerves, is not the true *cortex Winteranus*; they grow on different trees, and in different countries, and their appearance is very different: yet are they ſo like in taſte, that he thinks they may be uſed as ſuccedaneums to each other.

Cortex *Capparis*. See the article Caper.

Cortex *Cerebri*, the *cortical*, or cineritious ſubſtance of the brain. See Cortical, and Brain.

CORTICAL *ſubſtance of the brain*, in anatomy, the exterior part of the brain and cerebellum; or that part immediately under the pia mater; ſo called, becauſe of its inveſting the inner or medullary part, as a bark does a tree. See Brain.

The ſame is alſo called the *cineritious ſubſtance*, from its greyiſh or aſh-colour.

Archangelo Piccolomini, a Ferrareſe, firſt introduced this diviſion of the brain into *cortical* or cineritious, and medullary or fibrous ſubſtance, in the year 1526.

The *cortical* ſubſtance is more ſoft and moiſt than the medullary; and follows or attends it through all its prominences and ſinus's. It is formed, from the minute branches of the carotid arteries, interwoven in the meninges, and thence continued hither in infinitely fine ramifications.

Moſt anatomiſts, after Malpighi, agree in its being glandulous, and that the medullary parts are only a continuation thereof; Ruyſch alone excepted; who, from his admirable ſkill in injections, and the diſcoveries he has made thereby, maintains that it has nothing glandular in it.

CORTIN, in fortification. See the article CURTIN.

CORVET, or CURVET, in the manage, an air, in which the horſe's legs are raiſed higher than in the demi-volt; being a kind of leap up and a little forwards, wherein the horſe raiſes both his forelegs at once, equally advanced (when he is going ſtrait forward, and not in a circle); and as his forelegs are falling, he immediately raiſes his hindlegs, equally advanced, and not one before the other: ſo that all his four legs are in the air at once; and as he ſets them down, he marks but twice with them. See AIR.

Horſes that are very dull, or very firy, are improper for *corvets*; this being the moſt difficult air they can make, and requiring a great deal of judgment in the rider, as well as patience in the horſe, to perform it.

CORUSCATION, *glittering*; a gleam of light emitted from any thing.

The term is chiefly uſed for a flaſh of lightning nimbly darting down from the clouds, in time of thunder. See THUNDER, *&c.*

CORVUS, *raven*; in aſtronomy, a conſtellation of the ſouthern hemiſphere; whoſe ſtars in Ptolemy's catalogue are 7; in Tycho's as many; in the Britannic catalogue 10. The order, names, longitudes, latitudes, magnitudes, *&c.* whereof are as follow:

Names and Situations of the Stars.	Signs.	Longitude.			Latitude.			Magn.
		°	'	"	°	'	"	
That in the beak	♎	7	55	35	21	44	26	4
In the neck nigh the head		7	21	58	19	39	41	4
Small one following theſe		8	0	16	20	27	40	6
In the preceding wing		6	25	58	14	29	0	3
In the breaſt		9	29	58	18	16	40	5
5								
Informis over the wings		5	54	35	10	21	48	6
		11	16	15	20	23	42	6
Preced. of two in the hind wing.		9	9	13	12	9	47	3
ſubſeq.		9	32	0	11	39	31	5
In the foot, common with *hydra*	♎	13	3	25	18	1	40	3
10								

CORYBANTES, in antiquity, prieſts of Cybele, who danced and capered to the ſound of flutes and drums. See CROTALUM.

Catullus, in his poem called *Atys*, gives a beautiful deſcription of them; repreſenting them as madmen. Accordingly, Maximus Tyrius ſays, that thoſe poſſeſſed with the ſpirit of *Corybantes*, as ſoon as they heard the ſound of a flute, were ſeized with an enthuſiaſm, and loſt the uſe of their reaſon. And hence, the Greeks uſe the word Κορυϐαντιαν, to *Corybantize*, to ſignify a perſon's being tranſported, or poſſeſſed with a devil. See ENTHUSIASM.

Some ſay, that the *Corybantes* were all eunuchs; and that it is on this account Catullus, in his *Atys*, always uſes feminine epithets, and relatives, in ſpeaking of them.

Diodorus Siculus remarks, that Corybas ſon of Jaſon and Cybele, paſſing into Phrygia with his uncle Dardanus, there inſtituted the worſhip of the mother of the gods; and gave his own name to the prieſts.—Strabo relates it as the opinion of ſome, that the *Corybantes* were children of Jupiter and Calliope, and the ſame with the *Cabiri*.—Others ſay, the word had its origin from this, that the *Corybantes* always walked dancing (if the expreſſion may be allowed) or toſſing the head, Κορυπτοντες βαινοιεν.

CORYMBIFEROUS *Plants*, theſe are diſtinguiſhed into ſuch as have a *radiate* flower: as, the flos ſolis, calendula, *&c.* —and ſuch as have a *naked* flower: as, the abrotanum fœmina, eupatorium, and artemiſia—to which are added the *Corymbiferis Affines*, or thoſe akin hereunto; ſuch as ſcabious, dipaſcus, carduus, and the like.

CORYMBUS, in the general, ſignifies the top or ſummit of any thing; but among the antient botaniſts it was particularly uſed to expreſs the bunches or cluſters of ivy-berries, *&c.*

Some alſo call the top of the ſtalk of a plant, when ſo ſubdivided, and adorned with flowers or fruits, as to make a round ſpherical figure, by this name; as the tops of leeks, onions, and the like: others confound the word with *umbella*, which expreſſes the flowery tops of ſuch plants as have their branches and flowers ſpread round, into the form of what the women now call an *umbrella*.

But among the modern botaniſts, *Corymbus* is chiefly uſed for a compound diſcous flower, whoſe ſeeds are not pappous, or winged with down: ſuch are the flowers of daiſies, common marigold, *&c.*

Mr. Ray, therefore, makes a diſtinct genus of plants of ſuch as have a compound diſcous flower, but without any downy wings to carry off their ſeeds.

CORYPHÆUS *, in the antient tragedy, was the chief or leader of the company that compoſed the chorus.

* The word is formed from the Greek κορυφη, *tip of the head.*

The *Coryphæus* ſpoke for all the reſt, whenever the chorus took part in the action, in quality of a perſon of the drama, during the courſe of the acts.

Hence, *Coryphæus* has paſſed into a general name for the chief or principal of any company, corporation, ſect, opinion, *&c.* Thus, Euſtatius of Antioch is called the *Coryphæus* of the council of Nice; and Cicero calls Zeno the *Coryphæus* of the Stoics.

CORYZA, Κορυζα, in medicine, a running at the noſe; or a defluxion of ſharp ſerous humours from the glands of the head; ariſing from a diminution of perſpiration, or catching of cold.

Proper evacuations, as bleeding, epiſpaſtics, ſternutatories, *&c.* are uſual in caſes of *coryza's*.

COSCINOMANCY *, the art of divination, by means of a ſieve.

* The word comes from the Greek κοσκινον, *cribrum*, a ſieve; and μαντεια, *divination*.

The ſieve being ſuſpended; after rehearſing a formula of words, it is taken between two fingers only; and the names of the parties ſuſpected, repeated: he at whoſe name the ſieve turns, trembles, or ſhakes, is reputed guilty of the evil in queſtion.

This muſt be a very antient practice: Theocritus, in his third Idyllion, mentions a woman very ſkilful in it.—It was ſometimes alſo practiſed by ſuſpending the ſieve by a thread, or fixing it to the points of a pair of ſhears, giving it room to turn, and naming, as before, the parties ſuſpected: in which laſt manner, *coſcinomancy* is ſtill practiſed in ſome parts of England. It appears from Theocritus, that it was not only uſed to find out perſons unknown; but alſo to diſcover the ſecrets of thoſe that were known.

CO-SECANT, in geometry, the ſecant of an arch, which arch is the complement of another arch to 90 degrees. See SECANT, and COMPLEMENT.

CO-SINE, is the right ſine of an arch, which is the complement of another to 90 degrees. See SINE.

COSMETIC, a term in phyſic, uſed for any medicine, preparation, or means employed to beautify and embelliſh the face, and preſerve or improve the complexion; as ceruſs, and the whole tribe of fucus's, waſhes, cold creams, lip-ſalves, *&c.* See WATER.

The Indians uſe the water of green cacao-nuts as a grand *coſmetic*, which wonderfully improves their complexion.

COSMICAL, Κοσμικος, ſomething that refers, or has a relation, to the world.

COSMICAL *Aſpect*, among aſtrologers, is the aſpect of a planet with reſpect to our earth. See ASPECT.

COSMICAL *Qualities* are uſed by Mr. Boyle in the ſame ſenſe with ſyſtematical ones.

Tho', in conſidering the qualities of natural bodies, we uſually only take in the powers any particular one has of acting on, or its capacity of ſuffering from the action of, another, wherewith it is obſerved to have ſome manifeſt commerce, by a communication of impreſſions; yet there may be ſome attributes belonging to a particular body, and ſeveral alterations to which it may be liable, not barely on account of thoſe qualities preſumed to be evidently inherent in it, nor of the reſpects it bears to thoſe other particular bodies, whereto it ſeems manifeſtly related; but on account of a ſyſtem conſtituted as our world is, of ſuch a fabric, that there may be many unheeded agents, which by unperceived means have great operations on the body we conſider, and work ſuch changes in it, and enable it to work ſuch changes on other bodies, as are rather to be aſcribed to ſome unheeded agents, than to thoſe other bodies with which the body propoſed is obſerved to be concerned. So that if many bodies that might be named, were placed together in ſome imaginary ſpace, beyond the bounds of our ſyſtem; tho' they would retain many of the qualities they are now endowed with, yet they could not poſſeſs them all: but by being reſtored to their former places in this world, they would regain a ſet of faculties and diſpoſitions, depending on ſome unheeded relations, and impreſſions from the determinate fabric of the grand ſyſtem, or world, whereof they are parts. And theſe are what Mr. Boyle calls *coſmical*, or *ſyſtematical qualities*.

To account for theſe *coſmical* qualities, the ſame author propoſes ſome *coſmical* ſuſpicions, as to ſome unobſerved laws and orders of nature; and refers them principally to the action of certain effluvia hitherto unobſerved.

COSMICAL is alſo uſed, in aſtronomy, to expreſs one of the poetical riſings of a ſtar.

A ſtar is ſaid to riſe *coſmically*, when it riſes together with the ſun; or with that degree of the ecliptic wherein the ſun then abides.

Coſmical ſetting is, when a ſtar ſets and goes down in the weſt, at the ſame time the ſun riſes in the eaſt.

But, according to Kepler, to riſe or ſet *coſmically*, is only to aſcend above, or deſcend below, the horizon.

COSMOGRAPHY *, the deſcription of the world; or the art which teaches the conſtruction, figure, diſpoſition, and relation of all the parts of the world, with the manner of repreſenting them on a plane.

* The word comes from the Greek, κοσμος, *mundus*, world; and γραφω, *ſcribo*, I deſcribe.

Coſmography conſiſts chiefly of two parts.—Aſtronomy, which ſhews the ſtructure of the heavens, and the diſpoſition of the ſtars. And geography, which ſhews thoſe of the earth.

COSMOLABE, an antient mathematical inſtrument, ſerving to meaſure diſtances, both in the heavens, and on earth.

The *coſmolabe* is in great meaſure the ſame with the aſtrolabe. It is alſo called *pantacoſm*, or the *univerſal inſtrument*, by L. Morgard, in a treatiſe expreſly thereon, printed in 1612.

COSMOPOLITE, or COSMOPOLITAN *, a term ſometimes uſed to ſignify a perſon who has no fixed living, or place of abode; or a man who is a ſtranger no-where.

* The word comes from the Greek κοσμος, *mundus*; and πολις, *city*.

One of the antient philoſophers being interrogated what countryman he was; anſwered he was a *coſmopolite*, i. e. an inhabitant or citizen of the world.

COSTÆ, in anatomy. See the article RIBS.

COSTAL, in anatomy.—There are eight vertebræ diſtinguiſhed by the name of *coſtales*, or *pleurites*; becauſe ſerving to articulate the coſtæ, or ribs, which are lined with the pleura. See VERTEBRA.

Theſe vertebræ are the eight which follow the ſecond, called the *axillary*; and are therefore the third, fourth, fifth, and to the tenth incluſive.

COSTIVENESS, in medicine, a preternatural detention of the excrements, with an unuſual hardneſs and drineſs thereof; and, thence, a difficulty of diſcharging them.

This is the oppoſite to a *diarrhœa*, or looſeneſs.

In the *Philoſophical Tranſactions*, we have an uncommon inſtance of *coſtiveneſs* by Mr. Sherman: the patient, one Thomas Philips, for ſeveral years, never went to ſtool in leſs than 19 or 20 weeks: he generally eat and drank as well as his neighbours; and did all the while the office of a labouring man: yet was not any of the other evacuations ſenſibly greater than in other people. He died of it at 23 years old.

In *coſtiveneſs*, the uſual remedies are gentle preparations of ſenna, lenitive electuaries, cream of tartar; laxative clyſters, *&c.*

COSTUS *Arabicus*, the root of a tree reſembling elder, brought from Arabia; whence its name.—Its chief uſe in medicine is as an ingredient in Venice treacle.

The beſt is heavy, of a cineritious colour withoutſide, a rediſh one within; difficult to break, of a ſtrong ſmell, and an aromatic taſte.

This root was formerly called *coſtus verus*, and was divided into two kinds, the *ſweet* and the *bitter coſtus*: both of which are now uncommon. M. Charas, and others, are of opinion, there is but one kind of *coſtus*, which proves more or leſs ſweet or bitter, according to the ſoil where it is produced.

COSTUS *Indicus*, an American bark, called alſo *coſtus corticoſus*, *coſtus corticus*, or *Winter's bark*. The iſlands of Madagaſcar in Africa, of Domingo and Guadaloupa in America, are the places where the moſt and beſt is found.

COTAGE, or COTTAGE, antiently denoted a little houſe or habitation without land belonging to it. Stat. 4. Edw. I.

By a later ſtatute, 31 of Eliz. no man may build a houſe without laying four acres of land to it: ſo that, properly, a *cottage*, now, is a houſe without four acres of land to it.

CO-TANGENT, is the tangent of an arch, which is the complement of another arch to 90 degrees. See TANGENT.

COTHURNUS, *buſkin*, a very high ſhoe, or patten raiſed on ſoals of cork; worn by the antient actors in tragedy, to make them appear taller, and more like the heroes they repreſented; moſt of whom were ſuppoſed to be giants.

It covered the greateſt part of the leg, and was tied beneath the knee.—Sophocles is ſaid to have invented the *cothurnus*.

COTICE', or COTISE', in heraldry, is the fourth part of the bend; which, with us, is ſeldom or ever borne but in couples, with a bend between them: whence, probably, the name; from the French *coté*, ſide; they being borne, as it were, aſide of the bend. See BEND.

A bend thus bordered is ſaid to be *cotiſed*, *coticé*.—He bears ſable on a bend *cotiſed* argent three cinquefoils. See *Tab. Herald. fig.* 61.

COTTON *, or COTON, a ſort of downy matter, encompaſſing the ſeed of a tree of the ſame name.

* Menage derives the word from the Latin *cotonea*, the fine moſs growing on quinces, which reſembles *cotton*: but Nicod ſays, the Arabs call it *cotum*, and *bombaſum*; whence our *cotton*, and bombazeen.

The tree which produces this uſeful merchandize, grows common in ſeveral places of the Levant, and of the Eaſt and Weſt-Indies, eſpecially in the Antilles. Its fruit is of an oval form, about the ſize of a nut: as it ripens, it grows black withoutſide; and by the heat of the ſun opens in ſeveral places, diſcovering the *cotton* through the clefts, which is of an admirable whiteneſs. In each fruit are found ſeveral little beans, which are the ſeed of the tree.

There is another kind of *cotton* plant, called, by botaniſts, *goſſipium herbaceum*, which creeps along the ground, as the vine would do, if unſupported; the *cotton* whereof is the moſt eſteemed. And the late relations from the ſouth mention two other kinds, the one in the terra firma of Braſil, the other in the iſle of St. Catharine.

The ſeed of the *cotton* being mixed, in the fruit, together with the *cotton* itſelf, they have invented little machines, which being play'd by the motion of a wheel, the *cotton* falls on one ſide, and the ſeed on the other; and thus they are ſeparated.

Cotton makes a very conſiderable article of commerce: it is diſtinguiſhed into *cotton in the wool*, and *ſpun-cotton*. The firſt uſed for various purpoſes, is to be put between two ſtuffs, in quilts, night-gowns, *&c.* but it is the latter is more general; furniſhing various cloths, muſlins, callicoes, dimmities, and hangings; beſides that it is frequently joined with ſilk and flax, in the compoſition of other ſtuffs.

The firſt kind is ordinarily brought from Cyprus and Smyrna: near Smyrna its produce is greater than any-where elſe: they ſow the ſeed in June, and gather it in October; and the ſoil is ſo favourable, that they can have three crops in a year. There are ordinarily brought from Smyrna 10000 bales of *cotton per annum*; and yet there is, at leaſt, as much more ſpent in the manufactures of the country.

For the ſpun *cottons*, they are diſtinguiſhed by various names, the beſt are thoſe from Jeruſalem, called *bazacs*; and thoſe of Damaſcus, called *cottons of the ounce*. See OUNCE. Others are *demi-bazacs*, *baladins*, *payas*, *cottons joſeph*, *genegunſo*, &c.

Cotton antiently only grew in Egypt, and was uſed by the prieſts and ſacrificers for a very ſingular kind of gowns, worn by them alone.

Cotton, applied to wounds in lieu of linen, produces an inflammation: Leewenhoek, examining into the reaſons of this with a microſcope, found its fibres to have each two flat ſides; whence he concludes, that each of its minute parts muſt have two acute angles, or edges; which acute edges being not only thinner and more ſubtile than the globules whereof the fleſhy filaments conſiſt, but alſo more firm and ſtiff than any of the globulous fleſh; it follows, that, upon the application of *cotton* to a wound, its edges muſt not only hurt and wound the globules of the fleſh, but alſo cut inceſſantly the new matter brought to them to produce new fleſh, and that with the more eaſe, as this matter, not having attained the firmneſs and conſiſtence of fleſh, is the leſs able to reſiſt its attacks: whereas the linen ordinarily uſed in wounds, being compoſed of little round parts, very cloſe to each other, forms larger maſſes, and is thus incapable of hurting the globous parts of the fleſh.

COTTON *Paper*. See the article PAPER.

COTYLA, or COTULA, a liquid meaſure, in uſe among the antients, equal to the Roman ſemi-ſextary. See MEASURE.

Savot adds, that the Roman *cotyla* contained twelve ounces of any liquor: upon which principle there muſt have been as many *cotylæ* as there were liquors ordinarily ſold; which is nothing ſtrange, ſince, in ſeveral countries, we ſtill find meaſures of different capacity, called by the ſame name, when they contain the ſame weights, though under different bulks. Fannius ſays, the *cotyla* was the ſame thing with the hemina, which was half a ſextary.

> *At* Cotylas, *quas, ſi placeat, dixiſſe licebit*
> *Heminas, recipit geminas ſextarius unus.*

Chorier obſerves, that the *cotyla* was uſed as a dry meaſure, as well as a liquid one; from the authority of Thucydides, who in one place mentions two *cotylæ* of wine, and in another two *cotylæ* of bread.

COTYLA, or COTYLE, or COTYLOIDES, in anatomy, is a name given the cavities at the extremities of large bones, encompaſſed with thick ſtrong edges, which receive the heads, or apophyſes of other bones articulated with them. See BONE.

Such is the cavity in the iſchion, or hip-bone, which receives the head of the bone of the thigh.—It is alſo called *acetabulum*, i. e. cup.

COTYLEDONES, in anatomy, little glands diſperſed throughout the outermoſt membrane of the fœtus, called *chorion*, and ſuppoſed to ſeparate a nutritious juice for the ſubſiſtence of the fœtus.

Cotyledones, in this ſenſe, are only found in ſheep, goats, and ſome other animals; the placenta in the womb ſupplying the place thereof in women. See PLACENTA.

Other authors uſe *cotyledones* for the apertures of the veins in the inner ſurface of the womb. See MATRIX.

COUARD, in heraldry. See the article COWARD.

COUCH, in painting, denotes a lay, or impreſſion of colour, whether in oil or water, wherewith the painter covers his canvas, wall, wainſcot, or other matter to be painted.

The word is alſo uſed for a lay or impreſſion on any thing, to make it more firm, and conſiſtent, or to ſcreen it from the weather.

Paintings are covered with a *couch* of varniſh: a canvas to be painted muſt firſt have two *couches* of ſize, ere the colours be laid:

two or three *couches* of white lead are laid on wood, ere the *couch* of gold be applied: the leather-gilders lay a *couch* of water, and whites of eggs, on the leather, ere they apply the gold or ſilver leaf.

The gold wire-drawers alſo uſe the word *couch* for the gold or ſilver leaf wherewith they cover the maſs to be gilded or ſilvered, before they draw it through the iron that is to give it its proper thickneſs.

The gilders uſe *couch* for the quantity of gold or ſilver leaves applied on the metals in gilding or ſilvering. Each *couch* of gold is but one leaf, or two at moſt, and each of ſilver three, to gild: if the gilding be hatched, there are required from eight to twelve *couches*; and only three or four, if it be without hatching. To ſilver there are required from four to ten *couches*, according to the beauty of the work.

COUCHANT, in heraldry, is underſtood of a lion, or other beaſt, when lying down; but with his head lifted up: which diſtinguiſhes the poſture of *couchant* from *dormant*, wherein he is ſuppoſed quite ſtretched out, and aſleep.

COUCHANT *and Levant*, in law. See the article LEVANT.

COUCHE', in heraldry, denotes any thing laid all along: thus, a *chevron couché* is a chevron lying ſidewiſe with the two ends on one ſide of the ſhield, which ſhould properly reſt on the baſe.

COUCHING *of cataracts*. See CATARACT.

COVENANT, the conſent or agreement of two or more parties to do or perform ſomething.

A *covenant* ſeems to be much the ſame with a *pactum*, or *conventum*, among the civilians.

Covenant is either *in law*, or *in fact*.

COVENANT *in law* is that which the law intends to be made, though it be not expreſſed in terms: as, if the leſſor demiſe, and grant a tenement to the leſſee for a certain term; the law intends a *covenant* on the leſſor's part, that the leſſee ſhall, during the term, quietly enjoy the leaſe againſt all lawful incumbrances.

OVENANT *in fact* is that which is expreſly agreed between the parties.

There is alſo a *covenant merely perſonal*, and a *covenant real*.

itzherbert defines a COVENANT *real* to be that whereby a man ties himſelf to paſs a thing real, as lands or tenements, or to levy a fine on lands, &c.

OVENANT *merely perſonal* is where a man covenants with another by deed to build him a houſe, or to ſerve him, &c.

uit-COVENANT. See the article SUIT.

rk *of the* COVENANT. See the article ARK.

OVERED *flank*.	See the articles	FLANK.
OVERED *fountain*.		FOUNTAIN.
OVERED *medals*.		MEDAL.

OVERING, in architecture, one of the principal parts of a building. See ROOFING.

O-VERSED *ſine*, a term which ſome people uſe for the remaining part of the diameter of a circle, after the verſed ſine is taken from it. See SINE, and VERSED.

OVERT, in law.—*Feme* COVERT denotes a woman married, and ſo *covered* by, or under the protection of, her huſband.

OVERT *way*, in fortification, a ſpace of ground level with the adjoining country, on the edge of the ditch, ranging quite round the half moons, and other works without-ſide the ditch.—See *Tab. Fortification, Fig.* 21. lit. bb, &c.

It is otherwiſe called *corridor*, and hath a parapet together with its banquette, and glacis, which form the height of the parapet.

One of the greateſt difficulties in a ſiege, is to make a lodgment on the *covert way*; becauſe, uſually, the beſieged paliſade it along the middle, and undermine it on all ſides.

This is ſometimes alſo called the *counterſcarp*, becauſe it is on the edge of the ſcarp.

OVERTURE, in law, is particularly applied to the ſtate and condition of a married woman; who, by the laws of our realm, is under *covert-baron*, or *ſub poteſtate viri*; and therefore diſabled to make bargains with any, to the prejudice of herſelf, or her huſband, without his conſent or privity; or at leaſt without his allowance and confirmation: and if the huſband alien the wife's lands, during the marriage, ſhe cannot gainſay it during his life.

OUGH, TUSSIS, in medicine, a diſeaſe affecting the lungs, occaſioned by a ſharp ſerous humour, vellicating the fibrous coat thereof, and urging it to a diſcharge by ſpitting, &c. See LUNGS.

When the humour is ſo ſubtile, that the lungs cannot lay hold of it, to throw it off; or when the humour is ſo thick, that it will not give way; it is ſaid to be a *dry cough*.

Dry *coughs* are the moſt dangerous.—Hippocrates ſays, the *cough* ceaſes, if the teſticles ſwell.

n COUGH. See the article CHIN-*cough*.

OVIN, a deceitful compact, or agreement between two or more, to deceive or prejudice a third perſon.

As, if a tenant for life conſpire with another, that this other ſhall recover the land which the tenant holds, in prejudice of him in reverſion.

Dr. Skinner takes the word to be a corruption of the Latin *conventum*, and thereſore writes it *coven*. See CONSPIRACY.

COVING, in building. When houſes are built projecting over the ground plot, and the turned projecture arched with timber, lathed and plaſtered; the work is called *coving*.

COVING *corniche* is a corniche with a great caſement, or hollow therein.

COUL*, or COWL, a ſort of monkiſh habit worn by the Bernardines, and Benedictines.

* The word is formed from the Latin *cucullus*, by confounding the two firſt ſyllables into one, as being the ſame twice repeated.

There are two kinds of *couls*; the one white, very large, worn in ceremony, and when they aſſiſt at the office: the other black, worn on ordinary occaſions, in the ſtreets, &c.

F. Mabillon maintains the *coul* to be the ſame thing in its origin with the ſcapular. The author of the apology of the emperor Henry IV. diſtinguiſhes two forms of *couls*; the one a gown reaching to the feet, having ſleeves, and a capuchin, uſed in ceremonies; the other a kind of hood to work in, called alſo a *ſcapular*; becauſe it only covers the head and ſhoulders.

COUNCIL, or COUNSEL, an aſſembly, or meeting of divers conſiderable perſons, or officers, to conſider and concert meaſures touching the adminiſtration of public affairs, rendering juſtice, or the like.

The king's *privy-council* is the primum mobile of the civil government of England; and that from which all the inferior orbs derive their motion.

In the French polity, *councils* are very numerous: they have their *council of ſtate*, *council of the finances*, *council of diſpatches*, *council of directions*, *grand council*, *council of the regency*, *council of conſcience*, &c.

Aulic COUNCIL. See the article AULIC.

COUNCIL, in church-hiſtory and polity, a ſynod, or aſſembly of prelates, and doctors, met for the regulating of matters relating to the doctrine or diſcipline of the church.

Provincial COUNCIL is an aſſembly of the prelates of a province, under the metropolitan. See PROVINCE, and CONVOCATION.

National COUNCIL is an aſſembly of the prelates of a nation, under their primate, or patriarch. See PRIMATE.

Oecumenical or general COUNCIL is an aſſembly of all the prelates of Chriſtendom. See OECUMENICAL.

Indeed, to conſtitute a *general council*, it is not required, that all the prelates ſhould be actually preſent; it is ſufficient, that the *council* be regularly appointed, and that they may be there, or are called thereto.

General councils are frequently called by eccleſiaſtical authors *plenary councils*.—The Romaniſts reckon eighteen *general councils*: whereof only the firſt four are admitted by the reformed. The number is made out thus: two of Nice, four of Conſtantinople, one of Epheſus, one of Chalcedon, five of the Lateran, two of Lyons, one of Vienne, one of Florence, and the laſt of Trent, which held from 1545. to 1563.—The *council* of Trent ordains *provincial councils* to be held every three years; yet the laſt held in France is that of Bourdeaux, 100 years ago.

There have been various collections of the canons or decrees of *councils*, as that of Dr. Merlin at Paris in 1524. one of F. Crabbe, a Franciſcan, in 1536. another of Surius, in 1567. another at Venice, in 1585. another at Rome, in 1608. one of Binius, canon of Cologne, in 1606. in ten volumes: another at the Louvre, in 1664. in thirty-ſeven volumes; another of F. Labbé and F. Coſſart, Jeſuits, in 1672. in ſeventeen volumes, more ample than the reſt. Laſtly, another by F. Hardouin. See CANON.

COUNCIL *of war* is an aſſembly of the principal officers of an army, or fleet, occaſionally called by the general, or admiral, to conſider of the preſent ſtate of things, and concert meaſures for their conduct, with regard to ſieges, retreats, engagements, &c.

The ſame term is ſometimes alſo uſed for an aſſembly of the officers of a regiment, or ſhip; met to try ſoldiers or ſailors accuſed of any crime.

Common-COUNCIL is a court or aſſembly wherein are made all by-laws which bind the citizens of London.

It conſiſts, like the parliament, of two houſes; an *upper*, conſiſting of the lord mayor and aldermen; and a *lower*, of a number of *common-council* men, choſen by the ſeveral wards as repreſentatives of the body of the citizens.

COUNSELLORS *of honour*. See the article HONOUR.

COUNT, COUNTEE, COMES, a nobleman who poſſeſſes a domain erected into a *county*. See COUNTY, and VICOUNT.

Engliſh *counts* we diſtinguiſh by the title of *earls*; foreign ones ſtill retain their proper name.

The dignity of a *count* is a medium between that of a duke and a baron.

According to the modern uſe, moſt plenipotentiaries and embaſſadors aſſume the title of *counts*; though they have no county; as the *count d'Avaux*, &c.

Antiently, all generals, counſellors, judges, and ſecretaries of cities under Charlemagne were called *counts*; the diſtinguiſhing character of a duke and a *count* being this, that the latter had but one town under him, but the former ſeveral.

A *count* has a right to bear on his arms a coronet, adorned with three precious ſtones, and ſurmounted with three large pearls, whereof thoſe in the middle and extremities of the coronet advance above the reſt.

Counts were originally lords of the court, or of the emperor's retinue, and had their name *comites*, *à comitando*, or *à commeando:* hence, thoſe who were always in the palace, or at the emperor's ſide, were called *counts palatine*, or *comites à latere*. See Palatine.—In the times of the commonwealth, *comites*, among the Romans, was a general name for all thoſe who accompanied the proconſuls and proprætors into the provinces, there to ſerve the commonwealth; as the tribunes, præfects, ſcribes, *&c.*

Under the emperors, *comites* were the officers of the palace. The origin of what we now call *counts* ſeems owing to Auguſtus, who took ſeveral ſenators to be his *comites*, as Dion obſerves, *i. e.* to accompany him in his voyages and travels, and to aſſiſt him in the hearing of cauſes; which were here judged with the ſame authority as in full ſenate. Gallienus ſeems to have aboliſhed this council, by forbidding the ſenators being found in the armies: and none of his ſucceſſors re-eſtabliſhed it.

Theſe counſellors of the emperor were really *counts*, comites, *i. e.* companions of the prince; and they ſometimes took the title thereof, but always with the addition of the emperor's name whom they accompanied: ſo that it was rather a mark of their office, than a title of dignity.

Conſtantine was the firſt who converted it into a dignity; and under him it was, that the name was firſt given abſolutely.

The name once eſtabliſhed, was in a little time indifferently conferred, not only on thoſe who followed the court, and accompanied the emperor, but alſo on moſt kinds of officers; a long liſt whereof is given us by Du Cange.

Euſebius tells us, that Conſtantine divided the *counts* into three claſſes; the firſt bore the title of *illuſtres*, the ſecond that of *clariſſimi*, and afterwards *ſpectabiles*; the third were called *perfectiſſimi*.

Of the two firſt claſſes was the ſenate compoſed; thoſe of the third had no place in the ſenate, but enjoyed ſeveral other of the privileges of ſenators.

There were *counts* who ſerved on land, others at ſea; ſome in a civil, ſome in a religious, and ſome in a legal capacity; as, comes ærarii, comes ſacrarum largitionum, comes ſacri conſiſtorii, comes curiæ, comes capellæ, comes archiatrorum, comes commerciorum, comes veſtiarius, comes horreorum, comes opſoniorum or annonæ, comes domeſticorum, comes equorum regiorum, or comes ſtabuli; comes domorum, comes excubitorum, comes notariorum, comes legum, or profeſſor in jure; comes limitum, or marcarum; comes portus Romæ; comes patrimonii, *&c.*

The Francs, Germans, *&c.* paſſing into Gaul and Germany, did not aboliſh the form of the Roman government; and as the governors of cities and provinces were called *counts*, *comites*, and *dukes*, *duces*, they continued to be called ſo.

Theſe governors commanded in time of war; and in time of peace they adminiſtred juſtice. Thus, in the time of Charlemaign, *counts* were the ordinary judges and governors of the cities, all under one.

Theſe *counts* of cities were beneath the dukes and *counts* who preſided over provinces; the firſt being conſtituted in the particular cities under the juriſdiction of the latter. The *counts* of provinces were in nothing inferior to dukes, who themſelves were only governors of provinces.

Under the laſt of the ſecond race of French kings, they got their dignity rendered hereditary; and even uſurped the ſovereignty when Hugh Capet came to the crown: his authority was not ſufficient to oppoſe their encroachments: and hence it is they date the privilege of wearing coronets in their arms: they aſſumed it then, as enjoying the rights of ſovereigns in their particular diſtricts, or *counties*. But, by degrees, moſt of the *counties* became re-united to the crown.

The quality of *count* is now become very different from what it was antiently; being now no more than a title, which a king grants upon erecting a territory into a county, with a reſerve of juriſdiction and ſovereignty to himſelf.

At firſt, there was no clauſe in the patent of erection, intimating the reverſion of the county to the crown in default of heirs male; but Charles IX. to prevent their being too numerous, ordained that duchies and counties, in default of heirs male, ſhould return to the crown.

The point of precedence between *counts* and marquiſes has been formerly much controverted; the reaſon was, that there are *counts* who are peers of France, but no marquiſes: but the point is now given up, and marquiſes take place; though antiently, when *counts* were governors of provinces, they were on a level even with dukes.

William the Conqueror, as is obſerved by Camden, gave the dignity of *counts* in fee to his nobles; annexing it to this or that county or province, and allotting for their maintenance a certain proportion of money, ariſing from the prince's profits in the pleadings and forfeitures of the provinces. To this purpoſe he quotes an antient record, thus: Hen. II. *rex Angliæ his verbis* comitem *creavit*; *ſciatis nos feciſſe Hugonem Bigot* comitem *de Norf.* *&c.* *de tertio denarii de Norwich & Norfolk*, *ſicut aliquis* comes Angliæ, *&c.*

The Germans call a *count*, *graf*, or *graff*; which, according to a modern critic, properly ſignifies *judge*: and is derived from *gravio*, or *graffio*, of γραφω, I write.—They have ſeveral kinds of theſe *counts*, or *graffs*; as *landgraves*, *marchgraves*, *burg-graves*, and *palſgraves*, or *counts palatine*.

Theſe laſt are of two kinds; the former are of the number of princes, and have the inveſtiture of a palatinate; the others have only the title of *count palatine*, without the inveſtiture of any palatinate.

Some aſſert, that by publicly profeſſing the imperial laws for twenty years, the perſon acquires the dignity of a *count palatine*; and there are inſtances of profeſſors in law, who have aſſumed the title accordingly: but there are others who call this right in doubt.

Count, in law, denotes the original declaration in a real action; as the declaration is in a perſonal one: the libellus of the civilians anſwers to both.

Yet, *count* and declaration are ſometimes confounded; and uſed for each other: as, *count in debt* *count in appeal*, &c.

Count-wheel, in clock-work, a wheel which moves round in twelve hours; called alſo the *locking-wheel*. See Clock.

COUNTER, of the Latin prepoſition *contra*, againſt, is uſed in the compoſition of divers words in our language; and generally implies the relation of oppoſition.—As,

COUNTER-ALLEYS in gardening. See Alley.

COUNTER-APPROACHES, in fortification, lines or trenches made by the beſieged, when they come out to attack the lines of the beſiegers in form.

Line of **Counter-approach**, a trench which the beſieged make from their covered-way to the right and left of the attacks, in order to ſcour or enfilade the enemy's works. It ſhould commence in the angle of the place of arms of the half-moon that is not attacked, and of the baſtion that is attacked; about 50 or 60 fathoms from the attacks; and continued as far as ſhall be found neceſſary in order to ſee the enemy in his trenches and parallels. This line muſt be perfectly enfiladed from the covered-way and the half-moon, that if the enemy get poſſeſſion of it, it may be of no ſervice to him. In this line the governor muſt frequently in the night-time ſend ſmall parties of horſe, or foot, to drive the workmen from their poſts; and, if poſſible, to carry off the engineers, who have the direction of the works. Savin. Nouv. Ecol. Milit. p. 280.

COUNTER-BARRY, or Contre-barre', is uſed by the French heralds for what we more ordinarily call *bendy ſiniſter per bend counterchanged*. See Barry.

COUNTER-BATTERY, a battery raiſed to play on another, in order to diſmount the guns. See Battery.

COUNTER-BENDY, or Contre-bande', in heraldry, is uſed by the French to expreſs what we ordinarily call *bendy of ſix per bend ſiniſter counterchanged*. See Bendy.

COUNTER-BOND is a bond given to ſave a perſon harmleſs who has given his bond for another.—This is alſo called *counter-ſecurity*.

COUNTER-BREAST-WORK, in fortification, a *fauſſe-braye*. See Fausse-braye.

COUNTER-CHANGE, in commerce, *&c.* a mutual exchange between two parties. See Exchange.

COUNTER-CHANGED, in heraldry, is when there is a mutual changing of the colours of the field and charge in an eſcutcheon, by means of one or more lines of partition.

Thus, in the coat of the famous Chaucer: he beareth, party per pale argent and gules, a bend *counter-changed*; that is, that part of the bend, which is in that ſide of the eſcutcheon which is argent, is gules; and that part of it which is on the other, is argent. Vide *Tab. Heraldry*, *Fig.* 50.

COUNTER-CHARGE is a reciprocal charge, or recrimination, brought againſt an accuſer. See Recrimination.

COUNTER-CHARM, a charm or ſpell, contrived to hinder the effect of another. See Charm, Spell, Ligature, &c.

COUNTER-CHEVRONED denotes a ſhield *chevronny*, parted by ſome line of partition.

COUNTER-COLOURED. See the article Contreband.

COUNTER-COMPONED, or Contre-compone', Counter-compony, is when a bordure is compound of two ranks of panes: as repreſented in *Tab. Heraldr* *Fig.* 51.—When it conſiſts but of one rank, it is called *co* *poned*; and when of more than two, *checky*. See Check *&c.*

COUNTER-DEED, a ſecret writing, or a private act, ei before a notary, or under a privy-ſeal; which deſtro changes, annuls, or alters, ſome more ſolemn and public a *Counter-deeds* are rather tolerated than permitted: in m caſes they are actually prohibited; as being uſually no be than frauds.—The cuſtom of Paris annuls all *counter-d* contrary to the tenor of a marriage.

COUNTER-DRAWING, in painting, *&c.* the copyin deſign or painting, by means of a fine linen cloth, an o paper, or other tranſparent matter; whereon the ſtrokes pearing through, are followed and traced with a pencil, or without colour.

Sometimes they *counter-draw* on glaſs, and with frames nets divided into ſquares, with ſilk, or with thread; and by means of inſtruments invented for the purpoſe, as the rellelogram.

COUNTER-ERMINE. See the article Ermine.

COUNTERFEIT *Architecture.* See the article ARCHITECTURE.

COUNTER-FISSURE. See the article Contrafissure.

COUNTER-FOIL, or Counter-Stock, is that part of a tally, ſtruck in the exchequer, which is kept by an officer of the court. See Tally, and Exchequer.

COUNTERFORTS, *Buttreſſes*, or *Spurs*, are pillars of maſonry, ſerving to prop or ſuſtain walls, or terraſſes, ſubject to buldge, or be thrown down.

Theſe works are uſually turned archwiſe, and placed at a diſtance from each other.

When any thing is built on the deſcent of a mountain, it muſt be ſtrengthened with *counterforts* well bound to the wall, and at the diſtance of about twelve yards from each other.

OUNTER-FUGUE, in muſic, is when fugues proceed contrary to one another. See Fugue.

OUNTER-GAGE, in carpentry, a method uſed to meaſure the joints, by transferring, *v. gr.* the breadth of a mortiſe to the place in the timber where the tenon is to be, in order to make them fit each other.

OUNTER-GUARD, in fortification. See Envelope.

OUNTER-HARMONICAL. See the article Contra-Harmonical.

OUNTER-INDICATION. See the article Contra-Indication.

OUNTER-LIGHT, a window, or light, oppoſite to any thing, which makes it appear to a diſadvantage.—A ſingle *counterlight* is ſufficient to take away all the beauty of a fine painting.

OUNTERMAND, in a general ſenſe, a revocation of an order; or an excuſe for ſetting aſide, or deferring, a thing ordered to be done.

By the French law, a *countermand* differs from an eſſoin, 1°, In that, in the *countermand*, the conſignment is propoſed to be deferred to a day certain, which is not in the eſſoin. 2°, In the eſſoin, the cauſe of deferring the conſignment is expreſſed, and affirmed to be true; but in a *countermand* that affirmation is not required.

OUNTERMAND, in the Engliſh law, is where a thing, formerly executed, is afterward, by ſome act or ceremony, made void by the party that firſt did it.

As, if a man make his laſt will, and deviſe his land to T. S. and afterwards enfeoff another of the ſame land; this feoffment is a *countermand* of the will, and the will void as to the diſpoſition of the land.

OUNTERMANDATE. See the article Contramandatum.

OUNTER-MARCH, in war, a change of the face, or wings, of a battalion; whereby the men, who were in the front, come to be in the rear.

This is an expedient they have recourſe to when the enemy attacks their rear; or when they change their march for a direction oppoſite to that wherein they had begun.

The *counter-march* is either made by files, or ranks: by files, when the men in the front of the battalion go into the rear; by ranks, when the wings, or flanks, of the battalion change ground with one another.

The term is alſo uſed, at ſea, for the like change or motion of a ſquadron of ſhips.

UNTER-MARK, a ſecond or third mark, put on any thing marked before.

The word is applied, in commerce, to the ſeveral marks put on a bale of goods belonging to ſeveral merchants; that it may not be opened but in the preſence of them all, or their agents.

In goldſmiths works, &c. the *counter-mark* is the mark, or punchion, of the hall, or company; to ſhew the metal is ſtandard, added to that of the artificer who made it.

Counter-mark of a horſe, is an artificial cavity, which the jockeys make in the teeth of horſes that have out-grown the natural mark; to diſguiſe their age, and make them appear as if they were not above eight years old.

Counter-mark of a medal is a mark added to a medal, a long me after its being ſtruck.

Counter-marks appear to be faults, or flaws, in medals, diſfiguring the ground, ſometimes on the ſide of the head, and ſometimes on the reverſe; particularly in the large and midle-ſized braſs: yet are they eſteemed as beauties among the urious, who ſet a particular value on ſuch medals, in regard hey know the ſeveral changes in value they have undergone; hich are expreſſed by thoſe *counter-marks*.

ntiquaries, however, are not well agreed about the ſignifica-on of the characters they find on them. On ſome, N. PROB. n others, N. CAPR. on others, CASR. RM. NT. AUG. C. Some have, for their *counter-mark*, an emperor's head; me ſeveral; ſome a cornucopia.

are muſt be taken, not to confound the monograms with the *unter-marks*: the method of diſtinguiſhing them is eaſy. he *counter-marks*, being ſtruck after the medal, are dented, ſunk in; whereas the monograms, being ſtruck at the ſame me with the medals, have rather a little relievo.

UNTER-MINE, in war, a ſubterraneous vault, running the whole length of a wall, three foot broad, and ſix deep, with ſeveral holes and apertures therein; contrived to prevent the effect of mines, in caſe the enemy ſhould make any to blow up the wall.

This kind of *counter-mine*, however, is now little in uſe. The modern *counter mine* is a well, or pit, and a gallery, ſunk on purpoſe, till it meet the enemy's mine, and prevent its effect: it being firſt pretty well known whereabouts that is.

COUNTER-MURE, Counter-Wall, a little wall built cloſe to another, to fortify and ſecure it, that it may not receive any damage from the buildings contiguous to it.

By the cuſtom of Paris, if a ſtable be erected againſt a partition-wall, there muſt be a *counter-wall* added, eight inches thick. M. Bullet obſerves, that the *counter-wall* ought never to be bound, or connected, with the proper wall.

Counter-Mure, in fortification. See Contra-Mure.

COUNTER-PALED, Contre-Pale, is when the eſcutcheon is divided into twelve pales parted per feſſe, the two colours being counter-charged; ſo that the upper are of one colour, or metal, and the lower of another.

COUNTER-PART, a part of ſomething oppoſite to another part.

Thus, in muſic, the baſs and treble are two *counter-parts*, or oppoſite parts.

Counter-Part, in law, is the duplicate, or copy, of any indenture, or deed.

COUNTER-PASSANT is when two lions are in a coat of arms, and one appears to be paſſing, or walking, quite the contrary way from the other. See Passant.

COUNTER-PLEA, in law, a replication to a plea, or prayer.

When a tenant by courteſy, in dower, or other real action, prays the view or aid of the king, or him in the reverſion, for his better defence; or if a ſtranger to the action begun deſire to be admitted, to ſay what he can for the ſafeguard of his eſtate: that which the demandant alleges againſt this requeſt, why it ſhould not be admitted, is called a *counter-plea*.

COUNTER-PLOT, a plot, or intrigue, contrived to thwart and overthrow another.

COUNTER-POINT, in muſic, the art of compoſing harmony; or of diſpoſing and concerting ſeveral parts ſo together, as that they make an agreeable whole.

Counter point is divided into *ſimple*, and *figurative*; agreeably to the diviſion of harmony, into the harmony of concords, and that of diſcords.

Counter-point took its name hence: when muſic in parts was firſt introduced, their harmony being ſo ſimple, they uſed no notes of different time, and marked their conſonances by *points* ſet *againſt* each other. Hence, in regard of the equality of the notes of time, the parts were made to concord in every note.

This afterwards became denominated *ſimple* and *plain counter-point*; to diſtinguiſh it from another kind, wherein notes of different value were uſed, and diſcords brought in betwixt the parts; which they call *figurative counter-point*.

Simple counter-point, or the harmony of concords, conſiſts of the imperfect, as well as the perfect concords; and may therefore be denominated *perfect*, or *imperfect*, according as the concords are, whereof it is compoſed: thus, the harmony ariſing from a conjunction of any note with its fifth and octave, is perfect; but with its third and ſixth, imperfect.

Now, to diſpoſe the concords, or the natural notes, and their octaves, in any key, in *ſimple counter-point*; obſerve, with regard to the diſtinction into perfect and imperfect harmony, this general rule; *viz.* to the key *f*, to the fourth *f*, and to the fifth *f*, a perfect harmony muſt be joined; to the ſecond *f*, the third *f*, and ſeventh *f*, an imperfect harmony is indiſpenſible; to the ſixth *f*, either an imperfect or perfect harmony.

In the compoſition of two parts, obſerve, that though a third appears only in the treble on the key *f*, the fourth *f*, and the fifth *f*; yet the perfect harmony of the fifth is always ſuppoſed, and muſt be ſupplied in the accompanyments of the thorough baſs to theſe fundamental notes.

More particularly, in the compoſition of two parts, the rules are, that the key *f* may either have its octave, its third, or its fifth; the fourth *f*, and fifth *f*, may have either their reſpective thirds or fifths; and the firſt may have its ſixth; as, to favour a contrary motion, the laſt may have its octave. The ſixth *f* may have either its third, its fifth, or its ſixth.—The ſecond *f*, third *f*, and ſeventh *f*, may have either their reſpective thirds or ſixths; and the laſt, on many occaſions, its falſe fifth: which rules hold the ſame both in flat and ſharp keys. For the rules of *counter-point*, with regard to the ſucceſſion of concords; it muſt be obſerved, That as much as can be in parts, may proceed by a contrary motion; *i. e.* the baſs may aſcend when the treble deſcends, and *vice verſa*. The parts moving either upwards or downwards the ſame way; two octaves, or two fifths, never to follow one another immediately. Two ſixths never to ſucceed each other immediately. Whenever the octave or fifth is to be made uſe of, the parts muſt proceed by a contrary motion, except the treble move into ſuch octave or fifth gradually. If, in a ſharp key, the baſs deſcend gradually from the fifth *f* to the fourth *f*; the laſt, in that caſe, muſt never have its proper harmony applied to it; but the notes that were harmony in the preceding fifth *f*, muſt be continued on the fourth *f*. Thirds and fifths may follow one another as often as one has a mind.

Figurative counter-point is of two kinds: in the one, diſcords are introduced occaſionally; ſerving only as tranſitions from concord to concord: in the other, the diſcord bears a chief part in the harmony.

For the *firſt*, nothing but concords are ever to be uſed on the accented parts of the meaſure: in the unaccented parts, diſcords may paſs tranſiently, without any offence to the ear. This the French call *ſuppoſition*; becauſe the tranſient diſcord always ſuppoſes a concord immediately following it: which is of infinite ſervice in muſic.

For the *ſecond*, wherein the diſcords are uſed as a ſolid and ſubſtantial part of the harmony; the diſcords that have place are the fifth when joined with the ſixth, to which it ſtands in the relation of a diſcord: the fourth when joined with a fifth; the ninth, which is in effect the ſecond; the ſeventh; and the ſecond and fourth.

Theſe diſcords are introduced into the harmony with due preparation; and are to be ſucceeded by concords: which is commonly called the *reſolution of a diſcord*.

The diſcord is prepared by firſt ſubſiſting in the harmony in quality of a concord; *i. e.* the ſame note which becomes the diſcord is firſt a concord to the baſe no teimmediately preceding that to which it is a diſcord. The diſcord is reſolved by being immediately ſucceeded by a concord deſcending from it by the diſtance only of ſecond *g*, or ſecond *l*.

As the diſcord makes a ſubſtantial part of the harmony, ſo it muſt always poſſeſs an accented part of the meaſure. Now to introduce the diſcords into harmony; it muſt be conſidered what concords may ſerve for their preparation and reſolution: the fifth, then, may be prepared, either by being an octave, ſixth, or third. It may be reſolved either into the ſixth or third. The fourth may be prepared in all the concords, and may be reſolved into the ſixth, third, or octave. The ninth may be prepared in all the concords except the octave; and may be reſolved into the ſixth, third, or octave. The ſeventh may be prepared in all the concords; and reſolved into the third, ſixth, or fifth. The ſecond and fourth are uſed very differently from the reſt; being prepared and reſolved into the baſs. See farther under Harmony, Concord, Discord, Key, Clef, and Modulation.

COUNTER-POINTED, by the French called *contre-pointé*, is when two chevrons in one eſcutcheon meet in the points; the one riſing, as uſual, from the baſe; and the other inverted, falling from the chief: ſo that they are *counter*, or oppoſite to one another in the points.

They may alſo be *counter-pointed* the other way; that is, when they are founded on the ſides of the ſhield, and the points meet that way; called *counter-pointed in feſſe*.

COUNTER-POISE, any thing ſerving to weigh againſt another; particularly a piece of metal, ordinarily of braſs or iron, making a part of the *ſtatera Romana*, or ſteelyard. See Steelyard.

It is contrived to ſlide along the beam; and from the diviſion in which it keeps the balance in equilibrio, the weight of the body is determined.

It is alſo, by ſome, called the *pear*, on account of its figure; and *maſs*, by reaſon of its weight.--Rope-dancers uſe a pole by way of *counter-poiſe*, to keep their bodies in equilibrio.

COUNTER-POISON, an antidote, or remedy, which prevents the effect of a poiſon.

Of this kind are venice treacle, mithridate, orvietan. &c.

Counter-poiſons are either *general*, or *ſpecific*: to the general kind belong angelica, carduus benedictus, the vincetoxicum, dittany, ſcorzonera, citrons, bezoar, hartſhorn, &c.

For ſpecifics, citron-bark is ſuppoſed a *counter-poiſon* to nux vomica; venice-treacle to the bite of a viper; oil of ſcorpion to the bite of ſcorpions; oil of pine-apples, to orpiment; gentian, to the cicuta, &c.

Vander Linden, in his treatiſe *de venenis*, ſays, that in every putrid indiſpoſition, whether ariſing from the bite of venomous beaſts, or from an alcali formed by putrefaction, vinegar drank is ſovereign, either ſimple or diſtilled; either with honey in form of oxymel, or with ſquills.

COUNTER-POTENT, or *potent counter-potent*, by the French heralds called *contre-potence*, is reckoned a fur, as well as vair and ermine; but compoſed of ſuch pieces as repreſent the tops of crutches, called in French *potences*, and in old Engliſh *potents*.

COUNTER-PROOF, in rolling-preſs printing, a print taken off from another freſh printed; which, by being paſſed thro' the preſs, gives the figure of the former, but inverted.

To *counter-prove*, is alſo to paſs a deſign in black lead, or red chalk, through the preſs, after having moiſtened with a ſponge, both that, and the paper on which the *counter-proof* is to be taken.

COUNTER-QUARTERED, by the French called *contre-eſcartelé*, denotes the eſcutcheon, after being quartered, to have each quarter divided again into two: ſo that there are in it eight quarters, or diviſions.

COUNTER-ROLL, a copy of the rolls relating to appea inqueſts, &c. See Roll.

COUNTER-ROUND, a body of officers going to viſit, an inſpect the rounds.

COUNTER-SALIENT, is when two beaſts are borne in coat of arms in a poſture of leaping from each other, direct the contrary way.

COUNTER-SCARP, in fortification, the exterior ſlope, or ac clivity of the ditch, looking towards the campagne.—See Ta *Fortification*, *fig*. 21. *lit*. *c c*.

Counter-scarp is alſo uſed for the covert-way, and the glacis *Counter-ſcarps* are ſometimes made of ſtone, and withou any ſlope.

To be lodged on the counter-ſcarp, is to be lodged on the covert way, or the glacis. See Covert-way.

Angle of the Counter-scarp. See Angle.

COUNTER-SIGNING, the ſigning an order, or patent of ſuperior, in quality of ſecretary; to render the thing mo authentic.

Charters, &c. are ſigned by the king, and *counter-ſigned* by ſecretary of ſtate, or lord chancellor.

COUNTER-SWALLOW-TAIL, an outwork, in form of ſingle tenaille, wider at the gorge, or next the place, than the head, or next the campagne.

COUNTER-TALLY, one of the two tallies whereon any thi is ſcored.

COUNTER-TENOR, is one of the mean or middle parts muſic; ſo called, as being oppoſite to the *tenor*.

COUNTER-TRENCH, in fortification, a trench made again the beſiegers, and which, of conſequence, has its parapet tur ed towards them.

There are uſually a great many communications between th and the place, to prevent the enemy from making any uſe it, in caſe they render themſelves maſters thereof.

COUNTER-TRIPPING, is when two beaſts are borne in coat of arms tripping, *i. e.* in a walking poſture, and the he of the one to the tail of the other.

COUNTER-VALLATION, a *counter*-line, or ditch, ma around a place beſieged; to prevent the ſallies and excurſio of the garriſon, when it is ſtrong.—Along its edge, on t ſide of the place, runs a parapet; and it is flanked from ſpa to ſpace.

COUNTER-VENTION. See the article Contraventio

COUNTER-WORKING, in the military art, the raiſing works, in order to oppoſe thoſe of the enemy.

COUNTING, or Compting-house. See Compting-hous

COUNTRY *wakes*. See the article Wakes.

COUNTY, originally ſignifies the territory of a *count*, or ear

But now it is uſed in the ſame ſenſe with *ſhire*; the one wo coming from the French, the other from the Saxon. S Shire.

In this view, a *county* is a circuit, or portion of the realm, in 52 of which, the whole land, England and Wales, is divide for the better government thereof, and more eaſy adminiſt tion of juſtice therein.

Theſe *counties* are ſubdivided into rapes, lathes, wapentak hundreds; and theſe again into tithings.

For the execution of the laws in the ſeveral *counties*, excep ing Cumberland, Weſtmorland, and Durham, every Micha mas term, officers are appointed, under the denomination *ſheriffs*.

This officer has a double function: firſt, *miniſterial*, to ex cute all proceſſes and precepts of the courts of law direc to him: and ſecondly, *judicial*; whereby he has authority hold two courts, the one called the *ſheriff's-turn*, the other *county-court*.

Other officers of the ſeveral *counties*, are, a *lord-lieutenant*, has the command of the militia of the *county*; *cuſtodes rotulor* *juſtices of peace*, *bailiffs*, *high conſtable*, and *coroner*. See far under Lord-Lieutenant, Militia, Custos *rotulor* Justice *of the peace*, *High* Constable, Bailiff, Coroner.

Of the 52 *counties*, there are four of ſpecial note, which are the fore termed *counties palatine*, as Lancaſter, Cheſter, Durh and Ely: Pembroke alſo, and Hexham, were antiently *cou* *palatine*; which laſt belonged to the archbiſhop of York, was ſtripped of its privilege in the reign of queen Elizab and reduced to be a part of the *county* of Northumberlan The chief governors of theſe *counties palatine*, heretofore, ſpecial charter from the king, ſent out all writs in their names; and, touching juſtice, did all things as abſolute the king himſelf in other *counties*; only acknowleging their ſuperior and governor. But in Henry VIII's time, ſaid power was much abridged.

County-Corporate, is a title given to ſeveral cities, or tient boroughs, on which the Engliſh monarchs have th fit to beſtow extraordinary privileges; annexing to th particular territory, land, or juriſdiction.

The chief of theſe is the famous city of London; with Y Canterbury, Briſtol, Cheſter, Norwich; the town of Kin upon Hull, Newcaſtle upon Tyne, and Haverford We Wales, &c. See City.

COUNTY-COURT, is a court of juſtice held in each *county* by the ſheriff thereof, or his deputy, every month. See SHERIFF.

This *county-court* had antiently the cognizance of matters of great moment; but it was much abridged by *magna charta*, and more 1 Edward IV. but it has ſtill the determination of debts and treſpaſſes under forty ſhillings.

In effect, till the courts at Weſtminſter were erected, the *county-courts* were the chief courts of the kingdom. See COURT.

Among the laws of king Edgar is this; *viz.* Let there be two *county-courts* in a year, and let there be preſent a biſhop, and an alderman, or earl; one whereof ſhall judge according to the common law, the other according to the eccleſiaſtical law.—The conjunction of theſe two powers to aſſiſt each other, is as antient as the Engliſh government itſelf.

They were firſt ſeparated by William the Conqueror, who brought all the eccleſiaſtical buſineſs into a conſiſtory, erected for that purpoſe; and the law buſineſs into the king's-bench.

Rier COUNTY. See the article RIER.

COUPED, COUPE', in heraldry, expreſſes a head, limb, or other thing in an eſcutcheon which is borne as if cut clear and even off, from the trunk; in oppoſition to its being forcibly torn off, which they call *eraſed*.

Thus, the arms of Ulſter, which all baronets carry, is a dexter-hand *couped*, or cut off at the wriſt.

COUPED, *coupée*, is alſo uſed to denote ſuch croſſes, bars, ends, chevrons, *&c.* as do not touch the ſides of the eſcutcheon, but are, as it were, cut off from them.

COUPEE*, a motion in dancing, wherein one leg is a little bent, and ſuſpended from the ground; and with the other a motion is made forwards.

* The word, in the original French, ſignifies a *cut*.

COUPLE *cloſe*, in heraldry, the fourth part of a chevron: never borne but in pairs, except a chevron be between, ſaith Guillim; though Bloom gives an inſtance to the contrary. See CHEVRON.

COUPLED *columns*. See the article COLUMN.

COUPLET*, a diviſion of an hymn, ode, ſong, or the like, wherein an equal number, or equal meaſure, of verſes is found in each part.

* The word is French, formed from the Latin *copula*.

In odes, theſe diviſions are more ordinarily called *ſtrophes*. See STROPHE.

By an abuſe, *couplet* is ſometimes uſed to ſignify a couple of verſes.

OURANT*, or CURRENT, a term uſed to expreſs the preſent time: thus, the year 1749. is the *courant* year; the fifteenth *courant*, the fifteenth day of the month now running.

* The term is French, and properly ſignifies *running*.

With regard to commerce, the *price courant* of any merchandize, is the known and ordinary price accuſtomed to be given for it.

OURANT is alſo uſed for any thing that has courſe, or is received, in commerce: in which ſenſe, we ſay, *courant*, or *current* coin, *&c.*

OURANT is alſo a term in muſic and dancing; being uſed to expreſs both the tune or air, and the dance.

With regard to the firſt, *courant*, or *currant*, is a piece of muſic in triple time: the air of the *courant* is ordinarily noted in triples of minims; the parts to be repeated twice.

It begins and ends, when he who beats the meaſure falls his hand; in contradiſtinction from the ſaraband, which ordinarily ends when the hand is raiſed.

With regard to dancing, the *courant* was long the moſt common of all the dances practiſed in England: it conſiſts, eſſentially, of a time, a ſtep, a balance, and a coupee; though it alſo admits of other motions.

Formerly they leaped their ſteps; in which point, the *courant* differed from the low dances and pavades. There are *ſimple courants*, and *figured courants*, all danced by two perſons.

OURIER, or CURRIER, a meſſenger ſent poſt, or expreſs, to carry diſpatches.

Antiquity, too, had its *couriers*; we meet with two kinds, *viz.* hoſe who ran on foot, called by the Greeks *hemerodromi*, q. d. *ouriers of a day*. Pliny, Corn. Nepos, and Cæſar, mention ome of theſe, who would run 20, 30, 36, and, in the circus, ven 40 leagues *per* day.—And *riding couriers*, *curſores equitanes*, who changed horſes, as the modern *couriers* do.

Xenophon attributes the firſt *couriers* to Cyrus. Herodotus ſays, hey were very ordinary among the Perſians, and that there was othing in the world more ſwift than theſe kind of meſſengers. 'That prince, ſays Xenophon, examined how far a horſe would go in a day; and built ſtables, at ſuch diſtances from each other, where he lodged horſes, and perſons to take care of them; and at each place kept a perſon always ready to take the packet, mount a freſh horſe, and forward it to the next ſtage: and this quite through his empire.'

ut it does not appear, that either the Greeks or Romans had y regular fixed *couriers*, till the time of Auguſtus: under that ince they travelled in cars; though it appears from Socrates, ey afterwards went on horſeback.

nder the weſtern empire, they were called *viatores*; and under at of Conſtantinople, *curſores*: whence the modern name.

RIERS *extraordinary*. } See { EXTRAORDINARY.
-COURIERS. } See { VAN-COURIERS.

COURSE, in navigation, the point of the compaſs, or horizon, on which a ſhip ſteers.

When a veſſel begins its *courſe*, the wind wherewith it is driven makes a certain angle with the meridian of the place; and, as it is here ſuppoſed, the veſſel follows exactly the direction of the wind; it makes the ſame angle with the meridian which the wind makes.

The wind is further ſuppoſed always the ſame; and becauſe each point, or inſtant of a *courſe*, may be regarded as the firſt; every moment of the *courſe* it makes the ſame angle with the wind.

Now a wind that is north-eaſt, *v. gr.* here (and by conſequence makes an angle of 45 degrees with our meridian), is north-eaſt where-ever it blows, and makes the ſame angle of 45 degrees with all the meridians it meets.

The *courſe* of a veſſel, therefore, driven by the ſame wind, makes the ſame angle with all the meridians on the ſurface of the globe.

If the veſſel run north and ſouth, it makes an angle infinitely ſmall with the meridian, *i. e.* is parallel to it, or never goes from it: if it run eaſt and weſt, it cuts all the meridians at right angles.

In the firſt caſe it deſcribes a great circle; in the ſecond, either a great circle, which is the equator, or a parallel. But if the *courſe* be between the two, it does not then deſcribe a circle; becauſe a circle drawn in ſuch a manner, would cut all the meridians at unequal angles. It deſcribes, therefore, a ſpiral, or curve, the eſſential condition whereof is, to cut all the meridians under the ſame angle; called the *loxodromic curve*, or *loxodromy*, popularly rhumb.

The ſhip's *courſe*, therefore, except in the two firſt caſes, is always a loxodromic curve; and the hypothenuſe of a rectangle-triangle, the two other ſides whereof, are the ſhip's way in latitude and longitude.

The latitude is uſually had by obſervation.

The rhumb, or angle of the *courſe*, is had by the compaſs, together with the one or other of the two ſides; and what remains to be calculated in ſailing, is the quantity of the longitude, and of the rhumb, or *courſe*.

Complement of the COURSE. See COMPLEMENT.

COURSE *of a river*. See the article RIVER.

COURSE, in architecture, denotes a continued range of ſtones, level, or of the ſame height, throughout the whole length of the building; and not interrupted by any aperture.—See *Tab. Architecture*, *fig.* 16. ſee alſo BUILDING, WALL, and MASONRY.

COURSE *of plinths*, is the continuity of a plinth of ſtone, or plaiſter, in the face of a building; to mark the ſeparation of the ſtories. See PLINTH.

COURSE, is alſo uſed for a collection, or body of laws, canons, or the like. See CORPUS.

The *civil courſe*, is the collection of Roman laws, compiled by order of Juſtinian. See CIVIL *law*.—*Canonical courſe*, is the collection of the canon law, made by Gratian.

COURSE, again, is uſed for the time ordinarily ſpent in learning the principles of a ſcience, or the uſual points and queſtions therein.—Thus, a ſtudent is ſaid to have finiſhed his *courſe* in the humanities, in philoſophy, *&c.*

COURSE is alſo uſed for the elements of an art exhibited and explained, either in writing, or by actual experiment.

Hence our *courſes* of philoſophy, anatomy, chymiſtry, mathematics, *&c.* probably ſo called, as going throughout, or running the whole length or *courſe* of the art, *&c.*

COURSE *of the moon*. } See the articles { MOON.
Paddock COURSE. } See the articles { PADDOCK.

COURT*, an appendage to a houſe, or habitation; conſiſting of a piece of ground incloſed with walls, but open upwards. See HOUSE.

* The word is formed from the French *cour*, and that from the Latin *cohors*; whence alſo *cortis*, and *curtis*, is ſometimes uſed for the ſame. In the laws of the Germans, there is one article, *de eo qui in curte regis furtum commiſerit*; and another, *de eo qui in curte ducis hominem occiderit*. Others derive *court* from the Gauliſh Cors, formed of *cohors*, and *cohors* from χορτος. See COHORT.

The court before a houſe is properly called the *fore-court*; that behind, the *back-court*; that where country affairs, *&c.* are managed, *i. e.* where cattle, *&c.* come, the *baſſe-court*.

COURT is alſo uſed for the palace, or place where a king, or ſovereign prince, reſides.

COURT, *curia*, in a law-ſenſe, is the place where the judges diſtribute juſtice, or exerciſe their juriſdiction.—Alſo the aſſembly of judges, jury, *&c.* in that place.

In this ſenſe, courts are divided into *ſovereign*, or *ſuperior*, and *ſubaltern*, or *inferior*: and, again, into *courts of record*, and *baſe courts*.—Crompton deſcribes 32 *courts* in England, moſt of them *courts of record*.

Again, *courts* are either ſuch as are held in the king's name; as all the ordinary *courts*, or thoſe held by his authority; where the precepts are iſſued in the judge's name, *virtute magiſtratus ſui*; as the admiral's *court*.

In England, we have four principal *courts* ſubſiſting; all eſtabliſhed by antient cuſtom of the realm, rather than by any ſtatute; tho' their eſtabliſhments have been from time to time ſince confirmed by acts of parliament. Theſe are, the *courts of king's bench*, the *common-bench*, or *pleas*, the *exchequer*, and the *court* *of chancery*. See each in its place, King's-Bench, Common-Pleas, Exchequer, and Chancery.

Court *of admiralty*, is a *court* for the deciſion of maritime controverſies. See Admiralty *Court*, and Admiral.

Court *of arches*. See the article Arches *Court*.

Court *of attachment*. } See { Attachment.
Court *of augmentation*. } See { Augmentation.

Court *of chivalry*, or the *marſhal's-court*; a *court* whereof the judges are the lord high conſtable, and the earl marſhal of England.

This *court* is the fountain of martial law; and the earl marſhal is not only one of the judges, but alſo to ſee execution done. See Chivalry.

Court *of delegates*, is a *court* where delegates or commiſſioners are appointed by the king's commiſſion, under the great ſeal, upon an appeal to him.

It is granted in three caſes; firſt, when a ſentence is given in an eccleſiaſtical cauſe, by the archbiſhop, or his official: ſecondly, when a ſentence is given in an eccleſiaſtical cauſe, in places exempt: thirdly, when ſentence is given in the admiralty court, in ſuits civil or marine, by order of the civil law.

Court *of faculties*. See the article Faculty.

Court *of the legate*, was a *court* obtained by cardinal Wolſey of pope Leo X. in the ninth year of Henry VIII. wherein he, as legate of the pope, had power to prove wills, and diſpenſe with offences againſt the ſpiritual laws, *&c.* It was but of ſhort continuance.

Court *of peculiars*, is a ſpiritual court, held in ſuch pariſhes as are exempt from the juriſdiction of the biſhops, and are peculiarly belonging to the archbiſhop of Canterbury.

Court *of pie-powders*. See Pie-Powders.

Court *of requeſts*, was a *court* of equity, of the ſame nature with the *court* of chancery, but inferior to it; being principally inſtituted for the help of ſuch petitioners, as, in conſcionable caſes, dealt by ſupplication to his majeſty.

Of this *court* the lord privy-ſeal was chief judge; aſſiſted by the maſters of requeſts. It had its beginning about 9 Hen. VII. according to Sir Julius Cæſar's tract on this ſubject.—Mich. 40 and 41 Eliz. in a *court* of common-pleas, it was adjudged, upon ſolemn argument, that this *court of requeſts*, or the *white-hall*, was no *court* that had the power of judicature, *&c.* Coke *Inſt.* fol. 97. It had aſſumed ſo great power to itſelf, that it grew burdenſome and grievous, and was therefore taken away, with ſome others, by a ſtatute made 16 and 17 Car. I. cap. 10.

Court *of verge*. See the article Verge.

Court *of wards, and liveries*. See Wards, and Masters.

Bouche of Court.	See the articles	Bouche.
Deſpight of the Court.		Departure.
Forejudged the Court.		Forejudged.
Inns of Court.		Inn.
Perquiſites of Court.		Perquisite.
Suit of Court.		Suit.
Ambulatory Court.		Ambulatory.
Baſe Court.		Base.
Biſhop's Court.		Bishop.
Chriſtian Court.		Christian.
County Court.		County.
Dutchy Court.		Dutchy.
Honour Court.		Honour.
Lawleſs Court.		Lawless.

Mayor's Courts.—To the lord mayor and city of London, belong ſeveral courts of judicature. The higheſt and moſt antient is that called *the huſtings*, deſtined to ſecure the laws, rights, franchiſes, and cuſtoms, of the city. The ſecond is a Court *of requeſt*, or *of conſcience*; ſo called, as meddling with nothing above forty ſhillings value; or rather, becauſe here the oath of the creditor himſelf is accepted.—The third is the Court *of the lord mayor and aldermen*, where alſo the ſheriffs ſit; to which may be added, two *courts of ſheriffs*; and the *court of the city orphans*, whereof the lord mayor and aldermen have the cuſtody.—Alſo, the Court *of common-council*, conſiſting of two houſes; the one for the lord mayor and aldermen, and the other for the commoners: in which *court* are made all by-laws, which bind the citizens.—Alſo the *chamberlain's* Court, where every thing relating to the rents and revenues of the city, as alſo the affairs of ſervants, *&c.* are tranſacted. Laſtly, to the lord mayor belong the *courts of coroner*, and of *eſcheator*; another *court* for the *conſervation of the river of* Thames; another of *gaol-delivery*, held uſually eight times a year, at the Old-Bailey, for the tryal of criminals, whereof the lord mayor is himſelf the chief judge.

There are other *courts* called *wardmotes*, or meetings of the wards; and *courts of halymote*, or aſſemblies of the ſeveral guilds and fraternities.

Prerogative Court. See the article Prerogative.

Sedentary Courts. } See the articles { Sedentary.
Wood-plea Court. } See the articles { Wood.

COURTS-BARON are courts that all lords of manors, who were antiently called *barons*, have within their reſpective precincts.

This *court* is twofold; 1°, *By cuſtom*: as, if a man having, a manor in a town, grant the inheritance of the copyholds thereto belonging to another; this grantee may keep a *court* for the cuſtomary tenants, and accept ſurrenders to the uſe of others, and make both admitances and grants.

2°, *By common law*. This is of freeholders, which is properly called a *court-baron*, wherein the freeholders are judges; whereas, of the other, the lord, or his ſteward, is judge.

COURT-DAYS are days when the courts of judicature are open, and pleas held.

COURT-LANDS, ſuch as the lord of the manor keeps in his own hands, for the uſe of his family, and for hoſpitality. See Manor.

COURT-LEET, a court belonging to a lord of a manor, in which all offences, under high-treaſon, are inquired into.

COURT-ROLL, a roll which contains an account of the number, *&c.* of lands, depending on the lord of the manor; with the names of the tenants, *&c.*

Tenants holding by copy of this roll, are denominated *copy-holders*. See Copy-holder, and Tenant.

COURTAIN. See the article Curtin.

COURTESY, or Curtesy *of England*, a tenure, whereby a man marrying an inheritrix, or a woman ſeiſed of lands in fee-ſimple, or fee-tail general, or ſeiſed as heir of tail-ſpecial, and getting a child by her which cometh alive into the world, tho' both wife and child die forthwith; yet, if ſhe were in poſſeſſion, he ſhall keep the land during his life, and be called *tenant by the courteſy of England*; this privilege being not allowed in any other country, except Scotland, where it is called *curialitas Scotiæ*.

This tenure was introduced by the conqueror, and borrowed by him from his own country, Normandy, where it obtained before, under the name of *veuveté*.

Arms of Courtesy. See the article Arms.

COURTIN, or Courtain, in fortification. See Curtin.

COURTISAN, a term of infamy, applied to women who expoſe their perſons, and make a trade of proſtitution.

Lais, the famous Theban *courtiſan*, ſtands on record for requiring no leſs than ten thouſand crowns for a ſingle night. Of all places in the world, Venice is that where *courtiſans* abound the moſt: it is now 250 years ſince the ſenate, which had expelled them, was obliged to recal them; to provide for the ſecurity of women of honour, and to keep the nobles employed, leſt they ſhould turn their heads to make innovations in the ſtate.

COUSIN *, a term of relation and kinſhip, applied to thoſe who are iſſued from two brothers, or two ſiſters.

* The word is ordinarily derived from *conſanguineus*; though Menage brings it from *congenius*, or *congeneus*, q. d. *ex eodem genere*.

In the firſt generation they are called *couſin germans*, i. e. next *couſins*—In the ſecond, *ſecond couſins*; in the third and fourth, *couſins in the third and fourth degrees*.

In the primitive times, it was allowed *couſin-germans* to marry, to prevent their making alliances in heathen families; but Theodoſius the Great prohibited it, under pain of death on pretence that they were, in ſome ſort, brothers and ſiſters with regard to each other.

Paternal Cousins are thoſe ſprung from relations on the father's ſide.—*Maternal*, thoſe on the mother's.

Quater Cousins. See the article Quater.

Cousin is alſo a title of honour, which kings beſtow on peers or nobles, foreign princes of the blood, cardinals, and the principal perſons of their ſtate.

COUSSINET, *cuſhion*, in architecture, the ſtone that crowns a piedroit, or pier; or that lies immediately over the capital of the impoſt.

Its under-ſide is level, and its upper curved; receiving the firſt riſe or ſpring of the arch, or vault.

Coussinet is alſo uſed for an ornament, in the Ionic capital between the abacus, and echinus, or quarter-round; and which ſerves to form the volutes.

It is thus denominated from its repreſenting a pillow, or cuſhion, preſſed by the weight over it, and bound with the ſtrap or girdle, called, by Vitruvius, *baltheus*.

COUSU, in heraldry, is uſed in the ſame ſenſe as *remply*; vi for a piece of another colour, or metal, placed on an ordinary as if it were ſewed on; which the word, in the French language, naturally implies.—By reaſon the additional piece is not properly on the field, but in the nature of a thing ſewed on, *adſutus*. This is generally of colour on colour, or metal on metal, contrary to the general rule of heraldry.

COUTHUTLAUCH (from the Saxon *couth*, knowing; and *utlaugh*, out-law); he that wittingly receives a man outlawed and cheriſhes or conceals him: for which offence he was, in antient time, ſubject to the ſame puniſhment with the outlaw himſelf. Bracton.

COUVERT, in heraldry, denotes ſomething like a piece of hanging, or a pavilion, falling over the top of a chief, or other ordinary; ſo as not to hide, but only be a ſhadow thereto.

COWARD, in heraldry. A lion borne, in an eſcutcheon, with his tail doubled, or turned in between his legs, is called a *coward*.

COWL, or Coul, *cuculla*, a ſort of hood, wore by cer monks. See Coul.

COWRING, in falconry, the quivering of young hawks, who ſhake their wings, in ſign of obedience to the old ones.

COXÆ *os*. See the article Coccygis.

Coxæ, Coxendicis, *oſſa*, and in Engliſh the *hip-bones*, called alſo *oſſa innominata*, are two large bones, ſituate on either ſide the os ſacrum.—See *Tab. Anatomy* (*Oſteol.*), *Fig.* 3. n. 16, 17, 18, 19.

In infants, each of theſe conſiſts of three diſtinct bones, ſeparated by cartilages; which, in adults, grow up, and conſtitute one firm, ſolid bone; whoſe parts, however, retain three diſtinct names, according to their former diviſion; *viz.* the *os ilium*, *os iſchium*, by ſome peculiarly called *os coxendicis*, and the *os pubis*.

oxæ *muſculus*, according to Dr. Drake, is a pair of muſcles ariſing fleſhy from the os iſchium, between the muſculi marſupialis, and pyriformis, and which, deſcending obliquely, terminate on each ſide the os coccygis, and adjoining part of the os ſacrum; ſerving to draw the os coccygis upwards and inwards, as antagoniſts to two ligaments ſpringing from the back part of the os ſacrum, and terminating in the external ſurface of the os coccygis.

RABS-EYES, *oculi cancrorum*, or *lapides cancrorum*, in natural hiſtory and medicine, are little, white, round ſtones, ordinarily flat; ſo called, though really taken out of the craw-fiſh, or river lobſter: and bearing no great reſemblance to eyes, though reſembling them more than any other part.—They are much uſed in medicine, as a powerful alcali, or abſorbent.

The moſt able naturaliſts long imagined them formed in the brain of the animal. Van Helmont firſt found them in the region of the ſtomach: M. Geoffroy the younger has obſerved the manner of their formation much more accurately.

According to him, we may lay down one claſs of animals, which have their bones without-ſide; whereas the reſt have them within-ſide: of the firſt kind are the fiſhes we are ſpeaking of.

Thoſe of the rivers diveſt themſelves every year, in June, of the bones wherewith they are covered and armed: a membrane, wherewith the inſide of thoſe ſcales is lined, takes their place, and hardens, by degrees, into a new ſhell.

Indeed, it is much leſs wonder an animal ſhould caſt its ſkin, or covering; than that it ſhould diſcharge itſelf of its ſtomach, as the craw-fiſh does; and even, as M. Geoffroy thinks, of its inteſtines too: the exterior membranes of thoſe viſcera taking the place thereof.

There is room to believe, that, as they putrify and diſſolve, they ſerve for food to the animal; during the time of the re-formation, the old ſtomach ſeems to be the firſt food the new one digeſts.

t is only in this time that the ſtones are found, called *crabs-eyes*: they begin to be formed when the antient ſtomach is deſtroyed; and are afterwards wrapped up in the new one, where they decreaſe by degrees till they diſappear intirely.

AFT, a ſea term, ſignifying all manner of lines, nets, hooks, and the like, which ſerve for fiſhing. See Fishing.

Hence, as thoſe who uſe the fiſhing-trade, uſe ſmall veſſels, ſuch as ketches, hoys, ſmacks, &c. they call ſuch little veſſels *ſmall craft*.

AMP*, a kind of numbneſs, or convulſion, occaſioned by a thick viſcid vapour entering the membranes of the muſcles, which contracts or extends the neck, arms, legs, &c. with violent, but tranſitory pain; being uſually driven off with friction alone.

* The word comes from the German *krampſe*, which ſignifies the ſame.

AMP-IRON*, a piece of iron, bent at each extreme, ſerving to bind together pieces of wood, ſtones, or other things.

* Some derive the word, by corruption, from the French *agrapon*, or the Italian *rampone*, which ſignify the ſame thing.

AMPONEE', in heraldry. A *croſs cramponee*, is that which at each end has a *cramp*, or ſquare piece coming from it.—Repreſented in *Tab. Heraldry*, *Fig.* 52.

AMPOONS, Crampons, pieces of iron, hooked at the ends; for the drawing or pulling up of timber, ſtones, &c.

ANAGE*, a liberty to uſe a *crane*, for drawing up wares out of a ſhip, or hoy, &c. at a wharf; and to make profit thereof.

* The word alſo ſignifies the money taken, or paid for the ſame.

NE, a machine uſed in building and commerce, for the raiſing large ſtones, and other weights.

Perrault, in his notes on Vitruvius, makes the *crane* the ſame with the corvus, or raven, of the antients.

The modern *crane* conſiſts of ſeveral members, or pieces, the principal whereof is a ſtrong perpendicular beam, or arbor, firmly fixed in the ground, and ſuſtained by eight arms, ariſing from the extremities of four pieces of wood laid acroſs, through the middle whereof the foot of the beam paſſes. About the middle of the arbor the arms meet, and are mortiſed into it: its top ends in an iron pivot, whereon is borne a tranſverſe piece, advancing out to a good diſtance in manner of a *crane*'s neck; whence the name. The middle and extremity of this are again ſuſtained by arms from the middle of the arbor: and over it comes a rope, or cable, to one end whereof the weight is fixed; the other is wound round the ſpindle of a wheel, which, turned, draws the rope, and that heaves up the weight; to be afterwards applied to any ſide or quarter, by the mobility of the tranſverſe piece on the pivot.

Crane is alſo a popular name for a ſiphon.

CRANE-LINES, in a ſhip, are lines going from the upper end of the ſprit-ſail-top-maſt, to the middle of the foreſtays; ſerving to keep the ſprit-ſail-top-maſt upright and ſteady.—See *Tab. Ship. Fig.* 1. 137.

CRANIUM *, in anatomy, an aſſemblage of ſeveral bones, which cover and incloſe the brain and cerebellum; popularly called the *ſkull*.—See *Tab. Anatomy* (*Oſteol.*), *Fig.* 1. and 2.

* The word comes from the Greek κρανιον, of κρανος, *galea*, helmet; in regard it ſerves to defend the brain, like a head-piece. Pezron again derives κρανιον from the Celtic *cren*, by reaſon of its roundneſs.

The *cranium* is divided into two tables, or laminæ, laid or applied over each other; between which is a thin ſpongious ſubſtance, made of bony fibres detached from each lamina, and full of little cells of different bigneſſes, called *diploe*, or *meditullium*.

The tables are hard and ſolid, the fibres being cloſe to one another; the diploe is ſoft, in regard the bony fibres are here at a greater diſtance: a contrivance whereby the ſkull is not only made lighter, but leſs liable to fractures.

The external lamina is ſmooth, and covered with the pericranium; the internal is likewiſe ſmooth, abating the furrows made by the pulſation of the arteries of the dura mater, ere the *cranium* be arrived at its conſiſtence.

It has ſeveral holes, thro' which it gives paſſage to the ſpinal marrow, nerves, arteries, and veins, for the conveyance and re-conveyance of the blood, &c. between the heart and the brain.

Its figure is round, which is an advantage to its capacity; but a little depreſſed, and longiſh; advancing out behind, and flatted on the two ſides which form the temples; which contributes to the enlargement of the ſight and hearing.

It is compoſed of eight bones, ſix whereof are *proper*, and two *common*:—the *proper* are, the bone of the forehead, *os frontis*, that of the back of the head, *os occipitis*, the two oſſa parietalia, and the two of the temples, *oſſa temporum*. See each in its place, Frontis, Occipitis, Temporis, &c.

Within the eminences of the bones of the temples is contained the organ of hearing, with the four little bones belonging thereto; *viz.* the malleolus, incus, ſtapes, and os orbiculare. See Ear.

The *common* bones of the *cranium* are the os ſphenoides, and ethmoides.

The *cranium* has three *common* ſutures, which divide it from the jaw: it has others *proper*, whereof there are three genuine, the coronalis, ſagittalis, and lambdoides; the reſt ſpurious, called *ſquammoſæ*, or *temporales*.

This diviſion of the *cranium* into pieces by ſutures is of good uſe, as it makes it leſs liable to break, gives paſſage to the membranes which ſuſtain the pericranium, and affords vent to the matter of inſenſible perſpiration. See Fracture.

CRANK, a contrivance in machines, in manner of an elbow, only of a ſquare form; projecting out from an axis, or ſpindle; and ſerving, by its rotation, to raiſe and fall the piſtons of engines for raiſing water, or the like.

Crank, in the ſea language.—A ſhip is ſaid to be *crank-ſided*, when ſhe cannot bear her ſails, or can bear but ſmall ſail for fear of overſetting.

She is ſaid to be *crank by the ground*, when her floor is ſo narrow, that ſhe cannot be brought on ground without danger.

CRAPE, a light tranſparent ſtuff, in manner of gauze; made of raw ſilk, gummed and twiſted on the mill; woven without croſſing, and much uſed in mourning.

Crapes are either *craped*, i. e. *criſped*, or *ſmooth*: the firſt *double*, expreſſing a cloſer mourning; the latter *ſingle*, uſed for that leſs deep.—Note, white is reſerved for young people, or thoſe devoted to virginity.

The ſilk deſtined for the firſt is more twiſted than that for the ſecond; it being the greater or leſs degree of twiſting, eſpecially of the warp, which produces the criſping given it when taken out of the loom, ſteeped in clear water, and rubbed with a piece of wax for the purpoſe.

Crapes are all dyed raw.—The invention of this ſtuff came originally from Bologna: but the chief manufacture hereof is ſaid to be at Lyons.

Hiſtory tells us, that S. Bathilda, queen of France, made a fine *crape*, *crepa*, of gold and ſilver, to lay over the body of S. Eloy. The Bollandiſts own they cannot find what this *crepa* was. Binet ſays, it was a frame to cover the body of the ſaint withal: but others, with reaſon, take it to be a tranſparent ſtuff, through which the body might be ſeen; and that this was the *crepa* whence our word *crape* was formed.

CRAPULA, a ſurfeit by over-eating and drinking. See Surfeit.

CRASIS * *of the blood*, denotes a due temperament or conſtitution of that humour; wherein the ſeveral principles, *viz.* ſalt and oil, whereof it is compoſed, are found in their juſt proportion and purity:—in contradiſtinction to *dyſcraſy*, which conſiſts in an improper mixture of the principles, or an unnatural ſtate of ſome of the ingredients thereof.

* The word is Greek, κρασις, ſignifying *mixture, temperament*.

The chief dyſcraſies the blood is ſuſceptible of, whence flow moſt of the diſeaſes of the body, are coagulation, diſſolution, oilineſs, ſizineſs, and ſaltneſs.

Crasis, in grammar, is a figure, whereby two different letters are either contracted into one long letter, or a diphthong.—Such, *e.g.* is οφις for οφιας; αληθη for αληθεα, &c. τυχȣς for τυχεος, &c. where ι and α are contracted into ι; ε and α into η; and ε and ο into ȣ.

CRASSAMENTUM, a term uſed by ſome anatomiſts, for the cruor of the blood; or that part which, upon ſtanding to cool, and ſeparate, forms the coagulum:—in oppoſition to the *ſerum*, or whey, wherein it ſwims.

Some authors have ſuppoſed the *craſſamentum* to be ſpecifically lighter than the ſerum; but Dr. Jurin ſhews the contrary from repeated experiments.

CRATER, *cup*, in aſtronomy, a conſtellation of the ſouthern hemiſphere; whoſe ſtars in Ptolemy's catalogue are 7; in Tycho's 8; in the Britannic catalogue 11. The order, names, longitudes, latitudes, &c. whereof are as follow.

Names and Situations of the Stars.	Signs.	Longitude.			Latitude. South.			Magn.
		°	′	″	°	′	″	
That in the foot	♍	19	26	3	22	42	47	4 3
Preced. of 3 in the middle of the cup		22	23	50	17	35	20	4
South. in the middle of the cup.		25	5	50	20	47	43	4
Preced. in the north part of the circumference of the mouth		21	55	59	13	28	28	4
Middle of 3 in the middle of the cup		24	56	16	19	39	22	4
5								
Subſ. in north. circumf. of the mouth		23	9	20	14	35	16	6
In the north handle		24	16	26	11	18	33	4
In the middle of the mouth		26	8	52	14	13	32	5
In the ſouth. circumf. of the mouth		29	45	50	18	17	29	4
In the ſouth. handle	♎	1	47	42	16	4	46	4
10								
	♎	3	58	41	17	52	59	5 6

Crater, in falconry, denotes a line on which hawks are faſtened when reclaimed.

CRAVEN, or **Cravent**, in our antient cuſtoms, a term of reproach uſed in trials by battle.

The law was, that the victory ſhould be proclaimed, and the vanquiſhed acknowlege his fault, in the preſence of the people; or pronounce the word *cravent* in the name of recreantice, or cowardice, &c. and, preſently, judgment to be given; and the recreant *amittere legem terræ*, i. e. become infamous.

Coke obſerves, that if the appellant join battle, and cry *craven*, he is to loſe *liberam legem*. If the appelled cry *craven*, he is to be hanged.

CRAYON, a general name for all coloured ſtones, earths, or other minerals, uſed in deſigning, or painting in paſtel; whether they have been beaten and reduced to a paſte, or are uſed in their primitive conſiſtence of a ſtone, after ſawing or cutting them into long narrow ſlips.

In this laſt manner are red *crayons* made, of blood-ſtone, or red chalk; black ones, of charcoal and black lead. *Crayons* of all other colours are compoſitions of earths reduced to paſte.

CREAM *, the thickeſt and fatteſt part of milk; being that whereof butter is made.

* The word is derived from the Latin *cremor*, which ſignifies the ſame thing; though in the lower Latin we find *crema lactis*.

Cream *of tartar*, **Cremor** *tartari*, in pharmacy, a preparation of tartar, otherwiſe called *cryſtal of tartar*.

It is made by boiling tartar in water till it be diſſolved, and paſſing the diſſolution through a ſtraining-bag: half the liquor being evaporated, the remainder is ſet in a cool place; where it ſhoots into cryſtals, part of it ſwimming a-top, in form of *cream*.—This latter is properly the *cream of tartar*, the reſt *cryſtal of tartar*: both are of the ſame nature and uſe.

Cream of tartar is reputed a great ſweetener of the blood; for which ſome take it in whey or water-gruel in the ſpring-time, to the quantity of half an ounce every morning, for three or four weeks.

Its operation is by ſtool; and, by its ſaline particles, pretty much alſo by urine.—It is generally mixed with lenitive electuaries, and other gentle cathartics, in nephritic and anti-venereal caſes, where it often proves ſerviceable.

CREASE-TYLES. See the article **Tyle**.

CREATION. *Epocha of the* **Creation.**	See the articles	**Genesis.** **Epocha.**

CREDENTIALS, letters of credit and recommendation; eſpecially ſuch as are given to embaſſadors, plenipotentiaries, &c. ſent to foreign courts.

CREDIBILITY, a quality in objects whereby they become fit to be believed. See **Faith**.

A thing is ſaid to be *credible*, which is not apparent of itſelf, nor is certainly to be inferred either from the cauſe or effect; and yet has the atteſtation of a truth.—Things which appear immediately true, as the whiteneſs of ſnow, or that the whole is equal to its parts, are not ſaid to be *credible*, but evident.—Thoſe to which we only give our aſſent in virtue of ſome competent authority, or teſtimony of others, are, by the ſchoolmen, ſaid to be *credible*; as Chriſt was incarnate, crucified, &c. In the *Philoſophical Tranſactions*, we have a mathematical computation of the *credibility* of human teſtimony.

CREDIT, in commerce, a mutual truſt or loan of merchandize or money, on the reputation of the probity and ſolvability of a dealer.

Letters of **Credit**, are thoſe given to perſons in whom a merchant, &c. can truſt, to take money of his correſpondent abroad, in caſe he happens to need it.

Credit is alſo uſed for the currency which papers, or bills, have in the public, and among dealers.

In this ſenſe, *credit* is ſaid to *riſe*, when in negotiating the ſhares of a company, they are received and ſold at prices above *par*, or the ſtandard of their firſt creation.

Diſcredit is oppoſed to *credit*, and is uſed where money, bills, &c. fall below *par*.

Credit was alſo antiently a right which lords had over their vaſſals; conſiſting in this, that during a certain time they might oblige them to lend them money.

In this ſenſe, the duke of Britanny had *credit* during fifteen days on his own ſubjects, and thoſe of the biſhop of Nantes; and the biſhop had the ſame *credit* or right among his ſubjects, and thoſe of that prince.

CREDITOR, a perſon to whom any ſum of money is due, either by obligation, promiſe, or otherwiſe.

The laws of the twelve tables, which were the foundation of the Roman juriſprudence, allowed the *creditor* to tear or cut his debtor to pieces, in caſe he proved inſolvent.

Creditor, in book-keeping. See **Book-keeping**.

CREED, **Credo**, a ſhort, or ſummary account of the chief articles of the Chriſtian faith; thus called from the firſt word thereof in Latin, *credo*, I believe. See **Symbol**.

CREEK, a part of a haven, where any thing is landed from the ſea. See **Harbour**.

So many landing-places as there are in a harbour or port, ſo many *creeks* there are. Crompt.

CREMASTERS *, in anatomy, an epithet given two muſcles, otherwiſe called *ſuſpenſores*; ſerving to raiſe, or draw up the teſticles. See *Tab. Anat. (myol.) Fig.* 2. n. 32.

* The word comes from the Greek κρεμαν (*ſuſpendere*) to ſuſpend, to hang.

CRENATED *leaves*, a term uſed by botaniſts, for ſuch leaves of plants as are jagged, or notched round their edges. The more accurate writers, indeed, diſtinguiſh between crenated and deritated; the former denoting ſuch *leaves* as are divided into obtuſe or rounded ſegments; the latter, ſuch as are divided into pointed ones of the number of dentated *leaves*, are thoſe of mint; of the number of the crenated, are thoſe of wood-betony.

CRENELLE' *, *embattled*, in heraldry, is when any honourable ordinary is dented, after the manner of battlements of a wall.

* The French word comes from *cren*, a notch, or interval; the Engliſh from its being a place of fighting, or battle. Upton, in Latin, calls this *imbatallatum*, a word forged from the Engliſh; but moſt others term it *pinnatum*, from *pinna*, a battlement.

The origin hereof is, doubtleſs, from the figures of ſuch walls being given to warriors, either for having been the firſt a mounting, or the chief in defending them.

CREPITATION, that noiſe, which ſome ſalts make over the fire in calcination; called alſo *detonation*.

CREPITUS *lupi*, in natural hiſtory, a kind of fungus, popularly called *puff-ball*.

Mr. Derham obſerves, that upon examining the powder thereof with a microſcope, he found the ſeeds to be ſo many exceeding ſmall puff-balls, with round heads, and long, ſharp-pointe ſtalks; as if made on purpoſe to prick into the ground. The ſeeds become hurtful to the eyes, probably by their ſha ſtalks pricking and wounding them.

CREPUSCULUM *, in aſtronomy, *twilight*; the time fro the firſt dawn or appearance of the morning, to the riſing the ſun; and again, between the ſetting of the ſun, and th laſt remains of day.

* Papias derives the word from *creperus*; which he ſays, tiently ſignified *uncertain, doubtful*, q. d. a *dubious light*.

The *crepuſculum* is uſually computed to begin and end wh the ſun is about 18 degrees below the horizon.—It is longer duration in the ſolſtices than in the equinoxes, lo in an oblique than in a right ſphere.

The *crepuſcula* are occaſioned by the ſun's rays refracted in o atmoſphere, and reflected from the particles thereof, to the e —For ſuppoſe an obſerver in O (*Tab. Aſtronomy, fig.* 41.), th ſenſible horizon A B, and the ſun under the horizon in H K and let the ray S E fall in the atmoſphere below the hor Since it paſſes out of a rarer into a thicker medium, it will refract refracted, and that towards the perpendicular, *i. e.* towards the ſemidiameter CE. It will not, therefore, proceed to T, but touching the earth in D, it will fall upon A, the eaſtern part of the ſenſible horizon: nor can any other ray beſides AD, of all thoſe refracted in E, arrive at A. But now, ſince the particles of the atmoſphere reflect the ſun's rays (ſee Reflection); and ſince the angle DAC is equal to CAO; the rays reflected in A will be carried to O, the place of the ſpectator; who will therefore ſee the particle A ſhining in the ſenſible horizon, and conſequently the beginning of the morning *crepuſculum.*

And in the ſame manner might be ſhewn the refraction and reflexion of the ſun's rays in the atmoſphere, in the evening *crepuſculum.*

Kepler, indeed, aſſigns another cauſe of the *crepuſculum*, viz. the luminous matter around the ſun; which, ariſing near the horizon, in a circular figure, exhibits the *crepuſculum*; in nowiſe, as he would ſhew, owing to the refraction of the atmoſphere.

The depth of the ſun below the horizon, at the beginning of the morning crepuſculum, *or end of the evening one*, is determined in the ſame manner as the arch of viſion; *viz.* by obſerving the moment wherein the air firſt begins to ſhine in the morning *crepuſculum*, and that wherein it ceaſes in the evening; and finding the ſun's place for that moment.

Alhazen found it 19 degrees; Tycho 17°; Rothmannus 24°; Stevenius 18°; Caſſini 15°; Ricciolus, in the equinox in the morning, 16°, in the evening 20° 30′; in the ſummer ſolſtice in the morning, 21° 25′; in the winter ſolſtice in the morning, 17° 25′.

Nor need we wonder at this difference among aſtronomers; the cauſe of the *crepuſculum* being inconſtant: for, if the exhalations in the atmoſphere be either more copious, or higher, than ordinary; the morning *crepuſculum* will begin ſooner, and the evening hold longer, than ordinary: for the more copious the exhalations are, the more rays will they reflect, conſequently the more will they ſhine; and the higher they are, the ſooner they will be illumined by the ſun. To this it may be added, that in a denſer air, the refraction is greater; and that not only the brightneſs of the atmoſphere is variable, but alſo its height from the earth.

Hence, when the difference between the ſun's declination and the depth of the equator is leſs than 18°, and does not, in effect, exceed 15°; the *crepuſculum* will continue the whole night.

The elevation of the pole PR (Fig. 42.), *and the ſun's declination* OS, *being given, to find the beginning of the morning* crepuſculum, *or end of the evening*, Since in the triangle PSZ the ſeveral ſides are given; *viz.* PZ the complement of the elevation of the pole PR, and PS the complement of the declination OS, and SZ the aggregate of the quadrant ZD, and the ſun's depth DS; find the angle ZPS, whoſe meaſure is the arch AO. See Triangle.

Convert AO into ſolar times: thus have you the time elapſed from the beginning of the morning *crepuſculum*, to noon. See Time.

To find the crepuſculum *by the artificial globe*; ſee Globe.

CRESCENT*, the new-moon, which, as it begins to recede from the ſun, ſhews a little rim of light, terminating in points, or horns, which are ſtill increaſing, till it become full, and round in the oppoſition.

The term is alſo uſed for the ſame figure of the moon in its wane, or decreaſe, but improperly: in regard the points or horns are then turned towards the weſt, whereas they look to the eaſt in the juſt *creſcent.*

Crescent, in heraldry, is a bearing in form of a half-moon.—The Ottomans bear ſinople, a *creſcent* montant, argent.

The *creſcent* is frequently uſed as a difference in coat-armour, to diſtinguiſh it for that of a ſecond brother, or junior family.

The figure of the *creſcent* is the Turkiſh ſymbol; or rather, it is that of the city Byzantium, which bore this device from all antiquity; as appears from medals ſtruck in honour of Auguſtus, Trajan, *&c.*

The *creſcent* is ſometimes *montant*, i. e. its points look towards the top of the chief, which is its moſt ordinary repreſentation: whence ſome contend, that the *creſcent*, abſolutely ſo called, implies that ſituation; though other authors blazon it *montant*, when the horns are towards the dexter-ſide of the eſcutcheon, when others call it *incroiſſant.*

Creſcents are ſaid to be *adoſſed*, when their backs or thickeſt parts are turned towards each other; their points looking to the ſides of the ſhield.

Creſcent inverted is that whoſe points look towards the bottom:—*turned creſcents* are placed like thoſe *adoſſed*; the difference is, that all their points look to the dexter-ſide of the ſhield:—*conturned creſcents*, on the contrary, look to the ſiniſter ſide:—*affronted or appointed creſcents* are contrary to the *adoſſed*, the points looking towards each other.

Crescent is alſo the name of a military order, inſtituted by Renatus of Anjou, king of Sicily, *&c.* in 1448. ſo called from the badge, or ſymbol thereof, a *creſcent* of gold enamelled.

What gave occaſion to this eſtabliſhment was, that Renatus took for his device a *creſcent*, with the word *loz*, *praiſe*; which, in the ſtyle of rebus, makes *loz in creſcent*, q. d. *by advancing in virtue, one merits praiſe.*

CREST, in armoury, the uppermoſt part of the defenſive armour of the head; riſing over the reſt, in manner of the comb or tuft of a cock; to ſuſtain the effort of very keen ſcimitars, *&c.* It has its name from *criſta*, cock's comb.—Hence, alſo,

Crest, in heraldry, denotes the uppermoſt part of an armoury; or that part riſing over the caſk, or helmet. See Cask.

Next to the mantle, ſays Guillim, the *creſt* or *cognizance* claims the higheſt place, being ſeated on the moſt eminent part of the helmet; yet ſo, as to admit an interpoſition of ſome eſcrol, wreath, chapeau, crown, *&c.*

The *creſt* of the arms of England is a lion paſſant gardant, crowned with an imperial crown; that of France, a flower-de-lys.

In the antient turnaments, the cavaliers had plumes of feathers, eſpecially thoſe of oſtriches and herons, for their *creſts*; theſe tufts they called *plumarts*; and were placed in tubes, on the tops of high caps, or bonnets.—Some had their *creſts* of leather; others of parchment, paſtboard, *&c.* painted or varniſhed, to keep out the weather; others of ſteel, wood, *&c.* on which were ſometimes repreſented a member or ordinary of the coat; as, an eagle, flower-de-lys, *&c.* but never any of thoſe called honourable ordinaries, as pale, feſſe, *&c.*—The *creſts* were changeable at pleaſure; being reputed no other than as an arbitrary device, or ornament.

Herodotus attributes the riſe of *creſts* to the Carians, who firſt bore feathers on their caſks, and painted figures on their bucklers; whence the Perſians called them *cocks.*

The oldeſt of the heathen gods are ſaid to have worn *creſts*, even before arms were made of iron and ſteel.—Jupiter Ammon bore a ram's head for his *creſt*; Mars that of a lion, or a tyger caſting out fire at his mouth and noſtrils. Alexander the Great wore for his *creſt* a ram's head, to inculcate that he was the ſon of Jupiter Ammon. Julius Cæſar ſometimes bore a ſtar, to denote that he was deſcended from Venus; and ſometimes the head of a bull, or an elephant with his trunk; and ſometimes the wolf that ſuckled Romulus and Remus.

The Chriſtians, in their firſt religious wars, were wont to wear a croſs darting forth rays, for their *creſts*, as well as on their ſhields and banners, as Prudentius informs us;

> ———*Clypeorum inſignia Chriſtus*
> *Scripſerat, ardebat ſummis crux addita criſtis.*

The antient warriors bore *creſts* to ſtrike terror in their enemies, as the ſight of the ſpoils of animals they had killed; or to give them the more formidable mien, by making them appear taller, *&c.*—Plutarch obſerves, that the *creſt* of Pyrrhus was a bunch of feathers, with a ſtag's horns; and Diodorus Siculus, that of the kings of Egypt, a lion's head, or bull's, or dragon's. The *creſts* have given riſe to ſeveral fables: the antients, *v. gr.* give Serapis the head of a ſpar-hawk; this being the *creſt* of that cavalier. Geryon they made a monſter with three heads, becauſe he bore a triple *creſt*; they feigned, that Proteus changed his form every moment, becauſe, being king of Egypt, he frequently changed his *creſt*; ſometimes bearing that of a lion, ſometimes of a dragon, *&c.*

The *creſt* is eſteemed a greater mark of nobility than the armoury, as being borne at turnaments; to which none were admitted, till they had given proof of their nobility. Sometimes it ſerves to diſtinguiſh the ſeveral branches of a family. It has alſo ſerved, on occaſion, as the diſtinguiſhing badge of factions.

Sometimes the *creſt* is taken from the device; but more uſually it is formed of ſome piece of the arms: thus, the emperor's *creſt* is an eagle; that of Caſtile a caſtle, *&c.*—Families that exchange arms, as have done the houſes of Brunſwick and Cologne, do not change their *creſts*; the firſt ſtill retain the horſe, and the latter the mermaid.

Crest, among carvers, an imagery, or carved work, to adorn the head, or top of any thing; like our modern corniche.

CREST-FALLEN is ſpoken of a horſe, when the upper part of the neck, on which the main grows, does not ſtand upright, but hangs either to one ſide or the other.

CRESTED *ſtalk.* See the article Stalk.

CREUX, a term in ſculpture, much uſed by the French; tho' not yet, that we know of, naturalized among us: but the want of a word of equal import in Engliſh, as it has frequently put us under a neceſſity of uſing this in the courſe of the preſent work; ſo it pleads ſtrongly for its admiſſion into our language.

Creux originally ſignifies a *hollow*, *cavity*, or *pit*, out of which ſomething has been ſcooped, or dug: hence it is uſed to denote that kind of ſculpture, and graving, where the lines and figures are cut, and formed within the face, or plane of the plate, or matter engraven on.

In which ſenſe, it ſtands oppoſed to *relievo*; where the lines and figures are imboſſed, and the prominent above the face of the matter.

CREW, the company of ſailors belonging to a ſhip, boat, or other veſſel.

The ſailors that are to work and manage a ſhip are regulated by the number of laſts it may carry; each laſt making two tun.

The *crew* of a Dutch ſhip, from 40 to 50 laſts, is ſeven ſailors and a ſwabber; from 50 to 60 laſts, the *crew* conſiſts of eight men and a ſwabber; and thus increaſes at the rate of one man for every 10 laſts; ſo that a ſhip of 100 laſts has 12 men, &c.—Engliſh and French *crews* are uſually ſtronger than Dutch; but always in about the ſame proportion.

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* The word is Latin, *creſcens*, formed from *creſco*, I grow, or increaſe.

In a ſhip of war there are ſeveral particular *crews*, or gangs, as the boatſwain's *crew*, the carpenter's *crew*, the gunner's *crew*, &c.

CRIBRATION, in pharmacy, *ſifting*; the act of ſeparating the finer parts of a medicine, whether dry or humid, from the groſſer; the latter by means of a pulping-ſieve, the former by a fine ſearce.

CRIBROSUM *os*, or *Os* CRIBRIFORME, in anatomy, a little bone at the top of the noſe, pierced like a ſieve, to let paſs ſeveral little fibres, ariſing from the mamillary productions, and terminating in the membrane that lines the cavity of the noſtrils: called alſo *os ethmoides*.

CRICOARYTÆNOIDÆUS, in anatomy, a name given two pair of muſcles, ſerving to open the larynx.

The *cricoarytænoidæi* are either *poſterior*, or *lateral*: the former are the firſt pair of openers of the larynx; the latter, the ſecond pair.

The *lateral* have their origin in the edge of the lateral and ſuperior part of the cartilage cricoides, and are inſerted into the lateral and ſuperior part of the arytænoides.

The *poſterior* have their origin in the poſterior and lower part of the cricoides: and hence, the reaſon and etymology of the name is evident.

CRICOIDES*, in anatomy, a cartilage of the larynx; ſo called, as being round, like a ring, and encompaſſing the whole larynx.

* The word is formed from κρικος, uſed by tranſpoſition for κιρκος, *circle*; and ειδος, *form*.

The *cricoides* is the ſecond cartilage of the larynx: it is narrow before, thick behind: and ſerves as a baſe to all the other cartilages; being, as it were, let into the thyroides.

It is by means of this, that the other cartilages are joined to the trachea; on which account it is immoveable.

CRICOTHYROIDÆUS, in anatomy, a name given to the firſt pair of muſcles proper to the larynx.

Their name is derived hence, that they have their origin in the lateral and anterior part of the *cricoides*; and are inſerted into the inferior part of the thyroides.—Their uſe is to dilate the ſcutiform cartilage.

CRIME*, a breach or tranſgreſſion of a law, or an action contrary to the purport of a law, either natural or divine, civil, or eccleſiaſtic; to which a penalty is annexed.

* The term *crime* includes in it the idea of a determination and deſign formed to do an injury: it is derived from the Latin *crimen*, of the Greek κρινω, *judico*, I judge.

The Romans diſtinguiſhed two kinds of *crimes*; viz. *private*, which only affected particular perſons; the proſecution whereof was not allowed by the laws to any but thoſe intereſted therein; as *adultery*, &c. and *public crimes*; the proſecution whereof was permitted to all perſons, though in no-wiſe immediately intereſted.

With us, *crimes* are diſtinguiſhed into *capital*; as *treaſon*, *murder*, *robberies*, &c. and *common*, as *perjuries*, &c.

They are again divided into crimes cognizable by the king's judges; as thoſe above mentioned: and ſuch as are only cognizable in the ſpiritual courts, as ſimple *fornication*, &c.

Quaſi CRIME. } See the articles { QUASI *crime*.
CRIMEN *falſi*. } { FALSI.

CRIMSON*, one of the ſeven red colours of the dyers.

* The word comes from the Arabic *kermiſi*, of *kermes*, red.—The Bollandiſts inſinuate, that *crimſon* comes from *Cremona*, and is uſed for *Cremonois*.

The ſtuffs to be dyed in *crimſon*, after they have been cleared of their ſoap, and ſtrongly alumed, are put in a decoction of cochineal, each according to its colour.

CRINONES, in medicine, a ſort of worms, ſometimes found under the ſkin, in children; reſembling ſhort thick hairs, or briſtles.

They are alſo called *dracunculi*, and *comedones*, from the Latin *comedere*, to eat; by reaſon they prey on the ſubſtance of the child, or conſume its nouriſhment. See DRACUNCULI.

CRISIS, in medicine, a change, or turn in acute diſeaſes; wherein the morbific matter is ſo altered, as determines the patient either for recovery or death.

The cauſe of ſuch change is owing to the remaining vital force's being irritated by the matter of the diſeaſe ſo or ſo conditioned; *i. e.* fit either to be evacuated, or tranſlated, or to kill.

If the matter be diſpoſed for evacuation or tranſlation, but is not ſalubrious, it produces a change called a *critical perturbation*, or *imperfect criſis*.

If the change become ſenſible, they are called *critical ſymptoms*, or *ſigns of a criſis*, either future or preſent. See SIGN.

The ſymptoms of the *criſis* are frequently confounded with thoſe ariſing from the cauſe of the diſeaſe, and the diſeaſe itſelf, or the matter of the diſeaſe; whence the moſt unhappy conſequences.

The differences between *critical* ſymptoms and morbific ones are, that the firſt proceed from the vital power's prevailing
over the force of the diſeaſe; but the latter from the diſea
prevailing over the vital faculty: that the firſt are prece
by a manifeſt concoction, but the latter are formed
in crudities: that the former happen about the critical ti
but the latter at all times of the diſeaſe, chiefly during
increaſe.

The principal ſymptoms of an approaching criſis are, after
geſtion, and about the critical time, a ſudden ſtupor, drow
neſs, waking, delirium, anxiety, dyſpnœa, grief, redneſ
tillation, pricking, heavineſs, darkneſs, light, ſpontane
tears, nauſea, heat, thirſt, trembling of the lower lip, &c

The ſymptoms and effects of a preſent criſis are, after the p
ceding ones, a vomiting, ſalivation, looſeneſs, thick ſedim
in the urine, bleeding at the noſe, hæmorrhoids, ſweat, a
ceſſes, puſtules, tumours, buboes, parules, aphthæ, &c.

CRISTA *galli*, in anatomy, an eminence in the middle of t
os ethmoides, advancing within the cavity of the cranium
and to which is faſtened that part of the dura mater whi
divides the brain, called *falx*.

It has its name from its figure, which reſembles that of
cock's comb.—In adults, this proceſs appears of a piece wi
the ſeptum narium.

CRISTÆ is alſo a term uſed by the ſurgeons for certain prete
natural excreſcences ariſing about the fundament, reſembli
cocks combs.

Theſe, M. Dionis ſays, are taken off either by ligatur
cauterization, or amputation. When they have other figure
they have other names, as ficus, &c.

CRISTA is alſo uſed for a crooked, twiſted, ſpiral eminence,
the middle of the ſpine of the omoplata.

CRITERIUM, or CRITERION, a rule or ſtandard, whereb
to compare propoſitions and opinions, in order to diſcov
their truth or falſhood.

The doctrine of *criteria*, and the characters and rules there
make the firſt part of the Epicurean philoſophy.

CRITHOMANCY*, a kind of divination, perform'd by con
ſidering the dough, or matter of the cakes offered in ſacrifice
and the meal ſtrewed over the victims to be killed.

* Hence, in regard they ordinarily uſed barley-meal in theſe c
remonies, this kind of divination was called *crithomancy*; fro
κριθη, *barley*, and μαντεια, *divination*.

CRITICAL *days**, *ſymptoms*, &c. are certain days, a
ſymptoms, uſually ariſing in the courſe of acute diſeaſes,
fevers, ſmall-pox, &c. which indicate the patient's ſta
and determine him either to recover, or grow worſe.

* The word comes from the Greek κρινω, *judico*, I judge.

The criſes have been frequently obſerved to happen on th
ſeventh, fourteenth, or twentieth day; whence thoſe a
denominated *critical days*.

For the theory of critical days, it may be obſerved, that the co
coction of any morbific matter, and the humour to be ſ
cerned, is nothing elſe but a change thereof into ſuch a d
magnitude, or ſmalneſs, as it may be carried by the circu
lating blood along the canals, and excerned by veſſels deſtine
for that purpoſe. But if the morbific matter cannot be re
duced to ſuch a magnitude or ſmalneſs as may correſpond t
the orifices of the ſecretory veſſels; then either an abſce
or an hæmorrhage will follow, if a criſis be begun; f
which reaſon, abſceſſes, &c. are accounted leſs perfect criſes
But, that the morbific matter may be reduced to a due mag-
nitude, or ſmalneſs, and its wiſhed-for diſcharge take place
there is required a conſiderable time, if the quantity of ma-
ter be large; that is, if the diſtemper be great and ſevere
and ſince there are a great many cauſes, and thoſe very con
ſtant, which may occaſion the blood, and offending humour
therein, to be of a different fluidity in the inhabitants o
different climates; it is impoſſible but that different ſpace
of time ſhould be required for the finiſhing concoction
which makes it impoſſible to determine the *critical* days i
one climate, from what they are found to be in another.

The cauſes of real *critical* days, that is, ſuch on which hap-
pens the laſt concoction of the morbific matter, which i
always attended with its expulſion, are all thoſe things which
occaſion the humours to become of ſuch a certain magnitude
or minuteneſs, and of a greater or leſſer coheſion; but wi
any given power, bodies unequally large, or unequally co-
hering, cannot be concocted in an equal time: wherefore i
is to be found by the obſervations made by all nations amon
themſelves, which are the uſual cauſes and conditions o
thoſe diſeaſes, which require a certain number of days to fini
ſuch a concoction in.

CRITICISM, the art of judging concerning diſcourſe an
writings. See JUDGMENT.

Some define *criticiſm*, more amply, the art of judging of a
hiſtory, or a work of genius, with the various incidents
there met with, their ſtyle, and authors.

On which footing M. le Clerc ſeems to have given a defective
idea of *criticiſm*, when he defines it ſimply the art of entering
into the meaning of antient authors, and of making a juſt di
cernment of their genuine works.

Philoſophical CRITICISM, or the art of judging of opinions an
hypotheſes in philoſophy.

We may diſtinguiſh divers ſorts, or branches, of this art: as, *ological* Criticism, the art of judging of explications of doctrines of faith, *&c.*

litical Criticism, the art of judging of the means of governing, acquiring, and preſerving ſtates.

But the ordinary uſe of the word is reſtrained to

terary Criticism: which, however, is of great extent, as it takes in the art of judging of facts: a branch of *criticiſm*, which regards not only hiſtory, but alſo the diſcernment of the real works of an author, the real author of a work, the genuine reading of a text, and the art of diſcovering ſuppoſititious monuments, charters, interpolated paſſages, *&c.*

The other parts of *literary criticiſm* are, the art of judging of works of genius, their excellencies and defects. We have alſo

rammatical Criticism, or the art of interpreting and diſcovering the words and meanings of an author.

Riticism *of antiques*, which conſiſts in diſtinguiſhing genuine medals, and the different taſte and ſpirit found among them, according to the different people, the different country, and the different times wherein they were ſtruck; the diſtinguiſhing between what is caſt, and what ſtruck; what has been retouched, and repaired or added, from what is really antique; the genuine from the ſpurious, *&c.* and to decypher and explain them, *&c.*

cred Criticism, in general, is that employed in eccleſiaſtical matters, the hiſtory of the church, the works of the fathers, councils, lives of the ſaints, *&c.* but more particularly what concerns the books of the holy ſcriptures, and the canon thereof.

Ariſtotle, if we believe Halicarnaſſeus, is the firſt inventor of the art of *criticiſm*. Ariſtarchus, Dionyſius Halicarnaſſeus himſelf, Varro, and Longinus, diſtinguiſhed themſelves therein in their days. Among the Chriſtians, Dionyſius Alexandrinus, Heſychius, Euſebius, S. Jerom, and Theodoret, were the grenteſt maſters in this art. The decree of pope Gelaſius about the apocryphal books, required a good ſhare of *criticiſm*.

But the critical art fell with the other arts; and lay unknown till the time of Charlemaign, when it was re-eſtabliſhed under him and his ſons.—The care which the religious Ciſtercians took to correct the manuſcripts of the bible, ſhew that the rules of *criticiſm* were not intirely unknown in the eleventh century.—The works of Johannes Sariſburienſis, Euſtathius, and Tzetzes, make it evident, it was cultivated in the twelfth.—The manuſcripts of the bible corrected by the Dominicans of Paris, and the doctors of the Sorbonne, in the thirteenth, ſhew it was ſubſiſting then.—In the following ages it was ſtill cultivated with more earneſtneſs; eſpecially in the ſixteenth and ſeventeen centuries, when all the world made it their ſtudy.

From the whole, it follows, that *criticiſm* does, indeed, ſuppoſe an uncommon ſtock of knowlege of the ſubject whereon it is employed: but that *criticiſm*, itſelf, is nothing elſe but good ſenſe perfected by grammar and logic.

ROCHES, among hunters, the little buds about the top of a deer's horns.

ROCI, among botaniſts, the apices, or ſmall knobs, on the tops of flowers.

ROCIA, a biſhop's or abbot's croſier, or paſtoral ſtaff. See Crosier.

ROCODILE, Crocodilus, in rhetoric, a captious and ſophiſtical kind of argumentation; contrived to ſeduce the unwary, and draw them ſpeciouſly into a ſnare.

It has its name, *crocodile*, from the following occaſion, invented by the poets.—A poor woman, begging a *crocodile* that had caught her ſon walking by the river-ſide, to ſpare and reſtore him; was anſwered, that he would reſtore him, provided ſhe ſhould give a true anſwer to a queſtion he ſhould propoſe: the queſtion was, *Will I reſtore thy ſon, or not?* to this the poor woman, ſuſpecting a deceit, ſorrowfully anſwered, *Thou wilt not:* and demanded to have him reſtored, becauſe ſhe had anſwered truly. Thou lyeſt, ſays the *crocodile*; for if I reſtore him, thou haſt not anſwered truly: I cannot therefore reſtore him, without making thy anſwer falſe. Under this head may be reduced the propoſitions called *mentientes*, or *inſolubiles*; which deſtroy themſelves. Such is that of the Cretan poet: *Omnes ad unum Cretenſes ſemper mentiuntur*: all the Cretans, to a man, always lye. Either, then, the poet lyes, when he aſſerts that the Cretans all lye; or the Cretans do not all lye.

ROCOMAGMA, in pharmacy, a name given by ſome to troches compoſed of ſaffron, myrrh, red roſes, ſtarch, and gum Arabic: thus called from the Gresk κροκος, *ſaſtron*, and μαγμα, a maſs of any thing.

ROCUS, a term uſed for ſaffron. See Saffron.

Rocus, in chymiſtry, is a name given to ſeveral different preparations; from their red, or ſaffron colour.—As

Rocus *martis*, a preparation of iron; which is of two kinds, *viz. crocus martis aperiens*, and *crocus martis aſtringens*.

Rocus *martis aperiens*, *opening ſaffron of mars*, is a preparation of iron plates, made by firſt waſhing them, then expoſing them to the dew, till they have contracted a ruſt; which ruſt is ſcraped off, and the plates expoſed for more.

Others prepare it by calcining iron filings with an equal weight of ſulphur—Others, by clapping a bar of iron, red, or rather white hot, between two rolls of brimſtone; in which caſe, the iron melts, and runs down into a veſſel of water below: which ſome call *mars cum ſulphure præparatus*. Others have other preparations.

M. Lemery endeavours to ſhew, that iron taken in ſubſtance, it much more ſalutary and efficacious than when thus prepared; the proceſs tending to ſtrip it of its oily part, wherein its chief virtue reſides; leaving nothing behind but the mere ferruginous earthy part.

Crocus *martis aſtringens*, *binding ſaffron of iron*, is a preparation of iron filings; wherein they are deprived of their more ſaline parts by waſhing them five or ſix times in ſtrong vinegar, and calcining them five or ſix hours.

Crocus *metallorum*, a kind of impure, opake, glaſs of antimony, of a liver colour; hence frequently called *liver of antimony*: it is made by firing equal parts of powder of antimony and ſalt-petre, well mixed in an iron mortar, covered with a tile. See Antimony. This is kindled by dropping in a coal of fire; upon which a great detonation enſues; and the mortar is ſtruck, to make the matter fall to the bottom.—The ſhining part is the *crocus*, or liver, which is to be ſeparated from the droſs, and reſerved for uſe. Its chief uſe is in making the vinum emeticum, or benedictum, by infuſing an ounce or two of the *crocus* powdered, in a quart of wine for 24 hours.

CROFT *, Croftum, a little cloſe adjoining to a dwelling-houſe, either for paſture or tillage.

In ſome antient deeds, *cruſta* occurs as the Latin word for a *croft*; but *cum toſtis & croſtis* is more frequent. *Croft* is tranſlated in Abbo Floriacenſis, by *prædium*, a *farm*.

CROISADE, Crusade, or Cruzado, a *holy war*, or an expedition againſt infidels and heretics; particularly againſt the Turks, for the recovery of Paleſtine.

People antiently flocked on theſe *croiſades* out of devotion; the popes bulls, and the preaching of the prieſts of thoſe days, making it appear a point of conſcience. Hence ſeveral orders of knighthood took their riſe.

Thoſe who meant to go on this errand, diſtinguiſhed themſelves by croſſes of different colours, worn on their cloaths; and were thence called *croiſes*: the Engliſh wore them white; the French, red; the Flemiſh, green; the Germans, black; and the Italians, yellow.

They reckon eight *croiſades* for the conqueſt of the Holy Land: the firſt undertaken in 1095. at the council of Clermont; the ſecond in 1144. under Louis VII. the third in 1188. by Henry II. of England, and Philip Auguſtus of France; the fourth in 1195. by pope Celeſtin III. and the emperor Henry VI. the fifth publiſhed in 1198. by order of Innocent III. wherein the French, Germans, and Venetians, engaged; the ſixth under the ſame pope, began tumultuarily, in 1213. and ended in the rout of the Chriſtians; the ſeventh reſolved at the council of Lyons in 1245. undertaken by S. Louis; the eighth, which was the ſecond of S. Louis, and the laſt of all, in 1268.

Is is ſaid, it was the Ciſtercian monks who firſt projected the *croiſades*; Philip Auguſtus ſolicited the execution thereof with the holy ſee; and Innocent III. raiſed the firſt ſtandard of the croſs. It was the council of Clermont who ordered that they who embarked herein ſhould bear the croſs in their banner; and that thoſe who entered themſelves into the ſervice, ſhould alſo wear it on their cloaths.

The abbot Juſtiniani makes an order of knighthood of the croiſes, who ſerved in the *croiſades*.

Towards the middle of the twelfth century, there was alſo a *croiſade* of the Saxons, againſt the pagans of the north; wherein the archbiſhop of Magdeburg, the biſhops of Halberſtadt, Munſter, Merſburgh, Brandenburgh, *&c.* with ſeveral lay-lords, embarked.—And towards the beginning of the ſame century, under the pontificate of Innocent, there was alſo a *croiſade* undertaken againſt the Albigenſes; who were become powerful in Languedoc, *&c.*

CROISES, or Croizes, in our antient cuſtoms, pilgrims bound for the Holy Land, or had already been there; ſo called from a badge which they wore on their garments, repreſenting a croſs. The word *croiſes* is alſo extended to the knights of S. John of Jeruſalem, created for the defence and protection of pilgrims; and all thoſe of the nobility, gentry, *&c.* who in the reigns of king Henry II. Richard I. Henry III. and Edward I. were *cruce ſignati*, *i. e.* dedicated themſelves to the wars, for the recovery of the Holy Land.

CROISIERS, Crucigeri, or *croſsbearers*, a religious order, or congregation of regular canons, ſo called.

There are three orders which have, or do ſtill bear this name: one in Italy; another in the Low-countries; and a third in Bohemia.

The firſt pretend to be derived from S. Clet; and add, that S. Quiriacus the Jew, who ſhewed S. Helena the place of the true croſs, and was afterwards converted, reformed them. All we know for certain, is, that they ſubſiſted in Italy before Alexander III. mounted the throne; for that pontiff, flying from Frederic Barbaroſſa, found an aſylum in the monaſteries of the *croi-*

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* *Poſſunt etiam dicti monachi de eiſdem mariſcis verſus occidentem jacentibus pro ſe, & hominibus ſuis, includere* croftos, *ſive pratum juxta pontem, ſpecialiter, quantum illis placuerit.* Ingulf.

ſiers, which he afterwards, in 1169. took under his protection, giving them the rule of S. Auguſtine, *&c.*

They were confirmed by Pius V. but the diſcipline being much relaxed, they were ſuppreſſed in 1656. by Alexander VII.

Matt. Paris ſays, that the *croſiers*, bearing ſtaffs with croſſes at the end, came into England in 1244. and preſented themſelves before a ſynod held by the biſhop of Rocheſter, demanding to be admitted.

Dodſworth and Dugdale mention two monaſteries of this order in England, the one at London, the other at Ryegate; the firſt founded in 1245. the latter in 1298. ſome add a third at Oxford, where they were received in 1349. M. Allemand ſays, there were fourteen monaſteries of *croſs-bearers* in England; adding, that they came from Italy; thoſe of the Low-countries diſowning them.

The *croſiers* of the Low-countries and France were founded in 1211. by Theodore de Celles ſon of Boſon, who having ſerved in a croiſade in Paleſtine, in 1188. and there found ſome of the *croiſiers* inſtituted by S. Clet; conceived a deſign of inſtituting another congregation in his own country. This is certain, that Theodore, in his return from Paleſtine, engaged himſelf in the eccleſiaſtical ſtate; and went in quality of miſſionary to the croiſade againſt the Albigenſes: and that at his return in 1211. the biſhop of Liege gave him the church of S. Thibault near Huy; where, with four companions, he laid the foundation of his order; which was confirmed by Innocent III. and Honorius III. Theodore ſent his religious to Tholouſe, to join thoſe of S. Dominic, and combat the Albigenſes; and the congregation multiplied in France.—The popes have endeavoured to bring the croiſiers of Italy under thoſe of Flanders.

The *croiſiers*, or *port-croix with a ſtar*, in Bohemia, derive their origin from S. Quiriacus, and ſay they came from Paleſtine into Europe, where they embraced the rule of S. Auguſtine, and built monaſteries. They add, that S. Agnes of Bohemia, to diſtinguiſh them from other *croiſiers*, obtained of Innocent IV. to add a ſtar to their habit. But the ſtory of S. Quiriacus has no foundation; and it was Agnes herſelf, daughter of Primiſlas king of Bohemia, who inſtituted the order at Prague, in 1234.—They are very numerous; and have, now, two generals.

CROISSANTE', in heraldry. *Croix croiſſanté* is a croſs creſcented; that is, having a creſcent, or half-moon, fixed on each end thereof.

CROOKED *tyles.* See the article TYLE.

CROSETTES, in architecture, the returns in the corners of chambranles, or door-caſes, or window-frames; called alſo *ears*, *elbows*, *ancones*, *prothyrides*, &c.

CROSIER, or CROZIER, *ſhepherd's crook*; a ſymbol of paſtoral authority, conſiſting of a gold or ſilver ſtaff, crooked a-top, carried occaſionally before biſhops and abbots, and held in the hand when they give ſolemn benedictions. See BISHOP, and ABBOT.

At one end it is crooked, at the other pointed; expreſſed in the verſe:—*Curva trahit mites, pars pungit acuta rebelles.*

The cuſtom of bearing a paſtoral ſtaff before biſhops is very antient, as appears from the life of S. Cæſarea of Arles, who lived about the year 500. Among the Greeks, none but the patriarchs had a right to the *croſier*.

The *croſiers* were at firſt no more than ſimple wooden ſtaves, in form of a T, uſed to reſt and lean upon: by degrees they were made longer; and at length arrived to the form we now ſee them of.

Regular abbots are allowed to officiate with a mitre and a *croſier*. See ABBOT, and MITRE.

CROSIER, in aſtronomy, four ſtars, in form of a croſs; by help whereof, thoſe who ſail in the ſouthern hemiſphere find the antarctic pole.

CROSS*, CRUX, a ſort of inſtrument, compoſed of two pieces of wood, traverſing and cutting each other, ordinarily at right angles.

* Pezron derives the word *crux* from the Celtic *croug*, and *croas*; though, perhaps, *croug* and *croas* might with as much juſtice be derived from *crux*.

The *croſs* was uſed among the antients, as a puniſhment for malefactors and ſlaves; and was planted at ſeveral places, *in terrorem*, as our gallows, *&c.*

Sozomen obſerves, that it was Conſtantine who by law firſt aboliſhed the puniſhment of the *croſs*; which had obtained among the Romans till his time.

As to crucifixion, or the manner wherein the *puniſhment of the croſs* was effected, the critics, both antient and modern, are exceedingly divided: the points in diſpute are, Whether the criminal was faſtened with three nails, or with four; whether the feet were immediately faſtened to the *croſs*, or whether they reſted on a little piece of wood, in manner of a ſtep, or reſt, called πηγμα; whether the *croſs* was planted in the earth before the perſon was nailed on, faſtening him afterwards by means of a ſcaffold raiſed of the height of the place where the feet were to be nailed; or whether he was nailed ere the *croſs* was raiſed or planted, as the painters repreſent it: or laſtly, whether the patient was faſtened quite naked, or covered: queſtions that have all been occaſioned by the *crucifixion* of Jeſus Chriſt.

Invention of the CROSS, *Inventio Crucis*, an antient feaſt, ſolemnized on the third of May, in memory of S. Helena's (the mother of Conſtantine) finding the true *croſs* of Chriſt deep in the ground on mount Calvary; where ſhe erected a church for the preſer vation of part of it: the reſt being brought to Rome, and repo ſited in the church of the *holy croſs* of Jeruſalem. See FEAST.

Theodoret mentions the finding of three *croſſes*, that of Jeſu Chriſt, and thoſe of the two thieves; and that they diſtinguiſh ed between them by means of a ſick woman, who was imme diately healed by touching the true *croſs*.

The place is ſaid to have been pointed out to her by S. Qui riacus, then a Jew, afterwards converted and canonized.

Exaltation of the CROSS, an antient feaſt, held on the fourteent of September, in memory of this, that Heraclius reſtored t mount Calvary the true *croſs*, which had been carried o fourteen years before, by Coſroes king of Perſia, upon hi taking Jeruſalem from the emperor Phocas.

CROSS-BEARER, *port-croix*, *cruciger*, in the Romiſh church the chaplain of an archbiſhop, or a primate, who bears a *cro* before him on ſolemn occaſions.

The pope has the *croſs* borne before him every-where; a pa triarch any-where out of Rome; and primates, metropolitan and thoſe who have a right to the pallium, throughout the reſpective juriſdictions.

Gregory XI. forbad all patriarchs and prelates to have it born in preſence of cardinals.—A prelate bears a *ſingle croſs*, a pa triarch a *double croſs*, and the pope a *triple* one on their arm

Order of the CROSS, or CROISADE, an order of ladies inſtitute in 1668. by the empreſs Eleonora de Gonzagua, wife of th emperor Leopold; on occaſion of the miraculous recovery a little golden *croſs*, wherein were incloſed two pieces of th *true croſs*; out of the aſhes of part of the palace.—It ſeem the fire had burnt the caſe wherein it was incloſed, and mel ed the cryſtal; yet the wood remained untouched.

CROSS, in botany, is uſed to expreſs the arrangement of the pe tala of certain flowers; called *plantæ flore cruciformi.* Se PLANT; and FLOWER.

The flowers are not to have either more or leſs than four pe tala; and their calyx only to conſiſt of four pieces. The piſt generally becomes a fruit called *ſiliqua.* See Supplement, artic CRUCIFORM FLOWERS.

CROSS, in heraldry, is defined by Guillim, an ordinary compoſed fourfold lines; whereof two are perpendicular, and the oth two tranſverſe; for ſo we muſt conceive of them, though the be not drawn throughout, but meet by couples, in four rig angles, near the feſs-point of the eſcutcheon. See ORDINAR

The content of a *croſs* is not always the ſame: for when it not charged, cantoned, nor accompanied, it has only the fif part of the field; but if it be charged, it muſt contain th third part thereof.

This bearing was firſt beſtowed on ſuch as had performed, at leaſt undertaken, ſome ſervice for Chriſt, and the Chriſti profeſſion; and is held, by divers, the moſt honourable char in all heraldry. What brought it into ſuch frequent uſe, w the antient expeditions into the Holy Land; and the holy w pilgrims, after their pilgrimage, taking the *croſs* for their co nizance; and the enſign of that war being the *croſs*.

In thoſe wars, ſays Mackenzy, the Scots carried St. Andrew *croſs*; the French a *croſs* argent; the Engliſh a *croſs* or; t Germans ſable; the Italians azure; the Spaniards gules.

St. George's *croſs*, or the *red croſs*, in a field argent, is no the ſtandard of England; that ſaint being the reputed patro of this nation.

Guillim enumerates thirty-nine different ſorts of *croſſes* uſed heraldry, the ſeveral names whereof here follow; the deſcri tions are to be looked for under their proper articles.—A *cro* voided, a *croſs* wavy-voided, a *croſs* patee fimbriated, a *cro* patee fitched on the foot, a *croſs* patee on three parts a fitched on the fourth, a *croſs* engrailed, a *croſs* patonee, a *cr* flory, a *croſs* patonee voided, a *croſs* avelane, a *croſs* patee lam beaux, a *croſs* furchee, a *croſs* croſlet, a *croſs* croſlet fitchee the point, a *croſs* bottonee, a *croſs* pommee, a *croſs* urdee, *croſs* degraded fitchee, a *croſs* potent, a *croſs* potent fitched, *croſs* calvary, a *croſs* croſlet ſet in degrees, a *croſs* patriarcha a *croſs* anchored, a *croſs* molinee, a *croſs* clechee, a *croſs* flor or fleurdeliſſee, a *croſs* double fitchee, a *croſs*, a-ſeize poin a *croſs* milrinee, a *croſs* raguled, a *croſs* pointed voided, a *cr* pall, a tau or S. Antony's *croſs*, a *croſs* voided and coupe a *croſs* coupe dpierced, a *croſs* molinee pierced lozenge-ways, *croſs* molinee quarter-pierced, a ſaltire, or S. Andrew's *cro* which will be diſtinctly ſpoken of under that denominatio and ſo all the other may be found more particularly deſcrib under the names of their ſeveral differences.

Colombiere makes ſeventy-two diſtinct ſorts of *croſſes*, of whi we ſhall only mention thoſe that differ from ſuch as have be mentioned above; as a Croix remply, which is only one *cr* charged with another; a *croſs* party, that is, one half of o colour, and the other of another; a *croſs* quartered, that is, opposite quarters of ſeveral colours; a *croſs* of five pieces, tha of ſo many colours; a *croſs* mouſſue, and abaiſee; a *croſs* barbe a *croſs* croiſſantee, or creſcented, that is, having a creſcent each end; a *croſs* forked of three points; a *croſs* pometee of th pieces; a *croſs* reſſercelee; a *croſs* pointed; a *croſs* ankered, a ſur-ankered; a *croſs* ankered with ſnakes heads; a *croſs* orled high *croſs*; a *croſs* rayonnant, or caſting out rays of glory; a *cr* of Malta; a *croſs* of the Holy Ghoſt; a *croſs* forked like the tient reſts for muſquets; a *croſs* with eight points; a *croſs* bourdonnee; a *croſs* cramponnee and tournee; a *croſs* cablee; a *croſs* inclining; a *croſs* pater noſtree, that is, made of beads; a *croſs* trefle; a *croſs* fleuronnee; a *croſs* vuidee, clechee, and pommetee; a *croſs* crenellee and baſtilee; a *croſs* with four ſteps to every arm; a *croſs* rounded; a *croſs* and an half; a *croſs* eſtoilee, or ſtarways; a *croſs* corded; a *croſs* doubled of ſix pieces ſet together; a double *croſs* ſplit in pale; a long *croſs* cut in pieces and diſmembered; a *croſs* couped or cut through in feſſe, of the two contrary colours to the field; a chevron ſurmounted by an half *croſs*; four tails of ermine in a *croſs*, the tops of the ermines oppoſite to each other in the middle; four pieces of vair placed *croſs-ways*, and counter-pointing in the centre; the *croſs* or ſword of S. James; *croſs* potence cramponnee on the dexter upper arm, and a potence about the middle of the ſhaft.

Theſe are the various *croſſes* we find in the aforeſaid authors; which ſome may think too many, as not being all uſed in England: but heraldry extends to all countries; and all terms uſed require to be explained.

Nor is it only in *croſſes* that the variety is ſo great; the like is found in many other bearings, and particularly in lions, and the parts of them; whereof the ſame Colombiere gives us no leſs than ninety-ſix varieties.—Leigh mentions but forty-ſix ſeveral *croſſes*; Sylvanus Morgan, twenty-ſix; Upton, thirty; Johannes de Bado Aureo, twelve; and ſo others, whom it is needleſs to mention.

Upton owns he dares not preſume to aſcertain all the various *croſſes* uſed in arms, for that they are at preſent almoſt innumerable: and therefore he only takes notice of ſuch as he had ſeen uſed in his own time.

Cross, in ſurveying, or, the *ſurveying* Cross, is an inſtrument conſiſting of a braſs circle, divided into four equal parts, by two lines cutting each other in the centre: at each extremity of either line is fixed a ſight, perpendicular over the lines; with holes below each ſlit, for the better diſcovery of diſtant objects. The *croſs* is mounted on a ſtaff, or ſtand, for uſe. Sometimes, inſtead of four ſights there are eight.—The *ſurveying croſs* is but little known or uſed among us; abroad it is of more account: The manner of applying it is as follows:

Suppoſe the field ABCDE (Tab. *Surveying*, fig. 24.) required to be ſurveyed: plant poles at all the angles; meaſure the line AC, and the perpendiculars let fall from the angles to the line: take down the dimenſions of each. Now, to find the point F, plant poles at pleaſure in the line A C, and the foot of the inſtrument in the ſame line, in ſuch manner, as that through two of the oppoſite ſights you may obſerve two of the ſtaves; and through the other two, the ſtaff E. If in this ſtation E be not viſible, remove the inſtrument backwards or forwards, till the lines A F, E F, make a right angle in F; by which means, the plot of the triangle A F E will be had. After the ſame manner is the point H found, where the perpendicular D H falls; whoſe length, together with that of H F, is meaſured, to have the plot of the trapezium E F H D.

Again, meaſure H C, making a right angle with H D, and the plot of the triangle D H C will be had. All that now remains, is to find the point G, where the perpendicular B G falls: which being found after the ſame manner as the reſt, we have the plot of the whole field A, B, C, D, E. The area whereof is had by adding the triangles and trapeziums together.

oss *multiplication*, a method of multiplying feet and inches, y feet and inches, or the like; ſo called, becauſe the members are multiplied *croſs-wiſe*. See the method under Multiplication.

oss, in dialling. See the article Dial.

oss *batteries*, in war. See Battery.

OSS-*grained ſtuff*, in joinery.—Wood is ſaid to be *croſs-grained*, when a bough or branch has ſhot out of it: for the ain of the branch, ſhooting forward, runs athwart that of e trunk.

n wood well grown this defect is ſcarce perceivable, except n working; but in deal-boards theſe boughs make knots.—If e bough grew up with the young trunk, inſtead of a knot is und a *curling in the ſtuff*; very ſenſible under the plane.

OSS-STAFF, a mathematical inſtrument, otherwiſe called the *re-ſtaff*. See its deſcription and uſe under Forestaff.

OSSELET, *little croſs*, a diminutive *croſs*, uſed in heraldry, here we frequently ſee the ſhield covered with *croſſelets*; o feſſes, or other honourable ordinaries, charged or accomnied with *croſſelets*.

roſſes themſelves frequently terminate in *croſſelets*: as in al. *Heraldry*, fig. 54.

OTALUM, an antient kind of caſtagnetta, or muſical inument found on medals, in the hands of the prieſts of ybele.

e *crotalum* differed from the *ſiſtrum*; though authors freently confound the two. It conſiſted of two little braſs ates, or rods, which were ſhaken in the hand, and in ſtriking ainſt each other made a noiſe:

was ſometimes alſo made of a reed ſplit lengthwiſe; one t whereof they ſtruck againſt the other: and as this made a noiſe ſomewhat like that of a crane's bill, they called that bird *crotaliſtria*, *player on crotala*.

An antient, in Pauſanias, ſays, that Hercules did not kill the birds of the lake Stymphalus, but that he drove them away by playing on *crotala*. On this footing, the *crotalum* muſt be exceedingly antient.

Clemens Alexandrinus attributes the invention to the Sicilians; and forbids the uſe thereof to the Chriſtians, becauſe of the indecent motions and geſtures that accompany it.

CROTAPHITES, a muſcle of the lower jaw, ſerving to draw it downwards.—Its fibres ſpring ſeverally from the bones of the forehead, the ſinciput, ſphenoides, and temporale; which meeting, and as it were centring under the os jugale, whence alſo this muſcle receives ſome fibres, proceed to the proceſſus corone, into which they are inſerted.

CROTCHET, in muſic, one of the notes, or characters of time marked thus ♩ equal to half a minim, and double a quaver.

It is not eaſy to conceive how this character comes by the name *crotchet*: the word is apparently borrowed from the French *crochet*, of *croc*, a crook or hook, uſed by them for what we call the *quaver*, or *half crotchet*; by reaſon of the additional ſtroke at bottom, which gives it an appearance of a crook.

A dot added to the *crotchet*, thus ♩ increaſes its time by half; that is, makes it equal to a *crotchet* and an half, or to three quavers.

Crotchet, in printing, denotes a ſort of line, ſometimes ſtrait, ſometimes waved, but always turned up at each extreme; ſerving to bind or link together ſeveral articles, that are to be read together, ere you proceed to the ſubdiviſions, placed aſide of them with ſimilar or ſmaller *crotchets*; much uſed in genealogies, analytical tables, &c. for facilitating the diviſion and ſubdiviſion of any ſubject.

Crotchets are alſo uſed for two oppoſite characters, ſerving to incloſe what we call a *parentheſis*, or any other part of a diſcourſe, to be diſtinguiſhed from the reſt of the work; ſometimes in this form [ ], and ſometimes in this ( ).

CROW, in the ſea-language, a machine with an iron hook, for faſtening hold, and grappling with the enemies veſſel, in an engagement.

The name *crow*, or *raven*, *corvus*, was antiently given to ſeveral machines of war, uſed in the defence of places: one invented by Diades; another by the Tyrians, mentioned by Q. Curtius; another by Cn. Ovilius.

Vitruvius calls the firſt the *demoliſhing crow*, *corvus demolitor*, and alſo *deprædator*: others call it the *crane*, *grus*.—Polybius deſcribes another invented by C. Duillius uſed againſt the Carthaginian fleet.

They were all a kind of grappling-hooks; ſerving to drag things towards the engineer—That deſcribed by Q. Curtius was thrown out of a baliſta.

Crow's-Bill, an inſtrument uſed by chirurgeons, in their operations; eſpecially for the drawing bullets and other foreign bodies out of wounds.—It has its name from its figure.

Crow's-Feet, in the military art, are irons with four points, each three or four inches long; ſo that which way ſoever they fall, one point will be uppermoſt.

Crow's-Feet, in a ſhip, are ſmall ropes, or lines, ſometimes ſix, eight, or ten, reeved through the dead man's eye; of little uſe further than to make a ſhew of ſmall rigging.

CROWN, *corona*, a mark of regal dignity; being an ornament worn on the head by kings and ſovereigns, as a ſymbol of their authority.

In the remoteſt antiquity, the *crown* was only given to gods: Pliny ſays, that Bacchus was the firſt who uſed it: Pherecydes, cited by Tertullian *de Corona*, ſays, Saturn: Diodorus aſcribes it to Jupiter, after his victory over the Titans. Q. Fabius Pictor attributes the invention to Janus; adding, that it was an ornament he uſed in ſacrificing: Leo the Egyptian ſays, it was Iſis who firſt wore a *crown*; and that it conſiſted of ears of corn, the uſe whereof ſhe firſt taught men.

In this, moſt authors agree, that the *crown*, originally, was rather a religious than a civil ornament; rather one of the pontificalia, than the regalia: that it only became common to kings, as the antient kings were prieſts as well as princes; and that the modern princes are intitled to it, in their eccleſiaſtical capacity rather than their temporal. See King, &c.

The firſt *crowns* were no more than a bandelet, or headband, drawn round the head, and tied behind; as we ſtill ſee it repreſented on medals, around the heads of Jupiter, the Ptolemies, and the kings of Syria.

Afterwards they conſiſted of two bandelets; by degrees they took branches of trees of divers kinds: at length they added flowers; inſomuch that Tertullian, *de corona*, aſſures us (from Claudius Saturninus, who had written expreſly on the ſubject) there was not any plant whereof *crowns* had not been made.

The woods and groves were ſearched, to find different *crowns* for the ſeveral deities: thus, on medals, we find Jupiter's *crown* of flowers, more frequently of laurel; Juno's of the vine;

that of Bacchus, the vine with grapes, vine-leaves, and branches of ivy, with flowers and berries: thoſe of Caſtor, Pollux, and the river-gods, of bulruſhes: that of Apollo, ſometimes of laurel, ſometimes of ruſhes; that of Saturn, new figs: that of Hercules, poplar; that of Pan, pine or alder; that of Lucina, dittany; that of the Horæ, the fruits proper to each ſeaſon; that of the Graces, olive-branches, as well as that of Minerva; that of Venus, roſes: of Ceres, ears of corn, as well as that of Iſis: that of the Lares, myrtle or roſmary, *&c.*

Crowns were not only uſed on the ſtatues and images of the gods, by the prieſts in ſacrificing, and by kings and emperors; but alſo on altars, temples, doors of houſes, ſacred veſſels, victims, ſhips, *&c.*

The agonothetæ *crowned* thoſe who were victors in the ſolemn games, warriors, *&c.*

From ſome paſſages in Euſebius Cæſarienſis, ſome authors conclude, that biſhops had likewiſe antiently their *crowns.*

The Roman emperors had four kinds of *crowns,* ſtill ſeen on medals, *viz.* a *crown* of laurel, a radiating *crown,* a *crown* adorned with pearls and precious ſtones; and the fourth a kind of bonnet, or cap, ſomething like the mortier.

The firſt was that ordinarily uſed from the time of Julius Cæſar: the right of bearing it was granted him by the ſenate; ſome ſay, on account of his baldneſs; and afterwards continued to his ſucceſſors. Juſtinian was the firſt who took that of the bonnet-kind. The *papal crown* is compoſed of a cap or tiara, and a triple *crown* encompaſſing it; having two pendants, like the biſhops mitres: theſe three *crowns* repreſent the pretended triple capacity of the pope, *viz.* as high-prieſt, ſupreme judge, and ſole legiſlator of the Chriſtians.

The *imperial crown* is a bonnet or tiara, with a ſemicircle of gold, ſupporting a globe, with a croſs a-top.

The *Engliſh crown* is adorned with four croſſes, in the manner of thoſe of Malta; between which are flower-de-luces. It is covered with four diadems, which meet at a little globe ſupporting a croſs.

The *French crown* is a circle of eight flower-de-luces, encompaſſed with ſix diadems, bearing a-top a double flower-de-luce, which is the creſt of France.

The *Spaniſh crown* is adorned with large indented leaves, covered with diadems; bordering on a globe, ſurmounted with a croſs. Among the Romans, there were various kinds of *crowns,* diſtributed as rewards of military atchievements.—The *oval crown* was the firſt, made of myrtle; and was beſtowed on generals who had been victorious over ſlaves or enemies unworthy of the Roman valour, and who were intitled to the honours of the leſſer triumph, called *ovation.*

The ſecond was the *naval* or *roſtral crown,* conſiſting of a circle of gold, raiſed with prows and poops of ſhips; given to the captain who firſt grappled, or the ſoldier who firſt jumped aboard, an enemy's ſhip.

The third called *vallaris,* or *caſtrenſis,* was alſo a circle of gold, raiſed with piles or paliſades; given him who firſt leaped into the enemy's camp, or forced the paliſades.

The fourth, called *mural crown,* was a circle of gold, indented or embattled; given him who firſt mounted the wall of a place beſieged, and there lodged a ſtandard: this *crown* we alſo find given, on medals, to the particular genii and guardians of provinces and places.

The fifth, the *civic crown*; made of a branch of green oak: given to him who had ſaved the life of a citizen in battle or aſſault.

The ſixth was the *triumphal crown,* made of branches of laurel, given to a general who had gained a battle, or conquered a province. This was afterwards made of gold.

The ſeventh the *corona obſidionalis,* or *graminea,* made of graſs or herbs found on the ground; given to generals who had delivered a Roman army beſieged by the enemy, and obliged him to decamp.

The eighth was alſo a *crown* of laurel, given by the Greeks to their athletæ; and by the Romans, to thoſe who had negotiated, or confirmed a peace with an enemy: this was the leaſt eſteemed. Beſides theſe, in antiquity, we meet with *radial crowns,* given to princes at their tranſlation among the gods; whether before or after their death.—Caſaubon ſays, this ſort of *crown* was peculiar to deities; yet it is certain Nero took it in his life-time.

Athletic crowns were deſtined to crown victors at the public games.

Father Daniel ſays, that S. Louis ranſomed the *crown* of thorns of our Saviour, which had been pawned by Baldwin, emperor of Conſtantinople, for an immenſe ſum of money; and tranſported it with great ceremony to France, where it is ſtill kept in the holy chapel. The author of the hiſtory of S. Louis adds, that the thorns were ſtill green in his days. Some writers, from Clemens Alexandrinus, hold that it was made of bramble, *ex rubo*; others of buckthorn, *ex rhamno*; others of white thorn. Thoſe who ſee it in the chapel, take it to be the juncus marinus. Galiot derives the word *corona,* whence *crown,* from the Latin *cornu,* horn; becauſe the antient *crowns* were pointed in manner of horns; which were antiently, both by Jews and Gentiles, eſteemed as marks of power, ſtrength, authority, and empire.—Hence, in the holy ſcripture, horns are uſed for the regal dignity: and accordingly, *horn* and *crown,* in the Hebrew, are expreſſed by the ſame word.

Ch. Paſchal has wrote expreſly *de coronis*: Baudelot in his hiſtory of Ptolemy Auletes has a good number of curious obſervations on the ſame ſubject, that had eſcaped Paſchal. Du Cange gives us a curious diſſertation on *crowns*; and Schmeizell, a German, a treatiſe of *royal crowns,* both antient and modern.

Royal CROWN. } See the articles { ROYAL.
Electoral CROWN. } See the articles { ELECTORAL.

CROWN, in an eccleſiaſtical ſenſe, is uſed for the clerical tonſure; which is the mark, or character, of the Romiſh eccleſiaſtics.

This is a little circle of hair, ſhaved off from the *crown* of the head; more or leſs broad, according to the quality of the orders received.—That of a mere clerk is the ſmalleſt; that of prieſts and monks the largeſt.

The *clerical crown,* was antiently a round liſt of hair, ſhaved off around the head, repreſenting a real *crown*: this is eaſily obſervable in ſeveral antient ſtatues, *&c.* The religious of S. Dominic and S. Francis ſtill retain it.

CROWN, in commerce, is a general name for coins both foreign and domeſtic, of or near the value of five ſhillings ſterling.

In its limited ſenſe, *crown* is only applicable to that popular Engliſh coin which bears the name, and which is equivalent to ſixty Engliſh pence, or five ſhillings; or to five livres 16 ſols French money.—But, in its extenſive ſenſe, it takes in ſeveral others; as the French ecu, which we call the French *crown,* ſtruck in 1641. for ſixty ſols, or three livres; alſo the patagon, dollar, ducatoon, rix-dollar, and piaſtre, or piece of eight.

CROWN, in architecture, denotes the uppermoſt member of the corniche; called alſo *corona,* and *larmier.* See CORONA, and LARMIER.

CROWN, in aſtronomy, is a name given to two conſtellations; the one called *ſeptentrionalis,* the other *meridionalis.*

CROWN, or CORONET, in heraldry, is uſed for the repreſentation of that ornament, in the mantling of an armoury; to expreſs the dignity of the perſon who bears it.

The *crown* here is of more antiquity even than the helmet; and was uſed as a ſymbol of victory and triumph.

Radiated, or *pointed* CROWNS, are thoſe of the antient emperors, which had twelve points; repreſenting, as ſome will have it, the twelve months of the year.

Pearled, or *flowered* CROWNS, thoſe with pearls, or leaves of ſmallage, parſley, *&c.* Such were antiently almoſt all *crowns,* even thoſe of ſovereign princes: though they were not uſed in their armouries, till about 200 years ago.

CROWN, in geometry, a plane ring included between two parallel or concentric peripheries, of unequal circles; generated by the motion of ſome part of a right line round a centre, the moving part not being contiguous to the centre.

The area of this is had, by multiplying its breadth by the length of the middle periphery: for a ſeries of terms in arithmetic progreſſion being $n \times \frac{\alpha + \omega}{2}$; that is, the ſum of the firſt and laſt multiplied by half the number of terms, the middle element muſt be $\frac{\alpha + \omega}{2}$; wherefore that, multiplied by the breadth or ſum of the two terms, will give the *crown.*

CROWN-OFFICE, a court or office under the king's-bench, called, becauſe the *crown* is more immediately concerned what is therein tranſacted.

Though none of the officers under the lord chief juſtice of the king's-bench are employed in ſummoning a parliament yet many of them have buſineſs in other matters, during the ſitting of the parliament: as, in caſes of error, *&c.* but mo eſpecially on tryals of peers; wherein the clerk of the crown chief manager. He has likewiſe, out of parliament, al dictments in the *crown,* informations, recognizances; and multitude of other buſineſs runs through his hands, as writings of all pleadings, declarations, and other proceedin upon records: but the executive part is left to his ſecondary deputy.

Clerk of the CROWN. } See the articles { CLERK.
Pleas of the CROWN. } See the articles { PLEA.
Officers of the CROWN. } See the articles { OFFICER.

CROWN-GLASS, denotes the fineſt ſort of window-glaſs. GLASS.

CROWN-GRAFTING. See the article ENGRAFTING.

CROWN-POST, in architecture, a poſt which in ſome bui ſtands upright in the middle, between two principal rafters; from which there go ſtruts or braces to the middle of each r It is otherwiſe called a *kings-piece,* or *joggle-piece.* See P

CROWN-WHEEL *of a watch,* is the upper wheel next the lance, or that which drives the balance. See WATCH.

CROWN-WORK, in fortification, an outwork running in field; deſigned to keep off the enemy, gain ſome hill, vantageous poſt, and cover the other works of the place. Tab. *Fortific.* fig. 21. lit. ll.

The *crown-work* conſiſts of two demi-baſtions at the ex and an intire baſtion in the middle, with curtins.

CROWNED *horn-work*, is a horn-work with a *crown-work* before it. See HORN-WORK.

CROWNING, in architecture, is underſtood, in the general, of any thing that terminates, or finiſhes a member or decoration.

Thus, a corniche, a pediment, a croteria, &c. are called *crownings*. Thus, alſo, the abacus is ſaid to *crown* the capital; and thus any member or moulding is ſaid to be *crowned*, when it has a fillet over it; and a niche is *crowned*, when it is covered with a capital.

CROUPADE, in the manage, a leap, higher than the corvet, wherein the fore and hind parts of the horſe keep an equal height; his legs being truſſed under his belly, without ſtretching them out, or ſhewing his ſhoes.

CROUPER, or CRUPPER. See CRUPPER.

CROZIERED *abbots*. See the article ABBOT.

CRUCIAL *inciſion*, in chirurgery, an inciſion, or cut into ſome fleſhy parts, in form of a croſs.

CRUCIBLE *, a little veſſel, ordinarily of earth, ſometimes of iron, without any handle; wherein chymiſts, coiners, goldſmiths, glaziers, and other artificers, uſe to melt and calcine gold, ſilver, or other metals whereon they work.

* The word is formed from the French *creuſet*, which ſignifies the ſame: Du Cange derives this further from *cruſelinum*; which in the lower Latin, ſignifies a little drinking veſſel.

Earthen *crucibles* are made of potters clay, with ſtone potſherds pounded and ſifted: they are of various ſizes, but generally of the ſame form, which reſembles that of an inverted cone, or pyramid. It is theſe are chiefly uſed in coinage, as being the only ones in which gold will melt kindly. Iron *crucibles* are in form of little buckets without handles, made of iron well forged and hammered: in theſe they melt ſilver, copper, &c.

There are earthen *crucibles* that hold from 800 to 24 or 2500 ounces; but thoſe ordinarily uſed are but of 800.

The iron ones are larger; ſome holding ten thouſand ounces: theſe are not taken off the furnaces when the plates are to be run, but the metal is laded out with an iron ladle. It is a rule never to put as much metal in the *crucible* as it will hold. See COINING.

The *crucibles* uſed by goldſmiths and founders, are like thoſe uſed in coinage: thoſe of chymiſts, &c. are of all ſizes, according to the quantity and quality of the metal to be put in them. See Supplement, article CRUCIBLE.

CRUCIFIX, a croſs, whereon the body of Jeſus Chriſt is faſtened in effigy; much uſed by the Romaniſts in their churches, and other places, to recognize the paſſion of Jeſus Chriſt, and direct their prayers to.

There are ſome chapters wherein Jeſus Chriſt is the firſt canon, and the income of the canonry goes to the ſubſiſtence of the *crucifix*.

CRUCIFIXION, an antient form of execution; by faſtening the criminal to an erected croſs. See CROSS.

CRUCIFORM *flowers*. See the article FLOWER.

CRUCIS *experimentum*. See the article EXPERIMENTUM.

CRUDE, ſomething that has not paſſed the fire, or has not had the degree of coction, *i. e.* of heat, requiſite to prepare it for eating, or ſome other uſe.

Crude, or raw ſilk, is that which has not been put in boiling water, to unwind it from off the cod; nor boiled in water and ſoap, to fit it for dying.

CRUDE *ſugar*. See the article SUGAR.

CRUDE *antimony*, is that which comes immediately from the mines, without any preparation, except once melting.

n medicine, CRUDE *humours* are thoſe which want of that preparation and elaboration which they ordinarily receive from a thorough digeſtion.

The retainers to the doctrine of trituration hold, that the *crudity* of the humours only conſiſts in this; that they are not broken and comminuted ſo much as they ſhould be by the ordinary action of the ſtomach.

RUDITY, ſometimes denotes that ſtate of a diſeaſe, wherein the morbific matter is of ſuch bulk, figure, coheſion, mobility, or inactivity, as creates or increaſes the diſeaſe. See DISEASE.

The *crudity* is diſcovered, 1°, From the diſeaſe's continuing its degree of ſtrength, or increaſing. 2°, From a continual increaſe of ſymptoms. 3°, From a diſorderly exerciſe of the functions. 4°, But chiefly from a fault in the quantity or quality of the humours; both thoſe ſtill circulating, and thoſe ſecreted; as of ſweat, tears, mucus of the noſe, ſaliva, ſputum, the bile, urine, ichor, pus, blood, menſes, lochia, milk, aphthæ, &c.

That ſtate of the diſeaſe, wherein the *crude* matter is changed, and rendered leſs peccant, and laudable, is called *digeſtion*, *concoction*, or *maturation*.

RUISE, from the German *kruiſs*, a-croſs, ſignifies to croſs to and fro, to ſail up and down for guard of the ſeas, &c.

RUOR, a term uſed by anatomiſts for the red globules of the blood; in contradiſtinction to the limpid or ſerous part.

Some authors, Dr. Keill and Dr. Woodward for inſtance, ſuppoſe theſe globules replete with an elaſtic aura, or air; and on this principle account for ſome of the phænomena of the animal œconomy; particularly muſcular motion, &c. But Dr. Jurin has overturned that ſuppoſition.

Vanhelmont uſes the word *cruor* for the blood in the veins; in contradiſtinction to the blood in the arteries, which he calls *ſanguis*.

CRUPPER *, is uſed by ſome for the hind part of a horſe, comprehended between the place of the ſaddle and the tail.

* The word is formed from the French *crouppe*, which ſignifies the ſame.

CRURA *clitoridis*, in anatomy. Between the corpora nervoſa of the clitoris, runs a ſeptum, or membranous partition, from the glans to its divarication at the os pubis; dividing the clitoris into two parts, called the *crura of the clitoris*.—See *Tab. Anatomy* (Splanch.), *fig.* 13. *lit. b b.*

Theſe are three times as long as the ordinary trunk of the clitoris itſelf.

CRURA *of the medulla oblongata*, are two of the four roots whence the medulla oblongata ſprings, in the brain.

The *crura* are the larger roots; the two ſmaller are called *pedunculi*.

CRURAL, in anatomy, an epithet given to the large artery and vein of the thigh.

The *crural* artery ariſes from the iliac artery; or rather, it is the iliac itſelf, under another name; being called *crural*, from the place of its entrance into the thigh. See *Tab. Anatomy* (Angeiol.), *fig.* 1. *n.* 69.

It conveys blood through all the part, by means of a great number of branches diſſeminated through its ſubſtance.

The *crural* vein is formed of ſix other veins, *viz.* the *great* and *little ſciatica*, the *muſculoſa*, the *poplitea*, the *ſural*, and the *ſaphena*.

CRURAL *nerves*. See the article NERVE.

CRURÆUS *, in anatomy, a muſcle ariſing from the fore-part of the thigh-bone, between the leſſer and great trochanter, and lying cloſe upon the bone, joins its tendon with three others, which all together make one broad tendon, that paſſes over the patella, and is inſerted into the little tuberoſity on the upper and fore-part of the tibia. Its uſe is to extend the leg. See *Tab. Anatomy* (Myol.), *fig.* 2. *n.* 40.

* It is called *cruræus*, as being faſtened to the thigh-bone in the ſame manner as the brachiæus to the arm.

CRUS, among anatomiſts, denotes all that part of the body which reaches from the buttocks to the toes; and is divided into thigh, leg, and foot. See each in its place, THIGH, &c.

CRUSCA, an Italian term, ſignifying *bran*, or what remains of meal after the flour has been ſifted out.—It is only in uſe among us to denote that celebrated academy called *della cruſca*, eſtabliſhed at Florence, for purifying and perfecting the Tuſcan language.

The academy took its name from its office, and the end propoſed by it; which is to refine the language, and, as it were, to ſeparate it from the bran. Accordingly, its device is a ſieve, and its motto, *Il piu bel fior ne coglie*; that is, *It gathers the fineſt flour thereof*.

In the hall or apartment where the academy meets, M. Monconis informs us, every thing bears alluſion to the name and device: the ſeats are in form of a baker's baſket; their backs like a ſhovel for moving of corn: the cuſhions of grey ſattin in form of ſacks, or wallets; and the branches where the lights are placed, likewiſe reſemble ſacks.

The vocabulary *della cruſca* is an excellent Italian dictionary, compoſed by this academy.

CRUSTA *villoſa*, in anatomy, the fourth tunic, or coat of the ſtomach.

On the inner ſurface of this coat, are ſeen innumerable villi, or fibrillæ, riſing every-where perpendicularly from it; which ſome will have to ſerve for nothing but a defenſative to the ſtomach, to preſerve it from acrimonious humours: but Dr. Drake rather takes them to be excretory ducts to the ſubjacent glands; which ſome authors would have to be that now exploded thing a parenchyma; but which are, indeed, the organs by which moſt of that humour which is diſcharged into the ſtomach, is ſeparated; and theſe villi the immediate chanels through which it is conveyed.

CRUSTACEOUS *fiſhes*, in natural hiſtory, are thoſe covered with ſhells conſiſting of ſeveral pieces, or ſcales; as thoſe of crabs, lobſters, &c.

Theſe are uſually ſofter than the ſhells of the teſtaceous kind, which conſiſt of a ſingle piece, and uſually much thicker and ſtronger than the former; ſuch as thoſe of the oyſter, ſcallop, cockle, &c. See Supplement, articles CRUSTACEOUS, and TESTACEOUS.

Dr. Woodward obſerves, in his natural hiſtory, that of all the ſhells found in beds of all the different matters dug out of the earth, there are ſcarce any of the *cruſtaceous* kind: the reaſon he gives for it is, that theſe being much lighter than the reſt, muſt have floated on the ſurface at the time of the deluge, when all the ſtrata were formed; and there have corrupted and periſhed.

CRUX *herrings*. See the article HERRING.

CRUZADO, or CROISADE, an expedition to the Holy Land. See CROISADE.

CRUZADO, in commerce, is a Portugueſe coin, ſtruck under Alphonſus V. about the year 1457. at the time when pope Calixtus ſent thither the bull for a croiſade, againſt the infidels. See COIN. It had its name from a croſs, which it bears on one ſide; the arms of Portugal being on the other. A *cruzade* is of the value of 40 French ſols, or upwards of 2*s.* 10*d.* ſterl. See SOL.

CRY. See the article Hue, Clamor, Haro, *&c.*

CRYPTA*, a ſubterraneous cell, or vault; eſpecially under a church, for the interment of particular families, or perſons. S. Ciampini, deſcribing the outſide of the Vatican, ſpeaks of the *cryptæ* of St. Andrew, St. Paul, *&c.*

* The word is formed of the Greek κρυπτω, *abſcondo*, I hide; whence κρυπτη, *crypta*.

Vitruvius uſes the word *crypta* for a part of a building, anſwering nearly to our cellar; Juvenal, for a *cloaca*.

Hence, **Crypto-Porticus**, a ſubterraneous place, arched, or vaulted; uſed as an under-work, or paſſage in old walls.—The ſame is alſo uſed for the decoration at the entry of a grotto.

Crypta is alſo uſed, by ſome of our antient writers, for a chapel, or oratory, under-ground.

CRYPTOGRAPHY*, the art of ſecret writing, or writing in cipher. See Cipher, and Deciphering.

* The word is compounded of κρυπτω, *I hide*; and γραφω, *I deſcribe*.

CRYSTAL*, in natural hiſtory, a kind of foſſil tranſparent ſtone, colourleſs, like a diamond, but much inferior thereto in luſtre and hardneſs; uſed for vaſes, urns, mirrors, *&c.*

* The word comes from the Greek κρυϛαλλος, *glacies*; formed of κρυος, *frigus*, and ϛελλω, *concreſco*; becauſe of its reſembling ice.

The antients were but little acquainted with the nature of *cryſtal*: Pliny ſpeaks of it as hardened petrified water, which was the popular opinion of thoſe days; but experience has ſhewn us the contrary: for by a chymical analyſis, inſtead of reſolving into water, it yields nothing but a calx, earth, and ſalts.

For the places where it is found, Pliny adds, that he has ſeen it dug from off the higheſt and rougheſt rocks of the Alps; whence, doubtleſs, its name of *rock-cryſtal*. It is ſometimes alſo found in brooks and rivers, but not formed there; only waſhed down thither from off the mountains by the violent rains.

Several mountains of Europe, and ſome of Aſia, produce *rock-cryſtal*. If we may believe the French relation of Madagaſcar, that iſland yields more than all the world beſide.

Its perfection conſiſts in its luſtre, and tranſparency; that with ſtraws, duſt, clouds, *&c.* is little valued. It is frequently found hexagonal; the edges inimitably fine and accurate.

It is cut, or engraved, in the ſame manner, with the ſame inſtruments, and by the ſame workmen, as diamonds.

Cryſtal is of ſome uſe in medicine, being reputed an aſtringent; and as ſuch is uſed in diarrhœas, and dyſenteries: it is alſo uſed to increaſe the milk of nurſes; and, further, is eſteemed a good antidote againſt arſenic.

The formation of **Crystal** is delivered by F. Franciſco Lana, in the *philoſophical tranſactions*, to this effect: ‘In the Val ‘Sabbia I obſerved a ſpacious round of a meadow, ſome parts ‘whereof were bare of all herbs; wherein, and no-where elſe ‘thereabout, *cryſtals* are generated: all ſexangular; both ‘points terminating in a pyramidal figure, likewiſe ſexangu‘lar. The country people told me, they were produced from ‘the dews; becauſe, forſooth, being gathered over-night, ‘there would others ariſe, only in a ſerene and dewy ſky. ‘But having obſerved that there was no mark of any mine ‘thereabout, I concluded them produced by the plenty of ‘nitrous ſteams, which at the ſame time might hinder the ‘vegetation in thoſe places, and coagulate the dew falling ‘thereon: for nitre is not only the natural coagulum of wa‘ter, as is manifeſt in artificial glaciations, but ever retains ‘the aboveſaid ſexangular figure; which, by the way, may ‘be the cauſe of the hexagonal figure of ſnow.—‘Since *cryſtals* are only found in certain narrow places, it ‘is probable, thence are raiſed the exhalations that concrete ‘the dew; after the ſame manner as the vapour or exhala‘tion of lead coagulates quickſilver.’

Rohault argues, that *cryſtal*, diamond, *&c.* muſt have been originally liquid, from their figure, which is ſuch as drops of water of the ſame ſize muſt neceſſarily aſſume; and ſuch as globules of meal or flour, heaped up and compreſſed by their own weight, might have: for as each *cryaſtl* is encompaſſed and cloſed round with ſix others; ſo it becomes modelled into a hexagonal body, conſiſting of equal and ſquare ſides.

Boerhaave takes *cryſtal* to be the proper matter, or baſis, of all gems, or precious ſtones, which aſſume this or that colour, *&c.* from the different admixture of mineral and metalline fumes, with the primitive *cryſtalline* matter. See Supplement, article Crystal.

Crystal is alſo uſed for a factitious body, caſt in the glaſs-houſes; called alſo *cryſtal-glaſs*.

It is, in effect, glaſs; but carried, in the melting, and in the matter whereof it is compoſed, to a degree of perfection beyond the common glaſs: though it come far ſhort of the whiteneſs and vivacity of the natural *cryſtal*.

The beſt artificial *cryſtals* are ſaid to be thoſe made at Moran, near Venice; called *Venice cryſtals*.

Crystals, in chymiſtry, expreſs ſalts, or other matters, ſhot, or congealed, in manner of *cryſtal*. See Crystallization.—Thus,

Crystal *of alum*, is alum purified, and reduced into *cryſtals*, in the ſame manner as tartar. In like manner are vitriol, nitre, and other ſalts, *cryſtallized*.

Cryſtals of alum are quadrangular, and brilliant, like diamonds; thoſe of nitre, white, and oblong; thoſe of vitriol, green, angular, and ſhining. See Salt.

Crystal, or *cream of tartar*, is tartar purified and diſſolved, and again coagulated in form of *cryſtals*.

To prepare it, they boil tartar in water, ſkim it, and ſtrain it; when cool, there are formed little white ſhining *cryſtals*, at the edges; as alſo a pellicle, or cream ſwimming a-top. The cream and *cryſtals* were antiently ſuppoſed to be different; but are now found the ſame thing.

Cryſtal of tartar is eſteemed purgative, and aperitive; proper in hydropical and aſthmatical caſes, and in intermitting fevers.

Crystal *of tartar chalybeated*, is when it is impregnated with the moſt diſſoluble parts of iron.

Crystal *of tartar emetic*, is when it is charged with the ſulphureous parts of antimony, to render it vomitive.

Crystal *mineral*, called alſo *mineral anodyne*, and *ſal prunella*, is ſalt-petre prepared with ſulphur; thus, put half a pound of ſalt-petre in a crucible, and ſet that in a furnace; and when the ſalt-petre is in fuſion, add, at ſeveral times, two drachms of flower of ſulphur. After the flame is over, invert the crucible into a braſs or copper baſon: and it is then ſal prunella, which being diſſolved again in water, and ſhot into *cryſtals*, becomes *cryſtal* mineral.

This is eſteemed good againſt the ſquinancy, whence its name of ſal prunella; *pruna*, or *prunella*, expreſſing that diſeaſe.

Crystals *of ſilver*, or *luna*, denote ſilver, penetrated and reduced into the form of ſalts, by the pointed acids of ſpirit of nitre.

It is uſed for making eſchars, by applying it to any part: it is alſo of uſe internally, in dropſies, and diſeaſes of the brain.

Crystals *of Mars*, called alſo *ſalt*, or *vitriol of Mars*; is iron reduced into a ſalt by an acid liquor; uſed in diſeaſes ariſing from obſtructions.

Crystals *of Venus*, called alſo *vitriol of Venus*, is copper reduced into the form of vitriol by ſpirit of nitre, very cauſtic, and uſed to eat off proud fleſh. See Vitriol.

Iſland **Crystal**, is a tranſparent fiſſile ſtone, brought from Iceland; ſoft, as talc; clear, as rock-*cryſtal*, and without colour; famous among optic writers for its unuſual refractions.

It bears a red heat without loſing its tranſparency; and, in a very intenſe heat, calcines without fuſion: ſteeped a day or two in water, it loſes its natural poliſh; rubbed on cloth it attracts ſtraws, *&c.* like amber. In effect, it appears a kind of talc; and is found in form of oblique parallelepipeds with ſix parallelogrammatic ſides, and eight ſolid angles.

The phænomena of this ſtone are very remarkable, and have been examined with great accuracy by M. Huygens, and Sir Iſaac Newton: 1°, Whereas in other pellucid bodies there is only one refraction, in this there are two; ſo that objects viewed through it appear double.

2°, Whereas in other tranſparent bodies, a ray falling perpendicularly on the ſurface, paſſes ſtrait through, without ſuffering any refraction; and an oblique ray is always divided: in *iſland cryſtal*, every ray, whether perpendicular or oblique, becomes divided into two, by means of the double refraction. One of theſe refractions is, according to the ordinary rule, the ſine of incidence out of air into *cryſtal*, being to the ſine of refraction as five to three; but the other is perfectly new. The like double refraction is alſo obſerved in *cryſtal of the rock*, though much leſs ſenſibly.

When an incident ray is thus divided, and each moiety arrives at the farther ſurface; that, refracted in the firſt ſurface after the uſual manner, is refracted intirely after the uſual manner at the ſecond; and that refracted in the unuſual manner in the firſt, is intirely refracted after the like manner in the ſecond: ſo that each emerges out of the ſecond ſurface, parallel to the firſt incident ray. Again, if two pieces of this *cryſtal* be placed over each other, ſo as the ſurfaces of the one be parallel to the correſponding ones of the other; the rays refracted in the uſual manner in the firſt ſurface of the firſt, are refracted after the uſual manner in all the other ſurfaces: and the ſame uniformity appears in the rays refracted after the unuſual manner; and this in any inclination of the ſurfaces; provided their planes of perpendicular refraction be parallel.

From theſe phænomena, Sir Iſaac Newton gathers, that there is an original difference in the rays of light; by means whereof ſome are, here, conſtantly refracted after the uſual manner; and others in the unuſual manner.

Were not the difference original, and did it ariſe from any new modifications impreſſed on the rays at their firſt refraction, it would be altered by new modifications in the three following ones; whereas, in fact, it ſuffers no alteration at all.

Again, he hence takes occaſion to ſuſpect, that the rays of light have ſeveral ſides, endued with ſeveral original properties: for it appears from the circumſtances, that theſe are not two ſorts of rays differing in their nature from each other, one conſtantly, and in all poſitions, refracted in the uſual, and the other in the unuſual manner; the difference in the experiment mentioned, being only in the poſition of the ſides of the rays, to the plane of perpendicular refraction. For one and the ſame ray is refracted ſometimes after the uſual, and ſometimes after the unuſual manner,

ner, according to the poſition of its ſides to the *cryſtal:* the refraction being alike in both, when the ſides of the rays are poſited the ſame way to both, but different when different.

Every ray, therefore, may be conſidered as having four ſides, or quarters; two of which, oppoſite to each other, diſpoſe the ray to be refracted after the unuſual manner; and the other two in the uſual. Theſe diſpoſitions, being in the rays before their incidence on the ſecond, third, and fourth ſurfaces; and ſuffering no alterations, for what appears, in their paſſage through them; muſt be original and connate. See Supplement, articles ISLAND CRYSTAL, and PARALLELOPIPEDIUM.

CRYSTALLI, among phyſicians, denote puſtules diſperſed all over the body, white and tranſparent, and of the bigneſs of a lupine: much the ſame with what are otherwiſe called *phlyctanæ*.

CRYSTALLINE *humour* is a thick, compact humour of the eye, in form of a flattiſh convex lens, ſituate in the middle of the eye; ſerving to make that refraction of the rays of light, neceſſary to have them meet in the retina, and form an image thereon, whereby viſion may be performed.

The *cryſtalline* is ſet in the anterior part of the vitreous humour, like a diamond in its collet; and is retained there by a membrane which ſurrounds it; and which, for that reaſon, is called the *capſula of the cryſtalline*.—This membrane is ſometimes alſo called *cryſtalloides*; and by others, on account of its fineneſs, which reſembles that of a ſpider's web, *arachnoides*.

It is the configuration of the *cryſtalline* that occaſions perſons to be either *myopes*, or *presbytæ*; *i. e.* to be either long, or ſhort-ſighted.

The *cryſtalline* being of two conſiſtences; outwardly, like a jelly; but, toward the center, as hard as ſalt: hence, ſome authors think, that its figure may be varied; which variation they ſuppoſe to be effected by the ligamentum ciliare. Hence, Dr. Grew, and others, aſcribe to the ciliary ligament a power of making the *cryſtalline* more convex, as well as of moving it to or from the retina: accordingly, by the laws of optics, ſomething of this kind is abſolutely neceſſary to diſtinct viſion: for, as the rays from diſtant objects diverge leſs than thoſe from nigh ones; either the *cryſtalline humour* muſt be capable of being made more convex, or more flat; or elſe there muſt be an elongation of the eye, or of the diſtance between that and the retina.

The *cryſtalline humour*, when dried, appears to conſiſt of a vaſt number of thin, ſpherical laminæ, or ſcales, lying over one another: Leewenhoeck reckons, there may be 2000 of them in one *cryſtalline*; each of theſe, he ſays, he has diſcovered to conſiſt of a ſingle fibre, or fine thread, wound up in a ſtupendous manner, this way and that, ſo as to run ſeveral courſes, and meet in as many centers; and yet not interſere nor croſs in any place. *Philoſ. Tranſ.* N° 165. and 293.

The *cryſtalline* is the ſubject of the diſeaſe called a *cataract*, as well as of the operation of *couching*. See EYE.

CRYSTALLINE *heavens*, in the old aſtronomy, two orbs imagined between the primum mobile and the firmament, in the Ptolemaic ſyſtem, where the heavens were ſuppoſed ſolid, and only ſuſceptible of a ſingle motion.

King Alphonſus of Arragon is ſaid to have introduced the *cryſtallines*, to explain what they called the *motion of trepidation*, or *titubation*.

The firſt *cryſtalline*, according to Regiomontanus, *&c.* ſerves to account for the ſlow motion of the fixed ſtars; which makes them advance a degree in 70 years, according to the order of the ſigns, *viz.* from weſt to eaſt; which occaſions the preceſſion of the equinox.

The ſecond ſerves to account for the motion of libration, or trepidation; whereby the celeſtial ſphere librates from one pole towards another, occaſioning a difference in the ſun's greateſt declination.

But the moderns account for theſe motions, in a much more natural and eaſy manner.

RYSTALLINE *arſenic*. See the article ARSENIC.

RYSTALLIZATION, in chymiſtry, a kind of congelation befalling ſalts, both eſſential, fixed, and volatile; when, being ſet free from the greateſt part of their humidity, they are left to harden, dry, and ſhoot into cryſtals.

The ordinary method of *cryſtallization* is performed by diſſolving the ſaline body in water, filtering it, and letting it evaporate, till a film appears at the top; and, laſtly, letting it ſtand to ſhoot.

This ſhooting is accounted for, on Sir Iſaac Newton's principles, from that attractive force which is in all bodies, and particularly in ſalt, by reaſon of its ſolidity; whereby, when the menſtruum, or fluid, in which ſuch particles float, is ſated enough, or evaporated (which brings it to the ſame), ſo that the ſaline particles are within each other's attractive powers, and can draw one another more than they are drawn by the fluid, they will run into *cryſtals*.

This is peculiar to ſalts; that, let them be ever ſo much divided, and reduced into minute particles; yet, when they are formed into *cryſtals*, they each of them re-aſſume their proper figures: ſo that one might as eaſily diveſt and deprive them of their ſaltneſs, as of their figure. See SALT.

This being an immutable and perpetual law, by knowing the figure of the *cryſtals*, we may underſtand what the texture of the particles ought to be, which can form thoſe *cryſtals*: and, on the other hand, by knowing the texture of the particles, may be determined the figures of the *cryſtals*.

For, ſince the figures of the moſt ſimple parts remain always the ſame; it is evident, that the figures they run into, when compounded and united, muſt be uniform, and conſtant: and ſince the force of attraction may be ſtronger on one ſide of a particle, than on another; there will conſtantly be a greater accretion of ſalts upon thoſe ſides which attract more ſtrongly: from which it may eaſily be demonſtrated, that the figure of the leaſt particles is intirely different from that which appears in the *cryſtal*. See Supplement, article CRYSTAL.

CRYSTALLOIDES, the cryſtalline coat of the eye; a fine membrane, immediately encompaſſing, and containing the cryſtalline humour; and ſuppoſed to ſerve, by conſtringing or dilating that humour, to vary the place of its focus.

Anatomiſts are divided about the reality of ſuch tunic, which is alſo, from its fine texture, called *aranea tunica*, or *arachnoides*.

CRYSTALLOMANCY*, the art of divining, or foretelling, future events, by means of a mirror; wherein the things required are repreſented.

* It is alſo called *catoptromancy*—The firſt from κρυςαλλος, congealed water, or cryſtal; and the ſecond from κατοπτρον, mirror; and μαντεια, divination.

CUBATURE, or CUBATION, of a ſolid; the meaſuring of the ſpace comprehended in a ſolid; as a cone, pyramid, cylinder, *&c.* or finding the ſolid content thereof.

The *cubature* regards the content of a ſolid, as the quadrature does the ſuperficies of a figure: ſo that the *cubature* of the ſphere turns on the ſame thing as the quadrature of the circle.

CUBE*, in geometry, a regular or ſolid body, conſiſting of ſix ſquare and equal faces, or ſides; and its angles all right, and therefore equal.

* The word comes from the Greek κυβος, *teſſera*, dye.

The *cube* is alſo called *hexaedron*, becauſe of its ſix ſides.

The *cube* is ſuppoſed to be generated by the motion of a ſquare plane, along a line equal to one of its ſides, and at right angles thereto: whence it follows, that the planes of all ſections, parallel to the baſe, are ſquares equal thereto; and, conſequently, to one another.

To deſcribe a rete, or net, whence any given cube *may be conſtructed, or wherewith it may be covered.* On the right line AB (*Tab. Geometry, fig.* 49.), ſet off the ſide of the *cube*, four times; on A erect a perpendicular, AC, equal to the ſide of the *cube* AI, and compleat the parallelogram ACDB: with the interval of the ſide of the *cube*, in the line CD, determine the points K, M, and O; laſtly, draw the right lines IK, LM, NO, and BD; produce IK and LM, each way to E and F, and to G and H; till $EI = IK = KF$, and $GL = LM = MH$, and draw the right lines EG, FH.

To determine the ſurface and ſolidity of a cube. As the ſurface of a *cube* conſiſts of ſix equal ſquares, a ſide multiplied by itſelf, and the product by ſix, will give the ſuperficies; and the ſame product, again, multiplied by the ſide, the ſolidity.

Hence, if the ſide of a *cube* be 10, the ſolidity will be 1000; if that be 12, this will be 1728: wherefore, the geometrical perch being 10 foot, and the geometrical foot 10 digits, *&c.* the *cubic* perch is 1000 *cubic* foot, and a *cubic* foot 1000 *cubic* digits, *&c.*

Hence, alſo, *cubes* are in the triplicate ratio of their ſides; and are equal, if their ſides be ſo.

Duplication of a CUBE.	See the articles	DUPLICATION.
Scenography of a CUBE.		SCENOGRAPHY.

CUBE, or **CUBIC** *number*, in arithmetic, is a number ariſing from the multiplication of a ſquare number by its root.

Thus, if the ſquare number four be multiplied by its root two; the factum eight is a *cube*, or *cubic number*; and the number two, with reſpect thereto, a *cube root*.

Hence, ſince, as unity is to the root, ſo is the root to the ſquare; and as unity is to the root, ſo is the ſquare to the *cube*: the root will, alſo, be to the ſquare, as the ſquare to the *cube*: that is, unity, the root, the ſquare, and the *cube*, are in continual proportion; and the *cube root* is the firſt of two numbers that are mean proportionals between unity and the *cube*.

For the compoſition of CUBIC *numbers*. Every *cubic* number of a binomial root is compoſed of the *cubic* numbers of the two parts of the factum of thrice the ſquare of the firſt part into the ſecond, and of the factum of thrice the ſquare of the ſecond part into the firſt.

Demonſt. For a *cubic* number is produced by multiplying the ſquare by the root: but the ſquare of a binomial root is compoſed of the ſquares of the parts, and double the factum of one part into the other.

Wherefore, the *cubic* number is compoſed of the *cube* of the firſt part, of the triple factum of the ſquare of the firſt part into the ſecond, and of the triple factum of the ſquare of the ſecond part into the firſt.

An ocular demonſtration of this we have in the following example, where multiplication alone is uſed. Suppoſe, *v. gr.* the root 24, or 20 + 4. Here,

$$\begin{array}{r}
24^2 = \qquad 20^2+2.\,4.\ \ 20+4^2 \\
20+4^2 \\
\hline
+4.\ 20^2+2.\,4.\ 20+4^3 \\
20^3+2.\,4.\ 20^2+\quad 4^2.\ 20 \qquad \\
\hline
24=20^3+3.\ 20^2.4+3.\ 4^2.\ 20+4^3 \\
20^3=8000 \\
3.\ 20^2.\ 4=4800 \\
3.\ 4^2.\ 20=960 \\
4^3=64 \\
\hline
24^3=13824
\end{array}$$

Hence, as the part on the right-hand is placed among units, and that on the left among tens; the *cubic* number of the right-hand part muſt be put in the right-hand place; the factum of its triple ſquare into the left, in the ſecond place; and the factum of the triple ſquare of the left into the right, in the third: laſtly, the *cube* of the left-hand part falls in the fourth place.

If the root be a multinomial, two or more characters on the right muſt be eſteemed as one; that it may have the form of a binomial. It is obvious, that any *cube* is compoſed of the *cubes* of the ſeveral parts of the root, and of the factums of the triple ſquare of any of the left-hand characters into the next on the right; and alſo of the factums of the triple ſquare of the right-hand characters into all the left. Suppoſe, *v. gr.* the root 243: take 240 for one part of the root, three will be the other part; conſequently,

$$\begin{array}{rr}
240^3= & 13824000 \\
3.\ 240^2.\ 3= & 518400 \\
3.\ 240.\ 3^2= & 6480 \\
3^3= & 27 \\
\hline
\multicolumn{2}{c}{243^3=14348907}
\end{array}$$

The places of the ſeveral factums are determined from what was obſerved above: for regard muſt here, too, be had to the ciphers to be added to the numbers multiplied by each other, if they be placed alone.

This compoſition of *cubic numbers* once well conceived, the extraction of *cubic* roots will be eaſy. See EXTRACTION.

CUBE *root*, or **CUBIC** *root*, the origin of a *cubic* number; or a number by whoſe multiplication into itſelf, and again into the product, any given number is formed.

The *extraction of the cube root* is the ſame thing as the finding any number, *v. gr.* 2; by whoſe multiplication into itſelf twice continually, a given number, *v. gr.* 8, is produced: the proceſs whereof, ſee under the article EXTRACTION.

CUBEBS, in pharmacy, a fruit brought from the iſland of Java, in grains, or ſeeds, reſembling pepper, both in form and ſize; whence ſome call it *wild pepper*.

It is ſaid, the natives of the place boil it ere they allow it to be exported, to prevent its being ſown in other countries.—

Cubebs fortify the ſtomach, brain, and other viſcera; and enter as an ingredient in ſeveral officinal compoſitions.

CUBIC *equation* is an equation wherein the unknown quantity is of three dimenſions; as $x=a^3-b^3$, *&c.* See EQUATION.

For the conſtruction of cubic equations, ſee CONSTRUCTION.—*For their reſolution*, ſee RESOLUTION.—*For their roots*, ſee ROOT.

CUBIC *foot*. See the article FOOT.

CUBICAL *paraboloïs*, a term uſed by ſome writers for a parabola of the higher kind; *v. gr.* where $a^2x=y^3$, *&c.* See CURVE; ſee alſo PARABOLA.

CUBING *of a ſolid*. See the articles CUBATURE, and SOLID.

CUBIT, a long meaſure, uſed by the antients, eſpecially the Hebrews; taken from the ordinary extent of a man's arm, between the elbow and the tip of the hand.

In the Scripture, we find *cubits* of two lengths; the one equal, according to Dr. Arbuthnot, to 1 foot, 9 inches, $\frac{888}{1000}$ of an inch, our meaſure; being the fourth part of the fathom, double the ſpan, and ſix times the palm:—the other equal to 1. $\frac{824}{1000}$ foot, or the four hundredth part of a ſtadium.—The Romans, too, had a *cubit*, equal to 1 Engliſh foot, five inches, $\frac{406}{1000}$ of an inch. F. Merſenne makes the Hebrew *cubit* 1 foot, 4 digits, and 5 lines, with regard to the foot of the capitol. According to Hero, the geometrical *cubit* is 24 digits; and, according to Vitruvius, the foot is $\frac{2}{3}$ of the Roman *cubit*, *i. e.* 16 digits, or finger's-breadths. See FOOT, FINGER'S-*breadth*, &c.

CUBITÆUS *externus*, or *ulnaris*, in anatomy, the firſt of the extenſor muſcles of the fingers; thus called, as being placed along the *cubitus*, externally.—It riſes from the external protuberance of the humerus, and, paſſing its tendon under the ligamentum annulare, is inſerted into the fourth bone of the metacarpus, that ſuſtains the little finger.

CUBITÆUS *internus*, the firſt of the flexors, placed along the *cubitus*, withinſide the arm. It riſes from the internal protuberance of the humerus, and part of the ulna; upon which it runs all along till it paſſes under the ligamentum annulare, and is inſerted by a ſtrong and ſhort tendon into the fourth bone of the firſt order of the carpus.

CUBITI *biceps.*	See the articles	BICEPS.
CUBITI *brevis.*		BREVIS.
CUBITI *longus.*		LONGUS.

CUBITUS, in anatomy, a bone of the arm, reaching from the elbow to the wriſt; otherwiſe called *ulna*, or the *greater focile*. Some uſe the word for all that part of the arm between the elbow and the wriſt; including the *ulna*, or *cubitus*, properly ſo called, and the radius.

CUBO-CUBO-CUBUS. See CUBUS-CUBI.

CUBO-CUBUS, the term whereby Diophantus, Vieta, *&c.* diſtinguiſh the ſixth power; which the Arabs call *quadratum cubi*.

CUBOIDES, or *Os* CUBIFORME, in anatomy, the ſeventh bone of the foot; ſo called, from its being in form of a *cube*, or dye.—See *Tab. Anat.* (Oſteol.) *fig.* 7. *lit. b b.* ſee alſo FOOT.

Some alſo call it *multiforme:* it is ſituate in the fore-part of the calcaneum, in the ſame rank with the oſſa cuneiformia. Behind, it is articulated to the os calcis; before, to the two outer bones of the metatarſus; and within, it is joined to the third os cuneiforme.

CUBUS-CUBI, a name whereby the Arab writers, and thoſe who follow them, denominate the ninth power, or a number multiplied eight times by itſelf continually; which Diophantus, and after him Vieta, Oughtred, *&c.* call *cubo-cubo-cubus*. See POWER.

CUCKING-STOOL, or COKESTOOL, antiently called *tumbrel*, and *trebuchet*; an engine for the puniſhment of ſcolds and unquiet women, by ducking them in the water.

Kitchen ſays, 'Every one having view of frank-pledge, ought 'to have a pillory and a tumbrel.' This machine was much in uſe, even among our Saxon anceſtors, who called it *ſcealding-ſtole*.

The puniſhment was antiently alſo inflicted on brewers, and bakers, tranſgreſſing the law; who were thereupon, in ſuch a ſtool or chair, to be ducked *in ſtercore*, ſome muddy or ſtinking pond. This was antiently written *gaging ſtole*: in Domeſday it is called *cathedra ſtercoris*.

CUCULLARIS, in anatomy, a muſcle of the ſcapula, ſo called from the reſemblance it is ſuppoſed to bear to a monk's cowl; and *trapezius*, from its reſemblance to a geometrical figure called a *trapezium*.—See *Tab. Anat.* (Myol.) *fig.* 6. *n.* 9. *fig.* 2. *n.* 4. *fig.* 1. *n.* 18.

The fibres of this muſcle have various originations and actions; whence Dr. Drake thinks, it may be more properly called three, than one muſcle.—The upper order of fibres, or muſcles, ſprings from the os occipitis; the ſecond from the ſpine of the vertebræ of the neck, and the third from the ſpines of the eight upper vertebræ of the thorax, or back: and are inſerted into the ſpine, acromium, and baſis of the ſcapula, and part of the claviculæ.

From the different diſpoſitions of theſe fibres, the ſcapula is drawn different ways; the firſt pulling obliquely upwards, the laſt obliquely downwards, and the middle backwards: when they act all three together, they are ſaid to draw backwards only; *i. e.* the two extremes antagonizing, the middle one alone is at liberty to act.

CUCULLATE *flowers*, among botaniſts, are ſuch as reſemble a cucullus, or monk's hood, or cowl. See FLOWER.

CUCULLUS was antiently a traveller's cap; called alſo *cowl*, *goul*, or *gula:* whence the name paſſed to the monks, among whom it ſignified their frock and cap, which were of one piece.

CUCUPHA, an antient form of medicine; being a cap, or cover, for the head, with cephalic powders quilted therein; worn in many nervous diſtempers, and particularly ſuch as more immediately affect the head: as againſt catarrhs, defluxions, *&c.*—It is now much out of uſe.

CUCURBITACEOUS *plants*, a claſs of plants, ſo called fro their reſemblance to the gourd, called by the Latins *cucurbit* which is the head of this family.

Plants of the *cucurbitaceous* kind ſend out their branches ever way; which are ſoft, and generally beſet with tendrils, means whereof they cling to the bodies that are near them. Their flowers are either ſterile, or fertile: the laſt knit, yield fleſhy fruits of various figures; containing within the ſeveral flat ſeeds placed in three or four lodges, or even greater number.

Theſe ſeeds have uſually a white ſweetiſh kernel; the great part of them being of thoſe called *frigidæ majores*, or greater cold ſeeds.

The pumpion, melon, *&c.* are of the *cucurbitaceous* kind.

CUCURBIT, CUCURBITA, in chymiſtry, an earthen, or vaſſel, called alſo *body*; of the figure of a gourd, or a wherein are put the matters to be diſtilled.

It is ſometimes alſo made of tin, and ſometimes of braſs, When a diſtillation is to be made, they fit on to it a glaſs with an aperture, and a neck proportional.

CUCURBITULA, in chirurgery, a cupping-glaſs, or inſtru uſed in the operation of cupping. See CUPPING-GLASS.

CUDDY, in a firſt rate man of war, is a place lying between captain-lieutenant's cabin, and the quarter-deck; and di into partitions, for the maſter, and other officers.—See *Ship*, *fig.* 2. *lit. R.*

CUE, an item, or innuendo, given to the actors on the what, or when, to ſpeak. See PROMPTER.

CUERPO. *To walk in* CUERPO, is a Spaniſh phraſe for without a cloke; or without all the formalities of a full dr

CUI *ante divortium*, a writ, which a woman divorced from her husband, hath, to recover lands or tenements from him to whom her husband alienated them during marriage; becauſe, during the marriage, ſhe could not gainſay it.

Cui *in vita* is a writ of entry, which a widow hath againſt him to whom her huſband alienated her lands or tenements in his life-time; ſpecifying, that, during his life, ſhe could not withſtand it.

CUIRASSE*, a piece of defenſive armour, made of an iron plate well hammered; ſerving to cover the body, from the neck to the girdle, both before and behind.

* Some derive the word, by corruption, from the Italian *cuore*, heart; becauſe it covers that part: others from the French *cuir*, or the Latin *corium*, leather; whence *coriaceous*: by reaſon defenſive arms were originally made of leather.

The *cuiraſſe* was not brought into uſe till about the year 1300.

Hence, *cuiraſſiers*, the cavalry armed with *cuiraſſes*.

The French have ſtill a regiment of *cuiraſſiers*; and a good part of the German cavalry are *cuiraſſed*.

In the Roman calendar, we find the name of S. Dominic *the cuiraſſed*; a title given a ſaint of the eleventh century, from his conſtant wearing of an iron *cuiraſſe*, by way of penance.

CUL *de lamp*, a French term, properly ſignifying the bottom of a lamp. It is applied in architecture to ſeveral decorations, both of maſonry and joinery, uſed, in vaults and cielings, to finiſh the bottom of works, and wreathed ſomewhat in manner of a teſtudo; particularly a kind of pendentive in Gothic vaults.

Cul *de four*, a ſort of low, ſpherical vault, oven-like. See Vault.

Cul de four of a niche denotes the arched roof of a niche on a circular plan.

CULINARY*, an epithet frequently added to fire; determining it to be a common fire, excited in wood, coals, or other ordinary fuel: in contradiſtinction to ſolar fire, or that raiſed by the action of a burning-glaſs; alſo to central fire; to animal fire, *&c.*

* The word is formed from the Latin *culina*, kitchen; this being the chief place of ſuch fires.

Culinary fire, according to Boerhaave, conſiſts of a portion of pure elementary, or ſolar fire, attracted by the oily, or ſulphurous parts of the fuel, with ſuch velocity, as that it moves the ſame, agitates and whirls them violently about, and by degrees breaks and attenuates them; renders them volatile, and diſperſes them in air.

The effect of air upon this fire is, to make, as it were, a vault around it, and, by that means, reſtrain and keep it in, determine it upon the ſulphur, and thus prevent its too haſty diſſipation.

ULLIAGE*, or Cullage, a right uſurped by the antient lords, and eſtabliſhed by a ſhameful cuſtom, which gave them the firſt night with their vaſſals brides.

* The word is formed from the French *cul, podex*, the breech.

It is ſaid this right was eſtabliſhed by Evenus III. king of Scotland, and finally aboliſhed by Malcolm III. a compenſation being ſettled in its ſtead; as occaſioning frequent revolts of the vaſſals againſt their lords.

ULMIFEROUS, in botany, a term applied to ſuch plants as have a ſmooth-jointed ſtalk, uſually hollow; the ſtalk wrapped about, at each joint, with ſingle, narrow, ſharp-pointed leaves; and the ſeeds contained in chaffy huſks.

Culmiferous plants are divided by Ray into two kinds; thoſe with a *greater*, and thoſe with a *ſmaller* ſeed.

Thoſe with a larger ſeed are called *frumentaceous*, or *cereales*; and are again divided into *ſpicatæ*, as wheat, rye, ſpelt, barley, rice, peas, *&c.* and *paniculatæ* or *jubatæ*, as oats, ſcordium, milium, and maiſe.

ULMINATION, in aſtronomy, the tranſit of a ſtar or planet over the meridian, or that point of its orbit wherein it is at its greateſt altitude.

Hence, a ſtar is ſaid to *culminate*, when it paſſes the meridian.

To find the culmination *of a ſtar, or the time wherein it paſſes the meridian*: on a meridian line AB (*Tab. Aſtronomy, Fig.* 48.) ſtretch a thread, DC, perpendicularly; and from D to E another, DE, cutting the meridian obliquely, at any angle: the triangular thread, DCE, will cut the plane of the horizon in the meridian line, or at right angles; and conſequently will be in the plane of the meridian.

The eye, therefore, being ſo placed, as that the thread DE may cover the thread DC; wait till the ſtar be biſected by the triangle DCE; for then the eye and the ſtar will, together with the triangle DCE, be in the ſame plane: conſequently the ſtar is in the meridian. *To find the* culmination *of a ſtar by the globe*; ſee Globe.

To find the time of a ſtar's culminating; its right aſcenſion, and the ſun's place in the ecliptic, being given.—From the ſun's place find his right aſcenſion: and from this ſubtract the right aſcenſion of the ſtar: the difference being converted into ſolar time, gives the time elapſed from mid-day to the time of the ſtar's *culmination*.

ULMUS properly denotes the ſtem or ſtalk of corn, or graſs; which in other plants is called *caulis*.

Hence the appellation *culmiferous plants*.

CULPABILIS. See the article Non *eſt culpabilis*.

CULPRIT, a term uſed by the clerk of the arraignments, when a perſon is indicted for a criminal matter.

After the indictment is read in court (which is the crown's charge againſt the priſoner at the bar), he is aſked if guilty, or not guilty? If he anſwers, *not guilty*, there is next a replication from the crown, by continuing the charge of guilt upon him; which is expreſſed by pronouncing the word *cul-prit*; *cul* being an abbreviation of the Latin word *culpa*, guilt, or *culpabilis*, guilty, and *prit* (now *pret*) the old French word for *ready*; or, as others rather think, the Latin *apparet*, appears.

From this formula, therefore, of the clerk of the arraignments, the priſoner is deemed guilty of the crime charged on him; and that the crown is ready to prove it upon him.

That this is the true explanation of the term, ſeems evident from the form of the entry of the record of the tryal, when drawn at large.

CULTELLATION, a term which ſome authors uſe for the meaſuring of heights, and diſtances, by piecemeal: that is, by inſtruments which give us ſuch heights and diſtances by parts, and not all at one operation.

CULTRARIUS. See the article Popa.

CULTURE. See Agriculture, and Horticulture.

Culture *of hops*. See the article Hops.

CULVERIN*, a long ſlender piece of ordnance and artillery, ſerving to carry a ball to a great diſtance.

* Menage derives the word from the Latin *colubrina*; others from *coluber*, ſnake; either on account of the length and ſlenderneſs of the piece, or of the ravages it makes.

Of theſe there are three kinds; *viz.* the *culverin extraordinary*, the *ordinary*, and the *leaſt ſized*.

The *culverin extraordinary* has $5\frac{1}{2}$ inches bore; its length 32 calibers, or 13 feet; it weighs 4800 pound; its load is above 12 pound; carries a ſhot 5 inches $\frac{1}{4}$ diameter, weighing twenty pound weight.

The *ordinary culverin* is 12 feet long; carries a ball of 17 pound 5 ounces; caliber $5\frac{1}{2}$ inches; its weight 4500 pound.

The *culverin* of the *leaſt ſize* has its diameter 5 inches; is 12 feet long; weighing about 4000 pounds; carries a ſhot 3 inches $\frac{3}{4}$ diameter, weighing 14 pounds 9 ounces. See Demi-Culverin.

CUMIN*, the ſeed of a plant of the ſame name, much like that of fennel; growing abundantly in the iſle of Malta, where it is ſown and cultivated after the manner of corn.

* The French frequently call it *anis aigre*, ſharp or ſour anis.

It is uſed with ſucceſs in vertigo's, wind-colics, tympanies, *&c.* It is eſteemed excellent to retrieve the natural heat in ſtallions, bulls, *&c.* Pigeons are exceedingly fond of it; whence ſome make uſe of it to ſtock their dove-houſes; incorporating it with an earth naturally ſaline, or ſome other earth that has imbibed urine.

This ſeed, as well as the common aniſe, yields, by expreſſion, a kind of oil, eſteemed ſovereign in rheumatiſms; provided it be uſed with precaution, and in ſmall quantities.

CUNEIFORME *os*, in anatomy. See Sphenoides.

Cuneiformia *oſſa* denote the fourth, fifth, and ſixth bones of the foot; thus called from their wedge-like ſhape, being large above, and narrow below.—See *Tab. Anat.* (*Oſteol.*) *Fig.* 7. lit. c. c. *Fig.* 3. n. 27. 27.

They lie all three aſide of one another, and are of different ſizes; their upper ſide convex, and their under hollow, by which means the muſcles and tendons in the bottom of the foot are not hurt in walking.

At one end they have each a ſinus, which receives the os naviculare; and at the other end they are joined each to one of the three inner bones of the metatarſus.

CUNETTE, or Cuvette, in fortification, a deep trench, about three or four fathom wide, ſunk along the middle of a dry moat, to lade out the water; or to make the paſſage more difficult to the enemy.

CUNEUS, one of the mechanical powers; more uſually, by Engliſh writers, called the *wedge*. See Wedge.

Parabolic Cuneus. See the article Parabolic.

CUNNUS*, the pudendum muliebre; or the anterior parts of the genitals of a woman, including the labia pudendi, and mons Veneris. See Pudendum.

* The word is formed from the Greek *κυειν*, to kiſs, or to be with-child.

CUP, *calyx*, a veſſel ſo called, of various forms and uſes.

In the Ephem. German. we have a deſcription of a *cup* made of a common pepper-corn, by Oſwald Nerlinger; which holds 1200 other ivory *cups*, each having its ſeveral handle; all gilt on the edges: with room for 400 more.

Cups, among herbaliſts, are thoſe ſhort green huſks in which flowers grow; ſome being divided into two, three, four, five, or ſix leaves. See Supplement, article Calyx.

Cup-*fountain*. See the article Fountain.

CUPOLA*, in architecture, the ſame with dome. See Dome.

* The word is Italian, formed of the barbarous Latin *cuppala*, otherwiſe called *thola*, and *fornix*.

CUPPEL, Cupel, or Coppel, among chymiſts, a veſſel or utenſil, uſed in the trying and purifying of gold and ſilver; called alſo *teſt*. See Supplement, article Coppell.

CUPPING, an operation in chirurgery, for the diſcharge of blood, and other humours, by the ſkin.

It is performed by collecting the humours into a tumour under the cutis; and letting them out thence, by ſcarification; *i. e.* by ſeveral inciſions made with a ſcarificator.

The inſtruments uſed herein are the *cucurbitulæ*, or *cupping-glaſſes*, and *ſcarificator*: the deſcription of each whereof ſee under their proper head.

Cupping is performed either *with*, or *without fire*.

Cupping with fire is the more uſual proceſs: and is commonly, among us, thus effected: the air in the cavity of the cucurbitula is heated, and ſo rarefied, by the application of the flame of a lamp, or the like; and the veſſel immediately applied to the part to be *cupped*.

Others, eſpecially the French, proceed thus: a piece of card is cut round, and a lamp, or four little wax candles, affixed to it; this is placed after the manner of a candleſtick on the part whereon the operation is to be performed, and covered with a cucurbita or *cupping-glaſs*.

After the included air has been well heated and rarefied with the flames of the candles, the glaſs is clapped cloſe to the ſkin; which it has no ſooner touched, but the candles are extinguiſhed, and the tumour is raiſed.

In *cupping without fire*, inſtead of rarefying the air included in the *cupping-glaſs* by heat, it is done by a ſyringe applied to the neck of the *cupping-glaſs*, fitted with a braſs collar, cap, and valve: the *cupping-glaſs* being applied to the ſkin, and the ſyringe wrought, part of the air is pumped out of the cucurbitula; and thus the tumour riſes, as in the former caſe. See Syringe.

The reaſon of the phænomenon is this: the air included in the *cupping-glaſs* being rarefied, a great part of the load which before preſſed the part, and kept it down, and which ſtill continues to preſs the reſt of the body, is taken off; upon which the air, known to be contained in the veſſels of the body, and mixed with the blood and juices, expands itſelf, and raiſes a tumour, carrying with it the fluids wherewith it is mingled.

The operation is performed on the back, and on the breaſts and thighs, to ſtop or promote the menſes: on the navel, for the colic.—*Cupping* is alſo uſed for defluxions on the eyes, for venomous wounds, and buboes; on the head, for apoplexies, &c.

Cupping-glass, *cucurbitula*, in chirurgery, a glaſs veſſel, applied to certain parts of the body, to draw the blood, and other humours, from within outwards; to be afterwards diſcharged through ſeveral inciſions made with a ſcarificator.

The veſſel is of various dimenſions: ſometimes, inſtead of glaſs, it is made of wood, horn, braſs, ſilver, &c.

When the *cupping* is to be performed with fire, the veſſel is heated with candles, tow, a torch, lamp, or the like; and in this ſtate applied cloſe to the part: the air in its cavity being by this means rarefied, and brought near to the condition of a vacuum; that part of the body covered by it becoming leſs preſſed by the air than the reſt, its juices are forced up with the cutis, and raiſe a bunch in the cavity of the veſſel: to which the ſcarificator being applied, and ten or twelve inciſions made at the ſame time, a plentiful evacuation is effected.

To cup without fire, the veſſel is fitted with a braſs neck; to which a ſyringe being applied, a rarefaction is produced, by working it to and fro; the reſt is done as in the former caſe.

CURATE is properly a parſon, or vicar of a pariſh, who hath the charge or cure of the pariſhioners ſouls. See Cure, and Parson.

Curate is now more generally uſed for a deputy, or ſubſtitute of the parſon; or one who officiates in the place of the incumbent, or beneficiary.

CURATIVE *indication*, among phyſicians, that which directs what is to be done for the cure of a diſeaſe. See Symptom, and Indication.

CURATOR, in the civil law, a truſtee, or perſon nominated to take care of the affairs and intereſts of a perſon emancipated, or interdicted.

In countries where the Roman law prevails, between the age of 14 and 24 years, minors have *curators* aſſigned them: till 14, they have tutors.

Curator *of an univerſity*, in the United Provinces, is an elective office, to which belongs the direction of the affairs of the univerſity; as, the adminiſtration of the revenues, the inſpection of the profeſſors, &c.

The *curators* are choſen by the ſtates of each province: the univerſity of Leyden has three; the burghermaſters of the city have a fourth.

CURDLING, the coagulating or fixing of any fluid body; particularly milk.

Pauſanias ſays, Ariſtæus ſon of Apollo, and Cyrene daughter of the river Peneus, were the firſt who found the ſecret of *curdling* milk.

At Florence they *curdle* their milk for the making of cheeſe with artichoke-flowers; in lieu of the rennet uſed for the ſame purpoſe among us.

The Biſaltæ, a people of Macedonia, Rochfort obſerves, live wholly upon *curdled* milk, *i. e.* of curds. He adds, that curds are the whole food of the people of the Upper Auvergne in France, and whey their only drink.

Women newly delivered are ſubject to have their milk *curdled*, converted into little grumæ, in their breaſts, which occaſions violent pains, with a ſhivering in the back.

It is owing to the want of being ſucked, whence the method of remedying, and preventing it, is apparent.

CURE, in medicine. See Palliative *cure*.

Cure *of ſouls*, a benefice, the incumbent whereof has the charge and guidance of the ſouls of the people within a certain extent of ground, called a *pariſh*.

Such are a vicar, a rector, &c. in contradiſtinction to a prebend, a dean, a chantor, &c.

Sine **Cures**. See the article Sine.

Cure, in falconry, the ſame with caſting. See Casting.

CURETES*, in antiquity, a ſort of prieſts, or people of the iſle of Crete; called alſo *Corybantes*.

* The name *Curetes*, according to Strabo, was given them by reaſon of their cutting off the hair before, to prevent the enemy's taking hold thereof: the word being Greek, κȣρητες, of κȣρα, *tonſure*, from κειρω, *tondo*. Others derive it from κȣροτροφια, the feeding or educating of a child; by reaſon they are ſaid to have educated Jupiter.

The *Curetes* are ſaid to have been originally of mount Ida, in Phrygia; for which reaſon they were alſo called *Idæi Dactyli*. Ovid ſays, they had their origin from a huge ſhower of rain: Lucian and Diodorus Siculus repreſent them as very expert in caſting of darts; though other authors give them no weapons but bucklers and pikes: but all agree in furniſhing them with tabors and caſtanetta's; and relate, that they uſed to dance much to the noiſe and claſhing thereof.

Some authors, however, give a different account of the *Curetes*: according to Pezron, and others, the *Curetes* were, in the times of Saturn, &c. and in the countries of Crete and Phrygia, what the druids and bards were afterwards among the Gauls, &c. i. e. they were prieſts who had the care of what related to religion, and the worſhip of the gods.

Hence, as in thoſe days it was ſuppoſed there was no communication with the gods but by divinations, auguries, and the operations of magic; the *Curetes* paſſed for magicians and inchanters: to theſe they added the ſtudy of the ſtars, of nature, and poeſy; and ſo were philoſophers, aſtronomers, &c.

Such were the *Curetes*, and after them the druids; with this difference, that the *Curetes*, in the time of the Titans, went to the wars; for which reaſon they were armed, and were wonderfully dextrous in dancing, cap-à-pé, ſhaking their bucklers and javelins: from which action, Pezron conjectures, they took their name *Curetes*; *curo*, in the Celtic, being the ſame with κρȣω in the Greek: *q. d.* I ſtrike or beat.

According to Kircher, the *Curetes* were what the *ſpirits* are among the Cabbaliſts, the *powers* in Dionyſius, the *dæmons* among the Platoniſts, and the *genii* among the Egyptians.

Voſſius, *de Idololat.* diſtinguiſhes three kinds of *Curetes*; thoſe of Ætolia, thoſe of Phrygia, and thoſe of Crete, who were originally derived from the Phrygians.

The firſt, he ſays, took their name from κȣρα, *tonſure*; in regard, from the time of a combat wherein the enemy ſeized their long hair, they always kept it cut: thoſe of Phrygia and Crete, he ſuppoſes were ſo called from κȣρος, *young man*; in regard they were young; or becauſe they nurſed Jupiter when he was young.

CURFEU, *q. d. couvre-feu*, a ſignal of retreat, given in cities taken in war, &c. to advertiſe the inhabitants to go to-bed, and not to ſtir out any more.

The *curfeu-bell*, wherewith the ſignal was antiently given, was ſometimes hung up as a puniſhment of ſedition. Paſquier ſays, it was called *carfou*, and *garefou*; as being intended to advertiſe the people to ſecure themſelves from the robbers and debauchees of the night.

The moſt antient *curfeu* was that eſtabliſhed in England by William the Conqueror; who appointed, under ſevere penalties, that, at the ringing of a bell at eight o'clock in the evening, every one ſhould put out their lights, cover, or rake up their fires, and go to-bed.—Whence, to this day, where a bell is accuſtomed to be rung about bed-time, it is called *curfeu-bell*.

CURIA, in our antient cuſtoms.—It was uſual for the kings of England to ſummon the biſhops, peers, and great men of the kingdom, to ſome particular place, at the chief feſtivals in the year; and this aſſembly is called, by our hiſtorians, *curia*; becauſe there they conſulted about the weighty affairs of the nation: whence it was ſometimes alſo called *ſolemnis curia*, *generalis curia*, *Auguſtalis curia*, and *curia publica*, &c.

Curia *adviſare vult*, in law, is a deliberation which the court ſometimes take, before they give judgment in a cauſe wherein there ſeems to be any point of difficulty.

Accedas ad **Curiam**. } See the articles { Accedas.
Auxilium **Curiæ**. } { Auxilium.

Curia *baronum*. See Court-Baron.

Curia *claudenda* is a writ that lies againſt him who ſhould fence and incloſe the ground, but refuſes or defers to do it.

Curia *militum**, a court ſo called; antiently held at Cariſbrook-caſtle, in the iſle of Wight.

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* *Et idem Dominus Willielmus de Inſula facere debet ſectam ad curiam domini caſtri de Cariſbroc, de tribus ſeptimanis in tres ſeptimanas, in curia quæ vocatur* curia militum.

Rectus in CURIA. See the article RECTUS.

CURIA, among the Romans, denoted a portion, or diviſion, of a tribe.

In the time of Romulus, a tribe conſiſted of ten *curiæ*, or a thouſand men; each *curia* being one hundred: that legiſlator made the firſt diviſion of his people into thirty *curiæ*.

Afterwards, *curia*, or *domus curialis*, became uſed for the place where each *curia* held its aſſemblies.

Hence, alſo, *curia* paſſed to the ſenate-houſe; and it is from hence the moderns come to uſe the word *curia*, court, for a place of juſtice, and for the judges, *&c.* there aſſembled *. See COURT.

* Varro derives the word from *cura*, care, *q. d.* an aſſembly of people charged with the care of public affairs: others deduce it from the Greeks; maintaining, that at Athens they called κυρια the place where the magiſtrate held his aſſizes, and the people uſed to aſſemble: κυρια, again, may come from κυρος, *authority, power*; in regard, it was here the laws were made.

CURIALITAS *Angliæ*. See COURTESY *of England*.

CURIO, the chief, and prieſt of a *curia*. See CURIA.

Romulus, upon dividing the people into *curiæ*, gave each diviſion a chief, who was to be prieſt of that *curia*, under the title of *curio*, and *flamen curialis*.

His buſineſs was to provide and officiate at the ſacrifices of the *curia*, which were called *curionia*; the *curia* furniſhing him with a ſum of money on that conſideration: which penſion or appointment was called *curionium*.

Each diviſion had the election of its *curio*; but all theſe particular *curio's* were under the direction of a ſuperior, or general, called *curio maximus*; who was the head of the body; and elected by all the *curio's*, aſſembled in the *comitia curiata*.

All theſe inſtitutions were ſet a-foot by Romulus, and confirmed by Numa, as Halicarnaſſeus relates it. Godwyn will have two *curio's* in each *curia*.

CURIOSUS, an officer of the Roman empire, during the middle age, appointed to take care that no frauds and irregularities were committed; particularly no abuſes in what related to the poſts, the roads, *&c.* and to give intelligence to the court of what paſſed in the provinces.

This made the *curioſi* people of importance; and put them in a condition of doing more harm than they prevented: on which account, Honorius caſhiered them, at leaſt in ſome parts of the empire, *anno* 415.

The *curioſi* came pretty near to what we call *controllers*: they had their name from *cura*, care; *quod curis agendis & evectionibus curſus publici inſpiciendis operam darent*.

cademy of the CURIOSI *naturæ*. See ACADEMY.

URLING *ſtuff*, in joinery. See CROSS-GRAINED *ſtuff*.

URNOCK, a meaſure of corn, containing four buſhels, or half a quarter.

URRANTS, or CURRANS, a kind of little raiſins, or dried grapes of different colours, black, white, or red; brought from ſeveral places of the Archipelago, and among others, from the iſthmus of Corinth; whence their name, *currants*, q. d. *corinths*.

They muſt be choſen new, ſmall, and in large maſſes; and care be taken, that the little Spaniſh *currants* be not foiſted in their room.—When made up in bales, they may keep two or three years, without ſtirring, or giving them air.—Their uſe is in ſeaſoning ſeveral viands, and in ſome medicinal compoſitions; where they ſerve in lieu of raiſins. Sir George Wheeler's account of theſe fruits, and the manner of prepareing them, is very curious.—The iſland of Zant, he obſerves, is the chief place whence *currants* are brought: the Morea, or the iſthmus of Corinth, which was antiently the principal plantation, and whence the Latins denominated them *uvæ Corinthiacæ*, now produces no more; as having been much neglected: the jealouſy of the Turks not allowing large veſſels to enter the gulph to take them off their hands.

They do not grow on buſhes, like our gooſeberries, though that be the common opinion; but on vines, like other grapes; except that the leaves are ſomewhat thicker, and the grapes ſomewhat ſmaller: they have no ſtone, and, in this country, are all red, or rather black.

They gather them in Auguſt, diſpoſe them in couches on the ground till they be dry, clean them, and lay them up in magazines, which the natives call *ſeraglios*; pouring them in at a hole, till the magazine be full. They cling ſo faſt together by their own weight, that they are forced to be dug out with iron inſtruments.

To barrel them for ſending abroad, they have people who greaſe their feet and legs, and tread them cloſe, that they may keep the better. They are ſold for about twelve crowns the thouſand weight; and pay as much cuſtom to the ſtate of Venice.

Zant produces enough yearly to load five or ſix veſſels; Cephalonia three or four; and the other iſlands one. The Engliſh have a factory at Zant; the Dutch two or three merchants, and the French one: the Engliſh conſuming more than ſix times the quantity that both France and Holland do together.

Those of Zant know but little of the uſe we make of them; being perſuaded they only ſerve in dyeing of cloth; and being entirely ignorant of the luxury of Chriſtmas pyes, and Engliſh puddens.

URRANT, or COURANT *money*, good money, or that which paſſes in commerce from one to another. See the article COURANT.

CURRANT *accompts.*	See the articles	BOOK.
CURRANT *coins.*		COIN.
CURRANT *price.*		PRICE.

CURRANT, CURRANTO, alſo denotes a ſort of running French dance—ſometimes, a muſical air in triple time. See COURANT.

CURRENT, in hydrography, a ſtream or flux of water in any direction.

Currents, in the ſea, are either *natural* and *general*, as ariſing from the diurnal rotation of the earth on its axis; or *accidental* and *particular*, cauſed by the waters being driven againſt promontories, or into gulphs and ſtreights; where, wanting room to ſpread, they are driven back, and thus diſturb the ordinary flux of the ſea.

The *currents* are ſo violent under the equator, where the motion of the earth is the greateſt, that they carry veſſels very ſpeedily from Africa to America; but abſolutely prevent their return the ſame way: ſo that ſhips are forced to run as far as the fortieth degree of latitude, to find a paſſage into Europe.

In the Streights of Gibraltar, the *currents* almoſt conſtantly drive to the eaſtward, and carry ſhips into the Mediterranean: they are uſually, too, found to drive the ſame way in St. George's chanel. The great violence and dangerouſneſs of the ſea in the Streights of Magellan, is attributed to two contrary *currents* ſetting in, one from the ſouth, and the other from the north ſea.

CURRENTS, with reſpect to navigation, may be defined, certain progreſſive motions of the water of the ſea, in ſeveral places, either quite down to the bottom, or to a certain determinate depth; by which a ſhip may happen to be carried forward more ſwiftly, or retarded, in her courſe, according to the direction or ſetting of the *current*, in, with, or againſt, the courſe or way of the ſhip.

The buſineſs of *currents* making a conſiderable article in navigation; the way they ſet, together with their ſtrength, is to be carefully obſerved: this ſome do by the ripplings of the water, and by the driving of the froth along the ſhore, when in ſight of it: but the more uſual, as well as more accurate way, is thus: They firſt fix their boat, by throwing out a triangular piece of wood, with a piece of lead faſtened to it, and tied to the ſtem of the boat with a cord; and letting it ſink ſixty fathom, or more; or, ſometimes, by a kettle tied by the bowl, and ſunk, as the other. By either of theſe means, the boat is brought to ride as at anchor; which done, the log is caſt over, the glaſs turned, and as the log-line veers out, the drift of the log is ſet with the compaſs.

This ſhews whether there be any *current*, or none; and if any, which way it ſets, and at what rate it drives: obſerving, however, to add ſomething to the drift, for the boat's drift; for tho' ſhe appear to ſtand ſtill, yet, in reality, ſhe is found to move. This addition, experience has thus determined; if the line ſhe ride by be ſixty fathom, a third part of the drift to be added; if eighty fathom, a fourth; if an hundred, a fifth.

If a ſhip ſail along the direction of a *current*, it is evident the velocity of the *current* muſt be added to that of the veſſel: if her courſe be directly againſt the *current*, it muſt be ſubtracted; if ſhe ſail athwart the *current*, her motion will be compounded with that of the *current*; and her velocity augmented, or retarded, according to the angle of her direction with that of the direction of the *current*; i. e. ſhe will proceed in the diagonal of the two lines of direction, and will deſcribe or paſs thro' that diagonal in the ſame time wherein ſhe would have deſcribed either of the ſides, by the ſeparate forces.

To determine a ſhip's courſe and diſtance, ſailing obliquely with, or againſt, a current. Suppoſe, *v. gr.* ſhe ſails N. E. 110 miles, in a *current* which ſets S. W. 30 miles in the ſame time: to ſolve the problem geometrically; ſet off four points from N towards E (*Tab. Navigation, fig.* 15.), and draw AC equal to 110 miles; from C draw CB, parallel to the line NNE, and equal to 30 miles: laſtly, draw AB, which will be the ſhip's true courſe and diſtance.

To find which trigonometrically. In the triangle ABC, there are given AC 110, BC 30, and the angle C, 22° 30′; then, $A+CBC : AC-BC :: t, \tfrac{1}{2} A+B : t, \tfrac{1}{2} B-A$. That is, as the ſum of AC and BC, *viz.* 140, is to their difference 80 :: ſo is the tangent of 78° 45′ to the tangent 10° 49′. Hence her true courſe appears to be N. E. 7° 56′ eaſterly. For her diſtance; as the ſine of the angle A, 7° 56′, is to the drift of the *current* BC, 30, ſo is the ſine of the angle at C 22° 30′, to the diſtance run, 83, two miles.

Under-CURRENTS.—Dr. Halley makes it highly probable, that in the Downs, in the Streights of Gibraltar, *&c.* there is an *under-current*, whereby as much water is carried out, as is brought in by the *upper-current*. See UNDER-*Currents*.

This he argues from the offing between the north and ſouth Foreland, where it runs tide and half-tide, *i. e.* it is either ebb or flood in that part of the Downs three hours ere it is ſo off at ſea: a certain ſign, that though the tide of flood runs aloft, yet the tide of ebb runs under-foot, *i. e.* cloſe by the ground; and ſo at the tide of ebb it will flow under-foot.

This he confirms by an experiment in the Baltic Sound, communicated to him by an able ſeaman preſent at the making it: being there, then, with one of the king's frigates, they went with their pinnace into the mid-ſtream, and were carried violently by the *current*. Soon after that, they ſunk a baſket with a large cannon-bullet, to a certain depth of water, which gave check to the boat's motion; and ſinking it ſtill lower and lower, the boat was driven a-head to the windward, againſt the *upper-current*; the *current* aloft not being above four or five fathom deep. He added, that the lower the baſket was let down, the ſtronger the *under-current* was found.

From this principle, it is eaſy to account for that vaſt draught of water continually pouring in with the *current* out of the Atlantic into the Mediterranean, through the Streights of Gibraltar; a paſſage about twenty miles broad: yet, without any ſenſible riſing of the water along the coaſts of Barbary, &c. or any overflowing of the lands, which there lie very low.

CURRICULUS *, in our antient writers, denotes the year, or courſe of a year.

* *Actum eſt hoc annorum dominicæ incarnationis quater quinquagenis & quinquies, quinis luſtris, & tribus* curriculis, *i. e.* In the year 1028. for four times fifty makes two hundred, and five times two hundred makes one thouſand; five *luſtres* are twenty-five years, and three *curriculi* are three years.

CURRIED *hide*. See the article HIDE.

CURRYING, a method of preparing leather, with oil or tallow; which raiſes on the hair, or wool-ſide, a kind of grain, not unlike that of morocco.—Though there is alſo a kind of *curried* leather without grain.

Currying is the laſt preparation, and puts the leather in a condition to be uſed for ſhoes, ſaddles, harneſs, &c. It is equally practiſed on ſheep, calf, and bullocks-ſkins.

The colours given in *currying* are, black, white, red, yellow, and green: the other colours are given by the ſkinners; who differ from the *curriers* in this, that they apply their colours on the fleſh-ſide; the *curriers* on the hair-ſide.

Manner of currying *in black, with the grain.*—Of blacks there are four caſes: either the ſkins are put in tallow on both ſides; or oil is uſed, in lieu of tallow, on the fleſh-ſide; or tallow is uſed alone on the hair-ſide, and nothing on the other; or tallow is uſed on both ſides, but no grain raiſed.

The two firſt are uſed for cows and calves leather; the ſecond is the only way uſed for ſheep; and the two laſt are uſed occaſionally for cow and bullock: for calf and ſheep, they uſe ſumac on the fleſh-ſide, which gives an orange-caſt.

For *neats-ſkin* in black; the ſkin, coming from the tanner, is wet ſeveral times with a broom, rolled and trod under-foot to make it tractable, drained, and as much of the remaining fleſh as poſſible taken off with the knife; hung in the air till half dry, then wet and trampled again, and again.

This done, it is rubbed over with a pummel, or call having niches in manner of teeth, to render it ſtill more pliant; and ſinged with ſtraw, to prepare it to receive the tallow; which is applied, boiling hot, on both ſides.

The ſkin is then ſindged a ſecond time, laid four hours in a veſſel of freſh water, trampled, and worked a ſecond time with the pummel on each ſide, and ſtoutly drained; ſmeered over with its firſt black made of galls and ferailles, boiled in beer-aigre, or ſour beer; half dried, ſtretched on a table, and the grain beat down with a flat iron inſtrument drawn over it from place to place.

It now receives its ſecond black, made of galls, copperas, and gum-arabic; when dry, and ſtretched on a table, it is ſmeered over with beer-aigre; then folded from corner to corner, and the pummel drawn over it to cut the grain, firſt on the hair-ſide, then on the fleſh-ſide; the laſt with a pummel of cork: the beer hanging in it is taken out with a hair rubber, boiled in hatter's lye; and the ſkin faſtened to the table, and cleaned with the iron inſtrument above-mentioned, and again wiped with a piece of worſted ſtocken. The ſkin is now brightened, on the hair-ſide, with a luſtre made of barberries, to prepare it to receive its laſt grain. The grain, we already obſerved, is begun, by folding the ſkin, the hair-ſide inwards, ſeveral ways: to finiſh it, it is again folded, after its firſt luſtre, two ways; firſt from corner to corner, a little ſlanting; then acroſs, *i. e.* firſt directly, or from eye to eye, then from head to tail.

The grain thus formed, the laſt luſtre, which makes its laſt preparation, is given; compoſed of gum arabic, garlick, beer vinegar, and Flanders ſize, boiled together, and applied cold.

Calf-ſkin, in black, is prepared much after the ſame manner; though begun differently. After wetting, taking off as much of the fleſh remaining as poſſible, and drying; they pounce the fleſh-ſide with a hard, rough, pumice-ſtone, which makes it more ſmooth and gentle; then give the grain with the pummel, put in the tallow: the reſt as before.

Sheep-ſkins, in black. What theſe have peculiar in their preparation, is, that they are firſt ſtretched on a table to get off the bourre, or tan, wherewith they are loaden; then wet, trod under-foot, and tallow added on the hair-ſide: they are again wet, again trod, ſtretched on the table, and the water ſqueezed out with the pummel; then blacked, repaſſed under the pummel on each ſide, dried, and all the roughneſs and inequality pared off with a flat, round, cutting inſtrument: the reſt as before.

Sleek-leather, or that without any grain, made of cows or bullocks ſkins, differs a little in its preparation from the former. The ſkins being wet, trod, and paſſed under the pummel, the fleſh is taken off; the reſt as in the firſt article: obſerving, that the tallow be applied on both ſides as thick as poſſible: being now ſteeped in water, trod, frized, and blacked the firſt time; the ſecond black is next laid on, till the hair-ſide be quite ſmooth. Laſtly, after receiving the two luſtres, they are preſſed between two tables; without plaiting or folding them in any manner during the whole preparation.

CURSED. See the articles ACCURSED, and CORZNED.

CURSITOR, an officer or clerk belonging to the court of chancery, who maketh out original writs.

Theſe are alſo called *clerks of the courſe*; and are twenty-four in number: making a corporation of themſelves. To each of them are allotted ſeveral ſhires; in which ſhires they make out ſuch original writs as are by the ſubject required.

CURSOR, a little ruler, or label of braſs, divided like a line of ſines, and ſliding in a groove, or notch, along the middle of another label, or ruler, repreſenting the horizon, and always at right angles to it.—It is uſed in the analemma.

CURSOR is alſo uſed for a point ſcrewed on the beam-compaſs; and which may be moved, or ſlidden along the beam thereof, for the ſtriking of greater or leſs circles. See *Beam*-COMPASS.

CURTAILING, in the manage, the docking, or cutting off a horſe's tail.

The practice of *curtailing* is no-where in vogue ſo much as in England; it being a popular opinion, that the cutting off the tail renders the horſe's chine or back the ſtronger, and more able to bear burdens: which ſeems warranted by experience.

The amputation is uſually made between the fourth and fifth joints of the tail; a ligature being firſt tied tight about the place, to prevent the flux of blood; and the raw ſtump afterwards ſeared up with a hot iron, till the extremities of the veſſels be all ſtopped.

CURTAIN, in fortification. See the article CURTIN.

CURTATE *diſtance*, in aſtronomy, the diſtance of a planet's place from the ſun, reduced to the ecliptic; or, the interval between the ſun, and that point where a perpendicular, let fall from the planet, meets with the ecliptic.

CURTATION, the interval between a planet's diſtance from the ſun, and the *curtate* diſtance.

From the preceding article, it is eaſy to find the *curtate diſtance*; whence the manner of conſtructing tables of *curtations* is obvious.

The quantity of inclination, reduction, and *curtation* of a planet, depending on the argument of the latitude; Kepler, in his *Rudolphin tables*, reduces the tables of them all into one, under the title of *tabulæ latitudinariæ*.

CURTESY. See the article COURTESY.

CURTICONE, in geometry, a cone whoſe top is cut off by a plane parallel to its baſis; called alſo *truncated cone*. See TRUNCATED.

CURTIN *, CURTAIN, or COURTINE, in fortification, that part of a wall, or rampart, which is between two baſtions; or which joins the flanks thereof.—See *Tab. Fortification*, *fig.* 21. lit. q q.

* Du Cange derives the word from the Latin *cortina*, *quaſi minor cortis*, a little county-court, incloſed with walls: he ſays, it was in imitation hereof, that they gave this name to the walls and parapets of cities, which incloſe them like courts: he adds, that the *curtains* of beds take their name from the ſame origin; that *cortis* was the name of the general's, or prince's tent; and that thoſe who guarded it were called *cortinarii* and *curtiſani*.

The *curtin* is uſually bordered with a parapet five feet high; behind which the ſoldiers ſtand to fire upon the covert way, and into the moat.

Beſiegers ſeldom carry on their attacks againſt the *curtin*; becauſe it is the beſt flanked of any part. See FLANK.

Angle of the CURTIN. } See articles { ANGLE.
Complement of the CURTIN. } See articles { COMPLEMENT.

CURVATURE *of a line*, is its bending, or flexure; whereby it becomes a curve, of ſuch peculiar form and properties.

Thus, the *curvature* of the circle is ſuch, as that all points of the periphery are equally diſtant from one point within, called the *centre*.

The *curvatures* of different circles are to each other reciprocally as their radii.

CURVE, in geometry, a line whoſe ſeveral points tend ſeveral ways, or are poſited towards different quarters. See LINE.

In this ſenſe, the word is uſed in oppoſition to a *ſtrait line*, whoſe ſeveral points are poſited towards the ſame quarter. Hence, figures terminated with lines of the firſt ſort are called *curvilinear* figures; in oppoſition to thoſe terminated with the latter, called *rectilinear* figures.

The doctrine of *curves*, and of the figures and ſolids generated from them, conſtitute what we call the *higher geometry*.

In a *curve*, the line A D (*Tab. Geometry*, *fig.* 51.), biſecting the parallel lines M M, is called the *diameter*: if the lines be equidiſtant, and it cut them at right angles, it is called the *axis*; and the point A, whence the diameter is drawn, is called the *vertex*.

The equidiſtant lines, M M, are called *ordinates*, or *applicates*; and their halves, P M, *ſemiordinates*.

The portion of the diameter A P, between the vertex, or other fixed point, and an ordinate, is called the *abſciſſe*.

And the concourſe of all the diameters, the center.

Curves are diſtinguiſhed into *algebraic*, frequently with Des Cartes called *geometrical*; and *tranſcendental*, called by the ſame Cartes, *&c. mechanical curves.*

Algebraical CURVES, are thoſe wherein the relation of the abſciſſes AP, AP, A P, fig. 52. to the ſemiordinates MP, M P, MP, may be expreſſed by an algebraical equation.

Suppoſe, *v. gr.* in a circle, $AB=a$, $AP=x$, $PM=y$; then will $PB=a-x$; conſequently, as $PM=AP$, PB, $y=ax-x^2$. Or, ſuppoſe $PC=x$, $AC=a$, $PM=y$; then will $MC^2=PC^2=PM^2$; that is, $a^2-x^2=y^2$.

Note, Thoſe are alſo called *algebraical curves*, which are of a determinate order; ſo, as that the equation always continues the ſame in the ſeveral points of the *curve*.

Moſt authors, after Des Cartes, call algebraic *curves*, *geometrical* ones; as admitting none elſe into the conſtruction of problems; nor, conſequently, into geometry. But Sir Iſaac Newton, and after him Meſſ. Leibnitz, and Wolfius, are of another opinion; and think, that in the conſtruction of a problem, one *curve* is not to be preferred to another, for its being defined by a more ſimple equation, but for its being more eaſily deſcribed.

Tranſcendental CURVE, is that which cannot be defined by an algebraic equation.

Theſe *curves*, Des Cartes, *&c.* call *mechanical* ones (ſee MECHANICAL), and under that notion exclude them out of geometry: but Newton and Leibnitz, for the reaſon above-mentioned, are of another opinion. Indeed, Leibnitz has found a new kind of equations, which he calls *tranſcendental equations*; whereby even *tranſcendental curves*, and thoſe which are not of any determinate order, *i. e.* which do not continue the ſame in all the points of the *curve*, may be defined. *Act. erudit. Lipſ.* an. 1684. p. 234.

Algebraic CURVES *of the ſame kind or order*, are thoſe whoſe equations riſe to the ſame dimenſion.

Geometrical lines being defined by the relation between the ordinates and abſciſſes (or, which is the ſame, by the number of points wherein they may be cut by a right line) are well diſtinguiſhed into two kinds, or orders: in which view, lines of the firſt order will be right lines; and thoſe of the ſecond, or quadratic order, will be *curves*, *viz.* the *conic ſections*.

Now, a *curve* of the firſt kind is the ſame with a line of the ſecond (a right line not being numbered among *curves*); and a *curve* of the ſecond kind is the ſame with a line of the third.

Thus, *curves of the firſt kind*, are thoſe whoſe equations riſe to two dimenſions; if they riſe to three, the *curves* are *of the ſecond kind*; if to four, *of the third*, &c.

Thus, *e. gr.* the equation for a circle is, $y^2=ax-x^2$, or $a^2-x^2=y^2$. A circle, therefore, is a *curve* of the firſt kind.

Again, *a curve of the firſt kind*, is that defined by the equation $ax=y^2$; and a *curve of the ſecond kind*, that defined by the equation $a^2x=y^3$.

For the various curves *of the firſt kind, and their properties, ſee* CONIC *ſections.*

For curves of the ſecond kind, Sir Iſaac Newton has a diſtinct treatiſe, under the title of *enumeratio linearum tertii ordinis*.

Curves of the ſecond and other higher kinds, he obſerves, have parts and properties ſimilar to thoſe of the firſt: thus, as the conic ſections have diameters and axes; the lines cut or biſected by theſe, are called *ordinates*; and the interſection of the *curve* and diameter, the *vertex*: ſo, in *curves of the ſecond kind*, any two parallel right lines being drawn ſo as to meet the *curve* in three points; a right line cutting theſe parallels ſo, as that the ſum of the two parts between the ſecant and the *curve* on one ſide, is equal to the third part terminated by the *curve* on the other ſide, will cut, in the ſame manner, all other right lines parallel to theſe, and that meet the *curve* in three points, *i. e.* ſo, as that the ſum of the two parts on one ſide, will be ſtill equal to the third part on the other ſide.

Theſe three parts, therefore, thus equal, may be called *ordinates*, or *applicates*; the ſecant the *diameter*; and where it cuts the ordinates at right angles, the *axis*: the interſection of the diameter and the *curve*, the *vertex*; and the concourſe of the two diameters, the *center*; and the concourſe of all the diameters, the *common* or *general center*.

Again, as a hyperbola of the firſt kind has two aſymptotes; that of the ſecond has three, that of the third four, *&c.* and as the parts of any right line between the conic hyperbola and its two aſymptotes are equal on either ſide; ſo, in hyperbolas of the ſecond kind, any right line cutting the *curve* and its three aſymptotes in three points; the ſum of the two parts of that right line, extended from any two aſymptotes, the ſame way, to two points of the *curve*, is equal to the third part, extended from the third aſymptote, the contrary way, to the third point of the *curve*. See ASYMPTOTE, HYPERBOLA, *&c.*

Again, as in other conic ſections, not parabolical, the ſquare of an ordinate, *i. e.* the rectangle of the ordinates drawn to contrary parts of the diameter, is to the rectangle of the parts of the diameter terminated at the vertices of an ellipſis or hyperbola, as a given line, called the *latus rectum*, is to that part of the diameter which lies between the verticles, and called the *latus tranſverſum*: ſo, in *curves of the ſecond kind*, not parabolical, the parallelepiped under three ordinates, is to the parallelepiped under the parts of the diameter cut off at the ordinates and the three vertices of the ſigure, in a given ratio: wherein, if there be taken three right lines ſituate at the three parts of the diameter between the vertices of the figure, each to each; then thoſe three right lines may be called the *latera recta* of the figure, and the parts of the diameter between the vertices, the *latera tranſverſa*.

And, as in a conic parabola, which has only one vertex to one and the ſame diameter, the rectangle under the ordinates is equal to the rectangle under the part of the diameter cut off at the ordinates and vertex, and a given right line called the *latus rectum*: ſo, in *curves of the ſecond kind*, which have only two vertices to the ſame diameter, the parallelepiped under three ordinates is equal to the parallelepiped under two parts of the diameter cut off at the ordinates and the two vertices, and a given right line, which may therefore be called the *latus tranſverſum*.

Further, as in the conic ſections, where two parallels, terminated on each ſide by a *curve*, are cut by two parallels terminated on each ſide by a *curve*; the firſt by the third, and the ſecond by the fourth: the rectangle of the parts of the firſt is to the rectangle of the parts of the ſecond, as that of the ſecond is to that of the fourth: ſo, when four ſuch right lines occur in a *curve* of the ſecond kind, each in three points; the parallelepiped of the parts of the firſt will be to that of the parts of the ſecond, as that of the ſecond to the parts of the fourth.

Laſtly, the legs of *curves*, both of the *firſt*, *ſecond*, and *higher kinds*, are either of the parabolic or hyperbolic kind: an hyperbolic leg being that which approaches infinitely towards ſome aſymptote; a parabolic, that which has no aſymptote.

Theſe legs are beſt diſtinguiſhed by their tangents; for, if the point of contact go off to an infinite diſtance, the tangent of the hyperbolic leg will coincide with the aſymptote; and that of the parabolic leg, recede infinitely, and vaniſh. The aſymptote, therefore, of any leg, is found by ſeeking the tangent of that leg to a point infinitely diſtant; and the bearing of an infinite leg is found by ſeeking the poſition of a right line parallel to the tangent, when the point of contact is infinitely remote: for this line tends the ſame way towards which the infinite leg is directed.

Reduction of CURVES *of the ſecond kind.*—Sir Iſaac Newton reduces all *curves* of the *ſecond kind* to four caſes of equations: in the firſt, the relation between the ordinate and abſciſſe, makeing the abſciſſe x, and the ordinate y, aſſumes this form, $xyy+ey=ax^3+bxx+cx+d$. In the ſecond caſe, the equation aſſumes this form, $xy=ax^3+bx^2+cx+d$. In the third caſe, the equation is $yy=ax^3+bx^2+cx+d$. In the fourth, the equation is of this form, $y=ax^3+bx^2+cx+d$.

Enumeration of the CURVES *of the ſecond kind.*—Under theſe four caſes, the ſame author brings a vaſt number of different forms of *curves*, to which he gives different names.

A hyperbola lying wholly within the angle of the aſymptotes, like a conic hyperbola, he calls an *inſcribed hyperbola*; that which cuts the aſymptotes, and contains the parts cut off within its own periphery, a *circumſcribed hyperbola*; that, one of whoſe infinite legs is inſcribed, the other circumſcribed, he calls *ambigenal*; that whoſe legs look toward each other, and are directed the ſame way, *converging*; that where they look contrary ways, *diverging*; that where they are convex different ways, *croſs-legged*; that applied to its aſymptote with a concave vertex, and diverging legs, *conchoidal*; that which cuts its aſymptote with contrary flexures, and is produced each way into contrary legs, *anguineous*, or *ſnake-like*; that which cuts its conjugate a-croſs, *cruciform*; that which returning around cuts itſelf, *nodated*; that whoſe parts concur in the angle of contact, and there terminate, *cuſpidated*; that whoſe conjugate is oval, and infinitely ſmall, *i. e.* a point, *pointed*; that which from the impoſſibility of its two roots, is without either oval, node, cuſp, or point, *pure*: and in the ſame manner he denominates a parabola, to be *converging*, *diverging*, *cruciform*, &c. Where the number of hyperbolic legs exceeds that of the conic hyperbola, he denominates the *hyperbola redundant*.

Now, the various *curves* which he enumerates under theſe four caſes, are in number 72; whereof nine are *redundant* hyperbolas, without diameters, having three aſymptotes including a triangle, the firſt conſiſting of three hyperbolas, one *inſcribed*, another *circumſcribed*, another *ambigenal*, with an *oval*; the ſecond *nodated*; the third *cuſpidated*; the fourth *pointed*; the fifth and ſixth *pure*; the ſeventh and eighth *cruciform*; the laſt *anguineal*.

There are twelve *redundant* hyperbolas, having only one diameter: the firſt *oval*, the ſecond *nodated*, the third *cuſpidated*, the fourth *pointed*; the fifth, ſixth, ſeventh, and eighth, *pure*; the ninth and tenth *cruciform*; the eleventh and twelfth *conchoidal*.

Two are *redundant* hyperbolas, with three diameters.

Nine are *redundant* hyperbolas, with three aſymptotes converging to a common point; the firſt formed of the fifth and ſixth redundant parabolas, whoſe aſymptotes include a triangle; the ſecond, of the ſeventh and eighth; the third and fourth, of the ninth; the fifth is formed of the fifth and ſeventh of the redundant hyperbolas, with one diameter; the ſixth, of the ſixth and ſeventh; the ſeventh, of the eighth and ninth; the eighth, of the tenth and eleventh; the ninth, of the twelfth and thirteenth: all which converſions are effected, by diſtinguiſhing the triangle comprehended between the aſymptotes, till it vaniſh into a point. Six are defective parabolas, having no diameters; the firſt *oval*, the ſecond *nodated*, the third *cuſpidated*, the fourth *pointed*, the fifth *pure*.

Seven are defective hyperbolas, having diameters: the firſt and ſecond *conchoidal*, with an *oval*; the third *nodated*; the fourth *cuſpidated*, which is the ciſſoid of the antients; the fifth and ſixth *pointed*; the ſeventh *pure*.

Seven are parabolic hyperbolas, having diameters: the firſt *oval*, the ſecond *nodated*, the third *cuſpidated*, the fourth *pointed*, the fifth *pure*, the ſixth *cruciform*, the ſeventh *anguineous*.

Four are parabolic hyperbolas; four are hyperboliſms of the hyperbola; three hyperbolas of the ellipſis; two hyperboliſms of the parabola.

Five are diverging parabolas: one a *trident*, the ſecond *oval*, the third *nodated*, the fourth *pointed*, the fifth *cuſpidated* (this is Neil's *parabola*, uſually called the *ſemicubic parabola*), the ſixth *pure*.

Laſtly, one commonly called the *cubic parabola*.

Organical deſcription of CURVES.—1°, If two angles, given in magnitude, PAD, PBD (Tab. *Geom. fig.* 53.) revolve round poles given in poſition, A and B; and their legs, AP, BP, with their point of concourſe, P, paſs over another right line: the other two legs AD, BD, with their point of concourſe D, will deſcribe a conic ſection paſſing through the poles A, B: unleſs that line happen to paſs through either of the poles A or B; or unleſs the angles BAD and ABD vaniſh together: in which caſe, the point will deſcribe a right line.

2°, Now, if the legs AP, BP, by their point of concourſe, P, thus deſcribe a conic ſection paſſing through one of the poles, A; the other two, AD, BD, with their point of concourſe D, will deſcribe a *curve of the ſecond kind*, paſſing through the other pole B, and having a double point in the firſt pole A: unleſs the angles BAD, ABD, vaniſh together; in which caſe, the point D will deſcribe another conic ſection, paſſing through the pole A.

3°, If the conic ſection, deſcribed by the point P, paſs through neither of the poles A, B; the point D will deſcribe a *curve of the ſecond or third kind*, having a double point: which double point will be found in the concourſe of the deſcribing legs AD, BD, when the two angles BAP, ABP, vaniſh together. The *curve* deſcribed will be of the *ſecond kind*, when the angles BAD, ABD, vaniſh together; otherwiſe of the *third kind*, having two other double points in the poles A and B.

With regard to *double points of curves*: we have obſerved, that *curves* of the ſecond kind may be cut by a right line in thoſe points: now two of theſe ſometimes coincide, *v. gr.* when the right line paſſes through an infinitely ſmall oval, or through the concourſe of two parts of a *curve*, mutually cutting each other, and uniting in a cuſp. Sometimes all the right lines only cut the *curve* in one point; as in ordinates of the Carteſian and cubic parabola, *&c.* in which caſe, we muſt conceive the right lines paſſing through two other points of the *curve*, placed, as it were, at an infinite diſtance: two of theſe coincident interſections, whether at a finite or infinite diſtance, make what we call a *double point*.

Geneſis of CURVES *of the* ſecond order *by ſhadows*.—If the ſhadows of figures be projected on an infinite plane, illumined by a lucid point; the ſhadows of conic ſections will ſtill be conic ſections; thoſe of *curves* of the ſecond kind, will be *curves* of the ſecond kind; thoſe of the third kind, *curves* of the third kind, *&c.*

And as a circle, in projecting a ſhadow, generates all the conic ſections; ſo the five diverging parabolas, with their ſhadows, generate and exhibit all other *curves* of the ſecond kind.

And in this manner may a train of *ſimple curves* of other kinds be found, which ſhall form all the other *curves* of the ſame kind, by their ſhadows projected from a lucid point, upon a plane.

Deſcription of CURVES *of the* ſecond order, *having double points.*—Theſe are all deſcribed from ſeven given points, whereof one is the double point itſelf: thus, let there be given any ſeven points of the *curve* to be deſcribed; as, *v. gr.* A, B, C, D, E, F, G (Tab. *Geometry*, *fig.* 54.), whereof A is the double point: join the point A, and any other two points, *v. gr.* B and C; and let the angle CAB, of the triangle ABC, revolve about its vertex A; and another of the angles ABC, about its vertex B: and when the point of concourſe C, of the legs AC, BC, is ſucceſſively applied to the four other points, D, E, F, G, let the concourſe of the remaining legs AB and BA fall on the four points P, Q, R, S.

Through thoſe four points, and the fifth A, deſcribe a conic ſection; and let the forementioned angles CAB, CBA, ſo revolve, as that the point of concourſe of the legs AB, BA, may paſs over that conic ſection; and the concourſe of the other legs AC, BC, will deſcribe the propoſed *curve*.

Uſe of theſe CURVES *in the conſtruction of equations.*—The uſe of *curves* in geometry is, by means of the interſections thereof, to ſolve problems. See CONSTRUCTION.

Suppoſe, *v. gr.* an equation to be conſtructed of nine dimenſion as $x^9 + bx^7 + cx^6 + dx^5 + ex^4 + fx^3 + gx^2 + hx + k =$ where *b*, *c*, *d*, &c. ſignify any given quantities affected with t ſigns + and —: aſſume the equation to a cubic parabola $x^3 =$ and the firſt equation, writing y for x^3, will come out $y^3 + bx$ $+ cy + dx^2y + exy + my + fx^3 + gx^2 + hx + k = 0$; equation to another *curve* of the ſecond kind, where m or f m be aſſumed or annulled at pleaſure: and by the deſcriptions an interſections of theſe *curves* will be given the roots of the equ tion to be conſtructed. It is ſufficient to deſcribe the cubical p rabola once. If the equation to be conſtructed, by omitting t two laſt terms hx and k, be reduced to ſeven dimenſions; t other *curve*, by expunging m, will have the double point in t beginning of the abſciſſe, and may be eaſily deſcribed as above if it be reduced to ſix dimenſions, by omitting the three la terms, taking $gx^2 + hx + k$; the other *curve*, by expunging f will become a conic ſection: and if, by omitting the three la terms, the equation be reduced to three dimenſions, we ſha fall on Dr. Wallis's conſtruction by the cubic parabola an right line.

Rectification of a CURVE denotes the finding a right line equa to a *curve*. For the praxis hereof, ſee RECTIFICATION o *curves*.

Inflection of a CURVE. See the article INFLECTION.

Quadrature of a CURVE, the finding the area, or ſpace, include by a *curve*; or the aſſigning a ſquare equal to a curvilinear ſpace

Family of CURVES is an aſſemblage of ſeveral *curves* of differen kinds, all defined by the ſame equation of an indeterminate de gree; but differently, according to the diverſity of their kind. *E. gr.* Suppoſe an equation of an indeterminate degree, a^{m-1} $= y^m$. If $m = 2$, then will $ax = y^2$; if $m = 3$, then will a^2 $= y^3$; if $m = 4$, then $a^3x = y^4$, *&c.* all which *curves* ar ſaid to be of the *ſame family*, or *tribe*.

The equations whereby the families of *curves* are defined, ar not to be confounded with the tranſcendental ones: fo though, with regard to the whole family, they be of an inde terminate degree; yet, with reſpect to each ſeveral *curve* o the family, they are determinate: whereas tranſcendent equa tions are of an indefinite degree, with reſpect to the ſame *curve*.

All algebraic *curves*, therefore, compoſe a certain family, conſiſting of innumerable others; each whereof comprehends infinite kinds. For ſince the equations whereby the *curves* are defined enter the facta, either of the powers of the abſciſſes and ſemiordinates into the given coefficients, or of the powers o the abſciſſes into the powers of the ſemiordinates, or of th mere given quantities; and all equations may be equal to nothing (*v. gr.* if $ax = y^2$, then $ax = y^2 = 0$); the equation for al algebraical *curves* will be $ay^m + bx^n + cy^r x^3 + df = 0$.

Cauſtic CURVE. } See the articles { CAUSTIC.
Diacauſtic CURVE. } { DIACAUSTIC.

Exponential CURVE is that defined by an exponential equation that is, by an equation wherein is an exponential quantity, *v. gr.* x^x, a^x, *&c.*

The ſymptoms, properties, geneſes, &c. *of particular* curves, v. gr. *the cycloid*, *logarithmic* curve, *conchoid*, &c. *ſee under their proper heads*; CYCLOID, LOGARITHMIC, CONCHOID, &c.

Radial CURVES. } See { RADIAL.
Regular CURVES. } { REGULAR.
Characteriſtic triangle of a CURVE. } { CHARACTERISTIC.

CURVET, in the manage. See COURVET.

CURVILINEAR, or CURVILINEAL *figures*, in geometry, are ſpaces bounded by crooked lines; as the circle, ellipſis, ſpherical triangle, *&c.*

CURVILINEAR *angle*. } See the articles { ANGLE.
CURVILINEAR *ſuperficies*. } { SUPERFICIES.

CURULE *chair*, *ſella* CURULIS, in antiquity, a high ivory chair, wherein certain of the Roman magiſtrates had a right to ſit.

The *curule* magiſtrates were, the ædiles, prætors, cenſors, and conſuls.

The ſenators, who had borne theſe charges, were carried to the ſenate on *curule chairs*; as alſo thoſe who triumphed: the chair being fitted into a kind of chariot, *currus*; whence the origin of the word *curulis*.

The *curule chair* is uſed, on medals, to expreſs a *curule* magiſtracy: when traverſed by a haſta, it is the ſymbol of Juno, and ſerves to expreſs the conſervation of princeſſes.

CURULE *ſtatues*. See the article STATUE.

CUSP, *cuſpis*, properly denotes the point of a ſpear, or ſword; but is uſed in aſtronomy to expreſs the points, or horns, of the moon, or other luminary.

In aſtrology, CUSP is uſed for the firſt point of each of the twelve houſes, in a figure, or ſcheme, of the heavens. See HOUSE.

CUSPIDATED, in botany, is when the leaves of a flower end in a *cuſp*, or point, reſembling that of a ſpear.

CUSPIDATED *hyperbola*, &c. See CURVE.

CUSTODE *admittendo*, and CUSTODE *amovendo*, are writs for the admitting, or removing, of guardians.

CUSTODES *libertatis Angliæ*, *authoritate parliamenti*, was the ſtyle, or title, in which writs, and other judicial proceedings, did run in the time from the death of king Charles I. til Oliver was declared protector, *&c.*

CUSTODIA. See RECTO *de cuſtodia terræ & hæredis*.

Hærede deliberando alii qui habet CUSTODIAM *terræ.* See HÆREDE.

CUSTOM is uſed to denote the manners, ceremonies, or ways of living of a people, which in time have turned into habit, and by uſage obtained the force of laws.

In this ſenſe, *cuſtom* implies things that were at firſt voluntary, but are become neceſſary by uſe: thus, the preſents made by officers at their admiſſion into poſts, are only due becauſe they have paſſed into *cuſtom*.

CUSTOM alſo ſignifies the doing, or not doing, certain things, introduced by the greateſt part of the people of a country, or province.

If there be nothing evil in ſuch *cuſtom*, it obliges, till it be either abrogated by a contrary *cuſtom*, or a law.

For a *cuſtom* thus eſtabliſhed to have the force of a law, it is neceſſary, ordinarily, that it be founded on ſome natural equity, or ſome conſiderable good; and that it have ſubſiſted *ultra tritavum*: but, as this is hard to prove, it is ſufficient, if two or more witneſſes depoſe, they heard their fathers ſay the ſame of their time. If it be matter of record, the continuance of 100 years is ſufficient.

The effect of a *cuſtom*, thus circumſtantiated, is, that it has the ſame force and authority as a law; making what we call *lex non ſcripta*; and that in popular ſtates, and limited monarchies, it ſerves to interpret the written laws: for in abſolute monarchies it is the king alone has the power of interpreting laws. Hence, the word *cuſtom* is ſtill retained, and ſerves to expreſs the particular rights, and municipal laws, eſtabliſhed by uſage in particular provinces, *&c.* after they are reduced into written laws.

In this ſenſe, moſt of the common law of England is *lex non ſcripta*; being originally no more than the *cuſtoms* of our forefathers.

Lex non ſcripta, in this ſenſe, is uſed in oppoſition to *ſtatutes*, or *acts of parliament*; which commence laws at once.

Cowel diſtinguiſhes *cuſtom* from *preſcription*, in that the former is more general, and relates to ſeveral perſons; whereas the latter is uſually confined to this or that man. Five years time, too, are ordinarily ſufficient for preſcription; whereas, for *cuſtom*, there are required 100.

Cuſtoms are real things, and are included within their limits, or territories: they are either *local*, *i. e.* reſtrained to this or that place, or *general*.

The *cuſtom* of Paris ſerves as a rule for all the other places of France; where they have no proviſions contrary thereto.

The Romans were governed by *cuſtoms*, or unwritten laws, after the expulſion of their kings.

Cæſar obſerves, that the Gauls had their *cuſtoms*, which they conſtantly retained; and that it was impoſſible for the Romans to govern them by any other laws: ſo that it was only the provinces bordering on Italy that received the Roman laws.

ower by CUSTOM. } See the articles { DOWER.
it CUSTOM. } { SUIT.

USTOMS, in commerce, the dues, duties, or tolls, paid by merchants to the king, for carrying out, and bringing in, of merchandizes.

The *cuſtoms* of goods exported and imported, throughout England, amount yearly to 1300000 pounds; whereof thoſe of the port of London make a third part.

The *cuſtoms* in England are very numerous, and very high; perhaps beyond what any other trading nation knows: the principal are, duties of *tunnage* and *poundage*, which are very antient, being the only ones in uſe before the time of king Charles II. But that prince, and his ſucceſſors, have introduced divers others: at preſent, the *cuſtoms* on liquors are, *tunnage*, the *additional* duty, the duty of *exciſe*, *coinage*, duty of the *old impoſition*, duty of the *additional impoſition*, duty of *orphans money*, duty on French *wines*, *new ſubſidy*, $\frac{1}{2}$ and $\frac{2}{3}$ of *ſubſidies*.

For other merchandizes, the duties are, *poundage*, the *additional* duty on ſilks and linens, *new impoſition* of poundage, another of $\frac{4}{5}$; a duty of 25 *per cent.* on French commodities; the *new ſubſidy* of poundage, in 1697. an *additional ſubſidy* of $\frac{2}{3}$ of poundage in 1703. a third in 1704. a duty on *fiſh* and *oils*, another on *leather*, another on *paper*, *ſoap*, &c. See theſe deſcribed more at large under the article DUTY; ſee alſo TUNNAGE, POUNDAGE, *&c.*

TOM-HOUSE, an office eſtabliſhed on the frontiers of a ſtate, or in ſome chief city, or port, for the receipt of the cuſtoms and duties of importation and exportation, impoſed on merchandizes, by the authority of the ſovereign, and regulated by tariffs, or books of rates.

There are ſeveral *cuſtom-houſes* in the ſeveral ports of England: the moſt conſiderable is that of London.—It is under the direction of ſeven commiſſioners appointed by patent; who have the charge and management of all the *cuſtoms* (the petty-farms alone excepted) in all the ports of England.

Other officers are, a *ſecretary*, *ſollicitor*, *receiver-general*, *comptroller* of the iſſues and payments of the receiver-general, *comptroller-general*, *inſpector* of the out-port collectors accompts, *inſpector-general* of the exports and imports, *regiſter-general* of all ſhips of Great-Britain, *ſurveyor-general*, *ſurveyor of the out-ports*, *regiſter* of the ſeizures, *&c.* all holding their places by patents: with other inferior officers, appointed by warrant from the board of treaſury.

CUSTOMARY *tenants*, CUSTUMARII, or *tenentes per conſuetudinem*, are ſuch tenants as hold by the cuſtom of the manor as their ſpecial evidence.

Theſe were antiently bondmen, or thoſe that held *tenura bondagii*.—*Et omnes illi qui tenuerint in bondagii tenura, ſolebant vocari* cuſtumarii.—*MS. de conſuetud. man. de* Sutton Colfield, *de anno* 3 Edw. II.

CUSTOS *brevium*, a clerk, belonging to the court of common pleas; whoſe office is to receive and keep all the writs, and put them upon files, every return by itſelf; and at the end of each term to receive of the prothonotaries all the records of the niſi prius, called the *poſtea*.

The writs are firſt brought in, by the clerks of aſſize of every county, to the prothonotary who entered the iſſue in that matter, to enter judgment. Four days after the return, the prothonotary enters the verdict, and judgment thereupon, into the rolls of the court; and then delivers them over to the *cuſtos brevium*.

The *cuſtos brevium* alſo makes entry of writs of covenant, and concords on fines; and makes copies and exemplifications of all writs and records in his office, and of all fines levied: the fines, when engroſſed, are divided between the *cuſtos brevium* and chirographer; the former keeping the writ of covenant and the note, the latter the concord, and foot of the fine.

In the court of king's-bench there is likewiſe a *cuſtos brevium & rotulorum*, who files ſuch writs as are there uſed to be filed, and all warrants of attorney; and tranſcribes or makes out records of niſi prius, *&c.*

CUSTOS *rotulorum*, he who has the cuſtody of the rolls, or records, of the ſeſſions of peace; and, ſome ſay, of the commiſſions of peace itſelf.

He is always a juſtice of peace, and quorum, in the county where he hath his office; and by his office appears to be rather a miniſter than a judge: for that the commiſſion of the peace, by expreſs words, lays this ſpecial charge upon him, *Quod ad dies & loca prædicta, brevia, præcepta, proceſſus, & indictamenta prædicta coram te & dictis ſociis tuis venire facias.*

CUSTOS *ſpiritualium*, he who exerciſes ſpiritual or eccleſiaſtical juriſdiction in any dioceſe, during the vacancy of the ſee.

This, by the canon law, belongs to the dean and chapter; but, in England, to the archbiſhop of the province, by preſcription: though divers deans and chapters do challenge it, by antient charters, from kings of this land.

CUSTOS *temporalium*, the perſon to whoſe cuſtody a vacant ſee was committed by the king, as ſupreme lord; who, as a ſteward of the goods and profits, was to give an account to the eſcheator, and he into the exchequer.

His truſt continued till the vacancy was ſupplied by a ſucceſſor, who obtained the king's writ *de reſtitutione temporalium*; which was commonly after conſecration, but ſometimes before.

CUT *a feather*, in the ſea language, is when a well-bowed ſhip ſo ſwiftly preſſes the water, that it foams, or froths.

To *cut the ſail*, is to unfurl it, and let it fall down.

CUT *baſtion.* } See the articles { BASTION.
CUT *roof.* } { ROOF.

CUT-*Water*, the ſharpneſs of the head of a ſhip under the beak. See SHIP.

CUTANEOUS, ſomething that concerns the cutis, or ſkin; whether in the way of diſtemper, or remedy.

Thus, we ſay, *cutaneous* eruptions; the itch is a *cutaneous* diſeaſe.

CUTICULA, CUTICLE, in anatomy, a thin, pellucid membrane, void of ſenſe; ſerving as a cover to the cutis, or ſkin.—See *Tab. Anat.* (Myol.) *fig.* 9.

The *cuticula* is that firſt, and outermoſt, covering of the body, called alſo *epidermis*, but more commonly the *ſcarf-ſkin*; or that ſoft tegument which riſes in a bliſter upon a burn, or the application of a cautery.

It ſticks cloſe to the ſurface of the cutis, or true ſkin, to which it is alſo tied by the veſſels that feed it; though theſe are ſo ſmall as not to be ſeen.

When examined by a microſcope, it appears to conſiſt of ſeveral lays of exceeding ſmall ſcales, which cover one another, more or leſs, according to its different thickneſs, in the ſeveral parts of the body; and in the lips, where the ſcales appear plaineſt becauſe the ſkin is thinneſt, they do little more than barely touch.

Theſe ſcales are either the excretory ducts of the glands of the cutis, as is the caſe apparently in fiſhes; or elſe the glands have their tubes, opening between the ſcales. See MILIARY *gland*.

Leewenhoeck reckons, that in one *cuticular* ſcale there may be 500 excretory ducts; and that a grain of ſand will cover 250 ſcales: ſo that one grain of ſand will cover 125000 pores, or orifices, through which we daily perſpire.

Yet, notwithſtanding the exceeding poroſity of the *cuticula*, it obſtructs a great part of the ſerous humours, which would otherwiſe be evacuated by the glands of the cutis; as is evident, from that plentiful diſcharge conſequent on the application of a bliſter, or other accident, whereby the *cuticula* is removed, and the cutis bared.

The ſcales are often glued together by the groſſer parts of our inſenſible tranſpiration hardening upon them by the heat of the body, which carries off the more volatile particles; and in this is ſuppoſed to conſiſt that indiſpoſition we popularly call a *cold*.

The humour which is thenceforward ſeparated by the glands of the ſkin, being pent in between the ſcales, cauſes frequent itching; and where the matter has been long pent up, ſmall pimples, and other foulneſſes: for removing of which, nature directs to thoſe wholſome remedies of frequent rubbing, waſhing, or bathing.

Some imagine the *cuticle* to be form'd from the groſſer parts of the excrementitious ſerous humour, eliminated through the pores of the cutis, and condenſed on the ſurface; like the pellicle which appears, upon evaporation, on the ſurface of the ſerum of the blood: but Leewenhoeck, with more probability, takes it to be from an expanſion of the excretory ducts of the glands of the ſkin.

Its uſe is to defend the nerves of the cutis, which are the origin of the ſenſe of feeling, from the injuries of rough and hard bodies, as well as the air: for either of thoſe would make too exquiſite and painful an impreſſion on the naked nerves; or the air would dry them, ſo as that they would be leſs ſuſceptible of the nicer touches of pleaſure.

Riolanus, and ſeveral others, maintain that the *cuticula* of women has no pores: Molinette argues the contrary from their ſweating; but maintains, withal, that this is true of dogs and cats, which never ſweat, how much ſoever fatigued.

CUTICULARES *carunculæ*. See CARUNCULÆ *cuticulares*.

CUTIS, in anatomy, *the ſkin*; a reticular plexus, or body of veſſels, immediately under the cuticle, or ſcarf-ſkin.—See *Tab. Anat.* (Myol.) *fig.* 8.

The veſicles of the *cutis* contain a mucous liquor; from the tincture of which, Malpighi, and others, take the colour of the ſkin to be derived; founded on this, that the *cutis*, as well as cuticle of blacks is white, and the blood red, *&c.* and that the only thing they have peculiar in this part, is the colour of this liquor.

The *cutis* conſiſts of fibres of its own; or, according to Steno, is formed out of the productions of the tendons of the ſubjacent parts: which terminate in an infinite number of pyramidal papillæ, interwoven with innumerable nervous fibres, and other veſicles, forming what we call a *parenchyma*. See PARENCHYMA.—It is by means of theſe papillæ that the *cutis* becomes the organ of feeling.

The *cutis* is generally connected to the ſubjacent parts by the membrana adipoſa, and its proper veſſels, the veins, arteries, nerves, *&c.* Its uſe is to wrap up and cover the whole body; to be a general emunctory for the matter of perſpiration; and to be the organ of feeling.

The diſeaſes of the *cuticula* and cutis are the *itch*, *leproſy*, *ſmall-pox*, *meaſles*, *ſcarlet fever*, and *eryſipelatous inflammations*.

CUTTER *of the tallies*, an officer of the exchequer, who provides wood for the tallies, and cuts the ſum paid upon them. See TALLY.

CUTTING, a term uſed in various ſenſes, and various arts; in the general, it implies a diviſion or ſeparation.

CUTTING is particularly uſed in heraldry, where the ſhield is divided into two equal parts, from right to left, parallel to the horizon, or in the feſſe-way.

The word is alſo applied to the honourable ordinaries, and even to animals, and moveables, when they are divided equally the ſame way; ſo, however, as that one moiety is colour, the other metal.—The ordinaries are ſaid to be *cut*, *couped*, when they do not come full to the extremities of the ſhield.

CUTTING, *lithotomy*, in chirurgery, denotes the operation of extracting the ſtone out of the bladder by ſection. See STONE.

It appears, that *cutting* was in uſe for the ſtone, even in the time of Hippocrates; though we are perfectly in the dark as to the manner in which they performed it: it was, however, wholly diſuſed in the after-ages; inſomuch that, in the beginning of the ſixteenth century, there was nobody durſt practiſe it. The faculty of medicine at Paris were obliged to petition the parliament, to obtain leave to make a trial on a criminal condemned to death, who had the ſtone in the bladder: the operation ſucceeding, the practice became popular.

There are three principal ways of performing the operation; the *apparatus minor*, *apparatus major*, and *apparatus altus*; or the *low lateral*, and *high operations*. The method of performing each, ſee under the article LITHOTOMY.

CUTTING-GLASS, in chirurgery. See CUPPING-GLASS.

CUTTING, in coinage. When the laminæ, or plates of the metal, be it gold, ſilver, or copper, are brought to the thickneſs of the ſpecies to be coined, pieces are *cut* out, of the thickneſs, and nearly of the weight, of the intended coin; which are now called *planchets*, till the king's image have been ſtamped on them.

The inſtrument wherewith they *cut*, conſiſts of two pieces of ſteel, very ſharp, and placed over one another; the lower a little hollow, repreſenting a mortar; the other a peſtle.—The metal put between the two, is *cut* out in the manner deſcribed under the article COINAGE.

Note, Medallions, where the relievo is to be great, are not *cut*, but caſt, or moulded.

CUTTING, in the manage, is when the horſe's feet *interfere*; or when with the ſhoe of one foot he beats off the ſkin from the paſtern joint of another foot.

This is more frequent in the hind feet than the fore: the cauſes are either wearineſs, weakneſs in the reins, not knowing how to go, or ill ſhoeing.

CUTTING, in painting, the laying one ſtrong lively colour over another, without any ſhade or ſoftening.—The *cutting* of colours has always a diſagreeable effect.

CUTTING *in wood*, a particular kind of ſculpture, or engraving; denominated from the matter wherein it is employed.

It is uſed for various purpoſes; as, for initial or figured letters, head and tail-pieces of books; and even for ſchemes, and other figures, to ſave the expences of engraving on copper: and for prints, and ſtamps for paper, callicoes, linens, *&c.*

The invention of *cutting in wood*, as well as that in copper, is aſcribed to a goldſmith of Florence; but it is to Albert Durer, and Lucas, they are both indebted for their perfection.

One Hugo de Carpi invented a manner of *cutting* in wood, by means whereof, the prints appeared as if painted in clair-obſcure: In order to this, he made three kinds of ſtamps for the ſame deſign; which were drawn, after one another, thro' the preſs for the ſame print: they were ſo conducted, as that one ſerved for the grand lights, a ſecond for the demi-teints, and a third for the outlines, and the deep ſhadows.

The art of *cutting in wood*, was certainly carried to a very great pitch about 150 years ago; and might even vie, for beauty and juſtneſs, with that of engraving in copper: at preſent it is in a low condition, as having been long neglected, and the application of artiſts wholly employed on copper, as the more eaſy and promiſing province: not but that wooden *cuts* have the advantage of thoſe in copper on many accounts; chiefly for figures and devices in books; as being printed at the ſame time, and in the ſame preſs, as the letters: whereas, for the other, there is required a particular impreſſion.

The *cutters in wood* begin with preparing a plank or block, of the ſize and thickneſs required, and very even and ſmooth on the ſide to be *cut*: for this, they uſually take pear-tree, or box; though the latter is the beſt, as being the cloſeſt, and leaſt liable to be worm-eaten.

On this block they draw their deſign with a pen, or pen il, juſt as they would have it printed. Thoſe who cannot draw their own deſign, as many there are cannot, make uſe of a deſign furniſhed them by another; faſtening it upon the block with paſte made of flour and water, with a little vinegar the ſtrokes or lines turned towards the wood.

When the paper is dry, they waſh it gently over with a ſponge dipped in water; which done, they take off the paper by little and little, ſtill rubbing it a little firſt, with the tip of the finger; till at length there be nothing left on the block, but the ſtrokes of ink that form the deſign, which mark out ſo much of the block as is to be ſpared, or left ſtanding.

The reſt they *cut* off, and take away very curiouſly with the points of very ſharp knives, or little chiſſels, or gravers, according to the bigneſs or delicacy of the work; for they need no other inſtruments.

CUTTINGS, or *ſlips*, in gardening, the branches or ſprigs of trees, or plants, *cut* or ſlipped off to ſet again; which is don in any moiſt fine earth.

The beſt ſeaſon is from Auguſt to April; but care is to be taken, when it is done, the ſap be not too much in the top leſt the cut die ere that part in the earth have root enough ſupport it: nor yet muſt it be too dry, or ſcanty; the ſap the branches aſſiſting it to take root.

In providing the *cuttings*, ſuch branches as have joints, kno or burrs, are to be *cut* off two or three inches beneath the and the leaves to be ſtripped off ſo far as they are ſet in the earth. Small top-branches, of two or three years growth, fitteſt for this operation. See Supplement, article CUTTING

CUVETTE. See the article CUNETTE.

CYCLE, in chronology, a certain period, or ſeries of numb proceeding orderly from firſt to laſt, and recurring ag from laſt to firſt; ſucceſſively, and without interruption. PERIOD.

The origin of *cycles* was thus: the apparent revolution of ſun round the earth, has been divided, arbitrarily, into hours; the baſis or foundation of all our menſuration of ti Civil uſe knows none but hours; or rather multiples of ho as days, and years. But neither the annual motion of the nor that of the other heavenly bodies, can be meaſured actly, and without any remainder, by hours, or their m ples. That of the ſun, *v. gr.* is 365 days, five hours, fo nine minutes, nearly; that of the moon twenty-nine d twelve hours, forty-four minutes.

Hence, to ſwallow up theſe fractions, in whole numbers, and in numbers which only expreſs days and years, *cycles* have b invented: which, comprehending ſeveral revolutions of the ſame body, replace it, after a certain number of years, in the ſame points of the heaven whence it firſt departed; or, which is the ſame thing, in the ſame place of the civil calendar.

Such is the famous *cycle* of 19 years, called alſo the

CYCLE *of the moon, or lunar* CYCLE, a period of 19 ſolar years; equivalent to 19 lunar years, and ſeven intercalary months: in which time the new and full moons are ſuppoſed to return to the ſame day of the Julian year.

This is alſo called the *Metonic period*, from its inventor Meton, the Athenian; and the *golden number*.—Tho', in propriety, the golden number is rather the particular number which ſhews the year of the lunar *cycle*, which any given year is in.—This *cycle* of the moon only holds true for 312 years: for, though the new moons do return to the ſame day after 19 years; yet not to the ſame time of the day, but near an hour and a half ſooner: which error, in 312 years, amounts to an intire day.

Yet thoſe employed in reforming the calendar went on a ſuppoſition of the lunations returning preciſely from 19 years to 19 years, for ever.

The uſe of this *cycle*, in the antient calendar, is to ſhew the new moon of each year, and the time of Eaſter.

In the new one, it only ſerves to find the epacts; which ſhew, in either calendar, that the new moons fall eleven days too late.

As the orientals began the uſe of this *cycle* at the time of the council of Nice; they aſſumed, for the firſt year of the *cycle*, the paſchal new moon to fall on the 13th of March: on which foot, the lunar *cycle* three fell on the firſt of January, in the third year.

The occidentals, on the contrary, put the number one to the firſt of January, which occaſioned a conſiderable difference in the time of Eaſter: hence, Dionyſius Exiguus, upon framing a new calendar, perſuaded the Chriſtians of the Weſt to ſalve the difference, and come into the practice of the church of Alexandria.—*To find the year of the lunar* CYCLE, is to find the golden number. See GOLDEN *number*.

YCLE *of indictions* is a ſeries of 15 years, returning conſtantly around, like the other *cycles*; and commencing from the third year before Chriſt.

When this *cycle of indictions* was firſt ſet on foot among the Romans, and for what end, is much controverted among chronologers. Petavius leaves it as a thing not to be aſcertained. The moſt probable opinion is, that it was received about the year 312. in the time of Conſtantine.

To find the cycle *of indiction for any given year*; add three to the given year, and divide the ſum by 15, the remainder is the *cycle of indiction*.—If there be no remainder, the indiction is 15.

YCLE *of the ſun, or ſolar* CYCLE, a revolution of 28 years; beginning with 1, and ending with 28; which elapſed, the dominical or ſunday-letters, and thoſe that expreſs the other feaſts, &c. return into their former place, and proceed in the ſame order as before.

It is called *ſolar cycle*, not with regard to the ſun's courſe, which has nothing to do herein; but from ſunday, antiently called *dies ſolis, the day of the ſun*: in regard the dominical letter is principally ſought for from this revolution; the dominical letters, which are the firſt in the alphabet, having been ſubſtituted in lieu of the nundinal letters of the Romans.

The reformation of the calendar under pope Gregory occaſioned a conſiderable alteration of this *cycle*: in the Gregorian calendar, the *ſolar cycle* is not conſtant and perpetual; by reaſon every fourth ſecular year is common; whereas, in the Julian, it is biſſextile. The epocha, or beginning of the *ſolar cycle*, both Julian and Gregorian, is the ninth year before Chriſt.

To find the cycle *of the ſun for any given year*; add nine to the number given, and divide the ſum by 28; the number remaining will be the number of the *cycle*, and the quotient the number of revolutions ſince Chriſt.

If there be no remainder, it will be the twenty-eighth, or laſt year of the *cycle*.

CYCLE *of the Sun in* Julian *Years.*

1	GF	5	BA	9	DC	13	FE	17	AG	21	CB	25	ED
2	E	6	G	10	B	14	D	18	F	22	A	26	C
3	D	7	F	11	A	15	C	19	E	23	G	27	B
4	C	8	E	12	G	16	B	20	D	24	F	28	A

CYCLE *of the Sun from the* Gregorian *Year* 1700. *to the Year* 1800.

1	DC	5	FE	9	AG	13	CB	17	ED	21	GF	25	BA
2	B	6	D	10	F	14	A	18	C	22	E	26	G
3	A	7	C	11	E	15	G	19	B	23	D	27	F
4	G	8	B	12	D	16	F	20	A	24	C	28	E

CLE, it may be obſerved, is not only applied in general to ll the numbers that compoſe the ſeries; but to each number n particular: thus we compute, that the ordinary epocha from he birth of Jeſus Chriſt had the *ſolar cycle* 10; the *lunar ycle*, or the golden number, 2; the dominical letter B; and he *cycle of indiction* 4.

CYCLISCUS (from κυκλος, *circulus*); an inſtrument in form of an half-moon; uſed by the ſurgeons to ſcrape the ſkull, in fractures of that part.

CYCLOID, in geometry, one of the mechanical, or, as others term them, tranſcendental curves; called alſo the *trochoid*.

It is deſcribed by the motion of a point A (*Tab. Geometry, Fig.* 55.) in the periphery of a circle; while the circle makes a revolution along the right line AP.

Hence, *the properties of this curve*, viz. that the right line AE is equal to the periphery of the circle ABCD; and A*c* to the ſemi-periphery; and in any ſituation of the generating circle, the right line A*d* is equal to the arch D*d*.—Again, *ad* being parallel to A*c*; A*d* is equal to the arch of the generating circle *d*F.—Further, the whole length of the *cycloid* is four times that of the diameter of the generating circle; and the *cycloidal* ſpace comprehended between the curve and the ſubtenſe AE is triple the area of the generating circle.—Laſtly, any part eſtimated from the vertex, as FI, is every-where double the chord of the circle F*b*, and the tangent thereof, GI, perpetually parallel to the ſame chord F*b*.

The geneſis of the CYCLOID may be conceived by imagining a nail in the circumference of a wheel: the line which the nail deſcribes in the air, while the wheel revolves on a right line, is the *cycloid*.

The *cycloid* is reputed a modern curve, and its invention aſcribed, by ſome, to Merſenne; by others, to Galileo: but Dr. Wallis ſhews it of an older ſtanding, and to have been known to Bovillus, about the year 1500. and even conſidered by cardinal Cuſanus much earlier, *viz.* before the year 1451.

M. Huygens has demonſtrated, that from whatever point, or height, a heavy body, oſcillating on a fixed centre (*v. g.* a pendulum), begins to deſcend; while it continues to move in a *cycloid*, the times of its falls, or oſcillations, will be equal to each other. This property M. Fontenelle ſtates thus: the nature of the *cycloid* is ſuch, that if a body, which deſcribes it, fall from a greater height, and by that means acquire a certain augmentation of velocity, as in Galileo's theory, the greater *cycloidal* arch which it deſcribes, takes up preciſely that exceſs of velocity. So that the body does not deſcribe it either ſooner for its being accelerated, or later for having a greater ſpace to move: and hence ariſes an equality in time, notwithſtanding the inequality of arches.

On this foundation it is, that the pendulum-clock is built: on the ſubject whereof, the ſame M. Huygens has written a large volume, under the title of *horologium oſcillatorium*. See PENDULUM; ſee alſo OSCILLATION.

CYCLOIDAL *ſpace*, the ſpace contained between the *cycloid*, and the ſubtenſe thereof.

CYCLOMETRY, the art of meaſuring cycles, or circles.

CYCLOPÆDIA *, Κυκλοπαιδεια, the circle, or compaſs of arts and ſciences: more ordinarily called *encyclopædia*.

* The word *cyclopædia* is not of claſſical authority, though frequent enough among modern writers, to have got into ſeveral of our dictionaries. Some make it a crime in us to have called the preſent work by this name; not conſidering, that names and titles of books, engines, inſtruments, &c. are in great meaſure arbitrary; and that authors make no ſcruple even of coining new words on ſuch occaſions, when there are no old ones to their mind. Thus it is Dr. Hook calls his fine book of microſcopical obſervations, *Micrographia*; Wolfius his book on the air, *Aerometria*; Drake his book of anatomy, *Anthropologia*, &c. all of them words of modern, if not their own fabric: and on no better authority ſtand the names of half our later inventions, as *Microſcope, Teleſcope, Barometer, Thermometer, Micrometer*, &c.—But it is ſuggeſted the word *cyclopædia* is ambiguous, and may denote the *ſcience of a circle*, as well as the *circle of ſciences*: we anſwer, that as cuſtom, the only ſovereign rule of language, has determined the word to the latter ſenſe, it is no more chargeable with ambiguity than a thouſand other words of received uſe; no more, for inſtance, than *micrometer*, which might either denote a *little meaſure*, or a *meaſure of little things*.

CYDER. See the article CIDER.

CYDER *vinegar*. See the article VINEGAR.

CYDONITES *vinum*. See the article VINUM.

CYGNUS, or CYCNUS, *the ſwan*, in aſtronomy, a conſtellation of the northern hemiſphere, between Lyra and Cepheus. See CONSTELLATION.

The ſtars in the conſtellation *cygnus*, in Ptolemy's catalogue, are 17; in Tycho's, 19; in the Britannic catalogue, 107. The order, names, longitudes, latitudes, magnitudes, &c. whereof are as follow:

Names and Situations of the Stars.	Signs.	Longitude. °	′	″	Latitude. North. °	′	″	Magn.
Preced. of two towards the harp	♑	20	54	46	66	13	6	5
Subſeq. and more north		25	41	28	68	49	57	6
In the extremity of the north. wing	♒	10	38	18	73	50	11	4
That preced. the bill towards the ſo.	♑	23	47	46	47	41	20	5
Preced. the bill towards the ſouth		25	18	47	50	57	30	5

Names and Situations of the Stars.	Signs.	Longitude.			Latitude, North.			Magn.
		°	′	″	°	′	″	
		24	16	45	46	25	40	6
		28	51	20	57	20	44	6
That below the bill		25	12	34	45	54	20	4
		25	16	24	45	59	22	6
In the bill		26	55	37	49	0	31	3 4
10								
	♒	13	40	9	72	10	51	6
	♑	29	55	52	55	14	20	6
Middle of 3 in the north. wing	♒	13	42	43	71	28	38	4
		2	38	16	57	23	36	6
In the head		0	36	19	50	39	38	5
15								
South. of 3 in the north. wing		14	22	42	69	37	56	4
		7	54	44	62	42	5	6
		0	18	38	46	10	32	6
		5	50	43	57	15	9	6
Preced. in the inſide of the no. wing.		17	1	8	69	30	50	6
20								
Preced. in the neck		4	36	37	53	42	33	5
In the angle of the north. wing		11	57	17	64	27	14	3 4
		1	28	49	42	41	50	4 5
		8	53	22	58	7	12	6
		2	43	29	43	58	26	4 5
25								
North of the middle ſtars in the wing		24	13	58	70	53	46	5 6
In the middle of the neck		8	37	28	54	18	48	4
		10	31	20	57	31	43	6
		4	7	19	42	40	56	5
		25	11	36	74	10	15	6 7
30								
South. of the middle ſtars in the wing		25	9	41	69	59	55	5
		6	31	37	47	1	43	4 5
		10	58	10	55	54	29	6
		5	39	1	44	15	50	5
Laſt of thoſe in the north. wing		23	44	12	67	33	40	6
35								
		6	36	40	42	41	12	4 5
Preced. in the riſe of the neck		12	30	29	54	28	16	5
		9	3	51	45	34	54	6 5
Middle of 3 in the riſe of the neck		13	57	43	55	1	40	5
		9	24	14	45	24	28	6
40								
		9	19	24	45	4	48	5 6
		10	59	28	47	2	8	5 6
		9	7	46	42	0	27	5
Subſeq. in the riſe of the neck		15	34	43	54	36	33	6
		11	3	12	46	5	20	4 5
45								
		9	58	47	43	1	53	5
Preced. in the foot, which is double }		23	46	19	63	43	29	5
		23	47	55	63	38	3	4
Subſeq. in the ſame foot		25	31	58	64	18	53	5 6
A new one of the breaſt, *anno* 1600.		17	29	12	55	29	20	6
50								
South of two under the new one		15	44	13	52	36	15	6
North. of the ſame		17	2	13	54	33	16	6
		11	26	23	42	26	36	6
In the breaſt (of the n. wing		20	32	51	57	9	20	3
Middle of 3 *informes* preced. the angle		15	42	22	49	36	33	4
55								
		20	51	58	55	4	46	6
South. of the ſame		16	24	20	47	28	53	4
		20	0	57	53	7	6	4
	♓	1	22	17	64	41	46	5 6
	♒	20	57	9	53	23	53	6
60								
Middle and brighter agſt. the no. knee	♓	1	46	7	64	3	51	5
Subſeq. at the knee		2	31	4	64	10	7	5 6
North. of thoſe preced. in the angle	♒	20	37	18	51	38	16	5
(gle near the tropic		16	10	4	42	45	11	6
Preced. of the *informes* in the trian-		16	42	41	43	13	32	5 6
65								
		19	28	14	47	57	16	6
South. in that triangle		16	2	55	40	54	36	5 6
		14	56	59	38	7	7	5
		20	54	55	48	21	13	6
Bright ſtar in the tail	♓	1	1	32	59	56	37	2
70								
Subſeq. of the ſaid triangle	♒	18	22	34	41	30	54	6
	♓	7	17	32	64	4	18	6 7
Inform. under the ang. of the ſ. wing	♒	21	21	29	46	30	26	5
In the angle or elbow of the ſ. wing		23	22	52	49	26	21	3
In the middle of ſame wing		25	26	47	51	38	37	4
75								
	♓	4	8	54	49	57	10	5
South. of thoſe preced. the extreme }	♒	21	18	12	42	37	9	6
of the 2 *informes* of the ſ. wing }	♓	2	22	56	58	5	31	6 5
(the wing		3	39	19	58	5	13	6
North of thoſe prec. the extrem. of	♒	22	45	37	43	13	58	5
80								
		20	45	4	37	39	42	6
In the ſouth foot (tail	♓	1	51	21	54	56	25	4
Foremoſt of 3 in the north part of the		8	49	9	60	6	19	5 6
South of the ſame		7	42	19	58	50	19	6 7
		1	57	3	51	50	35	5
85								
Againſt the ſouth knee		6	32	3	56	36	5	4
Subſeq. in the north part of the knee		10	50	42	59	33	35	6 5
	♒	24	51	36	37	59	50	6
In the extrem. of the ſouth wing		28	44	36	43	43	13	3
Middle of thoſe in the ſouth wing	♓	4	16	38	50	32	40	4
90								

Names and Situations of the Stars.	Signs.	Longitude.			Latitude, North.			Magn.
		°	′	″	°	′	″	
South of 3 in the wing		2	57	29	47	29	10	5
North of the ſame		6	3	49	51	30	45	4
A ſmall one following the ſouth. knee		10	14	21	55	20	9	6
		6	1	38	48	25	8	6
That under the extrem. of the ſ. wing		1	14	9	40	0	20	6 5
95								
		7	1	15	48	34	55	6
North of 2 in the extrem. of the tail		15	39	47	56	25	37	6
		9	59	28	49	7	0	6
South in the extremity of the tail		15	53	18	55	12	21	4 5
		12	1	23	50	32	2	6
100								
		15	15	52	52	39	30	6
		13	31	55	50	25	21	6
		13	56	49	50	34	26	6
Under the ſouth wing, towards }		6	8	0	39	32	16	3 4
the foot of Pegaſus }		12	3	43	48	3	34	6
105								
N. of the *informes* following the tail		24	1	45	58	52	37	4 5
South of thoſe following the tail	♓	23	17	18	57	12	6	5

CYLINDER, in geometry, a ſolid body, contained unde three ſurfaces; ſuppoſed to be generated by the rotation of parallelogram, as CBEF (*Tab. Geometry*, *fig*. 56.), abou one of its ſides, CF.

If the generating parallelogram be rectangular, as CBEF the *cylinder* it produces will be a *right cylinder*, i. e. a *cylinde* whoſe axis is perpendicular to its baſe.

If the parallelogram be a *rhombus*, or *rhomboides*, the *cylinde* will be *oblique*, or *ſcalenous*.

The ſurface of a *right cylinder*, excluſive of its baſes, is demonſtrated to be equal to a rectangle contained under th periphery, and the altitude of the *cylinder*.

The periphery, therefore, of the baſe, and thence the ba itſelf, being found, and multiplied by two, and the produ added to the rectangle of the height, and periphery of th *cylinder*; the ſum will be the area or ſuperficies of the *cylinder*: multiply this by the area of the baſe; and the produ will be the ſolidity of the *cylinder*.

For it is demonſtrated, that a circle is equal to a triangl whoſe baſe is equal to the periphery, and height, to the r dius; and alſo, that a *cylinder* is equal to a triangular priſ having the ſame baſe and altitude with itſelf: its ſolidit therefore, muſt be had by multiplying the ſuperficies in the baſe.

Again, ſince a cone may be eſteemed an infinite-angular p ramid; and a *cylinder* an infinite-angular priſm: a cone one third part of a *cylinder*, upon an equal baſe, and of th ſame height.

Further, a *cylinder* is to a ſphere of the ſame baſe and altitu as 3 to 2.

Laſtly, It being demonſtrated in mechanics, that every figu whether ſuperficial or ſolid, generated, either by the motion a line, or of a figure; is equal to the factum of the generati magnitude into the way of its centre of gravity, or the line centre of gravity deſcribes: hence, if the rectangle ABC (*Tab. Mechanics*, *fig*. 43.) revolve about its axis AD, it w deſcribe a *cylinder*, and its ſide BC the ſurface of the *cylind* But the centre of gravity of the right line BC is in the mi dle F; and the centre of gravity of the generating plane in th middle G, of the right line EF. The way of this, therefor is the periphery of a circle deſcribed by the radius FG; and that, the periphery of a circle deſcribed by EF. The ſup ficies, therefore, of the *cylinder*, is the factum of the altitu BC, into the periphery of the circle deſcribed by the rad EF, *i. e.* into the baſe: but the ſolidity of the *cylinder* is t factum of the generating rectangle ABCD, into the pe phery of the circle deſcribed by the radius EG; which is ſu duple of EF, or the ſemidiameter of the *cylinder*.

Suppoſe, *v. gr.* the latitude of the deſcribing plane, and the fore of the *cylinder* $BC=a$, the ſemidiameter of the b $DC=r$; then will $EG=\frac{1}{2}r$; and ſuppoſing the ratio the ſemidiameter to the periphery, $=1:m$; the periphery ſcribed by the radius, $\frac{1}{2}r$ will be equal to $\frac{1}{2}mr$. Therefo multiplying $\frac{1}{2}mr$ into the area of the rectangle $AC=a$ the ſolidity of the *cylinder* $=\frac{1}{2}mar^2$: but $\frac{1}{2}mar^2=\frac{1}{2}r.mr$ and $\frac{1}{2}r.mr$, the area of the circle deſcribed by the ra DG. The ſolidity of the *cylinder*, therefore, is equal to factum of the baſe, and the altitude.

For the ratio of CYLINDERS; as the radii of all *cylinders*, co &c. are in a ratio compoſed of their baſes, and altitudes: hen if their baſes be equal, they will be in the ratio of their heigh if their altitudes be equal, in the ratio of their baſes.

Hence, alſo, the baſes of *cylinders* and cones being circles; circles being in a duplicate ratio of their diameters; all *cylin* and cones are in a ratio compounded of the direct ratio of altitude, and the duplicate one of their diameters: and, they be equally high, as the ſquares of the diameters.

Hence, again, if in *cylinders* the altitude be equal to the dia ter of the baſes, they will be in a triplicate ratio of the dia ters of the baſe. All *cylinders*, cones, &c. are in a tripli ratio of their homologous ſides; as alſo of their altitudes Again, equal *cylinders*, cones, &c. reciprocate their baſes altitudes. See CONE, &c.

Laſtly, a *cylinder* whoſe altitude is equal to the diamete the baſe, is to the cube of its diameter, as 785 to 1000.

find a circle equal to the ſurface of a given CYLINDER, we ave this theorem: the ſurface of a *cylinder* is equal to a ircle, whoſe radius is a mean proportional between the diameter and height of the *cylinder*.

diameter of a ſphere, and altitude of a CYLINDER *equal hereto, being given, to find the diameter of the* cylinder: the heorem is; the ſquare of the diameter of the ſphere is to the ſquare of the diameter of the *cylinder* equal to it, nearly, as riple the altitude of the *cylinder* to duple the diameter of the ſphere. See SPHERE.

To find a rete, *or cage, whence a* cylinder *may be formed, or wherewith any* cylinder *may be covered.* With the diameter of the baſe, deſcribe two circles; find their peripheries: and, upon a line equal to the altitude of the *cylinder*, form rectangle, whoſe other dimenſion is equal to the found eriphery. Thus may the *cylinder* required be formed, or overed.

ſiſtance of a CYLINDER. } See articles { RESISTANCE.
nography of a CYLINDER. } { SCENOGRAPHY.

LINDER *charge*, in gunnery, is that part of a great gun which is poſſeſſed by the powder and ball.

LINDER *concave*, in gunnery, is all the chace, or hollow ength, of a piece of ordnance.

LINDER *vacant*, in gunnery, is that part of the hollow that emains empty, after the gun is charged. See CANNON.

LINDRICAL *column.* } { COLUMN.
LINDRICAL *compaſſes.* } See the articles { COMPASSES.
LINDRICAL *mirrours.* } { MIRROUR.
LINDRICAL *wax-candles.* } { CANDLE.

LINDROID*, in geometry, a ſolid body, approaching the igure of a *cylinder*; but differing from it in ſome reſpect, *gr.* as having its baſes elliptical, but parallel, and equal.

* The word comes from the Greek κυλινδρος, *cylinder*; and ειδος, *form*.

erbolic CYLINDROID. See HYPERBOLIC.

MA, in botany, a term ſignifying the tender ſprout of any lant, eſpecially of the cabbage kind.

MA, in architecture. See CIMA, and CYMATIUM.

MATIUM, CIMATIUM, or CIMA, in architecture, a ember, or moulding of the corniche, whoſe profile is aved, *i. e.* concave a-top, and convex at bottom; frequently alſo called *doucine*, *gorge*, or *gula recta*; eſpecially by e French: by the Italians *goletta*, i. e. *parva gula*; but more ſually, *cymatium*, among us; being the laſt, or uppermoſt ember of the corniche.—See *Tab. Architecture*, *fig.* 8.

ome write the word *ſimaiſe*, from *ſimus*, *camus*, flat-noſed; ut this etymology is unlucky: the beauty of the moulding onſiſting in its having its projecture equal to its height.

M. Felibien therefore rejects this origin; contending, that he moulding is not ſo denominated from its being the uppermoſt member of the corniche, but, according to the ſentiment f Vitruvius, from its being waved, from the Greek κυματιον, *undula*, of κυμα, *wave*. This is certain, that Vitruvius ſometimes uſes the word *unda* for *cymatium*; and ſometimes *lyſis*, i. e. *ſolution*, *ſeparation*; in regard corniches, here the *cymaiſes* are found, ſeparate one piece of architecture from another; as the pedeſtal from the column, and e frieze from the corniche.

ut, withal, it muſt be obſerved, that he does not confine *matium* to the corniche; but uſes it indifferently for any milar moulding, where-ever he meets with it: in which he iffers from the more accurate among the moderns.

elibien makes two kinds of *cymatiums*; the one *right*, the her *inverted*: in the firſt, that part which projects the fartheſt is concave, and is otherwiſe called *gula recta*, and *doucine*. See DOUCINE.—In the other, the part that projects fartheſt is convex, called *gula inverſa*, or *talon*. See TALON.

ur architects do not uſe to give the name *cymatium* to theſe ouldings, except when found on the tops of corniches; but e workmen apply the name indifferently, where-ever they nd them.—Palladio diſtinguiſhes the *cymatium* of the corniche by the name *intavolata*.

can CYMATIUM conſiſts of an ovolo, or quarter-round. hilander makes two *Doric cymatiums*, whereof this is one: aldus calls this the *Leſbian aſtragal*.

ic CYMATIUM is a cavetto; or a cavity leſs than a ſemicircle, having its projecture ſubduple its height.—See *Tab. rchitecture*, *Fig.* 28. lit. L. and *Fig.* 6.

ian CYMATIUM, according to Vitruvius, is what we therwiſe call *talon*; viz. a concavo-convex member, having its projecture ſubduple its height.

MBAL*, a muſical inſtrument, uſed among the antients; lled by the Greeks κυμβαλον, and by the Latins *cymbalum*.

* Sylburgius derives the word from three ſeveral Greek roots, *viz.* from κυφος, *crooked*; from κυπελλον, *cup*; and from φωνη, *voice*. Iſidore derives it from *cum*, and *ballematica*, an immodeſt dance, uſed to accompany this inſtrument. The real etymology appears to be from κυμβος, *cavity*.

he *cymbal* was of braſs, like our kettle-drums; and ſome ink in their form, but ſmaller, and its uſe different.

aſſiodorus and Iſidore call it *acetabulum*, the name of a cup cavity of a bone wherein another is articulated; and Xenophon compares it to a horſe's hoof: whence it muſt have en hollow; which appears, too, from the figure of ſeveral other things, denominated from it, as a baſin, caldron, goblet, caſque; and even a ſhoe, ſuch as thoſe of Empedocles, which were of braſs.

In effect, the antient *cymbals* appear to have been very different from our kettle-drums, and their uſe of another kind: to their exterior cavity was faſtened a handle; whence Pliny takes occaſion to compare them to the upper part of the thigh, *coxendicibus*; and Rabanus to phiols.

They were ſtruck againſt one another, in cadence, and made a very acute ſound. Their invention was attributed to Cybele; whence their uſe in feaſts and ſacrifices: ſetting aſide this occaſion, they were ſeldom uſed but by diſſolute and effeminate people. M. Lampe, who has written expreſly on the ſubject, attributes the invention to the Curetes, or inhabitants of mount Ida in Crete: it is certain, theſe, as well as the Corybantes, or guards of the kings of Crete, and thoſe of Rhodes, and Samothracia, were reputed to excel in the muſic of the *cymbal*. See CORYBANTES.

The Jews, too, had their *cymbals*, which they called צלצלים or תצלתים; or at leaſt, inſtruments that the Greek, Latin, and Engliſh tranſlators, render *cymbals*; for as to their matter, form, &c. the critics are wholly in the dark.

The modern *cymbal* is a paltry inſtrument, chiefly in uſe among vagrants, gypſies, &c. It conſiſts of ſteel wire, in a triangular form, whereon are paſſed five rings, which are touched and ſhifted along the triangle with an iron rod held in the left hand, while it is ſupported in the right by a ring, to give it the freer motion. Durandus ſays, that the monks uſed the word *cymbal* for the bell hung in the cloiſter, uſed to call them to the refectory. See BELL.

CYMBIFORME *os*, in anatomy. See NAVICULARE *os*.

CYNEGETICS, κυνηγητικα, books treating of the art of hunting.—Gratius Faliſcus has written a *cynegetica* with applauſe.

CYNICS, a ſect of antient philoſophers, who valued themſelves on their contempt of every thing, eſpecially riches and ſtate, arts, and ſciences; all excepting morality.

The founder of this ſect is ſaid to have been Antiſthenes, a diſciple of Socrates; who, after his maſter's death, quitting the Pyreum, retired to Cynoſarges, a kind of academy not far from the gates of Athens.

Hence, ſome will have it, came the name κυνικος, *cynicus*, viz. from *cynoſarges*. But others, with more probability, derive it from κυων, *dog*, becauſe of their ſeverity and importunity in reprehending vice. Thus, Ariſtotle obſerves, οἱ δὲ κυνικοι, &c. the Cynics *were ſo called from their free way of rebuking*, &c. Hence, Diogenes the *Cynic* ſaid of himſelf, *I bite the evil*; and Antiſthenes himſelf was called απλως κυων, *an ingenuous and ſincere dog*: it being the diſtinguiſhing character of the *Cynics* to attack and bark at the ill, and to defend and fawn on the good.

Arrian praiſes the *cynical* genius to the ſkies: 'A *Cynic* (ſays he) is a meſſenger ſent from Jupiter to overlook human 'affairs;—a public doctor, and tutor of mankind; who inſtructs and chaſtiſes at the ſame time:—an Æſculapius; 'a lord and king, adorned with a ſceptre and diadem,—'who governs the people; and this voluntarily, without 'trembling, without guards, &c. but by a good conſcience.'

The ground of this encomium may be owing, in ſome meaſure, to that affinity between the *Stoics* and *Cynics*: the chief difference between them conſiſted in this, that the former were more modeſt and reſerved than the latter; who were ſaid to have baniſhed all ſhame, and were able to practiſe any obſcenity without bluſhing.

Hence, Laertius obſerves of Diogenes, that he did every thing openly, whether it belonged to Ceres or to Venus: tho' the ſame Laertius adds, that he did it in imitation of the chorididaſcali, *i. e.* he only ran to an exceſs of impudence, to put others out of conceit with it.

CYNIC *ſpaſm*, *ſpaſmus* CYNICUS, a ſort of convulſion, whereby the patient is brought to imitate the geſtures, ſnarlings, howlings, &c. of a dog. See SPASMUS.

D. Freind, in the *Philoſophical Tranſactions*, gives us an account of a very extraordinary *ſpaſmus* of this kind, wherewith two families, at Blackthorn in Oxfordſhire, were ſeized.

The novelty of the thing drew abundance of viſitors to the village, and among the reſt Dr. Willis; who, a good while ere he reached the place, heard a terrible noiſe of barking and howling: upon his entering the houſe, he was ſtrait ſaluted with five girls, bawling, and anſwering each other by turns, with violent motions of the head. In their face there was no convulſion ſeen, beſide *cynic* diſtortions, and oſcillations of the mouth: their pulſe was pretty regular; their noiſe was rather like that of the howling, than of the barking of dogs; only that its returns were more frequent, with deep ſighings between.

The *ſpaſmus* had ſeized them all equally; whereof the youngeſt was but ſix, and the eldeſt fifteen years of age: at intervals they had their reaſon and ſenſes intire; but not long, ere one of them, returning to her yelling, ſet on the reſt: till at length, all fainting, they fell like epileptics on a bed laid in the middle of the room to receive them.

A little while they would lie quietly and decently together; but upon a new orgaſm of the ſpirits, they began to beat and bruiſe each other. Two of the youngeſt awaked while the doctor ſtayed, and left their ſiſters on the bed: but the *ſpaſmus* ſoon had hold on them again.

In July 1700. Dr. Freind himſelf viſited another family, in the ſame village; where one boy and three girls had been ſeized ten weeks, without any apparent preceding cauſe. A girl had had it firſt; and the reſt, as the mother informed him, were ſo ſtruck with their ſiſter's diſorder, that they too were ſeized. At his arrival, they were all at play, very briſkly, and unconcernedly, before the doors; at length the eldeſt girl, about fourteen years of age, was ſeized as uſual.

The only ſymptom of its approach, was a ſwelling of the ſtomach; which riſing gradually up the throat, ſet the muſcles of the larynx and the head upon their uſual convulſions: this riſing was a certain ſymptom of an approaching paroxyſm in them all; and if they endeavoured to ſtop it, it burſt out with the greater violence, and held the longer.

The noiſe they made was inceſſant, and diſagreeable; yet not ſo much like the barking or howling of dogs, as had been given out, as a quaint kind of a ſong, conſiſting of three notes, or tones, repeated twice over; and cloſed by deep ſighs, *&c.* accompanied with extraordinary geſtures and nutations of the head.

This diſeaſe the doctor takes to be natural; and to riſe from the common cauſe of all convulſions, *viz.* from the animal ſpirits growing unruly in the nerves, and driving the muſcles into various contractions, according to the circumſtances of the indiſpoſition.

CYNOCTONON, See ACONITE.

CYNODESMUS, or CYNODESMION, among anatomiſts, the band, or ligament, which ties the prepuce of the yard to the nut, or glans.

CYNOREXY, an immoderate appetite, to the degree of a diſeaſe; called alſo *fames camina*, and *bulimy*. See BULIMY.

CYNOSURA *, in aſtronomy, a denomination given by the Greeks to Urſa minor, or the little bear. See URSA.

* The word is formed of κυνοσυρα, q. d. *the dog's-tail*.

This is the conſtellation next our pole, conſiſting of ſeven ſtars; four whereof are diſpoſed like the four wheels of a chariot; and three lengthwiſe, repreſenting the beam: whence ſome give it the name of the *chariot*, or Charles's *wain*.

From theſe ſeven ſtars it is the pole takes its name, *Septentrionalis*; and the reſt of the hemiſphere, as far as the line, *Septemtriones*.

CYON, or CION, a graft, ſprig, or ſucker. See CION, GRAFT, *&c.*

CYPHER. See the article CIPHER.

CYPHI, a term in the Arabian pharmacy, ſignifying a kind of cordial perfume.

Mithridates gave the appellation *cyphi* to the troches wherewith the Egyptian prieſts uſed to ſweeten their gods, to make them grant what they requeſted. He uſed the ſame in the compoſition of mithridate, on account of their efficacy againſt poiſons, defluxions, *&c.*

The *cyphi* are compoſed of raiſins, or dried grapes, turpentine, myrrh, bdellium, ſpica nardi, caſſia lignea, aſpalathum, ſaffron, *&c.* tempered into a maſs with honey and a little wine.

CYPHONISM, CYPHONISMUS, a kind of torture, or puniſhment, in uſe among the antients.

The learned are at a loſs to determine what it was: ſome will have it to be that mentioned by S. Jerom, in his life of Paul the hermit, chap. 2. which conſiſted in ſmearing the body over with honey, and thus expoſing the party, with his hands tied, to the warm ſun, to invite the flies and other vermin to perſecute him.

CYPRESS, CUPRESSUS, in natural hiſtory, a precious ſort of wood, the produce of a tree of the ſame name; frequent in the iſland of Cyprus.

It is very compact, and heavy; and its ſmell as agreeable as that of ſaunders. It ſcarce ever rots, decays, or is worm-eaten, no more than cedar, or ebony: for which reaſon, the antients uſed it to make the ſtatues of their gods.

In Candia, and particularly about mount Ida, the tree is ſaid to riſe ſpontaneouſly, where-ever the earth is a little dug; but is ſomewhat difficult to raiſe by art.

The fruits of this tree, called *cones*, are uſed in aſtrin decoctions, againſt hernias, hæmorrhages, *&c.*

CYPRUS, an order of knights, called alſo knights of *ſil* and knights of *the ſword*; inſtituted by Guy de Luſig king of Cyprus, in 1192.

The deſign of the inſtitution was, to oppoſe the inroads irruptions of the infidels in that iſland: accordingly, motto was *ſecuritas regni*.

CYPRUS *vitriol*. See the article VITRIOL.

CYRENAICI, a ſect of antient philoſophers; ſo called their chief, Ariſtippus of Cyrene, a diſciple of Socrates. SOCRATIC.

Their leading tenet was, that man is born for pleaſure; that virtue is only ſo far laudable, as it conduces thereto. By pleaſure, they meant, not only a privation of pain, tranquillity of mind, like what Epicurus preached up; assemblage of all the poſitive pleaſures both of the mind the ſenſes; eſpecially the laſt. See EPICUREAN.

Cicero makes frequent mention of Ariſtippus's ſchool; ſpeaks of it as yielding debauchees.

Three diſciples of Ariſtippus, after his death, divided the into three branches; under which diviſion it languiſhed ſunk: the firſt called the *Hegeſiac* ſchool; the ſecond *Annicerian*, and the third the *Theodoran*; from the nam their authors.

CYRTOMA, a bunch or curvity of the back. See GIBBO

CYST-HEPATIC *duct*, a canal, by which the porus bi diſcharges part of its bile into the gall-bladder.

It was firſt deſcribed by Dr. Gliſſon, and long afterwards tended to be diſcovered by M. Perrault.—See *Tab. A* (Splanch.), *fig.* 5. lit. c c.

Verheyen, from the courſe of the bile, inverts the and more properly calls it *hepaticyſticus*.

CYSTIC, an epithet given to two arteries, and two opening into the gall-bladder.—See *Tab. Anatomy* (Ang *fig.* 1. n. 34.

The *cyſtic arteries*, *cyſticæ gemellæ*, are two branches fro cœliac, beſtowed on the gall-bladder, and bringing bl the ſame.—The *cyſtic veins* return the remains of this into the vena porta.

CYSTICS, denote medicines againſt diſtempers of the bl See STONE, LITHONTRIPTIC, *&c.*

CYSTICUS *ductus*, or *meatus*, a biliary duct, about th neſs of a gooſe's quill; joined to the meatus hepatic about two inches diſtance from the gall-bladder; the t gether forming the ductus communis.—See *Tab. A* (Splanch.), *fig.* 1. lit. d. *fig.* 5. lit. g g.

CYSTIS *, the ſame with veſica, or bladder.

* The word is Greek, κυςις, which ſignifies the ſame.

CYSTIS *choledocha*, the ſame with *felliculus*, or *veſicula* See VESICULA *fellis*.

CYTHARA. See the article CITHARA.

CYZICENS, CYZICENA, among the antient Greeks, a ſort of magnificent banqueting-houſes, always looki wards the north, and uſually opening upon gardens.

They had their name from Cyzicus, a city very conſi for the grandeur of its buildings; ſituate in an iſl Myſia, bearing the ſame name.—Theſe *cyzicens* were the Greeks what the triclinia and cœnacula were amo Romans.

CZAR, a title of honour, aſſumed by the grand-dukes, they are now ſtiled, emperors of Ruſſia.

The natives pronounce it *tzar*, or *zaar*; and this, ruption, from Cæſar, emperor; on account of I kn what relation to the Roman emperors; by reaſon of they alſo bear the eagle as a ſymbol of their empire.

The firſt who bore the title of *czar*, was Baſil, ſon of B who freed his country from its ſubjection to the Tarta firſt ſet it on its preſent footing, about the year 1470 M. Sperlingius, in his diſſertation on the majeſty of th *konning*, obſerves, that the Ruſſian princes never b name *czar*, till their people had embraced the Greek before that time, he ſays, they were called *konger*, kin KING.

D.

D, The fourth letter in the alphabet, and the third conſonant.

Grammarians generally rank *D* among the lingual letters, as ſuppoſing the tongue to have the principal ſhare in the pronunciation thereof; tho' the abbot de Dangeau ſeems to have reaſon in making it a palatal letter. The letter *D* is the fourth in the Hebrew, Chaldee, Samaritan, Syriac, Greek, and Latin alphabets; in the five firſt of which languages it has the ſame name, though ſomewhat differently ſpoken, *e. gr.* in Hebrew, Samaritan, and Chaldee, *Daleth*, in Syriac *Dolath*, and in Greek *Delta*.

The Arabians have three *D*'s in their language, the firſt called *Dal*, which is the eighth of the 28 letters; the ſecond, called *Dhſal*, is only diſtinguiſhed from the former by having a point added over it; though its ſound is much the ſame with that of the Z: the third, which is their ſeventeenth letter, is called *Da*, and pronounced like our *D*, though in form it reſembles the Arabic *Ta*, all it differs in being a point added a-top. The form of our *D* is the ſame with that of the Latins; as appears from all the antient medals and inſcriptions. And the Latin *D* is no other than the Greek Δ, rounded a little, by making it quicker, and at two ſtrokes. The Δ of the Greeks, again, is borrowed from the antient character of the Hebrew *Daleth*; which form it ſtill retains on the Samaritan coins, as is ſhewn by the Jeſuit Souciet in his diſſertation on the Samaritan medals. All the alteration the Greeks have made in it, is the making it ſtoop a little, and taking away a little line. Nor would it be difficult to ſhew, that the Syriac *Dolath*, and the Arabic *Dal*, are both borrowed from the antient Hebrew, as well as the ד *Daleth* of the modern, or Chaldee Hebrew.

Some indeed will have it, that the Greek Δ, *Delta*, is borrowed from the Egyptians, who made their *D* of three ſtars diſpoſed in a triangle; which was a hieroglyphic that among them denoted God, the ſovereign Being, as if they had had ſome notion of a Trinity: but this ſurmiſe is but weakly ſupported.

D is alſo a numeral letter ſignifying *five hundred*, which ariſes hence, that in the Gothic characters the *D* is half the M, which ſignifies a thouſand. Hence the verſe:

Litera D *velut* A *Quingentos ſignificabit.*

A daſh added at the top of $\overline{D}$, denotes it to ſtand for *five thouſand.*

ACRYODES *, in medicine, a term applied to ulcers, which are continually yielding a putrid matter.

* The word is formed from δακρυ, tear, and ειδος, form; denoting the ulcers to weep, or ſhed ſomewhat like tears.

ACTYL, Dactylus, a foot in the Latin and Greek poetry, conſiſting of a long ſyllable, followed by two ſhort ones: as *Cārmĭnĕ*.

The *Dactyl* is ſaid to have been the invention of Dionyſus or Bacchus, who delivered oracles in this meaſure at Delphos, before Apollo.—The Greeks call it πολιτικος, *Diom.* iii. p. 474. The *Dactyl* and ſpondee are the moſt conſiderable of the poetical feet; as being the meaſures uſed in heroic verſe, by Homer, Virgil, &c. Theſe two are of equal time, but not equal motion. The ſpondee has an even, ſtrong and ſteady pace like a trot: the *Dactyl* reſembles the nimbler ſtrokes of a gallop.

Actylus was alſo a ſort of dance among the antient Greeks, chiefly performed, as Heſychius obſerves, by the athletæ.

Actyls alſo denote the fruits of the palm-tree, more uſually called *Dates*.

ACTYLI, in antiquity, a name attributed to the firſt prieſts of the goddeſs Cybele; who were particularly called *Dactyli Idæi*, on account of the goddeſs herſelf, who was ſtyled *Cybele Idæa*, becauſe principally honoured on mount Ida in Phrygia. The name *Dactyli* is ſuppoſed to have been given them on this occaſion: that to prevent Saturn from hearing the cries of Jupiter, whom Cybele had committed to their cuſtody, they uſed to ſing I know not what verſes of their own invention, which by their unequal meaſures ſeemed to reſemble the foot called *Dactylos*.—This is the account of the grammarian Diomedes.

One Sophocles, quoted by Strabo, Lib. X. ſpeaks differently. According to him they were called *Dactyli*, from the Greek word δακτυλος, finger, by reaſon their number was at firſt equal to that of the fingers of the hand, *viz.* ten; five of them boys, and as many girls.—He adds, that it is to them we owe the invention of iron, and the manner of working it, with divers other uſeful things. Others make their numbers more, and others leſs, than ten. Some, again, make them natives of Phrygia, near the foot of mouna Ida; and others bring them from elſewhere.

However, all the authors Strabo had ſeen, he ſays, agreed, that they were the firſt who wrought in iron; that they had been miniſters of the mother of the gods, or Cybele; and that they dwelt at the foot of mount Ida.

It is alſo conjectured by ſome authors, not that the Curetes and Corybantes were the ſame with the *Dactyli Idæi*, but that the Curetes and Corybantes were their poſterity; that a hundred men, born in Crete, were firſt called *Dactyli Idæi*; that each of theſe had nine children, who were the Curetes; and that each of the Curetes had ten children, who were alſo called *Dactyli Idæi*.

Strabo only gives us the names of four of the *Dactyli Idæi*, which are Salaminus, Damnanæus, Hercules, and Acmon.

DACTYLIC, ſomething that has a relation to *Dactyls*.

Antiently, there were *Dactylic*, as well as ſpondaic flutes, *Tibiæ Dactylicæ*.—The *Dactylic* flutes conſiſted of unequal intervals; as the *Dactylic* foot does of unequal meaſures.

Dactylic *Verſes* are hexameter verſes, ending in a *Dactyl* inſtead of a ſpondee; as ſpondaic verſes are thoſe which have a ſpondee in the fifth foot inſtead of a *Dactyl*.

An inſtance of a *Dactylic* verſe we have in *Virg. Æ.* L. VI. 33.

Bis patriæ cecidere manus: quin protinus omnia
Perlegerent oculis ——

DACTYLIOMANCY *, Dactyliomantia, a ſort of divination performed by means of a ring.

* The word is compoſed of the Greek δακτυλιος, ring; of δακτυλος, finger, and μαντεια, divination.

Dactyliomancy conſiſted principally in holding a ring, ſuſpended by a fine thread, over a round table, on the edge whereof were made divers marks with the 24 letters of the alphabet. The ring in ſhaking, or vibrating over the table, ſtopped over certain of the letters, which, being joined together, compoſed the anſwer required.

But the operation was preceded and accompanied by ſeveral ſuperſtitious ceremonies: for firſt the ring was to be conſecrated with a great deal of myſtery; the perſon who held it was to be clad in linen garments, to the very ſhoes; his head was to be ſhaved all round; and in his hand he was to hold vervain. And ere he proceeded on any thing, the gods were firſt to be appeaſed by a formulary of prayers, &c. Ammianus Marcellinus gives the proceſs at large in his XXIXth book.

DACTYLONOMY, Dactylonomia, the art of accounting, or numbering, by the fingers.

The rule is this: the left thumb is reckoned 1, the index 2, and ſo on to the right thumb, which is the tenth, and of conſequence is denoted by the cypher 0.

DADO, in architecture, is by ſome writers uſed for that part in the middle of the pedeſtal of a column between its baſe and cornice—It is of a cubic form, whence it is alſo denominated, *dye*.

DADUCHI, in antiquity, prieſts of Ceres.

That goddeſs, having loſt her daughter Proſerpine, ſay mythologiſts, began to make ſearch for her at the beginning of the night. In order to do this in the dark, ſhe lighted a torch, and thus ſet forth on her travels throughout the world; for which reaſon it is, that ſhe is always ſeen repreſented with a lighted torch in her hand.

On this account, and in commemoration of this pretended exploit, it became a cuſtom for the prieſts, at the feaſts and ſacrifices of this goddeſs, to run about in the temple, with torches, after this manner: one of them took a lighted torch from off the altar, and holding it with his hand, ran with it to a certain part of the temple, where he gave it to another, ſaying to him, *Tibi trado:* this ſecond ran after the like manner, to another part of the temple, and gave it to the third, and ſo of the reſt.

* From this ceremony the prieſts became denominated *Daduchi*, Δαδουχοι, q. d. torch-bearers; from δας, an unctuous and reſinous wood, as pine, fir, &c. whereof the antients made torches; and εχω, I have, I hold.

DÆMON, ΔΑΙΜΩΝ, a name the antients gave to certain ſpirits, or genii, which they ſay appeared to men, either to do them ſervice, or to hurt them.

The firſt notion of *Dæmons* was brought from Chaldea; whence it ſpread itſelf among the Perſians, Egyptians, and Greeks. Pythagoras and Thales were the firſt who introduced *Dæmons* into Greece. Plato fell in with the notion, and explained it more diſtinctly, and fully, than any of the former philoſophers had done. By *Dæmons*, he underſtood ſpirits inferior to gods, and yet ſuperior to men; which, inhabiting the middle region of the air, kept up the communication between gods and men, carrying the offerings and prayers of men to the gods, and bringing down the will of the gods to men. But he allowed of none but good and beneficent ones: though his diſciples afterwards, finding themſelves unable to account for the origin of evil, adopted another ſort of *dæmons*, who were enemies to men.

There is nothing more common in the heathen theology, than theſe good and evil genii. And the ſame ſuperſtitious notion we find got footing among the Iſraelites, by their commerce with the Chaldeans. But by *dæmons*, they did not mean the devil, or a wicked ſpirit: they never took the word *dæmon* in that ſenſe, nor was it ever uſed in ſuch a ſignification, till by the evangeliſts, and ſome modern Jews. The word is Greek, δαιμων.

Gale endeavours to ſhew, that the origin and inſtitution of *dæmons* was an imitation of the Meſſiah. The Phœnicians called them בעלים *Baalim*. For they had one ſupreme being, whom they called *Baal*, and *Moloch*, and various inferior deities, called *Baalim*, whereof we find frequent mention in the Old Teſtament. The firſt *dæmon* of the Egyptians was Mercury, or Thuet. The ſame author finds ſome reſemblance between the ſeveral offices aſcribed to the *dæmons*, and thoſe of the Meſſiah.

DÆMONIAC, is applied to a perſon poſſeſſed with a ſpirit, or *dæmon*.

In the Romiſh church, there is a particular office for the exorciſm of *dæmoniacs*.

DÆMONIACS, are alſo a party or branch of the Anabaptiſts, whoſe diſtinguiſhing tenet it is, that the devils ſhall be ſaved at the end of the world.

DAILY, in aſtronomy, &c. See DIURNAL.

DAMAGE, is generally taken for any hurt, or hindrance, that a man receives in his eſtate; but more particularly for a part of what the jurors are to inquire of, in paſſing verdict for the plaintiff, or defendant, in a civil action, be it perſonal or real.—After verdict given of the principal cauſe, they are aſked their conſciences touching coſts and *damages*, which contain the hindrances that the plaintiff or demandant hath ſuffered by means of the wrong done him by the defendant or tenant.

DAMAGE has two ſignifications; the one proper and general, the other ſtrict and relative:—*Proper*, as it is in caſes where *damages* are founded on the ſtatute of 2 H. IV. cap. 1. and 8 H. VI. cap. 9. where coſts are included within the word *damages*. *Damage* then, in its proper ſignification, is ſaid *à demendo*, when, by diminution, a thing becomes worſe; and in this ſenſe coſts of ſuit are *damages* to the plaintiff, as by them his ſubſtance is diminiſhed.

Relative, is when the plaintiff declares the wrong done him to the *damage* of ſuch a ſum—this is to be taken relatively, for the wrong which paſſed before the writ brought; and is aſſeſſed by reaſon of the treſpaſs aforeſaid; and cannot extend to the coſts of ſuit, which are future, and of another nature.

DAMAGE *feſant*, or *faiſant*, is when a ſtranger's beaſts are doing hurt, or ſpoiling the graſs, corn, woods, &c. of another man, without his leave or licence.

In this caſe, the party whom they *damage* may diſtrain, and impound them, both by night, and by day; though in other caſes, as for rent, ſervices, &c. none may diſtrain in the night.

DAMASK, a ſort of ſilken ſtuff, having ſome parts raiſed above the ground, repreſenting flowers, or other figures.

Damaſk is properly a ſort of mohair and ſattin, intermixed in ſuch manner, as that what is not ſattin on one ſide is on the other. The elevation which the ſattin makes on one ſide, is the ground on the other. The flowers have a ſattin grain; and the ground, a grain of taffetas. It has its name from its being originally brought from Damaſcus, in Syria.

DAMASKEENING, the art, or act, of adorning iron, ſteel, &c. by making inciſions therein, and filling them up with gold or ſilver wire; chiefly uſed in enriching ſword-blades, guards and gripes, locks of piſtols, &c.

Its name ſhews the place of its origin; or, at leaſt, the place where it has been practiſed in the greateſt perfection, *viz.* the city of Damaſcus in Syria: though M. Felibien attributes the perfection of the art to his countryman Curſinet, who wrought under the reign of king Henry IV.

Damaſkeening, is partly moſaic work, partly engraving, and partly carving: as moſaic work, it conſiſts of pieces inlayed; as engraving, the metal is indented, or cut in *creux*; and as carving, gold and ſilver are wrought therein in *relievo*.

There are two manners of *damaſkeening*: in the firſt, which is the moſt beautiful, the artiſt cuts into the metal with a graver, and other tools proper for engraving on ſteel; and afterwards fills up the inciſions, or notches, with a pretty thick ſilver or gold wire.—In the other, which is only ſuperficial, they content themſelves to make hatches, or ſtrokes, acroſs the iron, &c. with a cutting-knife, ſuch as is uſed in making of ſmall files. For the firſt, it is neceſſary the gravings, or inciſions, be made in the dovetail form; that the gold or ſilver wire, which is thruſt forcibly into them, may adhere the more ſtrongly.

For the ſecond, which is the more uſual, the method is thus: having heated the ſteel till it changes to a violet, or blue colour, they hatch it over and acroſs with the knife; then draw the deſign, or ornament, intended, on this hatching, with a fine braſs point, or bodkin. This done, they take fine gold wire, and, conducting or chaſing it according to the figures already deſigned, they ſink it carefully into the hatches of the metal with a copper tool.

DAMASCUS-*ſteel*, a very fine kind of ſteel, made in ſome parts of the Levant, and particularly at Damaſcus; remarkable for its excellent temper; and uſed chiefly in the making of ſword-blades.

Some authors aſſure us it comes from the kingdom of Golconda in the Eaſt-Indies; where the method of tempering with alum, which the Europeans have never been able to imitate, was firſt invented.

DAMIANISTS *, a branch of the antient Acephalous Severites; who agreed with the Catholics in admitting the fourth council; but diſowned any diſtinction of perſons in the godhead, and profeſſed one ſingle nature incapable of any difference. And yet they called God, the Father, Son, and Holy Ghoſt. On which account the Severitæ Petritæ, another branch of Acephali, uſed to call them Sabellianiſts, and ſometimes Tetraditæ. Thus much we learn from Nicephorus Calliſtus, L. XVIII. c. 49.

* They took their name from *Damianus*, a biſhop, who was originally their leader.

DAMNATA *Terra*, in chymiſtry, the ſame with *Caput Mortuum*; that is, the earthy part, or maſs, remaining at the bottom of the retort, &c. after all the other principles have been drawn out of the body by fire.

DAMPS, in natural hiſtory, are noxious ſteams, or exhalations, frequently found in cloſe, ſubterraneous places, particularly mines, pits, and wells.

The *damps* in mines are of four kinds: the firſt, which withal is the moſt ordinary, the workmen apprehend in its approach, by the flame of the candle's becoming orbicular, and leſſening by degrees, till it goes quite out; as alſo by their ſhortneſs or difficulty of breathing; thoſe who eſcape ſwooning, ſeldom ſuffer any great harm by this kind; but ſuch as ſwoon away, though they are not downright ſuffocated; yet, on their firſt recovery, are tormented with very violent convulſions: the way of cure is, to lay the perſon down on the earth in a prone poſture, with a hole dug in the ground under his mouth; if this fail, they fill him with good ale; and if that will not do, they conclude him deſperate. Theſe are the miners remedies.

The ſecond is the *peas-bloom damp*, which is called ſo from its ſmell. This *damp* always comes in the ſummer-time, and hath never been known to be mortal: the miners in the peak of Derby fanſy it ariſes there from the multitude of red trefoil-flowers, called by them honeyſuckles, with which the lime-ſtone meadows of the Peak much abound; the ſmell of this gives timely notice to get out of the way.

The third is the moſt peſtilential, and moſt ſtrange of all, if what is ſaid of it be true: they who pretend to have ſeen it (for they ſay it is viſible), deſcribe it thus: in the higheſt part of the roof of thoſe paſſages in a mine which branch out from the main grove, they ſee a round thing hanging, about as big as a foot-ball, covered with a ſkin of the thickneſs and colour of a cobweb: if this bag, by a ſplinter, or any other accident, become broken, the *damp* immediately flies out, and ſuffocates all the company: the workmen, by help of a ſtick, and long rope, have a way of breaking this at a diſtance; and when they have done it, they purify the place well with fire: and, they will have it, that it gathers from the ſteam of their bodies and candles, aſcends up into the higheſt part of the vault, and there condenſes, and in time has a film grown over it, and then corrupts, and becomes peſtilential.

The fourth is the *fulminating*, or *fire-damp*, whoſe vapour, being touched by the flame of the candle, preſently take fire, and has all the effects of lightning, or fired gun-powder. Theſe are found frequently in the coal-mines, and ſometimes though rarely, in lead ones.—How mineral ſteams may prov poiſonous, may be underſtood from Dr. Mead's eſſay on poiſons. See MEPHITES, and POISON.

Naturaliſts furniſh us with very ſurpriſing inſtances of th effects of *damps*. In the *Hiſt. de l'Academie des Sciences, An* 1701. we read of a well in the city of Rennes, into which a mason, at work near its brink, letting fall his hammer, a labourer, who was ſent down to recover it, ere he reached th water, was ſtrangled. A ſecond, ſent to fetch up the corp met with the ſame fate, and ſo a third: at laſt a fourth half-drunk, was let down, with charge to call out as ſoon he felt any thing incommode him. He called accordingly, ſoon as he came near the water, and was inſtantly dra out; yet he died three days afterwards. The information brought them was, that he felt a heat, which ſcorched his entrails. A dog, being let down, cried about the ſam place, and died as ſoon as he came to air; but throwi water on him, he recovered; as happens to thoſe thrown i the Grotto del Cane, near Naples. The three carcaſes being drawn up with hooks, and opened, there appeared not any cauſe of their death.—What renders the relation the more remarkable, is, that the water of this well had been drawn and drank, ſeveral years, without the leaſt ill conſequence.

In the ſame hiſtory, *Anno* 1710. we are told of a baker of Chartres, who having carried 7 or 8 buſhels of brands out of his oven into a cellar 36 ſtairs deep; his ſon, a robuſt young fellow, going with more, his candle went out on the middle of the ſtairs. Having lighted it afreſh, he was no ſooner got into the cellar, than he cried out for help; and they heard no more of him: his brother, an able youth, ran immediately after him; cried out, he was dead; and was heard no more. He was followed by his wife, and ſhe by a maid, and ſtill it was the ſame. Such an accident ſtruck the whole neighbourhood with a panic; and nobody was forward to venture any farther: till a fellow, more hardy and zealous than the reſt, perſuaded that the four people were not dead, would go down to give them help: he cried too, and was ſeen no more. Upon this a ſixth man, requiring a hook, to draw ſome of them forth without going to the bottom, drew up the maid; who, having taken the air, fetched a ſigh and died. Next day the baker's friend, undertaking to get up all the carcaſes with a hook, was let down with ropes on a wooden horſe, to be drawn up whenever he ſhould call. He ſoon called; but the rope breaking he fell back again; and though the rope was ſoon pieced again, he was drawn forth dead. Upon opening him, his meninges were found extravagantly ſtretched, his lungs ſpotted with black, his inteſtines ſwelled as big as one's arm, inflamed and red as blood; and what was moſt extraordinary, all the muſcles of his arms, thighs, and legs, torn and ſeparated from their parts. The magiſtrate, at length, taking cognizance of the caſe, and the phyſicians being conſulted; they gave the opinion, that the brands had been but ill extinguiſhed: the conſequence of which muſt be, that as all the cellars in Chartres abound with ſaltpetre, the unuſual heat in this had raiſed a malignant vapour, which had done the miſchief; and that a good quantity of water muſt be thrown in to put out the fire, and lay the vapour. This performed, a dog and a lighted candle were et down, without injury to either: an infallible ſign the danger was over.

A third hiſtory we ſhall add from Dr. Connor, in his *Diſſert. Med. Phyſ.* Some people digging in a cellar at Paris, for uppoſed hidden treaſure; after a few hours working, the maid, going down to call her maſter, found them all in their igging poſtures; but ſtark-dead. The perſon who managed he ſpade, and his attendant who ſhoveled off the earth, were oth on foot, and ſeemingly intent on their ſeveral offices: he wife of one of them, as if weary, was ſat down on the de of a hopper, very thoughtful, and leaning her head on er arm: a boy, with breeches down, was evacuating on e edge of the pit; his eyes fixed on the ground: all of hem, in fine, in their natural poſtures and actions, with pen eyes, and mouths that ſeemed yet to breathe; but ſtiff as tatues, and cold as clay.

AMSEL, DAMOISEL, or DAMOISEAU, an appellation ntiently given to all young people of genteel or noble extraction of either ſex, *e. gr.* to the ſons and daughters of nights, barons, and even of kings.

Thus, in hiſtory, we read of the *damſel Pepin*, *damſel Louis Gros*, *damſel Richard*, prince of Wales.

aſquier will have the word a diminutive of *dam*, an antient ame for lord; as in ſome authors we read *Dam Dieu* for ord God; *dam* chevalier, &c. Though in its feminine ſenſe takes it to come from *dame*.—Others derive the word om *domicellus*, or *domnicellus*, a diminutive of *domnus*, *quaſi rvus dominus*: accordingly, du Cange obſerves, that it has en ſometimes written *domenger*.

hey who hold the ſignory of Commercy, M. de la Roque lls us, antiently held it in the title of *damoiſeau*: and M. Marca aſſures us, that the nobleſſe of Bern is ſtill divided o three bodies, or claſſes; the barons, the cavers, and the *mſels*, domicellos, called in that country *domengers*.

he kings of Denmark and Sweden have here the ſame title, appears from Pontanus's *hiſt. of Denmark*, L. VII. and II. and Henry of Upſal's *hiſt. of Suec.* L. III.

om the ſons of kings, the appellation paſſed to thoſe of at lords and barons; and, at length, to thoſe of gentlemen o were not yet knights.—

SEL, at preſent, is applied to all maids, or girls, not yet rried; provided they be not of the loweſt claſs of people.

SEL is ſometimes alſo applied to a kind of utenſil put in s, to warm old mens feet withal.

conſiſts of a hot iron incloſed in a hollow cylinder, which wrapped round with linen cloth, and keeps its warmth a g time. Some call it a *nun*.

AIDES, in the antient mythology, the daughters of *Da*-, or *Danaus*, eleventh king of Argos, and brother of gyptus.

ey were 50 in number, and were eſpouſed to the 50 ſons heir uncle Ægyptus.

Danaus, fearing the accompliſhment of an oracle, which had foretold, that he ſhould be expelled his kingdom by a ſon-in-law, perſuaded his daughters to murder, each of them, her huſband, the firſt night; which they performed, all but Hypermneſtra, who ſpared her huſband Lynceus.

In vengeance for this crime of the 49 *Danaides*, the poets have condemned them to hell, to be continually employed in filling a caſk perforated at bottom.

The *Danaides* are ſometimes alſo called *Belides*, from their father, who was the ſon of the Egyptian Belius. Hyginus has preſerved the names of 47 of them.

DANCE *, an agreeable motion of the body, adjuſted by art, to the meaſures or tune of a violin, or other inſtrument, or voice.

* The word is French, *dance*, formed of the German *dantz*, or *tantz*, which ſignifies the ſame thing: Bochart derives it from the Arabic *tanza*, and Guichart from the Hebrew דוץ, *douts*, which have all the ſame ſignification. Salmaſius derives the French *danſer*, to *dance*, from the Latin *denſare*, to thicken; as holding it a practice among the antient fullers to leap and *dance* as they fulled their cloaths.

Some diſtinguiſh the *high dance*, conſiſting of capers, gambades, &c. from the *low dance*, which is the *terra a terra*, or cloſe to the ground.

In the carrouſal of king Louis XIII. there were *dances* of horſes. The invention of ſuch *dances* is attributed to the Sybarites.

Dancing has always been in uſe among all nations, both civilized and barbarous: though held in eſteem among ſome, and in contempt among others. Of itſelf, no doubt, *dancing* is harmleſs. There is a time, ſays the preacher, to *dance*: and ſometimes it is even made an act of religion. Thus David *danced* before the ark, to honour God, and expreſs his exceſs of joy for its return into the city of Sion. Socrates learnt to *dance* of Aſpaſia. And the people of Crete and Sparta went to the attack *dancing*. On the other hand, Cicero reproaches Gabinius, a conſular man, with having *danced*. Tiberius expelled the *dancers* out of Rome; and Domitian excluded ſeveral members from the ſenate, for having *danced*. Caſtor and Pollux are ſaid to be the firſt who taught the art of *dancing*; and that to the Lacedemonians: though others attribute the invention to Minerva, who, they ſay, *danced* for joy after the defeat of the giants.

The antients had three kinds of *dances*: the firſt grave, called *Emmelia*, anſwering to our *low dances* and pavanes. The ſecond gay, called *Cordax*, anſwering to our courants, galliards, gavots, and vaults. The third, called *Siccinis*, was a mixture of gravity and gaiety. Neoptolemus, ſon of Achilles, taught the Cretans a new ſort of *dance*, called *Pyrricha*, or the *armed dance*, to be uſed in going to war: though, according to mythologiſts, the Curetes firſt invented this *dance*, to amuſe and divert the infant Jupiter, and to drown his cries with the noiſe and claſh of their ſwords, beating againſt their bucklers.

Diodorus Siculus, in the IVth of his Bibliotheca, aſſures us, that Cybele, daughter of Menoes, king of Phrygia, and Dindymenis his wife, invented divers things, and, among among others, the flageolot of ſeveral pipes, *dancing*, the tabor and the cymbal. Numa, 'tis certain, inſtituted a ſort *dance* for the Salii, prieſts of Mars, who made uſe of weapons therein. From theſe *dances* were compoſed another ſort, called *Saltatio Mimicorum*, or the *buffoons dance*; wherein the *dancers* were dreſſed in little corſlets, with gilt morions, and had bells on their legs, and ſwords and bucklers in their hands. Lucian has an expreſs treatiſe, and Julius Pollux, a chapter, on this head; Athenæus, Cælius Rhodiginus, and Scaliger, alſo make mention of this *dance*.

It is not many years ago, ſince Thoinot Arbeau, a *dancing*-maſter of Paris, gave an orcheſography, wherein all the ſteps and motions of a *dance* are written, or noted down; as the ſounds of a ſong are ſcored in muſic. Though the famous Beauchamp had ſome pretenſions to be the inventor of this ſecret, and accordingly procured an arret in his favour.

Dancing is uſually an effect and indication of joy among moſt nations: though Mr. Palleprat aſſures us, that there are people in ſouth America, who *dance* to ſhew their ſorrow.

Rope-DANCER, *Schoenobates*. Groddeck, profeſſor of philoſophy at Dantzic, has publiſhed a diſſertation on *rope-dancers*, *de Funambulis*; full of learning, and an uncommon knowlege of antiquity. He defines a *rope-dancer*, a perſon who walks on a thick rope faſtened to two oppoſite poſts; which is preciſely what is expreſſed by the Latin word *funambulus*. But our *rope-dancers* do more; for they not only walk, but *dance* and leap, upon the rope.

The antients, 'tis certain, had their *rope-dancers* as well as we: witneſs the Greek words, *neurobates*, and *ſchœnobates*, as well as the Latin *funambulus*, which every-where occur. They had likewiſe the Cremnobates and Oribates, that is, people who walked on the brinks of precipices. Nay more, Suetonius *in Galba*, c. 6. Seneca in his 85th epiſtle, and Pliny, Lib. VIII. cap. 2. make mention of elephants that were taught to walk on the rope.

Acron, an antient grammarian, and commentator on Horace, takes occaſion to obſerve, on the 10th ſatire of the firſt book, that Meſſala Corvinus was the firſt who uſed the word *Funambulus*; and that Terence had it from him: but Mr. Groddeck ſhews that he is miſtaken, and that Meſſala lived after Terence. The buſineſs is, Acron confounds Valerius Meſſala, who got the ſurname Corvinus in the war againſt the Gauls about 200 years before Terence, with one of his deſcendants, who was a famous orator in the time of Horace. Mr. Groddeck, coming from the hiſtorical to the moral conſideration, maintains that the profeſſion of a *Rope-dancer* is not lawful; that the profeſſors are infamous, and their art of no uſe to ſociety; that they expoſe their bodies to very great dangers; and that they ought not to be tolerated in a well regulated ſtate.—But, coming afterwards to temper the ſeverity of his morals, he allows that there are ſometimes reaſons for admitting them; that the people muſt have ſhews; that one of the ſecrets of government is to furniſh them therewith, &c. The antient *Rope-dancers* had four ſeveral ways of exerciſing their art; the firſt vaulted, or turned round the rope, like a wheel round its axis, and there hung by the heels, or the neck. The ſecond flew, or ſlid, from above, downwards, reſting on their ſtomachs with the arms and legs extended. The third ran along a rope ſtretched in a right line, or up and down. Laſtly, the fourth not only walked on a rope, but made ſurpriſing leaps and turns thereon.

DANCETTE', in heraldry, is when the out-line of any bordure, or ordinary, is indented very largely; the largeneſs of the indentures being the only thing that diſtinguiſhes it from indented.

There is alſo a bearing of a bend, called *double Dancetté*; thus, he beareth azure, a bend double *Dancetté* argent.

DANCHE, or *Denché*, in heraldry, the ſame with indented; or, as others will have it, with *Dancetté*.

DANEGELT, an annual tax laid on our anceſtors, firſt of 1 *s.* afterwards 2 *s.* for every hide of land through the realm, for maintaining ſuch a number of forces as were thought ſufficient to clear the *Britiſh* ſeas of *Daniſh* pirates, which heretofore greatly annoyed our coaſts.

DANEGELT was firſt impoſed as a ſtanding yearly tax on the whole nation, under king Ethelred, *A. D.* 991. That prince, ſays Camden, *Britan.* 142. much diſtreſſed by the continual invaſions of the Danes; to procure his peace, was compelled to charge his people with heavy taxes, called *Danegelt*.—At firſt they paid 10000 *l.* then 16000 *l.* then 24000 *l.* after that 36000 *l.* and laſtly, 48000 *l. per annum.*

Edward the Confeſſor remitted this tax: William I. and II. reaſſumed it occaſionally. In the reign of Henry I. it was accounted among the king's ſtanding revenues; but king Stephen, on his coronation-day, abrogated it for ever.

No church or church land paid a peny to the *Danegelt*; becauſe, as is ſet forth in an antient *Saxon* law, the people of England placed more confidence in the prayers of the church, than in any military defence they could make. *Camd. ap. Magn. Brit. p.* 68.

DANTELLE', in heraldry, the ſame with *Danché*, or rather with *Dancetté*, viz. a large open indenture. See DANCETTE'.

DAPIFER *, the dignity or office of grand maſter, or grand ſewer, of a king's or prince's houſhold.

* The word is pure Latin, compounded of *daps, dapis*, a diſh of meat ſerved on the table, and *fero*, I bear: ſo that *Dapifer* litterally ſignifies a diſh-carrier, or an officer who ſerves the meats upon the table.

The title of *Dapifer* was given by the emperor of Conſtantinople to the Czar of Ruſſia, as a teſtimony of favour. In France, the like office was inſtituted by Charlemaign, under the title of *Dapiferat*, and *Senechauſſeé*; to which was affixed the ſuperintendance over all the officers of the houſhold.

In England, the office of *Dapifer* was leſs eminent; being found in ſeveral of our antient charters named one of the laſt of the officers of the houſhold.

The dignity of *Dapifer* is ſtill ſubſiſting in Germany. Till the year 1623. the elector palatine was *Dapifer*, or grand ſewer of the empire: ſince that time the elector of Bavaria has aſſumed the title of *Arch-Dapifer* of the empire. His office is, at the coronation of an emperor, to carry the firſt diſh of meat to table on horſeback.

The ſeveral functions of a *Dapifer* occaſioned the antients to give him divers names: as, Ἐλεάτρος, and *Eleator*, *Dipnocletor*, *Convocator*, *Trapezopæus*, *Architriclinus*, *Proguſta*, *Prægustator*, *Domeſticus*, *Megadomeſticus*, *Oeconomus*, *Majordomus*, *Seneſchallus*, *Schalcus*, *Gaſtaldus*, *Aſſeſſor*, *Præfectus*, or *Præpoſitus Menſæ*, *Princeps Coquorum*, & *Magirus*.

DARAPTI, in logic, a mode of ſyllogiſm in the third figure, wherein the major and minor are univerſal affirmative propoſitions, and the concluſion a particular affirmative. *E. gr.*

d A. Every truly religious man is virtuous.
r A. Every truly religious man is hated by the world.
pt I. Therefore, ſome virtuous men are hated by the world.

DARDANARIUS, *Uſurer*, *Monopoliſt*; a name antiently attributed to ſuch as cauſed a ſcarcity, and dearneſs of proviſions, particularly corn, by buying and hoarding it up, to raiſe its value, and ſell it again at an extravagant rate.

The name *Dardanarius* was given from one *Dardanus*, who is ſaid to have made a practice of ſpoiling and deſtroying the fruits of the earth by a ſort of ſorcery.

The ſame people are alſo called *Æruſcatores*, *Directarii*, *Sitocapeli*, *Annonæ Flagellatores*, and *Seplaſiarii*.

DARE. See FISHING.

DARII, in logic, a mode of ſyllogiſms in the firſt figure, wherein the major propoſition is an univerſal affirmative, and the minor and concluſion particular affirmatives. *E. gr.*

d A. They who ſpeak well of every body have many friends.
r A. Some ſpeak well of every one.
I. Therefore ſome have many friends.

DARK *Chamber*. See the article CAMERA *Obſcura*.

DARK *Tent*, a portable camera obſcura, made not unlike a deſk, and fitted with optic glaſſes, to take proſpects of landſchapes, buildings, fortifications, &c. See CAMERA *Obſcura*.

DARREIN, in law, a corruption of the French *Dernier*, laſt, and uſed in the like ſenſe: as—*Darrein* continuance. (See CONTINUANCE).—*Darrein* preſentment. See ASSISE *Darrein preſentment*.

DART, in geometry, aſtronomy, &c. See SAGITTA.

DARTOS *, or DARTUS, in anatomy, the inner coat of the ſcrotum, compoſed of a great number of muſcular, or fleſhy fibres; whence ſome conſider it as a cutaneous muſcle.

* The word is pure Greek, δαρτος, *Excoriatus*, *pelle nudatus*, of δερω, *excorio*, probably by reaſon it lies cloſe under the skin. See SCROTUM.

'Tis by means hereof that the ſcrotum is contracted, or corrugated, which is eſteemed a ſign of health.

The *Dartos* was antiently taken to be a continuation of the panniculus carnoſus; but miſtakenly. It has ſeveral veins and arteries. It inveſts the teſticles, and extending itſelf between them, ſeparates them from each other.

DATA, in mathematics, certain things, or quantities, ſuppoſe to be given, or known, in order, from them, to find ou other things or quantities, which are unknown, or ſough for. A problem, or queſtion, generally conſiſts of two parts *Data* and *Quæſita*.

Euclid has an expreſs treatiſe of *Data*; wherein he uſes th word for ſuch ſpaces, lines, and angles, as are given in magn tude; or to which we can aſſign others equal.

From the primary uſe of the word *Data* in mathematics, it ha been tranſplanted into other arts; as philoſophy, medicin &c. where it expreſſes any quantity, which, for the ſake of preſent calculation, is taken for granted to be ſuch, witho requiring an immediate proof for its certainty; called alſo th *given* quantity, number, or power—And hence alſo ſuch thin as are known, from whence either in natural philoſoph the animal mechaniſm, or the operation of medicines, w come to the knowlege of others unknown, are now frequen ly in phyſical writers called *Data*.

DATE *, an addition, or appendage, in writings, acts, i ſtruments, letters, &c. expreſſing the day, and month of t year, when the act, or letter, was paſſed or ſigned; toget with the place where the ſame was done.

* The word is formed from the Latin *Datum*, given, the p ticiple of *do*, I give. The Latins uſually ſay *dabam*, I ga

In writings of importance the *Date* ſhould be written in wo at length, *dated* or given at London this twenty-ſixth day March, in the year of our Lord one thouſand ſeven hund and fifty. In letters, the *Date* is uſually in figures, Lond March the 26th, 1750.

An *Ante-date* is a falſe *Date*, prior to the real time when instrument was paſſed, or ſigned.

A *Poſt-date*, is that poſterior to the real time, &c.

Our antient deeds had no *Dates*, but only the month year, to ſignify that they were not made in haſte, or in ſpace of a day, but upon longer and more mature deliberat The king's grants began with theſe words, *Præſentibu futuris*, &c. but the grants of private perſons with *Omn præſentes literas inſpecturis* —.

DATE *, *Dactylus*, the fruit of the palm-tree.

* The word is formed of *Dacte*, and that of *Dactylus*, fin as being round and oblong, reſembling a finger's end.

This fruit is gathered in autumn, before it is ripe; and h a near reſemblance to our bullace; being of a green col and very ſharp and aſtringent. When ripe, it becomes r having a hard, longiſh ſtone, cloven at bottom, and enc paſſed with a thin white pellicle, or ſkin.

The huſk, or covering of the *Date*, called by the anti *Elate*, or *Spatha*, when the fruit is in its growth, is vari having as many changes of colour as the fig has.

Some *Dates* are black, ſome white, ſome brown, ſome a are round like apples, and very big. Ordinarily they ar long, fleſhy, yellow, ſomewhat bigger than the thumb's and ſome are very agreeable to the taſte. Some are no b than a chich-pea, and others as big as a pomgranate. best are thoſe called *Royal Dates*. There is alſo another called *Caryotæ*, which are very good. Some of them ſtones, and others none.

Dates are principally uſed in medicine: their qualities a ſoften the aſperities of the gullet, to ſtrengthen the *fa* the womb, to aſſwage all immoderate fluxes of the belly, to eaſe diſorders of the reins and bladder. Their bad property is, that they digeſt difficultly, cauſe pains in the head, and produce a thick melancholic blood.—Theſe effects ariſe from the principles they contain, which are, a moderate ſhare of oil, and a deal of phlegm, and eſſential ſalt. The oil and phlegm render them moiſtening and nutritious, good againſt acrimonies of the breaſt, to aſſwage coughs, &c. and the phlegm and ſalt render them deterſive and aſtringent, and good againſt diſeaſes of the throat. For the reſt; they are an heavy food, full of earthy juice, and occaſion obſtructions in the viſcera; for which reaſon, people who eat great quantities of *dates* become ſcorbutic, and loſe their teeth betimes.

Our *dates* are brought us from Egypt, Syria, Africa, and the Indies. They never come to full maturity in Italy, or the moſt ſouthern parts of Spain; and yet there are tolerable *dates* in Provence; but they do not keep, but breed worms. Thoſe from Perſia exceed all others, in largeneſs, colour, and taſte.

DATISI, in logic, a mode of ſyllogiſms in the third figure, wherein the major is an univerſal affirmative, and the minor and concluſion are particular affirmative propoſitions. *E. gr.*

dA. All God's friends are kings.
tI. Some of God's friends are poor.
SI. Therefore, ſome poor, are kings.

DATIVE, in grammar, the third caſe in the declenſion of nouns; expreſſing the ſtate, or relation, of a thing, to whoſe profit or loſs ſome other thing is referred.

It is called *dative*, becauſe uſually governed by a verb implying ſomething to be given to ſome perſon. As, *commodare Socrati*, to lend to *Socrates*; *utilis reipublicæ*, uſeful to the commonwealth; *pernicioſus eccleſiæ*, pernicious to the church; *viſum eſt Platoni*, it ſeemed to Plato, &c.

In Engliſh, where we have properly no caſes, this relation is expreſſed by the ſign *to*, or *for*.

DAUGHTER. See the article SON.

The *ſons* and *daughters* of the king of England are called the *ſons* and *daughters* of England; becauſe all the ſubjects of England have a ſpecial intereſt in them. See PRINCES *of the blood.*

DAVIDISTS, DAVIDICI, a ſect of heretics, the adherents of David George, a glazier, or, as others ſay, painter, of Ghent; who, in 1525. began to preach a new doctrine: publiſhing himſelf to be the true meſſiah; and that he was ſent thither to fill heaven, which was quite empty for want of people to deſerve it.

He rejected marriage, with the Adamites; held, with Manes, that the ſoul was not defiled by ſin; and laughed at the ſelf-denial ſo much recommended by Jeſus Chriſt.—Such were his principal errors.

He made his eſcape from Ghent, and retired firſt into Friſeland, and then to Baſil; where he changed his name, aſſumeing that of John Bruck; and died in 1556.

He left ſome diſciples behind him, to whom he promiſed, that he would riſe again at the end of three years. Nor was he altogether a falſe prophet herein; for the magiſtrates of that city, being informed, at the three years end, of what he had taught, ordered him to be dug up, and burnt, together with his writings, by the common hangman.

There are ſtill ſome remains of this ridiculous ſect in Holſtein, particularly about Frederickſtadt, where they are intermixed with the Arminians.

DAVIS's *Quadrant*. See the article BACK-STAFF.

DAUPHIN, DOLPHIN, in aſtronomy. See DELPHINUS.

DAUPHIN is a title given the eldeſt ſon of France, and preſumptive heir of the crown; on account of the province of *Dauphiné*, which in 1343. was given to Philip De Valois, on this condition, by Humbert, *dauphin* of the Viennois.

The *dauphin*, in his letters patents, ſtyles himſelf, 'By the 'grace of God, eldeſt ſon of France, and *dauphin* of Vi'ennois.'

DAUPHIN[*] was antiently the title, or appellation, of the prince of Viennois in France.

The ſeigneurs, or lords, of Auvergne, have likewiſe borne the appellation of *dauphin*; but the *dauphins* of Auvergne had it not till a good while after thoſe of the Viennois, and even received it from them. The manner was this: Guy VIII. *dauphin* of Viennois, had by his wife Margaret, daughter of Stephen, earl of Burgundy, a ſon and two daughters. The ſon was Guy IX. his ſucceſſor. Beatrix, one of the daughters, was married to the count D'Auvergne, who, according to Blondel, was William V. or rather, as Chorier and others hold, Robert VI. father of William V. This prince loſt the greateſt part of the county Auvergne, which was taken from him by his uncle William, aſſiſted by Louis the Young; and was only left maſter of the little canton whereof Vodable is the capital. He had a ſon whom he called *dauphin*, on account of Guy, or Guigues, his uncle by the mother's ſide. From his time his ſucceſſors, holding the ſame petty canton of Auvergne, ſtiled themſelves *dauphins* of Auvergne, and bore a *dolphin* for their arms.

DAY, a diviſion of time, drawn from the appearance and diſappearance of the ſun.

The *day* is of two kinds; *artificial*, and *natural*.

Artificial DAY, which ſeems to be that primarily meant by the word *day*, is the time of light; determined by the ſun's riſing and ſetting.

This is properly defined, the ſtay of the ſun above the horizon: in oppoſition to which, the time of darkneſs, or the ſun's ſtay below the horizon from ſetting to riſing again, is called *night*.

Natural DAY, called alſo *civil day*, is the ſpace of time wherein the ſun performs one revolution round the earth: or, more juſtly, the time wherein the earth makes a rotation on its axis; which the Greeks more properly expreſs by *νυχθημερον*, *nychthemeron*, q. d. night-day.

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[*] Moſt authors, who have ſought the origin of the name *dauphin*, and *Dauphiné*, ſeem to have given too much looſe to conjecture. Some will have it derived from the Auffinates, an antient people mentioned by Ptolemy and Pliny; but thoſe authors place the Auffinates on the other ſide of the Alps in the Gallia Ciſalpina: others write, that the Allobroges brought the name from Delphos; others, that king Boſon's ſhield was diſtinguiſhed by the figure of a dolphin, which he bore thereon; others, that the princes, who reigned in the Viennois after Boſon, pitched on the *dolphin* for their arms as a ſymbol of their mildneſs and humanity; others, that it was firſt given by an emperor who made war in Italy, but whom they do not name, to a governor of this province, who ſent him a powerful ſupply with ſuch expedition, that it deſerved to be compared with the ſwiftneſs of a *dolphin*. Thaboct fanſies the word to be Gothic: as well as the names Breſs, Savoy, Beaujeau, &c. Claud De Grange takes it to have been formed from the word Viennois, the antient name of this province. A perſon of this province, ſays he, being aſked what countryman he was; anſwered, *do Viene*: and the prince of the province called himſelf the prince *do Viene*; and afterwards, changing the V, according to cuſtom, into F, *do Fiene*; and at length, retrenching the two ee's, *Doſin*: laſtly, the common opinion, that the word was formed from *delphinus*, occaſioned them to write *dauphin*; but this appears, to Chorier, no better than a ridiculous ſubtlety. Others will have it, that Guy the Fat, having a daughter he was very fond of, uſed to call her *dauphin*; and to immortalize her, when dead, gave her name to his country: others are of opinion, that the laſt count D'Albon, whoſe eſtate being incorporated with that of the count De Greſivaudan, by the marriage of his only daughter with the firſt Guy, was actually named *Dauphin*; and that his eldeſt grandſon, being obliged to take his name, was called *Dauphin*; and bore the figure of a *dolphin* for his arms. Du Cheſne is likewiſe of opinion, that it was the grandſon of Guy the Fat who firſt bore the name of *dauphin*; though not for the reaſon juſt alleged, but that it was given him at his baptiſm, and added to that of Guy. Chorier will not allow any thing probable in any of theſe opinions: he obſerves, that William, canon of Notre Dame at Grenoble, who has wrote the life of Margaret, daughter of Stephen earl of Burgundy, married with Guy, ſon of Guy the Fat, calls the latter ſimply Guy the Old, and the former always count *Dauphin*; and adds, that no record, no monument, ever attributes the title of *dauphin* to Guy the Fat, or any of his predeceſſors: ſo that it muſt neceſſarily have taken its riſe in his ſon, all whoſe ſucceſſors ſo conſtantly aſſumed it, that it became the proper name of the family. He died in 1142. in the flower of his youth; ſo that it muſt be about the year 1120. that the title commenced; and without doubt, adds he, on ſome illuſtrious occaſion. He obſerves farther, that this prince was of a military diſpoſition, and delighted in nothing but war; and again, that it was the cuſtom of the cavaliers to deck their caſks, coats of arms, and the houſing of their horſes, with ſome figure, or device, peculiar to themſelves, whereby they were diſtinguiſhed from all others engaged in the ſame combat or tournament. From all theſe circumſtances he conjectures, that this Guy choſe the *dolphin* for his ſignature; that this was the creſt of his helmet; and that he bore it on his coat in ſome notable tournament, or battle, wherein he diſtinguiſhed himſelf. And this, Chorier makes no doubt, is the real origin of the appellation. The preſident De Valbonnet ſpeaks more juſtly on the ſubject: Guigues, or Guy the Fat, ſon of Guy the Old, married Mathilda, who has been ſuppoſed to be of the ſame royal family, as being called *regina* in ſeveral antient charters. This couple had a ſon, who, in a deed paſſed between him and Hugh, biſhop of Grenoble, in 1140. is called *delphinus*; *Guigo comes, qui vocatur delphinus.* This has occaſioned ſome hiſtorians to think, that, to diſcover the origin of the name *dauphin*, there was no neceſſity for having recourſe to voyages beyond the ſea, where the counts De Greſivaudan might take the *dolphin* for their arms, or badge of diſtinction. In effect, that conjecture does not ſtand on any proof; nor is it true, that the firſt and ſecond race of thoſe princes bore the *dolphin* for their arms; there being ſcarce any ſigns thereof before Humbert I. who firſt wore it on his ſhield. It is more probable, that the ſurname *Dauphin*, which Guy firſt aſſumed, pleaſed his ſucceſſors ſo much, that they added it to their own name, and erected it into a title, which has been retained ever ſince. Nothing was more common, in thoſe times, than to make proper names become the names of families, or dignities. Witneſs the Ademars, Arthauds, Aynards, Atiemans, Berengers, and infinite others; who all owe their names to ſome one of their anceſtors, from whom it has been tranſmitted throughout the family.

The *epocha*, or *beginning of the civil day*, is the term from which one *day* begins, and in which the preceding *day* concludes. The fixing of this term is of ſome importance. It is certain, that, for the more commodious diſtinguiſhing of *days*, it ought to be fixed in ſome moment of time wherein the ſun is in ſome diſtinguiſhable part of the heavens. The moſt eligible, therefore, ſhould be the moments wherein the ſun paſſes either the horizon, or the meridian. In effect, as there is no moment can be more accurately determined by obſervation than that in which the ſun paſſes through the upper meridian; if regard be had to the exactneſs of the meaſure, the noon-tide has the beſt pretenſions; the riſing and ſetting of the ſun being diſturbed by the refraction; beſide that, the horizon is ſeldom clear of clouds. But yet, as the *artificial day* does begin with the ſun's riſe, and ends with the ſetting; and, beſides, the ſun's paſſing the horizon is a thing eaſily obſerved; the riſing or ſetting of the ſun ſhould appear the moſt commodious, though not moſt accurate, *epoch* or beginning of the *civil day*.

As, then, there are not wanting reaſons for beginning the *natural day*, both from the ſun's paſſing the meridian, and the eaſtern and weſtern ſide of the horizon; it is no wonder, that different nations ſhould begin their *day* differently.

Accordingly, *1ſt*, The antient Babylonians, Perſians, Syrians, and moſt other eaſtern nations, with the preſent inhabitants of the Balearic iſlands, the Greeks, *&c.* begin their *day* with the ſun's riſing. *2dly*, The antient Athenians and Jews, with the Auſtrians, Bohemians, Marcomanni, Sileſians, modern Italians, and Chineſe, reckon it from the ſun's ſetting. *3dly*, The antient Umbri and Arabians, with the modern aſtronomers, at noon. And, *4thly*, The Egyptians and Romans, with the modern Engliſh, French, Dutch, Germans, Spaniards, and Portugueſe, at midnight.

The *day* is divided into hours; and the week, month, *&c.* into *days*.

For the different lengths of the *day* in different climates.

It has been a matter of ſome controverſy among aſtronomers, whether or no the *natural days* be all equally long throughout the year; and, if not, what is their difference? A profeſſor of mathematics, at Sevil, in a memoir in the *Philoſophical Tranſactions*, aſſerts, from a continued ſeries of obſervations for three years, that they are all equal. Mr. Flamſteed, in the ſame *Tranſactions*, refutes the opinion; and ſhews, that one *day*, when the ſun is in the equinoctial, is ſhorter than when he is in the tropicks, by 40 ſeconds; and that 14 tropical *days* are longer than ſo many equinoctial ones, by $\frac{1}{6}$ of an hour, or 10 minutes. This inequality of the *days*, flows from two ſeveral principles: the one, the eccentricity of the earth's orbit; the other, the obliquity of the ecliptic with regard to the equator, which is the meaſure of time. As theſe two cauſes happen to be combined, the length of the *day* is varied.

DAY, in law, is frequently uſed for the *day* of appearance in court, either originally, or upon aſſignation.

We ſay, He had a *day* by the rolls; *i. e.* he had a *day* of appearance aſſigned him.

DAYS *in bank* are *days* ſet down by ſtatute, or order, of the court, when writs ſhall be returned, or when the party ſhall appear on the writ ſerved.

To be diſmiſſed *without day*, *ſine die*, is to be finally diſcharged the court.

DAYS *of prefixion*, in the exchequer. See REMEMBRANCER.

DAYS *of grace*, in commerce, are a number of *days* allowed by cuſtom for the payment of a bill of exchange, after the ſame becomes due; *i. e.* after the time it was accepted for is expired.

In England, three *days of grace* are allowed: ſo that a bill accepted, in order to be paid, *e. gr.* ten *days* after ſight, is not to be paid till thirteen *days*. Throughout France, they allow ten *days of grace*; as many at Dantzic; eight at Naples; ſix at Venice, Amſterdam, Rotterdam, and Antwerp; four at Francfort; five at Leipſic; twelve at Hamburgh; ſix in Portugal; fourteen in Spain; thirty in Genoa, *&c.*—Note, ſundays and holidays are included in the number of *days of grace*.

Fiſh DAYS. See the article ABSTINENCE.

Dog DAYS, *dies caniculares*. See CANICULAR.

Critical DAYS, *dies critici*. See CRITICAL *days*.

Intercalary, or *additional* DAYS. See INTERCALARY *days*.

DEACON*, DIACONUS, a perſon in the loweſt degree of holy orders, whoſe buſineſs is to baptize, read in the church, and aſſiſt at the celebration of the euchariſt.

* The word is formed from the Latin *diaconus*; of the Greek *διακονος*, miniſter, ſervant.

Deacons were firſt inſtituted, ſeven in number, by the apoſtles, *Acts*, chap. vi. which number was retained a long time in ſeveral churches. Their office was, to ſerve in the Agapæ, and to diſtribute the bread and wine to the communicants, and diſpenſe the alms.

By the antient canons, marriage was not incompatible with the ſtate and miniſtry of a *deacon*; but it is now a long time that the Romiſh church has prohibited their marrying; and the pope only grants them diſpenſations for very important cauſes; and, after this diſpenſation, they loſe the rank and functions of their order, and return to a lay ſtate.

The *deacons* were formerly prohibited ſitting with the prieſts: the canons forbid *deacons* to conſecrate; that being a ſacerdotal office. They alſo prohibit a *deacon* being ordained, unleſs he have a title, or call, and be at leaſt twenty-five years of age. The emperor Juſtinian, in *Novel* 123. aſſigns the ſame age of twenty-five years for a *deacon*: but this was the cuſtom when prieſts were not ordained at leſs than thirty years of age. At preſent twenty-three years of age ſuffice for a *deacon*.

At Rome, under pope Sylveſter, they had only one *deacon*; then ſeven were appointed; then fourteen; and, at laſt, eighteen; who were called *cardinal deacons*, to diſtinguiſh them from thoſe of other churches.

Their office was, to take care of the temporalities of the church, to look to the rents and charities, and provide for the neceſſities of the eccleſiaſtics, and even of the pope. The collecting of the rents, alms, *&c.* belonged to the *ſubdeacons*; the *deacons* were the depoſitaries and diſtributers. Having thus the management of the revenues of the church in their hands, their authority grew apace, as the riches of the church increaſed. Thoſe of Rome, as being miniſters of the firſt church, preceded all others, and even at length took place of the prieſts themſelves. Doubtleſs, it was the avarice of the prieſts that made them give place to the *deacons*, who had the diſpoſal of the money. St. Jerom exclaims againſt this attempt, and proves, that a *deacon* is properly inferior to a prieſt. The council in Trullo, which is the IIId of Conſtantinople, Ariſtenus in his ſynopſis of the canons of that council, Zonaras on the ſame council, Simeon Logotheta, and Oecumenius, diſtinguiſh *deacons*, deſtined for ſervice at the altar, from thoſe who had the care of the diſtribution of the alms of the faithful. Thus the cuſtom of conſtituting *deacons*, without any other office but to attend the prieſt at the altar, being once introduced, thoſe ſimple *deacons* durſt no longer pretend to a ſuperiority over the prieſts: as to the other *deacons*, who had got the adminiſtration of the revenues, they would ſtill retain the ſuperiority; and, for diſtinction-ſake, where there were ſeveral, the firſt took the appellation of *archdeacon*.

The *deacons* rehearſed certain prayers at the holy office, which were thence denominated *diaconical*.

They took care that the people at church behaved themſelves with due modeſty and reſpect. They were not allowed to teach publickly; at leaſt not in the preſence of a biſhop or prieſt. They only inſtructed the catechumens, and prepared them for baptiſm. The doors of the church were likewiſe in their cuſtody; though, in after-times, that charge was committed to the *ſubdeacons*.

Among the Maronites of mount Lebanon, there are two *deacons*, who are mere adminiſtrators of the temporalities. Dandini, who calls them *li ſignori diaconi*, aſſures us, they are ſecular lords, who govern the people, ſit in judgment on all their differences, and treat with the Turks as to what concerns the taxes, and other affairs. In this, the patriarch of the Maronites ſeems to have aimed to imitate the apoſtles, who diſcharged all the temporal concerns of the church on the *deacons*: it is not well done, ſay they, to leave the word of God, and ſerve at tables. And, in effect, it was this that gave occaſion to the firſt eſtabliſhment of the *diaconate*.

DEACONESS, DIACONISSA, an office in uſe in the primitive church, though now laid aſide. St. Paul makes mention thereof in his epiſtle to the Romans: and the younger Pliny, in a letter to Trajan, tells that prince, that he had ordered two *deaconeſſes*, whom he calls *miniſtræ*, to be tortured.

Deaconeſs was a title given to certain devout women, who conſecrated themſelves to the ſervice of the church, and rendered thoſe offices to the women, which men could not decently do: as in baptiſm, for inſtance, which was conferred by immerſion, on women as well as men.

They were likewiſe to look to the doors on the ſide the women were on, who were ſeparated from the men, according to the cuſtom of thoſe times. They had the care and inſpection of the poor, ſick, *&c.* and in times of perſecution, when a *deacon* could not be ſent to the women, to exhort and fortify them, a *deaconeſs* was ſent. See Balſamon on the eleventh canon of the council of Laodicea; and the *Apoſtolical Conſtitutions*, L. II. c. 57. to ſay nothing of the epiſtle of Ignatius to the people of Antioch; where what is ſaid of *deaconeſſes*, is ſuppoſed to be an interpolation.

In Lupus's commentaries on the councils it is ſaid, that they were ordained by the impoſition of hands: and the council in Trullo uſes the term *χειροτονειν*, to impoſe hands, to expreſs the conſecration of *deaconeſſes*. Baronius, however, denies that hands were laid on the *deaconeſſes*, or that there was any ceremony of conſecration; founding his opinion on the nineteenth canon of the council of Nice, which places them in the rank of the laity; and ſays expreſly, they have had no impoſition of hands. And yet the council of Chalcedon decrees, they ſhould not be ordained till forty years of age; whereas, till then, they had not been ordained before ſixty as is preſcribed in the firſt epiſtle to Timothy, chap. v. 9. and as is ſeen in the *Nomocanon* of John of Antioch, in Balſamon, the *Nomocanon* of Photius, the Theodoſian *Code*, Tertullian *de veland. virgin.* &c.

Tertullian, *ad uxorem*, L. I. c. 7. ſpeaks of women who had received ordination in the church, and who, on that account, were deprived of the liberty of marrying. For the *deaconeſſes* were widows, and might not re-marry. Nor were they capable of being admitted to that order, if they had been married more than once. Though in after-times virgins were alſo made *deaconeſſes*, if we may credit St. Epiphanius, Zonaras, Balſamon, and Ignatius.

The council of Nice ranks *deaconeſſes* among the clergy: though ſome hold, that their ordination was not ſacramental, but a mere eccleſiaſtical ceremony. However, it gave them a pre-eminence above the reſt of their ſex; for which reaſon the council of Laodicea forbad the ordaining of any more for the future. The firſt council of Orange, held in 441. likewiſe forbids the ordaining of *deaconeſſes*, and injoins ſuch as had been ordained to receive the benediction with the mere laity. It is hard to ſay when the order of *deaconeſſes* expired; by reaſon they did not all ceaſe together. The eleventh canon of the council of Laodicea, it is true, ſeems to abrogate them; but it is certain they ſubſiſted in diverſe places long afterwards. For tho' the twenty-ſixth canon of the firſt council of Orange, and the twenty-firſt of that of Epaona, held in 515. forbid the ordination of *deaconeſſes*; yet there were ſome at the time of the council in Trullo.

Atto of Verceil in his VIIIth letter gives the reaſon of their being aboliſhed: he obſerves that in the firſt ages the miniſtry of women was neceſſary, in order to the more eaſy inſtructing of other women, and recovering them from paganiſm; and that they likewiſe ſerved for the more decent adminiſtration of baptiſm to the ſame: but that it was not then neceſſary, by reaſon none but children were baptized; and it might now be added, by reaſon baptiſm is only conferred by ſprinkling.

The number of *deaconeſſes* does not ſeem to have been fixed: the emperor Heraclius, in his letter to Sergius patriarch of Conſtantinople, orders that in the great church of Conſtantinople there be forty *deaconeſſes*, whereas there were only ſix in that of the mother of God, in the quarter of the Blachernæ.

EACONRY, DIACONATE, the order, or miniſtry of a *deacon*, or *deaconeſs*. See DEACON, and DEACONESS.

EACONRY, DIACONIA, is alſo a name ſtill reſerved to the chapels and oratories in Rome, under the direction of the ſeveral deacons, in their reſpective regions or quarters.

To the *deaconries* were annexed a ſort of hoſpitals, or boards for the diſtribution of alms, governed by the regionary deacons, called cardinal deacons, of whom there were ſeven, anſwering to the ſeven regions, their chief being called the arch-deacon.

The hoſpital adjoining to the church of the *deaconry*, had an adminiſtrator for the temporal concerns, called the *Father of the deaconry*, who was ſometimes a prieſt, and ſometimes a layman. At preſent there are fourteen of theſe *deaconries* or hoſpitals at Rome, which are reſerved to the cardinals. Du Cange gives us their names: as the *deaconry* of St. Maria in the broad way; the *deaconry* of St. Euſtachio near the Pantheon, &c.

EADLY *Feud* *, in our law-books, a profeſſion of irreconcilable enmity till a perſon is revenged by the death of his enemy.

* The word *Feud*, is derived from the German *Fehd*, which, as Hottoman obſerves, ſignifies, *modo bellum, modo capitales inimicitias.* See FEUD.

Such enmity and revenge was allowed by our antient laws in he time of the Saxons; *viz.* If any man was killed, and a ecuniary ſatisfaction were not made to the kindred, it was awful for them to take up arms, and revenge themſelves on he murderer: which was called *Deudly Feud.* And this, robably, was the original of an appeal.

AD-*Pledge.* See the article MORTGAGE.

AD-*Reckoning*, at ſea, is that eſtimation, judgment, or conecture, which the ſeamen make of the place where a ſhip is, y keeping an account of her way by the log, by knowing he courſe they have ſteered by the compaſs, and by rectifying ll, with allowance for drift lee-way, &c. according to the hip's trim: ſo that this *reckoning* is without any obſervation f the ſun, moon, and ſtars, and is to be rectified as often as ny good obſervation can be had. See LOG.

AD-*Water*, is the eddy-water juſt behind the ſtern of a ſhip: t is ſo called, becauſe it does not paſs away ſo ſwiftly, as the ater running by her ſides doth.

a ſhip have a great eddy following her ſtern, they ſay, ſhe akes much *dead-water.*

AFFORESTED, in our law-books, the being diſcharged om being foreſt; or freed and exempted from foreſt-laws*. e FOREST.

* *Johannes Dei Gratia, &c. Archiepiſcopis, Epiſcopis, &c. ſciatis nos omnino* Deafforeſtaſſe *Foreſtam de Brewood de omnibus quæ ad Foreſtam & Foreſtarios pertinent. Quare volumus & firmiter præcipimus, quod prædicta Foreſta, & homines in illa manentes, & hæredes eorum ſint* Deafforeſtati *in perpetuum.*

DEAFNESS, the ſtate of a perſon who wants the ſenſe of hearing: or a diſeaſe of the ear, which prevents its due reception of ſounds.

Deafneſs generally ariſes either from an obſtruction, or a compreſſion, of the auditory nerve; or from ſome collection of matter in the cavities of the inner ear; or elſe from the auditory paſſage being ſtopped up by ſome hardened excrement; or, laſtly, from ſome excreſcence, as a ſwelling of the glands, or ſome foreign body introduced within it.

Thoſe born *deaf* are alſo dumb, as not being able to learn any language; at leaſt in the common way. However, as the eyes, in ſome meaſure, ſerve them for ears, they may underſtand what is ſaid by obſerving the motion of the lips, tongue, &c. of the ſpeaker; and even accuſtom themſelves to move their own, as they ſee other people do; and by this means learn to ſpeak.

Thus it was that Dr. Wallis taught two young gentlemen, born *deaf*, to know what was ſaid to them, and to return pertinent anſwers. Digby gives us another inſtance of the ſame, within his own knowlege. And there was a Swiſs phyſician lately living at Amſterdam, one Joh. Conrad Amman, who effected the ſame in ſeveral children born *deaf*, with ſurpriſing ſucceſs. He has reduced the thing to a fixed art, or method, which he has publiſhed in his *Surdens Loquens*, Amſtelod. 1692. and *de Loquela*, ibid. 1700.

In the *Philoſoph. Tranſact.* N°. 312. we have an account by Mr. Waller, R. S. Secr. of a man and his ſiſter, each about fifty years old, born in the ſame town with Mr. Waller, who had neither of them the leaſt ſenſe of hearing; yet both of them knew, by the motion of the lips only, whatever was ſaid to them, and would anſwer pertinently to the queſtion propoſed. It ſeems they could both hear and ſpeak when children; but loſt their ſenſe afterwards; whence they retained their ſpeech, which, though uncouth, was yet intelligible.

Such another inſtance is that of Mr. Goddy's daughter, miniſter of St. Gervais in Geneva, related by biſhop Burnet. At two years old they perceived ſhe had in great part loſt her hearing; and ever after, though ſhe heard great noiſes, yet ſhe could hear nothing of what was ſaid to her. But by obſerving the motions of the mouths and lips of others, ſhe had acquired ſo many words, that out of theſe ſhe had formed a ſort of jargon, in which ſhe could hold converſation whole days with thoſe that could ſpeak her language. She knew nothing that was ſaid to her, unleſs ſhe ſaw the motion of their mouths that ſpoke to her; ſo, that in the night, they were obliged to light candles to ſpeak to her. One thing will appear the ſtrangeſt part of the whole narration: ſhe had a ſiſter, with whom ſhe had practiſed her language more than with any body elſe; and in the night, by laying her hand on her ſiſter's mouth, ſhe could perceive by that what ſhe ſaid, and ſo could diſcourſe with her in the dark. Burn. *Let.* IV. p. 248.

It is obſervable that *deaf* perſons, and ſeveral others thick of hearing, hear better and more eaſily, if a loud noiſe be raiſed at the time when you ſpeak to them: which is owing, no doubt, to the greater tenſion of the ear-drum, on that occaſion. Dr. Willis mentions a *deaf* woman, who, if a drum were beat in the room, could hear any thing very clearly; ſo that her huſband hired a drummer for a ſervant, that by his means he might hold converſation with his wife. The ſame author mentions another, who, living near a ſteeple, could always hear very well, if there was a ringing of three or four bells: but never elſe. See Supplement, article DEAF.

DEAN *, a prime dignitary in moſt cathedral and collegiate churches; being uſually the preſident of the chapter.

* He is called *Dean, Decanus*, of the Greek δεκα, ten, as being ſuppoſed to preſide over ten canons or prebendaries, at leaſt.

Canoniſts diſtinguiſh between *deans* of cathedral, and thoſe of collegiate churches. The firſt, with their chapter, are regularly ſubject to the juriſdiction of the biſhop. As to *deans* of collegiate churches, they have uſually the contentious juriſdiction in themſelves, that is, they exerciſe juriſdiction over their canons in all civil, or criminal matters; though ſometimes this belongs to them in common with the chapter.

In England, as there are two foundations of cathedral and collegiate churches, the old and the new (the latter being thoſe founded by Henry the VIIIth on the ſuppreſſion of the abbots and priors, when their convents were turned into *dean* and chapter); ſo there are two ways of creating the *deans*. Thoſe of the old foundation are brought to their dignity much like a biſhop; the prince firſt ſending out his conge d'eſlire to the chapter; the chapter then chooſing, the king yielding his royal aſſent, and the biſhop confirming him, and giving his mandate to inſtal him. Thoſe of the new foundation are inſtalled by a ſhorter courſe; only by the king's letters patent, without either election or confirmation.

Conſtantine, we are told, erected an office of nine hundred and fifty perſons at Conſtantinople, taken out of diverſe trades and profeſſions, whom he exempted from all impoſitions, and beſtowed them on the cathedral church, to render the offices of burial *gratis* to the defunct, particularly to the poor. Theſe he called *decani*, and *lecticarii*, probably by reaſon they were divided by tens; each whereof had a bier, or litter, to carry the bodies in. It is ſuppoſed to be theſe, who, under Conſtantius, began to be called *copiatæ*; *i. e.* clerks deſtined for labour: for they are uſually ranked among the clerks, and even before the chantors. By a law of the year 357. it appears, that there were ſome of theſe *copiatæ* at Rome.

Dean is alſo a title applied among us to divers perſons that are the chief of ſome peculiar churches, or chapels: as, the *dean* of the king's chapel, of the arches, of battel, of boking, *&c.*

Rural **Dean**, or *Urban* **Dean**, was formerly an eccleſiaſtical perſon, who had a diſtrict of ten churches, or pariſhes, either in the country or city, within which he exerciſed juriſdiction. Theſe *rural deans* were ſometimes called *archipresbyteri*; and at firſt they were, both in order and authority, above the archdeacons. They were at firſt elected by the clergy, and by their votes depoſed; but afterwards they were appointed, and removed, at the diſcretion of the biſhop: and hence they were called *decani temporarii*, to diſtinguiſh them from the cathedral *deans*, who were called *decani perpetui*.

We meet with *rural deans* as early as the IXth century. Hincmar, in a capitular to his archdeacons, reſerves the right of electing them to himſelf; and only allows it to the archdeacons, in caſe he be abſent, and by proviſion only. Some take the *rural deans* to hold the rank and place of the *chorepiſcopi*. Be this as it will, it is certain, they are very antient in France, Germany, and England; though, till the end of the XVIth century, they were unknown in Italy; in regard the biſhopricks being there exceeding ſmall, they were not needed. S. Charles Borromeo is ſaid to have firſt introduced them there.

Dean, in the antient monaſteries, was a ſuperior eſtabliſhed under the abbot, to eaſe him in taking care of ten monks; whence he was called *decanus*, in imitation of thoſe officers called by the ſame name among the Romans, who had ten ſoldiers under them.

Till the time of St. Benedict, there were uſually in each monaſtery a provoſt, *præpoſitus*, and ſeveral *deans*, *decani*, under the abbot. In ſome abbeys there was but one *dean*, and he bleſſed by the biſhop, as well as the abbot himſelf. This privilege gave him occaſion to think himſelf, in ſome meaſure, the abbot's equal; and to ſcruple obedience to him. St. Benedict was ſenſible of this inconvenience; and, to prevent it in his order, he appointed, that the monaſteries ſhould be governed under the abbot by ſeveral *deans*, whoſe authority being thus ſhared, they would be the leſs dangerous.

The office of the *deans*, we have obſerved, was, to have the inſpection each of ten monks, to look to their working, and all their exerciſes. They were not choſen by ſeniority, but merit; and might be depoſed after three admonitions. The monaſteries being now leſs populous than they were in antient times, the abbot, or prior, does not ſtand in ſo much need of being eaſed; ſo that theſe *deans* are, in general, ſet aſide.

Dean *and Chapter*.—Antiently, biſhops did not ordinarily tranſact matters of moment *ſine conſilio presbyterorum principalium*, who were then called *ſenatores eccleſiæ*, and collegues of the biſhops; repreſented, in ſome meaſure, by our chapters of cathedrals, wherein the *dean* and ſome of the prebends are, upon the biſhop's ſummons, to aſſiſt him in ordinations, deprivations, condemnations, excommunications, and other weighty concerns of the church. See **Chapter**.

DEARTICULATION, in anatomy. See **Diarthrosis**.

DEATH, *mors*, is generally conſidered as the ſeparation of the ſoul from the body; in which ſenſe it ſtands oppoſed to life, which conſiſts in the union thereof.

Phyſicians have uſually defined *death* by a total ſtoppage of the circulation of the blood; and a ceſſation of the animal and vital functions conſequent thereon; as reſpiration, ſenſation, *&c.*

An animal body, by the actions inſeparable from life, undergoes a continual change: in time, its ſmalleſt fibres become rigid; its minute veſſels grow into ſolid fibres no longer pervious to the fluids; its greater veſſels grow hard and narrow; and every thing becomes contracted, cloſed, and bound up; whence the drineſs, immobility, and extenuation, obſerved in old age. By ſuch means, the offices of the minuter veſſels are deſtroyed, and the humours ſtagnate, harden, and at length coaleſce with the ſolids: thus are the ſubtileſt fluids in the body intercepted and loſt, the concoction weakened, and the reparation prevented; only the coarſer juices continue to run ſlowly through the greater veſſels, to the preſervation of life, after many of the animal functions are deſtroyed. At length, in the proceſs of theſe changes, *death* itſelf becomes inevitable, as the neceſſary conſequence of life.

But it is rare, that life is thus long protracted, or that *death* ſucceeds merely from the decays and impairments of old age: diſeaſes, a long and horrid train, uſually cut the work ſhort.

Death-*watch*, in natural hiſtory, a little inſect famous for a ticking noiſe, like the beat of a watch, which the populac have long taken for a preſage of *death*, in the family where it is heard: whence it is alſo called *pediculus fatidicus*, *martiſaga*, *pulſatorius*, &c.

There are two kinds of *death-watches*: of the firſt we have a good account in the *Philoſoph. Tranſact.* by Mr. Allen. It is a ſmall beetle $\frac{1}{8}$ of an inch long, of a dark-brown colour, ſpotted; having pellucid wings under the vaginæ, a large cap, or helmet, on the head, and two antennæ proceeding from beneath the eyes. The part it beats withal, he obſerved, was the extreme edge of the face, which he chooſes to call the upper-lip; the mouth being protracted, by this bony part, and lying underneath, out of view. Its figure, as it appears in a microſcope, ſee repreſented in Tab. *Nat. Hiſt. fig.* 2.

This account is confirmed by Mr. Derham, with this difference, that, inſtead of ticking with the upper-lip, he obſerved the inſect to draw back its mouth, and beat with its forehead. That author had two *death watches*, a male and a female, which he kept alive in a box, ſeveral months; and could bring one of them to beat whenever he pleaſed, by imitating its beating: and by this ticking noiſe he could frequently invite the male to get up upon the other, in the way of coition. When the male found he got up in vain, he would get off again, beat very eagerly, and then up again: whence the ingenious author concludes thoſe pulſations to be the way whereby theſe inſects woo one another, and find out, and invite each other to copulation.

The ſecond kind of *death-watch* is an inſect in appearance quite different from the firſt. The former only beats ſeven or eight ſtrokes at a time, and quicker; the latter will beat ſome hours together, without intermiſſion; and his ſtrokes are more leiſurely, and like the beat of a *watch*. This latter is a ſmall greyiſh inſect, much like a louſe when viewed with the naked eye. Its figure, as magnified, is ſeen in Tab. *Nat. Hiſt. fig.* 1.

It is very common in all parts of our houſes in the ſummer-months; is very nimble in running to ſhelter, and ſhy of beating, when diſturbed: but will beat very freely before you, and alſo anſwer the beating, if you can view it without giving it diſturbance, or ſhaking the place where it lies. The author cannot ſay, whether they beat in any other thing, but he never heard their noiſe except in or near paper. As to their noiſe, he is in doubt, whether it be made by thei heads, or rather ſnouts, againſt the paper; or whether it be not made after ſome ſuch manner as graſhoppers and cricke make their noiſe: but he inclines to the former opinion. The reaſon of his doubt is, that he obſerved the animal's body to ſhake, and give a jerk, at every beat; but could ſcarce perceive any part of its body to touch the paper. But its body is ſo ſmall, and ſo near the paper, and its motion in ticking ſo quick, that he thinks it might be, yet he not perceive it. The ticking, as in the other, he judges to be a wooing-act; as having obſerved another, after much beating, come an make offers to the beating inſect; which, after ſome offers, le off beating, and got upon the back of the other. Whe they had been a little while joined, he got off again, and the continued ſome hours joined tail to tail, like dog and bitc in coition. This inſect is at firſt a minute white egg much ſmaller than the nits of lice; though the inſect is nea as big as a louſe. In March it is hatched, and creep about with its ſhell on. When it firſt leaves its ſhell, it i even ſmaller than its egg; though that be ſcarce diſcernib without a microſcope. In this ſtate it is ſomewhat like t mites in cheeſe: from this ſmall ſtate they grow gradually t their mature or perfect ſize: when they become like t old ones, they at firſt run about much more ſwiftly than before.

DE bene esse, a Latin phraſe uſed in our law-books.—T take, or do, a thing *de bene eſſe*, is to accept, or allow, it a well done for the preſent; but when it comes to be mo fully examined, or tried, to ſtand or fall, to be allowed o diſallowed, according to the merit, or well-being, of the thi in its own nature; or, as we ſay, *Valeat quantum val poteſt.*

Thus, in chancery, upon motion to have one of the l principal defendants in a cauſe examined as a witneſs, t court (not then thoroughly examining the juſtice of it, or n hearing what may be objected on the other ſide) often ord ſuch a defendant to be examined *de bene eſſe*, *i. e.* that his d poſitions ſhall be allowed, or ſuppreſſed, at the hearing of t cauſe upon a full debate of the matter, as the court ſhall th fit; but for the preſent they have a well-being, or conditio allowance.

DEBENTURE, a kind of writing in the nature of a bo firſt given in 1649. to charge the commonwealth to ſecure t ſoldier-creditor, or his aſſigns, the ſum due, upon auditing t accounts of his arrears.

The word is now alſo uſed in the exchequer, and in the kin houſhold, where *debentures* are uſually given to the vants for the payment of their wages, board-wages, and like.

debenture is mentioned in the act of oblivion, 12 Car. II. cap. 2. and ſince the late revolution, has been uſed in many acts of parliament, eſpecially in that which relates to the forfeited eſtates in Ireland, out of which the ſoldiers *debentures* are appointed to be ſatiſfied, 11 W. III.

DEBILITY (in a medicinal ſenſe) is a relaxation of the ſolids, which often induces weakneſs and fainting.

DEBILITY (in aſtrology). See DIGNITY.

DEBRUIZED, or DEBRUISED, in heraldry, is when we would intimate the grievous reſtraint of any animal, which is debarred its natural freedom by any of the ordinaries being laid over it.

Thus when a pale, *&c.* is borne upon a beaſt in an eſcutcheon, the beaſt is ſaid to be *debruiſed* by the pale.

DEBT, a thing due to another, whether it conſiſt of money, goods, or ſervices.

By our law, *debts* due to the king are to be ſatiſfied in the firſt place in all caſes of executorſhip, and adminiſtratorſhip; and till the king's *debt* be ſatiſfied, he may protect the debtor from the arreſt of any other creditor.

We meet with divers kinds of *debts*: *active debts* are thoſe whereof a perſon is creditor: *paſſive debts* thoſe whereof he is debtor.—There are alſo *real debts*, *perſonal debts*, and *mixed debts*.

Chirographary DEBT, in the French law, is that due by virtue of a note, or writing under one's hand, and not proved in judicature.

Hypothecary DEBT is that due in virtue of ſome contract, or judgment.

Prædiatory DEBT is that ariſing from an alienation of lands, *&c.* the whole purchace whereof has not been paid.

Privileged DEBT is that which muſt be ſatiſfied before all others; as, the king's tax, *&c.*

DEBTOR, a perſon who owes ſomething to another: in oppoſition to creditor, which is he to whom it is owing.

DECAGON, a plain figure in geometry, having ten ſides and angles.

If all the ſides and angles be equal, it is called a regular *decagon*, and may be inſcribed in a circle.

The ſides of a regular *decagon* are, in power and length, equal to the greateſt ſegment of an hexagon inſcribed in the ſame circle, and cut according to extreme and mean proportion.

A fortification alſo conſiſting of ten baſtions is ſometimes called a *decagon*.

DECALOGUE*, the ten commandments of God, engraven on two tables of ſtone, and given to Moſes.

* The word is Greek, compoſed of δεκα, ten, and λογος, word, *q. d.* ten words. Accordingly, the Jews call them עשרה דבורים *the ten words*, which appellation is very antient.

The Samaritans, both in their text and verſion, add after the 17th verſe of the XXth chapter of Exodus, and after the 21ſt verſe of the Vth chapter of Deuteronomy, an eleventh commandment, to build an altar on mount Gerizzim, *&c.* But it is apparently an interpolation, to authorize their having a temple and an altar on that mountain; and to diſcredit, if poſſible, the temple at Jeruſalem, and the worſhip there performed. It muſt be added, however, that, though all, both Jews and Chriſtians, agree in the number of ten commandments; there is ſome difference as to the manner of dividing them.

The Talmudiſts, and Poſtellus after them, in his treatiſe *de Phœnicum literis*, ſay, that the *decalogue*, or ten commandments, were engraven quite through the tables which God gave to Moſes; but that nevertheleſs the middle of the ם, *Mem* final, and of the ס, *Samech*, remained miraculouſly ſuſpended without adhering to any thing. See the *Diſſertation on the Samaritan medals*, printed at Paris in 1715. They add, that the *decalogue* was written in letters of light, *i. e.* in luminous ſhining letters.

ECAMERIS*, a term ſignifying a tenth part; uſed by Mr. Sauveur, and ſome other authors, to mark and meaſure the intervals of ſounds.

* The word is formed of δεκα, ten, and μερις, part.

ECAMERON, a work containing the actions or converſaions of ten days. *Boccacio*'s *decameron* conſiſts of one hundred novels related in ten days.

ECAMP. When an army raiſes its camp, or breaks up rom the place where it lay before, they ſay it is *decamped*.

ECANTATION, in chymiſtry, the act of pouring off a iquor from off the fæces, *&c.* by gently inclining the lip, r *canthus* of the veſſel; whence the word is derived. See CANTHUS.

CANUS, among the Romans, an officer who had ten ther officers, or perſons, under his charge; whence our Engſh dean.

CAPITE', in heraldry. See DEFFAIT.

CAPROTI*, DECEMPRIMI, among the antients, were fficers who gathered the tributes, or taxes.

* The word comes from δεκα, ten, and πρωτος, firſt; probably by reaſon the ten firſt, or principal perſons of each community, were choſen to make the levies.

he *decaproti* were obliged to pay for the dead; or, to anver to the emperor for the quota parts of ſuch as died, out of their own eſtates. Cicero, in his oration for Roſcius, calls them *decemprimi*.

DECASTYLE*, in the antient architecture, a building with an ordonnance of ten columns in front.—The temple of Jupiter Olympius was *decaſtyle*.

* The word is formed of δεκα, and ϛυλος, column.

DECEMBER, the laſt month of the year; wherein the ſun enters the tropic of capricorn, and makes the winter ſolſtice.

In Romulus's year *December* was the 10th month, whence the name, *viz.* from *decem*, ten: for the Romans began their year in *March*.

The month of *December* was under the protection of Veſta: Romulus aſſigned it 30 days; Numa reduced it to 29; which Julius Cæſar increaſed to 31.

Under the reign of Commodus, this month was called, by way of flattery, *Amazonius*, in honour of a courteſan, whom that prince paſſionately loved, and had got painted like an *Amazon*; but it only kept the name during that emperor's life.

At the latter-end of this month they had the *juveniles ludi*, and the country people kept the feaſt of the goddeſs Vacuna in the fields, having then gotten in their fruits, and ſown their corn; whence ſeems to be derived our popular feſtival called *harveſt-home*.

DECEMPEDA, ΔΕΚΑΠΟΥΣ, *ten-feet rod*; an inſtrument uſed by the antients in meaſuring.

The *decempeda* was a rule, or rod, divided into ten feet; whence its name, from *decem*, ten, and *pes*, *pedis*, foot.—The foot was ſubdivided into 12 inches; and each inch into 10 digits.

The *decempeda* was uſed both in meaſuring of land, like the chain among us; and by architects, to give the proper dimenſions and proportions to the parts of their buildings, which uſe it ſtill retains. Horace, Lib. II. Od. 15. blameing the magnificence and delicacy of the buildings of his time, obſerves, that it was otherwiſe in the times of Romulus and Cato; that in the houſes of private perſons there were not then known any portico's meaſured out with the *decempeda*, nor turned to the north to take the cool air.

DECEMVIRI, an order of magiſtrates among the Romans, created with a ſovereign power to draw up and make laws for the people; thus called by reaſon their number was ten.

To the *decemviri* was given all the legiſlative authority ever enjoyed by the kings, and after them by the conſuls. One among them had all the enſigns and honours of the function; and the reſt had the like in their turn, during the year of their *decemvirate*.

It was the *decemviri* who drew up the laws of the twelve tables, called thence *leges decemvirales*, which for a conſiderable time were the whole of the Roman law.

In the year 302. the conſuls Appius Claudius Craſſinius, and T. Genucius Augurinus, being obliged to abdicate; the firſt *decemviri* were created; the year following ten new ones were appointed to ſucceed them; and in the year 304. another ſet were to have been choſen, but that the people roſe, made them lay down, and reſumed the conſuls. The exceſſive debauchery of Appius Claudius Craſſinius; one of the conſuls, who was firſt obliged to abdicate, and who had been choſen firſt *decemvir* three times, was the principal cauſe of all this. Cicero *de Finib.* Lib. I. Livy, Lib. III. Halicarnaſſeus, Lib. X. and Florus, Lib. I. c. 24. relate the hiſtory.

The *decemviral* adminiſtration, however, it is to be obſerved, had not its firſt riſe at the time when the authority of the conſuls was devolved into the hands of the *decemviri*: for, during the interregnum that enſued after the death of Romulus, the management of affairs, which the ſenate then took upon them, is called by Halicarnaſſeus, Lib. II. *decemviral*, by reaſon the ſenators, divided into tens, commanded each in their turn: that is, one of each ten, for five days ſucceſſively, having the faſces, lictors, &c. like the kings.

There were alſo military *decemviri*; and on divers emergencies *decemviri* were created to manage and regulate certain affairs, after the ſame manner as boards of commiſſioners are appointed among us. Thus, we find *decemviri* for conducting colonies; *decemviri* to prepare and preſide at feaſts in honour of the gods; *decemviri* to take care of the ſacrifices; and *decemviri* to keep the Sibyls books.

Sometimes in lieu of *decemviri*, they only created *ſeptemviri*, or *triumviri*, or *duumviri*, &c.

DECENNALIA, in antiquity, feaſts which the Roman emperors held every tenth year of their reign, with ſacrifices, games, largeſſes to the people, *&c.*

Auguſtus was the author of this cuſtom, which was afterwards imitated by his ſucceſſors.

At the ſame time they likewiſe offered vows for the emperor, and the perpetuity of his empire, called *vota decennalia.* See VOW.

From the time of Antoninus Pius, we find theſe ceremonies marked on medals. PRIMI DECENNALES. SECUNDI DECENNALES. VOTA SOL. DECEN. II. VOTA SVSCEP. DECENN. III.

Theſe vows muſt have been made at the beginning of every tenth year; for on a medal of Pertinax, who ſcarce reigned four months, we find VOTA DECENN. & VOTIS DECENNALIBUS.

Struvius is of opinion, that theſe vows took place of thoſe which the cenſor uſed to make in the times of the republic for the proſperity and preſervation thereof. In effect, they were not only made in behalf of the prince, but alſo of the ſtate, as may be obſerved from Dion. Lib. VIII. and Pliny the younger, Lib. X. cap. 101.

Auguſtus's aim in eſtabliſhing the *decennalia* was to preſerve the empire, and the ſovereign power, without offence or reſtraint to the people. For, during the celebration of this feaſt, that prince uſed to ſurrender up all his authority into the hands of the people, who, filled with joy, and charmed with the goodneſs of Auguſtus, immediately delivered it him back again.

DECENNIERS; ſee the next column.

DECIDUOUS, in the general, expreſſes a thing apt and ready to fall.

In ſome plants, the perianthium or calyx is *deciduous* with the flower, that is, falls off from the plant with it; in others, not.

In ſome, the leaves are *decidubus*, or fall off in autumn; in others, they remain all the winter.

DECIES *tantum*, a writ that lies againſt a juror, who hath taken money for giving his verdict.

It is ſo called from its effect, which is to recover ten times as much as he took.

It alſo lies againſt embracers that procure ſuch an inqueſt. See EMBRACER.

DECIL, DECILIS, in aſtronomy, an aſpect or poſition of two planets, when they are diſtant from each other a tenth part of the zodiac.

DECIMAL *arithmetic*, the art of computing by *decimal* fractions, firſt invented by Johannes Regiomontanus, and uſed by him in the conſtruction of his table of ſines.

DECIMAL *fractions* are thoſe whoſe denominator is 1, with one or more cyphers; as, 10, 100, 1000, 10000, &c. Thus $\frac{5}{10}$ $\frac{6}{100}$ $\frac{7}{1000}$, &c. are *decimal fractiens*.

In the writing of *decimal fractions* we uſually omit the denominator, as only conſiſting of unity with cyphers annexed; and in lieu thereof, a point, or comma, is prefixed to the numerator. Thus, $\frac{5}{10}$ is written ,5; $\frac{46}{100}$, ,46. So .125 expreſſes an hundred twenty-five parts of any thing ſuppoſed to be divided into 1000 parts.

As cyphers on the right hand of integers do increaſe their value *decimally*; as, 2, 20, 200, &c. ſo, when ſet on the left-hand of *decimal fractions*, they decreaſe the value *decimally*; as, 5, 05, 005, &c. when ſet on the left-hand of integers, or on the right-hand of *decimals*, they ſignify nothing, but only to fill up places; thus, ,5000, or 0005. is but five units.

To reduce any vulgar fraction, as ſuppoſe $\frac{5}{8}$, to a *decimal fraction* of the ſame value, whoſe denominator ſhall be 1000; ſay, by the rule of three, as 8, the denominator of the vulgar fraction, is to 5 the numerator: ſo will 1000, the denominator aſſigned, be to a 4th term, which, by working, will be found to be ,625. and therefore $\frac{625}{1000}$, or .625 is a *decimal* of the ſame value with the former fraction $\frac{5}{8}$.

The common operations in *decimals* are performed as in the vulgar rules, regard being had only to the particular notation, to diſtinguiſh the integral from the fractional part of a ſum.

In Addition and Subtraction of DECIMALS; the points being all placed under each other, the figures are to be added, and ſubtracted, as in common arithmetic: and when the operation is done, ſo many figures of the ſum, or the remainder, are to be noted for *decimals*, as there are places of *decimals* in the greateſt given numbers.—An example will make this clear.

Addition of *decimals*. Subtraction.

```
 ,43791 | 59 ,271 || From 67 ,9
 792    | 15 ,040 || Take 29 ,8754
 6124   |  3 ,791 || -------------
 053    | 12 ,009 || Rem. 38 ,0246
 10     |  7 ,5   || =============
 2      | ------- || From 25 ,1462
 ------ | 97 ,062 || Take 13 ,07
2,19531 |         || Rem. 12 ,0762
```

For Multiplication of DECIMALS, obſerve to cut off juſt ſo many *decimal* parts from the product as there are *decimals* in both factors. The work is the ſame as in integers. Thus,

Multiplication of *decimals*.

```
   ,1472 |   ,365 |   3,650
   ,175  |   ,122 |     621
 ------- | ------ | -------
    7360 |    730 |   3 650
  10304  |   730  |  73 00
  1472   |  365   | 2190 0
 ------- | ------ | -------
,0257600 | ,044530| 2266,650
```

Note, In the firſt and ſecond examples the products only amount to fix and five places; for which reaſon cyphers are prefixed, to make up the numbers of *decimal* places in the two factors reſpectively.

In Diviſion of DECIMALS, proceed in all reſpects as in dividing of integers; and, when the operation is done, mark as many places in the quotient for *decimals*, as, with the number of *decimals* in the diviſor, are equal to the *decimal* places of the dividend.

```
,22),8030(3,65     |  22)8,030(,365
     66            |      6 6
    ----           |     ----
     143           |      1 43
     132           |      1 32
    ----           |     ----
     .110          |      1 10
      110          |      1 10
    ----           |     ----
      ..0          |       ..0
22),8030(,0365     |  73,2)83,219(1,13
     66            |       73 2
    ----           |      -----
     143           |       100 1
     132           |       73 2
    ----           |      -----
     110.          |       26 99
     110           |       21 96
    ----           |      -----
     ...           |        5 03
```

But there are certain caſes in diviſion of *decimals*, which r quire ſome farther management: as, firſt, where the diviſo is a *decimal fraction*, and the dividend is an integer; ad or annex, as many or rather more cyphers to the dividend than there are places in the diviſor: thus, ,365)22,0000(60, For there being three places of *decimals* in the diviſor, a four in the dividend, there will be but one in the quotient Secondly, Where the diviſor is a mixed number, and the d vidend a whole number, add at leaſt as many cyphers to t dividend, as there are places in the diviſor. Thus 3,65) 22,0000(6,02. Thirdly, Where-ever the diviſor is bigg than the dividend, annex cyphers to the latter. Thus, 36, 22,0000(,602.

DECIMAL *ſcales*, in the general, denote any *ſcales* divided d *cimally*; but particularly certain *ſcales* of money, weigh and meaſures, made from tables ſo called, to expedite *de mal* arithmetic, by ſhewing by inſpection the *decimal fracti* of any part of money, weight, or meaſure. See SCALE.

DECIMATION, a puniſhment which the Romans uſed inflict on the ſoldiers who had quitted their poſt, raiſed mutiny in the camp, behaved themſelves cowardly in t fight, or otherwiſe failed in their duty; for which every te man was put to death as an example to the reſt.

The manner of *decimating* was thus: The general aſſemb the whole camp; then the tribune brought to him thoſe t were guilty, and impeached, and reproached them with t cowardly actions, and baſeneſs, in the preſence of the wh army: then putting their names into an urn, or an helm as many were drawn out as made the tenth part of the w number, and theſe were put to the ſword, and the oth ſaved.

This was called *decimare*, a word of the antient Roman litia, who, to puniſh whole legions, when they had faile their duty, ſometimes alſo made every tenth ſoldier draw l and put him to death for an example to the others.

As the Romans had their *decimatio*, they had alſo the v ſimatio, and even centeſimatio, when only the twentieth hundredth man ſuffered by lot.

DECINERS, DECENNIERS, or DOZINERS, in the an monuments of our law, are ſuch as were wont to have overſight and check of the friburghs, for maintenance of king's peace; the limits of whoſe juriſdiction were called *cenna*, and *dozein*.

They ſeem to have had very large authority in the S times; taking cognizance of cauſes within their circuit, redreſſing wrongs by way of judgment. Thus Briton, "
" will that all thoſe who are fourteen years old ſhall
" oath, that they will be ſufficient and loyal to us; and
" ther be felons, nor aſſenting to felons; and we will, t
" profeſs themſelves of this or that *dozein*, and make or
" ſurety of their behaviour by thoſe or thoſe *doziners*, e
" religious perſons, clerks, knights eldeſt ſons, and wom

A *dozein* now ſeems to be no other than a leet: for in only this oath is adminiſtred by the ſteward, and take ſuch as are twelve years old and upwards.

DECIPHERING, or DECYPHERING, the art, or act, of ing the alphabet of a *cipher*, or of explaining a letter w in *cipher*.

Every language has peculiar rules of *deciphering*. *Geſvry* has publiſhed the principles of *deciphering* the F wherein the rules peculiar to that language are laid do The principal, we ſhall here add as a ſpecimen in this kind. Firſt, that when a character is found alone, it muſt ei an *A*, *Y*, or an *O*, theſe being the only letters in the F alphabet that make words ſingly.

Secondly, the character that occurs the ofteneſt in a w to be *deciphered* is ordinarily an *E*; this being the moſt mon letter in that language.

Th

Thirdly, to know the *U*, you muſt take the character that is always preceded by one certain other, which will be the *Q*.

Fourthly, the *I* is alſo known by means of the *Q*, for ſince *QUE* and *QUI* are the only ſyllables in the *French* tongue that begin with *Q*; whenever you find a word of three characters, whereof the firſt is a *Q*, and the laſt is not an *E*, it muſt be an *I*.

Fifthly, in all words of two letters, one of them is a vowel.

Sixthly, of the three firſt characters of a word, one of them is a vowel.

Seventhly, the vowels being once *deciphered*; the conſonants are readily found by the connexion which certain conſonants uſually have with certain vowels.

DECK *of a ſhip*, a kind of planked floor, reaching from ſtem to ſtern, whereon the guns are laid, and the men walk to and fro'; ſerving alſo as a cieling to ſeparate the ſtories of the ſhip, or other veſſel.

A *ſhip* is ſaid to have two or three *decks*, when it contains two or three ſtories. The middling ſort of veſſels have two *decks*; the biggeſt have three, diſtant from each other about five feet. The *bottom deck* is called the *firſt deck*: the *ſecond deck*, anſwering to the ſecond ſtory from the ground in houſes, contains an equal number of guns with the firſt, abating that there is none over the ſtern, which is the captain's apartment. Before this *deck* are the kitchen-offices, *&c.* In large veſſels there is a *third deck*, and a third battery.

Some veſſels have likewiſe a *half-deck*, which reaches from the main-maſt to the ſtern of the ſhip: as alſo a *quarter-deck*, which is from the ſteerage aloft to the maſter's round-houſe.

Sometimes alſo there is a *ſpare-deck*, which is the uppermoſt of all, being between the main-maſt and the miſſen, called alſo the *orlope*.

Rope-DECK is that made of cordages interwoven, and ſtretched over a veſſel that has no *deck*, through which it is eaſy to annoy the enemy who comes to board her, and has leaped thereon.—Theſe are little uſed but in merchant-veſſels, to defend them from the corſairs.

DECLAMATION, a diſcourſe or ſpeech made in public, in the tone and manner of an oration.

Among the Greeks, *declamation* was the art of ſpeaking indifferently on all ſubjects, and on all ſides of a queſtion; of making a thing appear juſt that was unjuſt, and of triumphing over the beſt and ſoundeſt reaſons.

Such ſort of *declamations*, M. de St. Evremond obſerves, were fit only to corrupt the mind by accuſtoming men to cultivate their imagination rather than to form their judgment, and to ſeek for veriſimilitudes to impoſe upon, rather than ſolid reaſons to convince, the underſtanding.

Among us, *declamation* is reſtrained to certain exerciſes, which ſcholars perform, to teach them to ſpeak in public.

We ſay, a *declamation* againſt Hannibal, againſt Pyrrhus, the *declamations* of Quintilian, *&c.*

In the colleges of the Jeſuits, *declamations* are little theatrical or dramatic performances, conſiſting of a few ſcenes not divided into acts, rehearſed by the ſtudents by way of exerciſe, and to form them for ſpeaking in public.

Such *declamations* are the moſt uſeful exerciſes performed in the colleges.

ECLARATION, in law, the act of ſhewing in writing the grief and complaint of the demandant, or plaintiff, againſt the defendant, where he is ſuppoſed to have received ſome wrong.

This ought to be plain and certain, both becauſe it impeacheth the defendant, and alſo compels him to anſwer thereto.

ECLARATION is alſo uſed for a confeſſion, which the Quakers, who ſcruple taking the oaths of ſupremacy, *&c.* are obliged to make and ſubſcribe in lieu thereof.

Its tenor is a ſolemn promiſe before God and the world, to be true to king George, with a deteſtation and horror of that damnable poſition, that princes excommunicated by the pope, or any other power, may be depoſed or murdered; and a *declaration*, that no foreign prince, or power, has any right, juriſdiction, or authority, in this kingdom.

ECLENSION, in grammar, the inflexion of a noun, according to its diverſe caſes. See CASE, NOMINATIVE, *&c.*

The *declenſion* of nouns is a different thing in the modern languages, which have not properly any caſes; from what it is in the antient Greek and Latin, which have.

Declenſion in languages wherein the nouns admit of changes, whether in the beginning, middle, or end, is properly the expreſſing or reciting all thoſe changes in a certain order, and by certain degrees, called *caſes*.

In languages wherein the nouns do not admit of changes in the ſame number, *declenſion* is the expreſſing of the different ſtates or habitudes a noun is in, and the different relations it has: which difference of relations is marked by particles called *articles*; as, *a*, *the*, *of*, *to*, *from*, &c.

CLENSION *of a diſeaſe* is when it is paſt its height, and the ſymptoms abate.

DECLINATION, in aſtronomy, the diſtance of the ſun, a ſtar, planet, or other point of the ſphere of the world, from the equator, either northward or ſouthward.

Declination is either *real* or *apparent*, according as the real or apparent place of the point is conſidered.

The *declination* is an arch of a great circle, as GS (*Tab. Aſtron. Fig.* 4.), intercepted between a given point, as S, and the equator AQ, and perpendicular to the ſame. Conſequently, the circle, by whoſe arch the *declination* GS is meaſured, paſſes through the poles of the world.

The *declination* of a ſtar, *&c.* is found by firſt obſerving the altitude of the pole, as PR (*Fig.* 5.) This ſubtracted from 90° gives the height of the equator AH. Then, the meridian altitude of the ſtar HD being obſerved, if it be greater than the altitude of the equator AH, the latter ſubtracted from the former leaves the *declination* northward AD: or, if the altitude of the ſtar HT be leſs than that of the equator HA, the former ſubtracted from the latter leaves the *declination* ſouthward TA.

E. gr. Tycho at Uraniſbourg obſerved the meridian altitude of the Cauda Leonis:

	HD	50°	59′	0″
Altitude of equat.	HA	34	5	20
Declinat. therefore,	AD	16	53	40

If the ſtar be in the quadrant ZR, then the leaſt altitude MR ſubtracted from the altitude of the pole PR leaves the diſtance from the pole PM; which ſubtracted again from the quadrant PQ, leaves the *declination* MQ.—*E. gr.* M. Couplet obſerved PM 2°. 18′ 50″, which ſubtracted from 90° leaves MQ 87° 41′ 10″. And by this method are conſtructed the tables of *declination* of the fixed ſtars given us by Ricciolus and Dechales.

By comparing the antient obſervations with the modern, it appears, that the *declination* of the fixed ſtars is variable; and that, differently, in different ſtars. For in ſome it increaſes, and in others decreaſes, and that in different quantities. But the greateſt increaſe or decreaſe does not exceed three minutes and an half in ten years time.

It has been greatly diſputed among the later mathematicians, whether or no the *declination* and obliquity of the ecliptic be variable? but the point ſeems now decided in favour of the immutability.

Circle of DECLINATION is a great circle of the ſphere paſſing through the poles of the world; and on which the *declination* of a ſtar is meaſured: ſuch is PDGK, paſſing through the poles T and K, *Fig.* 4.

Parallax of DECLINATION is an arch of the circle of *declination*, whereby the parallax of the altitude increaſes or diminiſhes the *declination* of a ſtar.

Refraction of the DECLINATION, an arch of the circle of *declination*, whereby the *declination* of a ſtar is increaſed or diminiſhed by means of the refraction.

DECLINATION *of the needle*, or *compaſs*, is its variation from the true meridian.

DECLINATION *of a plane*, or *wall*, in dialling, is an arch of the horizon, comprehended either between the plane, and the prime vertical circle, if you account it from eaſt to weſt; or between the meridian and the plane, if you account it from north to ſouth.

There are many ways given by authors for finding the *declination* of planes: the moſt handy and practical way is by a *declinator*.

DECLINATOR, or DECLINATORY, an inſtrument in dialling, whereby the declination, inclination, and reclination, of planes is determined.

Its ſtructure is as follows: on a ſquare wooden board ABCD (*Tab. Dial. Fig.* 1.), deſcribe ſemicircle AED, and divide the two quadrants thereof AE and EM into 90 degrees each, beginning from E, as in the figure. Then, having fixed a pin in the centre F, fit a wooden ruler HI upon the ſame, moveable thereon, with a box and needle K, as ſhewn under COMPASS.

Now, to apply this, in taking the *declination* of a plane: apply the ſide AD of the inſtrument to the plane propoſed, as MN (*Fig.* 2.); and move the ruler FG, with the compaſs G this way and that, about the centre F, till the needle reſt upon the line of the magnetical meridian of the place. Now if the ruler in this ſituation cut the quadrant in E, the plane is either northern or ſouthern: but if it cut between D and E, the plane declines to the weſt; or, if between AE, to the eaſt by the quantity of the angle GFE.

The ſame inſtrument will alſo ſerve to take the inclinations and reclinations of planes. To this end, inſtead of the ruler and needle, a thread with a plumbet is fitted on a pin in the centre F: then the ſide BC of the *declinator* ABCD, being applied to the propoſed plane, as IL (*Fig.* 3.), if the plumb-line FG cut the ſemicircle AED in the point E, the plane is horizontal; or if it cut the quadrant EL in any point at G, then will EFG be the angle of inclination: laſtly, if applying the ſide AB to the plane, the plumbet cut E, the plane is vertical. Hence, if the quantity of the angle of inclination be compared with the elevation of the pole, and equator, it is eaſily known, whether the plane be inclined, or reclined. See INCLINATION, and RECLINATION.

DECLINERS, or DECLINING *dials*, are thoſe which cut either the plane of the prime vertical circle, or the plane of the horizon, obliquely.

If we conceive the plane of the prime vertical circle to revolve a little upon a right line drawn from Zenith to Nadir; the plane will become *declining*; nor will it be any longer cut at right angles by the meridian; but by ſome vertical circle paſſing through the intermediate points. After the like manner a horizontal plane will be brought to *deline*, if revolving on the meridian line, one part of it be raiſed a little towards the Zenith, and the other depreſſed towards the Nadir.

The uſe of *declining* vertical dials is very frequent, in regard the walls of houſes whereon dials are commonly drawn, do generally decline from the cardinal points. Incliners and recliners, and eſpecially deincliners, are very rare. See DIAL.

DECLINING, { *Erect*, *Inclining*, *Reclining*, } *Dials*. See DIAL.

DECLIVIS, in anatomy, a muſcle of the abdomen, called alſo *obliquus deſcendens*. See OBLIQUUS *deſcendens*.

DECLIVITY. See the article ACCLIVITY.

DECOCTION, the act of boiling one or more plants, or other drugs, to extract the virtues out of the ſame for ſome medicinal purpoſe.

Decoctions of guaiacum and ſarſaparilla are the common drink in venereal diſeaſes.

M. Boulduc aſſures us from his own experience, that the infuſions of vegetable purgatives act better, and produce better effects, than their *decoctions*; which he attributes to this, that the pureſt and moſt active principles of thoſe bodies are diſſipated and evaporated by a boiling heat. *Memoires de l'Academie Royale des Sciences, an.* 1710.

DECOLLATION, *beheading*, a term frequently uſed in the phraſe, *decollation* of St. John Baptiſt, which denotes a painting, wherein is repreſented the Baptiſt's head, ſtruck off from his trunk; or, the feaſt held in honour of that martyr.

A French embaſſador at Conſtantinople ſhewing the grand ſignor a *decollation* of St. John admirably repreſented, except that the painter had not obſerved, that when a man is beheaded, the ſkin ſhrinks back a little; the emperor immediately ſpied the fault in that exquiſite performance; and to convince the embaſſador thereof, ſent orders for a man to be immediately beheaded, and his head to be brought for a proof. *Catherinot Traité de la Peinture.*

DECOMPOSITION, in chymiſtry and pharmacy, the ſame with analyſis or reſolution; *viz.* the reduction of a body into its principles, or component parts.

DECOMPOSITION is ſometimes taken for any ſort of reſolution, or ſeparation of parts; but, in propriety, *decompoſition* is a chymical proceſs, in order to a ſeparation of the heterogeneities, or impurities, from any matter.

Tradition, founded on repeated experiments, is a much ſurer way of arriving at the knowlege of the properties of a plant, than any chymical analyſis, or *decompoſition* of its principles. See MEDICINE.

DECORATION, in architecture, any thing that adorns and enriches a building, church, triumphal arch, or the like, either without-ſide, or within.

The orders of architecture contribute greatly to the *decoration*; but then the ſeveral parts of thoſe orders muſt have their juſt proportions, characters, and ornaments; otherwiſe the fineſt order will bring confuſion rather than richneſs.

Decorations in churches are paintings, vaſes, feſtoons, &c. occaſionally applied to the walls; but that with ſo much conduct and diſcretion, as not to take off any thing from the form of the architecture: as is much practiſed in Italy, at the ſolemn feaſts.

DECORATION is more properly applied to the ſcenes of theatres.

In operas, and other theatrical performances, the *decorations* muſt be frequently changed conformably to the ſubject.

The antients had two kinds of *decorations* for their theatres: the firſt, called *verſatiles*, having three ſides, or faces, which were turned ſucceſſively to the ſpectators: the other called *ductiles*, ſhewing a new *decoration* by drawing, or ſliding another before it.

This latter ſort is ſtill uſed, and apparently with much greater ſucceſs than among the antients, who were obliged to draw a curtain whenever they made a change in the *decoration*; whereas on our ſtage the change is made in a moment, and almoſt without being perceived.

DECORTICATION, the act of peeling, or unhuſking roots, ſeeds, fruits, branches, &c. or of freeing them from their barks, rinds, huſks, or ſhells.

DECORUM, DECOR, in architecture, denotes the ſuitableneſs of a building, and of the ſeveral parts, and ornaments thereof, to the place and occaſion.

Vitruvius is very ſevere in this point; and gives expreſs rule for the appropriating, or ſuiting the ſeveral orders to thei natural characters: ſo, *e. g.* as that a Corinthian column may not be ſet at the entrance of a priſon, or gatehouſe; nor a Tuſcan, in the portico of a temple; as ſome have done among us, in breach of *decorum*. Even in the diſpoſition of the offices of our ordinary houſes, we find grievous offences againſt *decorum*: the kitchen being often where the parlour ſhould be; and that in the firſt and beſt ſtory, which ſhould have been condemned to the loweſt, and worſt.

DECOUPLE', in heraldry, the ſame as uncoupled, *i. e.* parted, or ſevered.

Thus, a chevron *decouplé* is a chevron wanting ſo much towards the point, that the two ends ſtand at a diſtance from each other.

DECOURS, DECRESSANT, } in heraldry. See DECREMENT.

DECOY, a place made fit for catching of wild fowl.

Hence alſo a *decoy-duck* is one that flies abroad, and lights into company of wild ones, and, being become acquainted with them, by her allurement draws them into the *decoy*-place, where they become a prey. See Supplement, article WILD-FOWL.

DECREE, DECRETUM, an order, or reſolve, made by a ſuperior power, for the regulating of an inferior.

The commerce between ſoul and body, Fa. Malebranche obſerves, has no other vinculum, or connexion, but the efficacy of the divine *decrees*. Second cauſes only execute the *decrees* of Providence.

The doctrine of the Calviniſts implies, that God concurs to ſin by a poſitive *decree*; in that, if crimes were not ordained by an antecedent *decree*, God could not foreſee the events.

DECREES of councils are the laws made by them to regulate the doctrine and policy of the church.

DECREE was originally uſed by the lawyers for any thing ordained by the prince, upon cognizance of a cauſe.

But the canoniſts now reſtrain the word *decree* to the ordinances of popes; as the name canon is to what is ordained by councils.

DECREES in chancery are the determinations or ſentences of the lord chancellor, upon full hearing, and weighing the merits of the cauſe. See CHANCERY.

DECREMENT, or DECRESSANT, in heraldry, denotes the wane, or decreaſe of the moon, when ſhe is receding from the full towards the new.

In this ſtate ſhe is called, in blazon, a *moon-decreſſant*, or, *en decours*; ſince to call it a creſcent, would be improper, as that term denotes an increaſe. The moon looking to the left ſide of the eſcutcheon, is always ſuppoſed to be *decreſſant*: when ſhe faces the right, ſhe is creſcent, or in her growth.

DECREPITATION, in chymiſtry, the operation of drying and calcining ſalts over the fire, continued till ſuch time as they ceaſe to crackle.

DECREPITATION is alſo applied to the noiſe or crackling of the ſalts during the operation.

The deſign of this operation is to free the ſalt of its ſuperfluous moiſture: but the ſalt is hereby rendered ſo porous, and apt to imbibe moiſture, that unleſs it be kept very cloſe afterwards, it ſoon moiſtens again.

DECRETAL, a reſcript, or letter of a pope, whereby ſome point or queſtion in the eccleſiaſtical law is ſolved, or determined.

The *decretals*, *literæ decretales*, compoſe the ſecond part of the canon-law.

Pope Gregory IX. in 1220. procured a compilation to be made of all the *decretals* or pontifical conſtitutions of his predeceſſors, in five books, by Frier Raimond, a Dominican, his chaplain. Which is the only collection authorized by the holy ſee to be read in ſchools. Boniface the VIIIth, in 1297. made a new collection, under the name of *Sextus*, containing 5 books. Clement the IIId made a third, under the title of *Clementines*; and John the XXIId, another under that of *Extravagantes*.

All the *decretals* attributed to the popes before Siricius, in 318. are evidently ſuppoſititious. The impoſture is ſo glaring, that even ſuch as are moſt favourable to the court of Rome, are obliged to abandon them: though they have been one great means of eſtabliſhing the grandeur of Rome, and ruining the antient diſcipline, particularly as to eccleſiaſtical judgments, and the rights of biſhops. They are ſuppoſed by ſome the ſpurious offſpring of Iſidore, archbiſhop of Seville, by reaſon the collection thereof bears the name of Iſidore Peccator, or Mercator. They were firſt publiſhed by Riculph biſhop of Mentz, in the IXth century.

DECUPLE, in arithmetic, a term of relation, or proportion implying a thing to be ten times as much as another.

DECURIO, the chief, or commander of a *decury*, both of the Roman army, and in the college, or aſſembly of the people. See DECURY.

ECURIO *municipalis* was a name given to the ſenators of the Roman colonies.

They were called *decuriones*, by reaſon their court, or company, always conſiſted of ten perſons. See DECURY.

By means hereof, the cities of Italy, at leaſt ſuch as had colonies, had a ſhare, under Auguſtus, in the election of the Roman magiſtrates; the *decuriones*, or ſenators, of thoſe cities, having ſuffrages therein, which they ſent, ſealed up, to Rome, a little before the election.

ECURIO was alſo a name given to certain prieſts, intended, as it ſhould ſeem, for ſome particular ſacrifices, or other religious ceremonies; or for the ſacrifices of private families and houſes, as Struvius conjectures, who thence derives their name.

Be the origin of the name what it will, we have an inſcription in Gruter, which confirms what we have ſaid of their function. ANCHIALVS. CVB. AED. Q. TER. IN. AEDE. DECVRIO. ADLECTVS. EX. CONSENSV. DECVRIONVM. FAMILIAE. VOLVNTATE. Where we have a *decurio* in the houſe of a private perſon, Q. Terentius.

ECURY, ten perſons ranged under one chief, or leader, called the *decurio*.

The Roman cavalry was divided into *decuries*.

Romulus divided the whole Roman people into three tribes; over each of which he appointed a tribune: each tribe he ſubdivided into ten centuries, with centurions at their heads; and each century he ſubdivided further into ten *decuries*, over each of which a decurio commanded.

ECUSSATION, in geometry, optics, and anatomy, the point wherein two lines, rays, or nerves, croſs, or interſect, each other: or the action itſelf, of croſſing.

The optic nerves of both eyes are commonly ſuppoſed to *decuſſate* before they reach the brain; to which *decuſſation* many authors attribute it, that we ſee ſingle with two eyes; though others deny this *decuſſation*.

The rays of light *decuſſate* in the cryſtalline, before they reach the retina.

There are divers muſcles, membranes, &c. that *decuſſate*; their fibres running over each other at greater or leſſer angles, and by that means giving both ſtrength, and conveniency of motion, different ways.

ECUSSORIUM, a ſurgeon's inſtrument, wherewith the dura mater is preſſed down in trepanning, to ſecure it from damage in the operation.

EDI, in conveyances, imports a warranty given to the feoffee, and his heirs. See WARRANTY.

EDICATION, the act of conſecrating a temple, altar, ſtatue, place, &c. to the honour of ſome deity. See TEMPLE, ALTAR, CHURCH, &c.

The uſe of *dedications* is very antient, both among the worſhipers of the true God, and among the heathens: the Hebrews call it חנכה *hhanuchah*, initiation; which the Greek tranſlators render Εγκαινια, and Εγκαινισμος, renewing.

In the Scripture we meet with *dedications* of the tabernacle, of altars, of the firſt and ſecond temple, and even of the houſes of private perſons; Numb. VII. 10, 11. 84. 88. Deut. XX. 5. 1 Kings VIII. 63. 2 Chron. VII. 5. 9. Ezra VI. 16, 17. 1 Eſdr. VII. 7. Pſalm XXX. 1. Hebr. IX. 18. There are alſo *dedications* of veſſels, and garments of the prieſts, and Levites, and even of the men themſelves.

Under the Chriſtian diſpenſation, we call the like ceremonies *conſecrations*, *benedictions*, *ordinations*, &c. and not *dedications*; which is only applied to places.

The *feaſt of the* DEDICATION, or, rather, the feaſt-day of the ſaint and patron of a church, called, in our law-books, &c. *dedicatio*, was celebrated not only by the inhabitants of the place, but by thoſe of all the neighbouring villages, who uſually reſorted thither: and ſuch aſſemblies were authorized by the king.—*Ad dedicationes, ad ſynodos, &c. venientes ſit ſumma pax.*

The cuſtom is ſtill retained, in divers places, under the name of *feaſts*, *wakes*, or *vigils*.

The heathens had alſo *dedications* of temples, altars, and images, of their gods, &c. Nebuchadnezzar had a ſolemn *dedication* of his ſtatue, Daniel III. 2. Pilate *dedicated* gilt bucklers, at Jeruſalem, to Tiberius; Philo *de Legat*. Petronius would have *dedicated* a ſtatue to the emperor in the ſame city, *ibid*. p. 791. Tacitus, *Hiſt.* lib. IV. c. 53. mentions the *dedication* of the capitol, upon rebuilding it by Veſpaſian, &c.

Theſe *dedications* were performed with ſacrifices proper to the deity they were offered to; but they were never practiſed without public permiſſion. Among the Greeks, it does not appear who gave that permiſſion; but, among the Romans, it was always the magiſtrate.

The Jews celebrated the anniverſary of the *dedication* of their temple every year, for eight days; this was firſt enjoined by Judas Maccabæus, and the whole ſynagogue, in the year of the Syro-Macedonian æra 148. *i. e.* 164 years before Chriſt.

The heathens had the like anniverſaries, as that of the *dedication* of the temple of Parthenope, mentioned by Lycophron.

Under Chriſtianity, *dedication* is only applied to a church; and is properly the conſecration thereof, performed by a biſhop, with a number of ceremonies preſcribed by the church.

The Chriſtians, finding themſelves at liberty under Conſtantine, in lieu of their ruinous churches, built new ones in every place; and *dedicated* them with a great deal of ſolemnity. The *dedication* was uſually performed in a ſynod; at leaſt they aſſembled a number of biſhops, to aſſiſt at the ſervice. We have the deſcription of thoſe of the churches at Jeruſalem and Tyre, in Euſebius, and many others in later writers.

In the ſacramentary of Gelaſius, the *dedication* of the baptiſtery is delivered ſeparately from that of the church, which was performed with leſs ceremony than at preſent.

DEDIMUS *poteſtatem*, in law, a writ whereby commiſſion is given to one, or more, private perſons, to aſſiſt for the expedition of ſome act belonging to a judge.

The civilians call it *delegatio*: it is granted moſt commonly upon ſuggeſtion, that the party, who is to do ſomething before a judge, or in a court, is ſo weak he cannot travel.

Its uſe is various: as, to take a perſonal anſwer to a bill in chancery; to examine witneſſes, or to levy a fine, &c.

DEDUCTION, in commerce, a ſubtracting, or retrenching, a little ſum paid, from a greater remaining to pay.

When you have made a deduction of 300 *l.* which I ſent you, from the 500 which you lent me, there will only remain 200 due.

DEED, *factum*, in law, an inſtrument written on paper, or parchment, the validity of which conſiſts in three things; *viz.* writing, ſealing, and delivery; and which comprehends a contract, or bargain, between party and party.

Of theſe there are two ſorts; *deeds indented*, and *deeds poll*: which denominations ariſe from the form and faſhion thereof; the one being cut in and out in the top, or ſide, called *indented*; and the other plain, or *polled*.

A *deed indented*, or an indenture, conſiſts of two parts, or more (for there are *tripartite*, *quadripartite*, *ſeptempartite*, &c. *deeds*); wherein it is expreſſed, that the parties thereto have to every part thereof interchangeably ſet their ſeveral ſeals. The cauſe of their indenting is, that whereas the ſeveral parties have each of them one, the indenture may make it appear, that they belong to one and the ſame contract by their tallying. See INDENTURE.

A *deed poll*, or *polled*, antiently called *charta decima parte*, or *charta ſimplex*, is a plain *deed*, without indenting; uſed when the vendor, for example, only ſeals, and there is no need for the vendee's ſealing a counter-part, by reaſon the nature of the contract is ſuch, that it requires no covenant from the vendee.

DEEMSTERS *, or DEMSTERS.—All controverſies in the iſle of Man are decided, without proceſs, writings, or any charges, by certain judges, choſen yearly from among themſelves, called *deemſters*.—This inſtitution they are ſuppoſed to owe to the antient druids.

* The word is formed from the Saxon *dema*, judge, or umpire.

There are two *deemſters* for each diviſion of the iſland: in antient court-rolls they are called *juſticiarii domini regis*. They ſet judges in all courts, either for life, or property; and with the advice of the twenty-four keys, declare what is law in uncommon emergencies.

DEEP-*ſea line*, or DIP-*ſea line*, in the ſea-language, a ſmall line to ſound withal when a ſhip is in very *deep* water at ſea.

At the end of this line is a piece of lead, called the *deep-ſea lead*, at the bottom of which is a coat of white tallow, to bring up ſtones, gravel, ſhells, or the like, from the bottom; in order to learn the differences of the ground: which being entered, from time to time, in their books, by comparing of obſervations, they gueſs, by their ſoundings, &c. what coaſts they are on, though they cannot ſee land.

DE *expenſis militum*, a writ commanding the ſheriff to levy four ſhillings *per* day, to defray the expences of a knight of the ſhire attending in parliament. See KNIGHT.

There is a like writ, *de expenſis civium, & burgenſium*, to levy a ſhilling *per* day for every citizen and burgeſs in parliament. See REPRESENTATIVE.

DE *facto*, ſomething actually in fact, or exiſting: in contradiſtinction to *de jure*, where a thing is only ſo in juſtice, or equity, but not in fact.

After the revolution, the retainers to the abdicated king inſiſted much on the difference between a king *de jure*, and *de facto*; or a prince in actual, but not legal, poſſeſſion of the crown, and another who had the right, but not the poſſeſſion. The nonjurors ſtill hold the pretender for king *de jure*; and only allow king George for king *de facto*.

DEFAULT, in law, an omiſſion of what a perſon ought to do, particularly before a court of juſtice, at a day aſſigned; for which judgment may be given againſt the *defaulter*.

DEFECATE, or DEFÆCATE, a term applied to ſome body that is purged and cleared of fæces, or impurities.

Diſtillations, and other chemical operations, are intended to ſeparate the moſt pure and ſubtile parts from the fæces, or lees.

DEFECTION *, the act of abandoning, or relinquiſhing, of a party, or an intereſt, a perſon had been engaged in.

* The word is formed of the Latin *deficio*, to fall of.

DEFECTIVE, or DEFICIENT, *Nouns*, in grammar, are ſuch as want either a whole number, or a particular caſe, or are totally indeclinable.

The term *defective* is alſo applied to a verb that has not all its moods and tenſes.

DEFEISANCE, DEFEASANCE, or DEFEIZANCE, in law, a condition relating to a deed; which being performed, the deed is defeated, or annulled, as if it had never been done.

The difference between a proviſo, or condition, in a deed, and a *defeiſance*, is this, that a proviſo, or condition, is annexed or inſerted in the deed of grant; whereas a *defeiſance* is uſually a deed by itſelf. See PROVISO.

DEFENCE, in ſieges, is uſed for any thing that ſerves to preſerve or ſcreen the ſoldiers, or the place. See FORTIFICATION.

The parapets, flanks, caſemates, ravelins, and outworks, that cover the place, are called the *defences*, or covers, of the place: and when the cannon has beat down, or ruined, theſe works, ſo that the men cannot fight under covert; the *defences* of the city are ſaid to be demoliſhed.

Line of DEFENCE is that which flanks a baſtion, being drawn from the flank oppoſite thereto.

The line of *defence* ſhould not exceed a muſquet-ſhot, *i. e.* 120 fathoms, or 720 feet, or 60 Rhinland perches: indeed Melder allows 65; Scheiter 70; the counts De Pagan, and Vauban, 75.

Line of DEFENCE *greater*, or *fichant*, is a right line, as E C (Tab. *Fortif. fig.* 1.), drawn from the point, or vertex, of the baſtion C, to the concourſe E of the oppoſite flank L E, with the curtin E A.

Line of DEFENCE *leſſer*, called alſo *raſant*, and *flanquant*, is the face of the baſtion continued to the curtin; as C I.

DEFENCE *, in old law-books, is ſometimes uſed for prohibition.

* Thus, in Rot. Parl. 21 Edw. III. cries and *defence* were made throughout England, *i. e.* proclamation and prohibition. *Salmones ponantur in* defenſo. Stat. Weſt. 2. c. 47. Salmons are by that act prohibited to be taken at certain times. *Uſurarios* defendit *Rex Eduardus, ne remanerent in regno. LL. Edu. Confeſſ.* In the ſtatutes of Edward I. we have one, intituled, *Statutum de* defenſione *portandi arma*, &c. and it is *defended* by law, to diſtrain on the high-way.

DEFENCE-*month* is more uſually called *Fence-month.* See FENCE-*month*.

DEFENCES, in heraldry, are the weapons of any beaſt; as, the horns of a ſtag, the tuſks of a wild boar, *&c.*

DEFENDANT, a term in law, ſignifying him who is ſued in an action perſonal; as tenant is he who is ſued in an action real.

DEFENDEMUS, in law, a term uſed in feoffments and donations; having this force, that it binds the donor and his heirs to *defend* the donee, if any man go about to lay any incumbrance on the thing given, other than is contained in the donation. See WARRANTY.

DEFENDERS * were antiently notable dignitaries, both in church and ſtate; whoſe buſineſs was, to look to the preſervation of the public weal, and to protect the poor and helpleſs, and to maintain the intereſts and cauſes of churches, and religious houſes.

* The council of Chalcedon, Can. 2. calls the *defender* of a church, Ἔκδικος. Codin, *de officiis aulæ conſt.* makes mention of *defenders* of the palace: ſo does Bollandus, Act. S. Januar. T. 1. p. 501. There was alſo a *defender* of the kingdom, *defenſor regni*; *defenders* of cities, *defenſores civitatis*; *defenders* of the people, *defenſores plebis*; of the poor, fatherleſs, widows, *&c.*

About the year 420. each patriarchal church began to have its *defender*; which cuſtom was afterwards introduced into other churches, and continued to later days under other names; as thoſe of *advocate*, and *advouee*. See ADVOCATE, and ADVOUEE.

In the year 407. we find the council of Carthage aſking the emperor for *defenders*, of the number of *ſcholaſtici*, *i. e.* advocates who were in office; and that it might be allowed them to enter, and ſearch the cabinets and papers of the judges, and other civil magiſtrates, whenever it ſhould be found neceſſary for the intereſt of the church.

The emperor ſtill retains the quality of advocate of the church; and the kings of Great Britain preſerve the title of *defender of the faith*, granted to king Henry VIII. by pope Leo X. in 1521. on occaſion of that prince's writing againſt Luther, and afterwards confirmed by Clement VII. tho' Chamberlayne ſays, the title belonged to the kings of England before that time; and, for proof hereof, appeals to ſeveral charters granted to the univerſity of Oxford: ſo that pope Leo's bull was only a renovation of an antient right. *Pref. Stat. l.* 1. *c.* 2.

DEFENDING, in fortification, is ordinarily ſynonymous with flanking.

Thus, we ſay, the flank *defends* the curtin, and the oppoſite face of the baſtion; this demilune flanks, or *defends*, the horn, or crown-work: the antient fortifications are eaſily taken; there being nothing to *defend*, that is, to flank them.

When they ſay, the flank *defends* the curtin; they mean, not only that it is aſide of the curtin; but, alſo, that it prevents the approaches: that is, ſuch as are poſted on the flank of a baſtion, can ſee any that come to attack the curtin; and can ſhoot them, or prevent their approaching it.

Inner DEFENDING-*Angle* is the angle C I E (Tab. *Fortif. fig.* 1.), made by the leſſer line of *defence* with the curtin.

Outer DEFENDING-*Angle* is the angle C O F, formed by the two leſſer lines of *defence* C O, and F O.

The lines, or ſides, of the rampart, or wall, are *defended* by muſquets, or carbines; as more eaſy, cheap, and commodious, than cannons.

DEFENSITIVE, in medicine, and chirurgery, denotes a bandage, plaiſter, or the like; uſed in the cure of a wound, to moderate the violence of the pain, the flux of blood, and the acceſs, or impreſſion, of the external air.

The cauterization performed, the wound is covered with lint, and the eye with a *defenſitive*, and a triangular compreſs. For the firſt dreſſing of the entorſe, M. Dionis uſed a little *defenſitive* made of the white of an egg, oleum roſatum, and alum-powder.

DEFENSOR. See ADVOCATE.

DEFERENT, DEFERENS, in anatomy, is applied to certain veſſels of the body, appointed for the conveyance of humours from one place to another.

Vaſa DEFERENTIA are the veſſels that convey the ſeed as faſt as it is ſecreted and prepared in the teſticles, *&c.* into the veſiculæ ſeminales; there to be depoſited till an emiſſion is required.—See *Tab. Anat.* (Splanch.) *fig.* 1. *lit.* t t. *fig.* 8. *lit.* n n. *fig.* 15. *lit.* a a.

Some call them the *ejaculatory veſſels.* They are white, nervous, and round; ſituate partly in the ſcrotum, and partly in the abdomen.

DEFERENT, or DEFERENS, in the antient aſtronomy, a circle invented to account for the eccentricity, perigee, and apogee, of the planets.

As the planets are found differently diſtant from the earth, at different times; it was ſuppoſed, that their proper motion was performed in a circle, or ellipſis, which is not concentric with the earth; and this eccentric circle, or ellipſis, they called the *deferent:* becauſe, paſſing through the center of the planet, it ſeemed to ſupport, or ſuſtain, it in its orbit.

The *deferents* are ſuppoſed differently inclined to the ecliptic, but none more than 8 degrees, excepting that of the ſun, which is in the plane of the equator itſelf, and is cut differently by the *deferents* of the other planets in two places, called *nodes*.

In the Ptolemaic ſyſtem, the ſame *deferent* is alſo called the *deferent of the epicycle*; becauſe it traverſes the center of the epicycle, and ſeems to ſuſtain it.

DEFFAIT, or DECAPITE′, a term uſed, by the French heralds, to denote a beaſt whoſe head is cut off ſmooth: in which it differs from eraſed; where the head is, as it were, torn off, and the neck left ragged.

DEFICIENT *numbers* are ſuch whoſe parts, added together, make leſs than the integer, whoſe parts they are. See NUMBER.

Such, *e. gr.* is 8; whoſe quota parts are, 1, 2, and 4; which, together, only make 7. See ABUNDANT *Number*.

DEFICIENT *Hyperbola* is a curve of that denomination, having only one aſymptote, and two hyperbolic legs running out infinitely towards the ſide of the aſymptote, but contrary ways. See CURVE.

DEFILE *, in fortification, a narrow paſs, or way, through which a company of horſe, or foot, can paſs only in file, by making a ſmall front; ſo that the enemy may take an opportunity to ſtop their march, and to charge them with ſo much the more advantage, in regard that the front and rear cannot reciprocally come to the relief of one another.

* The word is formed from the French *défile*, to unthread, or unſtring.

To DEFILE, is to go off file by file. See FILE.

The army began to *defile* on the left, and was forced to *defile* at each end of the field, by reaſon of the moraſſes, and the woods.

DEFINITE, in grammar, is applied to an article that has a preciſe, determinate ſignification.

Such are, the article *the* in Engliſh, *le* and *la* in French, *&c.* which fix and aſcertain the noun, they belong to, to ſome particular; as, *the* king, *le* roy: whereas, in the quality *of* king, *de* roy, the articles *of*, and *de*, mark nothing preciſe; and are therefore called *indefinite.*

DEFINITION, in logic, an enumeration of the chief ſimple ideas, whereof a compound idea conſiſts; in order to aſcertain, or explain, its nature and character.

The ſchoolmen give very imperfect notions of *definition.* Some define it, the firſt notion, or conception, that ariſes of a thing, whereby it is diſtinguiſhed from every other, and from which all the other things, that we conceive of it, are deduced: but the uſual *definition* of it is, *oratio explicans quid res eſt*, a diſcourſe explaining what a thing is; that is, as ſome further explain it, a diſcourſe ſetting forth thoſe attributes which circumſcribe and determine the nature of a thing. For to explain, is only to propoſe the parts ſeparately, and expreſly, which were before propoſed conjunctly, and implicitly; ſo that every explication has regard to ſome whole. Hence, according to the diverſe kinds of parts in any thing, *viz.* phyſical parts, metaphyſical parts, *&c.* ariſe ſo many different kinds of *definitions* of the ſame thing; thus, man is either *defined* an animal, conſiſting of ſoul and body; or, a reaſonable animal, *&c.*

Definitions are of two kinds; the one *Nominal*, or, *of the Name*: the other *Real*, or, *of the Thing*.

DEFINITION *of the Name*, or *Nominal* **DEFINITION**, is that which explains the ſenſe or ſignification appropriated to a word: or, as Wolfius more accurately conſiders it, it is an enumeration of certain marks, or characters, ſufficient to diſtinguiſh the thing *defined* from any other thing; ſo to leave it out of doubt, what the ſubject is that is intended, or denoted by the name.

Such is the *definition* of a ſquare, when it is ſaid to be a quadrilateral, equilateral, rectangular figure.

By *definition of the name*, is either meant a declaration of the ideas, and characters appropriated to the word in the common uſage of the language; or the peculiar idea, *&c.* which the ſpeaker thinks fit to denote by that word; *i. e.* the ſpecial ſenſe wherein he propoſes to uſe it, in his future diſcourſe. For it may be obſerved, that the ſignificancy of any word depends intirely on our will; and we may affix what idea we pleaſe to a ſound, which itſelf ſignifies nothing at all.

The *definition* of the name therefore, in the ſecond ſenſe, is merely arbitrarily; and ought never to be called in queſtion; only it is to be minded, that we keep inviolably to the ſame ſignification. Hence, a *definition* comes to ſtand, or to be made uſe of, as an undoubted, or ſelf-evident maxim; as it frequently does, and particularly among geometricians, who, above all other people, make uſe of ſuch *definitions*.

Not that we mean, that after having *defined* a thing ſo and ſo, there is nothing in our idea affixed to the *defined* term, but muſt be granted to the thing itſelf: thus, if any one ſhould *define* heat to be a quality in certain bodies, like that which we feel upon the application of fire, or hot bodies; no man could find fault with the *definition*, as far as it expreſſes what he means by the word heat; but this does not hinder us from denying, that there is any thing in the body that warms us, like what we feel in ourſelves.

DEFINITION *of the Thing*, or *Real* **DEFINITION**, is properly an enumeration of the principal attributes of a thing, in order to convey or explain its nature.

Thus, a circle is *defined* a figure, whoſe circumference is every-where equidiſtant from its centre.

Wolfius *defines* a *real definition* to be a diſtinct notion explaining the geneſis of a thing; that is, the manner wherein the thing is made, or done: ſuch is that of a circle, whereby it is ſaid to be formed by the motion of a right line round a fixed point. On which footing, what was before inſtanced as a *real definition* of a circle, amounts to no more than a nominal one.

This notion of a *real definition* is very ſtrict and juſt; and affords a ſufficient diſtinction between a *real*, and a *nominal* one. But, though it has the advantages of analogy, diſtinctneſs, and conveniency, on its ſide; yet, being only itſelf a *nominal definition*, i. e. a *definition* of the term *real definition*, we muſt conſider it in that light, that is, as an idea fixed arbitrarily to that word, and which the author always denotes by that word in the courſe of his book. But, in effect, it is not the uſual ſenſe, or acceptation of the term; which is much leſs convenient and diſtinct. And it is to that uſual acceptation we are here chiefly to have regard.

Definitions are uſually divided into *accurate* and *inaccurate*; the firſt make what we ſtrictly call a *definition*; the ſecond, we diſtinguiſh under the name of *deſcription*.

Of the parts enumerated in a *definition*, ſome are common to other things beſide the thing *defined*; others are peculiar thereto: the firſt are called the *Genus*, or *Kind*; and the ſecond, the *Difference*.—Thus, in the former *definition* of a circle, by a figure whoſe circumference is every-where equidiſtant from its centre: the word *figure* is the *kind*, as being a name common to all other figures, as well as the circle: the reſt are the *difference*, which ſpecify, or diſtinguiſh the circle from every other figure.

And hence ariſes that recipe of Fa. de Colonia, for the making of a *definition*. Take, ſays he, ſomething that is common to the thing *defined* with other things, and add to it ſomething that is proper, or peculiar to the thing; and you will have a *definition*. Thus, *e. gr.* rhetoric is *defined* the art of ſpeaking well; for that it is an art, is common to it with ſeveral other things; but that it is the art of ſpeaking well, is peculiar to it alone.

There are three common rules of a good *definition*. 1ſt, That it be clear, and more eaſy and obvious than the thing *defined*. 2dly, That it be univerſal, or adequate to the thing *defined*; that is, that it agree to all the things contained in the ſpecies *defined*. And 3dly, That it be proper or peculiar to the thing *defined*.

The two ordinary defects of *definitions* are, not to agree either to the whole thing, or the ſole thing defined: *neque omni, neque ſoli*; than which nothing is more common, even among the beſt and juſteſt authors.

Lord Bacon obſerves of Ariſtotle's *definitions* in the general, that they are very much like that, whereby man ſhould be *defined* an animal that tills the ground. Nor was his maſter Plato leſs exceptionable. The joke put upon him on that account is famous: Plato, it ſeems, had *defined* man, *animal bipes & implume*, a two-footed animal without feathers. Upon which, Diogenes the cynic, a great derider of the Academics, threw a cock ſtripped of his feathers, and quite naked, into the middle of Plato's ſchool; crying, "Here is "Plato's man."

Definition it muſt be obſerved, has not place every-where: it has only to do with compound ideas; as being no more than an enumeration of the chief ſimple ideas they are compounded of. Simple ideas cannot be *defined*, as not allowing of an enumeration. He who knows not what it is one calls *heat*, will only learn it by experience, or ſome ſynonymous word, or ſome word of another language, or by circumlocution, whereby a thing is ſhewn, not *defined*; as if we ſhould ſay, "it was a ſenſation which we find when we ſit by the "fire, or in the ſunſhine;" which ſhews nothing of the nature of the thing; nor would a perſon that had never felt the ſenſation, underſtand any more what is meant thereby, than a man born blind would know what a green colour was, by telling him it was the ſenſation we have when we behold the graſs in the field.

Our *definitions* of ſubſtances, it muſt be added, are very defective: and as for individuals, we have no *definitions* at all.—The ideas of ſubſtances are compounded of the various ſimple ideas jointly impreſſed when they preſent themſelves; and all we can do to *define* them, is only to enumerate thoſe ſeveral ſenſible ideas, as colour, denſity, malleability, weight, *&c.* Thus, gold is *defined* by ſuch a peculiar colour, gravity, *&c.*—Yet ſuch *definitions* may raiſe an idea clear enough of that ſubſtance in the mind of one who has ſeparately received, by his ſenſes, all the ſimple ideas that are in the compoſition of the complex idea *defined*; though the intimate nature and eſſence of ſubſtance is unknown, and conſequently cannot be *defined*.

It follows, that it is only the modes, or attributes, that can be explained by what we properly call a *definition*.

DEFINITION, in rhetoric, is defined by Tully, a ſhort comprehenſive explanation of a thing.

The *definitions* of the orator, it muſt be obſerved, differ much from thoſe of the logician, and philoſopher: theſe latter *define* a thing cloſely and drily by genus and difference; *e. gr.* man is a reaſonable animal, *&c.*

The orators take a larger compaſs, and *define* things more ornamentally from the places of rhetoric, thus: man is a curious work of an Almighty Creator, framed after his own image, endued with reaſon, and born to immortality. But this rhetorical *definition*, in ſtrictneſs, comes nearer to the nature of a deſcription, than an accurate *definition*.

There are diverſe kinds thereof; as, 1ſt, That drawn from the parts whereof a thing conſiſts: thus, oratory is an art conſiſting of invention, diſpoſition, elocution, and pronunciation. 2dly, From the effects; as, ſin is the plague of the ſoul, the ſting of conſcience, the ſcandal of nature, the ruin of the world, the hatred of God, *&c.* 3dly, From affirmation and negation, as when we firſt ſay what a thing is not, that it may be the better conceived what it is. Thus Cicero, by *defining* the conſulate, and ſhewing that it does not conſiſt in enſigns, lictors, *&c.* but in virtue, proves that Piſo was not conſul. 4thly, From the adjuncts, as when alchymy is *defined*, an art without ſenſe, whoſe beginning is deceit; its middle, labour; and its end, beggary. And laſtly, from ſimilies, and metaphors; as when death is *defined*, a leap in the dark, *&c.*

To this laſt claſs of metaphorical *definitions*, are reducible thoſe five not unelegant *definitions* of a man which we ſhall here ſubjoin. The poets feign, that the ſciences were once called together by Minerva's command, to form a *definition* of man: the firſt, *viz.* logic, *defined* him, a ſhort enthymeme; his birth the antecedent, and his death the conſequent. Aſtronomy *defined* him, a changeable moon; which never continues in the ſame ſtate. Geometry *defined* him, a ſpherical figure; which ends in the ſame point where it began. Laſtly, rhetoric *defined* man, an oration; whoſe exordium was his birth; narration, trouble; and peroration, death; the figures of the oration being ſighs, tears, or joy worſe than tears.

DEFINITIVE, is applied to ſomewhat that terminates or decides a queſtion, or proceſs.

The houſe of lords have paſſed a *definitive* ſentence in ſuch a cauſe: the church has given a *definitive* judgment on ſuch an article of faith.

The word ſtands in oppoſition to *proviſional*, and *interlocutory*. See PROVISIONAL.

DEFINITOR, a term uſed in ſeveral religious orders, for an aſſeſſor, or counſellor of a general, or ſuperior, in certain monaſteries.

In moſt orders of religious, the *definitor* takes place after the ſuperior of the convent he lives in, when in the convent itſelf; but out of the convent, the *definitor*'s place is before his own ſuperior.

Definitors are alſo ſubject, in the convent they reſide in, to the immediate ſuperior of the convent, as to things relating to the monaſtic diſcipline; but in nothing elſe.

DEFLAGRATION *, in chemiſtry, the kindling, or ſetting fire to a ſalt, a mineral, or other matter, either alone, or mixed for that purpoſe, with a ſulphureous one, in order to purify it.—As is done in the preparing of Æthiops mineral by fire, of ſal prunellæ, *&c.*

* The word is formed of the Latin *de*, and *flagrare*, to burn.

DEFLECTION, the turning any thing aſide from its former courſe, by ſome adventitious or external cauſe.

The word is often applied to the tendency of a ſhip from her true courſe, by reaſon of currents; *&c.* which divert her; and turn her out of her right way.

DEFLECTION *of the Rays of Light*, is a property which Dr. Hook obſerved 167$\frac{4}{5}$. and read an account of before the Royal Society, March 18. the ſame year.—He ſays, he found it different both from reflexion, and refraction; and that it was made towards the ſurface of the opacous body perpendicularly.

This is the ſame property which Sir Iſaac Newton calls *Inflection*. See INFLECTION.

DEFLORATION, or DEFLOWERING, the act of violating or taking away a woman's virginity.

Death, or marriage, are decreed by the civil law in caſe of *defloration*. Many anatomiſts make the hymen a real proof of virginity, perſuaded that where it is not found, the girl muſt have been *deflowered*. See HYMEN.

The antients had ſo much reſpect for virgins, that they would not put them to death, till they had firſt procured them to be *deflowered*. It is ſaid, the natives of the coaſt of Malabar pay ſtrangers to come and *deflower* their brides.

Among the Scots, and in the northern parts of England, it was a privilege of the lords of the manor, granted them by king Ewen, that they ſhould have the firſt night's lodging with their tenants wives. King Malcolm III. allowed the tenants to redeem this ſervice at a certain rate, called *Marcheta*, conſiſting of a certain number of cows: Buchanan ſays, it was redeemed with half a mark of ſilver. The ſame cuſtom had place alſo in Wales, Flanders, Friſeland, and ſome parts of Germany.

By the cuſtom of Anjou, and Maine, a maid, after twenty-five years of age, may ſuffer herſelf to be *deflowered* without being diſinherited for it by her father.

Du Cange quotes an arret of the 19th of March 1409. obtained by the inhabitants of Abbeville, againſt the biſhop of Amiens, for taking money to diſpenſe with an injunction he had made, not to ſuffer them to get their wives maidenheads the three firſt nights; the injunction being founded on a canon of the IVth council of Carthage, which decrees the ſame, out of reverence of the matrimonial benediction.

DEFLUXION *, or FLUXION, a falling, or flowing of ſome humour to any part of the body; as of rheum on the trachea, and oeſophagus in a catarrh.

* The word is formed from the Latin, *defluo*, I flow down, the humours falling upon ſome part, where they are gathered together.

Defluxions on the Lungs are of dangerous conſequence. See CATARRH, and PHTHISIS.

Defluxions on the Eyes produce a weakneſs of ſight, and frequently blindneſs. See EYE.

DEFORCEMENT, in law, a withholding lands, or tenements, by force, from the right owner.

DEFORCEOR, or DEFORCIANT, one that caſts out another from his lands, or tenements, by mere *force*.

Deforceor differs from *diſſeiſor*, in that a man may diſſeiſe without *force*: and that a man may *deforce* another who never was in poſſeſſion; as where ſeveral perſons have a right to lands, as common heirs, and one entering firſt keeps out the reſt. See DISSEISOR.

Deforceor alſo differs from *intruder*, in that a man becomes *intruder* by a wrongful entry only into lands void of a poſſeſſor; whereas a *deforceor* holds out the rightful heir. See INTRUSION.

DEFORMITY, a diſpleaſing or painful idea excited in the mind, on occaſion of ſome object which wants of that uniformity, neceſſary to conſtitute beauty.

It is an inquiry of ſome delicacy, and importance, whether there be any ſuch thing as *abſolute deformity?* Our perception of the ideas of beauty and harmony is juſtly reckoned a ſenſe; from its affinity to the other ſenſes in this, that the pleaſure does not ariſe from any knowlege of principles, proportions, cauſes, uſes, *&c.* but ſtrikes at firſt view; as alſo in this, that the ideas of beauty, like other ſenſible ideas, are neceſſarily pleaſant to us, as well as immediately. But, as the other ſenſes, which give us pleaſure, do alſo give us pain; does this ſenſe of beauty make any objects diſagreeable to us, and the occaſion of pain?

That many objects give no pleaſure to our ſenſe, is obvious; many are certainly void of beauty: but then, ſays a late ingenious author, there is no form which ſeems neceſſarily diſagreeable of itſelf, when we dread no other evil from it, and compare it with nothing better of the kind. Many objects are naturally diſpleaſing, and diſtaſteful to our external ſenſes, as well as others pleaſing, and agreeable; as ſmells, taſtes, and ſome ſeparate ſounds: but for our ſenſe of beauty, no compoſition of objects which give not unpleaſant ſimple ideas, ſeems poſitively unpleaſant, or painful of itſelf, had we never obſerved any thing better of the ſame kind.

Deformity, then, is only the abſence of beauty, or a deficiency in the beauty expected in any ſpecies: thus, bad muſic pleaſes ruſtics, who never heard any better; and the fineſt ear is not offended with tuning of inſtruments, if it be not too tedious, where no harmony is expected: and yet much ſmaller diſſonancy ſhall offend amidſt the performance, where harmony is expected. A rude heap of ſtones is no way offenſive to one who ſhall be diſpleaſed with irregularity in architecture, where beauty was expected. And had there been a ſpecies of the form which we now denominate ugly, or *deformed*, and had we never ſeen or expected greater beauty, we ſhould have received no diſguſt from it; though the pleaſure would not have been ſo great in this form as in thoſe we now admire. Our ſenſe of beauty ſeems deſigned to give us poſitive pleaſure; but not poſitive pain, or diſguſt, any further than what ariſes from diſappointment.

There are, indeed, many faces which, at firſt view, are apt to raiſe diſlike. But this is generally not from any poſitive *deformity*, which of itſelf is poſitively diſpleaſing, but either from want of expected beauty, or from the carrying ſome natural indications of morally bad diſpoſitions, which we all acquire a faculty of diſcerning in countenances, airs, and geſtures. That this is not occaſioned by any form poſitively diſguſting, appears hence, that if upon long acquaintance we are ſure of finding ſweetneſs of temper, humanity, and chearfulneſs, though the bodily form continues, it ſhall give us no diſguſt. There are horrors raiſed by ſome objects, which are only the effect of fear for ourſelves, or compaſſion towards others, when either reaſon, or ſome fooliſh aſſociation of ideas, makes us apprehend danger, and not the effect of any thing in the form itſelf. For we find, that moſt of thoſe objects, which excite horror at firſt, when experience, or reaſon, has removed the fear, may become the occaſion of pleaſure; as in ravenous beaſts, a tempeſtuous ſea, a craggy precipice, a dark ſhady valley, *&c.*

This aſſociation of ideas makes many objects beautiful and pleaſant. The beauty of trees, their cool ſhades, and their aptneſs to conceal from obſervation, have made groves, and woods, the uſual retreat of thoſe who love ſolitude, eſpecially the religious, the penſive, the melancholy, and the amorous: and do not we find, that we have ſo joined the ideas of thoſe diſpoſitions of mind, with thoſe external objects, that they always occur to us along with them? and according as the habits, or paſſions, contracted or gratified therein, give us pleaſure, or pain, the remembrance is pleaſurable, or painful. The dim light in Gothic buildings has had an aſſociation of a very foreign idea, which Milton expreſſes by his epithet, a *dim religious light*. After the like manner, the caſual conjunction of ideas gives us diſguſt, where there is nothing diſagreeable in the form itſelf. And this, in effect, is the cauſe of moſt of our fantaſtic averſions to the figures of diverſe animals, *&c.* Thus ſerpents of all kinds, and many inſects, really beautiful enough, are beheld with averſion by many people, who have got ſome accidental ideas of miſchief aſſociated to them.

DEFTARDAR *, or DEFTERDAR, the treaſurer of the revenues of the Turkiſh empire. See TREASURER.

* The word is compounded, firſt, of דפתר *defter*, a Turkiſh name for a book, regiſter, memoir, *&c.* which Meninſki derives from the Greek διφθερα, the ſkin or parchment antiently wrote on. The ſecond word, whereof *deftardar* is compounded, is דאר *dar*, a Turkiſh and Perſian word, ſignifying keeping, or holding, *q. d.* book keeper of the money received, and expended.

Meninſki calls him *Supremus Theſaurarius*, high treaſurer; and *Præſes Cameræ*, preſident of the exchequer: Caſtellu makes him the keeper, and comptroller of the books of receipts, and payments.

The *deftardar*, or, as Vigenere calls him, *dephterderi*, h in his charge the rolls and accounts of the militia, and th treaſury: he receives all the grand ſignior's revenues, pays hi forces, and furniſhes the expences of all public affairs: which, his office differs from that of the Chaznadar, who i treaſurer of the ſeraglio or court, as the *defterdar* is of th ſtate.

Ricaut makes a *deftardar*, whom he calls *teſtardar*, in eac Beglerbeglick, or government. Vigenere aſſures us, there a but two, the one for Europe, and the other for Aſia; the fir reſides at Conſtantinople, and has under him two general com milli miſſioners, or deputies, one for Hungary, Tranſylvania, Walachia, Croatia, Servia, Bulgaria, Boſnia, *&c.* the other for Greece and the Morea, with the iſlands of the Archipelago. Each of theſe has under him as many ſub-commiſſioners, or ſub-agents, as there are ſangiackats in his province; which ſub-commiſſioners have as many clerks as there are ſabaſſi's in their ſangiack , to keep the account of the timariots in their diſtricts. The *deſtarder* of Aſia has two general deputies, the one for Anatolia: the other for Syria, Arabia, and Egypt: theſe have likewiſe their ſub-agents, clerks, *&c.* as thoſe of Europe.

DEGENERATION, the act of failing, or declining from a more perfect, or valuable kind, ſtate, or condition, to a leſs.

It is a great diſpute among the naturaliſts, whether or no animals, plants, *&c.* be capable of degenerating into other ſpecies? The affirmative is urged by many, as a ſtrong objection againſt the plant being contained in the ſeed, and that doctrine of generation wherein that is ſuppoſed to be ſo.

Fortun. Licetus, Lib. IV. *de ſpont. vivent. ort.* expreſly contends, that the forms of animals *degenerate* into other more imperfect ones: thus, ſays he, the ſoul of a calf, after its death, *degenerates* into the ſouls of the worms, bees, *&c.* which ariſe out of its carcaſe: but the other ſchool-men laugh at this notion.

Others hold, that, in the ſame matter, there are divers forms; and that *degeneration* is only the putting off one form, and calling forth another latent one: but it is impoſſible the form of a worm, and that of a calf, ſhould be actually exiſting together, in the ſame piece of matter.

Others hold, that *degeneration* only obtains in vegetables; and define it the change of a plant of one kind, into that of another viler kind. Thus, ſay they, wheat *degenerates* into darnel; barley into oats; ocimum into ſerpyllum; mint into ſiſyrubrium; caulis into rapa, *&c.*

The plantule, or ſtamen of the future vegetable, they hold to exiſt in the ſeed; ſo that to produce ſuch a plexus, or organiſm, a matter ſo and ſo prepared is only required: and add, that the matter in the ſoil where the ſeed is lodged, being ſuch as is incapable of producing the ſaid plexus, it muſt neceſſarily change into another, of a different nature from that the ſeed required, though in ſome reſpects like it, and approaching thereto: thus, darnel and wheat, in many reſpects, agree; ſo alſo ſerpyllum and ocimum, *&c.* They allow, however, that there is no *degeneration* in the root, but only in the ſeed: inaſmuch as the root already ſuppoſes a perfect organization.

But our lateſt and beſt naturaliſts maintain the opinion of ſuch a *degeneration*, or tranſmutation, to be erroneous, and a chimera: not but they allow, that a plant, by being tranſplanted to an improper ſoil, or ſun, may be depraved; ſo as a Dutch roſe, of an hundred leaves, may only produce another roſe, far ſhort thereof in number of leaves, colour, ſmell, *&c.* Such a depravation is poſſible, and frequently happens; but a ſpecific transformation ſeems out of the power of nature; a new form ever ſuppoſing a new *generation*, which again ſuppoſes a corruption of the former kind.

DEGLUTITION, in medicine, the act of ſwallowing the food.

Deglutition is performed, in the firſt place, by means of the tongue, driving the aliment into the œſophagus, or gullet; and then, by the contraction of the ſpincter, and the fleſhy fibres of the ſame œſophagus; which, leſſening the bore, ro aperture thereof, protrude the contents downwards into the ſtomach, in our eating.

Deglutition ſucceeds *maſtication*, and is followed by *concoction*.

DEGRADATION, in our law-books called *diſgradation*, and *depoſition*; the act of depriving, or ſtripping a perſon for ever of a dignity, or degree of honour; and taking away the title, badge, and privileges thereof.

The *degradations* of a peer, a prieſt, a knight, a gentleman, an officer, *&c.* are performed with divers ceremonies. That which antiently obtained in *degrading* a perſon from his nobility, is very durious, and deſerves to be rehearſed here, after Geliot, and la Colombiere. It was practiſed in the time of Francis I. upon captain Fangel, who had cowardly given up Fontarabia, whereof he was governor.

On this occaſion, twenty or thirty cavaliers, without blemiſh or reproach, were aſſembled; before whom the gentleman was accuſed of treaſon, and breach of faith, by a king at arms. Two ſcaffolds were erected; the one for the judges, heralds, and purſuivants; and the other for the guilty cavalier, who was armed at all points, and his ſhield placed on a ſtake before him, reverſed with the point upwards. On one ſide aſſiſted twelve prieſts, in ſurplices, who ſung the vigils of the dead. At the cloſe of each pſalm they made a pauſe, during which the officers of arms ſtripped the condemned of ſome piece of his armour, beginning with the helmet, and proceeding thus, till he was quite diſarmed: which done, they broke his ſhield in three pieces with a hammer. Then the king at arms emptied a baſon of hot water on the criminal's head; and the judges, putting on mourning habits, went to the church. This done, the *degraded* was drawn from off the ſcaffold, with a rope tied under his arm-pits, laid on a bier, and covered with mortuary cloaths; the prieſt ſinging ſome of the prayers for the dead; and then he was delivered to the civil judge, and the executioner of juſtice.

For a more domeſtic inſtance: Sir Andrew Harcla, earl of Carliſle, being attainted and convicted of treaſon, 18° Edw. II. *coram rege*; after judgment was pronounced on him, his ſword was broken over his head, and his ſpurs hewn off his heels; Sir Antony Lucy, the judge, ſaying to him, "Andrew, now art thou no knight, but a knave." By *ſtat.* 13. *Caroli* II. William lord Monſon, Sir Henry Mildmay, and others, were *degraded* from all titles of honour, dignities, and pre-eminences, and prohibited to bear, or uſe, the title of lord, knight, eſquire, or gentleman, or any coat of arms, for ever afterwards.

As to eccleſiaſtics, we have an inſtance of *degradation* before condemnation to death, in the VIIIth century, at Conſtantinople. It is in the perſon of the patriarch Conſtantine, whom Conſtantine Copronymus cauſed to be executed. He was made to aſcend the ambo; and the patriarch Nicetas ſent ſome of his biſhops to ſtrip him of the pallium, and anathematized him: then they made him go out of the church backwards.

But we have a much later inſtance in our own hiſtory: when Cranmer, archbiſhop of Canterbury, was *degraded*, by order of queen Mary, they dreſſed him in epiſcopal robes, made only of canvas, put the mitre on his head, and the paſtoral ſtaff in his hand; and in this attire ſhewed him to the people. Which done, they ſtripped him again, piece by piece.

At preſent, they do not ſtand ſo much on the ceremony of *degradation*, in order to the putting a prieſt to death; by reaſon of the delays and difficulties that it would occaſion. Pope Boniface pronounced, that ſix biſhops were required to *degrade* a prieſt; but the difficulty of aſſembling ſo many biſhops, rendered the puniſhment frequently impracticable.

With us, a prieſt, after having been delivered to his ordinary, if he cannot purge himſelf of the crime laid at his door, his gown, and other robes, are ſtripped over his ears by the common hangman; by which he is declared diveſted of his orders.

It is decided, however, that *degradation* does not efface the prieſtly character.

Degradation only ſeems to differ from depoſition in a few ignominious ceremonies, which cuſtom has added thereto. Accordingly, in the buſineſs of Arnoul, archbiſhop of Rheims, ſentenced in the council of Orleans, in 991. it was deliberated, what form they ſhould follow in the depoſition; whether that of the canons, that is, ſimple depoſition; or that of cuſtom, *viz. degradation.* And it was declared, that he ſhould ſurrender the ring, paſtoral ſtaff, and pallium; but that his robes ſhould not be torn off him.

In effect, the canons preſcribe no more than a mere reading of the ſentence. It is the reſt, therefore, added thereto by cuſtom, *viz.* the ſtripping off the ornaments, and the tearing the pontifical veſtments, that properly conſtitutes *degradation.*

DEGRADATION, in painting, expreſſes the leſſening, and rendering dim and confuſed, the appearance of diſtant objects in a landſchape, ſo as they ſhould appear there, as they would do to an eye placed at that diſtance from them. See PERSPECTIVE.

DEGRADED, in heraldry.—A *Croſs* DEGRADED, is a croſs marked, or divided into ſteps at each end, diminiſhing as they aſcend towards the middle, or centre; by the French called *perronnée*. See CROSS.

DEGREE, in geometry, a diviſion of a circle, including a three hundred and ſixtieth part thereof.

Every circle, great and ſmall, is ſuppoſed to be divided into 360 parts, called *degrees*: the *degree* is ſubdivided into 60 leſſer parts, called minutes; the minute into 60 others, called ſeconds: the ſecond into 60 thirds, *&c.*—It follows, that the *degrees*, minutes, *&c.* of greater circles, are greater than thoſe of leſs.

The ſubdiviſions of *degrees* are fractions, whoſe denominators proceed in a ſexagecuple ratio; that is, a firſt minute is $= \frac{1}{60}$, a ſecond $= \frac{1}{3600}$, a third $= \frac{1}{216000}$, *&c.* But theſe denominators being troubleſome, their logariſms are ſubſtituted in common uſe, as indices thereof.

Thus a *degree*, as being the integer, or unit, is denoted by 0, a firſt minute, or prime, by 1; a ſecond by 2, or ″; a third by 3, or ‴; *&c.* Accordingly 3 *degrees*, 25 minutes, 16 thirds, are written 3°, 25′, 16‴.

But though the antient Egyptians, to whom this diviſion is uſually aſcribed, did, by means hereof, free aſtronomical calculations from fractions; ſince ſexageſimal fractions may be handled as integers; and were very happy in the choice of ſuch a number of *degrees* in the circle, as admitted of a juſt diviſion, by 2, 3, 4, 5, 6, 8, and 9; yet Stevinus, Oughtred, Wallis, *&c.* with good reaſon, wiſh the ſexageſimal fractions ſet aſide, and decimals taken in their room.

For in decimals there is no occaſion for reducing leſſer fractions into greater, or greater into leſſer; which is a tedious article in ſexageſimals. Stevinus even holds, that this diviſion of th circle which he contends for, obtained in the wiſe age, *in ſæculo ſapienti*. Stevin. *Coſmog.* Lib. I. Def. 6.

The magnitude or quantity of angles is accounted in *degrees.* Thus we ſay, an angle of 90 *degrees*; of 70 *degrees*, 50 minutes; of 25 *degrees*, 15 minutes, 45 ſeconds.

Such a ſtar is mounted ſo many *degrees* above the horizon, declines ſo many *degrees* from the equator.

Such a town is ſituate in ſo many *degrees* of longitude and latitude.

A ſign includes 30 *degrees* of the ecliptic.

Degree *of latitude*, is the ſpace of 365184 Engliſh feet included between two parallels of latitude.

Degree *of longitude*, is the ſpace between two meridians; the quantity of which is variable according to the latitude.

Theſe expreſſions are borrowed from the antients, who were acquainted with a very large extent of earth, from eaſt to weſt, which they accounted the length, and a much leſs from north to ſouth, which paſſed with them for the breadth, of the earth. See Latitude, and Longitude.

The *quantity of a* **Degree** of a meridian, or other great circle, on the ſurface of the earth, is variouſly determined by various obſervers: the methods too made uſe of are various. See Earth.—Ptolemy fixes the *degree* at 68 Arabic miles $\frac{2}{3}$, accounting 7 $\frac{1}{2}$ ſtadia to a mile. The Arabs themſelves, who made an exact computation of the diameter of the earth, by meaſuring the diſtance of two places under the ſame meridian, in the plains of Seniar, by order of Almamom, only make 56 miles. Kepler, determining the ſemidiameter of the earth by the diſtance of two mountains, makes a *degree* 13 German miles: but his method is far from being accurate. Snellius, ſeeking the diameter of the earth, from the diſtance of two parallels of the equator, finds the quantity of a *degree*, by one method, to be 57064 Paris toiſes, or 342384 feet; and by another method, 57057 toiſes, or 342342 feet. The mean between which two numbers M. Picart found by menſuration in 1669. from Amiens to Malvoiſin, the moſt ſure, and makes the quantity of a *degree* 57064 toiſes, or 342360 feet, which, reduced to other meaſures, gives the quantity of a *degree* of a great circle, in

Engliſh miles of 50000 feet each	——	73 $\frac{200}{7}$
Florentine miles of 3000 braccios	——	63 $\frac{7}{10}$
Common French leagues of 220 toiſes	—	25
Rhinland perches of 12 feet	— —	29556

However, M. Caſſini, at the command of the king of France, in the year 1700. repeated the ſame labour, and meaſuring the ſpace of 6 *degrees*, 18 minutes, from the obſervatory at Paris, along the meridian to the city of Colioure in Rouſſillon, that the greatneſs of the interval might diminiſh the error, found the quantity of a *degree* to be 57292 toiſes, or 343742 Paris feet, amounting to 365184 Engliſh feet.—On which footing, the quantity of a minute of a *degree* of a great circle of the earth is 5710 Paris feet, and that of a ſecond, 95 feet.

With which account pretty nearly agrees that of our countryman Mr. Norwood, who, about the year 1635. meaſured the diſtance between London and York, and found it 905751 Engliſh feet; and finding the difference of latitudes 2° 28′, determined the quantity of one *degree* to be 367196 Engliſh feet, or 57300 Paris toiſes, or 69 Engliſh miles, 288 yards. See Newt. *Princ. Phil. Nat. Math.* prop. 19. p. 378. and *Hiſt. Acad. R. Scienc. Anno* 1700. p. 153.

The quantity of a *degree* of a great circle, with the diſtance of any other parallel from the equator, being given, the quantity of a *degree* in that parallel is found by this canon: as the whole ſine is to the coſine of the diſtance of the parallel from the equator; ſo is the quantity of a *degree* of the equator to the quantity of a *degree* of the parallel.

Suppoſe, *e. gr.* the latitude of the parallel 51°, and ſuppoſe a *degree* of the equator 69 miles.

Log. of whole ſine		100000000.
Coſine of 51°		97988718.
Log. 69°		18388491.
Log. required	——	16377201.

The number correſponding to which in the tables is 43$\frac{42}{100}$ miles, nearly; which being multiplied by 5280, the number of feet in a mile, gives the number of Engliſh feet in a *degree* in that parallel.—On which foundation (ſuppoſing M. Caſſini's proportion of 365184 Engliſh feet, or 69 miles, 864 feet to 1 *degree* of a great circle) is built the following table, exhibiting the quantity of a *degree* of longitude in each parallel of latitude.

Deg. of lat.	Engliſh ſtat. miles of 5280 feet.		Deg. of lat.	Engliſh ſtat. miles of 5280 feet.	
Equ.	69	864			
1	69	808	46	48	338
2	69	641	47	47	994
3	69	363	48	46	1575
4	68	5254	49	45	2082
5	68	4739	50	44	2515
6	68	4143	51	43	2777
7	68	3422	52	42	3069
8	68	2590	53	41	3293
9	68	1648	54	40	3449
10	68	595	55	39	3540
11	67	4714	56	38	3568
12	67	3443	57	37	3533
13	67	2064	58	36	3438
14	67	576	59	35	3283
15	66	4260	60	34	3072
16	66	2557	61	33	2804
17	66	747	62	32	2483
18	65	4110	63	31	2110
19	65	2088	64	30	1686
20	64	5240	65	29	1213
21	64	3008	66	28	743
22	64	672	67	27	128
23	63	3513	68	25	4800
24	63	972	69	24	4150
25	62	3609	70	23	3460
26	62	865	71	22	2732
27	61	3301	72	21	1968
28	61	358	73	20	1169
29	60	2597	74	19	338
30	59	4738	75	17	4756
31	59	1503	76	16	3866
32	58	3453	77	15	2948
33	58	29	78	14	2006
34	57	1791	79	13	1043
35	56	3461	80	12	53
36	55	5040	81	10	4327
37	55	1248	82	9	3303
38	54	2648	83	8	2264
39	53	3961	84	7	1212
40	52	5187	85	6	147
41	52	1147	86	4	3454
42	51	2204	87	3	3272
43	50	3178	88	2	2184
44	49	4071	89	1	1093
45	48	4884	90		0

Degree, in civil and canon law, denotes an interval in cognation, or kinſhip, whereby proximity and remoteneſs of blood are computed.

Degrees are the intervals whereby it is known what perſons are neareſt to the ſtock or root—Or they are the diſtances of one perſon from another in the line of conſanguinity or affinity, reckoned from ſome common parent, or anceſtor. See Consanguinity.

We ſay, the ſecond *degree*, the third *degree*; Gregory the Great was the firſt who prohibited marriage to the ſeventh *degree*; which reſtriction was long obſerved: the ſecond council of Lateran, under Innocent III. reſtrained the prohibition to the fourth degree incluſive; that is, to couſin-germans children. See Marriage.

In the civil law, the *degrees* of kindred, or cognation, are differently computed from what they are in the canon law.—The firſt reckons by the number of perſons iſſued from the ſame ſtock, each perſon ſprung therefrom making one *degree*: but with this difference, that in the direct line the order begins with the firſt *degree*; and thus the father and ſon are in the firſt *degree*: but in the collateral line there is no firſt *degree* reckoned; two brothers being only related in the ſecond *degree*, by reaſon the father, who is the common ſtock, makes the firſt *degree*.

The canon law obſerves the ſame rule, as to the direct line; but in the collateral line, a generation only makes a *degree*: thus brothers are in the firſt *degree*, and couſins german in the ſecond. Whereas, the civil law puts brothers in the ſecond, and couſins german in the fourth.—So that two *degrees* in the civil law only make one in the canon law.

Degree, in medicine, denotes a certain pitch, or intenſeneſs, of the elementary qualities.

The *degrees* uſually allowed are four, anſwering to the number of the peripatetic elements.

In the ſchool philoſophy, the ſame qualities are divided into eight: the laſt, or higheſt *degree* of intenſion, is called *ut octo.*

They ſay, a thing is cold in the ſecond *degree*, pepper is hot in the third *degree*, &c.

Fire was held hot in the eighth *degree*, and dry in the fourth *degree*.

Degree, in chemiſtry, is underſtood of the ſtate or intenſeneſs of the fire or heat.

Our chemiſts diſtinguiſh four *degrees* of fire, or heat: the *firſt*, is that raiſed by two or three coals.

The *ſecond*, that of four or five coals; or rather ſo much as is ſufficient to warm a veſſel ſenſibly; yet ſo as that the hand may be held on it a conſiderable time.

The *third degree* is, when there is a fire capable of boiling a veſſel of five or ſix pints of water.

The *fourth* is, when there is fire enough for a furnace.

Theſe *degrees*, however, are all varied according to the different circumſtances of operations, furnaces, veſſels, ſubjects, *&c.* See Heat.

Degrees, in muſic, are the little intervals whereof the concords, or harmonical intervals, are compoſed. See Interval, and Concord.

The muſical *degrees* are three; the greater tone, the leſſer tone, and the ſemi-tone.

The primary cauſe of the invention of *degrees*, or intervals, leſs than concords, and whereby the concords are divided, and, as it were, graduated, Deſcartes judges to have been this: that if the voice were always to proceed by harmonical intervals, there would be too great a diſproportion, or inequality, in the intenſeneſs thereof, which would weary both the finger and the hearer.

Thus, ſuppoſing A and B the diſtance of a greater third; if the voice were immediately to aſcend from A to B, then becauſe B, being acuter, ſtrikes the ear with more force than A, leſt that diſproportion ſhould prove uneaſy, another ſound, C, is put between them; by which, as by a ſtep, or *degree*, we may aſcend more eaſily, and with leſs unequal force in raiſing the voice.

Hence it appears, ſays that author, that the *degrees* are only certain mediums contrived to be put betwixt the extremes of the concords, for moderating their inequality, but which of themſelves have not ſweetneſs enough to ſatisfy the ear, and are of uſe only with regard to the concords. So that when the voice has moved one *degree*, the ear is not yet ſatisfied till we come to another, which therefore muſt be a concord with the firſt ſound.

The ſubſtance of what is here alleged amounts to this: that by a fit diviſion of the concording intervals, into leſſer ones, the voice will paſs ſmoothly from one note to another, and the hearer be prepared for a more exquiſite reliſh of the perfect intervals, whoſe extremes are the proper points in which the ear finds the expected reſt and pleaſure.

Such is the end, and office, of the *degrees*, or leſſer intervals.—Now there are only three, that experience recommends as agreeable, whoſe ratios are 8 : 9, called the *greater tone*; 9 : 10, called the *leſſer tone*; and 15 : 16, called the *ſemitone*. By theſe alone a ſound can move upwards or downwards ſucceſſively, from one extreme of a concord to another, and produce true melody: and, by means of theſe, ſeveral voices are alſo capable of the neceſſary variety in paſſing from concord to concord. As to the original of theſe *degrees*, they ariſe out of the ſimple concords, and are equal to their differences. Thus, 8 : 9, is the difference of a fifth and fourth; 9 : 10, is the difference of a leſſer third and fourth; or of a fifth and greater ſixth; and 15 : 16, the difference of a greater third and fourth, or of a fifth and leſſer ſixth.

or the uſe of Degrees, in the conſtruction of the ſcale of muſic; ſee Scale.

Degree, in univerſities, denotes a quality conferred on the ſtudents, or members thereof, as a teſtimony of their proficiency in the arts or faculties; and intitling them to certain privileges, precedencies, *&c.*

The *degrees* are much the ſame in the ſeveral univerſities: but the laws thereof, and the diſcipline or exerciſe previous thereto, differ.—The *degrees* are, *bachelor*, *maſter*, and *doctor*; inſtead of which laſt, in ſome foreign univerſities, they have *licentiate*.

In each faculty there are but two *degrees*, viz. *bachelor* and *doctor*, which were antiently called *bachelor* and *maſter*: nor do the arts admit of more than two, which ſtill retain the denomination of the antient *degrees*, viz. *bachelor* and *maſter*.

At Oxford, *degrees* of maſter and doctor are only conferred once a year, *viz.* on the Monday after the ſeventh of July; when a ſolemn act is held for the purpoſe. See Act.

The expences of a *degree* of doctor in any of the faculties, in treats and ſet fees, uſually amount to 100 *l.* and that of a maſter of arts, to 20 or 30 *l.*—There are made yearly about 150 doctors and maſters.

The *degree* of bachelor is only conferred in Lent; and there proceed uſually about 200 yearly.

To take the *degree* of bachelor of arts, four years are required, and three more for maſter of arts.

At Cambridge, matters are nearly on the ſame footing, only the diſcipline is ſomewhat more ſevere, and the exerciſes more difficult. The commencement, which anſwers to the act of Oxford, is the Monday before the firſt Tueſday in July.—The *degrees* of bachelor are taken up in Lent, beginning on Aſh-Wedneſday.

To the *degree* of bachelor of arts, it is required, that the perſon have reſided in the univerſity near four years; and in his laſt year have kept philoſophy acts, *i. e.* have defended three queſtions in natural philoſophy, mathematics or ethics, and anſwered the objections of three ſeveral opponents, at two ſeveral times; as alſo, that he have oppoſed three times. After which, being examined by the maſter and fellows of the college, he is referred to ſeek his *degree* in the ſchools, where he is to ſit three days, and be examined by two maſters of arts, appointed for the purpoſe.

The *degree* of maſter of arts is not given till above three years after that of bachelor; during which time, the candidate is obliged, three ſeveral times, to maintain two philoſophical queſtions in the public ſchools, and to anſwer the objections raiſed againſt him by a maſter of arts.—He muſt alſo keep two acts in the bachelors ſchool, and declaim one.

To paſs bachelor of divinity, the candidate muſt have been ſeven years maſter of arts; he muſt have oppoſed a bachelor of divinity twice; kept one divinity act; and preached before the univerſity, once in Latin, and once in Engliſh.

For the Degree of doctor; ſee the article Doctor.

DEICIDE, Deicida, a term only uſed in ſpeaking of the condemnation, and execution, of the Saviour of the world, by Pontius Pilate, and the Jews; which was an horrible *deicide*.

The Jews, an ingenious author obſerves, were never more remote from idolatry than at preſent; never more inviolably attached to the laws of Moſes than at preſent: whence then, that load of evils and misfortunes they have for ſo many ages groaned under; evils incomparably greater, and more laſting, than all the chaſtiſements wherewith God antiently avenged their moſt heinous idolatries? whence do they ariſe, but from the *deicide* they committed in the perſon of Jeſus Chriſt?

DEJECTION, in medicine, properly ſignifies the act of ejecting, or evacuating the excrements, by means of the periſtaltic motion of the guts.

In which ſenſe it comes to the ſignification of *excretion*.

Dejection is alſo, and that more ordinarily, applied to the excrements themſelves, thus evacuated; in which ſenſe it is of the ſame import with *ſtool*.

Viſcid, glutinous, or, as ſome call them, *unguinous dejections*, frequent in ſcorbutic diſeaſes, indicate a colliquation of the ſolids of the body.

Dejection, in aſtrology, is applied to the planets, when in their detriment, *i. e.* when they have loſt their force, or influence, as is pretended, by reaſon of their being in oppoſition to ſome others, which check and counteract them.

Or, it is uſed when a planet is a ſign oppoſite to that wherein it has its greateſt effect, or influence, which is called its exaltation. Thus, the ſign *Aries* being the exaltation of the ſun, the ſign *Libra* is its *dejection*. See Exaltation.

DEIFICATION, in the Pagan theology, the act, or ceremony, of *deifying* their emperors, *i. e.* of placing them among the gods, and decreeing divine honours to be rendered them. See God, and Consecration.

The *deification* is the ſame with *apotheoſis*.

DEINCLINERS, or Deinclining *dials*, are ſuch as both decline, and incline or recline, at the ſame time.

Suppoſe, for inſtance, a plane to cut the prime vertical circle at an angle of 30 degrees, and the horizontal plane under an angle of 24 degrees, the elevation of the pole being 52 degrees; a dial, drawn on this plane, is called a *deincliner*. See Dial.

DEIPARA, Θεοτοκος. See Mother *of God*.

DEISM, the doctrine, or belief, of thoſe who hold the exiſtence of a God as the whole of their religion.

DEISTS, a ſect, or claſs of people, known alſo under the denomination of *free-thinkers*, whoſe diſtinguiſhing character it is, not to profeſs any particular form, or ſyſtem, of religion; but only to acknowlege the exiſtence of a God, without rendering him any external worſhip or ſervice.

The *deiſts* hold, that conſidering the multiplicity of religions, the numerous pretences to revelation, and the precarious arguments generally advanced in proof thereof, the beſt and ſureſt way is, to return to the ſimplicity of nature, and the belief of one God; which is the only truth agreed to by all nations.

They complain, that the freedom of thinking and reaſoning is oppreſſed under the yoke of religion; and that the minds of men are ridden, and tyrannized, by the neceſſity impoſed on them of believing inconceivable myſteries; and contend, that nothing ſhould be required to be aſſented to, or believed, but what their reaſon clearly conceives.

The appellation *deiſt* is alſo more particularly given to ſuch as are not altogether without religion, but reject all revelation as an impoſition, and believe no more than what natural light diſcovers to them; as, that there is a God, a providence, a future ſtate, with rewards and puniſhments for the good and the bad; that God muſt be honoured; and his will, ſo far as we can learn it, performed; but that each perſon is to do this after his own manner, and as his own conſcience ſuggeſts.

The number of *deiſts* is ſaid to be daily increaſing: in England, a great part of the men of ſpeculation, and letters, are ſaid to incline that way; and the like is obſerved in ſome of our neighbour nations, where freedom of ſpeaking, writing, and thinking, are indulged.

DEITY, *Godhead*; a common appellation given to God; and alſo by the poets to the heathen gods and goddeſſes.

DEIVIRILE *, a term in the ſchool-theology, ſignifying ſomething divine and human at the ſame time. See THEANDRIC.

* The word is a compound of *Deus*, God, and *virilis*, of *vir*, man.

DELEGATES, certain perſons *delegated*, or appointed, by the king's commiſſion, under the great ſeal, to ſit upon an appeal to the king in the court of chancery, in three caſes: 1. Upon a ſentence given, in any eccleſiaſtical cauſe, by the archbiſhop, or his official: 2. Upon a ſentence given, in an eccleſiaſtical cauſe, in places exempt: 3. Upon a ſentence, given in the admiral court, in ſuits civil and marine, by order of the civil law.

Court of DELEGATES is the higheſt court, for civil affairs, concerning the church; for the juriſdicton whereof it was provided, 25 H. VIII. that it ſhall be lawful for the ſubject, in caſe of defect of juſtice in the eccleſiaſtical courts, to appeal to the ſovereign, in his court of chancery; whence a commiſſion is directed, under the great ſeal, to particular perſons therein mentioned, for redreſs of judgment.

From the higheſt eccleſiaſtical court there lies no appeal, but to the court of *delegates*; and beyond this to no other, except to the houſe of lords. But the king, of his free will, may grant a commiſſion of review under the great ſeal. The citations run all in the king's name.

DELEGATION, a commiſſion extraordinary given a judge to take cognizance of and determine ſome cauſe, which ordinarily does not come before him.

In the civil law, *delegation* alſo denotes a ſort of ſurrender, whereby a perſon ſubſtitutes another debtor in his place. See Ulpian. l. 11. ff. *de novationibus & delegationibus.*

This *delegation* differs from transferring, or tranſlation, in that three perſons intervene in a *delegation*; *viz.* the creditor, the debtor, and a third, who himſelf is indebted to the debtor, and on whom the debtor transfers the obligation he was under to pay the creditor, *delegating* him, as it were, for that purpoſe. But, in a ſimple transfer, it is enough the transferrer and the transſerree be preſent.

DELETERIOUS (from δηλεω, *noceo*, I hurt), a term ſometimes uſed among naturaliſts, for ſuch things as are of a pernicious and poiſonous nature. See POISON.

DELF *, a quarry, or mine, where ſtone or coal is dug.

* From the Saxon word *delfan*, to *delve*, or dig.

DELF *of coal*, denotes coal lying in veins under-ground, before it is dug up.

DELF, or DELVE *of coals*, is alſo a certain quantity, dug out of a mine, or pit. See COAL.

DELF, is alſo uſed in heraldry, for one of the abatements of honour; being a ſquare in the middle of the eſcutcheon.

A *delf* tenne was antiently due to him that receded from his own challenge, or any way departed from his parole, or word. If there be two, or more, *delfs* in an eſcutcheon, it is then no longer an abatement: ſo alſo, if it be of metal, or charged upon; it then becomes a charge of perfect bearing.

DELIA, in antiquity, feaſts celebrated by the Athenians, in honour of Apollo, ſurnamed *Delius.*

The principal ceremony in this feaſt, was an embaſſy, or rather a pilgrimage, to Apollo of Delos, performed every five years, by a certain number of citizens, deputed for that purpoſe, and called *Deliaſtæ*, Δηλιαϛαι, or theori, Θεωροι, *q. d.* the ſeers; and the firſt perſon of the embaſſy, or deputation, *Architheorus*, Αρχιθεωρος. To him were added, four more of the family of the *Ceryci*, prieſts deſcended from Mercury, who reſided all the year at Delos, to aſſiſt in the temple. The whole deputation ſet out in five veſſels, carrying with them every thing neceſſary for the feaſt, and the ſacrifices.

The veſſels that carried the *Deliaſts*, or *Theori*, were called Δηλιας, *delias*; the four others were the *Paralis*, *Antigonis*, *Ptolemais*, and *Ammonis*: though this is a circumſtance there is ſome diſpute about.

The Deliaſts, who went abroad, were crowned with laurel. At their arrival, they immediately offered a ſacrifice to Apollo: and, after the ſacrifice, a number of young maids danced round the altar, a dance called in Greek Γερανος, wherein, by their various motions, and directions, they repreſented the turnings and windings of a labyrinth. When the Deliaſts returned to Athens, the people went out to meet them, and received them with all the joy and acclamation imaginable. They never laid aſide their crown till their commiſſion was fully completed; and then they conſecrated it to ſome god in his temple.

The whole time of their going and retnrning, with all the ceremonies thereof, was called the *Delia*; during which time no criminal might be executed, which was a peculiar privilege of this feaſt, not allowed to any other, not even thoſe of Jupiter. Thus, Plutarch obſerves, that it was a day conſecrated to Jupiter, when Phocion was made to take the poiſon he was condemned to; whereas they waited thirty days to give it to Socrates, by reaſon of the *Delia.*

According to Thucydides, the *Delia* were firſt inſtituted in the ſixth year of the Peloponneſian war, after the Athenians had expiated the iſle of Delos, removed all the tombs out of it, and ordained, that nobody ſhould either be born or die in it; but that all the ſick people ſhould be removed into a little iſland, challed Rhenia: though the Ionians, and the neighbouring iſlanders of Ionia, had long before that time held a ſort of *Delia*; that is, feaſts and games, like thoſe which the Athenians celebrated afterwards.

DELIAC, DELIACUS, among the antients, denoted a poulterer; or a perſon who ſold fowls, fatted capons, *&c.*

The traders in this way were called *Deliaci*, by reaſon it was the people of the iſle of Delos who firſt bethought themſelves thereof. They alſo ſold eggs, as appears from Cicero, in his academic queſtions, lib. IV. Pliny, lib. X. c. 30. and Columella, lib. VIII. c. 8. likewiſe mention the *deliaci.*

DELIACAL *problem*, *problema* DELIACUM, a famous problem among the antients, concerning the duplication of the cube. See DUPICATION.

DELIBERATIVE, is applied to that kind, or branch, of rhetoric employed in proving a thing, or convincing an aſſembly thereof, in order to oblige them to put it in execution.

The *deliberative* kind was much in vogue among the Greeks and Romans, when the orators harangued the people.

To have a *deliberative* voice in the aſſembly, is when a perſon has a right to give his advice, and his vote, therein. In councils, the biſhops have *deliberative* voices; thoſe beneath them have only conſultative voices.

DELINEATING. See the article DESIGNING.

DELINQUENT, a perſon who has committed ſome fault, or offence.

It is the buſineſs of a magiſtrate to be ſevere in puniſhing *delinquents.*

DELIQUIUM, or DELIQUIUM *animi*, a ſwooning, or fainting away; called alſo *ſyncope*, *lipothymia*, *lipopſychia*, *eclyſis*, and *aſphyxia.* See SYNCOPE.

DELIQUIUM, in chymiſtry, is the diſſolution, or melting, of a ſalt, or calx, by ſuſpending it in a moiſt cellar.

Salt of tartar, or any fixed alcali, ſet in a cellar, or other cool moiſt place, and in an open veſſel, reſolves, or runs, into a kind of liquor, called by the chymiſts, oil of tartar *per deliquium.*

DELIQUIUM is alſo uſed, in ſome authors, for a diſtillation by means of fire. See DISTILLATION.

DELIRIUM *, lightheadedneſs, in medicine, a ſymptom frequent in fevers, cauſed by internal inflammations, wounds, *&c.* whereby the mind is diſordered to a degree of folly, or even phrenſy.

* Some derive the word from *de*, and *lira*; which, among the antients, ſignified a furrow drawn in a right line; whence *delirare, a recto aberrare.*

Deliriums alſo frequently ariſe from immoderate loſſes of blood, whereby the brain is too much weakened; from the ſtings of venomous beaſts; from the ſeed, or menſes, being retained in the womb; from the rotting of a gangrened member, *&c.*

A diſorder in the diaphragm commonly produces a *delirium.* There are various ſpecies and degrees of *deliriums.* In ſome the patient is fierce and outrageous; in others more mild and eaſy, offering no violence to any body, but only indulging idle, ridiculous diſcourſe; ſome laugh and ſing; others cry and are ſullen, *&c.*

DELIVERY, *parturition*, or *child-birth*, the bringing forth of a perfect foetus, or child, out of its mother's womb; whether it be living or dead. See FOETUS, BIRTH, *&c.*

To a natural *delivery*, according to the phyſicians, are required three conditions: firſt, that both the mother and the child ſtrive alike, the one to *deliver*, and the other to be *delivered*: the ſecond, that it come into the world headforemoſt, which is its natural poſture: and the third, that it be quick and eaſy, without ill accidents.

When the child preſents its feet foremoſt, or comes acroſs, double, it is no natural *delivery*; and the Latins call ſuch hildren *agrippæ*, q. d. *ægre parti*.

legitimate delivery is that which happens at the juſt term, *e.* in the tenth lunar month; and an *illegitimate*, that hich comes either ſooner, or later; as in the eighth, or after e tenth. Women are indeed *delivered* at ſeven, eight, nine, n, and eleven months, and not later: though there are me phyſicians who hold, that a *delivery* may be regular in e fourteenth month.

has been obſerved, that *deliveries* are more happy in the ſe-enth month, than in the eighth; *i. e.* that the child is eaſier ved, and more frequently lives, when it comes in the ſe-enth, than when in the eighth mon h.

Monſ. Peyſonnel, a phyſician of Lyons, has a Latin treatiſe xpreſly *on the term of delivery*; wherein he undertakes to re-oncile all the apparent contradictions of Hippocrates, with eſpect thereto. He holds, that the ſhorteſt term of a *legi-imate* birth, according to Hippocrates, is 182 days, or ſix omplete months; and the longeſt 280 days, or nine months, nd ten days; and that the children who come earlier, or later, han thoſe terms, do not live, or are not *legitimate*.

Bartholine has compoſed a book, *De inſolitis partus viis*, on he extraordinary paſſages of the fœtus; where he gives di-ers inſtances of very extraordinary *deliveries*. Some have een delivered by the navel, and others by the anus. See Salmuth. *Obſ.* 94. *Cent.* 3. *Philoſ. Tranſact.* N° 416. p. 435.

In the year 1686. at Leckerkerck, eight or ten leagues from he Hague, the wife of one Chriſtian Claes was *delivered* of ive children: the firſt was a boy, who lived two months; ſe-enteen hours afterwards came a ſecond ſon, who was dead; twenty-four hours afterwards a third ſon was born, who lived bout two hours; in twenty-four hours more ſhe had a fourth, dead: laſtly, ſhe died in bringing forth the fifth, who died alſo in the birth.

ELPHINUS, the *dolphin*, in aſtronomy, a conſtellation of the northern hemiſphere; whoſe ſtars, according to Ptolemy, are 10; according to Tycho, as many; and, according to Mr. Flamſteed, 18. The longitudes, latitudes, magnitudes, &c. whereof are as follow.

Names and Situations of the Stars.	Signs.	Longitude.			Latitude North.			Magni.
		°	′	″	°	′	″	
	♒	8	49	50	28	54	38	6
rſt of three in the tail		9	44	27	29	6	21	3
etw. the tail and the prec. rho.		10	30	06	30	42	6	6
hat immediat. preced. the tail		11	27	4	32	10	27	5
orth of the follow. in the tail		11	00	18	28	51	3	3
5								
eced. ſouth in the rhombus		12	1	14	31	56	52	3
uth. of the follow. in the tail.		10	54	6	27	31	40	6
etw. the tail and the hind rho.		51	54	5	30	38	14	6
orth of preced. in the rhomb.		13	3	24	33	2	58	3
		13	2	25	31	39	48	7
10								
outh in the hind rhombus.		13	48	7	31	58	12	3 4
orth of the following.		15	3	41	33	44	32	3
		11	54	12	23	00	5	5
nformes following the *dolphin* to-		13	00	33	24	37	30	6
(wards *equuleus*		14	28	25	29	7	5	6
15								
		16	7	40	28	40	19	6
		16	31	5	29	46	35	6
	♒	16	15	57	26	48	35	6

DELTOIDES, in anatomy, a triangular muſcle of the ſhoulder; thus called from the Greek *delta*, Δ, and εἶδος, *form*.—See *Tab. Anat.* (Myol.) *fig.* 1. *n.* 21. *fig.* 6. *n.* 10. It ariſes, exactly oppoſite to the trapezius, from one third part of the clavicula, from the acromium, and ſpine of the ſcapula, and is inſerted tendinous into the middle of the os humeri, which bone it lifts up directly; and it aſſiſts, with the ſupra-ſpinatus, and coracobrachialis, in all the actions of the humerus, except the depreſſion; it being convenient, that the arm ſhould be raiſed, and ſuſtained, in order to its moving on any ſide.

DELUGE, Diluvium, in natural hiſtory, a flood, or inundation, of water, covering the earth, either in the whole, or in part.

We meet with divers accounts of *deluges* in antient hiſtory, both ſacred and profane: that which happened in Greece, in the time of Deucalion, called *diluvium Deucalioneum*, is famous: this *deluge* only overflowed Theſſaly. Its date is fixed to the year before Chriſt 1529. being the third year before the Iſraelites coming out of Egypt, according to the computation of Petavius, *Rat. Temp.* P. I. L. I. C. 7.

The *deluge* of Ogyges happened near 300 years before that of Deucalion, 1020 years before the firſt olympiad, and 1796 before Jeſus Chriſt, according to the ſame author, *Rat. Temp.* P. I. L. I. C. 4. P. II. L. II. C. 5. This only ravaged Attica.

Theſe two *deluges* are frequently mentioned, in antient Greek authors, under the denomination of *cataclyſmus prior*, and *poſterior*.

Of the like kind were thoſe inundations in the Netherlands, which, in 1727. overwhelmed and covered with ſea all that part now called the gulph Dollart in the United Netherlands; and in 1421. all that part between Brabant and Holland.

But the moſt memorable *deluge* is that which we particularly, by way of eminence, call the *deluge*, or the *univerſal deluge*, or *Noah's flood*; being a general inundation ſent by God to puniſh the corruption of the then world, by deſtroying every living thing (Noah, and his family, and what was ſhut up with him in the ark, only excepted) from off the face of the earth.

This flood makes one of the moſt conſiderable events in all hiſtory, and one of the greateſt epochas in chronology. Its hiſtory is given us by Moſes, Gen. c. VI. and VII. Its time is fixed, by the beſt chronologers, to the year from the creation 1656. anſwering to the year before Chriſt 2293.—From this flood, the ſtate of the world is divided into *diluvian*, and *antediluvian*.

The *deluge* has been, and remains, a mighty ſubject of inquiry and diſpute among naturaliſts, critics, &c. The points chiefly controverted, may be reduced to three: Firſt, its extent; *viz.* whether it were *general*, or *partial*. Secondly, its natural cauſe. And, Thirdly, its effects.

1°, The immenſe quantity of water, requiſite to furniſh an univerſal *deluge*, has occaſioned ſeveral authors to ſuſpect it only partial. An univerſal *deluge*, they think, had been unneceſſary, conſidering the end for which it was brought; *viz.* to extirpate the wicked inhabitants. The world was then but new, and the people not very many; the holy Scriptures only making eight generations from Adam to Noah. It was but a ſmall part of the earth that could be yet inhabited: the country about the Euphrates, which is ſuppoſed to have been the ſcene of the firſt antediluvian inhabitants, was ſufficient to bear them all. Now Providence, ſay they, which ever acts wiſely, and frugally, would never have diſproportioned the means to the end ſo far as to overflow the whole globe, only to drown a little corner of it. They add, that, in the Scripture-language, the *whole earth* expreſſes no more than *all the inhabitants*; and on this principle advance, that an overflowing of the Euphrates and Tigris, with a vehement rain, &c. might anſwer all the phænomena of the *deluge*.

But the *deluge* was univerſal. God declared to Noah, Gen. VI. 17. that he was reſolved to deſtroy every thing that had breath under heaven, or had life on the earth, by a flood of waters: ſuch was the menace; ſuch the execution. The waters, Moſes aſſures us, covered the whole earth, buried all the mountains, and were no leſs than fifteen cubits above the higheſt of them: every thing periſhed therein; birds, beaſts, men, and all that had life, excepting Noah, and thoſe with him in the ark, Gen. VI. 19. Can an univerſal *deluge* be more clearly expreſſed? If the *deluge* had only been partial, there had been no neceſſity to ſpend an hundred years in the building of an ark, and ſhutting up all the ſorts of animals therein, in order to re-ſtock the world: they had been eaſily and readily brought from thoſe parts of the world not overflowed, into thoſe that were: at leaſt, all the birds would never have been deſtroyed, as Moſes ſays they were, ſo long as they had wings to bear them to thoſe parts where the flood did not reach. If the waters had only overflowed the neighbourhood of the Euphrates and Tigris, they could not be fifteen cubits above the higheſt mountains: there was no riſing to that height, but they muſt ſpread themſelves, by the laws of gravity, over the reſt of the earth: unleſs, perhaps, they had been retained there by a miracle; and, in that caſe, Moſes, no doubt, would have related the miracle, as he did that of the waters of the Red ſea, and the river Jordan, which were ſuſtained in an heap, to give paſſage to the Iſraelites, Exod. XIV. 22. and Joſh. III. 16. Add, that, in regions far remote from the Euphrates and Tigris, *viz.* in Italy, France, Switzerland, Germany, England, &c. there are frequently found, in places many ſcores of leagues from any ſea, and even in the tops of high mountains, whole trees ſunk deep under-ground; as alſo teeth and bones of animals, fiſhes intire, ſea-ſhells, ears of corn, &c. petrefied; which, the beſt naturaliſts are agreed, could never have come there but by the *deluge*.

2°, The *deluge* allowed univerſal, the philoſophers are ſolicitous to find water to effect it.

Moſes brings it from two funds: *The fountains of the great deep were broken up; and the windows of heaven were opened.* Dr. Burnet, in his *Telluris Theoria Sacra*, ſhews, that all the waters in the ocean were not near enough to cover the earth fifteen cubits above the tops of the higheſt mountains. According to his computation, no leſs than eight oceans were required. Suppoſing the ſea, therefore, drained quite dry, and all the clouds of the atmoſphere diſſolved into rain; we ſhould ſtill want much the greateſt part of the water of a *deluge*.

To get clear of this embarras, many of our beſt naturaliſts, as Steno, Burnet, Woodward, Scheuchzer, &c. adopt Des Cartes's ſyſtem of the formation of the earth. That philoſopher

pher will have the primitive world to have been perfectly round and equal, without mountains, or vales; and accounts for its formation on mechanical principles, by ſuppoſing it at firſt in the condition of a thick turbid fluid, replete with diverſe heterogeneous matters, which, ſubſiding by ſlow degrees, formed themſelves into different concentric ſtrata, or beds, by the laws of gravity: and thus, at length, left a dry, ſolid earth. Dr. Burnet improves on this theory: he ſuppoſes the primitive earth to have been no more than an orbicular cruſt, inveſting the face of the abyſs, or deep, which grew chinky, clave, burſt, and fell down into the water, and ſo drowned its inhabitants.

The ſame theoriſt adds, that by this cataſtrophe, the globe of earth was not only ſhaken, and broken in a thouſand places, but the violence of the ſhock it then underwent ſhifted its ſituation; ſo that the earth, which before was placed directly under the zodiac, became thenceforth oblique to the ſame. Whence aroſe the difference of ſeaſons, which the antediluvian earth was not expoſed to.

But how all this conſiſts with the ſacred text above cited, which expreſly mentions mountains as the ſtandard of the height of the water; or with that other paſſage, Gen. viii. 22. where God, promiſing not to bring any more *deluges*, but that every thing ſhould be reſtored on its antient footing, ſays, that *ſeed-time and harveſt*, *and cold and heat*, *and ſummer and winter*, *and day and night*, *ſhall ceaſe no more*; we do not ſee.

Other authors, ſuppoſing a ſufficient fund of water in the abyſs, or ſea, are only concerned for an expedient to bring it forth: accordingly, ſome have recourſe to a ſhifting of the earth's centre, which, drawing after it the water out of its chanel, overwhelmed the ſeveral parts of the earth ſucceſſively.

The inquiſitive Mr. Whiſton, in his *New Theory of the Earth*, has a very ingenious hypotheſis, and that perfectly new. He ſhews, from ſeveral remarkable coincidences, that a comet, deſcending in the plane of the ecliptic towards its perihelion, paſſed juſt before the earth on the firſt day of the deluge; the conſequences whereof would be, firſt, that this comet, when it came below the moon, would raiſe a prodigious, vaſt, and ſtrong tide, both in the ſmall ſeas, which, according to his hypotheſis, were in the antediluvian earth, for he allows no great ocean there, as in ours; and alſo in the abyſs, which was under the upper cruſt of the earth: and that this tide would riſe, and increaſe all the time of the approach of the comet towards the earth; and would be at its greateſt height when the comet was at its leaſt diſtance from it. By the force of which tide, as alſo by the attraction of the comet, he judges, that the abyſs muſt put on an elliptic figure, whoſe ſurface being conſiderably larger than the former ſpherical one; the outward cruſt of the earth, incumbent on the abyſs, muſt accommodate itſelf to that figure, which it could not do while it held ſolid, and conjoined together. He concludes, therefore, that it muſt of neceſſity be extended, and at laſt broke, by the violence of the ſaid tides, and attraction; out of which, the included water iſſuing, was a great means of the deluge; this anſwering to what Moſes ſpeaks of the *fountains of the great deep being broken open*.

Again, the ſame comet, he ſhews, in its deſcent towards the ſun, muſt have paſſed ſo cloſe by the body of the earth, as to involve it in its atmoſphere, and tail, for a conſiderable time; and of conſequence, it muſt have left a vaſt quantity of its vapours, both expanded and condenſed, on its ſurface; a great part of which, being afterwards rarefied by the ſolar heat, would be drawn up again into the atmoſphere, and afterwards return again in violent rains; and this he takes to be what Moſes intimates *by the windows of heaven being opened*; and particularly by the *forty days rain*. For as to the following rain, which, with this, made the whole time of raining 150 days, Mr. Whiſton attributes it to the earth coming a ſecond time within the atmoſphere of the comet, as the comet was on its return from the ſun. Laſtly, to remove this vaſt orb of waters again, he ſuppoſes a mighty wind to have ariſen, which dried up ſome, and forced the reſt into the abyſs again through the clefts by which it came up: only a good quantity remained in the alveus of the great ocean, now firſt made, and in leſſer ſeas, lakes, &c.

To the credit of this theory, it muſt be obſerved, that it was at firſt only propoſed hypothetically: that is, the author only ſuppoſed ſuch a comet, merely as it would account well, and philoſophically, for the phænomena of the deluge; without any aſſurance, that there really was any comet ſo near the earth at that time: and the hypotheſis pleaſed even under ſuch circumſtances: but, upon further conſideration, he has ſince, he thinks, proved, that there actually was a comet near the earth at that time, *viz.* the ſame great comet which appeared again in 1688. The author no longer, therefore, looks upon it as an hypotheſis, but has republiſhed it in a particular tract, intituled, *The Cauſe of the Deluge demonſtrated.*

III. But the great difficulty is yet behind. The orderly ſtrata, or layers of the earth, with the exuviæ, or remains of fiſhes, as their teeth, bones, ſhells, &c. both marine, and fluviatile, found in the bodies even of the moſt ſolid ſtrata; and in flints, marbles, &c. are not yet diſpatched. Thoſe who adhere to Des Cartes's ſyſtem, as Steno, &c. take the finding of the parts of terreſtrial, and aquatic animals, branches of trees, leaves, &c. in the beds, or ſtrata of ſtone, to be a direct proof of the primitive fluidity of the earth. But then they are obliged to have recourſe to a ſecond formation of ſtrata, much later than the firſt; by reaſon at the time of the firſt there was neither plant, nor animal, in being. Steno, therefore, holds for ſecond formations occaſioned at different times by extraordinary inundations, earthquakes, volcano's, &c.—But Burnet, Woodward, Scheuchzer, &c. chooſe rather to attribute a ſecond general formation to the *deluge*: without excluding, however, the particular ones of Steno. But the great objection againſt this ſyſtem of fluidity, is mountains; for the whole globe being liquid, whence ſhould ſuch inequalities ariſe? Mr. Scheuchzer, rather than part with a ſyſtem which looks ſo promiſing, gives into the opinion of thoſe who hold, that, after the *deluge*, God, to remit the waters into their ſubterranean reſervoirs, broke, and diſplaced, with his own almighty hand, a great number of ſtrata, that were before horizontal, and raiſed them above the ſurface of the earth; whence it is, that the ſtrata in mountains, though concentrical, are never horizontal.

Dr. Woodward, taking the ſeveral ſtrata for the ſediments of a *deluge*, and conſidering the circumſtances of thoſe fiſhes, ſhells, and other exuviæ, found in them, draws ſeveral inferences, which very much illuſtrate the effects of the *deluge*. As firſt, that theſe marine bodies, and other ſpoils of ſalt-water fiſhes, were borne forth of the ſea, by the univerſal *deluge*; and, on the return of the water back again, were left behind at land. Secondly, that while the flood covered the globe, all the ſolid matters, as ſtones, metals, minerals, and foſſils, were totally diſſolved, and the coheſion of their corpuſcles deſtroyed; and that theſe corpuſcles, with thoſe of the leſs ſolid bodies, as earth, fleſh of animals, and vegetables, were ſuſtained promiſcuouſly in the water, and made one common maſs. Thirdly, that all the maſs, thus ſuſtained, was at length precipitated to the bottom; and that according to the laws of gravity, the heavieſt ſettling firſt, and the reſt in order. And that the matters, thus ſubſiding, conſtituted the ſeveral ſtrata of ſtone, earth, coal, &c. Fourthly, that theſe ſtrata were originally all parallel, even, and regular, and rendered the ſurface of the earth perfectly ſpherical; and that the whole maſs of water lay upon them, and conſtituted a fluid ſphere encompaſſing the globe. Fifthly, that after ſome time, by the force of an agent ſeated within the earth, theſe ſtrata were broken on all ſides the globe, and their ſituation varied; being elevated in ſome places, and depreſſed in others; whence mountains, valleys, grotto's, &c. with the chanel of the ſea, iſlands, &c. In one word, the whole terraqueous globe was put, by this diſruption, and diſlocation of the ſtrata, into the condition we now behold it in. Sixthly, that upon the diſruption of the ſtrata, and the depreſſion of ſome, and elevation of other parts, which happened towards the end of the *deluge*; the maſs of water fell back again into the depreſſed, and loweſt parts of the earth, into lakes, and other cavities, and the chanel of the ocean; and through the fiſſures, whereby this communicates with the abyſs, which it filled till it came to an equilibrium with the ocean. *Nat. Hiſt. of Earth*, p. 1. and 2.

But of all the ſyſtems yet advanced, there ſeems none better calculated to ſolve the phænomena of thoſe petrified exuviæ, than that of Mr. de la Pryme. The antediluvian world, according to this author, had an external ſea, as well as land, with mountains, rivers, &c. and the *deluge* was effected by breaking the ſubterraneous caverns, and pillars thereof, with dreadful earthquakes, and cauſing the ſame to be for the moſt part, if not wholly, abſorbed and ſwallowed up, and covered by the ſeas that we now have. Laſtly, this earth of ours aroſe out of the bottom of the antediluvian ſea, and in its room; juſt as many iſlands are ſwallowed down, and others thruſt up in their ſtead.

From this ſyſtem, which is very agreeable to ſcripture, the great difficulties that clog all the other ſyſtems, ſeem eaſily ſolved. It is no longer a wonder, that ſhells, and ſhell-fiſh, and the bones of fiſhes, and four-footed creatures, with fruits, &c. ſhould be found in beds, and quarries, in mountains, and valleys, and the very bowels of the earth: for here they bred in the antediluvian ſea; thither they were elevated with the hills and mountains, in the time of the *deluge*; and there they fell into, were abſorbed, and buried in chaſms, and holes, and clefts, that would neceſſarily happen in the extruſion of the earth. *Philoſoph. Tranſact.* № 266.

DEMAIN, or **DEMESNE**, in its popular ſenſe, denotes the lord's manour-place, with the lands thereto belonging; which he and his anceſtors have from time to time kept in their own manual occupation. See MANOUR.

DEMAIN, or **DEMESNE**, in a law-ſenſe, ſignifies, according to Hottoman, *patrimonium domini*, the lord's patrimony; called alſo *domain*, and by the Civilians, *dominicum*. See DOMAIN.

The ſame author proveth thoſe lands to be *demain*, which a man holdeth originally of himſelf; and thoſe to be *feodum*, which he holdeth of a ſuperior lord.

In England, no common perſon has any *demain*, ſimply underſtood; for all depends either mediately, or immediately, on the crown. When a man, therefore, in pleading, would ſignify his land to be his own, he ſaith, that he is or was ſeiſed thereof in his *demain*, as of fee; whereby he means, that although his land be to him and his heirs for ever, yet it is no true *demain*, but depends upon a ſuperior lord, and he holdeth by ſervice, or rent, in lieu of ſervice, or by both ſervice and rent.

Demain is ſometimes alſo taken, more largely, for lands and tenements held for life, *&c.* and ſometimes more ſtrictly for ſuch only as are generally held in fee.

Demain is ſometimes again uſed for a diſtinction between thoſe lands that the lord of a manour has in his own hands, or in the hands of his leſſee, demiſed upon a rent, for term of years, or life; and ſuch other lands, pertaining to the ſaid manour, which belong to the free, or copy-holders.

The reaſon why the copy-hold is accounted *demain*, is, becauſe they, who are tenants to it, are judged in law to have no other right but at the will of the lord; ſo that it is reputed ſtill, after a ſort, to be in the lord's hands: and yet in common ſpeech that is ordinarily called *demain*, that is, neither free, nor copy-free.

Demain, again, is uſed in a more ſpecial ſignification, in oppoſition to *frank-fee*.

Thus, thoſe lands, which were in the poſſeſſion of Edward the Confeſſor, are called, *antient demain*; and all others are called, *frank-fee*: and the tenants who hold any of thoſe former lands, are called, *tenants in antient demain*; and the others, *tenants in frank-fee*, and alſo, *tenants at common law*.

The reaſon is, becauſe tenants in *antient demain* cannot be ſued out of the lord's court.

DEMAND, in its popular ſenſe, denotes a calling for, or requiring one's due.

Demand, in law, has a more ſpecial ſignification, as contradiſtinguiſhed from *plaint*: for all civil actions are purſued, either by *demands* or plaints; according to which the purſuer is called either *demandant*, or *plaintiff*; *viz.* in real actions, *demandant*; and in perſonal actions, *plaintiff*.

Where the party purſuing is called *demandant*, the party purſued is called *tenant*; and where *plaintiff*, *defendant*.

There are two kinds of *demands*: the one in *deed*, *de facto*, as in every precipe; the other in *law*, *de jure*; ſuch is entry in land, diſtreſs for rent, *&c.*

If a man releaſe another from *all demands*, it is the beſt releaſe the releaſee can have, and ſhall redound moſt to his advantage.

A releaſe of facts is more large than of quarrels or actions; and a releaſe of *demands* more large and beneficial than either: by a releaſe of all *demands* to the diſſeiſor, the right of entry into the land, and all contained therein, is releaſed: and he that releaſeth all *demands*, excludes himſelf from all actions, entries, and ſeizures. But it is no bar to a writ of error to releaſe an outlawry.

DEMANDANT, *Petens*, he who is actor, or plaintiff in a real action; thus called, becauſe he *demands* lands, *&c.*

DEMARCHUS, in antiquity, the chief of a region, or diſtrict, in the country of Attica.

The Athenians divided their country into certain regions, or diſtricts, which they called Δημοι, *i. e.* people; and eſtabliſhed a magiſtrate at the head of each, under the denomination of Δημαρχος, *demarchos*, of δημος, and αρχη, rule, government.

DEMEMBRE', in heraldry, is when an animal is *diſmembered*, *i. e.* the limbs cut off its body.

DEMESNE. See Demain.

DEMI, a word of the ſame uſe and effect in the French language, with *ſemi*, in the Latin and Engliſh; being formed from *dimidium*; and uſed, in compoſition with other words, to ſignify *half*.

In words borrowed from the Latins, we uſe *ſemi*; and in thoſe from the French, we retain their *demi*. See Semi.

Demi, or Demy, in heraldry, ſignifies the *half* of a thing; as, a *demy lion*, &c.

Colombiere has what he calls *croix & demy*, a croſs and an half; being a ſhaft croſſed in the upper-part like the Calvary croſs, and having but one arm at the lower-part.

Demi-Air, or Demi-Volt, in horſemanſhip, is one of the ſeven artificial motions of an horſe; being an air, in which his fore-parts are more raiſed than in terra a terra: but the motion of the horſe's legs is more quick in the latter than in the *demy volt*.

Demi-Bastion, is a kind of fortification, that has only one face, and one flank. See Bastion.

Demi-Cannon, a piece of ordnance, uſually about 6 inches bore, 5400 pound weight, 10 or 11 feet long, and carrying a ſhot of 30 or 32 pound weight.

It carries point-blank 150 paces; its charge of powder is 14 pound weight.

There are alſo two ſizes of *demi-cannon* above this, which are ſomething larger: as, the *ordinary demi-cannon*, which is 6 inches $\frac{1}{6}$ bore, 12 feet long, weighs 5600 pounds; its charge of powder 17 pounds 8 ounces, carries a ſhot 6 inches and a half diameter, and whoſe weight is 32 pounds: this piece ſhoots point-blank 162 paces.

Demi-cannon of the largeſt ſize, is 6 inches $\frac{5}{8}$ bore, 12 feet long, 6000 pounds weight; its charge is 18 pounds of powder, and it carries 180 paces.

Demi-Culverin, is a piece of ordnance commonly 4 $\frac{1}{2}$ inches bore, 10 feet long, 2700 pounds weight; its charge is 7 pounds 4 ounces of powder; and it carries a ſhot of 10 pounds 11 ounces; and ſhoots point-blank 175 paces.

Demi-culverin of the leaſt ſize, is 4 $\frac{1}{4}$ inches bore, 10 feet long, 2000 pounds weight; it carries a ball of 4 inches diameter, its charge is 6 pounds 4 ounces of powder, and its level range is 174 paces.

Demi-culverin of the largeſt ſort, is 4 inches $\frac{5}{8}$ bore, 10 feet long; its charge of powder is 8 pounds and 8 ounces; the ball is 4 $\frac{1}{2}$ inches diameter, weighs 12 pounds 11 ounces; and the point-blank ſhoots 178 paces. See Ordnance.

Demi-God, *&c.* See the articles God, Hero, *&c.*

Demi-Gorge, in fortification, is half the gorge, or entrance into the baſtion; not taken directly from angle to angle, where the baſtion joins to the curtin; but from the angle of the flank to the centre of the baſtion, or the angle the two curtins would make, were they thus protracted to meet in the baſtion.

Demi-Lune, *Half-Moon*, in fortification, an outwork, as EFGHK (*Tab. Fortif. fig.* 3.) conſiſting of two faces, and two little flanks; frequently built before the angle of a baſtion, and ſometimes alſo before the curtin; though now much diſuſed. The gorge terminates in a creſcent or half-moon, whence the denomination *demi-lune*.

Demi-Quaver, is a note in muſic, two of which are equal to the quaver.

DEMISE, in law, is applied to an eſtate either in fee-ſimple, fee-tail, or for term of life; and ſo it is commonly taken in many writs.

The king's death is, in law, termed, the *demiſe* of the king.

DEMOCRACY *, a form of government, wherein the ſovereignty, or ſupreme authority, is lodged in the people, who exerciſe the ſame by perſons of their own order, deputed for that purpoſe.

* The word is formed of the Greek δημος, *people*, and κρατειν, to *command*, *govern*.

The moſt flouriſhing *democracies* were thoſe of Rome and Athens; the modern republics, as Venice, and the United Provinces, are rather Ariſtocracies than *Democracies*. The government of Baſil, however, is a *democracy*; and ſo are ſome of the free cities in Germany. See Republic.

DEMONSTRABLE, a term uſed in the ſchools, to ſignify ſomewhat that may be clearly and evidently proved.

It is *demonſtrable*, that the ſide of a ſquare is incommenſurable with the diagonal. The problem of the motion, or reſt, of the earth, is not *demonſtrable*; by reaſon the ſame appearances reſult from either ſuppoſition.

DEMONSTRATION, in logic, a ſyllogiſm in form, containing a clear and invincible proof of the truth of a propoſition.

A *demonſtration* is a convincing argument, the two firſt propoſitions whereof are certain, clear, and evident; whence of neceſſity ariſes an infallible concluſion.

A *demonſtration* uſually conſiſts of three parts: Explication, Preparation, and Concluſion.

The *explication* is the laying down the things ſuppoſed to be given or granted; from which the *demonſtration* is to be made.

The *preparation* is ſomething to be previouſly done, according to the nature of the *demonſtration* intended.

The *concluſion* is a propoſition that concludes the thing to be *demonſtrated*, fully perſuading, and convincing the mind.

The method of *demonſtrating* things in mathematics is the ſame with that of drawing concluſions from principles in logics. In effect, the *demonſtrations* of mathematicians, are no other than ſeries's of enthymemes; every thing is concluded by force of ſyllogiſm, only omitting the premiſes, which either occur of their own accord, or are recollected by means of quotations. To have the *demonſtration* perfect, the premiſes of the ſyllogiſms ſhould be proved by new ſyllogiſms, till at length you arrive at a ſyllogiſm, wherein the premiſes are either definitions, or identic propoſitions.

Indeed it might be *demonſtrated*, that there cannot be a genuine *demonſtration*, i. e. ſuch a one as ſhall give full conviction, unleſs the thoughts be directed therein according to the rules of ſyllogiſm. Clavius, it is known to every body, reſolved the *demonſtration* of the firſt propoſition of Euclid into ſyllogiſm: Herlinus, and Daſipodius, *demonſtrated* the whole ſix firſt books of Euclid, and Heniſchius, all arithmetic, in the ſyllogiſtic form.

Yet people, and even mathematicians, uſually imagine, that mathematical *demonſtrations* are conducted in a manner far remote from the laws of ſyllogiſm; ſo far are they from allowing, that thoſe derive all their force and conviction from theſe. But we have men of the firſt rank on our ſide the queſtion. M. Leibnitz, for inſtance, declares that *demonſtration* to be firm and valid, which is in the form preſcribed by logic; and Dr. Wallis confeſſes, that what is propoſed to be proved in mathematics, is deduced by means of one, or more, ſyllogiſms: the great Huygens, too, obſerves, that paralogiſms frequently happen in mathematics, through want of obſerving the ſyllogiſtic form. See SYLLOGISM.

Problems conſiſt of three parts: a *propoſition*, *reſolution*, and *demonſtration*.

In the *propoſition* is indicated the thing to be done.

In the *reſolution*, the ſeveral ſteps are orderly rehearſed, whereby the thing propoſed is performed.

Laſtly, in the *demonſtration* it is ſhewed, that the things injoined by the reſolution being done, that which was required in the propoſition is effected. As often, therefore, as a problem is to be *demonſtrated*, it is converted into a theorem; the reſolution being the hypotheſis, and the propoſition the theſis: for the general tenor of all problems to be *demonſtrated* is this; that the thing preſcribed in the reſolution being performed, the thing required is done.

The ſchoolmen make two kinds of *demonſtration:* the one διοτι, or *propter quod*; wherein an effect is proved by the next cauſe. As when it is proved, that the moon is eclipſed, by reaſon the earth is then between the ſun and moon.—The ſecond ὁτι, or *quia*; wherein the cauſe is proved from a remote effect: as when it is proved, that fire is hot, becauſe it burns; or that plants do not breathe, becauſe they are not animals.

Affirmative DEMONSTRATION is that which, proceeding by affirmative and evident propoſitions, dependent on each other, ends in the thing to be *demonſtrated*.

Apagogical DEMONSTRATION, which does not prove the thing directly; but ſhews the impoſſibility and abſurdity which ariſes from denying it.—Hence it is alſo called *reductio ad impoſſibile, ad abſurdum*; from απο, from; and αγω, to carry.

Geometrical DEMONSTRATION is that framed of reaſonings drawn from the elements of Euclid.

Mechanical DEMONSTRATION is that, the reaſonings whereof are drawn from the rules of mechanics.

DRMONSTRATION *à priori* is that whereby an effect is proved from a cauſe, either a next, or remote one; or a concluſion proved by ſomething previous, whether it be a cauſe, or only an antecedent.

DEMONSTRATION *à poſteriori* is that whereby either a cauſe is proved from an effect; or a concluſion is proved by ſomething poſterior; whether it be an effect, or only a conſequent.

DEMONSTRATIVE, in rhetoric, one of the genera, or kinds, of eloquence; being that which obtains in the compoſing of panegyrics, invectives, *&c.*

Rhetoric is divided into three kinds; *deliberative, demonſtrative*, and *judiciary*. See RHETORIC.

DEMONSTRATIVE, in grammar, is applied to pronouns which ſerve to ſhew, point out, or indicate, a thing: as, *This here*, *That there*, *Thoſe yonder*, &c.

DEMURRAGE, in traffic, an allowance made to the maſter of a ſhip, by the merchants, for ſtaying in a port longer than the time firſt appointed for his departure.

DEMURRER, in law, a kind of pauſe, or ſtop, put to the proceeding of any action, upon ſome difficult point, which muſt be determined by the court, before any further progreſs can be had therein.

In every action, the controverſy is either as to fact, or as to law. the firſt, decided by the jury; the ſecond, by the judge. Now, if any thing turn up in the cauſe ſo rare and difficult, that the judge cannot pronounce upon it; a *demurrer*, or ſtop, is made, and a time taken, either for the court to conſider and agree of it among themſelves; or otherwiſe for the judges to meet in the exchequer-chamber; there, after hearing counſel on both ſides, to determine what is law.—This *demurrer* is expreſſed, in our records, by *moratur in lege*.

In common law, the defendant ſometimes *demurreth* to the plaintiff's count, or declaration; and ſometimes the plaintiff *demurreth* to the defendant's plea, by averring, that it is not a ſufficient plea in law, *&c.*

In chancery, the defendant *demurreth* to the plaintiff's bill, averring it to be defective in ſuch and ſuch a point; and demands the judgment of the court thereupon, whether he ſhall not be compelled to make any farther or other anſwer thereunto.

DENARIATUS *terræ**, in antient law-books, as much land as is worth a peny by the year. See FARDING-*deal*.

* *Sibylla Barthelot tenet unam acram, & 5 denariatos terræ in eodem tenemento.* Du Cang.

DENARIUS, in antiquity, the Roman peny; a ſilver coin equivalent to, from ſix to ſeven-pence three farthings ſterling. See COIN.

The Romans having, for a long time, uſed braſs money, which they call *as*, quaſi *æs*; or *libra* and *pondo*, becauſe it was a pound weight, began in the year of Rome 485. to coin ſilver; and coined firſt the *denarius*, which was marked with the letter X, becauſe it was worth ten aſſes, and divided into two quinarii, marked with V, which were ſubdivided into two ſeſtertia, marked with theſe three letters, IIS.

The firſt, or *conſular*, *denarius*, was worth more than the after, or *imperial:* the firſt weighed a juſt drachm, or a 7th part of an ounce, and was worth about ſeven-pence three-farthings of our money; the ſecond was only the 8th part of an ounce, and worth about ſix-pence halfpeny.

M. Tillemont obſerves, that the *denarius* was held ſufficient to keep a perſon handſomely for a day; and, upon the whole, ſeems to intimate, that it was equal to twelve French ſous, or eleven Engliſh pence: but this is to over-rate it.

The impreſſion on the firſt *denarius* was on one ſide the winged head of Rome; and on the other a biga, or quadriga: whence the *denarii* were denominated *bigati*, and *quadrigati*. Afterwards the reverſe was, a Caſtor and Pollux, and ſometimes a Victory driving a chariot, with two or four horſes.

DENARIUS * is alſo uſed, in our law-books, for an Engliſh peny.

* *Denarius Angliæ, qui nominatur ſterlingus, rotundus ſine tonſura, ponderabit* 32 *grana frumenti in medio ſpicæ*; & 20 *denarii facient unciam*; & 12 *unciæ facient libram. Stat. Edw.* I. *de menſuris.*

DENARIUS *Dei**, denotes *earneſt-money*; called alſo *argentum Dei*, by the French *deniers de Dieu*, and in ſome parts of our country *arles*.

* *Ita quod neuter mercatorum ab illo contractu poſſit diſcedere, vel reſilire poſtquam* denarius Dei *inter perſonas contrahentes datus fuerit & receptus.* Charta Eduardi I.

DENATES, in antiquity, domeſtic gods, more frequently called *penates*. See PENATES.

Dionyſius Halicarnaſſeus, lib. I. ſpeaking of the dii penates; tells us, that the hiſtorian Timæus has wrote, that the figure, ſtatue, or effigy, of the *denates*, or *penates*, was nothing but a crooked iron, or copper rod, and a Trojan veſſel of potters ware: and that this was all Æneas brought from Troy. But, for himſelf, he aſſures us, he had ſeen a temple at Rome, near the forum, where thoſe gods were repreſented ſitting, under the form of two young men, having each of them a dart in his hand: he adds, that the inſcription was DENATES; for that the antients, before the invention of the letter P, uſed a D inſtead thereof. But Dionyſius might be miſtaken: for the bottom of the P is frequently ſo very ſmall on medals, that there is no ſenſible difference between a P and a D; which might be the caſe in the inſcription that author mentions. For that the antient inhabitants of Italy had no P, is a miſtake ſufficiently refuted, by many proper names ſtill remaining of the moſt early ages: *e. gr.* Capys, Capetus, Picus, Pallas. Nor were the Trojans without the ſame: witneſs Palinurus, Paris, Priamus, *&c.*

DENCHE', DENCHEA, or ENDENCHE', in heraldry. See DANCHE'.

DENDRITIS, in natural hiſtory, a ſort of ſtone, whereon are ſeen trees, ſhrubs, and other ruſtic figures; repreſented, in miniature, in blackiſh or yellowiſh figures.

Some rank the *dendritis* in the claſs of entrochi, which they wrongly call ſtone-plants: but againſt this it is urged, firſt, that the branches of trees, *&c.* repreſented on the *dendritis*, are never confounded together, nor ſhoot acroſs each other, as thoſe of entrochi are uſually found to do.

Secondly, That the fire ſtrips the *dendritis* of all its figures, without deſtroying the ſtone, or reducing it to aſhes; which does not hold of any entrochus.

From hence it appears, that the figures of the *dendritis* are accidental; and the effect of a colour applied on the ſtone not artificially, but by nature. Two poliſhed marbles being applied on each other, with oil between; upon parting them again, the oil running into certain tracks, its impreſſion exhibits divers figures like thoſe on the *dendritis*; the ramification always beginning on the ſide on which the marbles are begun to be ſeparated. So that it appears, the figures of the *dendritis* are formed by ſome bituminous liquor inſinuatin between the beds, or ſtrata, of the ſtones: and, according we actually find, that the *dendritis*, being expoſed to the fire, yields a bituminous ſmell. This ſame liquor ſometimes al ouſes out of the ſtone itſelf, filtrating through its pores; being, in all probability, the cold, and preſſure of the upp beds, that forces it forth.

In ſome *dendrites*, the figures, or ſignatures, penetrate qui through; in others, they go but to the middle; and, in other not ſo deep. See Supplement, article DENDRITÆ.

DENDROPHORIA*, in antiquity, the carrying of one, more, trees, in ceremony, through a city, at certain feaſ and in honour of certain deities.

* The word is formed of δενδρον, tree; and φερω, I bear.

The *dendrophoria* was performed at the ſacrifices of Bacch Cybele, and the god Sylvanus. Arnobius, lib. V. ma mention of that performed in the ſacrifices of the mother the gods. It conſiſted in carrying a pine, in proceſſion, throu the city; which pine was afterwards planted in memory of that under which Atys, the favourite of this goddeſs, mutilated himſelf. The branches of this tree they crowned, in memory of Cybele's doing the ſame; and they covered its trunk with wool, by reaſon the goddeſs covered Atys's breaſt with the ſame matter.

The perſons who performed the office of carrying the tree were called *dendrophori.*

In the Roman hiſtory we find mention made of a company, or college of *dendrophori*, who attended the army: and the critics have been in great pain to aſſign their office. Some hold, that they hewed and faſhioned the wood for the tents: others, that they provided the wood neceſſary for the military works, machines of war, *&c.* Salmaſius, in his notes on the life of Caracalla by Spartian, owns this the general opinion of all the learned men of his time; but aſſures us, with his uſual modeſty, that they were all miſtaken, and that the *dendrophori* of the army were the ſame with thoſe of the feaſts and ſacrifices.

DENEB, an Arabic term, ſignifying *tail*; uſed by aſtronomers as a denomination of ſeveral fixed ſtars.

Thus *deneb elecet* ſignifies the bright ſtar in the lion's tail; *deneb adigege*, that in the ſwan's tail, *&c.*

DENIER, the French peny; a ſmall copper coin; twelve whereof make a ſol, or French ſhilling.

The French *denier* is now about the 23d part of the Engliſh peny. It is ſubdivided into two mailles, and the maille into two oboles. Antiently *denier* was a general name for all ſort of moneys in France; as nummus for thoſe in Rome.—Thus, a piece of gold money was called *denier d'or*; ſilver money, *denier d'argent:* after the ſame manner as the Romans ſaid *nummus aureus*, and *nummus argenteus*.

There were two kinds of *deniers*; the one Tournois, the other Pariſis; whereof the latter was worth a fourth part more than the former, and was called *monnoye royale*, or *forte monnoye*, and ſometimes *denier d'or*, and *denier à valeur d'or.* See MONEY, *&c.*

DENIZEN, in law, an alien enfranchiſed in England by the king's charter, and donation; and thereby enabled, in many reſpects, to do as the king's native ſubjects do; namely, to purchaſe and poſſeſs lands, to hold any office or dignity, *&c.*

Denizenſhip is a right inferior to naturalization by parliament: for a ſtranger naturalized may inherit lands by deſcent; which a *denizen* cannot.

Add, that, in the charter, whereby a perſon is made a *denizen*, there is uſually ſome clauſe or other, which abridges him of that full benefit which natural ſubjects enjoy.

When a man is thus enfranchiſed, he is ſaid to be, *ad fidem regis Angliæ*, or, *under the king's protection*; till ſuch time his goods might be ſeized to the king's uſe.

DENOMINATION, a name impoſed on any thing, uſually expreſſing ſome quality predominant therein.

Hence, as the qualities and forms of things are of two kinds; *viz.* internal, and external; *denomination* becomes twofold.

Internal DENOMINATION is that founded on the intrinſic form; thus Peter is *denominated* learned, on account of his learning, which is ſomething internal.

External DENOMINATION is that founded, or ariſing from the external form. Thus, a wall is ſaid to be ſeen, and known, from the viſion and cognition employed upon it; and thus Peter is *denominated* honoured, by reaſon of honour, which is not in the perſon honoured, but in him that honours.

DENOMINATOR, in arithmetic, a term only uſed in ſpeaking of fractions, or broken numbers. See FRACTION.

The *denominator of a fraction* is the number or letter below the line; ſhewing into how many parts the integer is ſuppoſed to be divided by the fraction.

Thus in the fraction $\frac{7}{12}$ ſeven twelfths, the number 12 is the *denominator*, and ſhews, that the integer is here divided into 12 parts. So in the fraction $\frac{a}{b}$, *b* is the *denominator.*

The *denominator* always repreſents an integer.

The number above the line 7 is called the *numerator.*

DENOMINATOR *of a ratio* is the quotient ariſing from the diviſion of the antecedent by the conſequent.

Thus 6 is the *denominator* of the ratio 30 : 5. becauſe 5) 30 (6. The *denominator* is what we otherwiſe call the *exponent* of the ratio.

DENSITY, that property, or habitude of bodies, whereby they contain ſuch a quantity of matter, under ſuch a bulk. Accordingly, a body that contains more matter than another, under the ſame bulk, is ſaid to be *denſer* than the other.

Denſity ſtands in oppoſition to *rarity.*

Hence, ſince the maſs is proportional to the gravity, a *denſer* body is ſpecifically heavier than a rarer; and a ſpecifically heavier is *denſer* than a ſpecifically lighter.

The *denſities*, and bulks of bodies, are the two great points, whereon all mechanics, or laws of motion, turn: 'tis an axiom, that bodies of the ſame *denſity* contain equal maſſes under equal bulks. If the bulks of two bodies be equal, their *denſities* are as their maſſes: conſequently, the *denſities* of equal bodies are as their gravities. If two bodies have the ſame *denſity*, their maſſes are as their bulks: and hence, the gravities of bodies of the ſame *denſity* are in the ratio of their bulks. The maſſes of two bodies are in a ratio compounded of their *denſities*, and bulks; conſequently, their gravities are in the ſame ratio; and if their maſſes or gravities be equal, their *denſities* are reciprocally as their bulks. The *denſities* of any two bodies are in a ratio compounded of the direct ratio of their maſſes, and the reciprocal one of their bulks.

The Peripatetics define *denſity* a ſecondary quality, whereby a body is full of itſelf; its parts cohering without any interſtice. So that the form of *denſity* conſiſts in the immediate coherence of parts. Hence Porphyry in his predicaments defines a *denſe* body, that whoſe parts are placed ſo near each other, that no other body can come between them; as gold. The efficient cauſe of *denſity* they uſually attribute to cold: Scaliger, and ſome others, attribute it to moiſture. Many of the moderns take the ſmalneſs of the parts of bodies, to contribute much to their *denſity*; as by this means the pores are left the ſmaller: though it is added, that the *denſity* of bodies does not only depend on the ſmalneſs of the pores, but alſo on their fewneſs; ſo far are we from having any body abſolutely *denſe* in the ſenſe of the antients, that gold itſelf, the *denſeſt* and heavieſt of all natural bodies, Sir Iſaac Newton obſerves, contains a great deal more pore, or vacuity, than ſubſtance.

When the preſſures of two liquids are equal, the quantities of matter in columns which have equal baſes do not differ; wherefore the bulks, that is, the heights of the columns, are inverſely as the *denſities*; whence may be deduced a method of comparing them together. For if in communicating tubes there be different fluids, and they remain at reſt, their preſſures are equal; and by meaſuring their altitudes, the ratio of their *denſities* is found.

The *denſities* of liquids are alſo compared together by immerging a ſolid into them; for if a ſolid lighter than the liquids to be compared together, be immerſed ſucceſſively into different liquids, the immerſed parts will be inverſely as the *denſities* of the liquids.—For, becauſe the ſame ſolid is made uſe of, the portions of the different liquors, which in every caſe would fill the ſpace taken up by the immerſed parts, are of the ſame weight; therefore the bulks of thoſe portions, that is, the immerſed parts themſelves, are inverſely as the *denſities.*

DENSITY *of the air* is a property that has much employed the later philoſophers, ſince the diſcovery of the Torricellian experiment, and the air-pump.

It is demonſtrated, that in the ſame veſſel, or even in veſſels communicating with each other, at the ſame diſtance from the centre, the air has every-where the ſame *denſity.*—The *denſity of the air* always increaſes in proportion to the compreſſion, or the compreſſing powers.

And hence, the lower air is always *denſer* than the upper: yet the *denſity* of the lower air is not proportional to the weight of the atmoſphere, by reaſon of heat and cold, which make notable alterations as to rarity, and *denſity.* If the air be rendered *denſer*, the weight of bodies therein is diminiſhed; and if rarer, increaſed; by reaſon bodies loſe more in heavier than in lighter mediums.

And hence, if the *denſity of the air* be ſenſibly altered, bodies, equally heavy in a lighter air, if their ſpecific gravities be conſiderably different, will have their equilibrium taken away in a *denſer* air, and the ſpecifically heavier will preponderate; which is the foundation of the manoſcope, an inſtrument for meaſuring the alterations in the *denſity of the air.* See MANOSCOPE.

DENTAL, DENTALIS, is applied to certain letters, in the pronunciation whereof the teeth have a principal ſhare.

Grammarians, and eſpecially the Hebrew ones, diſtinguiſh the letters into *dental*, *labial*, *guttural*, *lingual*, *palatal*, &c.

DENTALIS, or DENTALIUM, is a kind of ſhell, which the apothecaries are ordered to pulverize, and uſe in ſeveral medicaments, as an alcali.

The genuine *dentalis*, deſcribed by M. Tournefort, is of a tubular, or conical form, about three inches long; of a ſhineing, greeniſh-white colour; hollow; light, and divided lengthwiſe by parallel lines running from top to bottom. It is about the thickneſs of a quill, and bears ſome reſemblance to a dog's tooth, whence its name.

It is very ſcarce; and therefore, in lieu of it, they uſually ſubſtitute a ſhell of divers colours found among the ſand when the ſea is withdrawn; but not chanelled, or fluted like the *dentalis.*

Dr. Liſter, in the *Philoſ. Tranſact.* makes mention of two ſpecies of *dentalia*; the firſt commonly enough found about the iſland of Guernſey, *&c.* being a long, ſlender, white pipe, a little bending and tapering, and open at both ends: the other properly called *entalium*, longer and thicker than the former; and beſides, ſtreaked with ridges; whence the Italian term *intaglia.* See Supplement, articles DENTALIA, and ENTALIA.

DENTED, *indented*, *toothed*. See INDENTED.

DENTED *verge*, among botaniſts, is applied to ſuch leaves of plants as are notched, or jagged about the edge or rim: of theſe ſome are *fine-dented*; others *large*, or *deep-dented*, i. e. cut into the leaf. See LEAF.

DENTED *wheel*, *rota* DENTATA. See the article WHEEL.

DENTES, in anatomy. See the article TOOTH.

DENTICLES, or DENTILS, in architecture, an ornament in corniches, bearing ſome reſemblance to teeth; particularly affected in the Ionic and Corinthian orders; and of late alſo in the Doric.

They are cut on a little ſquare member, properly called *denticulus*; and the notches, or ornaments themſelves, *dentils*, by the Italians, *dentelli*, and *denticoli*, from *dens*, tooth, as having the appearance of a ſet of teeth.—See *Tab. Archit. Fig.* 30. *lit.* b b. and *Fig.* 28. *lit.* d d.

Antiently *dentils* were ſcarce ever uſed but in the Ionic cornich: yet we find them in the remains of the theatre of Marcellus; and this is an argument with ſome, that Vitruvius had not the direction of that building.—Vitruvius preſcribes the breadth of each *dentil*, or tooth, to be half its height; and the metopa, or interval between each two, he orders to be ⅔ of the breadth of the *dentil*, l. iii. c. 4.

The ſame author, c. 2. of his ivth book, obſerves, that the Greeks never uſed *dentils* underneath modillions; by reaſon modillions repreſent purlins; and *dentils* repreſent ends of rafters, which can never be placed underneath purlins.

The Romans were not ſo ſcrupulous as to this decorum; excepting in the pantheon, where there are no *dentils* under the modillions, neither in the portico, nor in the inſide of the building.

DENTIFORMIS *proceſſus*, the ſame as *Pyrenoides*. See PYRENOIDES.

DENTIFRICE, in medicine, *tooth-powder*; a remedy to rub the teeth withal, in order to cleanſe, or faſten them.

There are *dentifrices* of divers kinds and forms; ſome in form of a powder, compoſed of corals, pumice-ſtone, ſalt, alum, egg-ſhells, crabs-claws, hartſhorn, cuttle-bone, tartar vitriolated, &c. Others in form of an electuary, conſiſting of the ſame powders, mixed up with honey.

There are others, prepared with roots boiled with alum, and dried in the oven. Others in form of a liquor, drawn by diſtillations from drying herbs, and aſtringent medicines.

The Dutch hold butter the beſt *dentifrice*, to keep the teeth white and ſound; and the Spaniards, urine.

DENTITION, DENTITIO, the act of breeding, or cutting the teeth.

The time of *dentition* is uſually from about 7 months old to 17. The inciſores come firſt; then the molares; after them the canini; and laſtly the dentes ſapientiæ.

Dentition, Hippocrates obſerves, is uſually preceded with an itching of the gums, and with convulſions, fevers, and looſeneſs; eſpecially when the canine teeth are cut.

Moſt of theſe ſymptoms Dr. Liſter, on this paſſage of Hippocrates, obſerves, happen to birds upon moulting, or caſting their feathers; on which occaſion alſo they become mute, and ſullen.

The germen, or ſeed of the tooth, ſays Dolæus, is a tender mucous matter, like the white of an egg, contained in the cells, or alveoli, of the jaw-bone, which grows harder and bigger every day, till it be fit to break through the gum. In this rupture the poor child is afflicted with terrible ſymptoms, inflammations of the jaws, gripes, waking, inquietude, terrors, dejections, vomiting, ſalivation, epilepſy, abſceſſes, and frequently death.

There are two terms, or periods of *dentition*; the one, when the tooth makes its firſt endeavour to get out of the maxillary bone, and wherein the outer and upper part of the gum uſes to be encompaſſed with a whitiſh circle.—The other, when the tooth, conſiderably enlarged in bulk, renders the gum tumid, and ſtrives with all its force to break its way through the ſame. The remedies againſt the ſymptoms of *dentition* are abſorbents, and gentle purgatives. See Supplement, article DENTITION.

DENUNCIATION, a ſolemn publication, or promulgation of any thing.

All veſſels of enemies are lawful prize after *denunciation*, or proclamation of war.

The deſign of the *denunciation* of excommunicated perſons is, that the ſentence may be the more fully executed; that the perſons may be known, the entrance into the church refuſed them, and that other people may be warned not to have any communication with them.

DEOBSTRUENTS are ſuch medicines as open obſtructions.

There is ſomething further intimated by *deobſtruent*, than by *detergent*: for a medicine may be *deobſtruent*, that is not in the ſtricteſt ſenſe *detergent*: as, in effect, are moſt of thoſe which are made of metalline ſubſtances; ſuch as ſteel and mercury; which obtain the appellation *deobſtruents* from their acting by their natural weight, whereby they increaſe the momentum of the circulating fluid, and make it ſtrike againſt the ſecretory outlets with greater force; becauſe the
momentum, or vis percuſſionis, of all projectiles, of whic
kind is a circulating fluid, is as their ſolidities, ſuppoſing thei
velocities equal. The more therefore the animal fluids ar
ſaturated with denſe and ſolid particles; with the greate
force they diſtend the veſſels, and the more eaſily brea
through, where the ſtructure favours their eſcape; and upo
that account are medicines which add to theſe qualities in th
fluids called *deobſtruents*.

DEODAND, in our cuſtoms, a thing given, or forfeited, a
it were, to God, for the pacification of his wrath in a caſe o
miſadventure, whereby a man or woman comes to a violen
end, without the fault of any reaſonable creature.

As, if a horſe ſtrike his keeper, and kill him: if a man, i
driving a cart, falls ſo as the cart-wheel runs over him, an
preſſes him to death: if one be felling a tree, and gives warn
ing to the ſtanders-by, to look to themſelves, yet a man i
killed by the fall thereof: in the firſt place, the horſe; in th
ſecond, the cart-wheel, or the cart and horſes; and in th
third, the tree; is *Deo dandus*, *to be given to God*, that is, t
the king, to be diſtributed to the poor by his almoner, fo
expiation of this unhappy event; though effected by unrea
ſonable, nay, ſenſeleſs and dead creatures,

Omnia quæ movent ad mortem ſunt Deodanda.
What moves to death; or kills him dead,
Is *Deodand*, and forfeited.

This law ſeems to be an imitation of that in Exodus, chap
XXI. *If an ox gore a man, or a woman, with his horn, ſo*
they die; the ox ſhall be ſtoned to death, and his fleſh not
eat; ſo ſhall his owner be innocent.

Fleta ſays, the *Deodand* is to be ſold, and the price diſtribute
to the poor, for the ſoul of the king, his anceſtors, and a
faithful people departed this life.

DEOPPILATIVE, a remedy proper to ſoften, reſolve, an
remove obſtructions. See OBSTRUCTION.

Deoppilatives are the ſame with what we otherwiſe call *deo*
ſtruents. See DEOBSTRUENT.

DEPART, a method of refining, or ſeparating gold from ſi
ver by means of aqua fortis.

There are three ways of refining gold: the firſt by antimony
the ſecond by ſublimate; and the third, which is the mo
uſual, by aqua fortis.—The two former, ſee under the arti
cle REFINING.

For the operation of the *depart*, they take at the rate of o
pound of impure gold, and two or three of ſilver; theſe the
fuſe together in a crucible, and, when fuſed, caſt them in
cold water, where they become divided into grains of the bi
neſs of peas. Theſe grains taken out, and dried by the fir
are put in a *departing* veſſel, which is a ſtone matraſs, and
the metal are added four pounds of aqua fortis. Then takin
the veſſel, they ſet it on the coals, and in about an hour
ſpace the refining is done.—For, upon opening the veſſe
they find nothing appear therein but the aqua fortis, and th
gold reduced into a calx, or ſand; the ſilver being all di
ſolved, and imbibed by the liquor.

To raiſe the gold to its due fineneſs, they uſually give it th
aqua fortis again and again; uſing for the firſt time half
pound; and for the ſecond a quarter of a pound of the wate
to eight ounces of metal. If the third water be found go
and clear, the operation is ended: and the calx of the gol
being waſhed in repeated waters, is melted down again in
crucible, firſt by a gentle, and afterwards a vehement fire,
be caſt into ingots, or wedges.

It muſt be added, that the ſilver, with the impurities
the gold, is ſo thoroughly incorporated with the wate
that to the eye there does not appear any thing beſide t
pure liquid; yet is not this ſilver loſt. To recover it ag
out of the menſtruum, they divide their ſtock of aqua fo
into ſeveral ſtone veſſels, which they fill up with ſpri
water, obſerving to put ſeven or eight times as much
this, as that. This done, in each veſſel they put a quant
of copper; and leaving the whole for twenty-four hou
at the end thereof they find the ſpirits of the aqua fo
have quitted the ſilver, and are with the copper, leaving t
former in form of a calx, or incorporated aſhes at botto
This calx, being dried, is melted into an ingot, with a li
ſaltpetre.

To huſband the aqua fortis, and make it ſerve again fo
ſecond operation; they diſtil it in an earthen, or glaſs al
bic; and when the diſtillation is about a third over, cha
the recipient. The water of the firſt recipient ſerves for
firſt operation of *departing*, and the reſt for the ſubſequ
ones.

If the aqua fortis, having quitted the ſilver, and be
united with the copper, be then filtrated, it is called
ſecunda; in which if you ſteep an iron plate ſome ho
you will have another *departure:* for the menſtruum
let go the copper, and prey on the iron, leaving the co
in powder on the iron plate. And filtrating this diſſolu
you may get the iron out of it, by laying in it a piec
lapis calaminaris; for the iron in that caſe will *depar*
the bottom, and the calamine be diſſolved. And if
again filtrate this water, and pour on it the liquor of
nitre, you will have another *depart*, the calamine pr

tating to the bottom. And laſtly, filtrating this water, as before, and evaporating part of it, you will have cryſtals of ſaltpetre.

EPARTURE, or DEPARTER, in law, a term properly applied to a perſon, who firſt pleading one thing in bar of an action, and that being replied to, he waves it, and inſiſts on ſomething different from his firſt plea.

Or, it may be applied to a plaintiff, who in his replication ſhews a new matter from that in his declaration—So if a man plead a general agreement in bar; and in his rejoinder allege a ſpecial one; it ſhall be adjudged a *departure* in pleading. The defendant hereupon demurreth, becauſe it was a *departure* from the declaration. Coke, II. part. fol. 147.

EPARTURE *in deſpite of the court* is when the tenant, or defendant, after appearing to the action brought againſt him, and having a day over in the ſame term; does not appear at the day, but makes a default.—This is a *departure in deſpite of the court*; and therefore he ſhall be condemned.

The *departure* is always on the part of the tenant, or defendant; and its entry is, *quod prædictus A, licet ſolemniter exactus, non revenit, ſed in contemptum curiæ receſſit.*

EPARTURE, in navigation, is the eaſting, or weſting, of a ſhip, with reſpect to the meridian it *departed* or ſailed from. Or, it is the difference of longitude, either eaſt or weſt, between the preſent meridian the ſhip is under, and that where the laſt reckoning or obſervation was made.

This *departure*, any-where but under the equator, muſt be accounted according to the number of miles in a degree proper to the parallel the ſhip is under.

EPHLEGMATED, in chymiſtry, an epithet applied to ſpirits which are well cleared of water or phlegm.

To effect this, they rectify them, *i. e.* diſtil them over and over, till they be left quite pure.

EPHLEGMATION, in chymiſtry, is the act of purifying, or clearing a fluid of its phlegm, or water.

This is performed by diſtilling the ſpirit, or other fluid, again and again; by which means the ſpirituous part all riſes, and leaves the phlegm, or water, behind.—When the ſpirit is thus diſengaged of all its phlegm, or, at leaſt, as much as it can be, it is called a *dephlegmated ſpirit.*

EPILATORY[*], in medicine, a plaiſter, or medicine, applied on any hairy place, in order to bring off the hair.

[*] The word is formed of the particle *de*, and *pilus*, hair.

Depilatories are principally compoſed of lime and orpiment, which is a very cauſtic, and even a dangerous mineral.

PONENT, in the Latin grammar, a term applied to verbs which have active ſignifications, but paſſive terminations, or conjugations, and want one of their participles paſſive.

uch is *minor*, I threaten, which has for participles *minans*, *inaturus*, and *minatus*, but no *minandus*, which ſhould be he participle paſſive.

They are called *deponents*, as having *depoſited*, or laid aſide, heir paſſive ſignification.

POPULATION, the act of waſting, deſtroying, deſolating, or *unpeopling* a place. *Coke Inſtit.* part III. fol. 204. ence *depopulatores agrorum.* Stat. 4. Hen. IV.

PORTATION, a ſort of baniſhment in uſe among the omans, whereby ſome iſland, or other place, was allotted criminal for the place of his abode, with a prohibition from irring out of the ſame on pain of death.

lpian makes this difference between *deportation* and relegaon: that the former confined the party to one certain place r ever; whereas relegation was frequently revoked, and lowed the exile a little more liberty.

y *deportation* a perſon loſt the rights of a Roman citien.

POSIT, DEPOSITUM, a thing put into the hands of another, to be kept gratis.

he civilians divide *depoſitum* into *ſimple* and *judiciary*.

iciary DEPOSIT is that whoſe property is conteſted between veral perſons, and *depoſited* in the hands of ſome third pern, by decree of a judge.

le DEPOSIT is either voluntary, or neceſſary. Neceſſary that done in caſe of hoſtility, ſhipwreck, fire, &c.

nholders are reſponſible for the baggage brought to them, being a *neceſſary depoſit*.

POSITARY, in the French law, a perſon entruſted as eper, or guardian of any thing.

dinary depoſitaries are not to warrant the thing left with em, in caſe it be loſt, or ſtolen. They are only to anſwer a fraud, or breach of faith; not for negligence. But a *ceſſary depoſitary*, as an innkeeper, is accountable for a ft or robbery, if there have been any negligence in the e: and by the Engliſh law, even whether there were any gligence or not.

OSITION, in law, a teſtimony given in court by a wits upon oath.

In chancery, *depoſition* is a teſtimony ſet down in writing, by way of anſwer to the interrogatories exhibited in chancery, where ſuch witneſs is called *deponent*.

DEPOSITION is alſo uſed for the ſequeſtring, or depriving a perſon of his dignity and office.

This *depoſition* only differs from abdication, in that the latter is ſuppoſed voluntary, and the act of the dignitary, or officer himſelf; and the former of compulſion, being the act of a ſuperior power, whoſe authority extends thereto.—Some ſay the *depoſition*, and ſome the abdication, of king James II.

The pope pretends to a power of *depoſing* kings. Gregory VII. we are aſſured by Onuphrius Panvinius, and Otho de Friſinghen, was the firſt who attempted the *depoſition* of kings.

Depoſition does not differ from deprivation: we ſay indifferently a *depoſed*, or deprived biſhop, official, &c.

Depoſition differs from ſuſpenſion, in that it abſolutely and for ever ſtrips or diveſts a prieſt, &c. of all dignity, office, &c. whereas ſuſpenſion only prohibits, or reſtrains, the exerciſe thereof.

Depoſition only differs from degradation, in that the latter is more formal, and attended with a few more circumſtances, than the former; but in effect and ſubſtance they are the ſame; thoſe additional circumſtances being only matter of ſhew, firſt ſet on foot out of zeal and indignation, and kept up by cuſtom, but not warranted by the laws or canons. See DEGRADATION.

DEPRECATION, in rhetoric, a figure whereby the orator invokes the aid or aſſiſtance of ſome one; or prays for ſome great evil or puniſhment to befal him who ſpeaks falſly; either himſelf, or his adverſary.

DEPRECATORY, or DEPRECATIVE, in theology, a term applied to the manner of performing ſome ceremonies in the form of prayer.

Among the Greeks, the form of abſolution is *deprecatory*; being conceived in theſe terms, *May God abſolve you!* whereas in the Latin, and even in ſome of the reformed churches, it is in the declarative form, *I abſolve you.*

DEPRESSION *of equations.* See EQUATION.

DEPRESSION *of the pole.*—So many degrees as you ſail, or travel from the pole towards the equator; ſo many you are ſaid to *depreſs* the pole, becauſe it becomes, reſpectively, ſo much lower, or nearer to the horizon.

DEPRESSION *of the viſible horizon* denotes its ſinking or dipping below the true horizontal plane; whether cauſed by ſome variation in the atmoſphere, or by the different height of the obſerver's eye above the ſurface of the ſea.

The eye being one foot above the ſurface of the ſea, the viſible horizon, or edge of the ſea, will be thereby depreſſed one minute.—At the height of 3 feet, the dip will be 2 minutes;—at 7 feet, 3 minutes;—at 12 feet, 4 minutes;—at 18 feet, 5 minutes;—at 27 feet, 6 minutes.

DEPRESSOR, in anatomy, a name common to divers muſcles, from their office in lowering, or bringing down, the parts they are faſtened to.

DEPRESSOR *labii ſuperioris* is a muſcle called alſo *conſtrictor alæ naſi*. See CONSTRICTOR *alæ naſi*.

DEPRESSOR *labii inferioris proprius*, a muſcle placed between the *depreſſores labiorum communes*, on the part called the *chin*. It appears to be but one muſcle, aſcending with a twofold order of fleſhy fibres, and terminating in the lower lip. Its office is ſhewn by its name; it depreſſes the lower lip. See *Tab. Anat. (Myol.) Fig.* 1. n. 6.

DEPRESSOR *labiorum communis*, by ſome called *depreſſor labii ſuperioris*, is common to both lips. It ariſes with a broad origin from the lower margin of the under jaw, by the ſide of the chin, and is inſerted with a narrow tail into each lip near their coalition; ſerving to draw them obliquely down. See *Tab. Anat. (Myol.) Fig.* 1. n. 7.

DEPRESSORES *oculi*, a pair of muſcles ſpringing from each corner of the eye, and anſwered by another pair of like figure and ſtructure in the lower eye-lid. Theſe are often conſidered together by anatomiſts as one orbicular muſcle; the fibres invironing the eye-lids, and being inſerted into them, not unlike the ſphincters of other parts.

DEPRIMENS, in anatomy, the ſame with *depreſſor*. See DEPRESSOR.

DEPRIVATION, in the canon law, the act of bereaving, diveſting, or taking away a ſpiritual promotion, or dignity.—As when a biſhop, vicar, prebend, or the like, is depoſed, or *deprived* of his preferment, for ſome matter, or fault, in fact, or in law. See DEPOSITION.

Deprivation is of two kinds; *a beneficio*, & *ab officio*.

DEPRIVATION *a beneficio* is, when for ſome great crime a miniſter is wholly and for ever deprived of his living, or preferment: which differs from ſuſpenſion, in that the latter is only temporary.

Deprivation *ab officio* is when a miniſter is for ever *deprived* of his orders: which is the ſame, in reality, with what we otherwiſe call *depoſition* and *degradation*: and is uſually for ſome heinous crime deſerving death, and is performed by the biſhop in a ſolemn manner. See **Degradation.**

DEPTH, in geometry, *&c.* See **Altitude, Height**, *&c.*

Depth *of a ſquadron*, or *battalion*, is the number of men in a file; which in a ſquadron is three, and in a battalion generally ſix.

We ſay, the battalion was drawn up ſix *deep*; the enemies horſe were drawn up five *deep*.

DEPURATION, in pharmacy, the ſame as clarification, or purification; *viz.* the purging a body of all the lees, fæces, and other craſs, coarſe, and excrementitious parts contained therein.

Fermentation ſerves to *depurate* liquors: ſyrups, juices, *&c.* are *depurated* by paſſing them through the manica Hippocratis, or ſtraining-bag.

DEPUTATION, a miſſion of certain ſelect perſons out of a company, or body, to a prince, or aſſembly, to treat of matters in their name; or to proſecute ſome affair therein.

Deputations are more or leſs ſolemn, according to the quality of thoſe who ſend them, and the buſineſs they are ſent upon.

Deputation is not properly applied where a ſingle perſon ſends another with ſuch commiſſion; but only where a body are concerned.—The parliament *deputed* the ſpeaker, and ſix members, to preſent their addreſs to his majeſty. The chapter *deputed* two canons to ſolicit their affair in council.

DEPUTY, a perſon ſent, or *deputed*, by ſome community, in their name and behalf.

The ſeveral provinces of the French dominions ſend *deputies* to the king every year, to preſent him the Cayer des Etats: there are always three *deputies*, one from each order. It is the *deputy* of the firſt order that makes the compliment to the king. In the cities of Turky there are always *deputies* to treat with the grand ſignor's officers, as to taxes, and other concerns.—Theſe *deputies* are three or four of the richeſt and moſt conſiderable among the burghers.

Deputy is alſo frequently uſed among us for an office, or employ; not a dignity: and ſtands indifferently for a vice, or lieutenant.

Among the antients, **Deputatus** was applied, firſt, to armourers, or workmen employed in the making of armour in the forges, *&c.* And ſecondly, to a ſort of active people, who followed the army, and in engagements were truſted to bring off, and take care of the wounded.

Deputatus, ΔΕΠΟΥΤΑΤΟΣ, was alſo an inferior officer in the church of Conſtantinople, whoſe buſineſs was to call perſons of condition the patriarch had a mind to ſpeak withal, and to keep off the croud where that prelate walked.

This *deputy* appears to have been a ſort of uſher, or tipſtaff; but he had likewiſe the care of the ſacred veſtments; in which he approached the office of a ſacriſtan.

DERELICTS, in the civil law, are ſuch goods as are wilfully thrown away, or relinquiſhed by the owner.

Derelict is alſo applied to ſuch lands, as the ſea receding from, leaves dry, and fit for cultivation.

DERIVATION, in grammar, the affinity one word has with another, by having been originally formed from it.

Derivation, in medicine, the act of diverting a humour which flows on ſome noble part, and drawing it to ſome other neighbouring part, where it is leſs dangerous.

Thus, in defluxions upon the eyes, or teeth, they apply a bliſter behind the neck, to draw the matter thither: and in a quinſy, they preſcribe bleeding in the ranulæ, or veins under the tongue, to divert the humour from falling on the throat.

DERIVATIVE, in grammar, a word which takes its origin from another word, called its *primitive*.

Such is the word *derivative* itſelf, which takes its origin from the primitive *rivus*, a rivulet, or chanel, out of which leſſer ſtreams are drawn; and thus *manhood, deity, lawyer*, &c. are *derived* from *man, deus, law*, &c.

DERMA*, in anatomy, the cutis, or ſkin of an animal; or the tegument inveſting the whole body immediately under the cuticle, or ſcarf-ſkin.

* The word comes from the Greek δέρειν, *to flay*, or *excoriate*.

The *derma* conſiſts of two parts; the corpus reticulare, and papillæ pyramidales. See **Skin.**

DERNIER *reſſort*. See the article **Ressort.**

Whatever power is committed by the king to any other, the *dernier reſſort* is ſtill remaining in himſelf; ſo that he may ſit in court, and take cognizance of all cauſes: except in treaſons, and other caſes, where he himſelf is a party.

DEROGATION, an act contrary to a preceding one, and that annuls, deſtroys, and revokes it, either in whole, or part. *Derogations*, in general terms, are not regarded in judicature; they muſt be in ſpecific, and in formal terms.

A new law imports a *derogation* of a former one: a ſecond teſtament is a *derogation* of a firſt.

DEROGATORY, a clauſe importing *derogation*.

By the French law, if a perſon own himſelf indebted in certain ſum; notwithſtanding any quittance he has obtained for the ſame, the act is *derogatory*.

DERVIS*, or **Dervich**, a name given to a ſort of monk among the Turks, who lead a very auſtere life, and profeſ extreme poverty; though they are allowed to marry.

* The word is originally Perſian, דרויש, ſignifying a beggar or perſon who has nothing: and by reaſon the religious, an particularly the followers of Mevelava, profeſs not to profeſ any thing; they call both the religious in general, and th Mevelavites in particular, *Derviſes*, or *Derviches*.

The *Derviſes*, called alſo *Mevelavites*, are a Mahometan or der of religious; the chief, or founder whereof was one *Mevelava*. They are now very numerous. Their chief mo naſtery is that near Coigni in Natolia; where the general make his reſidence; and where all the aſſemblies of the order ar held: the other houſes being all dependent on this; by privilege granted to this monaſtery under Ottoman I.

The *Derviſes* affect a great deal of modeſty, patience, hu mility, and charity. They always go bare-legged, an open-breaſted, and frequently burn themſelves with hot iron to inure themſelves to patience. They always faſt on Wed neſdays, eating nothing on thoſe days till after ſun-ſe Tueſdays and Fridays they hold meetings, at which the ſu perior of the houſe preſides. One of them plays all th while on a flute, and the reſt dance, turning their bodi round and round with the greateſt ſwiftneſs imaginabl Long cuſtom to this exerciſe from their youth has broug them to ſuch a habitude, that it does not diſcompoſe the at all. This practice they obſerve with great ſtrictneſs, memory of Mevelava their patriarch's turning miraculouſ round, as they pretend, for the ſpace of four days, witho any food or refreſhment; his companion Hamſa playin all the while on the flute: after which he fell into an ecſta and therein received wonderful revelations for the eſtabliſ ment of his order. They believe the flute an inſtrume conſecrated by Jacob, and the ſhepherds of the Old Teſt ment; by reaſon they ſang the praiſes of God thereon. The profeſs poverty, chaſtity, and obedience; and really obſer them while they remain *Derviſes*; but if they chooſe to out, and marry, they are always allowed.

The generality of *Derviſes* are rank mountebanks: ſo apply themſelves to legerdemain, poſtures, *&c.* to amuſe t people; others give into ſorcery and magic: but all of the contrary to Mahomet's precept, are ſaid to drink wi brandy, and other ſtrong liquors, to give them the deg of gaiety their order requires.

Beſide their great ſaint Mevelava; there are particular ſai honoured in ſome particular monaſteries: as Kederle, grea revered in the monaſteries of Egypt, and held by ſome to St. George; and by others, with more probability, the pr phet Elias.

The *Derviſes* are great travellers; and, under pretence preaching, and propagating their faith, are continually pa ing from one place to another: on which account they ha been frequently uſed as ſpies.

There are alſo *Derviches* in Perſia, called in that coun *Abdals*, q. d. ſervants of God.—They lead a very penurio auſtere life, and preach the Alcoran in the ſtreets, coff houſes, and where-ever they can meet with auditors. T Perſian *Derviches* retail little but fables to the people, and in the laſt contempt among the men of ſenſe, and letter

DESART, or **Desert**, a wild, uncultivated, uninhabi place or country: as the *deſarts* of Libya, of the Theba *&c.* Geographers uſe the word in the general for all cou tries little, or not at all, inhabited. In Scripture, we fi ſeveral places in the Holy Land, or places adjoining there called *deſarts*. The *Deſart*, or wilderneſs, abſolutely called, is that part of Arabia on the ſouth of the Holy La wherein the Iſraelites wandered forty years, from the time their evacuating Egypt to their entry into the promiſed lan The *deſart* of Beerſheba was that part of the *Deſart* mentioned, which bordered on the Holy Land, running wards the Mediterranean. The *deſart* of Idumea is Idu itſelf, a barren, mountainous country. The *deſarts* Betharen, Bethſaida, Cadeſh, Damaſcus, Dibon, Engad Edom, Gibeon, Horeb, Jazer, Juda, Moab, Pharan, S Sinai, Zur, Zin, *&c.* are ſo many dry, uncultivated, in general mountainous places, like our downs, *&c.* wh there are few or no habitations or inhabitants; whence Hebrews call them by antiphraſis מדבר, which prop ſignifies *human word*, or *ſpeech*, by reaſon there is none he there.

Desart, in cookery. See the article **Dessert.**

DESCANT in muſic, the art of compoſing in ſeveral parts

Deſcant is threefold; *viz. plain, figurative*, and *double*.

Plain **Descant** is the ground-work or foundation of mu compoſition, and conſiſts altogether in the orderly placing many concords: anſwering to ſimple counterpoint.

Figurative, or *Florid*, **Descant** is that wherein diſcords concerned as well, though not ſo much, as concords. T may be well termed the ornamental or rhetorical part of m ſic; in regard that in this are introduced all the varietie poi points, figures, ſyncopes, diverſities of meaſures, and whatſoever elſe is capable of adorning the compoſition.

Double **DESCANT**, is when the parts are ſo contrived, that the treble may be made the baſs; and, on the contrary, the baſs the treble.

DESCENDANT, in genealogy, a term relative to *aſcendant*, and applied to a perſon who is born or iſſued from ſome other referred to.

Adam infected all his *deſcendants* with original ſin. The *deſcendants* from the brothers of the maid of Orleans are confirmed in their exemption from all taxes, and impoſts, by a regulation of the year 1634.

DESCENDING, ſomething that falls, or moves, from above downwards.

There are *aſcending* and *deſcending* ſtars; and *aſcending* and *deſcending* degrees.

There are alſo *aſcending* and *deſcending* veins ſpringing out of the cava; and *aſcending* and *deſcending* arteries riſing out of the aorta.

DESCENDING *latitude*, is the latitude of a planet in its return from the nodes to the equator.

DESCENSION, in aſtronomy, is either *right* or *oblique*.

Right **DESCENSION** *of a ſtar*, or *ſign*, is a point, or arch, of the equator, which *deſcends* with the ſtar, or ſign, below the horizon, in a right ſphere.

Oblique **DESCENSION**, is a point, or arch, of the equator, which *deſcends* at the ſame time with a ſtar, or ſign, below the horizon, in an oblique ſphere.

Deſcenſions, both *right* and *oblique*, are accounted from the firſt point of Aries, or the vernal interſection, according to the order of the ſigns; that is, from weſt to eaſt. And, as they are unequal, when it happens that they anſwer to equal arches of the ecliptic, as, *e. gr.* to the twelve ſigns of the zodiac, it follows, that ſometimes a greater part of the equator riſes, or *deſcends*, with a ſign, in which caſe the ſign is ſaid to aſcend, or *deſcend*, rightly: and ſometimes again, a leſs part of the equator riſes, or ſets, with the ſame ſign; in which caſe it is ſaid to aſcend and *deſcend* obliquely. See ASCENSION.

Refraction of the DESCENSION, *&c.* See REFRACTION.

DESCENSIONAL *difference*, is the difference between the right and oblique deſcenſion of the ſame ſtar, or point of the heavens, *&c.*

DESCENT, or DISCENT, in law, in order, or manner, wherein lands and tenements are derived to any man from his anceſtors.

Thus to *make his deſcent* from his anceſtors, is to ſhew how, and by what particular degrees, the land in queſtion came to a perſon from his anceſtors.

Deſcent is either *lineal*, or *collateral*.

ineal **DESCENT**, is that conveyed down, in a right line, from the grandfather to the father, and from the father to the ſon, from the ſon to the grandſon, *&c.*

llateral **DESCENT**, is that ſpringing out of the ſide of the line, or blood; as from a man to his brother, nephew, or the like.

If one dies ſeiſed of land, wherein another has right to enter, and it *deſcends* to his heir; ſuch *deſcent* ſhall take away the other's right of entry, and put him to his action for recovery thereof. Stat. 32 Hen. VIII.

ESCENT, in genealogy and heraldry, the order, or ſucceſſion, of *deſcendants* in a line, or family.

We ſay, one *deſcent*, two *deſcents*, &c. A gentleman is of perfect blood who has four *deſcents* of gentility, both by his father and mother's ſide, *i. e.* whoſe great grandfather, grandfather, and father, on both ſides, were all gentlemen.

ESCENT is alſo uſed, in heraldry, to expreſs the coming down of any thing from above.

Thus, a *lion en deſcent* is a lion with his head towards one of the baſe points, and his heels towards one of the corners of the chief; as if he were leaping from ſome high place.

ESCENT, *fall*, in mechanics, *&c.* is the motion, or tendency, of a body towards the centre of the earth, either directly or obliquely.

It is to be here obſerved, firſt, that a body cannot *deſcend*, unleſs it can divide and ſeparate the medium; which it cannot do, unleſs it be ſpecifically heavier than the medium. For ſince bodies cannot penetrate each other, one muſt give way before the other can move: and again, though a medium, *e. gr.* water, be diviſible, yet, if it be ſpecifically heavier than another, *e. gr.* wood, it is only heavier as it contains more particles of matter in the ſame bulk, all which have an impulſe downwards; and, conſequently, in water there is a greater impulſe than in the ſame bulk of wood.

Secondly, The *deſcending* body loſes as much of its weight, as is the weight of the medium, with the force of its coheſion.

Thirdly, The leſs the bulk of the *deſcending* body is, the more of its gravity does it loſe in the ſame medium. For though the proportion of the ſpecific gravity of the one to other be ſtill the ſame in a greater or leſſer bulk, yet the leſs the body, the more the ſurface, in proportion to the maſs; and the more the ſurface, the more the friction of reſiſtance.

The cauſe of this *deſcent*, or tendency downwards, has been greatly controverted. There are two oppoſite hypotheſes advanced; the one holding it to proceed from an internal, and the other from an external principle: the firſt maintained by the Peripatetics and Epicureans, and by the Newtonians; and the latter by the Carteſians and Gaſſendiſts.

The Peripatetics teach, that heavy bodies fall by certain motive powers, flowing from their forms towards the centre of the earth, as their proper element, or place, in the univerſe. Theſe powers they call *impetus's*; and will have them to have been impreſſed on the ſeveral parts of the earth at the creation; being a tendency of the parts to the whole. And they ſuppoſe, that it is by means hereof, that the whole is ſtill preſerved in its integral ſtate; adding, that if there were a perfect vacuity in any part of the air round us, a ſtone placed therein would not at all fall, or tend towards the earth, as being no longer a part thereof, nor having the natural *impetus*.

The antient Epicureans, or atomiſts, with the modern Newtonian philoſophers, hold, that all bodies do naturally gravitate, or tend downwards; and that the more ſtrongly, as they contain the more matter; conſequently, perfectly ſolid bodies, ſuch as they ſuppoſe atoms or primitive corpuſcles to be, the moſt of all.

The Carteſians aſcribe the cauſe of the *deſcent* of bodies to a circular motion of the æther, which they feign for this very purpoſe: according to them, all circular motion is unnatural; and therefore is continually endeavouring to recede from its centre, and to change into a rectilinear motion; conſequently, ſuch as have the moſt motion recede the moſt; and, in receding, depreſs, or thruſt down, ſuch as have leſs motion. And thus the air, being moved with the moſt vehement velocity, recedes more than ſolid bodies, and by that means drives them towards the centre.

The Gaſſendiſts account for the *deſcent* of heavy bodies, by ſuppoſing certain magnetic rays proceeding out of the earth, and conſiſting of contiguous particles, which, by their continual emiſſion, retain the rigidity of rods, or ſtretched cords. Theſe rays, being diffuſed every way from the earth, as a centre, ſtrike, or impinge, on what ſolid bodies they meet withal in their progreſs, and penetrate the ſame, ſome directly, and others obliquely and refractedly, after the manner of rays of light. Theſe rays, ſay they, are a kind of arms; and the deflexions and curvatures of their extremes, as it were fingers, or hooks, which pull, or draw, bodies from above towards the earth. They add, that theſe rays being the more rare, as they are more remote from the centre, their effect is the more feeble, and the *deſcent* of bodies is the more ſlow, in proportion as they are higher.

Laws of the DESCENT *of bodies.*—I. Heavy bodies, in an unreſiſting medium, fall with an uniformly accelerated motion. See *the laws of uniformly accelerated motion*, under the articles ACCELERATION, and MOTION.

Hence, 1. The ſpaces *deſcended* are in the duplicate ratio of the times and velocities; and increaſe according to the uneven numbers, 1, 3, 5, 7, 9, *&c.* 2. The time and velocities are in a ſubduplicate ratio of the ſpaces. 3. The velocity of *deſcending* bodies is proportionate to the times from the beginning of their falls. 4. The ſpaces, deſcribed by a falling body, are as the ſquares of the times from the beginning of the fall.

A body ſpecifically heavier *deſcends* in a fluid medium ſpecifically lighter (*e. gr.* the air), with a force equal to the exceſs of the weight of the body above an unequal bulk of the medium: for a body only *deſcends* in a medium with the force remaining, after a part has been ſpent in overcoming the reſiſtance of the medium; and this reſiſtance is equal to the weight of an equal bulk of the medium; conſequently, the body only falls with the exceſs of its weight above that of an equal bulk of the medium.

Hence, the power that ſuſtains a body in a ſpecifically lighter medium, is equal to the exceſs of the abſolute weight of the body above an equal bulk of the medium. Thus, $47\frac{1}{3}$ pound of copper in water loſe $5\frac{1}{3}$ of their weight. A power, therefore, of 42 pounds is able to ſuſtain them.

In ſuppoſing heavy bodies to *deſcend* in an unreſiſting medium, we conceive them free of all external impediments, from what cauſe ſoever. So that we even ſet aſide that oblique impulſe, given to bodies while in falling, by the rotation of the earth, though this produce no ſenſible irregularity in a little diſtance.

Galileo, who firſt diſcovered the *law of the deſcent* of heavy bodies by reaſoning, afterwards confirmed the ſame by experiments; the reſult of which, repeated an hundred times over, was, that the *deſcent* was as the ſquare of the times.

Grimaldi and Riccioli made experiments to the ſame effect, though in a different manner, by letting fall a number of balls, weighing eight ounces apiece, from the tops of ſeveral towers, and meaſuring the times of falling by a pendulum. Theſe experiments are exhibited in the following table.

Vibrations of the Pendulum.	Time.		Space at the End of the Time.	Space *deſcended* each Time.
	″	‴	Rom. Foot.	Rom. Foot.
5	0	50	10	10
10	1	40	40	30
15	2	30	90	50
20	3	20	160	70
25	4	10	250	90
6	1	0	15	15
12	2	0	60	45
18	3	0	135	75
24	4	0	240	105

Since, then, the experiments of Riccioli, made in ſuch conſiderable diſtances, agree ſo well to the theory, it is ſcarce worth taking notice of what is urged to the contrary by Dechales, in his *Mund. Math.* who writes, that he had found by experiment, that heavy bodies, in half a ſecond of time, *deſcend* $4\frac{1}{4}$ feet; in two $16\frac{1}{2}$; in three 36; in four 60; in five 90; in ſix 123. It is ſufficient, that he deduces the irregularity from the reſiſtance of the air, which we ſuppoſe out of the queſtion.

II. If an heavy body *deſcend*, in an unreſiſting medium, through an interval not over-large, the ſpace it deſcribes, is the ſubduple of that which it would deſcribe, in the ſame time with the velocity acquired at the end of the fall.

III. The time wherein a body falls from a given height being given, to determine the ſpaces it fell in the ſeveral parts of that time.

Suppoſe the given altitude = a, the time = t, and the ſpace it fell in one part of time x: then

$$1 : x = t^2 : a$$

$$t^2 x = a$$

$$x = a : t^2$$

Therefore the ſpace paſſed over in the ſecond part of time is $a : t^2$; conſequently, that paſſed over in the ſecond time $= 3a : t^2$; that in the third $= 5a : t^2$, &c.

E. gr. In the experiments of Riccioli, above delivered, the ball fell 240 feet in four ſeconds, Therefore the ſpace fallen the firſt ſecond was $= 240 : 16 = 15$. The ſpace in the ſecond was $= 15 . 3 = 45$. That in the third $= 15 . 5 = 75$. And that in the fourth $15 . 7 = 105$.

IV. The time wherein a body falls a given ſpace being given; to determine the time wherein it will fall any other given ſpace, in the ſame medium:

Since the ſpaces are as the ſquares of the times, to the ſpace which the body falls in the given time, the ſpace in the queſtion, and the ſquare of the given time, find a fourth proportional, which will be the ſquare of the time ſought. The ſquare root, therefore, being extracted therefrom, the problem is ſolved.

For example; one of Riccioli's balls, in four minutes time, falling 240 feet, it is inquired in what time it would fall 135 feet? the anſwer will be found $= \sqrt{(135 : 16 : 240)} = \sqrt{(135 : 15)} = \sqrt{9} = 3$.

V. The ſpace a body falls in a given time being given; to determine the ſpace it will fall in any other given time:

To the ſquare of the time wherein the body falls the given ſpace, the ſquare of the time wherein it ſhould fall the ſpace required, and the given ſpace, ſeek a fourth proportional; this will be the ſpace required.

For inſtance, Riccioli's ball falling 60 feet in 2 ſeconds, it is aſked what ſpace it will fall in 4 ſeconds? the anſwer is, $16 . 60 : 4 = 4 . 60 = 240$.

For the *Laws of the* DESCENT *of bodies on inclined planes*; ſee *Inclined* PLANE.

For the *laws of* DESCENT *in Cycloids*; ſee CYCLOID, and PENDULUM.

Line of ſwifteſt DESCENT, is that which a body falling by the action of gravity, deſcribes in the ſhorteſt time; which is proved by geometricians to be the cycloid.

DESCENT *into a ditch*, is a deep trench, or ſap, cut through the eſplanade, and under the covert-way, covered over head with planks and hurdles, and loaded with earth, againſt artificial fires. See MOAT.

In wet ditches, the *deſcent* is made even to the ſurface of the water: in dry ditches, it is carried to the bottom of the moat; where traverſes are made to lodge and ſecure the miners.

DESCRIBENT, is a term in geometry, expreſſing ſome line or ſurface, which by its motion produces a plane figure, or a ſolid.

DESCRIPTION, an imperfect, or unaccurate definition of a thing, giving a ſort of knowlege thereof from ſome accidents and circumſtances peculiar to it, which determine it enough to give an idea that may diſtinguiſh it from other things; but without explaining its nature or eſſence.

Grammarians content themſelves with *deſcriptions*: philoſophers require definitions of things. See DEFINITION.

A *deſcription* is an enumeration of divers attributes of a thin moſt of which are only accidental: as, when a perſon is *d* *ſcribed* by his deeds, his ſayings, his writings, his honours, & A *deſcription*, as to its outward appearance, reſembles a *def* *nition*, and is even convertible with the thing deſcribed; b does not explain it. For, inſtead of bringing ſeveral thing eſſential to the thing deſcribed, it only brings a number accidents belonging thereto. *E. gr.* Peter is the tall you man who lives on the green, wears black cloaths, frequen the college, courts N——, &c. where it is evident, we not give any explication of Peter, as not bringing things th are in Peter, but only circumſtances of things about hi tall, young, living, wearing, frequenting, courting, &c. deſcription, therefore, is no proper anſwer to the queſtio *quid eſt*, what is he? but to that, *quis eſt*, who is he?

Deſcriptions, in effect, are principally uſed for ſingulars, individuals; for things of the ſame ſpecies do not differ eſſence; but only as to *hic*, and *ille*, which difference contai nothing very notable, or diſtinguiſhable. But individuals, the ſame kind, differ much in accidents; *e. gr.* George is king, and William a citizen; Charles is a male, and An a female; Henry is wiſe, and John a blockhead, &c. Thu a *deſcription* is an accumulation of accidents, whereby thin are notably diſtinguiſhed from each other, though they ſcar differ at all in eſſence.

Some authors call a *deſcription* a quaſi-definition, as, bo is a thing diviſible, moveable, ſolid, extended, &c. whi only wants of a definition in this, that, inſtead of the form eſſence of a thing, it gives one or more properties ariſing fro the form or eſſence.

DESCRIPTION, in geometry.—To deſcribe a circle, ellip parabola, &c. is to conſtruct, or form thoſe figures, wi ruler, compaſſes, &c.

DESERTER, in war, a ſoldier on the muſter-roll, w quits the ſervice without leave, or liſts himſelf under anoth officer, into a different regiment.

The puniſhment of deſertion is death.—All ſoldiers fou half a league from a gariſon, or army, going towards enemy's country, or quarter, without a paſs, are deem and treated as *deſerters*.

The antient church excommunicated *deſerters*, as havi violated their oath.

DESHABILLE *, a French term, naturalized of late. It p perly ſignifies a night-gown, and other neceſſaries, made of in dreſſing or undreſſing. Mr. —— is not to be ſpok withal, he is yet in his *deſhabille*, i. e. undreſſed, or in night-gown.

* The word is a compound of the privative *de*, and *s'habil* to dreſs one's ſelf.

DESHACHE', in heraldry, is when a beaſt has its limbs ſe rated from the body, ſo as they ſtill remain on the eſcutche with only a ſmall ſeparation from their natural places.

DESIGN, the plan, or repreſentation, of the order, gen diſtribution, and conſtruction, of a painting, poem, bo building, or the like.

The painter has ſhewn the firſt *deſign* of his piece, in wh which the figures are well diſpoſed. The *deſign* of t poem, or book, is artfully laid. Claudian never ſees whole *deſign* together: when he compoſes a part, he thi of nothing elſe, and works up every member, as if it w ſeparate from all the reſt.

In building, we uſe the term ichnography, when by *d* is only meant the plan of a building, or a flat figure dra on paper.

Orthography, when ſome face, or ſide, of the buildin raiſed from the ground.

And ſcenography, when both front and ſides are ſeen in p ſpective.

DESIGN, in weaving manufactories, expreſſes the fig wherewith the workman enriches his ſtuff, or ſilk; which he copies after ſome painter.

In undertaking ſuch kinds of figured ſtuffs, it is neceſſ that, before the firſt ſtroke of the ſhuttle, the whole *d* be repreſented on the threads of the warp; we do not m in colours, but withan infinite number of little packthre which, being diſpoſed ſo as to raiſe the threads of the w let the workman ſee, from time to time, what kind of is to be put in the eye of the ſhuttle, for woof.

This method of preparing the work, is called, *readin* *deſign*, or reading the figure, which is performed after the lowing manner:

A paper is provided, conſiderably broader than the ſtuff, of a length proportionate to what is intended to be repreſe thereon. This they divide lengthwiſe, by as many lines as there are intended to be threads in the warp; croſs theſe lines by others drawn breadthwiſe, which, the former, make little equal ſquares. On the paper ſquared, the painter *deſigns* his figures, and heightens with colours, as he thinks fit. When the *deſign* is fini a workman reads it, while another lays it on the ſimblot. Now, to read the *deſign*, is to tell the perſon who ma the loom, the number of ſquares, or threads, compriſ the ſpace he is reading; intimating, at the ſame time, whether it is ground or figure.

To put what is read on the ſimblot, is to faſten little ſtrings to the ſeveral packthreads which are to raiſe the threads named. And thus they continue to do till the whole *deſign* is read.

Every piece being compoſed of ſeveral repetitions of the ſame *deſign*, when the whole *deſign* is drawn, the drawer, to re-begin, as I may ſay, the *deſign* afreſh, has nothing to do, but to raiſe the little ſtrings, with ſlip-knots, to the top of the ſimblot, which he had let down to the bottom; and this he is to repeat as often as is neceſſary, till the whole be manufactured.

The riband-weavers have likewiſe a *deſign*, but much more ſimple than that now deſcribed: it is drawn on paper, with lines and ſquares, repreſenting the threads of the warp, and woof. But in lieu of lines, whereof the figures of the former conſiſt, theſe only conſiſt of points or dots, placed in certain of the little ſquares formed by the interſection of the lines; theſe points mark the threads of the warp that are to be raiſed, and the ſpaces left blank denote the threads that are to keep their ſituation. The reſt is managed as in the former.

DESIGN is particularly uſed, in painting, for the firſt idea of a large work, drawn roughly, and in little, with intention to be executed, and finiſhed in large.

In this ſenſe, the *deſign* is the ſimple contour, or outlines, of the figures, or things intended to be repreſented, or the lines that terminate and circumſcribe them.

Such a *deſign* is ſometimes drawn in crayons, or ink, without any ſhadows at all: ſometimes it is hatched, that is, the ſhadows are expreſſed by ſenſible lines, uſually drawn acroſs each other with the pen, crayon, or graver. Sometimes, again, the ſhadows are done with the crayon rubbed, ſo as there do not appear any lines; ſometimes the grain, or ſtrokes of the crayon, appear, as not being rubbed; ſometimes the *deſign* is waſhed, that is, the ſhadows are done with a pencil in Indian ink, or ſome other liquor; and ſometimes the *deſign* is coloured, that is, colours are laid on much like thoſe intended for the grand work.

The qualities, or conditions, required in a *deſign*, are correctneſs, good taſte, elegance, character, diverſity, expreſſion, and perſpective.

Correctneſs depends principally on the juſtneſs of the proportions, and a knowlege of anatomy. Taſte is an idea or manner of deſigning, which ariſes either from the complexion, and natural diſpoſition, or from education, one's maſter, ſtudies, *&c.* Elegance gives the figures a kind of delicacy which ſtrikes people of judgment, and a certain agreeableneſs, which pleaſes every body. The character, is what is peculiar to each thing, in which there muſt be a diverſity; inaſmuch as every thing has its peculiar character to diſtinguiſh it. The expreſſion, is the repreſentation of an object according to its character, and the ſeveral circumſtances it is ſuppoſed to be in. The perſpective, is the repreſentation of the parts of a painting, or figure, according to the ſituation they are in, with reſpect to the point of ſight.

The *deſign*, or draught, is a part of the greateſt import and extent in painting: it is acquired chiefly by habit and application, rules being of leſs avail here than in any of the other branches of the art, as colouring, clair-obſcure, expreſſion, *&c.*

The principal rules that regard the *deſign* are, that novices accuſtom themſelves to copy good originals at firſt ſight; not to uſe ſquares in drawing, for fear of ſtinting and confining their judgment; to ſtay till they can *deſign* well after the life, before they begin the practice of perſpective rules; in deſigning after the life, to learn to adjuſt the bigneſs of their figures to the viſual angle, and the diſtance of the eye from the model, or object; to mark out all the parts of the *deſign*, before they begin to ſhadow; to make their contours in great pieces, without taking notice of the little muſcles, and other breaks; to make themſelves maſters of the rules of perſpective; to obſerve every ſtroke, as to its perpendicular, parallel, and diſtance; and particularly ſo to compare, and oppoſe the parts that meet upon and traverſe the perpendicular, as to form a kind of ſquare in the mind, which is the great, and almoſt the only rule of deſigning juſtly; to have a regard, not only to the model, but alſo to the part already deſigned, there being no ſuch thing as deſigning with ſtrict juſtneſs, but by comparing and proportioning every part to the firſt.

The reſt relates to perſpective: as, that thoſe objects be ſeen at one view, whoſe rays meet in a point; that the eye and object be always conceived as immoveable; that the ſpace, or medium between them, be conceived tranſparent; and that the eye, object, and picture, be at a juſt diſtance, which is uſually double the bigneſs of the ſubject, or picture. See PERSPECTIVE.

ESIGNATION, the act of marking or indicating, and making a thing known.—The *deſignation* of ſuch an eſtate is made by the tenants, butments, and boundings. Among the Romans, there were *deſignations* of the conſuls and other magiſtrates, ſome time before their election.

DESIGNATOR *, a Roman officer, who aſſigned and marked each perſon his place and rank in public ceremonies, ſhews, proceſſions, *&c.*

* The word is formed from the verb *deſignare*, to deſign.

The *deſignator* was a kind of marſhal, or maſter of the ceremonies, who regulated the ſeats, march, order, *&c.*

There were *deſignators* at funeral ſolemnities, and at the games, theatres, and ſhews, who not only aſſigned every body his place, but alſo led him to it; as appears from the prologue to the Pœnulus of Plautus.

Much of the ſame nature were the agonothetæ of the Greeks.

DESIGNING, the art of delineating, or drawing the appearance of natural objects, by lines, on a plain.

To deſign, according to the rules of mathematics, makes the object of perſpective.

To deſign by the camera obſcura; ſee CAMERA *Obſcura.*

Mechanical Method of DESIGNING *Objects.* Provide a ſquare piece of glaſs, fitted into a frame, ABDC (*Tab. Perſpective, fig.* 15.); and waſh or ſmear it over with water, wherein a little gum has been diſſolved. When it is well dried again, turn it towards the object or objects to be deſigned, ſo as that the whole thereof may be ſeen through a dioptra, or ſight GH, fixed thereto: then proceed to work, and, applying the eye to the ſight, with a pen and ink draw every thing on the glaſs, as you ſee it appear thereon. Having finiſhed the draught lay a fair moiſt paper thereon; and, preſſing it pretty tight down, the whole will be transferred from the glaſs to the paper.—This method is very good, eaſy, and exact, and deſerves to be more uſed by painters.

DESAVOHAMENTUM. See ADVOWING.

DESPOT, a title or quality given to the princes of Walachia, Servia, and ſome of the neighbouring countries.

The word, in its firſt origin, ſignified the ſame with the Latin *herus*, and the Engliſh *maſter*: but, in time, it underwent the ſame fate on medals, as, among the Latins, Cæſar did with regard to Auguſtus; BACIΛEΥC anſwering to Auguſtus, and ΔECΠOTHC, *deſpotes*, to Cæſar. See CÆSAR.

Thus, Nicephorus, having ordered his ſon Stauracius to be crowned, the ſon out of reſpect, would only take the name ΔECΠOTHC, leaving to his father that of BACIΛEΥC. For it is to be noted, that it was juſt about the time that the emperors began to ceaſe to uſe Latin inſcriptions.

This delicacy, however, did not laſt long; for the following emperors preferred the quality of ΔECΠOTHC, to that of BACIΛEΥC particularly Conſtantine, Michael Ducas, Nicephorus Botoniates, Romanus Diogenes, the Comneni, and ſome others.

In imitation of the princes, the princeſſes likewiſe aſſumed the title of ΔECΠOINA.

It was the emperor Alexius, ſurnamed the Angel, that created the dignity of *deſpot*, and made it the firſt after that of emperor, above that of Auguſtus, or Sebaſtocrator, and Cæſar. See AUGUST.

The *deſpots* were uſually the emperors ſons, or ſons in law, and their collegues, or copartners, in the empire, as well as their preſumptive heirs.—The *deſpots*, that were ſons of the emperors, had more privileges and authority than thoſe that were only ſons-in-law. Codin. *p.* 38. deſcribes the habit and ornaments of the *deſpot*. See the notes of Fa. Goar on that author.

Under the ſucceſſors of Conſtantine the Great, the title *deſpot of Sparta* was given to the emperors ſon, or brother, who had the city of Sparta, or Lacedæmon, by way of apanage.

DESPOTISM, or DESPOTIC *government*, a form of government wherein the prince is abſolute and arbitrary, doing whatever he liſts, without being checked by any other power. Such are moſt of the eaſtern governments; as thoſe of the mogul, grand ſignor, ſophi of Perſia, *&c.*

DESPOUILLE, in heraldry, is the whole caſe, ſkin, or ſlough of a beaſt, with the head, feet, tail, and all appurtenances, ſo that being filled, or ſtuffed, it looks like the intire creature.

DESPUMATION, the clarification of any liquor, by throwing up its foulneſs in a froth, and taking that off.

DESQUAMATION, expreſſes the flaking or ſcaling of carious bones. See EXFOLIATION.

DESSERT, or DESART, the laſt ſervice brought on the tables of people of quality, when the meats are all taken off. The *deſſert* conſiſts of fruits, paſtry-works, confections, *&c.*

DESSICATIVE, or DESICCATIVE, in medicine, a remedy that has the virtue of drying up ſuperfluous moiſture; uſed to ſkin over old ſores, *&c.* We ſay a *deſiccative* unguent, *&c.* Pimpinella is held deterſive, *deſiccative*, and vulnerary. Lemery.

DESTILLATION, or *diſtillation*, in chymiſtry. See DISTILLATION.

DESTINIES, in mythology. See the article PARCÆ.

DESTINY, the order, diſpoſition, or chain of ſecond cauſes appointed by providence; and importing, or carrying with it, a neceſſity of event.

According to many of the heathen philoſophers, *deſtiny* was a ſecret and inviſible power, or virtue, which, with incomprehenſible wiſdom, conducted what to us appears irregular and fortuitous. This amounts to what we call God.

The Stoics, by *deſtiny*, underſtood a certain concatenation of things, which from all eternity follow each other of abſolute neceſſity, their being no power able to interrupt their connexion. This anſwers, in a great degree, to our idea of providence.

But the Stoics made even the gods themſelves ſubject to the neceſſity of this *deſtiny*. The truth is, the Stoics rather define what the word *deſtiny* ſhould ſignify, than what it did ſignify in common language; for they had no diſtinct idea of this power, to which they attributed thoſe events. They had only a vague, confuſed idea of I know not what chimæra, or unknown cauſe, to which they referred that invariable diſpoſition, and the eternal concatenation of all things. There is no real being that the name *deſtiny* can agree to. The heathen philoſophers, who had framed a notion thereof, ſuppoſed it to exiſt, without knowing preciſely what they meant by it. But men, not daring on the one ſide to impute to providence the evils and misfortunes that befel them, as they imagined, undeſervedly; and, on the other ſide, not being willing to allow, that it was their own fault; formed this phantom of *deſtiny*, to bear the weight of all the evil.

DESTRUCTION, paſſively taken, is the corruption or annihilation of ſomething before exiſting. See CORRUPTION.

A thing paſſes from *eſſe* to *non-eſſe*, either, by corruption, when nothing of the ſubſtance is loſt, but only the accidents, *viz.* the diſpoſition of parts; or, by annihilation, when both ſubſtance and accidents are loſt.

DESUDATION expreſſes a profuſe and inordinate ſweating, followed by the irruption of ſudamina, or heat-pimples. See SUDAMINA.

DESULTOR, in antiquity, a vaulter, or leaper, who jumped off one horſe upon another.

Among the Scythians, Indians, and Numidians, the cavaliers, or horſemen, who ſerved in the wars, were very expert *deſultores*; that is, they always carried with them at leaſt two horſes, and when that they were mounted on grew weary, or wanted breath, they leaped, with great agility and addreſs, upon the other which they led in their hand.

The Greeks and Romans borrowed the ſame practice from thoſe barbarous nations; but they only uſed it in their games, races, and funeral ſolemnities; and never, that we read of, in war.

The *deſultores*, therefore, were, among the people of Aſia and Africa, ſoldiers; but, among the Romans, *&c.* they were no more than tumblers and poſture-maſters. Euſtathius, on *Homer's Iliad*, Lib. IV. aſſures us, that, inſtead of two, they had ſometimes four or ſix horſes, all a-breaſt, and would jump from the firſt to the fourth, or ſixth, which was the maſterpiece of their art.

DETACHED *Pieces*, in fortification, are demi-lunes, ravelins, horn and crown-works, and even baſtions, when ſeparated, or at a diſtance from the body of the place.

In painting, the figures are ſaid to be well *detached*, or looſened, when they ſtand free, and diſengaged from each other, are no-where confounded together, but ſtand out with a ſtrong relievo from the ground, and from each other.

DETACHMENT, a military term, ſignifying a certain number of ſoldiers, taken out of ſeveral regiments or companies equally, to be employed in ſome particular enterprize; as to form a kind of flying camp, to relieve a party already engaged in battle, to join a ſeparate army, to aſſiſt at the ſiege of a place, or to enter into ſome gariſon.

DETENTION, the poſſeſſion, or holding, of lands, or the like, from ſome other claimant.

The word is chiefly uſed in an ill ſenſe, for an unjuſt withholding, *&c.*

The canons condemn a perſon who has intruded into a benefice, to make reſtitution of all the fruits thereof, during the time of his unjuſt *detention*.

DETERIORATION, an act whereby a thing is impaired, or rendered worſe.

When the *deterioration* of a commodity, ſeized by an officer, ariſes from the fault of the keeper, he is anſwerable for the ſame.

J. Frederic Mayer, profeſſor at Leipſic, printed a treatiſe of *deterioration*, in the year 1695. under the title of *Tractatus de Deterioratione*.

DETERGENT, in medicine, is applied to remedies that cleanſe, mundify, and carry off viſcid and glutinous humours. The plant bucks-horn deterges, and conſolidates wounds. Rhaponticum is aperitive, and good againſt the gravel and ſtone; it alſo deterges, and expels poiſon.

Detergents are not only ſoftening and adheſive, but alſo, by a peculiar activity, or diſpoſition to motion, joined with a ſuitable configuration of parts, are apt to abrade, and carry along with them, ſuch particles as they lay hold of in their paſſage.—All medicines of this intention are ſuppoſed to cleanſe and heal, that is, incarnate, or fill up with new fleſh, all ulcerations and foulneſſes occaſioned thereby, whether internal or external. To do this, in all internal caſes eſpecially, the medicine muſt be ſuppoſed to maintain its primary properties, until it arrives at the place of action; and there it does what intitles it to the appellation of a *detergent*, and a vulnerary: firſt, by its adheſive quality, which conſiſts in the comparative largeneſs of ſurface, and flexibility of its component parts, by which it readily falls into contact with, and adheres to, the ſlough of ulcerous exſudations, which, by their looſe ſituations, are eaſily carried along with the medicine; and when ſuch matter is ſo carried away, which is the cleanſing and deterging part, what was inſtrumental in this office, will afterwards ſtick and adhere to the cutaneous filaments, until, by their addition, and the protruſion of proper nouriſhment, *ab interno*, to the ſame place, the waſte is made up, that is, the ulcer is healed. Quincy.

After the like manner is the operation of *detergents* to be accounted for in external application. By the warmth of their parts they rarefy, and by their adheſive quality they join with, and take off along with them, in every dreſſing, what is thrown upon the place to which they are applied, until a more convenient matter is brought thither by the circulating juices, which they aſſiſt in adhering to, and incarnating the eroded cavities. Only this may be taken notice of, that internally, whatſoever of this kind is mixed with the animal fluids, by the known laws of circulation, will be firſt ſeparated, and left behind; for all thoſe parts which are ſpecifically heavieſt, will move neareſt the axis of the canals, becauſe their moments are the greateſt, and will carry them, as near as can be, in ſtrait lines; but the lighter parts will always be joſtled to the ſides, where they ſooneſt meet with outlets to get quite off, or are ſtruck into ſuch cavities as we are here ſpeaking of, in which they adhere, and make part of the ſubſtance.

This is underſtood of the milder ſort of *detergents*; and it is eaſy to conceive from hence, how an increaſe of thoſe qualities of activity and adheſion conjointly, may make a medicine ariſe to the greateſt efficacy in this reſpect. And it is upon this foot that all thoſe medicines operate which are given to cleanſe obſtructions, or foulneſſes, in any of the viſcera, or paſſages; and which may be increaſed in efficacy ſo far, as to fetch off even the membranes, and part of the capillary veſſels.

DETERMINATE *Problem*, is that which has but one, or at leaſt but a certain number of ſolutions, in contradiſtinction to an indeterminate problem, which admits of infinite ſolutions.

Such, *e. gr.* is the problem, To deſcribe an iſoſceles triangle or given line, whoſe angles at the baſe ſhall be double that at the vertex: which has only one ſolution; as that which follows has two, *viz.* To find an iſoſceles triangle, whoſe area and perimeter are given.

A *determinate* problem may either be ſimple or linear, plane, ſolid, or ſurſolid.

DETERMINATION, in phyſics, the diſpoſition or tendency of a body towards one way, rather than another.

Heavy bodies have a *determination* towards the centre of the earth.

DETERMINATION is alſo uſed for the action whereby a cauſe or agent is limited, or reſtrained, to act, or not act, this or that, and in this or in that manner.

Determinations, ſay the ſchoolmen, proceed either from an efficient cauſe; in which caſe the *determination* is called effective; as, when an artiſt determines an inſtrument to a certain action; or from the form, as that determines the indifferency of the matter; and thus our ſenſes are ſaid to be *determinations* to have ideas upon the preſence of external objects.

Or the *determination* is from the matter or ſubject that receives the action; and thus the heating of fire upon clay determines it to harden, upon wax to ſoften, *&c.* Or it is from the object; as when we ſay, colour determines the viſive power: or laſtly, it is from the end, as the end determines the deſire.

Determinations, again, are either moral or phyſical: a moral *determination* is that proceeding from a cauſe which operates morally, *i. e.* by commanding, perſuading, or adviſing, ſome effect.

Phyſical determination, is an act whereby God excites and applies a ſecond cauſe to act, antecedently to all operation of the creature.—Such a *determination* the Thomiſts and Dominicans maintain neceſſary to all and ſingular actions of every creature. The Jeſuits, on the contrary, deny that God thus determines even ſecond cauſes; and hold, that God exerts no influence on ſecond cauſes, but only with the ſecond cauſes on the action. And thus they exclude a phyſical *determination*, both from natural cauſes, as ſuppoſing them already determined by nature to act; ſo that there needs no other external *determination* from God to the ſeveral actions; and from free cauſes, as ſuppoſing ſuch a predetermination contrary to our natural liberty.

A *determination* to be pleaſed with certain forms, or ideas, a late ingenious author calls, an *internal ſenſe*; and a *determination* to be pleaſed with virtuous actions, characters, manners, *&c.* a *moral ſenſe*.

DETERSIVES, in medicine, the ſame with *detergent*. See Detergent.

A clyſter is a *deterſive* medicine, which cleanſes the lower venter. *Deterſive* unguents are alſo called *mundificatives*. The leaves and ſummits of the ſtrawberry are *deterſive* and aſtringent.

DETINUE, a writ which lies againſt a man who, having goods, or chattels, delivered to keep, refuſes to re-deliver them. *Detinue* anſwers, in great meaſure, to the *acta depoſiti* of the civilians.—He takes his *action of detinue*, to recover the thing *detained*; not the damages ſuſtained by the *detinue*.

DETONATION *, in chemiſtry, the noiſe which ſome minerals, and other bodies, make, when they begin to heat in crucibles; by the volatile parts ruſhing out with impetuoſity, and the humidity eſcaping.

* The word is formed of *de*, and *tono*, I thunder.

Detonation is much the ſame with *decrepitation*; only its action is more forcible, and the noiſe is greater.—*Aurum fulminans* heated, *&c.* goes off with a violent crack, *i. e.* makes a great *detonation*.

Detonation takes away the impure volatile ſulphur from bodies.

Detonation denotes the act, or operation, of expelling the impure, volatile, and ſulphureous part, out of antimony; and leaving behind the fixed and internal parts.

This is chiefly performed by means of ſaltpetre, *&c.* See Antimony.

DETRANCHE', among the French heralds, ſignifies a line bend-wiſe, which does not come from the very dexter angle, but either from ſome part of the upper edge, and thence falling athwart, or diagonally; or from part of the dexter ſide. They ſay, *tranché*, *detranché*, and *retranché*; to denote, that there are two diagonal lines, making two partitions in the eſcutcheon, and coming from the angles, and a third from ſome of the other parts above-mentioned. See Tranche'.

DEVASTAVERUNT, or Devastavit, *bona teſtatoris*, a writ lying againſt executors, and adminiſtrators, for paying legacies, and debts on ſimple contract without ſpecialties, before debts on bonds and ſpecialties.—In which caſe, the executors are as liable to actions, as if they had notoriouſly waſted the goods of the teſtator, or converted them to their own uſe; and are compellable to pay ſuch debts, by ſpecialty, out of their own goods.

DEVENERUNT, a writ antiently directed to the eſcheator, on the death of the heir of a tenant of the king holding *in capite*, within age, and in the king's cuſtody; commanding the eſcheator to inquire, upon the oaths of good and lawful men, what lands and tenements, by the death of the tenant, come to the king.

DEVIATION, in the old aſtronomy, a motion of the deferent, or eccentric, whereby it advances to, or recedes from, the ecliptic. See Deferent.

The greateſt *deviation* of Mercury is ſixteen minutes; that of Venus is only ten.

DEVIL*, Diabolus, an evil angel; one of thoſe celeſtial ſpirits caſt down from heaven, for pretending to equal himſelf with God.

* The word is formed from the French *diable*, of the Latin *diabolus*, which comes from the Greek Διαβολος, accuſer, or calumniator.

The Ethiopians paint the *devil* white, to be even with the Europeans, who paint him black. Ludolph.

We find no mention of the word *devil* in the Old Teſtament; but only of Satan: nor do we meet with the word *devil*, in any heathen authors, in the ſignification attached to it among Chriſtians; that is, as a creature revolted from God: their theology went no farther than to evil genii, or dæmons, who haraſſed and perſecuted mankind. Thus, the Chaldeans believed both a good principle, and an evil principle, which was an enemy of mankind.

The relations we have of the religion of the Americans, affure us, of ſome idolatrous nations, who worſhip the *devil*; ut the term *devil* muſt not here be taken in the common enſe: thoſe people have an idea of two collateral independent beings; one whereof is good, and the other evil. And hey place the earth under the guidance and direction of that vil being, which our authors, with ſome impropriety, call he *devil*.

VISE, in heraldry, a name common to all figures, ciphers, haracters, rebus's, motto's, *&c.* which, by their alluſion to e names of perſons, or families, denote their qualities, nobity, or the like.

Deviſe, in this ſenſe, is of a much older ſtanding than heldry itſelf; being that which gave the firſt riſe to armoes. Thus, the eagle was the *deviſe* of the Roman empire; P.Q.R. was the *deviſe* of the Roman people, and ſtill conues to be what they call *the eſcutcheon of the city of Rome*. he firſt *deviſes* were mere letters diſtributed on the borders the liveries, houſings, and banners, and at length on the ields. Thus the K was the *deviſe* of the French kings of e name of Charles, from Charles V. to Charles IX.

here were alſo *deviſes* by rebus's, equivocals, or alluſions, both to names and arms. The dukes of Guiſe took for their *deviſe* an A in an O, to ſignify, *chacun A ſon tour*, every one in his turn: and the houſe of Seneſai, *in virtute & honore Seneſces*: ſome, that had towers in their arms, *turris mea Deus*, &c.

There are alſo ænigmatical *deviſes*: as that of the Golden Fleece, with *Autre n'aurai*; intimating, that Philip the Good, who inſtituted that order, renounced every other woman, but Iſabella of Portugal, whom he then married.

Deviſes ſometimes contain intire proverbs: as that of Cæſar Borgia, *aut Cæſar, aut nihil*.

The word *deviſe* is formed from the Latin *dividere*, and was applied to the things juſt mentioned, as well as thoſe hereafter mentioned; by reaſon they ſerved to divide, ſeparate, and diſtinguiſh, perſons, parties, *&c.* Fa. Menetrier obſerves, that there are as many different kinds of *deviſes*, as there are different manners of diſtinguiſhing one another, or as there are ſimple figures, or words, capable of expreſſing qualities, offices, virtues, actions, *&c.* of perſons; and of notifying, or diſtinguiſhing them from others.

Devise is now taken, in a more reſtrained ſenſe, for an emblem; or a repreſentation of ſome natural body, with a motto, or ſentence, applied in a figurative ſenſe to the advantage of ſome perſon.

In this ſenſe, the figure, or image, is called the *body*; and the motto the *ſoul*, of the *deviſe*.

A *deviſe* is a ſort of metaphor, repreſenting one object by another, wherewith it has ſome reſemblance: ſo that a *deviſe* is only true, when it contains a metaphorical ſimilitude, and may itſelf be reduced into a compariſon. Laſtly, it is a metaphor painted, and viſible, and that ſtrikes the eye. All theſe circumſtances are required to a *deviſe*; and, without them, a figure only makes a hieroglyphic, and a motto only a ſentence.

Fa. Bouhours gives an accurate explication of the word *deviſe*, in an extract inſerted in the *Memoires de Trevoux*. A *deviſe*, ſays he, is a compoſition, or aſſemblage, of figures drawn from nature and art, called the *body*; and of a few words adapted to the figure, called the *ſoul*: ſuch a compound, adds he, we make uſe of to denote our thought, or intention, by compariſon: for the eſſence of the *deviſe* conſiſts in a compariſon taken from nature, or art, and founded on a metaphor.

This he illuſtrates in the following inſtance: A young nobleman, of great courage and ambition, bore, for his *deviſe*, in the laſt carouſal at the court of France, a rocket mounted in the air, with this Italian motto, *poco duri, purche m'inalzi*; may I laſt but a ſhort time, provided I mount high; which ſeems to hold forth the following diſcourſe: As the rocket riſes a great pitch, though it only endures a little while; ſo it does not concern me to live long, provided I attain to glory and eminence; which is a juſt compariſon.

On this footing, a *deviſe*, to define it rightly, is, a painted metaphor; or, rather, an ænigma inverted: for, whereas ænigma's repreſent nature, or art, by the events of hiſtory, and the adventures of fables; a *deviſe* is, a repreſentation of human qualities by natural, or artificial, bodies.

Thus, to expreſs the character of Louis XIV. a ſun was painted; which yet, luminous as it is, has more power than luſtre: and the better to determine the ſenſe of the painting to this ſignification, the Caſtilian motto is added; *Mas virtud que luz*. The perſonal merit of Mary, queen of Scots, was repreſented by a pomgranate, with theſe words; *Mon prix n'eſt pas de ma couronne*: and the talent of an apoſtolical perſon, who became all things to all men, by a looking-glaſs, with thoſe words of St. Paul; *Omnibus omnia*.

Deviſes are uſed on coins, counters, ſeals, ſhields, triumphal arches, artificial fire-works, and other ſolemnities. They are a ſort of images, very pertinently and artfully repreſenting the enterprizes and intrigues of war, love, piety, ſtudy, fortune, *&c.*

The French have diſtinguiſhed themſelves in this way, eſpecially ſince the time of cardinal Mazarin, who had a wonderful fancy for *deviſes*.

The Italians have reduced the making of *deviſes* into an art, and laid down the laws and rules thereof. Some of the principal are, 1. That there be nothing monſtrous, or extravagant, in the figures; and nothing contrary to the nature of things, or to the common opinion of mankind. 2. That figures be not joined which have no affinity, or relation, to each other; the metaphor being to be founded on ſomething real, and not on hazard, or imagination, excepting ſome whimſical combinations eſtabliſhed in mythology: which cuſtom, and the authority of the poets, have made paſs for natural. 3. That the human body be never taken into *deviſes*; as this would be to compare a man with himſelf. 4. That there be a ſort of unity in the figures which compoſe the body: we do not mean, that there muſt only be a ſimple figure; but that, if there be ſeveral, they muſt have a relation and ſubordination to each other; ſo that there be one principal figure whereon all the reſt depend: though ſtill the fewer figures there are in the body of the *deviſe*, and the leſs they are confuſed, the more perfect and elegant is the *deviſe*. 5. The motto, which is to animate the figure, muſt agree ſo accurately thereto, as that it could not ſerve for any other. 6. Nothing is to be named that appears to the eye, and which the bare inſpection might notify. 7. The motto is not to have a complete ſenſe of itſelf; for, being to make a compound with the figure, it muſt only be a part, and, conſequently, muſt not ſignify the whole. If the words alone have a complete ſignification, you have a full and diſtinct notion independently of the figure; whereas the ſignification ſhould reſult from both. 8. The ſhorter the motto, the more beautiful; and a ſuſpenſion of the ſenſe, which leaves ſomewhat to gueſs, is one of the principal graces of the *deviſe*. Laſtly, It is accounted a happineſs, where the words of a poet are applied in a ſenſe which he never dreamed of, and yet ſo pertinently, that it ſhould ſeem they had been intended for the ſame.

Deviſe, or **Diviſe**, in common law, the act whereby a teſtator gives, or bequeaths, his lands, or goods, by his laſt will, in writing.

He who makes the *deviſe*, is called the *deviſor*; and he, to whom it is made, the *deviſee*.

The words of a will the law interprets in a larger, and more favourable ſenſe, than thoſe of a deed: for if land be *deviſed* to a man to have to him for ever, or to have to him, and his aſſigns; in thoſe caſes, the *deviſee* ſhall have a fee-ſimple: yet if given in the ſame manner by feoffment, he ſhall have but an eſtate for life.

So, if one *deviſe* land to an infant in his mother's belly; it is a good and valid *deviſe*, though it is otherwiſe by feoffment, grant, or gift. For, in thoſe caſes, there ought to be one of ability to receive preſently; otherwiſe it is void. See Will, and Deed.

DEUNX, a diviſion of the Roman libra, or pound; containing 11 ounces; or eleven twelfths of any thing. See As.

DEVOLVED, ſomething acquired by right of *devolution*.

Such a right is *devolved* to the crown: ſuch an eſtate *devolved* on M—— by the death of N——.

The word is alſo uſed for a right acquired by a ſuperior, of conferring a benefice, when the inferior, and ordinary collator, has neglected to confer, or has conferred it on an unqualified perſon.

If a patron neglects to preſent to a benefice in ſix months, the preſentation lapſes, or *devolves*, upon the biſhop, and from thence to the primate.

DEVOLUTION, in the French law, a right acquired by deſcent, or ſucceſſion, from degree to degree.

Devolution, in general, is an impediment provided by the cuſtoms of ſeveral provinces, whereby the huſband who ſurvives his wife, or the wife ſurviving her huſband, is prohibited to alienate the real and immoveable effects of the deceaſed; and obliged to preſerve them for the children iſſued from that marriage: ſo that they may ſucceed thereto in excluſion of thoſe born of a ſecond marriage.

DEVOTION, a ſincere, ardent worſhip of God.

Monſ. Jurieu defines *devotion*, a ſoftening and yielding of heart, with an inward conſolation, which the ſouls of believers feel in the exerciſes of piety.

Under the name of *devotions* are uſually underſtood certain religious practices, which a perſon makes it a rule to diſcharge regularly: and with reaſon, if this exactitude be founded on ſolid piety; otherwiſe it is vanity, or ſuperſtition.

Devotion, among the Romans, was a ſort of ſacrifice, or ceremony, whereby they conſecrated themſelves to the ſervice of ſome perſon.

The antients had a notion, that the life of one might be redeemed by the death of another: and hence were thoſe *devotions* ſo frequent for the lives of the emperors.

The *devotion* of Decius, who, after devoting himſelf to his country, threw himſelf into the hands of his enemies, and was killed, is ſaid to have gained the Romans the victory.

But *devotion* to any particular perſon was not known till Auguſtus. The day after the title Auguſtus had been given Octavius; Pacuvius, a tribune of the people, began to ſay, he would devote and conſecrate himſelf to him, as was practiſed among the barbarous nations, to obey him even at the expence of life, if he were commanded. His example was immediately followed by all the reſt; and it came at length to be eſtabliſhed into a cuſtom, never to go to ſalute the emperor, without declaring, they were devoted to him. Auguſtus, though ſeeming to oppoſe this vile and infamous flattery, yet rewarded the author.

DEVOURING, in heraldry.—When fiſhes are borne in an eſcutcheon, in a feeding poſture, the heralds denominate it *devouring*; by reaſon fiſhes ſwallow all their food whole.

DEUTEROCANONICAL*, in the ſchool-theology, an appellation given to certain books of Holy Scripture, which were added to the canon after the reſt; either by reaſon they were not wrote till after the compilation of the canon, or by reaſon of ſome diſpute as to their canonicity.

* The word is Greek; being compounded of δευτερος, ſecond; and κανονικος, canonical.

The Jews, it is certain, acknowlege ſeveral books in their canon, which were put there later than the reſt. They ſay, that, under Eſdras, a great aſſembly of their doctors, which they call, by way of eminence, the *great ſynagogue*, made the collection of the ſacred books, which we now have in the Hebrew Old Teſtament: and they agree, that they put books therein which had not been ſo before the Babyloniſh captivity. Such are thoſe of Daniel, Ezekiel, Haggai, &c. and thoſe of Eſdras and Nehemiah.

And the Romiſh church has ſince added others to the canon, that were not, nor could be, in the canon of the Jews; by reaſon ſome of them were not compoſed till after. Such is the book of Eccleſiaſticus; with ſeveral of the apocryphal books: as that of the Maccabees, Wiſdom, &c. Others were added ſtill later, by reaſon their canonicity had not been yet examined: and, till ſuch examen, and judgment, they might be ſet aſide, at pleaſure.

But ſince that church has pronounced as to the canonicity of theſe books, there is no more room now for her members to doubt of them, than there was for the Jews to doubt of thoſe of the canon of Eſdras: and the *deuterocanonical* books are, with them, as canonical as the proto-canonical; the only difference between them conſiſting in this, that the canonicity of the one was not generally known, examined, and ſettled, ſo ſoon as that of the others.

The *deuterocanonical* books, in the modern canon, are, the book of Eſther, either the whole, or at leaſt the ſeven laſt chapters thereof; the epiſtle to the Hebrews; that of James; and that of Jude; the ſecond of St. Peter; the ſecond and third of St. John, and the Revelation. The *deuterocanonical* parts of books are, the hymn of the three children; the prayer of Azariah; the hiſtories of Suſanna, of Bel, and the dragon; the laſt chapter of St. Mark; the bloody ſweat, and the appearance of the angel, related in St. Luke, ch. XXII. and the hiſtory of the adulterous woman in St. John, ch. VIII.

DEUTERONOMY*, one of the ſacred books of the Old Teſtament; being the laſt of thoſe written by Moſes.

* The word is Greek; compounded of δευτερος, ſecond; and νομος, law.

It does not appear that Moſes made any diviſion, of what he wrote, into books; or that he gave different names and titles to the different parts of his work: nor do the Jews, even at this day, diſtinguiſh them in the copies they uſe in the ſynagogues, but write them all running as one ſingle work, without any other diſtinction beſide that of little and great paraſches. It is true, in the other copies, uſed by private perſons, they are divided into five parts, as among us; but they give them no other name, but the firſt word wherewith each diviſion begins: much as we do in quoting a decree, or chapter, of the canon-law.

Thus, the firſt part of Moſes's work they call בראשית *Bereſchit*, becauſe beginning with that word: the ſecond they call ואלה שמות *Veelleh Schemoth*: the third, ויקרא *Vajickra*: the fourth, וידבר *Vajiedabber*: and the fifth, אלה הדברים *Elleh Haddebarim*; which is one of the firſt word thereof. This cuſtom is very antient among the rabbins, a appears from the antient commentaries on thoſe books, called בראשית רבה *Bereſchit Rabba*, ואלה שמות ראה *Veelle Schemoth Rabba*, &c. and from the *Prologus galeatus* of St Jerom.

It was the Greeks, when they firſt tranſlated the law, th gave the five parts, into which it was divided, the names o Geneſis, Exodus, Leviticus, Numbers, and *Deuteronomy*. Accordingly, the names are Greek, excepting that of Leviticus, which is Hebrew; and they expreſs what is containe in thoſe books, or at leaſt the moſt remarkable things con tained therein: which is the uſual Greek manner of givin titles.

The book of *Deuteronomy* was ſo called, becauſe this laſt pa of the work of Moſes comprehends a repetition, or recapitu lation, which that legiſlator made to the Iſraelites, before hi death, of the law he had before delivered them at large: an hence *Deuteronomy* is ſtill called, by the rabbins, משנה *Miſch neh*, repetition; משנה תורה *Repetition of the law*, *ſecon law*: they likewiſe call it ספ־ תוכחות *the Books of Repri mands*; on account of the XXVIIIth chapter, which is fu of bleſſings, promiſed to ſuch as keep the law; and of curſe threatened to ſuch as tranſgreſs it.

The book of *Deuteronomy* was written the fortieth year aft the delivery from Egypt, in the country of the Moabites b yond Jordan; Moſes being then in the 120th year of his ag It contains, in Hebrew, eleven paraſches, though only ten the edition of the rabbins at Venice; XX chapters, and 95 verſes. In the Greek, Latin, and other verſions, it contai XXXIV chapters: the laſt is not of Moſes. Some ſay, whic was added by Joſhua, immediately after Moſes's death; whic is the moſt probable opinion: others will have it added b Eſdras.

DEW, *ros*, a thin, light, inſenſible miſt, or rain, falling whi the ſun is below the horizon.

Naturaliſts uſually rank *dew* among the number of meteors of the watery kind. Some define it a vapour liquified, and let fall in drops: others, a vapour having a like relation to froſt, as rain has to ſnow, *&c.*—Among the diſſertations of Monſ. Huet, is a letter to ſhew that *dew* does not fall, but riſes. To us, *dew* appears only to differ from rain as more, and leſs. Its origin, and matter, no doubt, is from the vapours, and exhalations of the earth and water, raiſed as ſhewn under the article Vapour. The thin veſiculæ, whereof vapours conſiſt, being once detached from their bodies, we all know, keep riſing in the atmoſphere, till they arrive at ſuch a ſtage of the air, as is of the ſame ſpecific gravity with themſelves: then their riſe is ſtopped. Now, as it is the warmth, or fire, that, dilating the parts of water, forms the veſiculæ ſpecifically lighter than air, and capable of aſcending therein; ſo when that heat declines, or is loſt, as by the approach, or contiguity of any colder body, the veſiculæ condenſe, become heavier, and deſcend. In the day-time, therefore, the ſun warming the atmoſphere by a continual influx of his rays, the vapours once raiſed, continue their progreſs, as meeting with nothing to increaſe their gravity, till ſuch time as they are got out of the reach of the reflected warmth of the earth, in the middle region of the atmoſphere. Here condenſing, they form clouds; from which proceeds rain, as ſhewn under Clouds, and Rain. But when the ſun is below the horizon, the caſe is ſomewhat different: for the atmoſphere then cooling, the vapours raiſed by the warmth of the earth, and that of the rays of the ſun lodged therein during the preceding day, begin to condenſe apace, as ſoon as they are got into the air, ſpending their ſtock of fire and heat on the cold moiſt air they paſs through. Their aſcent, therefore, becomes ſhort; and by that time they are got a few fathoms high, being exhauſted of their fire, and reſtored to the natural dimenſions, and gravity, of their conſtituent water; they precipitate, and fall back again in little ſpherules, or drops, as is the caſe of rain.

From theſe principles the other phænomena of *dews* are eaſily accounted for. Hence, *e. gr.* it is, that *dews* are more copious in the ſpring, than in the other ſeaſons; there being then a greater ſtock of vapour in readineſs, through the ſmall expence thereof in the winter's cold and froſt, than at other times. Hence, what Pliny relates of Egypt, that it abounds in *dews* throughout all the heats of ſummer; for the air there being too hot to conſtipate the vapours in the day-time, they never gather into clouds, and hence they have no rain; but we know, that in climates where the days are exceſſive hot, the nights are remarkably cold; ſo that the vapours raiſed after ſun-ſet are readily condenſed into *dews*. Or, perhaps, that notable coldneſs is rather the effect, than the cauſe, of the quantity of *dews*. For a deal of vapour being raiſed by the great heat of the earth, and the ſtock of fire ſpent on it in the day-time, the influx of ſuch a quantity of cold moiſture muſt greatly chill the air.

May-Dew whitens linen, and wax; the *dew* of autumn is converted into a white froſt. Out of *dew* putrified by the ſun, ariſe divers inſects which change apace from one ſpecies into another: what remains is converted into a fine white ſalt with angles like thoſe of ſalt-petre, after a number of evaporations, calcinations, and fixations.

There is a ſpirit drawn from *May-dew*, which has wonderful virtues attributed to it. The method of collecting and preparing it is preſcribed by Hanneman, phyſician at Kiel. The *dew* is to be gathered in clean linen cloths, expoſed to the ſun in cloſe phials; then diſtilled, and the ſpirit thrown upon the caput mortuum; this is to be repeated till the earth unite with the ſpirit, and become liquid; which happens about the ſeventh, or eighth cohobation, or diſtillation. By ſuch means you gain a very red odoriferous ſpirit. Stolterfoht, a phyſician of Lubec, thinks *May-dew* ſhould be gathered in glaſs-plates, eſpecially in ſtill weather, and before ſun-riſe. And Etmuller is of the ſame opinion. It might likewiſe be collected with a glaſs funnel, expoſed to the air, having a crooked neck to bring the *dew* into a phial in a chamber. See *Philoſ. Tranſact.* N° 3. Hoffman, and others. It is apparently from the preparation of this *dew*, that the brothers of the Roſy-croſs took their denomination.

In the *Philoſoph. Tranſact.* we have an account of a very extraordinary kind of *dew*. For a good part of the winter 1695. ſays the biſhop of Cloyne, there fell in many parts of the provinces of Munſter, and Leinſter, a kind of thick *dew*, which the country-people called *butter*, from its conſiſtency and colour; being ſoft, clammy, and of a dark-yellow. It fell always in the night, and chiefly in low mooriſh places, on the top of the graſs, and oft on the thatch of cabins. It was ſeldom obſerved in the ſame place twice. It commonly lay on the earth a fortnight without changing colour, but then dried, and turned black. It fell in lumps; and had a ſtrong ſmell like that of graves.—Mr. R. Vans, in the ſame tranſactions, gives an account of the like at the ſame time, in Limeric, and Tipperary; adding, that if one rubbed it with the hand, it melted; but, laying it by the fire, it dried, and grew hard.

DEXTANS, in antiquity. See the article As.

DEXTER, in heraldry, is applied to the *right* ſide, as *ſiniſter* is to the *left*.

Dexter-*Baſe*, is the right ſide of the baſe.

Dexter-*Chief*, the angle on the right hand of the chief.

Dexter-*Point*. See the article Point.

The word is pure Latin, ſignifying right-handed; whence the word *dexterity* for addreſs, and ability in the performing of any thing.

DEXTROCHERE *, or Destrochere, in heraldry, is applied to the right arm, painted in a ſhield, ſometimes naked, ſometimes cloathed, or adorned with a bracelet, and ſometimes armed, or holding ſome moveable, or member uſed in the arms.

* The word is formed from the Latin *dextrocherium*, which ſignifies a bracelet worn on the right wriſt, mentioned in the acts of the martyrdom of St. Agnes, and the life of the emperor Maximus.

The *dextrochere* is ſometimes placed as the creſt.

DEY, the title of the ſovereign prince of the kingdom of Algiers.

The governors of the ſeveral provinces under him, are called *beys*.

DIA, ΔΙΑ, the beginning of divers terms in medicine, chirurgery, pharmacy, *&c.* Where theſe three letters commence the name of a remedy, unguent, plaſter, cataplaſm, *&c.* they ſignify compoſition, and mixture; as in *diapaſma*, *diachylon*, &c.

Dia is likewiſe the beginning of many terms in the other arts; as, *diameter*, *dialogue*, &c. on all which occaſions, *dia*, which is an inſeparable particle, or prepoſition, is borrowed from the Greek Δια, *ex*, or *cum*; which begins the ſame words in the Greek.

Indeed we have words wherein *dia* is no prepoſition borrowed from a foreign language; though it is poſſible, the words themſelves may: as in *diamant*, *dial*, &c.

DIABETES *, ΔΙΑΒΗΤΗΣ, in medicine, a haſty, and profuſe evacuation of the drink by the urinary paſſages; accompanied with an ardent thirſt, and leanneſs of the whole body.

* The word is derived from the Greek διαβαινειν, to *pervade*, or *paſs quick*.

The drink, thus diſcharged, is uſually a little altered from what it was when taken down, and turned chylous, and milky; but ſometimes not at all.

The *diabetes* ſeems owing to a too great laxity of the fibres of the arteries of the kidneys; or too great a quantity of ſharp ſalts in the blood, which diſſolve the maſs of blood, or diſunite the parts thereof; ſo that the ſeroſity is eaſily ſeparated from the thicker parts.

According to Quincy, the evident, and moſt common cauſe of the *diabetes* is the too great uſe of ſpirituous liquors, wherewith the ſerum becomes ſo impregnated, that it will not attract, and join with the cruor, or globules of the blood, but runs off through the kidneys ſweet, or inſipid.

There is another kind of *diabetes*, wherein the petſon affected renders a great deal more by urine, than he drinks, nay, ſometimes more than he both eats and drinks. Some phyſicians attribute this exceſſive quantity of liquor to the air he reſpires, which, they ſuppoſe, becomes converted into water; or, at leaſt, the water in the air reſpired is here abſorbed, and collected. But others, with more probability, attribute it to a colliquation of the blood, fat, and even the ſolid parts of the body. See Supplement, article Diabetes.

Diabetes, in hydraulics, is applied to a ſiphon, the two legs or branches whereof are incloſed in one another; as in the glaſs deſcribed by Hero, which runs itſelf quite empty, without being inverted, as ſoon as the water is arrived at the height of the upper branch of the ſiphon.

DIABOTANUM, in pharmacy, and chirurgery, denotes a plaiſter, wherewith wens, *&c.* are reſolved, and diſcuſſed.—The *diabotanum* is ſovereign for the hydatides.

DIABROSIS *, in medicine, a ſolution of the continuity of a part, cauſed by ſharp, corroſive humours gnawing and devouring the ſame.

* The word is Greek, compounded of δια, *per*, through; and βϱωσκειν, to eat.

DIACARTHAMI, in pharmacy, an electuary, compoſed of turbith, manna, ſcammony, hermodactyls, and other purgatives; with the addition of the pulp of the ſeed of the *carthamus*, which gives it the denomination.

Diacarthami chiefly purges *pituita*. It is preſcribed in diſeaſes of the brain; and is frequently mixed in medicines along with other purgatives: it is now wholly out of uſe.

DIACARYON *, or Dianucum, in pharmacy. See Dianucum.

* The word is formed from δια, and καϱυα, walnut.

Galen is ſaid to have prepared his *diacaryon* with the juice of walnuts, mixed with as much honey as ſufficed to render it an agreeable compoſition.

DIACAUSTIC *Curve*, or *Cauſtic by refraction*, is a ſpecies of cauſtic curves, whoſe geneſis may be thus conceived.

Imagine an infinite number of rays, as BA, BM, BD, *&c.* (*Tab. Geom. fig.* 23.) iſſuing from the ſame luminous point, B, to be refracted from, or to the perpendicular MC, in the curve AMD; and ſo, as that CE, the ſines of the angles of incidence CME be always to CG, the ſines of the refracted angles CMG, in a given ratio: then the curve line, which touches all the refracted rays, is called the *diacauſtic*.

DIACHALCITIS, in chirurgery and pharmacy, a plaiſter which formerly uſed to be applied after the amputation of a cancer, and on many other occaſions.

The *emplaſtrum diachalcitidis* is compoſed of oil, axungia, and chalcitis; from the laſt of which drugs it derives its name.

DIACHYLON, in pharmacy, a name given to divers plaiſters, on account of the mucilages mixed therein, which are viſcid juices, called by the Greeks χυλοι, drawn from certain plants. See MUCILAGE.

White, or *ſimple* DIACHYLON, ſhould be compounded of common oil, litharge of gold, and mucilages drawn from marſhmallow roots, fenugreek, and aniſeeds. It is proper to ſoften, digeſt, ripen, and reſolve.

The DIACHYLON, called *ireatum*, has for its baſis the common white *diachylon*, with a pound of which, an ounce of powder of iris is mixed. This plaiſter digeſts, incides, and ripens with more force than the ſimple *diachylon*.

There is alſo the *great* DIACHYLON, *diachylon magnum*, compoſed of litharge of gold, oils of orris, camomile, and dill, turpentine, reſin of the pine, yellow wax, and mucilages of line and fenugreek, with new figs, raiſins of Damaſcus, ichthyocolla, juices of orris, ſquills, and hyſſop.

This *diachylon* ſoftens ſcirrhus's, and reſolves and diſſipates tumours. It is called *the great*, not only on account of its extraordinary virtues, but alſo becauſe compounded of a greater number of ingredients than the reſt.

The DIACHYLON *gummatum*, or *diachylon cum gummi*, is the *great diachylon* with the addition of gum ammoniac, galbanum, and ſagapenum, diſſolved with wine, and boiled to the conſiſtence of honey. This plaiſter is the moſt powerful of all for digeſting, ripening, and reſolving.

DIACODIUM *, in pharmacy, a ſyrup prepared from poppy-heads; called alſo the *ſyrupus de meconio*.

* The word is formed from the Greek δια, *per*, and κωδεια, poppy-heads.

The antients had two kinds: *ſimple*, and *compound*.

The *ſimple* DIACODIUM was a kind of opiate, made of the juice expreſſed from the heads of white poppies, and boiled up with ſugar. See OPIATE.

It was preſcribed to ſoften ſharp, ſerous humours, to appeaſe coughs, and to provoke ſleep.—This preparation was of great uſe among the antients; but is now laid aſide, ſince it has been found, that the ſyrup made of an infuſion of white poppy-heads, which is what we now call *diacodium*, produces the ſame effect.

Compound DIACODIUM was made of the *ſimple*, with the addition of the troches of hamec, hypocyſtis, myrrh, ſaffron, and balauſtines. It was uſed to ſtop and ſoften catarrhs, hæmorrhoids, and fluxes of the belly.

DIACONICON *, *Sacriſty*, a place adjoining to the antient churches, where the ſacred veſtments, with the veſſels, and other ornaments of the altar, were preſerved.

* The word is Greek, formed from διακονεω, *I ſerve*, *I miniſter*, by reaſon here was kept every thing belonging to divine ſervice. It was alſo called Ασπασικον, and in Latin *ſalutatorium*; becauſe it was here that the biſhop received and ſaluted ſtrangers. Sometimes, too, it was called Μητατωειον, or Μιτατωειον, *Menſa*, by reaſon of the tables kept therein, for diſpoſing the ſacred ornaments on; or rather from Μητατον, a ſort of inn, or houſe for the lodging of ſoldiers in.

The firſt council of Laodicea, in the 21ſt canon, forbids the prieſts living in the *diaconicon*, εν τω διακονικω; or touching the holy utenſils. An antient Latin verſion of thoſe canons renders it, *in ſecretario*: but the copy at Rome, as well as Dionyſius Exiguus, retain the word *diaconicon* in Latin. It is true Zonaras and Balſamon underſtand that expreſſion in the 21ſt canon of the order of a deacon, and not of a building, to which opinion Leo Allatius alſo adheres in his treatiſe, *De Templis Græcorum*: but all the other interpreters are agreed as to its being a ſacriſty. Beſide the ornaments of the prieſthood and the altar, there were likewiſe here depoſited the relics of the church.

DIACONISSA, and DIACONATE. See DEACON, and DEACONRY.

DIACOUSTICS *, or DIAPHONICS, the conſideration of the properties of ſound refracted in paſſing through different mediums; that is, out of a denſer into a more ſubtile, or out of a more ſubtile into a denſer medium. See SOUND.

* The word is formed from the Greek δια, *per*, through, which intimates a paſſage; and ακυω, *I hear*, q. d. the conſideration of the paſſage of the ſounds we hear.

DIACRII, in antiquity, was the name of a party or faction at Athens.

That city, we read, was divided into two parties: the one favourers of an oligarchy, who would only have a few perſons employed in the government. The other conſiſted of ſuch as were for a democratical, or popular government, wherein the whole people ſhould have a ſhare.—The firſt were called *diacrii*, and the latter *pediaci*; the latter inhabiting the lower, and the former the upper-quarter, or part of the city.

The laws of Solon imported, that Piſiſtratus ſhould be chief of the *diacrii*: though the ſcholiaſt, on Ariſtophanes's comedy, *the Waſps*, affirms, that Pandion diſtributed the quarter of the *diacrii* among his ſons, and put Lycus at their head.

DIACYDONITES *, in pharmacy, is applied to things and remedies, wherein quinces are a principal ingredient.

* The word comes from δια, and κυδωνιον, *quince*.

Confectio diacydonites, or *diacydonium*, is marmalade, a confection of quinces, or wherein quinces have a chief ſhare.

DIADEM *, ΔΙΑΔΗΜΑ, in antiquity, a head-band, or fillet, worn by kings as a badge of their royalty; while the crown was left to the gods.

* The word comes from the Latin *diadema*, of the Greek διαδημα, *a little band encompaſſing the head*, of the verb διαδεω, *cingo*, I gird.

The *diadem* was a ſort of ribbon, or fillet, woven of ſilk, thread, or wool, more or leſs broad. It was tied round the temples, and forehead; the two ends being knotted behind and let fall on the neck.

It was uſually white, and quite plain, though ſometimes embroidered with gold, and ſet with pearls, and precious ſtones.—In later times it likewiſe came to be twiſted round crowns, laurels, &c. and even appears to have been worn on divers parts of the body: thus Phavorinus obſerves, that Pompey was ſuſpected of aſpiring to the royalty, becauſe of his wearing a white garter, which was no other than a ligature for an ulcer he had on his leg, but which the people conſtrued a *diadem*.

Pliny, lib. 7. c. 5. obſerves, that Bacchus was the firſt inventor of the *diadem*: Athenæus aſſures us, that it was the topers, and good fellows, who firſt made uſe of it, to preſerve themſelves from the fumes of wine, by tying it tigh
round their heads; and that it long afterwards came to be
royal ornament.

The *diadem* remained a long time the peculiar badge of kings
at length it was aſſumed by the Roman emperors, as the mar
of imperial dignity.

Authors are not agreed about the time when the Roman emperors firſt aſſumed the *diadem*. Some refer it to Caligula
others to Aurelian, and others to Conſtantine the Great. Th
younger Victor ſays, poſitively, that Aurelian took the *diadem*
which no emperor had dared to do before him. For thoug
it ſhould ſeem from the ſame writer, that Caligula had don
the like, yet Suetonius aſſures us, he had it only in view, an
that he never executed it. Heliogabalus, indeed, took
diadem; but it was only in the palace he wore it, and neve
appeared with it in public. Jornandes even goes as low
Diocleſian for the introduction of the *diadem*; but it is cer
tain, there is a medal of Aurelian, with a crown like one
our ducal crowns, which is ſuſtained by a border of pearl
that bears a very great affinity to a *diadem*. And the author
who have explained that medal, are all agreed, that it is on
Mr. Spanheim alſo allows Aurelian to have taken it: his ſu
ceſſors imitated him therein; and yet the ornament did n
become common till the time of Conſtantine.—After him th
empreſſes were allowed to wear it; accordingly we find the
repreſented therewith on medals; though till then, we ha
no inſtance either of crown, or *diadem*, on a woman's hea
in all the Roman empire.

An author of the fifth century, quoted by Bollandus, preten
that Conſtantine firſt wore the *diadem*, and that he only to
it to bind his hair, and keep it in order. But this is not ve
probable; and it is certain, that at leaſt ſome emperors h
worn it before him, as Aurelian, and Carinus.

Euſebius gives it to Conſtantius Chlorus, when only Cæſar
which is confirmed by one of his medals, wherein he is r
preſented with a *diadem*, adorned with rays; though even a
ter Conſtantine, when the *diadem* was become the uſual orn
ment of the Auguſti, it was not always given to the Cæſar
Indeed, we ſee it on ſome of the medals of Julian, wh
only Cæſar; though it is pretty certain, he did not wear
till he became Auguſtus.—Du Cange will not aſſert, th
Conſtantine firſt took the *diadem*; but only, that he fi
made it into a kind of caſk, or cloſe-crown, as is ſeen in ſo
of his medals, and thoſe of his ſucceſſors.

DIADEM, in heraldry, is applied to certain circles, or rim
ſerving to bind or incloſe the crowns of ſovereign prince
and to bear the globe, and croſs, or the flower-de-luces, f
their creſt.

The crowns of ſovereigns differ in this, that ſome are bou
with a greater, and ſome with a leſs, number of *diadems*.

Prelates likewiſe appear to have antiently worn a ſort
diadem: thus Baronius writes, that St. James the apo
wore a gold plate on his forehead, as a mark of his epiſco
dignity.

In blazoning, the bandage about the heads of Moors, on ſhiel
is ſometimes alſo called *diadem*.

DIÆRESIS *, in chirurgery, the operation of dividing
ſeparating parts, whoſe union and continuity were an obſta
to the cure; or which were joined and conglutinated co
trary to the order of nature.

* The word, in its original Greek Διαιρεσις, ſignifies *diviſio*

There are five manners of performing the *diæreſis*, viz. by cutting, pricking, tearing, drawing, and burning.

Diæresis is alſo uſed, in medicine, for the deſtroying or conſuming of the veſſels, or canals, of an animal body; when, from ſome cutting, or corroding humour, certain paſſages are made, which naturally ought not to have been; or certain natural paſſages are dilated beyond their ordinary dimenſions; ſo that the juices, which ſhould have been contained therein, extravaſate, or run out.

Diæresis, in grammar, is a figure whereby a diphthong is divided into two ſyllables: as *Aulæ* into *aulai*, *pictæ* into *pictai*, *aquæ* into *aquai*.

Diæresis is alſo uſed, in the general, for any diviſion of one ſyllable into two: as in that verſe of Tibullus, *Stamina non illi diſſolüenda deo*, for *diſſolvenda*.

This is uſually noted by two points placed over a letter, to ſhew that it is to be ſounded by itſelf, and not joined with any other ſo as to make it a diphthong: thus *aëra*, by the points over the *e*, is diſtinguiſhed from *æra*.

It is alſo a kind of metaplaſm, or addition to a word, by dividing one ſyllable into two: as *aulae*, by a *diæreſis*, is a word of three ſyllables, inſtead of *aulæ*.

DIAGLYPHICE, the art of engraving, cutting, or otherwiſe working, hollow or concave figures, in metals; ſuch as ſeals, intaglia's, matrices, or coins for medals, *&c.* See Sculpture.

DIAGNOSTIC *, in medicine, a term applied to thoſe ſigns, or ſymptoms, which indicate, or diſcover, the preſent ſtate of a diſeaſe, its nature, and cauſe.

* The word is compounded of the Greek, *δια*, *per*, through, or by; and *γινωσκω*, *I know*.

The phyſicians have *diagnoſtic*, as well as *prognoſtic* ſigns; the firſt, with regard to the preſent ſtate of the diſeaſe, and the patient; and the ſecond to the future.

DIAGONAL, in geometry, a right line drawn acroſs a parallelogram, or other quadrilateral figure, from the vertex of one angle to that of another.

Such is the line P N (*Tab. Geometr. fig.* 24.) drawn from the angle P, to N.

Some authors call it *diameter*, and others the *diametral* of the figure.

It is demonſtrated, 1. That every *diagonal* divides a parallelogram into two equal parts: 2. Two *diagonals*, drawn in any parallelogram, biſect each other: 3. The *diagonal* of a ſquare is incomenſurable with one of its ſides.

Add, 4. a very noble theorem in elementary geometry, firſt demonſtrated by Mr. Lagny, in the *Memoires de l'Academie Royale de Sciences*, *An.* 1706. is, that the ſum of the ſquares of the two *diagonals* of every parallelogram is equal to the ſum of the ſquares of the four ſides.

It is evident, at firſt ſight, that the famed 47th propoſition of Euclid, ſo richly worth the hecatomb it coſt the author, is only a particular caſe of this propoſition: for if the parallelogram be rectangled, it follows of courſe, that the two *diagonals* are equal; and, of conſequence, that the ſquare of a *diagonal*, or, which is the ſame thing, the ſquare of the hypothenuſe of a right angle, is equal to the ſquares of the two ſides. If a parallelogram be oblique-angled, and, of conſequence, the two *diagonals* unequal, as is the more uſual caſe; the propoſition becomes of more extenſive uſe.

The demonſtration, in oblique-angled parallelograms, is thus: ſuppoſe the oblique-angled parallelogram A B C D (*Tab. Geomet. fig.* 25.); whereof B D is the greater *diagonal*, and A C the leſſer: from the point A, of the obtuſe angle D A B, let fall a perpendicular A E, to the ſide C D; and from the point B another perpendicular B F to the ſide D C. Then are the triangles ADE, BCF equal, and ſimilar, as AD is equal to BC, and the angle ADE, BCF, as well as AED, BCF, are alſo equal; conſequently, D E is equal to C F. Now, by Euclid, *prop.* 12. *lib.* 2. in the obtuſe-angled triangle BDC, the ſquare of the ſide B D is equal to the ſum of the ſquares of BC, and CD, and over and above, to double the rectangle of C F by CD; and by the 13th, *lib.* 2. in the triangle D A C, the ſquare of the ſide A C is equal to the ſum of the ſquares of AD, and C D, abating double the rectangle of the ſame C D, by D E, equal to C F. Conſequently, the former exceſs preciſely compenſating this defect; the ſum of the ſquares of the two *diagonals* is equal to the ſum of the ſquares of the four ſides. Q. E. D.

Hence, in every rhombus, or lozange, knowing one ſide, and *diagonal*; the other *diagonal* will likewiſe be known: for, the four ſides are equal, ſubtracting the ſquare of the given *diagonal* from quadruple, the ſquare of the given ſide, the remainder is the ſquare of the *diagonal* required.

The propoſition is likewiſe of great uſe in the theory of compound motions; for, in an oblique-angled parallelogram, the greater *diagonal* being the ſubtenſe of an obtuſe; and the leſſer of an acute angle, which is the complement of the former; the greater will be the greater, and the leſs the leſs, as the obtuſe angle is the greater; ſo that if the obtuſe angle be conceived to grow till it be infinitely great, with regard to the acute one; or, which amounts to the ſame thing, if the two contiguous ſides of the parallelogram be extended directly, end to end, in a right line, the great *diagonal* becomes the ſum of the two ſides, and the leſſer one, nothing. Now, two contiguous ſides of a parallelogram being known, together with the angle they include, it is eaſy to find the ſubtenſe of that angle, *i. e.* one of the *diagonals* of the parallelogram, in numbers; which done, Mr. de Lagny's propoſition gives the other. Which ſecond *diagonal*, thus found, is the line that would be deſcribed by a body impelled at the ſame time by two forces, which ſhould have the ſame ratio to each other as the contiguous ſides have, and act in thoſe two directions; which *diagonal* the body would deſcribe in the ſame time, as it would have deſcribed either of the contiguous ſides in, if only impelled by the force correſponding thereto. This is one of the great uſes of the propoſition; for the ratio of two forces, and the angle they make, being given, it is frequently neceſſary to determine, in numbers, the line a body, impelled by two forces, would deſcribe in a certain time.

All the ſides of a rectilinear figure, as AB, BC, CD, DE (*fig.* 26.), excepting one E A, and the angles O, and Y, being given, to find the *diagonals*.

In the triangle ABE, the ſides AB, and AE, being given, the angle Q is eaſily found by trigonometry; and, from this, the *diagonal* BE. And, after the like manner, the triangle BCD is reſolved, and the *diagonal* B D found.

Since ichnographies, or plans, are beſt taken by having all the ſides and *diagonals*, the uſe of this problem, in planimetry, is of ſome importance; eſpecially to ſuch as are willing to have their work accurate, though at the expence of calculation.

DIAGRAM, in geometry, *&c.* a ſcheme for the explanation, or demonſtration, of any figure, or the properties thereto belonging.

Diagram, or Diagramma, in the antient muſic, was what we call the *ſcale*, or *gammut*, in the modern.

The extent of the *diagramma*, which they alſo called *ſyſtema perfectum*, was a diſdiapaſon, or two octaves in the ratio 1 : 4. In that ſpace they had eighteen chords, though theſe had not all different ſounds.

To explain it, they repreſent to us eighteen chords, or ſtrings, of an inſtrument, as the lyre, ſuppoſed to be tuned according to the proportions in any of the genera; *viz.* diatonic, enharmonic, or chromatic.

As the lyre was improved, and more chords added to it; ſo was the *diagramma*: by ſuch means it came from 4 chords to 7, then 8, then 10, then 14, and at laſt 18.

To each of theſe chords, or ſounds, they give a particular name, taken from its ſituation in the *diagramma*, or the lyre: their names and order, commencing from the loweſt, are as follow: *proſlambanomenos*, *hypate-hypaton*, *parhypate-hypaton*, *lychanos-hypaton*, *hypate-meſon*, *parhypate-meſon*, *lychanos-meſon*, *meſe*, *trite-ſynemmenon*, *paranete-ſynemmenon*, *nete-ſynemmenon*, *para-meſe*, *trite-diazeugmenon*, *paranete-diazeugmenon*, *nete-diazeugmenon*, *hyperboleon*, *paranete-hyperboleon*, *nete-hyperboleon*.

Guido Aretine improved this ſcale, or *diagram*, very greatly: finding it of too ſmall extent, he added five more chords, or notes, to it; laid them all down on a ſtaff of five lines; and, inſtead of the long Greek names above-mentioned, named all his notes by Gregory's ſeven letters. See Note.

The firſt, or loweſt, note of his ſcale, he marked Γ, and called *gamma*; whence the whole ſcale came to be denominated. See Gammut.

DIAGRYDIUM, in pharmacy, is ſcammony prepared, or corrected, for medicinal uſe.

The preparation is ordinarily performed by baking the ſcammony in a quince. Others make it receive the fumes of lighted ſulphur, whence it is called, *ſulphurated*, or *diagrydium ſulphuratum*. Some incorporate it with a quantity of ſpirit of vitriol roſat. ſufficient to make a ſort of liquid paſte, which is afterwards ſet to dry in the ſun, or by a gentle fire. And this preparation they call *diagrydium roſatum.*—The end of all theſe preparations is to correct the ſcammony; but the generality of authors now are of opinion, it has nothing that needs correction, and that it may be uſed in its natural ſtate. See Scammony.

DIAHEXAPLA, among farriers, a drink made for horſes, denominated from the ſix ingredients it conſiſts of; *viz.* birthworth, gentian-roots, juniper-berries, bay-berries, myrrh, and ivory-ſhavings. It is eſteemed a good ſtomachic, and cures bites of venomous beaſts, colds, conſumptions, *&c.*

DIAL *, or *Sun*-Dial, an inſtrument ſerving to meaſure time, by means of the ſhadow of the ſun.

* The word is formed from the Latin, *dies*, day, becauſe indicating the hour of the day. See Hour.

The antients alſo call it *ſciathericum*, from its doing it by the ſhadow.

DIAL is more accurately defined, a draught, or deſcription, of certain lines on a plane, or ſurface, of a body given, ſo contrived, as that the ſhadow of a ſtyle, or ray, of the ſun, paſſed through a hole therein, ſhall touch certain points at certain hours.

The diverſity of *ſun-dials* ariſes from the different ſituation of the planes, and the different figure of the ſurfaces whereon they are deſcribed; whence they become denominated *equinoctial*, *horizontal*, *vertical*, *polar*, *direct*, *erect*, *declining*, *inclining*, *reclining*, *cylindrical*, &c.

Dials are ſometimes diſtinguiſhed into *primary*, and *ſecundary*.

Primary DIALS, are thoſe either drawn on the plane of the horizon, called *horizontal dials*; or, perpendicular thereto, on the planes either of the meridian, or prime vertical, called *vertical dials*: to which number are alſo uſually added, thoſe drawn on the polar and equinoctial planes, though neither horizontal, nor vertical.

Equinoctial DIAL, is that deſcribed on an equinoctial plane, or a plane repreſenting that of the equinoctial.

A plane oblique to the horizon, either hangs over towards it, and makes an acute angle with the plane of the horizon, or it falls off backwards from it, and makes an obtuſe angle therewith. This latter is called a *reclining plane*; which, if it recline back, equal to the complement of the latitude of the place, then it lies in the plane of the equinoctial; and a *dial* drawn thereon, is denominated an *equinoctial dial*.

Equinoctial dials are uſually diſtinguiſhed into *upper*, which look towards the zenith; and *lower*, which reſpect the nadir.

Now, as the ſun only illumes the upper ſurface of an equinoctial plane, while he is in our hemiſphere, or on the northern ſide of the equator, an *upper equinoctial dial* will only ſhew the hour, during the ſpring and ſummer ſeaſon.

And again, as the ſun only illumines the lower ſurface of an equinoctial plane, while he is in the ſouthern hemiſphere, or on the other ſide of the equator; a *lower equinoctial dial* will only ſhew the hour in autumn, and winter.

To have an *equinoctial dial*, therefore, that ſhall ſerve all the year round, the *upper* and *lower* muſt be joined together; that is, it muſt be drawn on each ſide of the plane.

And, ſince the ſun ſhines on one ſide or on the other of an equinoctial plane the whole day, ſuch a *dial* will ſhew all the hours of an artificial day.

To deſcribe an equinoctial DIAL *geometrically*.—The *equinoctial* is the firſt, eaſieſt, and moſt natural, of all *dials*: but the neceſſity of drawing it double, prevents it being much in uſe. However, as its ſtructure ſhews the reaſon of the other kinds; and as it even furniſhes a good mechanical method of drawing all the other kinds of *dials*, it ſhall be here laid down.

Firſt, then, *to deſcribe an upper* equinoctial DIAL: from a centre C (*Tab. dialling*, *fig.* 4.) deſcribe a circle ABDE, and by two diameters, AD, and BE, interſecting each other at right angles, divide it into quadrants AB, BD, DE, and EA. Subdivide each quadrant into ſix equal parts, by the right lines C 1, C 2, C 3, *&c.* which lines will be hour-lines. Through the centre C drive a ſtyle, or pin, perpendicular to the plane ABDE.

The *dial* thus deſcribed being raiſed ſo as to be in the plane of the equator, the line C 12, in the plane of the meridian, and the point A looking towards the ſouth; the ſhadow of the ſtyle will ſhew the hours both of the forenoon and afternoon.

For, horary circles include arches of the equator of fifteen degrees each; conſequently, the plane ABDE being ſuppoſed in the plane of the equator, the horary circles will likewiſe include arches of 15 degrees of the circle ABDE. Wherefore, ſince the angles 12 C 11, 11 C 10, 10 C 9, *&c.* are each here ſuppoſed 15 degrees, the lines C 12, C 11, C 10, C 9, *&c.* are interſections of horary circles with the plane of the equinoctial.

Again, ſince the ſtyle paſſing through the centre C repreſents the axis of the world; its diſtance from the centre of the earth being inconſiderable, and it being the common diameter of the horary circles, its ſhadow will cover the hour-line C 12, when the ſun is in the meridian, or circle, of 12 o'clock; C 11, when in the circle of 11 o'clock; C 10, when in the circle of 10 o'clock, *&c.*

Secondly, *To deſcribe a lower* equinoctial DIAL: the method is the ſame as that for the *upper dial*, already deſcribed; except that no hour lines are to be drawn beyond that of 6 o'clock.

Thirdly, *To deſcribe an univerſal* equinoctial DIAL: join two metal, or ivory, planes ABCD, and CDEF (*fig.* 5.) ſo as to be moveable at the joint. On the upper ſurface of the plane ABCD, deſcribe an *upper equinoctial dial*, and upon the lower a *lower*, as already directed; and through the centre I drive a ſtyle. In the plane DEFC cut a box, and put a magnetical needle G therein; fit on the ſame plane a braſs quadrant nicely graduated, and paſſing through a hole cut in the plane ABCD. Now, ſince this may be ſo placed, by means of the needle, as that the line I 12 ſhall be in the plane of the meridian; and, by means of the quadrant, may be ſo raiſed, as that the angle BCE ſhall be equal to the elevation, or the equator; it will ſerve as a *dial* in any part of the world.

Horizontal DIAL, is that deſcribed on a horizontal plane, or a plane parallel to the horizon.

Since the ſun may illumine a horizontal plane at all times of the year, while he above the horizon; a *horizontal dial* may ſhew all the hours of the artificial day, throughout the year: ſo that a more perfect *dial* than this kind cannot be required.

To deſcribe a horizontal DIAL *geometrically*. Draw a meridian line AB (*fig.* 6.) on the given immoveable plane; or aſſume it, at pleaſure, on a moveable one. See MERIDIAN *line*.

From a point taken at pleaſure, as C, erect a perpendicular CD, and make the angle CAD equal to the elevation of the pole. In D make another angle CDE, equal likewiſe to the elevation of the pole, and draw the right line DE meeting AB in E. Then make EB equal to ED, and from the centre B, with the radius EB, deſcribe a quadrant EBF, which divide into ſix equal parts. Through E draw the right line GH, cutting AB at right angles. From the centre B, through the ſeveral diviſions of the quadrant EF, draw right lines B a, B b, B c, B d, BH, meeting the line GH, in the points a b c d H. From E upon the right line EG ſet off the intervals E a, E b, *&c. viz.* E a from E to e, E b from E to f, E c from E to g, *&c.* From the centre A deſcribe a little circle, and applying a little ruler to A, and the ſeveral points of diviſion a, b, c, d, H, and e, f, g, h, G, draw the lines A 11, A 10, A 9, A 8, A 7, and A 1, A 2, A 3, A 4, A 5. Through A draw a right line 6, 6 perpendicular to AB. Continue the right line A 7, beyond the little circle to 7, A 8 to 8, A 5 to 5, and A 4 to 4. Round the whole ſcheme draw a ſquare, circle, or oval figure. And laſtly, in A fix an index, making an angle DAC, with the meridian AB, equal to the elevation of the pole; or in C erect a perpendicular ſtyle equal to CD; or at AE fix a triangular plate, ADE, perpendicular to the plane of the *dial*.

In this caſe, the lines A 11, A 10, A 9, *&c.* are the hour-lines of the forenoon; and A 1, A 2, A 3, *&c.* thoſe of the afternoon: and the ſhadows of any of the gnomons, or ſtyles, above-mentioned, at the ſeveral hours, will fall on the reſpective hour-lines.

To deſcribe a horizontal DIAL *trigonometrically*. In large *dials*, where the utmoſt accuracy is required, geometrical lines ar best ſet aſide; and, in lieu thereof, the lines of the *dial* ar to be determined by trigonometrical calculation. M. Clapies in the *Memoires de l'Academie Royale des Sciences*, *Anno* 1707 has done the world good ſervice herein; having rendered th calculation of the hour-lines, which before had been operoſ enough, exceeding eaſy and expeditious: his canons, or ana logies, we ſhall lay down under the reſpective kinds of *dials*. And, firſt, for a *horizontal dial*; the elevation of the pole the place being given, to find the angles, which the hour-line make with the meridian in the centre of the *dial*.

The analogy, or canon, is thus: as the whole ſine is to th ſine of the elevation of the pole of the place, ſo is the tan gent of the ſun's diſtance from the meridian, for the hour re quired, to the tangent of the angle required: that is, as th ſide AC (*fig.* 7.) is to DC, ſo is the tangent of FDC the tangent FC, of the angle FAC. See TANGENT, &

Vertical DIAL, is that drawn on the plane of a vertical circl See VERTICAL.

Of theſe there are ſeveral varieties, according to the vertic pitched upon. The verticals chiefly uſed, are the prime ve tical, and the meridian; from which reſpectively ariſe, *ſout* *north*, *eaſt*, and *weſt dials*.

Dials which reſpect the cardinal points of the horizon, a particularly called *direct dials*. See DIRECT.

If any other vertical be choſen, the *dial* is ſaid to decline.

Further, if the circle, whoſe plane is uſed, be perpendicular the horizon, as is ſuppoſed to be the caſe in all thoſe no mentioned; the *dials* are particularly denominated *ere* E. gr. *erect ſouth*, *erect north*, &c.

Otherwiſe, the plane being oblique to the horizon, they ſaid either to *incline*, or *recline*.

South DIAL, or, more particularly, an *erect direct ſouth* DIA is that deſcribed on the ſurface of the prime vertical cir looking towards the ſouth.

Since the ſun then illumines the plane of the prime verti looking to the ſouth, when, in its progreſs, he paſſes from prime vertical to the meridian, or returns back from this that; in which he is employed ſix hours before, and ſix a noon; a *ſouth dial* ſhews the hours from ſix in the morn to ſix at night.

To draw a vertical ſouth DIAL. On the plane of the prime tical looking ſouthwards, draw a meridian line AB (*fig.* and taking the interval AC, at pleaſure, for the magnitud the future *dial*, in C erect a perpendicular of an indefi length CD; and, making an angle CAD equal to the eleva of the equator, draw a right line AD meeting the per di dicular CD in D. Then in the point D make the angle CDE likewiſe equal to the elevation of the equator, and draw the right line DE cutting the meridian in E. Through E draw the right line GH, cutting the meridian AB at right angles. Take EB equal to ED, and with this radius deſcribe a quadrant EF.—The reſt is performed as in a *horizontal dial*, except that the hours of the afternoon are to be written on the right hand, and thoſe of the forenoon on the left; as may be conceived from the figure. Laſtly, in the point A fix an oblique ſtyle, in an angle equal to the elevation of the equator; or in C erect a perpendicular ſtyle, equal to CD: or, laſtly, a triangular plate ADE, upon AE, ſo as to be perpendicular to the plane of the *dial*.

Then will the ſhadow of any of theſe indexes touch the ſeveral hour-lines at their reſpective hours.

North DIAL, or *erect direct north* DIAL, is that deſcribed on the ſurface of the prime vertical looking northward.

Since the ſun only illumines this ſurface, while he advances from the eaſt to the prime vertical, and proceeds from the ſame vertical to the weſt; and ſince he is in the prime vertical at ſix o'clock in the morning, and at ſix in the evening; a *north dial* ſhews the hours before ſix in the morning, and thoſe after ſix in the evening. And hence, as in autumn and winter-time, the ſun does not riſe before ſix, and ſets before ſix in the evening, a *north dial* is of no uſe all that time; but this being joined with a *ſouth dial*, it ſupplies the defects thereof.

To deſcribe a vertical north DIAL. Draw a meridian line EB, (*fig.* 9.) and from A deſcribe a little circle at pleaſure. At A make the angle DAC equal to the elevation of the equator, and from the point C, taken at pleaſure, erect a perpendicular CD, meeting AD in D. Make another angle, CDE, likewiſe equal to the elevation of the equator, and draw likewiſe a line DE, meeting AE in E; then take IB equal to ED, and through I draw GH, cutting SB at right angles; and from the centre B, with the radius IB, deſcribe a quadrant, which divide into ſix equal parts: through the two extreme diviſions draw lines from the centre B, *viz.* Bd and BH, meeting GH in d and H, and make Ih equal to Id, and IG equal to IH; then applying a ruler to A and d, and H, and again to A and h, and G, draw the right lines A 5, A 4, A 7, and A 8. Laſtly, in A fix an oblique index AD, making an angle DAE, with a meridian line in the plane of the meridian, equal to the elevation of the equator; or a perpendicular index in C, equal to CD; or, inſtead of an index, a triangular plate EDA, on the meridian line EA, perpendicular to the plane of the *dial*.

Then will A 4, A 5, A 5, A 6, be the hours of the forenoon; and A 6, A 7, and A 8, thoſe of the afternoon; and, accordingly, will be pointed out by the ſhadow of the ſeveral indexes.

Or thus: in a *ſouth dial* (*fig.* 8.), if the hour-lines 4 and 5, as alſo 7 and 8, be continued beyond the line 6 A 6; and the triangle ADE turned about its pole A, till AE fall directly againſt A 12; it is evident, a *north dial* is hereby had, only obſerving what has been ſaid about writing the hours.

To draw a vertical north or *ſouth* DIAL *trigonometrically.* Theſe only differ from the *horizontal dial*, in that the angle CAB is equal to the complement of the elevation of the pole of the place; ſo that the ſame analogy ſerves as for the horizontal one; only making the ſecond term the complement of the elevation of the pole of the place.

Eaſt DIAL, or *erect direct eaſt* DIAL, is that drawn on the plane of the meridian, looking to the eaſt.

Since the ſun only illumines the plane of the meridian looking eaſtward, before noon, an *eaſt dial* can only ſhew the hours till twelve o'clock.

To deſcribe an eaſt DIAL. On the eaſtern ſide of the plane of the meridian draw a right line AB (*fig.* 11.) parallel to the horizon, and to this join AK, making with it an angle KAB, equal to the elevation of the equator: then, with the radius DE, deſcribe a circle, and through the centre D draw EC perpendicular to AK, by which means the circle will be divided into 4 quadrants. Each of theſe quadrants ſubdivide into ſix equal parts. And from the centre D through the ſeveral diviſions draw right lines, D 4, D 5, D 6, D 7, D 8, D 9, D 10, D 11. Laſtly, in D erect a ſtyle equal to the radius DE, perpendicular to the plane; or, on two little pieces perpendicularly fixed in EC, and equal to the ſame radius DE, fit an iron rod, parallel to EC.

Thus will each index at the ſeveral hours project a ſhadow to the reſpective hour-lines 4 4, 5 5, 6 6, *&c.*

Weſt DIAL, or *erect direct weſt* DIAL, is that deſcribed on the weſtern ſide of the meridian.

As the ſun only illumines that ſide of the plane of the meridian looking to the weſt, after noon, a *weſt dial* can only ſhew the hours from noon to night.

This, therefore, joined with an *eaſt dial*, ſhews all hours of the day.

To draw a weſt DIAL. The conſtruction is perfectly the ſame as that of an *eaſt dial*, only that its ſituation is inverted, and the hours are written accordingly.

Polar DIAL, is that deſcribed on a plane paſſing through the poles of the world, and the eaſt and weſt points of the horizon. It is of two kinds; the firſt looking up towards the zenith, and called *upper*; the latter down to the nadir, called *lower*.

The *polar dial*, therefore, is inclined to the horizon in an angle equal to the elevation of the pole.

Since the polar plane POQS (*fig.* 12.) paſſes through the eaſt and weſt points O and S, a quadrant of the equator is intercepted between it and the meridian; conſequently the upper ſurface is illumined by the ſun from ſix in the morning to ſix at night; and the lower, from the ſun's riſe to ſix in the morning, and from ſix in the evening to ſun-ſet. A *lower polar dial*, therefore, ſhews the hour of the morning from ſun-riſe to ſix o'clock, and that of the evening, from ſix to ſun-ſet; and an *upper*, the hours from ſix in the morning to ſix in the evening.

To draw an upper polar DIAL. Draw a right line AB (*fig.* 13.) parallel to the horizon; and if the plane be immoveable, find the meridian line CE. Divide CE into two equal parts, and through C drawn a right line FG parallel to AB. Then, from the centre D, with the interval DE, deſcribe a quadrant, which divide into ſix equal parts; and from the ſame centre D, through the ſeveral points of diviſion, draw right lines, D 1, D 2, D 3, D 4, D 5; and the intervals E 1, E 2, E 3, E 4, E 5, ſet off the contrary way, *viz.* E 11, 10, 9, 8, and 7. From the points 5, 4, 3, 2, 1, *&c.* raiſe perpendiculars meeting the line FG in the correſpondent points. Laſtly, in D erect a perpendicular ſtyle equal to DE, or on two equal pieces, E and C, fix a croſs iron rod.

Then will 12, 12, 11, 22, 33, *&c.* be hour-lines, to be pointed out at the proper times by the ſhadow of the indices.

An *upper polar* DIAL only differs in ſituation, and the manner of writing the hours, from *eaſt* and *weſt dials*, joined together in the line of ſix o'clock.

A *lower polar* DIAL is had by putting out the hours of the forenoon, 9, 10, and 11, and thoſe of the afternoon 1, 2, and 3, with the noon-hour 12 itſelf; and only leaving the hours 7 and 8 of the morning, and 4 and 5 in the evening.

To draw all the primary DIALS *on the ſame block, or poſt.*

1. Let the plane ABCD (*fig.* 14.), in the proper poſition of the block, be ſuppoſed horizontal; and thereon deſcribe a *horizontal dial.* See *Horizontal* DIAL.

2. Draw the right lines EM and FL parallel to DC, which, accordingly, in the proper poſition of the block, will be parallel to the horizon: then let the plane BNMC make an angle with EM, equal to the elevation of the pole CME; and thereon deſcribe an *upper polar dial.*

3. Let the oppoſite plane, ADE, make with EM an angle, DEM, equal to the elevation of the equator; and on this draw an *upper equinoctial dial.*

4. Let the plane, KLHI, make with FL an angle HLF, equal to the elevation of the equator; and on this inſcribe a *lower equinoctial dial.*

5. Let the oppoſite plane, FG, make with FL an angle GFL, equal to the elevation of the pole; and here draw a *lower polar dial.*

6. Let the plane, MNKL, and the oppoſite one, EF, be perpendicular to FL; and on that draw a *ſouth dial*, and on this a *north dial.*

7. On the plane EMLF deſcribe a *weſt dial*; and on the oppoſite plane an *eaſt dial.*

If, then, the block be ſo placed, as that the plane, MNKL, looks to the ſouth, and the plane of the meridian biſect it in the line of 12 o'clock in the *horizontal dial* ABCD, and *ſouth dial* MNKL, all the hours of the day will bein dicated by ſeveral planes at once.

Secundary DIALS, are all thoſe drawn on the planes of other circles beſide the horizon, prime vertical, equinoctial, and polar circles: or thoſe, which either decline, incline, recline, or deincline.

Declining DIALS, are erect or vertical *dials*, which decline from any of the cardinal points; or they are ſuch as cut either the plan of the prime verticle, or of the horizon, at oblique angles.

The uſe of *declining dials* is very frequent; as the walls of houſes, whereon *dials* are uſually drawn, commonly deviate from the cardinal points.

Of *declining dials* there are ſeveral kinds, which are denominated from the cardinal points, which they ſeem moſt to reſpect, but from which they have a real declination; *decliners from the ſouth*, and *from the north*, and even *from the zenith.*

To draw a vertical declining DIAL *trigonometrically.*——

1. The declination of the plane, and the elevation of the pole of the place, being given; to find the angle formed in the centre of the *dial*, by the meridian and ſubſtyle.

Canon: As the whole ſine is to the tangent of the complement of the height of the pole of the place GF (*fig.* 15.), ſo is the ſine of the angle of the declination of the plane GFD, to the tangent GD, of the angle required GAD.

2. The declination of the plane being given, and the elevation of the pole of the place, to find the angle formed in the centre of a *vertical declining dial*, by the ſubſtyle and axis.

Canon: As the whole ſine is to the ſine of the complement of the elevation of the pole GF; ſo is the ſine of the complement of the declination of the plane DGF, to the ſide DF, the ſine of the angle DAB required.

3. The declination of the plane, and the elevation of the pole, given; to find the difference of longitudes, that is, the arch of the equator, comprehended between the meridian of the place, and the meridian of the plane.

Canon: As the whole ſine is to the ſine of the height of the pole of the place, ſo is the tangent of the complement of the declination of the plane, to the tangent of the complement of the difference of longitudes.

4. The angle of the difference of longitudes, and that of the axis, with the ſubſtyle, being given; to find the angles formed in the centre of a *vertical declining dial*, between the ſubſtyle and hour-lines.

This problem admits of three caſes; for the hour-lines, whoſe angles are ſought, may be either, 1. Between the meridian and ſubſtyle; or, 2. Beyond the ſubſtyle; or, 3. On that ſide the meridian where the ſubſtyle is not. In the two firſt caſes, the difference is to be taken between the ſun's diſtance from the meridian that hour, and the angle of the difference of longitudes found by the laſt problem; and in the third caſe, the ſum of thoſe two angles is to be taken, and the following canon uſed:

Canon: As the whole ſine is to the ſine of the angle between the axis and ſubſtyle, ſo is the tangent of the difference of the ſun's diſtance from the meridian, and the difference of longitudes, or of the ſum of thoſe two angles, to the tangent of the angle required.

5. The angle formed by the ſubſtyle, with the hour-lines, and that of the ſubſtyle, with the meridian, given; to find the angles formed between the meridian and hour-lines in the centre of *vertical declining dials*.

1. The angles of the hour-lines between the meridian and ſubſtyle are found by ſubtracting the angle formed by the ſubſtyle, with the hour-line, from the angle formed by the ſubſtyle, with the meridian.

2. The angles beyond the ſubſtyle, and on the ſide oppoſite to that of the meridian, are found by adding thoſe two angles.

3. Thoſe on the other ſide the meridian are found by taking their difference.

To deſcribe a vertical DIAL, *declining from the ſouth to the eaſt* or *weſt, geometrically*. Find the declination of the plane, as already taught under the articles DECLINATION, and DECLINATOR. Then draw upon a paper a *horizontal dial*, ſuppoſing the line of contingency of the horizontal with the equinoctial plane to be GH (*fig.* 16.): through the point E, wherein the meridian line AE cuts the ſame, draw a right line IK, making with GH an angle HEK, equal to the declination of the given plane. Thus, as GH repreſents the interſection of the prime vertical with the horizon, IK will be the interſection of the inclining plane, and the horizon; whence we alſo conceive, that the part IE muſt be raiſed above GE, in caſe the given plane decline to the weſt; or it muſt be depreſſed below the ſame GE, in caſe it decline to the eaſt. Draw a right line parallel to the horizon on the given plane, or wall, to anſwer to IK; and, aſſuming a point therein anſwering to E, ſet off from the right line IK on the paper, the ſeveral horary diſtances E 1, E 2, E 3, &c. Then from the point E erect a perpendicular EC, equal to the diſtance of the centre of the *horizontal dial*, from its line of contingency. Draw lines thence to the ſeveral points of the hour-lines E 1, E 2, E 3, &c. let fall a perpendicular AD, from the centre of the *horizontal dial* A, to the line of contingency IK, and transfer the diſtance ED, from the point E upon the wall: then will CD be the ſubſtylar line.

Wherefore, joining AD and DC at right angles, the hypothenuſe AC will be an oblique index, to be faſtened on the wall in the point C, according to the angle DCA.

To draw a vertical DIAL, *declining from the north towards the eaſt and weſt.* Take the declination of the plane, as already taught: then, as *north dials* are only *ſouth dials* inverted, draw a *vertical dial* declining from the ſouth, and invert it in ſuch manner, as that the centre C look to the horizon, and the point E to the zenith; and the hours on the right hand ſet off towards the left, and contrarywiſe, omitting all hour-lines, which in ſuch a plane cannot be ſhewn.

For the practice the beſt way is, after drawing a ſouth decliner upon paper, to prick the ſeveral points thereof through with a pin; then applying the face of the paper to the wall, the back-ſide thereof will ſhew you all the points neceſſary for the *north declining dial*.

Inclined DIALS are thoſe drawn on planes not erect, but inclining, or leaning forward towards the ſouth, or ſouthern ſide of the horizon, in an angle, either greater or leſs than the equinoctial plane.

Such an inclined plane may be conceived by ſuppoſing one part of the plane of the equator lifted up toward the zenith, and the other depreſſed toward the nadir; and thus to revolve upon a line drawn from the eaſt to the weſt points of the horizon.

To draw an inclined DIAL. 1. The inclination of the plane; as DC (*fig.* 17.), being found by a declinator, as taught under DECLINATOR; if it fall between the equinoctial plane CE, and the vertical one CB, in ſuch manner, as that the angle of inclination DCA is greater than the elevation of the equator ECA, on the upper ſide draw a *north dial*, and on the lower a *ſouth dial*, to an elevation of the equator, which is equal to the aggregate of the elevation of the equator of the given place, and the complement of the inclination to a quadrant.

2. If the inclined plane GF fall between the horizontal one CA, and the equinoctial CE, ſo as that the angle of inclination FCA, is leſs than the elevation of the equator ECA, deſcribe a *horizontal dial* to an elevation of the pole, equal to the aggregate of the elevation of the pole of the given place, and the inclination of the plane.

Dials, thus inclined, are drawn after the ſame manner as *primary dials*; except, that the index in the former caſe muſt be fitted under the angle ADC, and in the latter, under the angle DFC; and that the diſtance of the centre of the *dial* from the line of contingency, in the former caſe is DC, and in the latter FC.

Reclining DIALS, are thoſe drawn on planes not erect, but reclined, or leaning backwards from the zenith towards the north, in an angle greater or leſſer than the polar plane.

A *reclined* plane may be conceived by ſuppoſing one part of the polar plane raiſed towards the zenith, and the other depreſſed towards the nadir; and thus revolving about a line drawn from eaſt to weſt.—To find the reclination of a plane, ſee RECLINATION.

To draw a reclining DIAL. 1. If the *reclined* plane HC fall between the vertical plane BC, and the polar plane IC, ſo as that the angle of reclination BCH is leſs than the diſtance of the pole from the zenith BCI, deſcribe two vertical *ſouth* and *north dials* to an elevation of the equator, equal to the difference between the elevation of the equator of the given place, and the angle of reclination.

2. If the reclined plane, as KC, fall between the polar plane IC, and the horizontal one CL, ſo as that the angle of reclination BCK is greater than the diſtance of the pole from the zenith ICB, deſcribe a *horizontal dial* thereon to an elevation of the pole, equal to the difference between the angle of reclination, and the elevation of the equator of the given place.

To draw inclining and reclining DIALS *trigonometrically.* The inclination or reclination of the plane, and the elevation of the pole, being known, to find the angles made in the centre of an *inclining* or *reclining dial*, by the meridian and hour-lines.

Such *dial* is properly a *horizontal dial*, for a latitude equal to the particular elevation of the pole on the plane of the *dial*. Its angles, therefore, are found by the canon laid down for *horizontal dials*.

As to the elevation of the pole on the *dial* plane, it is thus found: the plane being inclined, either its inclination is greater than the elevation of the pole of the place, or leſs; or it is equal thereto. In the two firſt caſes, for upper *ſouth* or lower *north dials*, the particular elevation of the pole on the plane is had by taking the difference between the elevation of the pole of the place, and the inclination of the plane: and in the latter caſe, the *dial* is a *polar dial*, wherein the hour-lines will be parallel, by reaſon that the plane being placed on the axis of the world, neither of the poles can be repreſented thereon.

For upper *north* and lower *ſouth dials*: 1. If the inclinatio be greater than the complement of the elevation, the complement of the inclination muſt be added to the complement o the elevation. 2. If it be leſs, the inclination muſt be adde to the elevation. 3. If it be equal, the *dial* will be an *equinoctial dial*, wherein the angles at the centre will be equal t the ſun's diſtance from the meridian.

Deinclined DIALS, are thoſe which both *decline* and *incline*, o *recline*. See DECLINED.

The uſe of *inclined*, *reclined*, and eſpecially *deinclined dials*, very rare; the geometrical and trigonometrical conſtructio of theſe laſt, therefore, as being ſomewhat intricate witha we here chooſe to omit, and refer ſuch as may have a fancy fo ſuch a *dial*, to an univerſal mechanical method of drawin all kinds of *dials* here ſubjoined.

An eaſy method to deſcribe a DIAL *on any kind of plane, by mea of an equinoctial* DIAL, *or circle.* Suppoſe, *e. gr.* a dial r quired on a horizontal plane: if the plane be immoveable, ABDC (*fig.* 18.), find a meridian line GF; or, if moveabl aſſume the meridian at pleaſure. Then, by means of t triangle EKF, whoſe baſe is applied on the meridian lin raiſe the equinoctial *dial* H, till the index GI becom parallel to the axis of the world (which is had, if the an KEF be equal to the elevation of the pole), and t 12 o'clock line on the *dial* hang over the meridian line the plane, or the baſe of the triangle. If, then, in the nig time, a lighted candle be ſucceſſively applied to the axis G ſo as the ſhadow of the index, or ſtyle GI, fall upon one ho li

TAB. DIALLING.

Fig. 1. Declinator

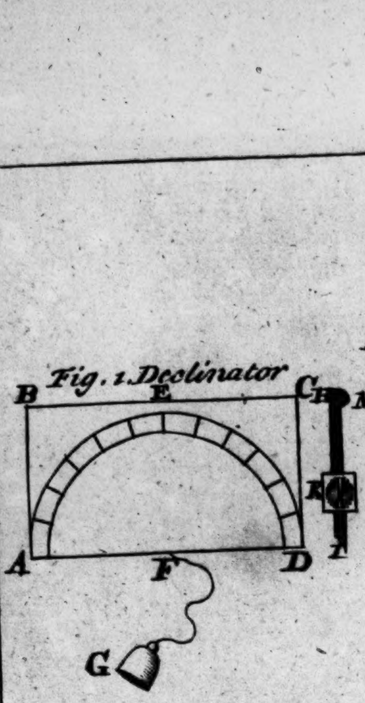
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Fig. 2. Declinator

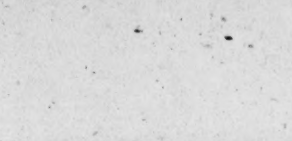

Fig. 3. Declinator

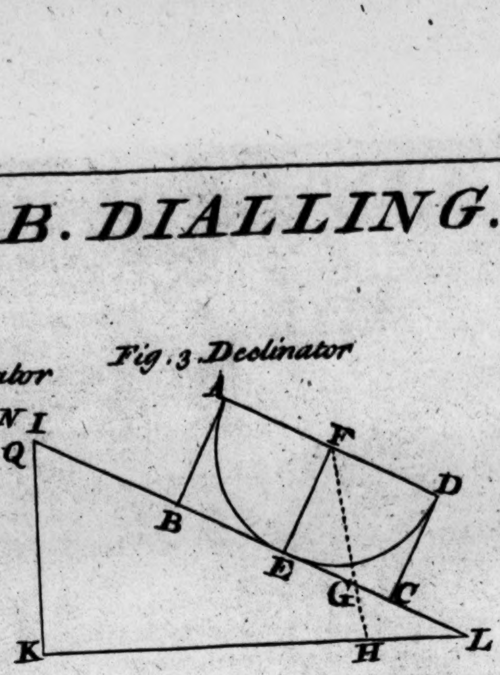
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Fig. 4. Equinoctial Dial

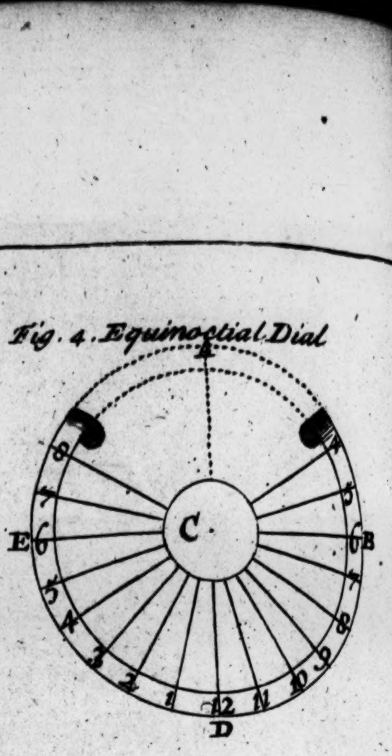
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Fig. 5. Equinoctial Dial

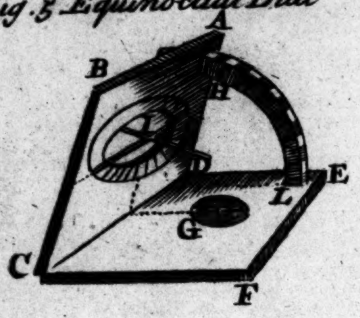

Fig. 6. Horizontal Dial

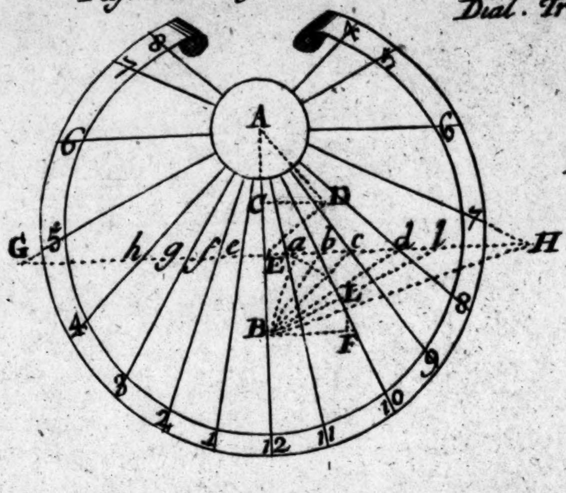
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Fig. 7. Horizontal Dial. Trigonometrically

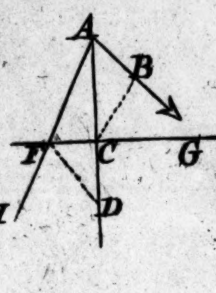

Fig. 7. Ring Dial

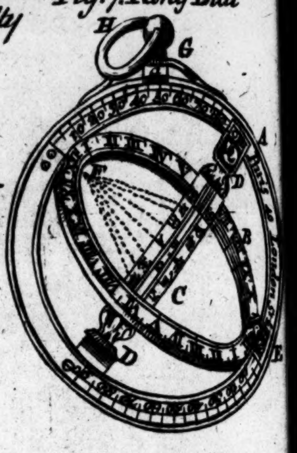

Fig. 8. Vertical South Dial

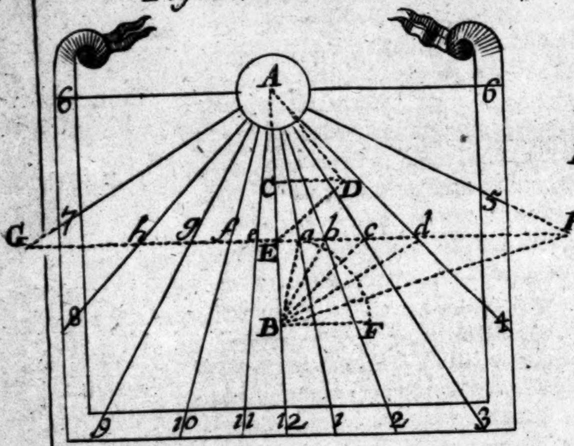
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Fig. 9. Vertical North Dial

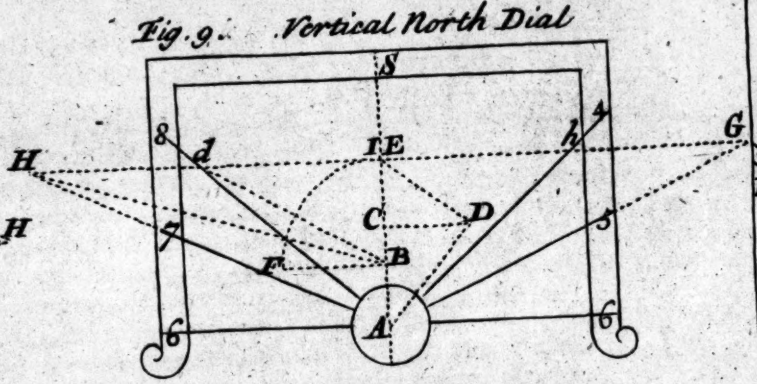
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Fig. 11. East Dial

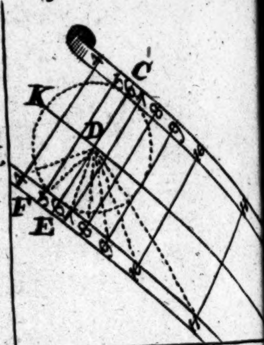

Fig. 14. Dials.

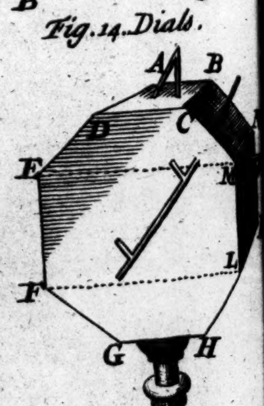

Fig. 12. Polar Dial

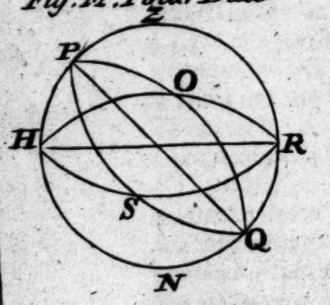

Fig. 13. Polar Dial

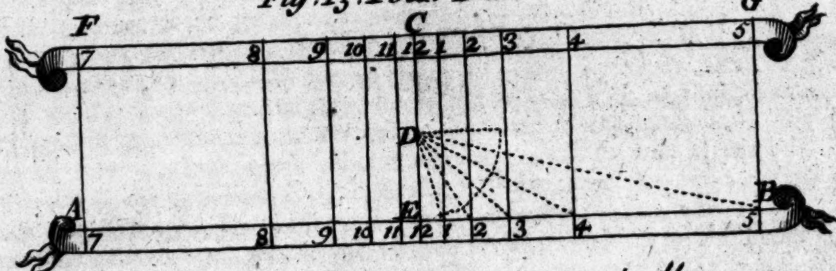
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Fig. 16. Vertical Declining Dial Geometrically.

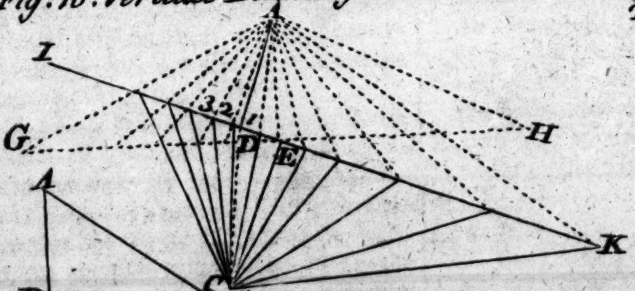
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Fig. 15. Vertical Declining Dial Trigonometrically

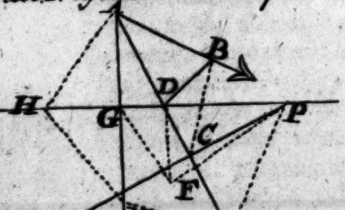

Fig. 17. Inclined Dial

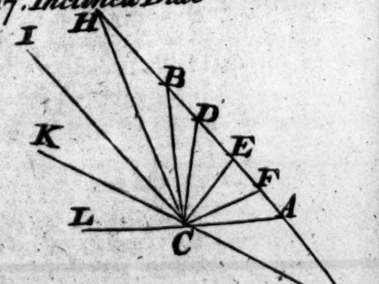
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Fig. 18. Universal Mechanical Dial

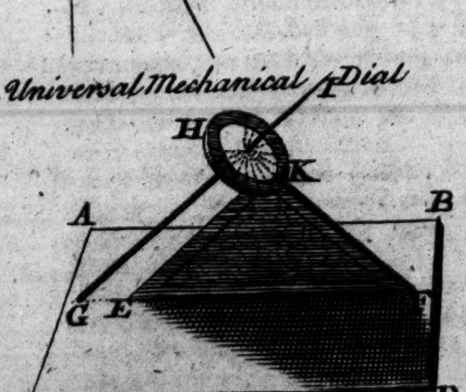
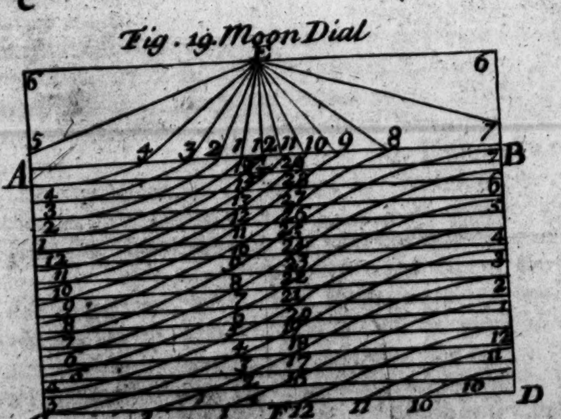


Fig. 19. Moon Dial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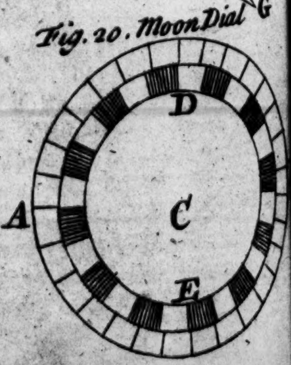
9
8
7
A
B
C
D
F

Fig. 20. Moon Dial



line after another; the ſame ſhadow will mark out the ſeveral hour-lines on the plane ABCD.

Noting the points, therefore, on the ſhadow, draw lines through them to G; then an index being fixed in G, according to the angle IGF, its ſhadow will point out the ſeveral hours by the light of the ſun.

If a *dial* were required on a vertical plane; having raiſed the equinoctial circle, as above directed, puſh forward the index GI, till the tip thereof I touch the plane.

If the plane be *inclined* to the horizon, the elevation of the pole ſhould be found on the ſame; and the angle of the triangle KEF ſhould be made equal thereto.

Note, Beſide the ſeveral ſpecies of *dials* above-mentioned, which are ſaid to be *with centres*; there are others, called *dials without centres*.

DIALS *without centres* are thoſe whoſe hour-lines do really converge, but ſo ſlowly, that the centre they converge towards cannot be expreſſed on the given plane.

Horizontal DIALS *without centres* are to be made for places, the elevation of whoſe pole is either very ſmall, or very great.

Vertical DIALS *without centres* are for places, the elevation of whoſe pole is very great.

For the Furniture of DIALS; ſee FURNITURE.

Ring-DIAL.	See	RING *Dial.*
Portable-DIAL.		RING *Dial.*
Quadrantal-DIAL.		*Herodictic* QUADRANT.
Reflecting-DIAL.		REFLECTING *Dial.*

Nocturnal, or *Night*-DIAL, is that which ſhews the hours of the night.

Of this there are two kinds; *Lunar*, and *Siderial.*

Moon-DIAL, or *Lunar* DIAL, is that which ſhews the hour of the night by means of the light, or ſhadow, of the moon, projected thereon from an index.

To deſcribe a Moon-DIAL. Suppoſe, *e. gr.* a horizontal *moon-dial* required: draw, firſt, a horizontal *ſun-dial*; then erect two perpendiculars, AB and CD (*fig.* 19.), to the line of 12 o'clock; and, dividing the interval GF into 12 equal parts, through the ſeveral points of diviſion draw lines parallel thereto: now, appropriating the firſt line CD to the day of the new moon, and the ſecond to the day when the moon comes an hour later to the meridian than the ſun; their interſections with the hour-lines will give points, through which to draw a curve line 12, 12, for the meridian-line of the moon. After the like manner determine the other hour-lines 1. 1, 2. 2, 3. 3, *&c.* which the ſhadow of the moon, projected from the ſtyle of the *dial*, interſects at the reſpective hours; then blot out the hour-lines of the *ſun-dial*, together with the perpendiculars whereby the lunar hours were drawn, and divide the interval GF, by other parallel lines, into 15 equal parts, anſwering to the 15 days between new and full moon: laſtly, to theſe lines write the ſeveral days of the moon's age.

Now, the moon's age being learnt from a calendar, the interſection of the line of the moon's age with the lunar hour-lines, will give the hour of the night.

After the ſame manner may any other *ſun-dial* be converted into a *moon-dial*.

To draw a portable Moon-DIAL. On a plane, that may be raiſed according to the elevation of the equator, deſcribe a circle AB (*fig.* 20.), and divide its circumference into 29 equal parts: from the ſame centre C deſcribe another moveable circle DE, which divide into 24 equal parts, or hours; in the centre C erect an index, as for an equinoctial *dial*.

This *dial* being duly placed, after the manner of an equinoctial *dial*, and the 12 o'clock line brought to the day of the moon's age; the ſhadow of the index will give the hour.

To uſe a Solar, as a Lunar-DIAL, i. e. *to find the hour of the night by a* Sun-dial.—Obſerve the hour which the ſhadow of the index points at by moon-light; find the moon's age in the calendar, and multiply the number of days by ¾, the product is the number of hours to be added to the hour ſhewn by the ſhadow, to give the hour required.

DIALECT, ΔΙΑΛΕΚΤΟΣ, the peculiar language of ſome province, or part, of a nation, formed by corruption of the general, or national language.

Homer could ſpeak five different languages in one verſe, *i. e.* five *dialects*; viz. the *Attic*, *Ionic*, *Æolic*, the *Doric*, and the common *dialect* of the Greeks.

The *Bologneſe*, *Bergamaſque*, *Toſcan*, &c. are the *dialects* of the Italian; the *Gaſcon*, and *Picard*, are *dialects* of the French.

DIALECTICA*, DIALECTICS, ΔΙΑΛΕΚΤΙΚΗ, the art of reaſoning and diſputing juſtly.

* The word comes from the Greek διαλεγομαι, I diſcourſe; formed of δια, and λεγω, *dico*, I ſay.

Zeno Elates was the firſt who diſcovered the natural ſeries of principles and concluſions obſerved in reaſoning, and formed an art thereof, in form of a dialogue; which, for this reaſon, was called *dialectica*.

The *dialectica* of the antients is uſually divided into ſeveral kinds: the firſt was the *Eleatica*, that of Zeno Eleates, which was threefold; viz. *Conſecutionum*, *Colloquutionum*, and *Contentionum*.—The firſt conſiſting of rules for deducing, or drawing, concluſions; the ſecond, the art of dialogue; which became of ſuch univerſal uſe in philoſophy, that all reaſoning was called *interrogation*: then, ſyllogiſm being laid aſide, the philoſophers did all by dialogue; it lying on the reſpondent to conclude and argue from the ſeveral conceſſions made.

The laſt part of Zeno's *dialectics*, Εριϛικη, was contentious; or the art of diſputing, and contradicting: though ſome, particularly Laertius, aſcribe this part to Protagoras, a diſciple of Zeno.

The ſecond is the *dialectica Megarica*, whoſe author is Euclid, not the mathematician, but another, of Megara. He gave much into the method of Zeno, and Protagoras; though there are two things appropriated to him: the firſt, that he impugned the demonſtrations of others, not by aſſumptions, but concluſions; continually making illations, and throwing in *ergo*, *ergo*, *ergo*: the ſecond, that he ſet aſide all arguments drawn from compariſon, or ſimilitude, as invalid.

He was ſucceeded by Eubulides, from whom the ſophiſtic way of reaſoning is ſaid to be derived. In his time the art is deſcribed as manifold: *Mentiens*, *Fallens*, *Electra*, *Obvelata*, *Acervalis*, *Cornuta*, and *Calva*. See SOPHISM.

The third is the *dialectics* of Plato, which he propoſes as a kind of analyſis, to direct the human mind, by dividing, defining, and bringing things to the firſt truth; where being arrived, and ſtopping there a little, it applies itſelf to explain ſenſible things; but with a view to return to the firſt truth, where alone it can reſt. Such is the idea of Plato's analyſis.

The fourth is Ariſtotle's *dialectics*, containing the doctrine of ſimple words, delivered in his book of *Prædicaments*; the doctrine of propoſitions, in his book *De Interpretatione*; and that of the ſeveral kinds of ſyllogiſm, in his books of analytics, topics, and elenchus's.

The fifth is the *dialectics* of the Stoics, which they call a part of philoſophy, and divide into rhetoric, and *dialectic*; to which ſome add, oric, or definitive, whereby things are juſtly defined; comprehending, likewiſe, the canons, or criterions, of truth.

The Stoics, before they come to treat of ſyllogiſms, have two principal places: the one, about the word ſignifying; the other, about the thing ſignified. On occaſion of the firſt, they conſider abundance of things belonging to the grammarians province: what, and how many, letters; what is a word, diction, ſpeech, *&c.* On occaſion of the latter, they conſider things themſelves, not as without the mind, but as in it, received in by means of the ſenſes. Accordingly, they firſt teach, that *nil ſit in intellectu, quod non prius fuerit in ſenſu*; whatever is in the mind, came thither by the ſenſes: and that, *aut incurſione ſui*, as Plato, who meets the ſight; *aut ſimilitudine*, as Cæſar by his effigy; *aut proportione*, either by enlarging, as a giant; or by diminiſhing, as a pygmy; *aut tranſlatione*, as a cyclops; *aut compoſitione*, as a centaur; *aut contrario*, as death; *aut privatione*, as a blind man.

The ſixth is Epicurus's *dialectics*. For though he ſeems to have deſpiſed *dialectic*, he cultivated it with vigour: he was only averſe to that of the Stoics, who, he thought, attributed too much thereto; as pronouncing him alone wiſe, who was well verſed in *dialectics*. For this reaſon, Epicurus, ſeeming to ſet aſide the common *dialectics*, had recourſe to another way; *viz.* to certain canons, which he ſubſtituted in their ſtead, the collection whereof he called *Canonica*: and as all queſtions in philoſophy are either *de re*, or *de voce*; he gave ſeparate rules for each.

DIALECTICAL *arguments*, in logic, are ſuch as are only probable, and do not convince, or determine, the mind abſolutely to either ſide of the queſtion.

DIALLING, the art of drawing ſun, moon, and ſtar-dials, on any given plane, or on the ſurface of any given body. See DIAL.

The Greeks and Latins call this art *Gnomonica*, and *Sciatherica*, by reaſon it diſtinguiſhes the hours by the ſhadow of a gnomon. Some call it *Photo-ſciatherica*, by reaſon the hours are ſometimes ſhewn by the light of the ſun. Laſtly, others call it *Horologiography*.

The antiquity of dials is beyond doubt. Some attribute their invention to Anaximenes Mileſius; and others, to Thales. Vitruvius mentions one, made by the antient Chaldee hiſtorian Beroſus, on a reclining plane, almoſt parallel to the equinoctial. Ariſtarchus Samius invented the hemiſpherical dial; and there were, at the ſame time, ſome ſpherical ones, with a needle for a gnomon. The diſcus of Ariſtarchus was an horizontal dial, with its limb raiſed up all around, to prevent the ſhadow ſtretching too far.

But it was late ere the Romans became acquainted with dials. The firſt ſun-dial at Rome was ſet up by Papyrius Curſor, about the year of the city 460. before which time, ſays Pliny, there is no mention of any account of time but by the ſun's riſing, and ſetting: the firſt dial was ſet up at or near the temple of Quirinus, but it went ill: about 30 years after, M. Valerius Meſſala, being conſul, brought out of Sicily another dial, which he ſet up on a pillar near the roſtrum; but for want of its being made for that latitude, it could not go true. They made uſe of it 99 years; till Martius Philippus ſet up another more exact.

But there ſeem to have been dials among the Jews much earlier than any of theſe. Witneſs the dial of Ahaz, who began to reign 400 years before Alexander, and within twelve years of the building of Rome; mentioned by Iſaiah, chap. xxxviii. verſe 8.

Dialling is wholly founded on the firſt motion of the heavenly bodies, and chiefly the ſun; or rather on the diurnal rotation of the earth; ſo that the elements of ſpherics, and the ſpherical aſtronomy, ſhould be maſtered, ere a perſon advances to the doctrine of *dialling*. The doctrine, or theory, we ſay; for, as to the practice, or the operations themſelves diſtinct from the demonſtrations, nothing is more eaſy and obvious.

The firſt profeſſed writer on *dialling*, is Clavius; who demonſtrates all, both the theory, and the operations, after the rigid manner of the antient mathematicians; but ſo intricately, that probably nobody ever read them all. Dechales, and Ozanam, give much eaſier in their *courſes*, and Wolfius in his *elements*. M. Picard has given a new method of making large dials, by calculating the hour-lines; and Mr. de la Hire, in his *dialling*, printed in 1683. a geometrical method of drawing hour-lines from certain points, determined by obſervation. Eberhardus Walperus, in 1625. publiſhed his *dialling*, wherein he lays down a method of drawing the primary dials on a very eaſy foundation. The ſame foundation is deſcribed at length by Sebaſtian Munſter, in his *Rudimenta Mathematica*, publiſhed in 1551. Sturmius, in 1672. publiſhed a new edition of Walperus's *dialling*, with the addition of a whole ſecond part, about inclining, and declining dials, *&c.* In 1708. the ſame work, with Sturmius's additions, was republiſhed with the addition of a fourth part, containing Picard's, and de la Hire's methods of drawing large *dials*, which makes much the beſt, and fulleſt book on the ſubject. Peterſon, Michael, and Muller, have each written on *dialling*, in the German tongue; Coetſius in his *Horologiographia plana*, printed in 1689. Gauppenius, in his *Gnomonica Mechanica*, and Bion, in his *Uſe of Mathematical Inſtruments*.

DIALLING-*Globe*, is an inſtrument made of braſs, or wood, with a plane fitted to the horizon, and an index; particularly contrived to draw all ſorts of dials, and to give a clear exhibition of the principles of that art.

DIALLING-*Sphere*, is an inſtrument made of braſs, with ſeveral ſemicircles ſliding over one another, on a moving horizon, to demonſtrate the nature of the doctrine of ſpherical triangles, and to give a true idea of the drawing of dials on all manner of planes.

DIALLING-*Lines*, or *Scales*, are graduated lines, placed on rules, or the edges of quadrants, and other inſtruments, to expedite the conſtruction of dials.

The principal of theſe lines are, 1. A ſcale of ſix hours, which is only a double tangent, or two lines of tangents each of 45 degrees, joined together in the middle, and equal to the whole line of ſines, with the declination ſet againſt the meridian altitudes in the latitude of London, ſuppoſe, or whatever place it is made for. The radius of which line of ſines is equal to the *dialling* ſcale of ſix hours. 2. A line of latitudes, which is fitted to the hour-ſcale, and is made by this canon; as the radius is to the chord of 90 degrees: ſo are the tangents of each reſpective degree of the line of latitudes, to the tangents of other arches. And then the natural ſines of thoſe arches are the numbers, which, taken from a diagonal ſcale of equal parts, will graduate the diviſions of the line of latitude to any radius. The line of hours and latitudes is general for pricking down all dials with centres.

DIALLING, in a mine, called alſo *Plumbing*, is the uſing of a compaſs (which they call *dial*), and a long line, to know which way the load, or vein of ore inclines, or where to ſhift an air-ſhaft, or bring an adit to a deſired place. See MINE. See Supplement, article PLUMBING.

DIALIA, in antiquity, ſacrifices performed by the flamen *dialis*, or prieſt of Jupiter.

It was not, however, of ſuch abſolute neceſſity, that the *dialia* were performed by the flamen *dialis*; but that others might officiate. We find in Tacitus, *Annal.* Lib. III. cap. 58. that if he were ſick, or detained by any other public employ, the pontifices took his place.

DIALIS *, in antiquity, a Latin term, ſignifying ſomewhat that belongs to Jupiter.

* The word is formed from Διος, the genitive of Ζευς, Jupiter.

Flamen **DIALIS**. See the article FLAMEN.

DIALOGUE *, a converſation of two, or more perſons, either by word of mouth, or in writing.

* The word is formed from the Latin *dialogus*, of the Greek Διαλογος, which ſignifies the ſame.

Dialogue is greatly recommended by many authors, and is the moſt antient form of writing; and that wherein the firſt authors wrote moſt of their pieces. The archbiſhop of Cambray gives a fine account of the advantages of *dialogue*, at the head of his paſtoral inſtruction.—The Holy Spirit himſelf has not diſdained to teach us in *dialogue*, *viz.* patience, in the book of Job, and love of God, in the Canticles. Juſtin Martyr opened this way, in his controverſy againſt the Jews; and Minutius Felix followed it in his againſt the idolaters. It is in this form, that Origen judged he could beſt refute the error of Marcion. The great Athanaſius thought it no diminution to the majeſty of myſteries of faith, to maintain them by the familiarity of *dialogue*. This way of writing St. Baſil alſo choſe as the moſt proper to convey thoſe rules, which have ſince illumined all the eaſt. The arts of *dialogue* were admirably put in practice by Gregory Nazianzen, and his brother Cæſarius, for conveying the ſublimeſt truths. Sulpitius Severus could not do better, than publiſh the wonders of ſolitude in a kind of converſations. A volume of St. Cyril of Alexandria is almoſt filled with *dialogues*, wherein he explains the moſt dogmatical truths, relating to the incarnation. The myſtery of Jeſus Chriſt is treated of in the ſame manner by the learned Theodoret. St. Chryſoſtom found no method more promiſing to expreſs the eminence and danger of the prieſthood. Who is not acquainted with the beautiful *dialogue* of St. Jerom, wherein he refutes the Luciferians? Who does not admire St. Auguſtine's *dialogues*, and eſpecially thoſe on free-will, where he goes back to the origin of ſin; againſt the Manichees? The tradition of the ſolitaries in the deſart is finely illuſtrated in the conferences of Caſſian, which have ſpread the ſame light through the weſt, that the eaſt received from St. Baſil. Gregory the Great deemed *dialogue* worthy the gravity of the apoſtolic ſee. The *dialogues* of St. Maximus, on the ſubject of the Trinity, are famous throughout all the church. St. Anſelm ſhewed the force of his genius in his *dialogues* on the fundamentals o religion.—Profane antiquity likewiſe made uſe of the art o *dialogue*, and that, not only on humorous, and comical ſubjects, as Lucian did, but alſo on the moſt ſerious and abſtract: ſuch are the *dialogues* of Plato, and thoſe of Cicero, which turn altogether on ſubjects of philoſophy, or politics. Among the moderns, the principal dialogiſts are M. de Fenelon archbiſhop of Cambray, M. Paſchal, in his *Provincial Letters*; F. Bouhours, in his *Entretiens d' Ariſte, & d' Eugene* M. Fontenelle, in his *Dialogues of the dead*, and *plurality o worlds*, &c.

DIALOGUE, in muſic, is a compoſition for at leaſt two voices or two inſtruments, which anſwer each other; and which frequently uniting at the cloſe, make a trio with the thorough baſs.

Such are many of the ſcenes in the Italian and French opera's.

DIALTHÆA, in pharmacy, an unguent thus called from i baſis, which is root of the *althæa*, or marſhmallow.

It conſiſts of mucilages drawn from that root, and from lin ſeed and fenugreek ſeed. The other ingredients are commo oil, wax, reſin, and turpentine.

It is eſteemed proper to ſoften, and diſſolve; aſſwage pains o the ſide, ſoften callus's, and ſtrengthen the nerves.—It is applied by rubbing it on the part affected.

DIALYSIS, in grammar, a character, conſiſting of two poin ·· placed over two vowels of a word, which would otherwi make a diphthong; but are hereby parted into two ſyllables. As in, *Moſaïc*. See DIÆRESIS.

DIAMARGARITON, in pharmacy, a medicine denom nated from pearls, called, in Latin, *margaritæ*; which are principal ingredient therein.

There are two kinds; the *hot* and the *cold*: but both are di uſed at this time.

Hot **DIAMARGARITON**, is a powder compoſed of pearls, p litory, ginger, nutmeg, cinnamon, and divers other hot i gredients.—It is reputed hyſteric, it ſtrengthens the wom promotes the menſes, and aſſiſts digeſtion.

Cold **DIAMARGARITON**, is a ſolid electuary, compoſed of pea ground fine, and white ſugar diſſolved in roſe-water, or th of bugloſs, and boiled to a conſiſtence.—It ſtrengthens t ſtomach, moderates the too abundant acids, ſtops the ſpitti of blood, and looſeneſs of the belly.

Compound cold **DIAMARGARITON**, is a powder made of pea red roſes, flowers of nenuphar, and violet, lignum aloes, red a citron ſantal, tormentil-root, ſeeds of melon, endive, &c. It is cardiac and ſtrengthening, facilitates reſpiration, a corrects malignant humours.

DIAMASTIGOSIS, in antiquity.—It was a cuſtom amo the Lacedemonians, for the children of the moſt diſtinguiſh families to ſlaſh and tear each others bodies with rods bef the altars of the gods; the fathers, and mothers, who w preſent at the ſpectacle, animating and exciting them all while, not to give the leaſt ſign of pain, or concern. T practice they called *diamaſtigoſis*, a Greek term, derived fr διαμαστιγοω, *I whip, ſcourge*.

The deſign hereof, apparently, was no other than to har their youth, and inure them betimes to blows, wounds, that they might deſpiſe them when they came to war.

DIAMETER, in geometry, a right line paſſing through the centre of a circle, and terminated on each ſide by the circumference thereof.

Or, *diameter* may be defined a chord paſſing through the centre of a circle.—Such is the line A E (*Tab. Geometry, fig.* 27.) paſſing through the centre C.

Half a *diameter*, as C D, drawn from the centre C to the circumference, is called the *ſemidiameter*, or *radius*.

The *diameter* divides the circumference into equal parts.—And hence we have a method of deſcribing a ſemicircle upon any line; aſſuming a point therein for the centre. The *diameter* is the greateſt of all the chords.

To find the ratio of the DIAMETER *to the circumference*.—This has been greatly ſought for by the mathematicians: and no wonder; inaſmuch as if this were juſtly given, the quadrature of the circle were atchieved.

Archimedes firſt propoſed a method of finding it, by regular polygons inſcribed in a circle, till arriving at a ſide ſubtending an exceeding ſmall arch, and then ſeeking a ſide of ſimilar polygon circumſcribed: each of theſe being multiplied by the number of ſides of the polygon, give the perimeter of the polygon both inſcribed, and circumſcribed. In which caſe, the ratio of the *diameter* to the circumference of the circle, is greater than that of the ſame *diameter* to the perimeter of the circumſcribed polygon, but leſs than that of the *diameter to* the perimeter of the polygon inſcribed. The difference between both gives the ratio of the *diameter* to the circumference in numbers nearly true.

That divine author, as already obſerved, by polygons of 96 ſides, found the ratio of the *diameter* to the circumference to be as 7 to 22; *viz.* ſuppoſing the *diameter* 1, the perimeter of the inſcribed polygon is found $3\frac{10}{71}$, and that of the circumſcribed $3\frac{1}{7}$.

After his example, later authors have found out ratio's yet nearer truth; but none ſpent ſo much time on it as Van Ceulen, who, after immenſe pains, found that ſuppoſing the *diameter* 1, the circumference is leſs than 3.14159265358979323846264338387950, and yet greater than the ſame number with only the laſt figure 0 changed into 1. But as ſuch prolix numbers are too unweildy for practice, many of our preſent practical geometricians aſſume the *diameter* to be to the circumference as 100 to 314; or in greater circles as 10000 to 31415; in which proportion Ptolemy, Vieta, and Huygens, agree with Van Ceulen.

Ad. Metius gives us the ratio 113 to 355, which is the moſt accurate of all thoſe expreſſed in ſmall numbers; as nor erring 3 in 10000000.

The DIAMETER of a circle being given, to find the circumference, and area; and the circumference being given, to find the *diameter*.—The ratio of the *diameter* to the circumference being had, as in the laſt article, that of the circumference to the *diameter* is had likewiſe. Then the circumference, being multiplied into the fourth part of the *diameter*, gives the area of the circle.—Thus, if the *diameter* be 100, the circumference will be 314, and the area of the circle 7850. But the ſquare of the *diameter* is 10000: therefore, this is to the area of the circle as 10000 to 7850, that is as 1000 to 785 nearly.

he area of a circle being given, to find the DIAMETER.—To 785, 1000, and the given area of the circle 246176, find a fourth proportional, *viz.* 3113600, which is the ſquare of the *diameter*. Out of this extract the ſquare root, and it is the *diameter* itſelf.

IAMETER *of a conic ſection*, is a right line, as A D (*Tab. Conics, fig.* 5.), biſecting all the ordinates M M, *&c.* in P, *&c.* See CONIC.

This, when it cuts the ſaid lines at right angles, is more particularly called the *axis of the curve*, or *ſection*.

ranſverſe **DIAMETER**, is a right line, as A B (*Tab. Conics, fig.* 6. N° 2.), which being continued each way between two curves, biſects parallel right lines between the ſame, as MM.

njugate **DIAMETER**, is a right line, biſecting lines drawn parallel to the tranſverſe *diameter*. See CONJUGATE.

IAMETER *of a ſphere*, is the *diameter* of the ſemicircle by whoſe rotation the ſphere is generated; called alſo the *axis of the ſphere*.

IAMETER *of gravity*, is a right line paſſing through the centre of gravity.

IAMETER, in aſtronomy.—The *diameters* of the heavenly bodies, are either *apparent*, *i. e.* ſuch as they appear to the eye; or *real*, *i. e.* ſuch as they are in themſelves.

e apparent DIAMETERS meaſured with a micrometer, are found different, in different circumſtances and parts of their orbits.

	Greateſt.		Mean.		Leaſt.	
	′	″	′	″	′	″
Ap. DIAM. *of the* Sun *accord. to Ptolemy*	33	20	32	18	31	20
to Tycho	32	0	31	0	30	0
Kepler	31	4	30	30	30	0
Ricciolus	32	8	31	40	31	0
Caſſini	32	10	31	40	31	8
de la Hire	32	43	32	10	31	38
of the Moon *accord. to Ptolemy*	35	20	—	—	31	20
Tycho in the Conjunct.	28	48	—	—	25	36
in the Oppoſ.	36	0	—	—	32	0
Kepler	32	44	—	—	30	0
de la Hire	33	30	—	—	29	30
of Saturn *accord. to Tycho*	2	12	1	50	1	34
Hevelius	0	19	0	16	0	14
Huygens	—	—	—	—	30	0
of Jupiter *accord. to Tycho*	3	59	2	45	2	14
Hevelius	0	24	0	18	0	14
Huygens	—	—	—	—	1	4
of Mars *accord. to Tycho*	6	46	1	40	0	57
Hevelius	0	20	0	5	0	2
Huygens	—	—	—	—	0	30
of Venus *accord. to Tycho*	4	40	3	15	1	52
Hevelius	1	5	0	16	0	9
Huygens	—	—	—	—	1	25
of Mercury *accord. to Tycho*	3	57	2	10	1	29
Hevelius	0	11	0	6	0	4

The great difference between Tycho, and the other two aſtronomers, is owing to this, that Tycho, in imitation of the antients, meaſured the *diameters*, as they appeared to the naked eye; whereas Hevelius and Huygens uſed teleſcopes, whereby a deal of ſpurious luſtre, which otherwiſe makes them appear bigger than they are, is taken off.

For the true DIAMETERS of the ſun, and planets, and their proportion to each other, ſee SEMIDIAMETER.

DIAMETER *of a Column*, is its thickneſs juſt above the baſe. From this the module is taken, which meaſures all the other parts of the column.

DIAMETER *of the Diminution*, is that taken from the top of the ſhaft. See DIMINUTION.

DIAMETER *of the Swelling*, is that taken at the height of one-third from the baſe.

DIAMOND, in natural hiſtory, by the antients called *adamant*, a precious ſtone, the firſt in rank, value, hardneſs, and luſtre, of all gems.

The goodneſs of *diamonds* conſiſts in their water, or colour, luſtre, and weight: the moſt perfect colour is the white. Their defects are veins, flaws, ſpecks of red or black ſand, and a bluiſh or yellowiſh caſt.

In Europe, the lapidaries examine the goodneſs of their rough *diamonds*, their water, points, *&c.* by day-light: in the Indies, they do it by night; in order to which, a hole is made in a wall a foot ſquare, and therein a lamp is placed, with a thick wick, by the light whereof they judge of the ſtone, holding it in their fingers.

The water, called *cœleſtis*, is the worſt of all, and yet is ſomewhat difficult to diſcover in a rough *diamond*. The only infallible way is to examine it in the ſhade of ſome tufted tree.

As to the diſtinguiſhing of *diamonds* from other ſtones, Dr. Wall, in the *Philoſoph. Tranſact.* ſeems to have found an infallible method: a *diamond*, with an eaſy, ſlight friction in the dark, with any ſoft, animal ſubſtance, as the finger, woollen, ſilk, or the like, appears luminous in its whole body: nay, if you keep rubbing for ſome time, and then expoſe it to the eye, it will remain ſo for ſome time. If the ſun be 18 degrees below the horizon; holding up a piece of bays, or flannel ſtretched tight between both hands, at ſome diſtance from the eye; and another rubbing the other ſide of the bays, or flannel, pretty briſkly with a *diamond*; the light is much more vivid and pleaſant than any other way. But what Dr. Wall judges moſt ſurpriſing is, that a *diamond*, being expoſed to the open air, in view of the ſky, gives almoſt the ſame light of itſelf, without rubbing, as if rubbed in a dark room: but, if in the open air, you put the hand, or any thing a little over it, to prevent its immediate communication with the ſky; it gives no light; which is a diſtinguiſhing criterion of a *diamond*.

Rough **DIAMOND**, is that not yet cut, but juſt as it comes out of the mine.

Brilliant **DIAMOND**, is that cut in faces both a-top, and bottom; and whoſe table, or principal face a-top, is flat.

Roſe **DIAMOND**, is that quite flat underneath, but its upper part cut in divers little faces, uſually triangles, the uppermoſt whereof terminate in a point.

Table **DIAMOND**, is that which has a large ſquare face a-top, encompaſſed with four leſſer.

Diamonds are found in the Eaſt-Indies, and that principally in the kingdoms of Golconda, Viſapour, Bengale, and the iſland of Borneo. There are four mines, or rather two mines, and two rivers, whence *diamonds* are drawn.—The mines are, 1. That of Raolconda, in the province of Carnatica, five days journey from Golconda, and eight from Viſapour. It has been diſcovered about 200 years. 2. That of Gani, or Coulour, ſeven days journey from Golconda, eaſtwardly. It was diſcovered 120 years ago by a peaſant; who, digging in the ground, found a natural fragment of 25 caracts. 3. That of Soumelpour, a large town in the kingdom of Bengal, near the *diamond-mine*: this is the moſt antient of them all. It ſhould rather be called that of Goual, which is the name of the river, in the ſand whereof theſe ſtones are found. Laſtly, the fourth mine, or rather the ſecond river, is that of Succudan, in the iſland of Borneo.

Diamond-*mine of* Raolconda.—In the neighbourhood of this mine the earth is ſandy, and full of rocks, and copſe: in theſe rocks are found ſeveral little veins, of half, and ſome times a whole inch broad, out of which the miners, with a kind of hooked irons, draw the ſand, or earth, wherein the *diamonds* are; breaking the rocks when the vein terminates, that the track may be found again, and continued. When a ſufficient quantity of earth, or ſand, is drawn forth, they waſh it two or three times, to ſeparate the ſtones therefrom: the miners work quite naked, except for a thin linen cloth before them; and, beſides this precaution, they have likewiſe inſpectors, to prevent their concealing of ſtones: which, however, in ſpite of all this care, they frequently find means to do, by watching opportunities, when they are not obſerved, and ſwallowing them down.

Diamond-*mine of* Gani, *or* Coulour.—In this mine are found a great number of ſtones from 10 to 40 caracts, and even more; and it was there that the famous *diamond* of Aureng-Zeb, the Great Mogul, which, before it was cut, weighed 793 caracts, was found. The ſtones of this mine are not very clear; their water is uſually tinged with the quality of the ſoil: being black, where that is marſhy; red, where it partakes of red; and ſometimes green, and yellow, if the ground happen to be of thoſe colours.—Another defect, of ſome conſequence, is, a kind of greaſineſs appearing on theſe *diamonds*, when cut, which takes off part of their luſtre.—There are uſually no leſs than 60000 perſons, men, women, and children, at work in this mine.

When the miners have found a place where they intend to dig, they level another, ſomewhat bigger, in the neighbourhood thereof, and incloſe it with walls about two feet high, only leaving apertures, from ſpace to ſpace, to give paſſage to the water: after a few ſuperſtitious ceremonies, and a kind of feaſt, which the maſter of the mine makes the workmen, to encourage them; every one goes to his buſineſs, the men digging the earth in the place firſt diſcovered, and the women and children carrying it off into the other, walled round. They dig 12 or 14 feet deep, and till ſuch time as they find water; then they ceaſe digging: and the water, thus found, ſerves to waſh the earth two or three times; after which, it is let out at an aperture reſerved for that purpoſe. This earth being well waſhed, and well dried, they ſift it in a kind of open ſieve, or riddle, much as we do corn in Europe; then they thraſh it, and ſift it afreſh; and, laſtly, they ſearch it well with the hands, to find the *diamonds*. They work naked here, as in the mine of Raolconda, and are watched, after the like manner, by inſpectors.

Diamond-*mine of* Soumelpour, *or river* Goual.—Soumelpour is a large town built all of earth, and covered with branches of cacao-trees: the river Goual runs by the foot thereof, in its paſſing from the high mountains, towards the ſouth, to the Ganges, where it loſes its name. It is from this river that are brought all our fine *diamond*-points, or ſparks, called *natural ſparks*. They never begin to ſeek for *diamonds* in this river till after the great rains are over, that is, after the month of December; and they uſually even wait till the water is grown clear, which is not before January: the ſeaſon at hand, eight or ten thouſand perſons, of all ages, and both ſexes, come out of Soumelpour, and the neighbouring villages. The moſt experienced among them ſearch and examine the ſand of the river; going up it from Soumelpour to the very mountain whence it ſprings. A great ſign that there are *diamonds* near, is, the finding of thoſe ſtones which we Europeans call thunder-ſtones. When all the ſand of the river, which at that time is very low, has been well examined, they proceed to take up that wherein they judge *diamonds* likely to be found; which is done after the following manner: they dam the place round with ſtones, earth, and faſcines; and, lading out the water, dig about two feet deep: the ſand, thus got, is carried into a place walled round on the bank of the river.—The reſt is performed after the ſame manner as at Coulour, and the workmen are watched with equal ſtrictneſs.

Diamond-*mine in the iſland of* Borneo, *or river of* Succudan.—We are but little acquainted with this mine; the queen who reigns in that part of the iſland not allowing ſtrangers to have any commerce in theſe ſtones: though there are very fine ones, to be bought at Batavia, brought thither by ſtealth. They were antiently imagined to be ſofter than thoſe of the other mines; but experience ſhews, they are in no reſpect inferior to them.

Beſide theſe four *diamond-mines*, there have been two other diſcovered; one of them between Coulour and Raolconda, and the other in the province of Carnatica: but they were both cloſed up almoſt as ſoon as diſcovered: that of Carnatica, by reaſon the water of the *diamonds* was always either black, or yellow; and the other, on account of their cracking, and flying in pieces when cut and ground.

The *diamond*, we have already obſerved, is the hardeſt of al precious ſtones. It can only be cut, and ground, by itſelf, and its own ſubſtance. To bring it to that perfection which augments its price ſo conſiderably, they begin by rubbing ſeveral againſt each other, while rough; after having firſt glued them to the ends of two wooden blocks, thick enough to b held in the hand: it is the powder thus rubbed off the ſtones, and received in a little box for the purpoſe, that ſerves t grind and poliſh the others.

Diamonds are cut and poliſhed by means of a mill, which turns a wheel of ſoft iron ſprinkled over with *diamond*-duſt mixed with oil of olives: the ſame duſt, well ground, and diluted with water and vinegar, is uſed in the ſawing of *diamonds*; which is performed with an iron, or braſs, wire, as fin as a hair: ſometimes, in lieu of ſawing the *diamonds*, they cleave them, eſpecially if there be any viſible plates in them But the Europeans are not uſually daring or expert enough to run the riſque of cleaving, for fear of breaking.

A *rough diamond* muſt be choſen uniform, of a good ſhape tranſparent, not quite white, and free of flaws and ſhivers black, rugged, dirty, flawey, veiny ſtones, and all ſuch as ar not fit for cutting, they uſe to pound in a ſteel mortar mad for that purpoſe; and, when pulverized, they ſerve to ſaw, cut and poliſh, the reſt. Shivers are occaſioned, in *diamonds*, b this; that the miners, to get them more eaſily out of th vein, which winds between two rocks, are often forced t break the rocks with huge iron wedges, which ſhakes and fill the ſtone with cracks and ſhivers. The antients had two mi taken notions, with regard to the *diamond*: the firſt, that became ſoft, by ſteeping it in hot goat's blood; and the ſe cond, that it was malleable, or bore the hammer. Expe rience ſhews us the contrary: there being nothing capable o mollifying the hardneſs of this ſtone; though its hardneſs b not ſuch, that it will endure being ſtruck at pleaſure with th hammer.

The fineſt *diamonds* now in the world are, that of the Gre Mogul, weighing 279 caracts; that of the great duke of Tu cany, weighing 139 caracts; and that known in France un der the name of *grand ſancy*, which is one of the crown jewels, weighing 106 caracts; whence its name *ſancy*, whic is a corruption of *cent ſix*, that is, 106. Tavernier, by a ru which he had made for eſtimating the value of *diamond* computes that of the Great Mogul at 11723278 Frenc livres, equivalent to 779244 pounds ſterling; and that of th duke of Tuſcany, at 2608335 livres, or 195374 pounds ſter ing. The following is a rate, or manner, of eſtimating t value of *diamonds*; drawn up by a perſon well verſed in ſu matters, and which, for its curioſity, as well as the uſe it ma be of to perſons who deal in precious ſtones, we judge, w not be unacceptable.

Table DIAMONDS.

Dutch Cut.

A *Diamond* weighing		Lib.	Sh.	Lib.	Sh. ſterl.
1 grain, is worth from		1	0	to 1	1
1½	— —	1	16	to 1	17
2	— —	2	15	to 3	0
2½	— —	3	12	to 3	15
3	— —	4	15	to 5	0
4	— —	7	17	to 8	0
5	— —	15	0	to 15	15
6	— —	22	0	to 25	0
7	— —	30	0	to 34	0
8	— —	42	0	to 45	0
9	— —	60	0	— —	—
10	— —	75	0	— —	—
12	— —	112	0	to 120	0
15	— —	187	0	to 220	—
19	— —	330	0	to 380	0
24	— —	450	0	— —	0
30	— —	700	0	to 735	0
40	— —	1500	0	to 1800	0
50	— —	3500	0	to 4500	0
60	— —	4500	0	to 5620	0

Antwerp Cut.

A *Diamond* weighing		Lib.	Sh.	Lib.	Sh. ſterl.
1 grain, is worth from		0	15	to 0	18
1½	— —	1	6	to 1	10
2	— —	2	2	to 2	5
3	— —	3	12	to 3	15
4	— —	6	0	to 6	7
5	— —	10	10	to 11	5
6	— —	13	10	to 15	0
7	— —	18	15	to 22	10
8	— —	24	0	to 26	0
9	— —	33	15	— —	—
10	— —	37	0	to 40	0
12	— —	55	0	to 58	0
15	— —	112	0	to 130	0
18	— —	247	0	— —	0
24	— —	315	0	— —	0
40	— —	900	0	to 970	0
50	— —	2200	0	to 2300	0
60	— —	3500	0	to 4500	0

It muſt be obſerved, however, that defects in the water, or ſhape; red, or black ſpots; ſhivers, and other failings, frequently found in theſe ſtones, reduce the price by one third, and ſometimes more.

As to *Brilliant* DIAMONDS of very ſmall cut, the price is always leſs by one third, than that of *Diamonds* of a larger cut; though the weights be the ſame: the reaſon is, that the latter ſhew themſelves a great deal more when ſet in their collets, than the former.

Attempts have been made to produce *artificial diamonds*, but with no great ſucceſs.

The *factitious diamonds* made in France, called *temple-diamonds*, on account of the temple at Paris, where the beſt of them are made, fall vaſtly ſhort of the genuine ones; accordingly they are but little valued, though the conſumption thereof is pretty conſiderable for the habits of the actors on the ſtage, *&c.* See Supplement, articles DIAMOND, and PASTES.

DIAMOND is an inſtrument of conſiderable uſe in the glaſs-manufactory, for ſquaring the large plates, or pieces; and among glaziers, for cutting their glaſs.

Theſe *diamonds* are differently fitted up. That uſed for looking-glaſſes, and other large pieces, is ſet in an iron ferril two inches long, and a quarter of an inch in diameter. The reſt of the cavity of the ferril is filled with melted lead, which keeps the *diamond* firm in its place.

The glaziers have a handle of box, or ebony, fitted into the ferril to hold it by. In the former there is a little piece of box croſſing the ferril, in form of a little plane, covered at bottom with a thin copper-plate.

DIAMOND, in heraldry, is uſed to expreſs the black colour in the atchievements of noblemen.

Gwillim diſlikes the way of blazoning the coats of peers by precious ſtones, inſtead of metals, or colour. But the Engliſh practice allows it. See COLOUR.

DIAMOND *glaſs*. See the article GLASS.

DIAMORUM, ΔΙΑΜΩΡΟΝ, a compoſition in pharmacy, of which there are two kinds; *ſimple*, and *compound*.—

Simple DIAMORUM, is the common ſyrup of mulberries, made of the juice of that fruit, boiled up with ſugar.—It is good againſt diſeaſes of the throat, and to ſtop dyſenteries.

There is alſo a ſort of *ſimple Diamorum* made of mulberry juice and honey, otherwiſe called *Mulberry Rob.*—

Compound DIAMORUM, is made with mulberry juice, verjuice, myrrh, and ſaffron.—It is uſed to deterge phlegm from the ſtomach and breaſt, and to eaſe reſpiration.

DIANA's *Tree*, *Arbor Dianæ*. See the article ARBOR.

DIANUCUM *, in pharmacy, a kind of rob, made of the juice of green walnuts, and ſugar, boiled together by a moderate fire, to the conſiſtence of honey.

* The word is formed from *dia*, and *nux*, *nucis*, nut.

It is good to ſtrengthen the ſtomach, promote ſweat, and reſiſt poiſon.

DIAPALMA, in pharmacy, a deſiccative, or drying plaiſter, ſaid to be ſo denominated from the wood of the palm-tree, whereof the ſpatula is to be made; that is to ſtir it while boiling. It is compoſed of common oil, hog's fat, and litharge of gold. —It is good to dry, reſolve, deterge, and cicatrize: and is the plaiſter moſt uſed for wounds, and ulcers.

DIAPASMA *, a common name for all powders ſprinkled on the body; whether as perfumes or otherwiſe.

* The word comes from the Greek *διαπασσειν*, *inſpergere*, to ſprinkle.

DIAPASON, in muſic, a muſical interval, otherwiſe called *octave*.

The *diapaſon* is the firſt, and moſt perfect of the concords: if conſidered *ſimply*, it is but one harmonical interval; though if conſidered *diatonically*, by tones, and ſemi-tones, it contains ſeven degrees, *viz.* three greater tones, two leſſer tones, and two greater ſemi-tones.

The interval of a *diapaſon*, that is, the proportion of its grave ſound to its acute, is as 2 to 1.

DIAPASON, among muſical inſtrument-makers, is a kind of rule, or ſcale, whereby they adjuſt the pipes of their organs, and cut the holes of their flutes, haut-bois, *&c.* in due proportion, for performing the tones, ſemi-tones, and concords, juſtly.

A ſquare being divided into eight equal parallelograms; the points wherein a diagonal interſects all theſe parallelograms, expreſſes all the uſual intervals in muſic: and on this principle it is, that the *diapaſon* is founded.

There is a particular kind of *diapaſon* for trumpets; ſerving as a ſtandard, or meaſure, for the different magnitudes they muſt have to perform the four parts of muſic.

There is another for ſackbuts, and ſerpents, ſhewing how far they are to be lengthened, or ſhortened, to riſe or fall from one tone or interval to another.

The bell-founders have likewiſe a *diapaſon*, or ſcale, ſerving to regulate the ſize, thickneſs, weight, *&c.* of their bells.

IAPASONDIAEX, in muſic, a kind of compound concord; whereof there are two ſorts: the *greater*, which is in the ratio of 10 to 3; and the *leſs*, in that of 16 to 5.

IAPASONDIAPENTE, in muſic, a compound conſonance, in the ratio of triple of 9 to 3.

The *diapaſon-diapente* is a ſymphony made when the voice proceeds from the 1ſt to the 12th tone. The word is properly a term in the Greek muſic: we ſhould now call it a *twelfth*.

DIAPASONDIATESSARON, in muſic, a compound concord, in the ratio of 8 to 3.

The *diapaſondiateſſaron* is a ſymphony wherein the voice proceeds from the firſt tone to the eleventh.—This the moderns would rather call an *eleventh*.

DIAPASONDITONE, in muſic, a compound concord, in the proportion of 10 to 4, or 5 to 2.

DIAPASONSEMIDITONE, a compound concord, whoſe terms are in the proportion of 12 to 5.

DIAPEDESIS *, ΔΙΑΠΗΔΗΣΙΣ, in medicine, an ouſing of blood through the coats of the veins, or arteries; occaſioned either by the blood's becoming too much diſſolved, or attenuated; or by the pores of the veſſels becoming too patent, and open.

* The word is compounded of *δια*, *through*; and *πηδαω*, *I leap*.

There are ſome able phyſicians who deny there can be any ſuch tenuity of blood, as that it ſhall exude through the veſſels, without any apperture made therein.

DIAPENTE *, in the antient muſic, an interval making the ſecond of the perfect concords; anſwering to what in the modern muſic we more uſually call a *perfect fifth*.

* The word is formed of *δια*, and *πεντε*, *five*.

The *diapente* is a ſimple concord; yet, if conſidered diatonically, it contains four terms, *viz.* two greater tones, a leſſer tone, and a greater ſemi-tone. The *diapente* is the greater part of the diapaſon, or octave, harmonically divided. It is produced when the voice paſſes from its firſt tone to its fifth.

DIAPENTE is alſo uſed, in pharmacy, for a compound of five ſeveral drugs, or ingredients.

DIAPHANOUS *, in philoſophy, a thing tranſparent, or that gives paſſage to the rays of light; as water, air, glaſs, talc, fine porcelane, *&c.* See TRANSPARENT.

* The word is formed of *δια*, *through*, and *φαινω*, *I ſhew*.

DIAPHANEITY, in the ſchools, the quality of a tranſparent body; or that which denominates it ſuch. See TRANSPARENCY.

The Carteſians hold the *diaphaneity* of a body to conſiſt in the rectitude of its pores; that is, in their being ſituate in right lines; ſo as that there is no intermediate ſubſtance to prevent the paſſage of the rays: and hence they argue, that the rendering glaſs malleable is an impoſſibility: for as ſoon as it becomes malleable, its pores will ceaſe to be ſituate directly againſt each other; and of conſequence it will loſe its *diaphaneity*, the principal character of glaſs.

Sir Iſaac Newton accounts for *diaphaneity* from another principle, *viz.* from the homogeneity, and ſimilarity between the medium, wherewith the pores are filled, and the matter of the body itſelf.—For the refractions the rays undergo in paſſing thus out of the matter into the pores, *i. e.* out of one medium into another, being but ſmall, the progreſs of the ray is not ſo much interrupted, but that it can make its way through the body.

DIAPHOENIC, DIAPHOENICUM, in pharmacy, a ſoft, purgative electuary; thus called from the dates, which make its baſis; the palm-tree, whoſe fruit they are, being called by the Greeks φοινιξ. See DATE.

The other ingredients are penidies, almonds, turbith, ginger, white pepper, mace, cinnamon, rice, fennel, and carrot-ſeeds, and honey.

The *Electuarium Diaphœnicum* purges chiefly ſeroſities, and excites the menſes.—It is alſo uſed in dropſies, lethargies, apoplexies, and palſies.

DIAPHORESIS, ΔΙΑΦΟΡΗΣΙΣ, in medicine, includes all diſcharges made through the ſkin; both ſenſible, and inſenſible: whence *diaphoretic*, &c. See PERSPIRATION.

DIAPHORETIC, in medicine, is applied to remedies that promote the expulſion of humours by inſenſible perſpiration.

Diaphoretic is much of the ſame import as *ſudorific*: except that the latter promotes ſenſible, and the former inſenſible perſpiration.—Their only difference, therefore, is in the degree of activity.

DIAPHORETIC *Antimony*, or *mineral Diaphoretic*, is a preparation of antimony, the proceſs whereof ſee under the article ANTIMONY.

DIAPHRAGM *, DIAPHRAGMA, in anatomy, a part, popularly called the *midriff*, and by anatomiſts, *ſeptum tranſverſum*. It is a nervous muſcle, ſeparating the breaſt, or thorax, from the abdomen, or lower venter; and ſerving as a partition between the natural, and the vital parts as they are called.

* It was Plato, as Galen informs us, that firſt called it *Diaphragm*, from the verb *διαφραττειν*, *to ſeparate*, or be between two. Till his time it had been called φρενες, *underſtanding*; from a notion, that an inflammation of this part produced phrenſy: which is not at all warranted by experience, no more than that other tradition, that a tranſverſe ſection of the *Diaphragm* with a ſword, cauſes the patient to die laughing.

Its figure is round, reſembling a ray-fiſh, or thorn-back. It conſiſts of two circles, the one membranous, the other fleſhy; though others will have both of them muſcular; of two arteries; and two veins, called *Phrenicæ*; and ſeveral branches of nerves.

The firſt, or ſuperior circle ariſes from the ſternum, and the ends of the laſt ribs: the ſecond, or inferior, comes from the vertebræ of the loins. The upper is covered a-top with a membrane derived from the pleura; and the lower is lined at bottom with another from the peritonæum.

Its ſituation is oblique, being extended from the cartilago xiphoides, by the extremes of the ribs, to the region of the loins. It is pierced in the middle of the paſſage of the vena cava; and in its lower part for the oeſophagus; and between the productions of the inferior circle paſs the aorta, thoracic duct, and vena azygos. In its natural diſpoſition it is convex on the upper ſide towards the breaſt, and concave on the lower towards the belly. Hence it has two motions; the one of contraction, the other of relaxation.

By the contraction, or ſwelling of the fibres, the *diaphragm* becomes flat on each ſide; the conſequence of which is, that the cavity of the breaſt is enlarged, to give liberty for the lungs to receive the air in inſpiration; and the cavity of the abdomen is leſſened, and, conſequently, the ſtomach and inteſtines preſſed, for the diſtribution of the chyle. In its relaxation, whereby it reſumes its natural ſituation, the cavity of the breaſt is diminiſhed, and the lungs preſſed for the expulſion of the air in expiration.

On the *diaphragm*, alſo, in great meaſure, depend the actions of coughing, ſneezing, yawning, laughing, the hiccough, *&c.* between which motions there is ſome connexion cauſed by the communication of the nerves of different parts, which meet in the *diaphragm*.

Dr. Hook obſerves, that an animal may be kept alive, without thorax, or *diaphragm*, by blowing air into the lungs with a bellows; of which he had made the experiment.

Diaphragm is alſo a general name, given to all partitions, or ſeparations between two parts of a thing; as the little perforated partitions in the tubes of long teleſcopes.

DIAPHRAGMATIC, is applied to the arteries, veins, and nerves, diſtributed through the diaphragm.

They are alſo called *Phrenic*, or *Phrenetic*.

DIAPRE', or **Diapered**, in heraldry, a dividing of a field into planes, or compartiments, in the manner of fret-work; and filling the ſame with variety of figures.

This chiefly obtains on bordures, which are *diapered*, or fretted over, and the frets charged with things proper to bordures: as in *Tab. Herald. fig.* 18.

DIAPRUNUM, in pharmacy, a ſoft, purgative electuary, thus called from the pulp of Damaſcus *prunes*, which make its baſe.

Diaprunum is either *ſimple*, or *compound*.

Simple, or *lenitive* **Diaprunum**, conſiſts of the pulp aforementioned, with caſſia, tamarins, rhubarb, red roſes, violet-ſeeds, ſaunders wood, both red and citron, ſcrapings of ivory, liquorice juice, and the four cold ſeeds. It is good to prepare, and ſoften the humours.

Compound, or *ſolutive* **Diaprunum**, is only the ſimple, with the addition of half an ounce of ſcammony to every pound of the electuary, to render it more purgative.

DIARRHODON *, ΔΙΑΡΡΟΔΟΝ, in pharmacy, a name given to divers compoſitions, wherein roſes are a principal ingredient.

* The word is formed of δια, and ῥοδον, *roſe*.

Diarrhodon *Abbatis*, is a cordial powder, ſo denominated from the abbot who invented it. It conſiſts of red roſes, red and citron ſaunders, lignum aloes, cinnamon, rhaponticum, ſpikenard, ivory, hart's-horn, ſaffron, maſtic, pearls, ambergris, muſk, *&c.* It is uſed to ſtrengthen the heart, ſtomach, and liver, to aſſiſt in digeſtion, and to prevent vomiting.

There are alſo *Trochiſci* **Diarrhodon**, compoſed of red roſes, ſhavings of ivory, the ſaunders, liquorice, maſtic, ſaffron, camphor, and roſe-water. They are good to fortify the heart, ſtomach, and liver, and to ſtop dyſenteries, and other fluxes of the belly.

Pilulæ **Diarrhodon** are compoſed of aloes, trochiſci diarrhodon, wormwood leaves, maſtic, and rock-ſalt. They firſt purge, then fortify the ſtomach, promote digeſtion, and prevent a ſtinking breath. But all theſe compoſitions are out of uſe at preſent.

DIARRHOEA *, ΔΙΑΡΡΟΙΑ, in medicine, a looſeneſs, or flux of the belly; or a profuſe evacuation of liquid excrements by ſtool.

* The word is formed of the Greek δια, *through*, and ῥειν, *to flow*.

The word, in the general, is uſed for any kind of flux of the belly; but properly for that wherein the humour, or excrement, flows out either pure, or mixed, with or without pain, in a fluid ſtate.

Diarrhœa's are of divers kinds, diſtinguiſhed by the diverſity of the excrements: ſome being bilious; ſome ſerous; ſome pituitous; and ſome purulent.

The purulent always ariſe from ſome abſceſs burſt in the body; the reſt either from morbid humours irritating the inteſtines, and expreſſing the juices out of the adjacent parts; or from a laxneſs of the inteſtinal fibres; or an extraordinary fermentation in the blood, whereby it diſcharges its excrements into the inteſtines.

There are alſo *diarrhœa's* ariſing from unwholſome foods, and the ſtoppage of the other excretions, particularly perſpiration. It is a ſtanding obſervation, that ſuch as perſpire but little, are ever ſubject to a *diarrhœa*; and on the contrary, people who perſpire much, are commonly coſtive.

Baglivi mentions *diarrhœa's* as one uſual great effect of grief; as likewiſe of immoderate anger; without which a fever would, in theſe caſes, be produced.

In the cure of *diarrhœa's*, from whatever cauſe they ariſe, the ſtomach muſt be corroborated, and ſudorifics are to be mixed with abſorbents. The patient is to drink ſparingly. Quince and wine burnt with aromatics is good. Wainwright obſerves, that a flannel ſhirt contributes much to the cure of an habitual *diarrhœa*.

Stolterſoht, a phyſician of Lubec, relates, that a mechanic of that city had a continual *diarrhœa* from 30, to the age of 65 years, which always gave him five or ſix ſtools a day; yet he was in good health all the while, having a good appetite, and ſufficient ſtrength and vigour. But in his 65th year taking ſome aſtringent medicines, he ſtopped his flux; upon which he was immediately ſeized with a violent pain in the kidneys, difficulty of breathing, and loſs of digeſtion; he threw up his food as he took it, grew cold at the extremes of the body, ſwelled in the thighs, had an inſupportable thirſt, and more appetite, and urined, with much difficulty, a thin watery humour, deſtitute of all ſulphur. See Supplement, article **Diarrhoea**.

DIARTHROSIS *, in anatomy, a kind of articulation, o juncture of the bones, which, being pretty lax, affords room for a manifeſt motion. See **Articulation**.

* The word comes from δια, and αρθρον, *juncture*, *aſſemblage*.

It is oppoſed to ſynarthroſis, wherein the articulation is ſo cloſe that there is no ſenſible motion at all.

Diarthroſis is of three kinds: 1. When the head of the bon is big, and long, and the cavity that receives it, deep; it i called *enarthroſis*: ſuch is that of the thigh, with the hip 2. When the head of the bone is flat, and the cavity that re ceives it, ſuperficial; it is called *arthrodia*: ſuch is that of th jaws, with the bones of the temples. 3. When two bone receive each other reciprocally, and are moveable in eac other, it is called *ginglymus*: thus the cubitus receives the r dius, at the ſame time that the radius receives the cubitus.

Diarthrosis *ſynarthroidalis*, called alſo *amphiarthroſis*, is kind of neutral, or dubious articulation; being neither abſo lutely *diarthroſis*, as not having a manifeſt motion; nor ab ſolutely *ſynarthroſis*, as not being quite immoveable.

Thus the articulations of the ribs with the vertebræ, an thoſe of the bones of the carpus, and tarſus, among eac other, are *ſynarthroidal diarthroſes*.

DIARY *Fever*, is a fever of one day. See **Ephemera**.

DIASCORDIUM, in pharmacy, a kind of electuary, fir deſcribed by Fracaſtorius, and denominated from *ſcordium* which is a chief ingredient therein.

The other ingredients are red roſes, bole, ſtorax, cinnamo caſſia lignea, dittany, tormentile roots, biſtort, gentia galbanum, amber, terra ſigillata, opium, long pepper, ginge mel roſatum, and malmſey wine.

It is an aſtringent, and is uſed againſt malignant fevers, t plague, worms, the colic, and to provoke ſleep, and re putrefaction.

DIASEBESTEN, in phnrmacy, a ſoft, purgative electuar whereof ſebeſtens are the baſis.

The other ingredients are prunes, tamarinds, juices of i anguria, and mercurialis, penidies, ſimple diaprunum, viol ſeed, the four cold ſeeds, and diagrydium. It is good in i termitting, and continued fevers, appeaſes thirſt, promo ſleep, and expels the morbid humours by urine.

DIASENNA, in pharmacy, a ſoft, purgative electuary, th called from *ſenna*, which is its baſe.

The other ingredients are ſugar-candy, cinnamon, lapis lazu ſilk, cloves, galanga minor, black pepper, nardus Indica, ſeed baſilicum, flowers of cloves, cardamoms, ſaffron, ginger, ze ary, roſmary-flowers, long pepper, lapis Armenus, and hone

Diaſenna eaſes and comforts the melancholic, and ſpleneti and is good againſt all diſeaſes ariſing from an atrabilis.

DIASTEM, **Diastema**, in muſic, a name the antients g to a ſimple interval; in contradiſtinction to a compound i terval, which they called a *ſyſtem*.

Muſicians divide intervals into two kinds: one of them call *ſyſtem*, which is to contain at leaſt two intervals in any k of muſic whatever; but many contain more.

The other, called *diaſtem*, is a mere, or ſingle interval; proper ſignification of the Greek διαςημα, being *interval*.

DIASTOLE *, in anatomy, expreſſes that motion of heart, and arteries, whereby thoſe parts dilate, or dil themſelves: the other oppoſite motion being called the ſy of the heart, and arteries; wherein they contract themſelv See **Heart**, and **Artery**.

* The word is Greek, formed from the verb διαςελλειν, to *parate*, *open*, *dilate*.

The *diaſtole* of the heart is properly the receſs of the parietes of the two ventricles from each other; or the enlargement of their cavities, and diminution of their lengths, and their approximation to a ſpherical form.

The *diaſtole*, or dilatation of the heart, ariſes from the blood being brought, by the veins, into its ventricles; and that of the arteries, from the blood being thrown into their cavities by the contraction of the heart. So that the *diaſtole* of the heart, and arteries, is not effected at the ſame time; the *diaſtole* of the heart happening when the arteries are contracted, and that of the arteries when the heart is contracted.

What we call the beating of the pulſe is only the *diaſtole* of the arteries.

The lungs and breaſt have likewiſe their ſyſtole and *diaſtole*; ſo has the brain.

The true cauſe of the *diaſtole* of the heart was but lamely accounted for before Dr. Drake: that the heart is a muſcle, is made evident beyond all doubt by Dr. Lower; and that the motion of all muſcles conſiſts in conſtriction, is not to be doubted.—By ſuch means the ſyſtole is eaſily accounted for.

But inaſmuch as the heart has no antagoniſt muſcle, the *diaſtole* has puzzled the greateſt wits. Dr. Lower unhappily attributes it to a motion of reſtitution. As the motion of the heart, ſays he, is performed by contraction; and as the fibres of the heart are alone formed for conſtriction; it is evident, all the motion of the heart lies in its ſyſtole; and that the fibres, in the ſeveral contractions, being ſtretched beyond their tone, as ſoon as the niſus is over, the heart relaxes again by a motion of reſtitution; *a nullo enim cordis motu, niſi tenſionem ejus remittente, & ab irruente ſanguine,* diaſtole, *ejus libratis vicibus ſuccedit.* De corde, p. 75.

Mr. Cowper accounts for the *diaſtole* from the analogy the heart of an animal bears to the pendulums of thoſe artificial automata, clocks and watches: its motion, he ſays, is performed like that of other muſcles, the blood doing the office of a pondus, or weight.—Both theſe notions Dr. Drake refutes; and with great reaſon and probability maintains the weight of the atmoſphere to be the pondus, or counterpoiſe, to the contractile force of the heart.

It has long been known, that the dura mater has a ſyſtole and *diaſtole*, exactly correſponding to thoſe of the heart. But its cauſe was not ſo well known: Dr. Ridley, in the *Philoſoph. Tranſact.* having bored a hole in the upper part of the bregma of a dog, firſt perceived the alternate vibrations of the dura mater; then, continuing the hole to the brain, he found both by his eyes, and even afterwards by touch, very ſenſibly, that there was a like briſk ſyſtole and *diaſtole* of the brain. See Brain, and Dura *Mater*.

Diastole, in grammar, a figure whereby a ſyllable naturally ſhort is made long.

Thus it is that Virgil begins a verſe with the word *Italus*, the firſt ſyllable whereof is naturally ſhort.

IASTYLE, in the antient architecture. an edifice, where the columns ſtand at ſuch a diſtance one from another, that three diameters, or ſix modules, are allowed for the intercolumniation. See *Tab. Archit. Fig.* 47.

IASYRMUS, ΔΙΑΣΥΡΜΟΣ, in rhetoric, a figure whereby we ſhortly anſwer, or rather evade, a thing which it would be tedious to reply to in form.—

E. gr. What matters it to reply to an argument foreign to the purpoſe?

IATESSARON *, in pharmacy, a ſort of theriaca, thus called becauſe conſiſting of four ingredients, which are roots of ariſtolochia, and gentian, bay-berries, and myrrh.

> * The word is Greek, compounded of δια, and τεσσαρα, *four*, q. d. a compoſition of *four* drugs.

It is alſo called *theriaca pauperum*, becauſe made at a very eaſy expence, and in a ſhort time. It is good againſt ſtings of venomous beaſts, epilepſies, convulſions, colics, to ſtrengthen the ſtomach, and promote the menſes.

Atessaron, in the antient muſic, a concord, or harmonical interval, compoſed of one greater tone, one leſſer, and one greater ſemi-tone: its proportion being as 4 to 3.

In the modern muſic, it is called a perfect *fourth*.

ATHESIS, a term uſed by ſome writers in the ſame ſenſe with conſtitution.

ATONIC, an epithet given to the common muſic, as it proceeds by tones, or degrees, both aſcending, and deſcending.

Authors divide the genera or kinds of muſic into *diatonic*, *chromatic*, and *enharmonic*.

Diatonic muſic only allows of three degrees; the greater and leſſer tone, and the greater ſemi-tone.

Hence *diatonic* muſic appears the moſt natural, and of conſequence is the moſt antient.

In the *diatonic* muſic there is a tone between every two notes, except between *mi* and *fa*, and *ſi* and *ut*, where there is only a greater ſemi-tone.

ATRAGACANTH, in pharmacy, is a name applied to certain powders, whereof gum tragacanth is the baſe.—There are two kinds, *cold* and *hot*.

Powder of *cold diatragacanth* is compoſed of the gums adraganth and Arabic, liquorice, ſtarch, white poppy-ſeed, and the four great cold ſeeds. It is good to thicken and ſoften the too ſharp, and ſubtile ſerous humours falling on the breaſt, to aſſwage coughs, and to promote ſpitting.

Powder of *hot diatragacanth* is compoſed of gum adraganth, cinnamon, hyſſop, almonds, linſeed, and fenugreek, liquorice, and ginger. It is good againſt aſthma's, to promote expectoration, ſtrengthen the ſtomach, and aſſiſt digeſtion.

DIAZEUCTIC *tone*, in the antient Greek muſic, was that which disjoined two fourths, one on each ſide of it, and which, being joined to either, made a fifth.

This in their muſic was from *meſe* to *parameſe*; that is, in ours, from A to B: ſuppoſing *mi* to ſtand in *be-fa-be-mi*. They allowed to this *diazeuctic tone*, which is our *la*, *mi*, the proportion of 9 to 8, as being the unalterable difference of diapente and diateſſaron.

DICHOTOMY *, *biſection*, a term uſed by aſtronomers for that phaſis, or appearance of the moon, wherein ſhe is biſected, or ſhews juſt half her diſk, or circle.

> * The word is Greek, formed of διχοτομεω, *I biſect*, or cut in two, of δις, *twice*; and τεμνω, *I cut*.

The time of the moon's *dichotomy* is of conſiderable uſe in fixing the ſun's diſtance from the earth. But it is very difficult to fix the preciſe moment when the moon is biſected, or in her true *dichotomy*. Obſervation informs us, that when ſhe is 30 minutes diſtant from the quadratures, ſhe appears biſected; but ſhe appears ſo too in the quadratures themſelves, and ſome time afterwards, as Ricciolus acknowleges in his *Almageſt*. So that ſhe appears *aichotomized* at leaſt for the ſpace of a whole hour: in which time any moment may be taken for the true point of the *dichotomy*, as well as any other. But the infinite number of moments of time give an infinite diverſity of diſtances. The moment in which the true *dichotomy* happens being thus uncertain; but it being granted withal, that it happens before the quadrature; Ricciolus takes the middle point between the quadrature, and the time when it is firſt dubious, whether the moon be *dichotomized*, or not, for the true *dichotomy*. Keil.

Dichotomy, in botany, a term uſed to expreſs that diviſion of the branches which we ſee in miſletoe, and in the greater part of the ſea-fucus's, in which each branch is divided into two.

DICTAMNUM, Dittany, a medicinal plant, much valued among the antients, and particularly applauded by their poets. It was eſteemed a ſpecific for wounds of arrows, which it drew out with wonderful eaſe; and, according to them, only grew in the iſland of Crete, and even only in a little obſcure corner thereof; whence its appellation *dictamnus Creticus*. It is ſtill found in that iſland.—M. Tournefort, who was in Crete, deſcribes the place where it grows, and ſays it flouriſhes there almoſt the whole year.

The modern *dictamnus albus*, called alſo *white dittany*, or *fraxinella*, from its leaves, which reſemble thoſe of the aſh, called by the Latins *fraxinus*, is ſcarce in leſs eſteem than that of the antients. Its root, wherein all its virtue is lodged, is about the thickneſs of a finger, and is frequently divided into a number of little branches; its colour is white, its taſte bitter, its ſmell ſtrong, ſomewhat like that of a he goat; its ſtem is about two feet high, rediſh, and full of leaves; at the top of the ſtem is a flower not unlike a ſpike or ear; in the middle of the flower is a piſtil with five little pieces at the bottom, wherein the ſeed is contained, which is black, ſhineing, and oval (See Supplement, article Fraxinella). The root is excellent againſt the bite of venomous beaſts, as alſo againſt worms, the colic, *&c.* It muſt be choſen white, both inſide and outſide, not fibrous, and well cleaned.

There are ſeveral other kinds of *dittany*, but all of leſs value; as the *baſtard dittany*, whoſe leaves are much leſs; and the *wild dittany*, which ſome ſay neither bears flowers, nor fruit. The antients have a tradition, that the wounded deer firſt diſcovered the virtue of the *dictamnus Creticus*, which, being eaten, preſently forced out the arrows ſticking in them. Thus Pliny, Lib. VIII. c. 27. And the like account we have from Cicero *de Nat. Deor.* Lib. II. Virgil. *Æneid.* Lib. XII. v. 412. Tertull. *de Pœnit.* c. 11. Though Cicero, more prudent and reſerved than Pliny, is contented to ſpeak of it as by hearſay. Ariſtotle, Lib. *de Mirabilib. Auſcult.* relates it of the roe-buck. Pliny ſays expreſly, that the juice of this plant, taken inwardly, expels arrows, and cures wounds made with other weapons: he adds, that it ſtops ſuppurations, provokes the menſes, and delivery, and is good in frictions and fumigations.

DICTATE, Dictamen, in the ſchools, a ſuggeſtion, motion, or ſentiment of a man's conſcience. See Conscience.

A good action becomes evil, if done contrary to the *dictates* of one's own conſcience.

Dictate, Dictata, is likewiſe uſed in the ſchools for a leſſon, or exerciſe, wherein the maſter reading, or ſpeaking ſomething, the ſcholars take it down in writing after him.—Here the act of the maſter is likewiſe called *dictating*.

DICTATOR, a Roman magiſtrate, created by the ſenate, or people, on ſome extraordinary and eminent occaſion, to command, with ſovereign authority, for a certain time, ordinarily limited to ſix months; though the office was ſometimes continued to twelve.

Recourſe was never had to ſuch an officer, but in dangerous and difficult times; as in ſudden wars, popular factions, &c. He had abſolute and monarchic power while his *dictature* laſted: and ſome will even have it, his power went beyond that of the kings. He was arbiter of peace and war, and had command of life and death, without any appeals lying to the people. Twenty-four axes were borne before him, whereas only twelve before the conſuls.

The origin of this office was unknown even in Livy's time: though ſome antient authors ſpeak of T. Lartius Flavus as the firſt *dictator*, who was appointed in the year of Rome 255*. Sylla was the firſt perpetual *dictator*, and Cæſar the next. After Cæſar, there were no more *dictators*. The firſt *dictator* choſen from among the people was Marcus Rutilius, in 399.

* *Sed nec anno, nec quibus conſulibus—nec quis primum dictator creatus ſit, ſatis conſtat: apud veterrimos tamen auctores*, T. Lartium *dictatorem primum*, Sp. Caſſium *magiſtrum equitum creatos invenio. Conſulares legêre*. Liv. lib. 2.

Dionyſius Halicarnaſſeus derives the word *ab edicendo*, becauſe they ordained and appointed what they pleaſed. But Varro will have the word taken hence, that the conſul named him, which the Latins call *dicere*, Lib. IV. *de lingua Latina.* Dictator *quod a conſule dicebatur, cujus dicto audientes omnes eſſent.*

DICTION, the phraſe, elocution, or ſtyle of a writer, or ſpeaker.

The *diction* or language of an orator ſhould be pure, proper to the ſubject, rich without affectation, ſtrong and cloſe without drineſs, and ſuitable to the perſon, time, place, and audience.

The *diction* of tragedy is accounted the fourth of the eſſential parts thereof: it is of the leaſt importance of any; yet muſt peculiar care be taken herein to make every paſſion ſpeak its proper language.

DICTIONARY, a collection, or catalogue of all the words of a language, or art, with their ſignifications: ranged in the order of the alphabet.

What the Latins, and we after them, call *dictionary*; the Greeks call *lexicon*.

For the proper character, nature, office, &c. of a *dictionary*, ſee the preface to this work. See alſo the article VOCABULARY.

The moſt antient *dictionaries* for the Latin tongue, are, that called *Papias*, compiled by Solomon, abbot of St. Gall, biſhop of Conſtance, who lived about the year 1409. another made in 1496. called *Gemma Vocabulorum*: a third in 1502. called *Gemma Gemmarum*: and a fourth by Dionyſius Neſtor, a Cordelier.

The moſt celebrated old Latin *dictionary* is that of Ambroſe Calepine, a hermit of St. Auguſtine at Bergamo, and ſon of the count of Calegin. Conrad Geſner is ſaid to have augmented this with four thouſand words. Paulus Manutius increaſed it ſtill more; and Paſſerat after him: and yet Matthias Martinius made two volumes of their omiſſions.

There is another noted Latin *dictionary* of Criſpinus: to ſay nothing of Cowper, Holyoake, Gouldman, Littleton, Cole, and numerous others of leſs conſideration.

For the Greek, we have thoſe of Henry Stephens, and Scapula: for the Spaniſh, that of Covarruvias: for the Italian, that of the academy della Cruſca: for the French, thoſe of Nicod, Fa. Monet, Fa. Gaudin, Furetiere, Richelet, Trevoux, and that of the French academy: for the Engliſh, we have as yet ſcarce any worth the mentioning; unleſs, perhaps, thoſe of Lloyd, Philips, Kerſey, and Baily; but a very complete and accurate one is expected daily from Mr. Johnſon.

Junius has a *dictionary*, or alphabet, of the Gothic, Runic, and Anglo-Saxon. There is another in the Malayan, which is a dead language, famous throughout the Eaſt Indies; where it ſtands inſtead of the Latin among us.

There are alſo hiſtorical and geographical *dictionaries*: as that of Charles Stephens, which is tranſlated into French, and augmented by Morery: another of Hofmann, printed at Baſil in 1677. in two volumes folio; which were followed by a continuation of as many volumes in 1683. another of Mr. Bayle, under the title of hiſtorical and critical *dictionary*, firſt printed at Rotterdam in 1697. in two large volumes: a philoſophical *dictionary*, by Mr. Chauvin of Berlin: beſides ſeveral law *dictionaries*, phyſical *dictionaries*, family *dictionaries*, *dictionaries* of arts, of commerce, &c.

DIDACTIC*, in the ſchools, ſignifies the manner of ſpeaking, or writing, adapted to teach or explain the nature of things.

* The word is formed from the Greek *διδασκω*, *doceo*, I teach.

There are many words that are only uſed in the *didactic*, and dogmatic way.

DIDYMI, ΔΙΔΥΜΟΙ, the ſame with Gemelli, or Twins.

DIEM *clauſit extremum*, a writ iſſued out of chancery to the eſcheator of the county, upon the death of any of the king's tenants in capite, to inquire by a jury of what lands he died ſeiſed, and of what value, and who was the next heir to him.

DIES. See the article DAY.

DIES, in common law. There are two kinds of *days*: *juridici*, & *non juridici*.

DIES *juridici*, or *faſti*, are all days wherein juſtice is adminiſtred in court.

DIES *non juridici*, or *nefaſti*, are all ſundays in the year: and in Eaſter term, the feaſt of the Aſcenſion of our Lord: in Trinity term, the Nativity of St. John the Baptiſt: in Michaelmas term, the feaſt of all Saints, and all Souls: and in Hilary term, the Purification of the bleſſed Virgin.

The ſame diſtinction holds not only as to legal proceedings in court, &c. but alſo as to contracts.

DIES, in ſome antient authors, is alſo uſed for daily proviſion. *Et reddebat dimidium diem mellis*, q. d. as much honey as ſerved the king's family half a day.

DIES *datus* is a day, or time of reſpite given to the tenant, or defendant, by the court.

DIESIS, in muſic, a diviſion of a tone, leſſer than a ſemitone; or an interval conſiſting of a leſſer, or imperfect ſemitone.

The *dieſis* is the ſmalleſt, and ſofteſt change, or inflexion, of the voice imaginable. It is alſo called a *feint*, and is expreſſed by a St. Andrew's croſs, or ſaltier.

Ariſtotle calls *dieſes* the elements of voice, as letters are thoſe of diſcourſe. Indeed, Ariſtotle's *dieſes* were apparently different from ours: and we find Vitruvius expreſly making the *dieſes* a fourth part of the tone. But the Pythagoreans, who are held the inventors of the name *dieſis*, did not make it ſo ſmall: they only divided the tone into two unequal parts, and called the leſſer, *dieſis*, which we call the leſſer ſemi-tone; and the greater, which we call the greater ſemi-tone, they called *apotome*.

But in after-times, when the tone came to be divided into three and four parts, the name *dieſis* was retained to them all. And hence thoſe different accounts, we meet withal in authors, of the quantity of the *dieſis*.

Enharmonical DIESIS is the difference between a greater and leſſer ſemi-tone. See TONE, GENUS, DEGREE, SCALE, &c.

Dieſes are divided into three kinds: the *leſſer enharmonical dieſis*, or *ſimple dieſis*, denoted by a ſingle croſs, raiſes the note following by two comma's, or about $\frac{1}{4}$ of a tone: the *chromatic*, or *double dieſis*, denoted by a double croſs, raiſes the following note by a leſſer ſemi-tone, or about four comma's; which is the common *dieſis*. The *greater enharmonical dieſis*, denoted by a triple croſs, raiſes the note by ſix or ſeven comma's, or about $\frac{3}{4}$ of a tone. None but the *double dieſis* is uſed in muſic. A flat is frequently uſed to take away the *dieſis*, and a *dieſis* to take away a flat.

When ſemi-tones are placed where regular tones ſhould be or a tone where there ſhould be a ſemi-tone: it is called a *dieſis*, or *feint*.

DIESPITER*, in antiquity, a name given to *Jupiter*.

* Some authors will have it the ſame with *Dios pater*, *Jupite* father; *Jupiter* being called in Greek Ζευς, or Δευς whence the oblique caſe Διος, &c. Others hold *Dieſpiter* to ſignify *Diei pater*, father of the day. St. Auguſtine derives the name from *dies*, day, and *partus*, production, bringing forth; it being Jupiter that brings forth the day. Of which ſentiment were Servius, and Macrobius; the former adding that in the language of the Oſci they called him *Lucentiu* as *Dieſpiter* in Latin.

Struvius, Antiq. Rom. Synt. C. I. ſeems to intimate, that *Dieſpiter* ſignified *Pluto*: but, if that be his meaning, he apparently miſtaken. For both in Cicero, and in the in- ſcription he quotes from Gruter XXI. 8. we have only *Di pater*, and not *Dieſpiter*.

DIET*, DIÆTA, in medicine, &c. a regimen, or cour of living, proper in regard to health.

* The word *diet*, in this ſenſe, comes from *diæta*, which ſi nified antiently a banqueting-room; and at length an aſſembl of the ſtates, by reaſon the Germans held moſt of their cou cils at table.

A ſpare diet is a ſovereign remedy againſt all diſeaſes ariſin from repletion.

It is founded on this, that nature ought not to be buſi and diſtracted in the concocting of food; but left whol to her work of digeſting and expelling the morbific ma ter.

The word is formed from the Greek διαιτα, which ſignifi regimen, or *rule of life*, preſcribed by phyſicians. And the phyſicians uſually order a ſpare, ſcanty modicum, l than is uſually taken; *diet* has with many paſſed into a na for this retrenchment, or diminution of the ordinary qua tity of food, whether it be by advice of a phyſician, or by perſon's own choice: provided it be to remove, or preve ſome diſorder.

For the advantages of a *ſpare ſimple diet*, ſee ABST NENCE.

Dr. Cheyne ſhews, how one may ſupply the place of medici by *diet*: any one, ſays he, may in effect loſe a pound of blo take a purge, or a ſweat, by dropping the great meal, or a taining from animal food, and ſtrong liquors, for four or f days, in chronical caſes, as effectually as by opening a ve ſwallowing a doſe of pills, or taking a ſudorific bolus. He adviſes, therefore, all gentlemen of a ſedentary life, and of learned profeſſions, to uſe as much abſtinence as poſſibly they can, conſiſtently with the preſervation of their ſtrength, and the freedom of ſpirits. This they ought to have recourſe to, as ſoon as they find any heavineſs, inquietudes, reſtleſs nights, or averſion to application; either by leſſening one half their uſual quantity of animal food, and ſtrong liquors, till ſuch time as they regain their wonted freedom; or by living a due time wholly on *vegetable diets*, as ſago, rice, pudding, and the like; and drinking only wine and water.

DIET, or *Dyet*, is alſo uſed for an aſſembly of the ſtates, or circles, of the empire, or Poland, to deliberate and concert meaſures for the public good.

The *diets* of the empire are ordinarily held at Ratiſbon.

The general *diet* of Poland is by the laws only to be held every two years; but preſſing occaſions convene them every year: the laws alſo confine their ſitting to fifteen days, but they frequently protract it to ſix weeks. The uſual place is at Warſaw, the capital of the kingdom: though it has been often held at other places: in effect, as by the laws every third *diet* is to be convened at Grodno, in Lithuania; whenever, for particular reaſons, it is judged meet to baulk the turn, and hold it elſewhere, the nobility of the grand duchy muſt conſent to it. It is the king who fixes the time, and ſummons it by circular letters ſent to all the palatines. In an interregnum, the archbiſhop of Gneſna calls the *diet*.

The ſeveral particular *diets*, which are held ſix weeks before the general one, do each ſend three deputies, choſen out of the members thereof.

In Poland there are likewiſe *diets* on horſeback, held in the champagne, or country: ſuch are thoſe wherein they chuſe their king. They are called *poſpolites*.

There are likewiſe *diets* held in Switzerland; *diets* of the proteſtant cantons; *diets* of the catholic cantons; and general *diets*. They firſt aſſemble at Araw, and are convoked by the canton of Zurich; the ſecond at Lucern, convoked by the canton of that name; the third, compoſed of the deputies of all the cantons, both Proteſtant and Catholic, is held twice a year, at the end of June, and the beginning of December; and meets at Baden. It is the canton of Zurich which has the right of convening it.

DIETA, in our old law-books, denotes a day's journey. —*Omnis rationabilis* dieta *conſtat ex viginti milliaribus*. Fleta.

DIETETIC, DIÆTETICA, that part of phyſic which conſiders the way of living, with relation to food, ſuitable to particular caſes. See DIET.

DIEU & *mon droit*, q. d. *God and my right*, the motto of the arms of England, firſt given by king Richard I. to intimate, that he held not his empire in vaſſalage of any mortal.

It was afterwards taken up by Edward III. when he firſt claimed the crown of France; and was continued, without interruption, to the time of king William III. who uſed the motto *Je maintiendray*; though he commanded the former to be retained on the great ſeal. The ſame is to be underſtood of the late queen Anne, who uſed the motto, *Semper eadem*; which had been before uſed by queen Elizabeth.

DIFFAMATORY, a term chiefly uſed in the phraſe *diffamatory* libel; ſignifying a writing intended to ſcandalize, or diſcredit, a perſon, &c.

By the Roman law, and the antient ordonnances of France, the authors of *diffamatory* libels were puniſhed with death. See *Balduin. Comment. ad Leges de Libellis famoſis.*

But the hiſtorian tells us, that cardinal Ximenes was inſenſible to all *diffamatory* libels: he found it but reaſonable, to leave inferiors the liberty of venting their grief by writings, which only live while the perſon is offended at them, and loſe all their ſpirit and malignity when deſpiſed, or diſregarded.

DIFFARREATION*, among the Romans, a ceremony whereby the divorce of their prieſts was ſolemnized.

* The word comes from the prepoſition *dis*; which is uſed, in compoſition, for diviſion, or ſeparation; and *farreatio*, a ceremony with wheat; of *far*, wheat.

Diffarreation was properly the diſſolving of marriages contracted by confarreation; which were thoſe of the pontifices, or prieſts. Feſtus ſays, it was performed with a wheaten cake. Vigenere will have confarreation and *diffarreation* to be the ſame thing.

DIFFERENCE, in logic, an eſſential attribute belonging to ſome ſpecies, and not found in the genus; being the idea that defines the ſpecies.

Thus, body and ſpirit are the two ſpecies of ſubſtance, which in their ideas include ſomething more than is included in the idea of ſubſtance. In body, for inſtance, is found impenetrability, and extenſion; in ſpirit, a power of thinking, and reaſoning: ſo that the *difference* of body is impenetrable extenſion, and the *difference* of ſpirit is cogitation.

DIFFERENCE, in mathematics, the exceſs of one quantity above another.

This angle is 60 degrees, and that 90; their *difference* is 30.

When a leſs quantity is ſubtracted from a greater, what remains is called the *difference*.

DIFFERENCE *of longitude* of two places, is an arch of the equator intercepted between the meridians of the places.

Aſcenſional DIFFERENCE, in aſtronomy. See ASCENSIONAL.

DIFFERENCES*, in heraldry, certain additaments to coat-armour; whereby ſomething is altered, or added, to diſtinguiſh the younger families from the elder, or to ſhew how far they are removed from the principal houſe.

* They are called, in Latin, *diminutiones*, and *diſcernicula armorum*; and, by the French, *briſures*.

Of theſe *differences* Sylv. Morgan gives us nine, which obtain principally among us: *viz.* the *label*, which denotes the firſt and eldeſt ſon; the *creſcent*, the ſecond; the *mullet*, the third; the *martlet*, the fourth; the *annulet*, the fifth; the *fleur de lis*, the ſixth; the *roſe*, the ſeventh; the *eightfoil*, the eighth; and the *croſs moline*, the ninth. See each under its proper article, LABEL, &c.

Again, as the firſt *differences* are ſingle for the ſons of the firſt houſe, or deſcent; the ſons of the younger houſes are differed by combined, or putting the ſaid *differences* upon each other. As the firſt *differences* are, the *label*, *creſcent*, &c. for the firſt houſe; the *difference* for the ſecond houſe is the *label* on a *creſcent*, for the firſt of that houſe; for the third brother of the ſecond houſe, a *mullet* on a *creſcent*, &c.

The original of *differences* is controverted. Camden will have them to have begun about the time of king Richard; Paradin aſſigns *differences* worn as early as the year 870. the preſident Fauchet obſerves *differences* to have been hereditary in the French families before the time of Louis le Gros, who came to the crown in the year 1110. Moreau refers them to the time of St. Louis; and Lallonette, Belleforeſt, &c. to that of Philip Auguſtus.—The occaſion of their riſe is well accounted for by Colombiere.

All nations, ſays he, prefer the eldeſt brothers to the younger; whence thoſe, in a direct line, ſucceeding to their fathers, and becoming maſters of their lands, took on them their coat-armour, without any change, or alteration; and tranſmitted the ſame again to their eldeſt ſons; the younger brothers, or baſtards, not being allowed to bear the ſame arms, without ſome additional mark, to diſtinguiſh them from the elder. Hence ſome heralds, he goes on, have endeavoured to confine them to certain fixed and determinate figures, for diſtinguiſhing the ſecond from the firſt, the third from the ſecond, and ſo on to the ſixth; aſſigning the ſecond a *label*, the third a *bordure*, the fourth an *orle*, the fifth a *battoon*, and the ſixth a *bend*, or *cottice*.

And the deſcendents of theſe to bear double *differences*, or *differences* charged on one another; *viz.* the eldeſt ſon of the ſecond ſon to retain his paternal coat, with the *difference* of the *label* of three points; the ſecond the *label* of four points; the third ſuch a *label* on a chief; the fourth a *label* charged with certain figures, as *eaglets*, *lioncels*, *martlets*, *creſcents*, *roſes*, &c. and, for the ſame reaſon, the ſecond ſon of the third ſon ſhall bear a *bordure* engrailed; the third a *bordure* charged with bezants, or tourteaux, &c.

But the ſame author judges the fixing any certain invariable *differences* at all an abuſe; by reaſon they may happen not to be agreeable to the paternal coat, but very much deface and blemiſh it. He adds, that many other figures, beſide thoſe above-mentioned, may be uſed as *differences*; as ſhells, bezants, cinquefoils, and a thouſand more. Some younger families have made the *difference* in their arms by only diminiſhing the ordinaries, or changing the poſture; and others, by only changing the metal, or colour.

It muſt be added, that the *difference* may be of metal on metal, or colour on colour; which, in other caſes, is falſe heraldry.

DIFFERENTIAL, DIFFERENTIALE, in the higher geometry, an infinitely ſmall quantity, or a particle of quantity ſo ſmall as to be leſs than any aſſignable one.

It is called a *differential*, or *differential quantity*, becauſe frequently conſidered as the difference of two quantities; and, as ſuch, it is the foundation of the *differential calculus*. Sir Iſaac Newton, and the Engliſh, call it a *moment*, as being conſidered as the momentary increaſe of quantity.

Mr. Leibnitz, and others, call it alſo an *infiniteſimal*. See INFINITESIMAL.

DIFFERENTIAL *of the firſt*, *ſecond*, &c. *degree*. See DIFFERENTIO-DIFFERENTIAL.

DIFFERENTIAL *calculus*, or *method*, is a method of differencing quantities; that is, of finding a *differential*, or infinitely ſmall quantity, which, taken an infinite number of times, is equal to a given quantity.

This method is one of the fineſt, and ſubtleſt, in all mathematics. Mr. Leibnitz, who claims the invention thereof to himſelf, calls it *differential calculus*, as conſidering the infinitely ſmall quantities found hereby as the differences of the quantities; and, accordingly, expreſſing them by the letter *d* prefixed: as the *differential* of x by dx; that of y by dy, &c. Sir Iſaac Newton, who has a better title to the diſcovery, calls it the *method of fluxions*, as conſidering the infinitely little quantities rather as fluxions, or momentary increments, *e. gr.* of a line, generated by the fluxion of a point; of a ſurface, by the flux of a line; or a ſolid, by the flux of a ſurface; and inſtead of *d* notes them by a *dot*: *e. gr.* the fluxion of x, he writes $\dot{x}$; that of y, $\dot{y}$, *&c.* which is the only difference between the *differential calculus*, and the *method of fluxions*.—For the hiſtory, doctrine, uſe, *&c.* thereof, ſee FLUXIONS.

DIFFERENTIO-DIFFERENTIAL *Calculus* is a method of differencing *differential* quantities.

As the ſign of a *differential* is the letter *d*; that of a *differential* of dx, is ddx, and the *differential* of ddx, $dddx$, or d^2x, d^3x, &c. or $\ddot{x}$, $\dddot{x}$, &c.

Thus we have powers, or degrees, of *differentials*.

The *differential* of an ordinary quantity, is called a *differential of the firſt power*, or *degree*; as dx.

DIFFERENTIAL *of the ſecond power*, or *degree*, is an infiniteſimal of a *differential* quantity of the firſt degree; as ddx, or $dxdx$, or dx^2, $dxdy$, &c.

DIFFERENTIAL *of the third degree* is an infiniteſimal of a *differential* quantity of the ſecond degree; as $dddx$, dx^3, $dxdydz$, and ſo on.

The *powers of differentials*, as dx^2, are differenced after the ſame manner, as the powers of ordinary quantities: and, again, as compound *differentials* either multiply, or divide, each other, or are powers of *differentials* of the firſt degree; *differentials* are differenced after the ſame manner as ordinary quantities; and, therefore, the *differentio-differential calculus* is the ſame, in effect, with the *differential*.

DIFFERENTIAL, in the doctrine of logarithms. Kepler calls the logarithms of tangents, *differentiales*; which we uſually call *artificial tangents*. See LOGARITHM, and TANGENT.

DIFFORM is a word uſed in oppoſition to *uniform*; and ſignifies, that there is no regularity in the form, or appearance, of a thing.

The botaniſts uſe it as a diſtinction of the flowers of ſeveral ſpecies of plants.

DIFFUSE, **DIFFUSIVE**, is chiefly uſed for a prolix manner of writing, *&c.*

A dictionary cannot well be too *diffuſive*: for a man is never too much informed of the word he wanted; and he is not obliged to read that part of the explication which does not concern him.

A *diffuſive* ſtyle is proper for diſcourſes in the demonſtrative kind. Demoſthenes is cloſe, and conciſe; Cicero, on the contrary, is *diffuſive*.

DIFFUSION, the act whereby a body is ſpread, or ſtretched, out, ſo as to take up more ſpace.

The ſchoolmen make three kinds of *diffuſion*: the firſt, that whereby a pure quality is *diffuſed*; as cold, force, *&c.* this they diſtinguiſh into *equal*, whereby equal portions, or degrees, of the quality are diſtributed upon equal parts of the medium; thus, when a direct motion is impreſſed on a moveable, all the parts of the moveable receive an equal impetus: and *unequal*, when unequal degrees of the quality are diſtributed on different parts of the ſubject; thus it is, that force is impreſſed on a lever, and cold propagated through a medium.

The ſecond kind of *diffuſion* is that performed by the motion of bodies: ſuch is the *diffuſion* of light, ſound, ſmell, magnetic, electric virtues, *&c.*

The third is performed partly by the motion of corpuſcles, and partly by the *diffuſion* of a quality; and thus they hold fire to be *diffuſed*.

But the modern philoſophers reject the notion of qualities, and their *diffuſion*. According to them, there is no other *diffuſion*, but that of corporeal ſubſtance, emitted in minute effluvia, or particles, into a kind of atmoſphere all around the body; which *diffuſion* of corpuſcles ſome call *atmoſpherical*, as being ſuppoſed to be terminated by a circle, whereof the *diffuſing* body is the centre. Every body, it is now proved, has its ſphere of activity, or *diffuſion*, within which the particles, or corpuſcles, torn from it, and flying away, have a ſenſible effect; as we ſee in odorous, ſonorous, *&c.* bodies. See QUALITY; where the phyſical law of the *diffuſion* of qualities is laid down.

DIGAMMA. See F.

DIGAMY, the ſame with *bigamy*. See BIGAMY.

DIGASTRICUS*, in anatomy, a muſcle of the lower-jaw, thus called, as having a double belly.—See Tab. *Anat.* (Myol.) *fig.* 1.

* The word is formed from δὶς, twice; and γαςὴρ, belly.

It ariſes fleſhy from the upper-part of the proceſſus maſtoideus, and, deſcending, contracts into a round tendon, which paſſes through the ſtylohyoideus, and an annular ligament, which is faſtened to the os hyoides; then it grows fleſhy again, and aſcends towards the middle of the edge of the lower-jaw, where it is inſerted. When it acts, it pulleth the lower-jaw down, by the help of an annular pulley, which alters its direction.

DIGEST, **DIGESTUM**, a collection of the Roman laws, ranged and *digeſted* under proper titles, by order of the emperor Juſtinian.

That prince gave his chancellor Tribonianus a commiſſion for this purpoſe; who, in conſequence thereof, choſe ſixteen juriſconſulti, or lawyers, to work upon the ſame. Theſe, accordingly, took out the beſt and fineſt deciſions from the two thouſand volumes of the antient juriſconſulti, and reduced them all into one body; which was publiſhed in the year 533. under the name of the *digeſt*: to this the emperor gave the force of a law, by a letter at the head of the work, which ſerves it as a preface.

The *digeſt* makes the firſt part of the Roman law, and the firſt volume of the corpus, or body, of the civil law.

It was tranſlated into Greek under the ſame emperor, and called *Pandecta*.

The uſual method of quoting it is by a double *ff*, on account of the Greek name *Pandect*; which being firſt abbreviated by a figure of two ΠΠ; to abbreviate it yet further, the two characters were joined into one ΓΠ, which the Latin copiſts miſtook for *ff*.

Cujas ſays, that *digeſt* is a common name for all books diſpoſed in a good order and œconomy: and hence it is, that Tertullian calls the goſpel of St. Luke, a *digeſt*.

DIGESTOR, or **DIGESTER**, an artificial means, or inſtrument, ſerving to *digeſt*, or diſſolve, meats out of the ſtomach, by a way analogous to that of animal digeſtion.

Mr. Leigh, in the *Philoſoph. Tranſact.* gives us an artificial *digeſter*, to illuſtrate the natural one: it is prepared from ſpirit of ſulphur, ſpirit of hartſhorn, the chyle of a dog, and its ſaliva. A piece of veal, mutton, beef, or the like, of the bigneſs of a nut, being put in a drachm of this preparation, and ſet on a *digeſting* furnace two hours; it drew from the fleſh a juice that had the colour and taſte of chyle, and left the meat light, dry, and inſipid.

Dr. Havers prepares a *digeſter* of oil of turpentine, mixed with oil of vitriol; in which, raw fleſh, and crumbs of bread, being put, and the whole committed for four hours to *digeſt* in balneo mariæ; the meat is found diſſolved, and the whole together forms a thickiſh pulp: hence, thoſe authors, each of them, conclude the food in the ſtomach to be *digeſted* by ſome ſuch menſtruums.

But the moſt celebrated *digeſter* is an inſtrument of that name invented by Papin; the effect whereof bears a more near reſemblance to the operation of the ſtomach. It is a ſort o vеſſel, wherein meat being put, together with ſo much water as ſerves exactly to fill it, a lid is ſcrewed cloſe on, ſo as to admit of no external air; then, by the application of two o three lighted charcoals, or even a ſingle ſmall lamp-flame, the meat is in a few minutes (ſix or eight) reduced into a perfect pulp, or rather liquor: by a little increaſe of the fire, o the addition of a few minutes in time, the hardeſt bones themſelves are brought into a pulp, or jelly. The effect is accounted for from the ſtrict cloſure of the engine; which excluding the intruſion, or eſcape, of air; the ſucceſſions occaſioned by the expanſions and oſcillations of the air included i the fleſh, are equable and ſtrong, and ſo reſolve the who into one ſeemingly homogeneous body, and mix the aqueous ſaline, oleous, and other particles, ſo ſtrongly together, a ſcarce to be ſeparate, but while hot, to appear one liquor, an when cold, jelly; of a ſtrength proportionate to the quantity o fleſh, or bones, diſſolved in the water.

This experiment ſeems to hold a cloſe analogy with the ope ration of the ſtomach. For though the ſtomach do not ordi narily diſſolve, either ſo ſtrongly, or ſo quick; yet in pro portion to its heat and conſtruction, Dr. Drake takes it to d the ſame thing: thereby breaking, and reſolving into ſmal the bodies which it included, ſo mixed, *inter minima*, with i humours.—Theſe, thus reduced into a fluor, and intimatel mixed with the liquids of the drink, and juices of the ſt mach, compoſe that lacteſcent liquor, called *chyle*, or *chym* See CHYLE.

DIGESTION, in medicine, that change of the food, taken i at the mouth, which it undergoes in the ſtomach, in ord to afford fit matter to compoſe, or increaſe, an animal, till arrives at its deſtined bulk; and to repair the loſs of tho particles which the body, in its natural ſtate, neceſſarily unde goes.

The operation of *digeſtion* ſucceeds to maſtication, and degl tition.

It includes chylification, and is ſucceeded by ſanguificatio and nutrition.

The cauſe, manner, and means, of *digeſtion*, have been in nitely controverted: it would be tedious to enter into all t ſyſtems, and hypotheſes, that have been framed by philo phers and phyſicians, to account for this important operatio Some contend, that it is done by a kind of elixation, or bo ing, of the ſolid and groſſer parts of the food in the liquid, the heat of the ſtomach, and of the adjacent parts, the li ſpleen, *&c.*

Others will have it done by attrition; as if the ſtomach by thoſe repeated motions, which are the effects of reſpiration, rubbed or ground off the minuter particles from the groſſer matters; and agitating, and driving the reſt againſt each other, attenuated, and diſſolved them.

Others think, the bilious juice; others the ſpirits, &c. chiefly concerned in the affair.

Others will have the food diſſolved by a menſtruum, or diſſolvent: but theſe are greatly divided as to the nature and origin of this menſtruum; ſome ſuppoſing it an acid, furniſhed by the glands of the ſtomach; others a nitroaereous ſpirit, which by penetrating the maſs of food, breaks the connexion of the moſt ſolid parts: and others, a ſaline juice, which divides and volatilizes the parts of the food.

Others, again, ſuppoſe *digeſtion* to be performed by means of a ferment, or leaven; which, mixing with the aliment, excites an inteſtine motion in the parts thereof, by whoſe mutual colliſions, the parts are attenuated and diſſolved.

But theſe, too, differ in their opinions of this ferment; ſome taking it to be the remains of the food laſt *digeſted*, which, by its continuance in the ſtomach, has contracted an acid quality, which renders it a ferment: others take the ferment, or principles of fermentation, to be contained in the aliment itſelf; which, when incloſed in the ſtomach, and heated thereby, being put in motion, enters on its office of fermentation: but theſe, too, are divided; ſome taking it to be the ſpirituous part; and ſome the air in foods.

Others ſuppoſe the matter of this ferment ſupplied by the glands of the ſtomach: and laſtly, others contend for the ſaliva, and make that the ferment ſerving principally for the *digeſtion* of the food.

All theſe ſyſtems are now reduced to three principal ones; which we ſtill find explained, and defended in the ſeveral later writings on that ſubject: the firſt holding *digeſtion* to be performed by fermentation; the ſecond by trituration; and the third by fermentation and trituration together.

The firſt opinion was for a long time the only one. The retainers of it hold, that the food, after it is received into the ſtomach, is there impregnated with certain menſtruous juices, which being aſſiſted by the natural heat of the ſtomach, raiſe a fermentation in the foods, which diſſolves, attenuates, and converts them into chyle.

This was, originally, the ſyſtem of the antients; who, tho' they only expreſs themſelves in general terms, as diſſolving, ſoftening, ſubduing, concretion, qualities, &c. yet ſeem to have the notion of what we call *fermentation*. Thus Empedocles and Hippocrates teach, that *digeſtion* is performed by a putrefaction of the foods, after the like manner as the ſame Empedocles holds water to be converted by putrefaction into wine. Hippocrates and Ariſtotle uſe the term *Concoction*, which we likewiſe find in Erotian, Plutarch, and Actuarius, to expreſs the manner of fruits ripening, the muſt's changing into wine, and paſte's riſing. Hippocrates expreſly names *efferveſcence*, and *fermentation*, *de veteri medicina*, c. 5. and Galen likewiſe, *L. de Conſuetudine*, c. 2. And in another place he aſſerts, that a certain ſerous juice of the ſtomach concurs with the bile and ſpirits to effect *digeſtion*. To ſay nothing of Cicero, who, according to the prevailing opinion of his time, attributes *digeſtion* to the heat of the ſtomach. Lib. II. *de Nat. Deor*.

The juices, or ferments in the ſtomach, to whoſe action *digeſtion* is ſuppoſed owing, are, the ſaliva, bile, and pancreatic juice. This is ſo true, that in certain voracious animals, which eat, and *digeſt* faſt, particularly wolves, oſtriches, and porcupines, the bile diſcharges itſelf immediately into the cavity of the ſtomach; and we have obſerved a diſpoſition analogous thereto in a man that had been a great eater.

There are only three marks to know the fermentation of dough and muſt by: firſt, in that the dough riſes, and ſwells; and the muſt bubbles and rarefies; ſecondly, in that the bread and wine made by theſe fermentations, have different taſtes and qualities from thoſe the flour and muſt had before; thirdly, in that the bread and wine, by diſtillation, yield principles that differ in many reſpects from thoſe drawn from flour and muſt. Now, all theſe characters are found in the change made in the food by *digeſtion*.

Againſt this ſyſtem it is objected by Mr. Hecquet, and others, that in every 24 hours there is prepared a pound of ſaliva, half a pound of bile, and at leaſt two ounces of pancreatic juice; to which is to be added the ſtomach-liquor, reſembling ſaliva; the whole amounting to about two pounds, or 13824 grains of leaven. Now, ſay they, it is allowed by the chymiſts, that one grain of ferment is ſufficient for 800 grains of matter to be fermented; conſequently 2 pounds of ferment would ſuffice for 1200 pounds of food: whereas a man ordinarily does not take above 4 pounds in a day.

Now, this, ſay they, is an argument, that fermentation is not the only, or principal intention of theſe juices; ſince, if it had, they would have been better proportioned to the occaſion. And, further, it furniſhes an objection, ſince ſuch a quantity of ſaline, menſtruous humour, having ſo little buſineſs to employ it in fermenting the food, muſt act on the ſtomach, corrode and deſtroy the fine membrane it is lined withal, and do many other miſchiefs.

But to this it is anſwered, 1. That, according to Mr. Hecquet himſelf, the faculty of fermenting only belongs to the ſalts; and that, by his own computation, half a pound of bile only contains 30 grains of ſalt; and a pound of ſaliva, with two ounces of pancreatic juice, and the ſtomach-liquor, contain but 14 grains more: ſo that the real ſaline ferment of the ſtomach produced each day, only amounts to about 44 grains, which ſeems ſcarce enough for two pounds of food. But Mr. Hecquet diminiſhes the quantity of theſe ſalts too much, which Verheyen, and others, make a great deal more. To which is alſo to be added, the volatile ſalt, mixed with the phlegm and ſpirits. 2. It is not true, that there is always required a grain, and only a grain, of leaven for 800 grains of matter. Experience contradicts this rule. In ſome fermentations there is no need of any leaven at all, and in others a deal leſs will ſerve. As to the ferments acting on the membranes of the ſtomach; it is certain, it does act on, and vellicate the ſame, when there is no food to employ it; and this it is, that occaſions the ſenſation of hunger. But as faſt as theſe are corroded, they are repaired again by the nouriſhment proper to them. The ſtomach is ſometimes gnawed, and incommoded, by the menſtruum; but ordinarily it is preſerved by a viſcid matter, wherewith its inner coat is lined.

Another objection againſt this doctrine is, that the chyle yields no inflammable ſpirit; which it ſhould, were it the effect of fermentation: but M. Aſtruc anſwers, that all fermentations do not produce any ſuch ſpirit: that of dough, for inſtance, affords none, nor that of rotten fruits, nor of acids, or pure alcali's. The inflammable ſpirit, in effect, requires a fine attenuated ſulphur, which is not found in all fermentations.

The ſecond ſyſtem was invented, or at leaſt renewed, in the preſent age; and has been maintained with a deal of zeal and vivacity, as is commonly the caſe in any thing that has the appearance of novelty. Thoſe who eſpouſe this opinion, contend, that it is a mere continual attrition, or grinding, that breaks, attenuates, and reduces the food, and with the addition of a proper fluid, forms it into that whitiſh ſubſtance, called *chyle*; much as corn is ground between the ſtones of a mill. Which opinion ſeems to be confirmed by ſomething obſerved in birds: their gizzard, or crop, is compoſed of two ſtrong, ſolid, compact muſcles, which rubbing againſt each other, and being aſſiſted by little angular ſtones, or grains of ſand ſwallowed by the birds, break and grind the dry food thoſe animals live on: and when the ſand is grown ſmooth, they caſt them off with the other excrements, and ſwallow freſh grains. This ſentiment is thus explained by an able aſſertor thereof, Mr. Hecquet, in his treatiſe of *digeſtion*. Every thing in the body is vaſcular: conſequently, every thing therein is hollow; every thing therein lives after its manner; conſequently, every thing is in motion: animal life being nothing but motion; and conſequently, all the veſſels are in motion. Now the parts of a body, that are to move, will move moſt readily towards thoſe ſides, where they find the leaſt reſiſtance. But the place of the leaſt reſiſtance in tubes is the cavity; conſequently, the motion of the parts of veſſels is towards their axes. The parts of veſſels that are to move, are the parietes, or ſides, becauſe flexible and elaſtic; and this motion can only be effected by an approximation of thoſe parts; conſequently, the motion of the veſſels conſiſts in an approximation of their parietes: it is, therefore, a ſort of contraction, preſſion, or coarctation. Hence, as all the parts of the body are only veſſels, they all undergo a ſyſtole, preſſion, or contraction.

Further, all theſe veſſels contain juices in their cavities; and, therefore, all the juices, or liquids in the body, are continually compreſſed. This preſſion is the action of an elaſtic force; conſequently, the preſſion will be ſuch as is the force; and, therefore, alternative: conſequently, it is a pulſe, or palpitation; and therefore the juices are continually beaten.—Now, theſe juices are exceedingly diviſible; and conſequently they are continually attenuated, and divided: and a diviſion effected by a pulſation, or beating, is a trituration; and conſequently, the juices in the body are continually triturated, or ground.—The reaſon why the compreſſive force ſhould be alternative, is, that the membranes, which compoſe the veſſels, conſiſt of two plans, or ſeries's of fibres; the one longitudinal, the other circular, cutting the longitudinal, at right angles: the longitudinal are tendinous, and elaſtic; the circular are muſcular, or motive, like ſphincters, which compreſs: the circular are over the longitudinal, and embrace, or gird them round: the former, we have already obſerved, are elaſtic; and their elaſticity oppoſes the compreſſion of the latter. From this oppoſition, or reſiſtance, ariſes a reciprocal action, and re-action, which is the alternative grinding force required. See TRITURATION.

To ſuch as account for *digeſtion* from a ferment, thoſe philoſophers object, that *digeſtion* is a diſſolution; that to prepare the matters for this diſſolution, they muſt be ſoftened; that the proper effect of acid ferments, is, to gnaw, or tear the hardeſt matters, and to harden the ſofter, to thicken the fluid, fix the fat, and coagulate the milky; conſequently, that an acid ferment ſhould rather impede, than promote, *digeſtion.* Add, that, beſide the force to grind the juices, and the veſſels to compreſs them, there are likewiſe liquors to dilute and temper them; *viz.* the ſaliva, and ſtomach-liquor; and mineral matters, which the ſtomach-liquor cannot diſſolve, are found to be worn, and poliſhed, after having ſtayed ſome time in the ſtomach: now poliſhing is the effect of triture, or grinding, not of corroſion; accordingly we find pelotoons, or balls of hairs, or threads, in the ſtomachs of cattle, very ſmooth and ſhining, and far from having any marks of corroſion.

The authors who are for the trituration, require three things for *digeſtion* to proceed: a liquor, to wet and dilute the food, which they find in the ſaliva and ſtomach-liquor; a veſſel, which is the ſtomach; and a moving power to grind, which they imagine to have found in the muſcles of the ſtomach, diaphragm, and abdomen. The moving force in the muſcles of the ſtomach they maintain to be equivalent to the weight of 248235 pounds; and the force of the ſtomach, alone, to a weight of 12951 pounds: a power more than equal to that of one of the ableſt mill-ſtones. See *Traité de la Digeſtion, par M. Hecquet.*

Borelli, on the footing of the equilibrium of fluids, has demonſtrated, that the force of the flexor of the laſt articulation of the thumb is equal to 3720 pounds; whence Pitcairn deduces, that the force of the fibres of the ſtomach is equal to 12951, and that of the diaphragm, and muſcles of the lower venter, to 248235 pounds. His way of eſtimating, is this: the flexor only weighs 122 grains, and yet may ſuſtain 3720 pounds; conſequently, the fibres of the ſtomach, weighing 8 ounces, and the diaphragm, with the muſcles of the lower venter, weighing together 8223 grains, have the force abovementioned.—But this argumentation ſeems founded on a miſtake: for it is not in virtue of its weight of 122 grains, that the flexor muſcle is equivalent to 3720 pounds; beſides that it would follow, hence, that the heavier the muſcles of the ſtomach, diaphragm, and abdomen, are, the more force they would have; and, conſequently, the more eaſy and expedite would the *digeſtion* be: which is falſe.

The patrons of this ſyſtem compare the brain to the arbor, or ſcrew, of a preſs, the heart to a piſton, the lungs to bellows, the mouth to a mill-ſtone, or a peſtle, the ſtomach to a preſs, and the inteſtines to a receiver, or vat. They contend, that Caſtellus, a phyſician of Meſſina, was the firſt of the moderns who expreſly eſpouſed the ſyſtem of ferments; and that he was followed by Van Helmont, and Willis.

But even the partiſans of trituration are not perfectly agreed amongſt themſelves: Pitcairn will have it performed by a total contraction of the ſtomach; and Mr. Hecquet, by a ſucceſſive periſtaltic, or vermicular, contraction.

Aſtruc, in his treatiſe *De la cauſe de la Digeſtion*, refutes this ſyſtem of trituration at large. He makes a ſtrong oppoſition to the calculus which raiſes the moving force of the ſtomach, *&c.* ſo very high: the contraction of the fibres of the ſtomach, to compreſs the food, he ſhews, cannot exceed three ounces; and it is even *gratis* that he allows ſo much: that of the diaphragm, and abdomen, he computes at about 4 pounds. He obſerves, that Pitcairn, ſurpriſed, in all probability, with what he had aſſerted of this force, durſt not purſue the proportion whereon his calculus was founded; and according to which, one of the forces would have been found equivalent to 117088 pounds, and the other to 250734; which, together, make 367822 pounds.

The diaphragm, in its motion, has two powers: the one direct, which is that whereby its muſcles draw from the centre towards the circumference; the other lateral, whereby it reſts, or preſſes, on the ſtomach: the latter is very ſmall, in compariſon of the former. Now, what ſeems to have deceived Pitcairn and Hecquet, is, their taking the direct for the lateral force; the contraction of the fibres, for their preſſure on the ſtomach: and the ſame overſight they are guilty of, in the muſcles of the abdomen, whoſe preſſure againſt the abdomen is only lateral. Add, that there are voracious animals without any diaphragm at all; as fiſhes, which reſpire through their gills: and others, that have only a ſingle membrane; as birds, in whom the muſcles of the lower venter are very ſmall and feeble, and in a ſituation that incapacitates them from acting at all on the ſtomach.

The membranes of the ſtomach, being very ſoft, and having only a ſlender motion, ſeem very unfit for the office of a mill-ſtone. It is true, in certain fowls the ſtomach conſiſts of a cloſe, compact, fleſhy muſcle, exceeding ſtrong, ſo as to break little ſtones, and bits of glaſs: but to this it is urged, that it is no *digeſtion*, which in theſe animals is effected in the inteſtines; and the ſtructure of our ſtomach, compared with the gizzard, or crop, of granivorous birds, does, on the contrary, furniſh a very cogent argument againſt trituration. The gizzard is provided, on the outſide, with four fleſhy muſcles, the tendons whereof meet in two oppoſite points; the inſide is lined with a hard, thick, cartilaginous membrane, eſpecially in the places where the tendons meet: by this mechaniſm, nature plainly intimates the office of the gizzard to be the grinding of the grain by the friction of its parietes, or ſides: whereas the membrane in the ſtomach of a man is exceedingly thin and fine, furniſhed with few fleſhy fibres, covered with a tender, ſenſible kind of villi; and the ſtomach itſelf is of a great capacity: and the ſtomach in rapacious birds, who devour huge pieces of raw fleſh without chewing, is ſtill a finer membrane. Laſtly, on the foot of the ſyſtem of trituration there ſeems no accounting for hunger, nauſea's, indigeſtions, crudities, *&c.*

In the ſyſtem of trituration it ſeems impoſſible to explain why certain things eaſy to grind, *e. gr.* cabbage-leaves, cannot be *digeſted* in certain ſtomachs; which yet find no difficulty in *digeſting* more hard and ſolid meats, as beef and mutton: whereas the difference of diſſolvents gives a natural and eaſy ſolution. Hydropic people continue to *digeſt*, notwithſtanding the fibres of the ſtomach, as well as the reſt of the body, are extremely relaxed, through the redundance of moiſture; and the total, prompt change of nature induced in foods, can be the effect of nothing elſe but fermentation; which even diſcovers itſelf by belches, *&c.* while it goes on. The iron, needles, pins, *&c.* ſometimes found undiſſolved in the ſtomach, are no objection to the ſyſtem of fermentation; it being notorious, that no diſſolvent diſſolves all bodies.

In birds, which feed on grain, the fermentation is manifeſt; firſt in the crop, where the grain is prepared for *digeſtion*, by being macerated in a liquor like the ſaliva; and afterwards in the gizzard, where the *digeſtion* is perfected by a diſſolvent poured into it by a conglomerate gland.—But the thing is ſtill more apparent in ruminating animals, which are provided with four ſtomachs; the two firſt whereof, though formed of a nervous membrane, make but little alteration in the aliment, for want of a ferment, or menſtruum; ſo that it returns to be chewed again, and only becomes well *digeſted* in the fourth ſtomach, whither a diſſolvent is poured from a conglomerate gland.

The partiſans of the third opinion allow it inconteſtable, that there are acids in the ſtomach which mix with the foods, and act on them; and they hold, likewiſe, that their action is aided and promoted by the motion of ſyſtole and diaſtole in the viſcera: they add, that the acids produce a fermentation, and the oſcillatory motion of the viſcera a trituration: and that thus *digeſtion* is the effect of fermentation, and trituration at the ſame time.

Be it as it will, with each of the three ſyſtems, thus much we may venture to lay down from them all, as the real proceſs of *digeſtion*: the end of this operation being to prepare the foods, ſo as that they may ſerve for nutrition, thoſe foods muſt be conſidered from the time the man takes them in; till, being converted into chyle, they mix with the blood, which conveys them into all parts of the body: the foods, then, we take, are either crude, as oyſters, fruits, certain puls, *&c.* or dreſſed, as fleſh and fiſh, which are roaſted, boiled, fried, *&c.* and ſeaſoned a thouſand divers ways with ſalt, pepper, and other ſpices, vinegar, wine, *&c.* this is done to heighten and inrich the taſte, as much as to aſſiſt *digeſtion.*

Further, there are ſome foods we ſwallow without chewing, as liquids; and others, which we break and comminute by chewing, as bread, fleſh, *&c* it is of theſe laſt we ſhall here ſpeak, as undergoing more preparations, and more changes to fit them for nutrition, than the others.

The food, then, is firſt broke and divided by the teeth, and, at the ſame time, moiſtened with a liquor ſupplied by the ſalival glands, and thus is formed into a kind of paſte.

Thus prepared, it is paſſed through the œſophagus into the ſtomach, there to ferment. This fermentation is cauſed, 1. By the ſalival juice, which is a ferment, and has the ſame effect on the aliment, that leaven, or yeaſt, has on paſte. 2. By the heat of the ſtomach, viſcera of the abdomen, and even excrements; which here has nearly the ſame effe on foods, as a dunghil has on matters laid by the chemiſts to *digeſt* therein. 3. By the remains of foods left adhering in the rugæ, or folds, of the ſtomach, and there turned ſour and acrimonious. 4. By the compreſſion of the muſcles of the abdomen, and diaphragm. 5. By the liquor which the repeated compreſſion of thoſe muſcles occaſions to drip from the glands of the ſtomach. And, 6. According to the ſentiment of ſome modern phyſicians, by the air itſelf, which, being mixed, and embaraſſed in the aliments, dilate by the heat of the ſtomach, and ſeparates the parts of th foods. Theſe cauſes all contribute to attenuate and divid the food, ſo as to convert it into a cineritious matter, calle *chyle.*

From the ſtomach the chyle deſcends into the duodenum where it is further perfected by the pancreatic juice, and th bile, which thin it, precipitate its groſſer parts, and render more fluid: the chyle, thus perfected and attenuated, ente the lacteal veins, which convey it into the receptaculum chyl where it is further diluted by the lympha, which is broug hither in abundance; hence it ariſes into the thoracic duc and enters the ſubclavian vein; where, being taken up by th aſcending cava, it is poured into the right ventricle of the hea The chyle, thus mixing with the blood, embaraſſes the gl bules thereof, and thus abates its motion; and hence that i clination to go to ſleep after meals: but, by degrees, the blo co communicates its motion to the chyle; and, by its volatile and exalted parts, together with the ſaline and nitrous parts of the air, ſubtilizes, and gives it its laſt perfection. Then the *digeſtion* is finiſhed: and the foods being, by ſo many changes, rendered the immediate matter of nutrition, are carried by the blood into all parts of the body, to repair and fill the vacancies of ſuch as are continually diſſipating and exhaling; or even to add new ones.

As to the groſſer parts of the foods, ſeparated from the chyle by the bile and pancreatic juice, they aſſume the colour of excrements from the bile; and their rank ſmell they derive from the coarſer ſulphurs thereof. Theſe ſulphurs, and ſalts of the excrements, ſerve, after they have paſſed through the inteſtines, and are arrived at the laſt, which is the rectum, to vellicate the muſcles thereof, and diſpoſe them to relax, and thus to appriſe nature of a neceſſity to diſcharge.

The eparation of the urine from the blood may be eſteemed a part of perfect *digeſtion*; the deſign of ſuch ſeparation being to render the blood more pure and balſamic; and, of conſequence, more fit for nutrition; which the ſalts, the urine abounds withal, greatly prevented. This ſeparation is thus performed: the branches of the emulgent arteries, which terminate in the glands, whereof the ſubſtance of the kidneys is compoſed, carry the blood thither; where a ſeroſity is ſeparated from the blood, by means of the pores in the glands of the kidneys; thoſe pores repreſenting the holes in a ſieve, which only let paſs ſuch things as are of a leſs diameter than themſelves. This ſeroſity, called urine, is diſcharged hence into ſeveral little tubes, which, joining in a kind of pyramids, yields the humour into the pelvis, whence it runs through the ureters into the bladder.

Digestion, in chemiſtry, is a preparation of plants, minerals, metals, or other bodies, by putting them, with ſome proper fluid, in a veſſel, and heating them gradually over a gentle fire, like the heat of an animal body.

Digeſtion is a previous kind of diſpoſition to a perfect diſſolution of a body, made by means of fire, or fiery particles, ſtriking againſt and looſening the pores of the body, and attenuating the parts of their fluids, that their connexion with the harder matter may be more eaſily and perfectly diſſolved.

Bohnius ſeems to deſcribe it pretty adequately by an inſenſible action and reaction of the particles of a maſs moved together by ſome ſubtile, ambient fluid, to which it is expoſed for *digeſtion*. By calling *digeſtion* a reciprocal action, their motion is intimated, by means whereof they are torn from the contiguous ones; and, in a word, differently modified: ſo that the motion ended, the digeſted maſs differs either wholly, or in part, from the ſame maſs before *digeſtion*; ſometimes in colour, ſometimes in ſmell, ſometimes in tranſparency, ſometimes in taſte, ſometimes in conſiſtence, and other affections.

That *digeſtion* is effected by motion, is evident from an obſervation of Dr. Grew; who, bringing a mixture of ſalt of tartar and oil of turpentine, ſeveral days journey with him in a coach to London, found it had undergone a more intimate mixtion, than if it had been expoſed to a long *digeſtion*.

Digeſtion is ordinarily confounded with maceration; but the two things differ, in that there is heat required to *digeſtion*; whereas maceration is done in the cold.

Digeſtion is uſually performed with the addition of ſome menſtruum ſuitable to the matter: thus, roſes and poppies heads are put to digeſt in oil, or water, to make unguents, or ſyrups: calcined lead, and ceruſs, are digeſted in diſtilled vinegar, to make the magiſtery thereof, or the ſal Saturni.—Hence Dr. Freind defines *digeſtion* to be the ſolution of bodies, made by menſtruums, with the aſſiſtance of fire.

The uſe of *digeſtion*, in pharmacy, is to extract the more volatile particles, and mix them intimately with the menſtruum. To this end a gentle fire is commonly uſed, that the corpuſcles, which are moſt volatile, may ſeparate, as it were, of their own accord: for a fierce fire forces out the fæces, as well as the finer particles; and if it does not abate the ſtrength of the liquor, as is often the caſe, it will not fail of ſpoiling its clearneſs.

To conceive the nature of chemical *digeſtion*, it may be neceſſary to ſhew how the particles of bodies can, by this proceſs, be diffuſed every way, and ſuſtained in the menſtruum; which deſerves the more to be accounted for, becauſe thoſe ſolid particles have not the ſame ſpecific gravity, as the liquors have in which they ſwim. Though the nature of a perfectly fluid body be ſuch, as that the particles, which conſtitute it, do very readily give way upon the ſmalleſt impulſe, and recede from one another; yet there is found in moſt liquors ſome degree of tenacity: and from hence ariſes ſuch a coheſion of parts, as cannot be broken without ſome force. And though, indeed, this force of coheſion in liquors ſeems to be but little, or almoſt none at all, when compared with what we experience in ſolids; yet we find it can make ſome reſiſtance. And, as the force in liquors is either ſtronger or weaker, ſo it produces a variety of effects, differing, more or leſs, from the phænomena, which would naturally flow from a perfect fluid: ſo that, tho', by the laws of hydroſtatics, every corpuſcle, how ſubtil ſoever, if put into a fluid which is ſpecifically lighter, muſt neceſſarily ſink to the bottom; yet we find, that ſome heavy bodies, ſuch as gold, &c. when reduced into thin plates, will be ſuſtained in ſpirit of wine. This force, therefore, of tenacity, which reſiſts the motion of bodies in a fluid, is proportional to the number of parts which are to be ſeparated, or to the ſurface of the body which we would have move in the fluid. Hence it is, that ſince the ſurface of a body may be enlarged, without altering any thing of its gravity, the reſiſtance of a fluid may be ſo augmented, as to equal the force of gravity which carries the body downwards. And a body, though ſpecifically heavier than a fluid in which it is immerſed, may be very well ſuſtained in that fluid, provided it is reduced into very ſmall particles: becauſe the gravity of a body, thus reduced into ſmall particles, decreaſes in a much greater proportion than the ſurface does, or, which is proportional to it, the reſiſtance of the fluid: ſo that at length the reſiſtance, ariſing from its tenacity, will be equal to the gravity of the particle, and ſo will hinder its deſcent. And, therefore, both in ſolution and digeſtion, it is a general rule, that if the gravity of a body be to the tenacity of the fluid, as P to 1; and if the body be then ſubdivided, ſo that the diameters of the parts be to that of the whole, as 1 to P; the reſiſtance, which the particles will meet with in their deſcent, will be equal to their gravity: for ſince their weight is $\frac{1}{P3}$, but their ſurface $\frac{1}{P2}$, the gravity will be to the reſiſtance as $\frac{P}{P3}$ to $\frac{1}{P2}$, or as 1 to 1. So that by this we may underſtand how the corpuſcles of metals ſwim in menſtruums which are ſpecifically lighter; as gold, in the ſpirit of nitre, which is drawn off from bezoar mineral, though the gravity of gold be fifteen times greater. And, in the ſame manner, we may underſtand how corpuſcles, ſpecifically heavier, are ſuſpended in any other menſtruum. And it is for the ſame reaſon, that ſuch as are lighter cannot riſe up to the ſurface: for the preſſure of fluids being equal every way, the ſuperior parts act reciprocally on the inferior; ſo that the ſame force, which keeps the heavy particles from ſinking, will not permit thoſe which are lighter to aſcend.

Digestion, in chirurgery, expreſſes a diſpoſition in abſceſſes to ripen, and come to ſuppuration.

Tumours, ariſing on the parotides of children, are of eaſy *digeſtion*: they ripen in a little time. Dionis.

Digestion is alſo uſed for maturation, or that ſtate of a diſeaſe wherein the morbific matter is ſo changed in bulk, figure, coheſion, mobility, &c. by the uſe of proper medicines, or even by the force of nature, as to be leſs noxious and hurtful, and, conſequently, to abate the violence of the diſtemper.

The Greeks call it πεπασμὸς. The matter of the diſeaſe ſo far *digeſted*, as to become next a-kin to ſalubrious, or healthy matter, is ſaid to be *reſolved*.

DIGESTIVE faculty. The antient philoſophers admitted a *digeſtive faculty*, or *quality*, in the human body; as not knowing how otherwiſe to account for the act of *digeſton*.

Digestive is alſo uſed, in medicine, for ſuch remedies as ſtrengthen and increaſe the tone of the ſtomach, and aſſiſt in the *digeſtion* of foods. To this claſs belong all ſtomachics and ſtrengtheners, or corroborants.

Digestive, in chirurgery, denotes a ſort of unguent, plaiſter, or the like, that ripens and prepares the matter of wounds, &c. for ſuppuration.

The common *digeſtive* is compoſed of turpentine, yolk of eggs, oil of St. John's wort, unguentum baſilicum, and tincture of aloes.

The wound muſt be dreſſed the firſt day with a *digeſtive*, to bring it to ſuppuration.

DIGITATED, among botaniſts, is a term applied to the leaf of a plant, which either conſiſts of many ſimple leaves ſet together upon one foot-ſtalk; as in the cinquefoil, vetches, &c. or elſe when there are many deep gaſhes, or cuts, in the leaf; as in thoſe of dragons, hops, &c.

DIGIT, **Digitus**, in anatomy. See the article Finger.

Digit, in aſtronomy, is the meaſure whereby we eſtimate eclipſes; amounting to the 12th part of the diameter of the luminary eclipſed.

The diameter of the body, or diſk, of the ſun or moon, is divided into twelve parts, called *digits*; and an eclipſe is ſaid to be of ten *digits*, when ten of thoſe parts are hid.

Theſe *digits*, Wolfius, and ſome others, call *digiti ecliptici*.

Digit, in arithmetic, ſignifies an integer, or number, under ten; as 1, 2, 3, 4, 5, 6, 7, 8, 9.

Digit is alſo a meaſure taken from the breadth of the finger.

A *digit* is properly 3 fourths of an inch, and equivalent to 4 grains of barley, laid breadth-wiſe, ſo as to touch each other.

DIGLYPH, a kind of imperfect triglyph, conſole, or the like, with only two chanels, or engravings, inſtead of three. See Triglyph.

DIGNITARY, in the canon law, a perſon who holds a *dignity*, that is, a benefice, which gives him ſome pre-eminence in the choir, above mere prieſts and canons.

Such is a dean, and archdeacon; though the word is now abuſively applied to a mere prebendary, or canon.

Dignities are ſometimes ſimple, ſometimes with cure of ſouls, and ſometimes with juriſdiction and adminiſtration of ſacred things. The canoniſts even define *dignity, adminiſtratio cum juriſdictione & poteſtate conjuncta.* If the *dignity* have no contentious, or exterior, juriſdiction, it is a ſimple parſonage, and only gives pre-eminence. See Benefice, Parsonage, &c.

Of *dignities*, including prebends, Camden reckons in England 544 in number.

DIGNITY, a quality that denotes a man *(dignus) worthy.*

DIHELIOS, in the elliptical aſtronomy, a name which Kepler gives to that ordinate of the ellipſis, which paſſes through the focus, wherein the ſun is ſuppoſed to be placed.

DIKE *, a *ditch*, or *drain*, made for the paſſage of waters.

* The word ſeems formed from the verb, to *dig*: though others chooſe to derive it from the Dutch, *diik*, a dam, ſea-bank, or wall.

Dike *, or *dyke*, alſo denotes a work of ſtone, timber, or faſcines, raiſed to oppoſe the entrance, or paſſage, of the waters of the ſea, a river, lake, or the like.

* The word comes from the Flemiſh, *dyk*, or *diik*, a heap of earth to bound, or ſtem, the water. Junius and Menage take the Flemiſh to have borrowed their word from the Greek τειχος, *wall*. Guichard derives it from the Hebrew *dagbab*.

Theſe *dikes* are uſually elevations of earth, with hurdles of ſtakes, ſtones, and other matters.

The *dike* of Rochel is made with veſſels faſtened to the bottom. The *dikes* of Holland are frequently broken through, and large tracts of land are then drowned.

DILAPIDATION, a waſteful deſtroying, or letting buildings, eſpecially parſonage-houſes, run to ruin and decay, for want of neceſſary reparation.

The money recovered by *dilapidations*, by 14 Eliz. 11. muſt be employed in the repair of the ſame houſes.

DILATATION, in phyſics, a motion of the parts of a body, whereby it expands, or opens, itſelf, ſo as to occupy a greater ſpace.

The generality of authors confound *dilatation* with rarefaction; but the more accurate, eſpecially foreigners, diſtinguiſh between them: defining *dilatation* to be the expanſion of a body into a greater bulk, by its own elaſtic power: and rarefaction, the like expanſion produced by means of heat.

The moderns have obſerved, that bodies, which, after being compreſſed, and again left at liberty, reſtore themſelves perfectly, do endeavour to *dilate* themſelves with the ſame force whereby they are compreſſed; and, accordingly, they ſuſtain a force, and raiſe a weight, equal to that whereby they are compreſſed.

Again, bodies, in *dilating* by their elaſtic power, exert a greater force at the beginning of their *dilatation*, than towards the end; as being at firſt more compreſſed: and the greater the compreſſion, the greater the elaſtic power, and endeavour to *dilate*. So that theſe three, the compreſſing power, the compreſſion, and the elaſtic power, are always equal.

Again, the motion, whereby compreſſed bodies reſtore themſelves, is uſually accelerated: thus, when compreſſed air begins to reſtore itſelf, and *dilate* into a greater ſpace, it is ſtill compreſſed; and, conſequently, a new impetus is impreſſed thereon, from the *dilatative* cauſe; and the former remaining, with the increaſe of the cauſe, the effect, that is, the motion and velocity, muſt be increaſed likewiſe: thus an arrow, ſhot from a bow, does not quit the ſtring till after that be perfectly reſtored to its natural ſtate; nor does the arrow move a whit ſwifter than the ſtring: and if the ſtring, before it have perfectly reſtored itſelf to its right line, be ſtopped, the arrow will not go its full length; which is a proof, that it is continually acquiring a new impetus from the ſtring. And ſince projects, at the beginning of their motion, are little or nothing retarded, but rather accelerated, it is evident, that the motion of a ſtring reſtoring itſelf, is likewiſe accelerated. Indeed, it may happen, that where the compreſſion is only partial, the motion of *dilatation* ſhall not be accelerated, but retarded: as is evident in the compreſſion of a ſponge, ſoft bread, gawze, &c.

Dilatation, in medicine, &c. denotes the laying open any orifice, or the lips of a wound wider; or the extenſion of any veſſel, or the like.

DILATATORES *alæ naſi*, in anatomy, a pair of muſcles common to the *alæ naſi*, and upper lip.

They ariſe thin, broad, and fleſhy, from the cheek-bones under the orbits of the eyes, and deſcend obliquely with a twofold order of fleſhy fibres in each muſcle; which partly terminate in the upper lip, and partly in the *alæ naſi*.—They draw the *alæ* from each other, and widen the external openings of the noſtrils.

DILEMMA *, ΔΙΛΗΜΜΑ, in logic, an argument conſiſting of two, or more, propoſitions, ſo diſpoſed, that grant which you will of them, you will be preſſed by the concluſion.

* The word is formed from the Greek, δις, *bis*, twice; and λημμα, *ſumptio*.

A *dilemma*, is an argument conſiſting of two contrary parts, or ſides, either of which catches the adverſary. And hence it is alſo called *ſyllogiſmus cornutus*, a horned ſyllogiſm, its horns being ſo diſpoſed, that, if you avoid the one, you run upon the other.

It is alſo called *crocodilinus*, by reaſon that as the crocodile leads ſuch as follow it into the water, and purſues ſuch as fly it, to deſtroy them; ſo, whatever the adverſary either affirms, or denies, in this kind of ſyllogiſm, is turned to his diſadvantage.

For an example: a philoſopher once diſſuaded a man from marrying, by this argument: either the woman you marry will be handſome or ugly: if handſome, ſhe will give you jealouſy; if ugly, diſpleaſure.

Cicero uſes this fine *dilemma*, to prove, that all pain is to be borne with patience: *omnis dolor aut eſt vehemens, aut levis: ſi levis, facile feretur; ſi vehemens, certe brevis futurus eſt.*

The ſame orator, by another *dilemma*, proves that no meſſengers ſhall be ſent to Antony: *legatos decernitis; ſi ut deprecentur, contemnet: ſi ut imperetis, non audiet.*

Nor muſt we here omit that beautiful *dilemma* of Tertullian, whereby he clears the Chriſtians, and accuſes Trajan, who had forbad the ſeeking them out, and yet ordered them to be puniſhed when found: *O ſententiam neceſſitate confuſam! negat inquirendos, ut innocentes; & mandat puniendos, ut nocentes: parcit & ſævit, diſſimulat & animadvertit! quid temetipſum cenſura circumvenis? ſi damnas, cur non inquiris? ſi non inquiris, cur non & abſolvis?*

For a *dilemma* to be legitimate, there are two things required:

1. A full enumeration of parts: thus that of Ariſtippus abovementioned, whereby he diſſuades from marriage, is invalid, as being defective in the enumeration; there being a middle degree, or form, between *handſome* and *ugly*.

2. That the *dilemma* preſs the adverſary alone, and that the perſon who makes it be not able to have it retorted upon him. This was the caſe in that celebrated *dilemma* of the ſophiſt Protagoras, which the Areopagites, with all their wiſdom, were not able to reſolve.

A youth, named Evathlus, put himſelf to Protagoras to learn dialectics, upon condition that he ſhould pay him a large ſum of money the firſt cauſe he pleaded, in caſe he gained the ſame. Evathlus, when fully inſtructed, refuſing to pay the condition, Protagoras brings his action, arguing thus: You muſt pay the money, however the cauſe go; for if I gain, you muſt pay in conſequence of the ſentence, as being caſt in the cauſe: and if you gain it, you muſt pay in purſuance of our covenant. Nay, retorts Evathlus, which way ſoever the cauſe go, you will have nothing: for if I prevail, the ſentence gives it that nothing is due to you; and if I loſe, then there is nothing due by the covenant.

After the like manner, an antient prieſteſs diſſuading her ſo from haranguing the people, by this *dilemma: nam ſi injuſt ſuaſeris*, ſays ſhe, *habebis Deos iratos; ſin vero juſta, irato habebis homines:* the youth thus returned the *dilemma* on hi mother; *imo*, ſays he, *expedit ad populum verba facere: nam ſi juſta dixero, Dii me amabunt; ſi injuſta, homines.*

DILUTE.—To *dilute* a body is to render it liquid; or, if i were liquid before, to render it more ſo, by the addition of thinner thereto.

Thoſe things thus added, are called *diluents*, or *dilutors* ſuch are common wheys, ptiſans, and juleps, which, in reſpect of the blood in a ſtate of viſcidity, are thinner, an therefore are ſaid to thin, or *dilute* it—Flour muſt be well *diluted* to make it into paſte. Oker is *diluted* with oil, t paint beams, doors, &c.

DIMENSION, the extenſion of a body, conſidered as meaſureable.

Hence, as we conceive a body extended and meaſurable, bo in length, breadth, and depth, we conceive a *trine dimenſio* *viz.* length, breadth, and thickneſs.—The firſt called a *li* the ſecond a *ſurface*, the third a *ſolid*.

Dimension, is particularly uſed with regard to the powers the roots, or values of the unknown quantities of equatio which are called the *dimenſions* of thoſe roots. See Root.

Thus, in a ſimple equation, the unknown quantity is only *one dimenſion*, as $x=a+b:2$. In a quadratic equation it of *two dimenſions*, as $x^2=a^2+b^2$. In a cubic of *three*, $x^3+a^3-b^3$, &c.

DIMINISHED *column*, in architecture. See Column.

Diminished *interval*, in muſic, is a defective interval, or interval which is ſhort of its juſt quantity by a leſſer ſe tone. See Interval.

DIMINUTION, in rhetoric, the augmenting and exaggerating what you have to ſay, by an expreſſion that ſeems to weaken and diminiſh it.

As, for inſtance, when a man ſays, with a certain tone, This woman is not ugly; meaning, ſhe is very handſome.

Some authors take *diminution* in a ſtricter ſenſe, *viz.* for ſaying leſs than a man really means; as, You are not, indeed, to be commended; where a greater reproach is ſecretly meant.

DIMINUTION, in muſic, is when there are a number of words which are to make tones, and ſeveral haſty motions in the ſpace of a cadence; ſeveral quavers, and ſemi-quavers, correſponding to a crotchet, or minim.

DIMINUTIO, in heraldry, a term uſed by Latin writers for what we more uſually call *differences*, and the French *briſures.* See DIFFERENCE.

DIMINUTION, in architecture, a contraction of the upper part of a column, whereby its diameter is made leſs than that of the lower part. See *Tab. Archit. fig.* 39.

To attain thoſe two important points in architecture, ſtrength, and the appearance of ſtrength, all architects have made their columns leſſer above than below, which is called their *diminution.* Some have likewiſe made them a little bigger towards the middle than at the bottom, which is called their ſwelling. The Gothic architects, indeed, obſerve neither *diminution* nor ſwelling; their columns are perfectly cylindrical; for which reaſon they are properly called pillars, in contradiſtinction to columns.

The *diminution* generally commences from one third of the height of the column. Some make it begin from the very baſis, and hold tapering to the capital; but that has not ſo good an effect. Vitruvius would have the *diminution* of columns differ according to their height, and not according to their diameter: thus, a column of 15 feet high, he diminiſhes a ſixth part of its diameter; and another of 50 feet, only an eighth part; but we do not find this rule obſerved in the antique.

The difference of orders, M. Perrault obſerves, does not infer a difference of *diminution*, there being ſmall and great *diminutions* in different works of the ſame order; excepting, however, the Tuſcan, which Vitruvius diminiſhes by a fourth part, though Vignola only makes it a fifth, and the Trajan column a ninth. The *diminutions* are very differently adjuſted in the different antique buildings, as well as by the different modern authors.

IMINUTIVE, in grammar, a word formed from ſome other, to ſoften or diminiſh the force and effect thereof; or to ſignify a thing that is little in its kind.

Thus cellule is a diminutive of cell, globule of globe, hillock of hill, &c.

The Italians abound in *diminutives*, every author being at liberty to make as many as he pleaſes. The French are a good deal more reſerved in that reſpect, though their old authors were every whit as licentious as the Italians, witneſs Belleau, &c.

In Engliſh we have very few; not that, as ſome have ſaid of the French, our language is hard, and incapable of the ſofteſt expreſſions, but by reaſon we lay all our tenderneſs in our ſentiments; or rather, our language is tender, like a perſon of diſcretion, who always ſpeaks ſenſe, even in ſpeaking of his paſſion.

In Latin, Italian, Engliſh, and moſt other tongues, *diminutives* are formed from primitives, by the addition of a few letters, or ſyllables: in French, the caſe is frequently otherwiſe, the *diminutive* being ſometimes ſhorter than the primitive, ſometimes of the ſame length.

Some grammarians call *at leaſt* a *diminutive* conjunction, as ſerving to leſſen or diminiſh the force of what went before.

MISSORY *Letters*, *Literæ Dimiſſoriæ*, in the canon law, a letter given by a biſhop to a candidate for holy orders, having a title in his dioceſe, directed to ſome other biſhop, and giving leave for the bearer to be ordained by him.

When a perſon produces letters of ordination, or tonſure, conferred by any other than his own dioceſan, he muſt at the ſame time produce the letters dimiſſory given by his own biſhop, on pain of nullity.—

Letters dimiſſory cannot be given by the chapter, *ſede vacante*; this being deemed an act of voluntary juriſdiction, which ought to be reſerved to the ſucceſſor.

MOERITÆ *, a name given the Apollinariſts, who at firſt held, that the Word only aſſumed a human body, without taking a reaſonable ſoul like ours; but, being at length convinced by formal texts of ſcripture, they allowed, that he did aſſume a ſoul, but without underſtanding; the Word ſupplying the want of that faculty.

* From this way of ſeparating the underſtanding from the ſoul, they became denominated *Dimœrites*, q. d. dividers, ſeparaters, of δια, and μοιραω, I divide.

NER *, the great meal, or that taken about the middle of the day.

* The word is formed from the French *diſner*, which du Cange derives from the barbarous Latin *diſnare*. Henry Stephens derives it from the Greek δειπνειν; and will have it written *dipner*. Menage deduces it from the Italian *deſinare*, to dine; and that from the Latin *deſinere*, to leave off work.

Monks are ſaid to *dine* at eleven o'clock, the common people at twelve, and the men of buſineſs at two. The grand Tartar, emperor of China, after he has *dined*, makes publication by his heralds, that he gives leave for all the other kings and potentates of the earth, to go to *dinner*; as if they waited for his leave.

In the general, it is agreed to be the moſt ſalutary to make a ſpare ſupper, and to eat the more plentifully at *dinner*, eſpecially for tender, valetudinary people. This is the ſentiment of the *ſchola Salernitana*:

Ex magna cœna ſtomacho fit maxima pœna:
Ut ſis nocte levis, ſit tibi cœna brevis.

Yet Bernardinus Paternus, an eminent Italian phyſician, maintains the contrary, in a treatiſe expreſly on the ſubject.

The Romans, we are aſſured, never minded *dinner*; but deferred their good chaer to the evening, which they made their grand meal.

DIOCESE *, or DIOCESS, the circuit, or extent, of the juriſdiction of a biſhop. See BISHOP.

* The word is formed from the Greek διοικησις, government, adminiſtration, formed of διοικεω, which the antient gloſſaries render *adminiſtro*, *moderor*, *ordino*: hence διοικησις της πολεως, the adminiſtration, or government of a city.

DIOCESE is alſo uſed, in antient authors, &c. for the province of a metropolitan. See PROVINCE, and METROPOLITAN.

Diœceſis, Διοικησις, was originally a civil government, or prefecture, compoſed of divers provinces.

The firſt diviſion of the empire into *dioceſes* is ordinarily aſcribed to Conſtantine, who diſtributed the whole Roman ſtate into four, *viz.* the *dioceſe* of Italy, the *dioceſe of* Illyria, that of the Eaſt, and that of Africa. And yet, long time before Conſtantine, Strabo, who wrote under Tiberius, takes notice, lib. XIII. p. 432. that the Romans had divided Aſia into *dioceſes*, and complains of the confuſion ſuch a diviſion occaſioned in geography, Aſia being no longer divided by people, but by *dioceſes*, each whereof had a tribunal, or court, where juſtice was adminiſtred. Conſtantine, then, was only the inſtitutor of thoſe large *dioceſes*, which comprehended ſeveral metropoles, and governments; the former *dioceſes* only comprehending one juriſdiction, or diſtrict, or the country that had reſort to one judge, as appears from this paſſage in Strabo, and, before Strabo, from Cicero himſelf, lib. III. *epiſt. ad famil. ep.* 9. and lib. XIII. *ep.* 67.

Thus, at firſt, a province included divers *dioceſes*; and afterwards a *dioceſe* came to compriſe divers provinces. In after-times the Roman empire became divided into XIII *dioceſes*, or prefectures; though, including Rome, and the ſuburbicary regions, there were XIV. Theſe XIV *dioceſes* comprehended 120 provinces: each province had a proconſul, who reſided in the capital, or metropolis; and each *dioceſe* of the empire had a conſul, who reſided in the principal city of the diſtrict.

On this civil conſtitution, the eccleſiaſtical one was afterwards regulated: each *dioceſe* had an eccleſiaſtical vicar, or primate, who judged finally of all the concerns of the church within his territory.

At preſent there is ſome farther alteration; for *dioceſe* does not now ſignify an aſſemblage of divers provinces, but is limited to a ſingle province, under a metropolitan, or even to the ſingle juriſdiction of a biſhop.

Gul. Brito affirms *dioceſe* to be properly the territory, and extent, of a baptiſmal, or parochial church; whence divers authors uſe the word to ſignify a ſimple pariſh.

DIOCLESIAN *Epocha.* See the article EPOCHA.

DIONYSIA *, or DIONYSIACA, ſolemn feaſts, held among the antients, in honour of Bacchus.

* The word is formed from the Greek Διονυσια, of Διονυσος, Bacchus; and that of Διος, the genitive of Ζευς, Jupiter, and Nyſa, a city in Egypt, on the frontiers of Arabia, where Bacchus is ſaid to have been educated by the nymphs.

The *Dionyſia* are the ſame with what are otherwiſe called *Orgia*, and by the Romans *Bacchanalia* and *Liberalia.*

There were divers feſtivals under the denomination of Διονυσια, *Dionyſia*; but the chief were two, *viz.* 1*ſt*, The antient αρχαιοτερα, probably the ſame with μεγαλα, or the greater *Dionyſia*, ſometimes alſo called, by way of eminence, Διονυσια, without any other addition, as being the moſt celebrated of all Bacchus's feſtivals at Athens, where it was held, in the month of Elaphebolion. 2*dly*, The new νεωτερα, probably the ſame with μικρα, or the *leſſer Dionyſia*, held in autumn, as a ſort of preparation to the greater. Some will have this the ſame with Διονυσια ληναια, ſo called, from ληνος, a wine-preſs, and place it in the month Lenæon.

DIONYSIAN *Period.* See the article PERIOD.

DIOPTER, or DIOPTRA, in writers of aſtronomy, is frequently uſed for the hole, or index, pierced in the pinnula, or ſight of an alhidade. See SIGHTS.

DIOPTRA, among ſurgeons, denotes an inſtrument whereby to dilate the matrix, or anus, and inſpect any ulcers therein; called alſo *ſpeculum matricis*, and *dilatatorium.*

DIOPTRICS *, the doctrine of refracted viſion, called alſo *Anaclaſtics.*

* The word is originally Greek, formed of δια, *per*, through, and οπ]ομα, I ſee.

Dioptrics is properly the third branch of optics, its office being to conſider, and explain the effects of light refracted by paſſing through different mediums, as air, water, glaſs, &c. and eſpecially lenſes.

The laws of *dioptrics* ſee delivered under the articles REFRACTION, LENS, &c. and the application thereof, in the conſtruction of teleſcopes, microſcopes, and other *dioptrical* inſtruments, under the articles TELESCOPES, and MICROSCOPE.

DIPHRYGES *, or DIPHRYX, in the antient pharmacy, the ſcoria, or calx of melted copper gathered in the furnace, when the metal was run out.

* The word is formed from the Greek δις, twice; and φρυγειν, to roaſt.

Dioſcorides diſtinguiſhes three very different kinds of *diphryges*; one made of a kind of clay, or bole, dried in the ſun; another made of marcaſite, or pyrites, burnt; and a third that of the fæces of copper.

The laſt is moderately ſharp, and aſtringent; and is reputed good for ulcers that cicatrize with difficulty.

DIPHTHONG, ΔΙΦΘΟΓΓΟΣ, in grammar, a double vowel, or the union, or mixture of two vowels pronounced together, ſo as only to make one ſyllable: as (1) the Latin *ae*, or *æ*; *oe*, or *œ*: (2) the Greek, *αι*, *ει*; (3) the Engliſh *ai*, *au*, &c. See VOWEL, and SYLLABLE.

(1) The word is Greek, and is compounded of δις, twice; and φθογγος, ſound.

(2) *Ae* anſwers to *αι*, the proper; and *α*, the improper *Diphthong* of the Greeks; *e. g.* Αινειας, *Æneas*; σφαιρα, *ſphaera*, &c.—And, on the contrary, the Romans, when they had occaſion to divide their *ae*, changed it into the Greek, *ai*; *e. g.* *aulai*, for *aulae*, &c.

(3) *Ai*, by ſome is made a Latin *Diphthong*, as in *aio*, Caius, &c—But in *ais*, and *ait*, *i* manifeſtly belongs to the latter ſyllable: and the Greeks write not Γαι ος, but Γα ιος: whence it ſeems plain, that *ai*, in the Latin tongue, is not a *Diphthong*, as in the Greek.

The Latins pronounced the two vowels in their *diphthongs* much as we do, with this exception, that the two were not heard equally, but the one was ſomewhat weaker than the other; though the diviſion was made with all the delicacy imaginable among us, moſt of the Latin *diphthongs* are loſt in the pronunciation; their *æ* and *œ* are only ſpoken as *e*'s; ſo alſo the Engliſh *ea*, *oa*, &c. though written with two characters, are pronounced as ſimple ſounds.

In Engliſh, French, and divers other languages, one may diſtinguiſh *diphthongs* with regard to the eye, from *diphthongs* with regard to the ear.

A *diphthong* with regard to the eye, is formed of two vowels, meeting in the ſame ſyllable, whether the particular ſound of each of them be heard in the pronuntiation, or whether the ſound of one of them be drowned; or, laſtly, whether a new ſound, different from either of them, reſult from both. In the two latter caſes, it is with ſome impropriety that we call them *diphthongs*: the firſt, only, are real *diphthongs*, as being ſuch both to the eye and ear.

Diphthongs, with regard to the ear, are either formed of two vowels, meeting in the ſame ſyllable, whoſe ſounds are ſeverally heard; or of three vowels, in the ſame ſyllable, which only afford two ſounds in the pronunciation.

On this laſt occaſion, *diphthongs*, with regard to the ear, are triphthongs with regard to the eye.

Engliſh *diphthongs*, with regard both to the eye and ear, called *proper diphthongs*, are *ai*, as in *fair*; *au*, in *laud*; *ee*, in *bleed*; *oi*, in *void*; *oo*, in *food*; and *ou*, in *houſe*.

Engliſh *improper diphthongs*, or *diphthongs* with regard to the eye, are *aa*, pronounced only like *a*, as in *Aaron*; *ea*, like *a*, as in *ſwear*, *heart*; or like *e*, as *already*; or like *ee*, as *veal*; *eo*, like *e*, in *feoffee*; or like *o*, as in *George*; *eu*, or *ew*, like *u*, as *Deuteronomy*; *ie*, like *e*, as *cieling*, *field*; *ei*, like *a*, in *feign*; or like *e*, in *deceit*; *oa*, as in *cloak*, *doat*; *oe*, as in *doe*, *oeconomy*; *ue*, as in *gueſs*; and *ui*, as in *guile*, *recruit*.

DIPLOE, in anatomy, a ſpongy, medullary ſubſtance, ſeparating the two tables of the cranium, and together with them conſtituting the ſkull.

The ſubſtance of the *diploe*, being ſpongious, eaſily imbibes the blood; and is found ſeparated into an infinite number of little cells, of different magnitudes, which receive little branches of arteries from the brain, and give paſſage to the little veins that proceed to the ſinus's of the dura mater.

DIPLOMA, an inſtrument given by ſome colleges, and ſocieties, on taking a degree, or paſſing examination, as a proof of qualification for any advancement to title, or pre-eminence.

DIPPING-NEEDLE, or *Inclinatory Needle*, a magnetical needle, ſo hung, as that, inſtead of playing horizontally, and pointing out north and ſouth, one end *dips*, or inclines to the horizon, and the other points to a certain degree of elevation above it.

Or a *dipping-needle* may be defined, with Mr. Whiſton, to be a long, ſtrait piece of ſteel (repreſented *Tab. Navigation, fig.* 11.) every way equally poiſed on its centre, and afterwards touched with a load-ſtone; but ſo contrived, as not to play on the point of a pin, as does the common horizontal-needle, but to ſwing in a vertical plane, about an axis parallel to the horizon; and this in order to diſcover the exact tendency of the power of magnetiſm.

The inventor of the *dipping-needle*, Mr. Whiſton obſerves, was, without all doubt, an Engliſhman, Robert Norman by name, a compaſs-maker at Wapping, about the year 1576: this is not only teſtified by his own account, in his *New Attractive*, but was allowed by Dr. Gilbert, and other writers of that time. The occaſion of the diſcovery he himſelf relates, *viz.* that it being his cuſtom to finiſh, and hang the needles of his compaſſes, before he touched them, he always found, that, immediately after the touch, the north-poin would bend, or decline downward, under the horizon; inſomuch that, to balance the needle again, he was always forced to put a piece of wax on the ſouth-end, as a counter-poize.

The conſtancy of this effect led him, at length, to obſerve the preciſe quantity of the *dip*, or to meaſure the greateſt angl which the needle would make with the horizon.

This, in the year 1576. he found at London to be 71° 50′. But the *dip* varies, as well as the horizontal direction; and i found, at the ſame place, to be 75° 10′.

Burrows, Gilbert, Ridley, Bond, &c. endeavoured to appl this diſcovery of the *dip* to the finding of the latitude; an the laſt author, going farther, likewiſe propoſed the finding o the longitude thereby; but, for want of obſervations, an experiments, he could go no length.

Mr. Whiſton, being furniſhed with the further obſervations o Col. Windham, Dr. Halley, Mr. Pound, Mr. Cunningham Pere Noel, Pere Feuillée, and his own, has improved ver much on the doctrine and uſe of the *dipping-needle*; brough it to more certain rules; and endeavoured, in good earneſ to find the longitude thereby.

In order to this, he obſerves, 1*ſt*, That the true tendency the north or ſouth end of every magnetic needle, is not that point of the horizon, to which the horizontal need points, but towards another, directly under it, in the ſam vertical, and in different degrees under it, in different age and at different places.

2*dly*, That the power by which a horizontal needle is g verned, and all our navigation ordinarily directed, is prov to be but one quarter of the power by which the *dippin needle* is moved; which ſhould render the latter far the mo effectual and accurate inſtrument.

3*dly*, That a *dipping-needle*, a foot long, will plainly ſhew alteration of the angle of inclination, in theſe parts of t world, in half a quarter of a degree, or 7 ½ geographical mile *i. e.* ſuppoſing that diſtance taken along, or near a meridia and a needle of four feet, in two or three miles.

4*thly*, A *dipping-needle*, four feet long, in theſe parts of t world, will ſhew an equal alteration along a parallel; as o of a foot long, will ſhew along a meridian; *i. e.* this will, w equal exactneſs, ſhew the longitude, as that the latitude.

This depends on the poſition of the lines of equal *dip*, theſe parts of the world, which are found to lie about 14 15 degrees from the parallels.

Hence he argues, that, as we can have needles of 5, 6, 7, or more feet long, which will move with ſtrength ſuffici for exact obſervation; and, ſince microſcopes may be plied to the viewing the ſmalleſt diviſions of degrees on limb of the inſtrument, it is evident, the longitude at l may be found thereby to leſs than four miles.

And, as there have been many obſervations made at ſea, w the ſame inſtrument, by Noel, Feuillèe, &c. which have termined the *dip* uſually within a degree, ſometimes withi or ⅓ of a degree, and this with ſmall needles, of 5 or 6, o the moſt 9 inches long; it is evident, the longitude may found, even at ſea, to leſs than half a quarter of a deg Thus much premiſed, the obſervation itſelf follows:

To find the longitude, or latitude, by the DIPPING-*Needle.*— the lines of equal *dip*, below the horizon, be drawn on ma or ſea-charts, from good obſervations, it will be eaſy, fr the longitude known, to find the latitude; and from the l tude known, to find the longitude, either at ſea or land.

Suppoſe, *e. gr.* you were travelling, or ſailing along the ridian of London, and found the angle of *dip*, with a ne of one foot, to be 75°, the chart will ſhew, that this meri and the line of *dip*, meet in the latitude of 53° 11′; wh therefore, is the latitude ſought. See LATITUDE.

Or, ſuppoſe you were travelling, or ſailing along the pa of London, *i. e.* in 51° 32′ north latitude, and you find angle of *dip* to be 74°. This parallel, and the line of *dip*, will meet in the map in 1° 46′ of eaſt longitude, f London; which is, therefore, the longitude ſought.

DIPTERE *, or DIPTERON, in the antient architectur temple ſurrounded with a double row of columns, w form a ſort of portico's, called wings, or iſles.

* The word is Greek, formed from δις, twice; and πτ *ala*, wing.

DIPTOTES, in grammar, a kind of irregular nouns, having only two caſes; as, *fors*, *forte*.

DIPTYCHA*, in antiquity, a public regiſter, wherein were written the names of the conſuls, and other magiſtrates, among the heathens; and of biſhops, and defunct, as well as ſurviving, brethren among the Chriſtians.

* The word *diptycha* is formed from the Greek διπτυχον, or διπτυχα, and that from διπτυξ, a maſculine noun derived from πτυσσω, *I fold*, or *plait*. From its future πτυξω is formed πτυξ, a *fold*, or *plait*, to which adding δις, *twice*, we have διπτυξ, in the genitive διπτυχος, whence the nominative neuter διπτυχοι, q. d. *a book folded in two leaves*: though there were ſome in three, and others in four or five leaves.—An ingenious author imagines this name to have been firſt given them to diſtinguiſh them from the books that were rolled, called *volumina*. See VOLUME, and BOOK.

Juſtinian, offended at pope Vigil, for refuſing to ſubſcribe the condemnation of the three chapters, gave orders for his name to be eraſed out of the *diptycha*. Du Pin. The emperor commanded the name of the new patriarch to be entered in the *diptycha ſacra*.

It is certain, there were profane *diptycha* in the Greek empire, as well as ſacred ones in the Greek church. The former were the mattricula, or regiſter, wherein the names of the magiſtrates were entered: in which ſenſe *diptycha* is a term in the Greek chancery.

Sacred DIPTYCHA. The word is plural; *diptycha* being a double catalogue, in one whereof were written the names of the living, and in the other thoſe of the dead, which were to be rehearſed during the office. We meet with ſomething not unlike the *ſacred diptychs* of the Greeks, in the canon of the maſs, according to the Latin uſage; where the people are injoined to pray once for the living, and once for the dead; ſeveral ſaints are invoked in different times, *&c.*

Gentian Hervet explains the word *diptychs*, διπτυχα, by *altar-cloths*: Meurſius, by that of *libelli eccleſiaſtici*, church-books; but neither of thoſe authors, tho' in other reſpects of great abilities, and well verſed in the Greek antiquity, has given the genuine ſignification of the word. The *diptycha* were neither altar-cloths, nor church-books, but a ſort of tables, or tablets, alike in figure to the two tables of ſtone given to Moſes; on one of theſe tables were written the names of the deceaſed, and on the other thoſe of the living, for whom prayers were to be offered; which the deacon read over, when maſs was celebrated.

In theſe *diptycha* were entered the names of biſhops, who had governed their flocks aright; and theſe were never expunged out of the ſame, unleſs they were convicted of hereſy, or ſome other groſs crime. In the *diptycha* were likewiſe entered the names of ſuch as had done any ſignal ſervice to the church, whether they were living or dead, and mention was made of them in the celebration of the liturgy.

The Jeſuit Roſweyd affirms, that few names were entered in the *ſacred diptychs*, but thoſe of biſhops and patriarchs; and doubts very much, whether the ſacred Delta, mentioned by the pretended St. Dionyſius, *Eccleſ. Hierarch.* c. 2. wherein were entered the names of the new-baptized, with their godfathers and godmothers, were the ſame with the *diptycha*. He allows, however, that the names of the emperors, and other great perſons, diſtinguiſhed by their faith, and their merits, or benefactions to the church, were uſed to be entered.

Meurſius, in his *Gloſſarium Græco-Barbarum*, imagines them to have written the term *diptycha*, by reaſon there were *two* books, in one of which were written the living, and in the other the dead. But Fa. Roſweyd ſhews, he is miſtaken: for, in effect, there was uſually but one, the living being entered on one ſide thereof, and the dead on the other: and that if the living, and dead, were each written in a ſeveral book, each of them was called *diptycha*, and not both together.

Caſaubon, in his obſervations on Athenæus, Lib. VI. c. 14. ſuppoſes the Chriſtians to have borrowed the cuſtom of writing names in a book, and rehearſing them at maſs, from the heathens, who entered the names of perſons they would do any ſignal honour to, in the verſes of the Salii; as was done to Germanicus, and Verus, ſons of the emperor Marcus Aurelius, and long time before, during the age of the republic, to Mamurcus Veturius, and Lucia Volumnia, as we are told by Tacitus, Lib. II. Spartian, Ovid, Feſtus, Plutarch, *&c.* But Fa. Roſweyd does not approve this notion of Caſaubon. The pretended St. Dionyſius, a very antient author, ſays the contrary, and aſſerts the firſt eſtabliſhment of this uſage to have been founded on Scripture, 2 Tim. II. 19. Pſalm CXVI. 15. Roſweyd adds Eccleſiaſtic. XLIV. 1. and takes theſe to have been the paſſages the antient church had a view to, rather than the Salian verſes.

The *profane diptycha* were frequently ſent as preſents to princes, *&c.* On which occaſion they were finely gilt, and embelliſhed; as appears from Symmachus, Lib. II. Ep. 81. Thoſe preſented were uſually of ivory. The firſt law, *de Expenſ. Ludor. C. Theod.* forbids all magiſtrates below conſuls to make preſents of *diptycha* of ivory in the public ceremonies. Fa. Roſweyd owns himſelf at a loſs for the origin of this cuſtom of making preſents of *diptychs*. Lud. Carrion, Lib. II. *Emendat.* c. 6. ſuppoſes it to have ariſen hence, that ſuch preſents were at firſt made to the perſons who had been nominated *queſtors*, to whom they were to be of uſe. Many imagine the *diptycha* to have originally been a kind of table-books uſed by lovers. In effect Papias defines them *tabellæ in quibus amores ſcribebantur*.

DIRECT, in optics.—DIRECT *viſion* is that performed by *direct* rays; in contradiſtinction to viſion by refracted, or reflected rays.

Direct viſion is the ſubject of optics, which preſcribes the laws and rules thereof.

DIRECT *rays* are thoſe which paſs in right lines from the luminary to the eye, without being turned out of their rectilinear direction by any intermediate body, either opaque or pellucid. See RAY.

DIRECT, in arithmetic. The *Rule of three* DIRECT is that oppoſite to the inverſe. See RULE *of proportion*.

DIRECT, in aſtronomy. We conſider the planets in three ſtates; *viz.* *direct*, *ſtationary*, and *retrograde*. See PLANET.

They are ſaid to be *direct*, when they appear to move forward, according to the ſucceſſion of the ſigns; and *retrograde*, when they go the contrary way.

DIRECT, in matters of genealogy, is underſtood of the principal line, or the line of aſcendents and deſcendents; in contradiſtinction to the collateral line.

Thus the houſe of Bourbon is ſaid to deſcend in a *direct* line from St. Louis.—The heirs in a direct line always precede thoſe in the collateral lines.

A very good hiſtorian uſes the phraſe DIRECT *ſpeech*, or *harangue*, when he introduces any one ſpeaking, or haranguing of himſelf: when the hiſtorian ſpeaks, and only rehearſes the chief points of what was delivered by the ſpeaker, it is called an *indirect ſpeech*.

DIRECT $\left\{\begin{array}{l}\textit{Erect}\\ \textit{Eaſt}\\ \textit{Weſt}\end{array}\right\}$ *dials* are thoſe whoſe planes lie directly open to the eaſt, or weſt points of the heavens, or parallel to the meridian of the place. See DIAL.

DIRECT *ſouth*, or *north* $\left\{\begin{array}{l}\textit{Inclining}\\ \textit{Reclining}\end{array}\right\}$ *dials*. See DIAL.

DIRECT *ſphere*. See the article RIGHT *ſphere*.

DIRECTION, in aſtronomy, the motion, and other phænomena, of a planet, when *direct*. See PLANET.

DIRECTION, in aſtrology, is a kind of calculus, whereby they pretend to find the time wherein any notable accident ſhall befal the perſon whoſe horoſcope is drawn.

For inſtance, having eſtabliſhed the ſun, moon, or aſcendent, as maſters, or ſignificators of life; and Mars, or Saturn, as promiſers, or portenders of death; the *direction* is a calculation of the time wherein the ſignificator ſhall meet the portender.

The ſignificator they likewiſe call *apheta*, or giver of life; and the promiſer, *anereta*, *promiſſor*, or giver of death.

They work the *directions* of all the principal points of the heavens, and ſtars, as the aſcendent, mid-heaven, ſun, moon, and part of fortune. The like is done for the planets, and fixed ſtars; but all differently, according to the different authors.

DIRECTION, or *Line of* DIRECTION, in mechanics, is particularly uſed for a line paſſing from the centre of the earth through the centre of gravity of a body, and the ſupport or fulcrum that bears it.

A man muſt neceſſarily fall down as ſoon as the centre of his gravity is out of the *line of direction*.

Line of DIRECTION, in mechanics, alſo denotes that wherein a body moves, or endeavours to proceed.

Angle of DIRECTION, in mechanics, is that comprehended between the lines of *direction* of two conſpiring powers.

DIRECTION *of the load-ſtone*, that property whereby the magnet, or a needle touched by it, always preſents one of its ends towards one of the poles of the world, and the oppoſite end to the other pole.

The attractive property of the magnet was known long before its *directive*; and the *directive* long before the inclinatory.

DIRECTION *magnetical* is alſo uſed in the general for the tendency, or turning of our earth, and all magnetical bodies, to certain points.

The ſituation of the earth, we know, is ſuch, that its axis is in the axis of the univerſe; and therefore its poles, and cardinal points, exactly correſpond to thoſe thereof. This ſituation ſome account for hence, that it is the moſt commodious with regard to the aſpects and influences of the heavenly bodies, and renders it the fitteſt habitation for man. Others hold this poſition of the earth an effect of a magnetic virtue; and ſuppoſe a celeſtial pole, endued with a like magnetic virtue; which, extending as far as our earth, draws the correſpondent part thereof, the pole, towards itſelf.

DIRECTLY. In geometry, we ſay, two lines lie *directly* againſt each other, when they are parts of the ſame right line.

in mechanics, a body is ſaid to ſtrike, or impinge *directly* againſt another, if it ſtrike in a right line perpendicular to the point of contact.

A ſphere, particularly, ſtrikes *directly* againſt another, when the line of *direction* paſſes through both their centres. See Percussion.

DIRECTOR *penis*, in anatomy, a muſcle of the penis, called more uſually *erector*.—See *Tab. Anat.* (Splanch.) *Fig.* 15. *lit.* ee; ſee alſo the article Erector.

DIRIGENT, a term in geometry, expreſſing the line of motion, along with a deſcribent line, or ſurface, is carried in the geneſis of any plane, or ſolid figure.

Thus, if the line AB (*Tab. Geometry*, *Fig.* 33.) move parallel to itſelf, and along the line AC, ſo that the point A always keeps in the line AC, a parallelogram, as ABCD, will be formed, of which the ſide AB is the deſcribent, and the line AC the *dirigent*.—So alſo, if the ſurface ABCD be ſuppoſed to be carried along the line CE, in a poſition always parallel to itſelf in its firſt ſituation, the ſolid ADEH will be formed, where the ſurface AD is the deſcribent, and the line CE is the *dirigent*.

DIS, an inſeparable particle prefixed to divers words; the effect whereof is, either to give them a ſignification contrary to what the ſimple words had: as in *diſgrace*, *diſparity*, *diſproportion*, &c. Or to intimate a ſeparation, detachment, diſtribution, &c. as in *diſcerning*, *diſcourſing*, *diſtracting*, *diſpoſeing*, &c.

DISABILITY, in law, is when a man is made incapable to inherit lands, or take any benefit, which otherwiſe he might do; which may happen four ways; *viz.* by the act of the anceſtor; by the act of the party; by the act of law; and by the act of God.

Disability *by the act of the anceſtor* is where a man is attainted of treaſon, or felony: by which attainder his blood is corrupted, and thereby himſelf and his children are *diſabled* to inherit.

Disability *by the act of the party* himſelf, is where a man binds himſelf by obligation, that, upon a ſurrender of a leaſe, he will grant a new eſtate to the leſſee: and afterwards he grants the reverſion to another, which puts it out of his power to perform it.

Disability *by the act of the law*, is when a man, by the ſole act of law, without any thing by him done, is rendered incapable of the benefit of the law: as, an alien born; ſo that, if a man born out of the king's liegeance, will ſue an action, the tenant, or defendant, may ſay, he was born in ſuch a country out of the king's liegeance, and demand judgment, if he ſhall be anſwered; for the law is our birthright, to which an alien is a ſtranger, and therefore *diſabled* from taking any benefit thereby.

Disability *by the act of God*, as when the party is *non compos mentis*, or *non ſanæ memoriæ*, which ſo *diſables* him, that in all caſes, where he gives, or paſſes any thing, or eſtate, from him, after his death it may be annulled, and voided.

DISARMING, the act of depriving a perſon of the uſe or poſſeſſion of arms. See Arms.

On the concluſion of a peace, it is uſual for both ſides to *diſarm*. We have divers laws for *diſarming* papiſts, and all recuſants. Under K. George I. a law was made for *diſarming* the Highlanders; none of whom, except peers, or gentlemen of 400 *l. per ann.* are to wear any *arms* in the field, on the road, or at market. 1, G. I. ſtat. 2. c. 54.

The game law has, in effect, diſarmed all the common people of England, having under 100 *l.* a year in landed eſtate, except the ſervants of lords of manors.—Yet, by the antient policy of England, the whole nation was obliged to bear arms.

DISC, or **Disk**, **Discus**, in antiquity, a kind of round quoit, or a piece of ſtone, or metal, about a foot over, uſed by the antients in their exerciſes.

The *diſcus* of the antients was flat and round, reſembling the apparent figure of the ſun.

The exerciſe of the *diſcus* was one of thoſe practiſed in the ſolemnities of their public games: it conſiſted in pitching, or throwing a *diſcus* either upward, or ſtrait forward; and he who threw it higheſt, or fartheſt, bore away the prize.

Thoſe who practiſed at this game were called *diſcoboli*, i. e. throwers of the *diſcus*.

The poets tell us, that Hyacinth, a favourite of Apollo, playing at the *diſcus* with that god, was killed by a blow of Apollo's *diſcus*, which his rival Zephyrus diverted from its courſe, and caſt on the boy's head.

The *diſcus* was thrown by means of a little cord made of hair, as appears from Claudian, Lib. II. in Eutrop. *carm.* 20. v. 359, & *ſeq.* Ovid deſcribes this ſport, *Metam.* Lib. X. v. 175.

The Romans learnt the game of the *diſcus* of the Greeks, and practiſed it among themſelves. Dempſter, *Paraleip. in Roſin. Antiq. Rom.* L. V. c. 1. and Pet. Faber, *Agoniſticon*, L. II. c. 1. treat of the diverſion of the *diſcus*.

Disc, or **Disk**, in aſtronomy, the body, or face of the ſun, or moon; ſuch as it appears to us.

The *diſc* is conceived to be divided into twelve equal parts, called *digits*; by means whereof it is, that the magnitude of an eclipſe is meaſured, or eſtimated. Such an eclipſe was ſo many digits, or parts of the ſun, or moon's *diſk*. Mercury and Venus are ſometimes ſeen in the ſun's *diſk*, tranſiting the ſun's *diſk*.

In a total eclipſe of either of thoſe luminaries, the whole *diſ* is obſcured, or darkened; in a partial eclipſe, only part o them. See Eclipse.—Half the moon's *diſk* was immerged in the ſhadow of the earth in ſuch an eclipſe.

Disc, in optics, the magnitude of a teleſcope glaſs; or th width of its aperture, whatever its figure be, whether a plain convex, meniſcus, or the like.

Disc, **Discus**, in botany, is applied to the central, or middl part of radiated flowers; as being round, and plain like quoit.

This is ſometimes alſo called the *pelvis*, or *baſin*.—The *diſ* is compoſed of ſeveral floſculi perpendicularly placed.

Disc, in the Greek liturgy, is nearly the ſame thing with th *patena* in the Latin. See Patena.

In the Greek church the conſecrated bread is laid on a *diſcus*, as in the Latin church it is on a *patena*. The *diſcus* only differs from the *patena*, in that it is bigger, and deeper, a reſembling a plate, which was the proper ſignification of th word *diſcus* among the antients.

Discent. See the article Descent.

DISCERNING, an act of the mind whereby it diſtinguiſhe between ideas.

On this faculty of *diſcerning* depends the evidence and certainty of ſeveral, even general propoſitions, which paſs fo innate truths; and which in reality flow from this clear *diſcerning* faculty of the mind, whereby it perceives two ideas to be the ſame, or to be different.

In being able nicely to diſtinguiſh one thing from another where there is the leaſt difference, conſiſts in great meaſur that exactneſs of judgment, and clearneſs of reaſon, which i to be obſerved in one man above another; which is quite oppoſite to wit: this conſiſts moſt in the aſſemblage of ideas and putting thoſe together with quickneſs and variety, whic have the leaſt reſemblance, to form agreeable viſions: where judgment ſeparates carefully thoſe ideas, wherein can be foun the leaſt difference, to prevent error, and deluſion. To th well diſtinguiſhing our ideas, it chiefly contributes, that th be clear, and determinate; and when they are ſo, there wi not ariſe any confuſion, or miſtake about them, though th ſenſes ſhould convey them from the ſame object differently o different occaſions. See Judgment.

DISCIPLINE primarily ſignifies inſtruction, and government but the word is figuratively applied to a ſtated method living, according to the rules of ſome profeſſion.

We ſay the *military diſcipline*, the *eccleſiaſtic*, or *church diſcipline*, the *regular*, or *monaſtic diſcipline*, &c.

We do not ſay *civil diſcipline*, but inſtead thereof policy.

Discipline is alſo uſed in a peculiar ſenſe for the chaſtiſement, or bodily puniſhment, inflicted on a religious, who h been caught delinquent; or even for that which the religio voluntarily undergo, or inflict on themſelves, by way of mo tification.

Among all the auſterities practiſed by the antient monks a ſolitaries, Dupin obſerves, there is no mention made of *diſcipline*: in effect, it does not appear to have been in uſe antiquity, unleſs to puniſh the monks, who had been tak tripping.

It is commonly ſaid to be St. Dominic, and Peter Damia who firſt introduced the uſe of *diſcipline*: but Fa. Mabill notes, that Guy, abbot of Pompoſa, and others, had practiſ it before them. It is pretty certain, the practice was fi eſtabliſhed in the eleventh century, with deſign to redeem penances the canons impoſed on divers offences; and length they came not only to redeem for themſelves, b alſo for others. See Fa. Mabillon.

Discipline is alſo frequently uſed for the inſtrument whe with a monk chaſtiſes, or mortifies himſelf; which is uſua made of ropes, knotted hair, or twiſted parchment; ſom times of broken rods. St. Jerom is painted with *diſcipli* of iron chains, armed with ſpur-rowels, &c. See Flage lation.

DISCLAIMER, in law, a plea, containing an expreſs den renouncing, or *diſclaiming*, of a thing alleged.

As, if the tenant ſue a replevin upon a diſtreſs taken by lord, and the lord avow the taking, ſaying, that he holds him as his lord, and that he diſtrained for rent not paid, ſervice not performed; then the tenant, denying to hold ſuch lord, is ſaid to *diſclaim*: and the lord proving the te to hold of him, the tenant loſes his land.

Alſo a man, denying himſelf to be of the blood, or kind of another, in his plea, is ſaid to *diſclaim* his blood. I man arraigned of felony, *diſclaim* goods; being cleared, loſes them.

DISCONTINUANCE, an interruption, intermiſſion, or c ſation, of the courſe of a thing: as, *diſcontinuance* of p ſeſſion, of a plea, proceſs, &c.

The effect of a *diſcontinuance of poſſeſſion* is, that a man not enter on his own land, or tenement alienated, whate his right be to it, of himſelf, or by his own authority; muſt bring his writ, and ſeek to recover poſſeſſion by As if a man alien the lands he holdeth in right of his w or a tenant in tail make any feoffment, or leaſe for life not warranted by the ſtat. 32 Hen. VIII. by fine, or livery of ſeiſin; ſuch alienations are called *diſcontinuances.*

The effect of *diſcontinuance of plea*, is, that the opportunity of proſecution is loſt, and not recoverable, but by beginning a new ſuit. For to be *diſcontinued*, and to be put off without a day, are the ſame thing; and are nothing leſs than to be finally diſmiſſed the court.

If a juſtice-ſeat be *diſcontinued* by the not coming of the juſtices, the king commonly renews the ſame by his writ, *&c.*

DISCORD, in muſic, the relation of two ſounds, which are always, and of themſelves, diſagreeable, whether applied in ſucceſſion or conſonance.

If two ſimple ſounds be in ſuch a relation of tune, that is, have ſuch a difference of tune, as that, being ſounded together, they make a mixture, or compound ſound, which the ear receives with diſpleaſure; it is called a *diſcord*: as, on the contrary, if it receive it with pleaſure, it is called a *concord*: and whatever two ſounds make an agreeable, or diſagreeable compound, they will have the ſame effects reſpectively, if they be applied in ſucceſſion.

As concords are denominated harmonical intervals; ſo may *diſcords* be denominated unharmonical intervals.

Diſcords are diſtinguiſhed into *concinnous*, and *inconcinnous* intervals.

Concinnous DISCORDS, by the antients called *emmeli*, are ſuch as are apt, or fit for muſic, next to, and in combination with concords. Theſe are relations, which in themſelves are neither very agreeable, nor very diſagreeable; and have only a good effect in muſic by their oppoſition, as they heighten and illuſtrate the more natural and eſſential principles of the pleaſure we ſeek for; or, as by their mixture, and combination with them, they produce a variety neceſſary to our being better pleaſed.

Notwithſtanding this, they are ſtill called *diſcords*; as the bitterneſs of ſome things may help to ſet off the ſweetneſs of others, and yet they may ſtill be bitter.

Inconcinnous DISCORDS, by the antients called *ecmeli*, are ſuch as are never choſen in muſic; as having too great a harſhneſs in them, though even the greateſt *diſcord* is not without its uſe.

The eſſential principles of harmony, harmonical intervals, or concords, are but few, in number only eight; the indefinite number of other ratio's are all *diſcords.* Hence Mr. Malcolm ſhews the neceſſity of taking ſome of the leſs untoward of theſe *diſcords* into the ſyſtem of muſic: in order to this, he conſiders the effect of having none but harmonical intervals in the ſyſtem of muſic.

1. With reſpect to a ſingle voice: if that ſhould move always from one degree of tune to another, ſo as every note, or ſound to the next, were in the ratio of ſome concord; the variety, which is the life of muſic, would ſoon be exhauſted. For to move by no other, than harmonical intervals, would not only want variety, and ſo weary us with a tedious repetition of the ſame things, but the very perfection of ſuch relations of ſounds would cloy the ear, in the ſame manner as ſweet and luſcious things do the taſte; which, for that reaſon, are artfully ſeaſoned with the mixture of ſour and bitter.

2. With reſpect to muſic in parts, *i. e.* when two or more voices join in conſonance, the general rule is, that the ſucceſſive ſounds of each be ſo ordered, that the ſeveral voices ſhall be all concords. Now there ought to be a variety in the choice of theſe ſucceſſive concords, and alſo in the method of their ſucceſſions; all which depends on the movement of the ſingle parts. So that, if theſe could only move in an agreeable manner by harmonical diſtances, there are but a few different ways wherein they could move from concord to concord; and hereby we ſhould loſe much of the raviſhment of ſounds in conſonance. As to this part then, the thing demanded is a variety of ways whereby each ſingle voice, or more in conſonance, may move agreeably in the ſucceſſive ſounds, ſo as to paſs from concord to concord, and meet at every note in the ſame, or a different concord, from what they ſtood in at the laſt note.

n what caſes, and for what reaſons, *diſcords* are allowed, he rules of compoſition muſt teach: but only joining theſe wo conſiderations, *&c.* we ſee how imperfect muſic would without any other intervals than concords.

eſide the *concinnous diſcords*, uſed deſignedly in muſic, there e ſeveral other *diſcord* relations, which happen unavoidably, a kind of accidental and indirect manner. Thus, in the cceſſion of ſeveral notes, there are to be conſidered not on- the relations of thoſe which ſucceed others immediately; t alſo of thoſe betwixt which other notes intervene. ow the immediate ſucceſſion may be conducted ſo as to oduce good melody: yet among the diſtant notes there may very groſs *diſcords*, that would not be tolerable in imme- te ſucceſſion, and far leſs in conſonance. And ſuch *diſ- ds* are actually contained in the ſcale of muſic. Thus, king any one ſpecies, *e. gr.* that with the greater third, d marking the degrees betwixt each term and the next; though the progreſſion be melodious, as the terms refer to one common fundamental, yet there are ſeveral *diſcords* among the mutual relations of the terms; *e. gr.* from 4th to 7th *g*, is 32 : 45; and from 2d *g* to 6th *g*, is 27 : 40; and from 2d *g* to 4th, is 27 : 32; all *diſcords.*

The ſpecies of counterpoint, wherein there is a mixture of *diſcords*, is called *figurative counterpoint*; of which there are two kinds: that wherein the *diſcords* are introduced occaſionally, to ſerve as tranſitions from concord to concord: and that wherein the *diſcord* bears a chief part in the harmony.

Upon the unaccented parts of the meaſure, *diſcords* may tranſiently paſs without any offence to the ear: this is called *ſuppoſition*, by reaſon the tranſient *diſcord* ſuppoſes a concord immediately following.

The harmony of *diſcords* is that wherein the *diſcords* are made uſe of as a ſolid and ſubſtantial part of the harmony. For, by a proper interpoſition of a *diſcord*, the ſucceeding concords receive an additional luſtre. Thus the *diſcords* are in muſic what the ſtrong ſhades are in painting.

The *diſcords* are the 5th when joined with the 6th; the 4th joined with the 5th; the 9th is of its own nature a *diſcord*; ſo is the 7th.

Theſe *diſcords* are always to be introduced into the harmony with due preparation, and muſt be ſucceeded by concords: which is commonly called the *reſolution of the diſcord.* The *diſcord* is prepared by ſubſiſting firſt in the harmony in quality of a concord; that is, the ſame note, which becomes the *diſcord*, is firſt a concord to the baſs-note immediately preceding that to which it is a *diſcord.*

The *diſcord* is reſolved by being immediately ſucceeded by a concord deſcending from it by the diſtance only of greater 2d, or leſſer 2d.

Apple of DISCORD, *pomum diſcordiæ*, a phraſe uſed to ſignify the ſubject, or occaſion of ſome miſunderſtanding in a ſociety. It is borrowed from the heathen mythology: the poets feign, that at the marriage of Thetis and Peleus, the goddeſs of *diſcord* threw a golden apple, whereon were written theſe words, *to the faireſt*; which immediately ſtirred up a diſſenſion between Juno, Pallas, and Venus, each pretending a title to the apple.

DISCOVERY, in dramatic poetry, a manner of unravelling a plot, or fable, very frequent in tragedies, comedies, and romances; wherein, by ſome unforeſeen accident, a *diſcovery* is made of the name, fortune, quality, and other circumſtances, of a principal perſon, which were before unknown.

A late author defines the *diſcovery* a change, which, bringing us from ignorance to knowlege, produces either love or hatred in thoſe whom the poet has a deſign to make either happy, or miſerable.—For a *diſcovery* ſhould never be in vain, by leaving thoſe who thus diſcover one another in the ſame ſituation and ſentiments they were in before: in effect, thoſe *diſcoveries*, which are immediately followed by a peripetia, or change of fortune of ſome principal character, whereon the unravelling depends, are always the moſt beautiful.

One of the fineſt *diſcoveries* ever brought upon the ſtage, is that of Oedipus in Sophocles; for the minute he finds himſelf the ſon of that Jocaſta, who was then his wife, he becomes of the moſt happy, the moſt miſerable of all men.

There are three ſorts of *diſcoveries:* the firſt by certain marks in the body, either natural, or accidental: ſuch is that of Ulyſſes, who having received a wound in the thigh by a boar, before the Trojan war, is diſcovered by the old nurſe, upon waſhing his legs after his return home incognito.

The ſecond by tokens: as the caſket of things, which the prieſts found with Ion when he was expoſed, diſcovers Creuſa, whom he was a going to kill, to be his mother.

The third is made by remembrance: that is, when the ſight or hearing of any thing occaſions us to recollect our misfortunes. Thus, when Ulyſſes heard Demodocus ſing his actions at Troy, the memory of them ſtruck him, and drew tears from his eyes, which diſcovered him to Alcinous.

But the fineſt ſort is, that which ariſes from the ſubject, or incidents of the fable; as that of Oedipus from his exceſſive curioſity, and the letter that Iphigenia ſent by Pylades.

DISCOUNT, in commerce, a ſum deducted, or retained in hand, upon paying a greater. See DEDUCTION.

The term is much uſed among mechanics, and manufacturers, who keep workmen, journeymen, labourers, *&c.* for the ſums advanced them before-hand, which are diſcounted when the payments are made in courſe.

DISCOUNT is more particularly uſed for an allowance made on a bill of exchange, or any other debt not yet become due; to induce the acceptor, or debtor, to advance the money.

Diſcounts are alſo frequently given for the payment of dubious, or bad debts.

DISCOUNT is alſo uſed among merchants when they buy commodities on truſt, with a condition, that the ſeller ſhall *diſcount* ſo much with him *per cent.* for each payment made before the time expired. See PROMPT *payment.*

The Sieur de la Porte diſtinguiſhes between theſe two kinds of *diſcount:* the firſt, or that upon bills of exchange, is reckoned like the exchange, at the rate of ſo much *per cent.* *E. gr.* at 2 *per cent. diſcount* on an hundred pounds, there is only ninety-eight pounds to pay: whereas that on commodities, is not only laid on the hundred pounds, but on the hundred and *diſcount* added together. So that *diſcounting* for goods at 10 *per cent.* there is only eight abated on an hundred and eight, and not on the hundred. This laſt, he ſays, is the true *diſcount.*

DISCOUNT, is alſo uſed with leſs propriety for the tare, or waſte of any commodity, ſum, *&c.* There are 12 ſhillings *diſcount* in this bag.

The cag of oil ſent me from Spain leaks; there are fifty pints *diſcount.*

DISCOURSE, an operation of the human mind, whereby it paſſes, or proceeds from one thing to another, that is, from a known thing to an unknown.

The ſchool-men define it an act of cognition, whereby the mind deduces one thing from another: this it does, when, in conſequence of an aſſent given to one propoſition, it yields aſſent to another: ſo that *diſcourſe* conſiſts in a dependency of aſſents; and ſuppoſes ſuch an order between the acts, that that belonging to the conſequent ariſes from that belonging to the antecedent. So that the intellect is then ſaid, *diſcurrere,* to *diſcourſe*; when, from an aſſent to one, or more propoſitions, it infers, or draws an aſſent to another.

The object of *diſcourſe,* therefore, or that about which the intellect is employed in *diſcourſing,* is the connexion of extremes conſidered with regard to ſome third, or medium: thus, when it judges, that every reaſonable animal is riſible, affirming, that there is a connexion between riſibility, and rationality; and then finds, there is likewiſe a connexion betwixt man and reaſonable animal; and afterwards gathering from the connexion found between riſible and man, with rational, that man and riſible have likewiſe a connexion, as both are connected with rational; it is ſaid to *diſcourſe.*

Honce it appears, that *diſcourſe,* whereon men uſe to value themſelves, does really betray the infirmity of the human underſtanding; as it denotes a chain or ſcale of ſeveral ſucceſſive acts of cognition neceſſary to arrive at a truth. So that there is no *diſcourſe* in God, who underſtands all things originally and truly.

DISCOUS *Flower.* Botaniſts reckon two claſſes of plants with a *diſcous flower.* 1. Such as have the flower compounded, and the ſeed pappous, but the leaves and ſtalks not milky when broken. 2. The corymbiferous plants, whoſe flowers are compounded into a *diſcous* figure, but their ſeeds not pappous.—Of the former kind are the flea-banes, ragweeds, groundſels, *&c.* and of the latter, are daiſies, chamomile, tanſy, wormwood, *&c.* Theſe are diſtinctions founded by Mr. Ray, but not regarded by the later botaniſts.

ISCRETE, or DISJUNCT, *Proportion,* is, when the ratio between two or more pairs of numbers, or quantities, is the ſame, and yet there is not the ſame proportion between all the four numbers.

Thus, if the numbers 6 : 8 : : 3 : 4, be conſidered; the ratio between the firſt pair, 6 and 8, is the ſame as that between 3 and 4, and therefore theſe numbers are proportional; but it is only *diſcretely,* or *disjunctly*; for 6 is not to 8, as 8 to 3; that is, the proportion is broken off between 8 and 3, and is not continued all along, as it is in theſe following, which are called *Continual Proportionals,* viz. 3 : 6 : : 12 : 24.

DISCRETE *Quantity,* is ſuch as is not continued and joined together.

Such is a number, whoſe parts, being diſtinct units. cannot be united into one continuum; for in a continuum there are no actual determinate parts before diviſion, but they are potentially infinite; wherefore it is uſually and truly ſaid, that continued quantity is diviſible in infinitum. See CONTINUITY.

DISCRETIVE *Propoſitions,* are thoſe where various judgments are made, and denoted, by the particles *but, notwithſtanding,* or by words of the like nature either expreſſed, or underſtood. Thus, fortune may deprive me of my wealth, *but* not of my virtue; they, who croſs the ſeas, change their climate, *but* not their diſpoſition; are called *diſcretive propoſitions.*

DISCUS, among the antients, a name given to a round ſhield, conſecrated to the memory of ſome famous hero; and hung up in the temples of their gods, as a trophy of ſome great action.

From the figure of this *diſcus,* or rather of that which the Greeks and Romans uſed to divert themſelves with, eſpecially at their public games, and which was a round quoit of braſs, comes the word ſo much in uſe among aſtronomers, *viz.* the *Disk* of the ſun, or moon. See DISK.

DISCUSSION, in matters of literature, ſignifies a clear treating, or handling of any point, or problem. The word imports a ſhaking off, or diſpelling the difficulties and obſcurities with which a thing was embarraſſed. We ſay, ſuch a point was well *diſcuſſed,* when it was well treated of, an cleared up.

DISCUSSION is alſo uſed, in a medicinal ſenſe, for a diſperſin the matter of any tumour, or ſwelling, through the pores the body; or an evacuation of ſome thin matter gathered any part, by inſenſible perſpiration.

DISCUTIENTS, in medicine, either repellers or remedi proper to open the pores, and evacuate the redundant peccant humours of the body by inſenſible perſpiration otherwiſe.

Diſcutients are in this laſt ſenſe the ſame with what we other wiſe call *diaphoretics.*

DISDIAPASON, in muſic, a compound concord, in the qu druple ratio of 4 to 1, or of 8 to 2.

The *diſdiapaſon* is produced when the voice goes from th firſt tone to the 15th, and may be called a *fifteenth.*

The voice ordinarily does not go further than from its fir tone to the *diſdiapaſon*; i. e. it does not go beyond the com paſs of a double octave; for the *diſdiapaſon* is an octav doubled. It may ſometimes riſe ſeveral tones above a *di diapaſon,* but the effort or ſtruggle disfigures it, and mak it falſe. In reality, the antient ſcale, or diagramma, on extended to a *diſdiapaſon.*

DISDIAPASON-*Diapente,* in muſic, a concord in a ſextuple r tio, of 1 to 6.

DISDIAPASON-*Diateſſaron,* a compound concord in the pr portion of 16 to 3.

DISDIAPASON-*Ditone,* a compound conſonance in the pr portion of 10 to 2.

DISDIAPASON-*Semi-ditone,* a compound concord in the pr portion of 24 to 5.

DISEASE, in medicine, that ſtate of a living body, where it is prevented the exerciſe of any of its functions, wheth vital, natural, or animal.

Or, *diſeaſe* is an indiſpoſition contrary to nature, where the action of ſome part is immediately injured.

Or, *diſeaſe* is a depraved, and diſorderly ſtate of the ſol and fluid parts; whereby all or ſome of the functions ther of the body, or mind, or both, are either aboliſhed, impaired.

An ingenious author of a late Latin treatiſe, *de Purgatio* holds the eſſence of a *diſeaſe* to conſiſt in a want of t equilibrium between the ſolid and fluid parts, which is ceſſary to the maintenance of health: others add, that *diſeaſes* ariſe either from too lax, or too ſtrict, a tenſion the fibres.

Of all animals, man is ſubject to the moſt *diſeaſes*; and men, the ſtudious and ſpeculative are moſt expoſed there Other animals have their *diſeaſes*; but they are in ſm number: nor are plants without them; though their ma dies ſcarce exceed half a ſcore. . The antients deified t *diſeaſes:* Voſſius *de Idolol.* Lib. VIII. C. V.

Several authors have given us very compendious theories *diſeaſes*; reducing them all to ſome one general diſaffectio Bontekoe deduces all the *diſeaſes* of the human frame fr the ſcorbutus: Muſgrave from the arthritis: Dr. Wo ward from the bile: others imagine all *diſeaſes* the effect a virus, which has lurked in the ſeed ever ſince the fir Adam: Helmont, and Serenus the Dane, take them depend on ſome extraneous ferment, formed in or out of laſtly, it appearing from the obſervations of Pliny, K cher, Langius, and Bonomo, that there are little worm feveriſh blood, puſtules, carbo's, and the itch; divers p ficians have took occaſion to ſuſpect, that all *diſeaſes* a from inſects.

Some *diſeaſes* only impair the uſe of the part, as the o thalmia, gout, *&c.* Others deſtroy it intirely, as the g ſerena, palſy, *&c.* Some affect the whole body, as fever, apoplexy, epilepſy, *&c.* Others only impair a p as the aſthma, colic, dropſy, *&c.* Some only affect body, as the gout: others diſturb the mind, as melancho delirium, *&c.* Laſtly, others affect both the body and mi as the mania, phrenſy, *&c.*

As the actions, or conditions of the body, ſo alſo the *diſea* or defects thereof, may be reduced to three general hea *viz.* 1. *Diſeaſes* of the ſolid parts. 2. Thoſe of the f parts. And, 3. *Diſeaſes* compounded of both.

A popular ſyllabus of *diſeaſes* may be given, as follows: ſolid parts, *i. e.* the bones, and fleſh, may be diſordered ways; *viz.* They may be rendered turgid by tumours; with wounds; corroded by ulcers, or caries's; removed of their places, as in hernia's, proſapſus's, and diſlocatio or diſcontinued by fractures, and contuſions.

Diſeaſes of the fluids are either in the maſs of the blood, the ſpirits: thoſe of the blood are reducible to two ki thoſe that thicken, and inſpiſſate, or, which amounts to ſame, retard its motion; and thoſe which attenuate, and ſolve, and of conſequence accelerate it.

To this latter kind belong fevers, and feveriſh affecti alone: all the other *diſeaſes* of the blood belong to former.

In too thick a ſtate of the blood, its principles are too craſs, and its molecules too big; whence a lentor, lazy motion, and even ſtoppage, particularly in the ſinuous paſſages of the glands; and hence obſtructions, inflammations, ſcirrhus's, ſarcoma's, verrucæ, puſtules, œdemata, impetigines, and other tumours, and congeſtions, both in the viſcera, and habit of the body: and hence, again, drowſineſs, melancholy, hypochondriacal affections, &c. If this thick blood be too much replete with ſharp acid ſalts, it will deſtroy the texture of the parts, and break out in ulcers; as in phthiſical, ſcrophulous, ſcorbutic, and venereal diſeaſes, gangrenes, carbo's, cancers, and other eroſive tumours, according to the quality and degree of ſaltneſs and acrimony: and from the ſame ſource ariſe cephalalgia's, cardialgia's, colics, gouts, rheumatiſms, pleuriſies, &c. which, by abrading the ſolid ſubſtance, frequently emaciate the body.

The *diſeaſes* of the animal ſpirits ariſe either, 1. From an intermiſſion, or retardation of their motion; or a diminution of their quantity: or, 2. From a diſorder in their craſis, or quality.

To the firſt claſs are reduced the catalepſis, apoplexy, coma, carus, palſy, ſtupor, tremor, &c. To the ſecond belong the mania, phrenſy, delirium, fooliſhneſs, melancholy, vertigo, ſpaſms, epilepſy, hyſteric affections, horror, &c. Add, that, as all diſeaſes of the blood ariſe from external cauſes, *viz.* ſome one, or more, of the non-naturals, as food, air, evacuation, &c. ſo thoſe of the ſpirits generally proceed from diſorders of the blood.

Laſtly, the *diſeaſes* of the fluids, whether thoſe in the blood, or ſpirits, are ſeldom confined long thereto; but they preſently come to diſturb and impede ſome of the functions of the ſolid parts; and, at laſt, corrupt the ſubſtance of the ſolids themſelves. Hence compound, or complicated *diſeaſes*, which are infinitely various.

The learned Boerhaave furniſhes us a much more accurate and ſcientifical diviſion of *diſeaſes*, into thoſe of the ſolids and fluids.

ISEASES *of the ſolids* he conſiders, either as of the ſimple, and ſimilar parts, or of the organical.

imilar DISEASES are, 1. Thoſe of the laſt and ſmalleſt fibres; which are reducible to too great tenſion, and laxneſs, too great ſtrength, or weakneſs, and a ſolution of their continuity.

2. Thoſe of the membranes, which, being only aſſemblages of the fibres juſt mentioned, are ſubject to the ſame diſorders.

3. Thoſe of the laſt and ſmalleſt canals, which are formed of ſuch membranes.

4. Of the membranes compoſed of ſuch canals.

5. Of canals, compoſed of ſuch membranes, which are all the greater veſſels of the body.

6. Of the ſolid parts, which are compoſed of canals, compreſſed and grown together, ſo as to be void of humour to diſtend them; or canals growing into one conſiſtent part, the humour hardening together with the veſſel that contained it.

Laſtly, ſuppoſing theſe parts all ſound, *diſeaſes* may befal them, with reſpect to their ſtructure, from a vice, or vicious application, of the matter of nutrition.

ganical DISEASES.—An organical part, conſiſting of the ſeeral ſimple parts above-mentioned, and fitted to perform any ffice, by means of ſome humour contained in it, may be onſidered, either, in itſelf, as a ſolid part, or with reſpect to he humour it contains: in the firſt view, *organical diſeaſes* re reducible to four claſſes.

. Diſorders in the figure, and the circumſtances thereof; as oughneſs, ſolidity, cavity, &c. To this belong the Αναςο-ωσις, when one veſſel opens into another; the Διαπηδησις, hen a rupture is made; Διαιρεσις, when a breach is occaoned by corroſion; the Εμφραξις, which is a total obſtruction f the cavity, by a viſcous, grumous matter; the Στενοχωρια, r narrowneſs of the paſſage; the Θλιψις, or compreſſion of e ſides of the cavity; Συμφυσις, when the ſides are quite oined, and Συνιζησις, when the veſſel is ſo emptied, that, e ſides falling together, the cavity is loſt. See DIAPEDESIS, IÆRESIS, &c.

. In the number, where it is either deficient or redundant: t the parts ſeldom err in this reſpect, ſo as to occaſion a *ſeaſe.*

. In magnitude, to which belong nodes, exoſtoſes, and llus's.

. In the ſituation, and connexion; as, when the ligaments e too long, or too ſhort, when broken, or depraved; alſo, ſtortions, luxations, ſubluxations, herniæ, or ruptures in e groin, ſcrotum, bladder; procidentiæ of the womb, blad-r, and rectum; diſorders of the tendons, and muſcles, parcularly their flying out of their places; the relaxation, or pture of the membranous ligament that ſhould retain them. ſtly, there is a *diſeaſe*, common both to ſimilar and orgaal parts, called ſolution of continuity.

DISEASES *of the fluids*, conſidering thoſe fluids ſimply, and in themſelves, may be reduced to diſorders in reſpect of quantity and quality: but, conſidering them as contained in ſolids, they may err, too, in place and proportion.

As to the firſt, ſuch an abundance of the humours as diſturbs the animal functions, is called a plethora: as to *diſeaſes* from the defect of humours, we ſcarce know of any.

As to the ſecond, ſuch quality of the humours as diſturbs the animal functions, is called cacochymia. Now, this is either in the fluids, conſidered in themſelves, their own parts, and compoſition; or, conſidered as they concur towards conſtituting ſome part of the body.

If the morbid quality be conſidered in the particles of the humour, it muſt either conſiſt in an augmentation of bulk, whence the emphraxis, atrophy, ſymphyſis, and ſynizeſis; or in the diminution thereof, as in the diapnoe, and ceneangeia; or in an increaſe of ſolidity, whence too great an attenuation; or a decay thereof, whence a lentor, ſtagnation, and coheſion; or in the figure, as when of ſpherical it becomes angular, and conſequently, with reſpect to the part it is applied to, ſharp; whence acrimonies, both acid, alkaline, muriatic, ammoniac, ſaponaceous, vitriolic, &c. and oleoſities; or in rigidity, and flexibility; or in elaſticity; or in coheſion, and diviſibility. See ATROPHY, &c.

Again, all the juices being conſidered together, the principal diſorders they are ſubject to, are too great fluidity, or tenacity; or too much velocity in their veſſels, or too little.

Laſtly, conſidering the fluids as contained in the ſolids, there ariſe divers *diſeaſes*, merely from their changing of place: theſe may be reduced to two claſſes, *viz.* the groſſer humours, intruding themſelves into the finer canals; and the humours extravaſating, or getting out among the ſolid parts; whence inflammations, aneuryſma's, varices, enchymoſes, œdema's, puſtules, dropſy, ſpongious ſwellings of the head, breaſt, abdomen, and uterus; and emphyſema's.

Add, that the humours collected, and ſtagnating among the parts, grow putrid, purulent, ichorous, eroſive, and ſharp; and thus deſtroy the tender ſtamina, or ſolids; whence ſinus's, fiſtula's, ulcers, gangrenes, ſphacelus's, cancers, and the like.

Theſe are the prime differences of the *diſeaſes* of the body; and from theſe ariſe moſt of the reſt; ſo that they may be regarded, not only as *diſeaſes*, but as the cauſes of *diſeaſes*. See each further explained under its reſpective article in this work.

There is alſo another diviſion of *diſeaſes*, in uſe among phyſicians, taken from certain external accidents, which are common to a great many different *diſeaſes*; which diſtinction, too, has its uſe, though they generally run it too far. *Diſeaſes* are by this diſtinguiſhed, 1. With reſpect to their cauſe, into idiopathy, ſympathy, protopathy, deuteropathy, hereditary, connate, and acquired. 2. With reſpect to their ſubject, into *diſeaſes* of old age, children, adults, men, women, maids, pregnant, parturient; and into endemical, epidemical, &c. 3. With reſpect to duration, into moſt acute, which terminate in four days, acute, in twenty, and chronical, which are all thoſe of longer continuance. 4. With reſpect to ſeaſons, into vernal, autumnal, continued, and intermitting. 5. With reſpect to their effects, into benign, malignant, curable, incurable, mortal, and contagious. And, 6. With reſpect to their ſtate, into beginning, progreſs, ſtate, declenſion, and end.

DISEASES *of plants*. M. Tournefort, in an expreſs diſſertation on this ſubject, in the *Memoires de l academie des ſciences*, refers all the *diſeaſes* of plants to the following cauſes:

1. The too great abundance of the nutritious juice. 2. The defect, or want of this juice. 3. Some ill qualities it acquires. 4. Its unequal diſtribution in different parts of the plant. And, 5. External accidents.

The *diſeaſes*, principally obſerved by our gardeners, are, 1. Barrenneſs, when the tree, though ſeeming freſh and healthy, bears no bloſſoms; or, if it does, they ſoon fall; or, if they ſet, the fruit drops before it comes to maturity.

2. Blaſting of the buds, occaſioned by a froſt happening when the leaves and bloſſoms are wet; by this means the pores are ſhut, and the vital juices ſuffocated; when, if the ſun break out on a ſudden, they turn yellow, with round firy ſpecks growing on them; whence frequently proceed tumours, like warts, which, rotting, grow full of maggots. Mr. Mortimer adds, that the want of rain in bloſſoming-time often occaſions the dropping off of the bloſſoms, for want of ſap; he, therefore, recommends the watering them.

3. Conſumption, proceeding from a want of ſuſtenance, through the failure of the nouriſhing juices, or from obſtructions of the veins and roots; or ill digeſtion, and ſecretion of humours, &c.

4. The moſs; an account of which ſee under the article MOSS.

5. The jaundice, which, though it does not hinder the tree from appearing ſound, yet, when it begins to ſprout, the leaves

become of a whitiſh green, and, as they grow bigger, turn yellow: this frequently ariſes from external cauſes, as the mildew; but, chiefly, from a ſtony or chalky ſoil, impregnated with an acid ſalt.

6. Mildew, a kind of epidemical *diſeaſe*, moſt frequent and fatal in the ſpring ſeaſon: it is properly a corroſive and nipping dew, proceeding from pent up vapours now exhaled, and returned back on the tender opening buds, which infects them by its acrimony, and obſtructs the circulation of the nutritive juices; by which means the leaves begin to fade and wither, and both the bloſſoms and fruit are much prejudiced.

7. A thick fog, or too abundant due, Agricola aſſures us, occaſions the ſame *diſeaſes* as the mildew, only in a leſs degree.

8. Falling of the leaves: which happens when the trees, ſprouting too ſoon, are either ſurpriſed by exceſſive heat, or violent cold.

9. Uredo, or ſcorching: of which there are two kinds; the firſt happening upon the fall of a ſubtil dew, or ſmall rain, immediately followed by the piercing beams of the ſun, which ſuddenly cloſes the pores, before dilated, and burns up the leaves: the ſecond happening from the like fervour in the internal parts of the tree, *viz.* in the pith, occaſioned by ſome inward failing: Agricola imputes it to the fault of the gardeners, who, in tranſplanting trees, frequently cut off the leſſer filaments, and roots, as alſo the greater roots, without covering the wounds with wax, or the like.

10. Scurf, or leproſy; a diſeaſe chiefly of the bark, cauſed by a too great dilatation of the pores, whereby too much perſpirable matter tranſuding, it hangs and hardens on the bark, which, by this means, chaps and cracks; and thus a ſort of lepra is formed, perſpiration is obſtructed, &c. Add, that this ſcurfy ſkin proves a harbour for vermin, which live both on the bark and tree.

11. The worm, a little animal, generated in the corrupted ſubſtance of the bark, bloſſoms, fruit-leaves, pith, and roots. M. Gentil mentions another kind, called *cockchaffers*, which ſtick to the roots of young tender trees, and bark, and kill them. There is a third ſort, called *breezes*, or *gad-flies*, which gnaw the bark.—The worm is a very frequent *diſeaſe*, whereby young hopeful trees are, all of a ſudden, brought to languiſh and decay.

12. Rotten roots, occaſioned chiefly by their being planted too deep. This *diſeaſe* is incurable.

13. Blights; a particular account whereof, ſee under the article BLIGHT.

DISEMBOGUE. When a ſhip paſſes out of the mouth of ſome great gulph, or bay, they call it *diſemboguing*.—They ſay, alſo, of a river, that at ſuch a place, or after it has run ſo many leagues, it *diſembogues* itſelf into the ſea.

DISFRANCHISING, the taking away one's freedom, or privilege.

DISHERISON, an old word, of the ſame import as diſinheriting.—Our lord the king, conſidering his own damage, and *diſheriſon* of the crown, &c. Stat. 8. Richard II. Henry IV.

DISHERITOR, a perſon who *diſherits*, or puts another out of his inheritance.—The ſheriff ſhall, forthwith, be puniſhed as a *diſheritor* of our lord the king, and his crown. Stat. 3. Edw. I.

DISJUNCT *Proportion.* See DISCRETE *Proportion.*

DISJUNCTIVE, ſomething that ſeparates, or disjoins.

Thus *or*, *neither*, &c. are called *disjunctive conjunctions*; which, in connecting a diſcourſe, do yet ſeparate the parts thereof. *E. gr.* aut Cæſar, aut nullus; *either* Cæſar, *or* nothing. He *neither* advanced, *nor* gave back.

Disjunctive conjunctions may alſo be called *partitive*, *diſtributive*, and *alternative*.

DISJUNCTIVE *Propoſitions*, in logic, are compound propoſitions, conſiſting of two members, or parts, connected by a *disjunctive* conjunction.

The firſt propoſition of a dilemma is uſually a *disjunctive* propoſition:

You muſt either obey the king, or be a rebel.
But you muſt not be a rebel.
Therefore you muſt obey the king.

DISK. See the articles DISC, and DISCUS.

DISLOCATION, the putting a bone out of joint, by ſome violence, uſually called by the phyſicians, *luxation*. See LUXATION.

DISMEMBERED, in heraldry, is applied to birds that have neither feet nor legs; as alſo to lions, and other animals, whoſe members are ſeparated. See MEMBERED.

DISMES, *decimæ*, in our law-books, tiths. See the article TITH.

DISMOUNTING, in the military art, the act of unhorſing.—Thus, to *diſmount* the cavalry, the dragoons, or the like, is to make them light.

To DISMOUNT *the cannon*, is to break their carriages, wheels, and axletrees, whereby to render them unſerviceable.

Horſes are alſo *diſmounted* when they are rendered unfit for ſervice.

DISORIENTATED, a term applied to a thing that is turned, or removed from the eaſt, to which it was originally directed.

The dials drawn on this ſtone do not go well, by reaſon it has been moved, and *diſorientated*: it no longer looks eaſt and weſt.

But the word is moſt frequently uſed in a figurative ſenſe, for the diſconcerting, or putting a man out of his way, or element. Speak of law to a phyſician, or of phyſic to a lawyer, and they will both be *diſorientated*.

And. Marvel uſes the word *diſoccidentated*, inſtead of *diſorientated*: Geneva had *diſoccidentated* our geographer.

DISPARAGEMENT * is properly uſed, for the matching an heir, &c. in marriage, below his or her degree or condition; or againſt the rules of decency.

* The word is a compound of the privative particle *dis*, and *par*, equal.

DISPATCH, a letter on ſome affair of ſtate, or other buſineſ of importance, ſent, with care and expedition, by a courie expreſs.

The buſineſs of *diſpatches* lies on the ſecretaries of ſtate, an their clerks. The king gives directions to his miniſters abroa by *diſpatches*.

The word is alſo uſed for the packet, or mail, containing ſuch letters. The courier has delivered his *diſpatches*.

The French, during the reign of Lewis XIV. had a *Conſe des depêches*, council of *diſpatches*, held in the king's preſence, at which the dauphin, the duke of Orleans, the chancellor, and four ſecretaries of ſtate, aſſiſted.

DISPAUPER. When any perſon, by reaſon of his povert (atteſted, by his own oath, of not being worth five pounds, h debts being paid), is admitted to ſue in *forma pauperis*: if a terwards, before the ſuit be ended, the ſame party have an land or perſonal eſtate fall to him, or that the court, wherei his ſuit is depending, thinks fit for that, or ſome other reaſo to take away the privilege from him, he is then ſaid to be *di paupered*.

DISPENSARY, or DISPENSATORY, a name given to dive collections of recipes for compound medicines, wherein a ſpecified the ingredients, proportions, and chief circumſtance of the preparation and mixture; the ſame with what we othe wiſe call a *pharmacopœia*, or *antidotary*.

Such are the *diſpenſaries* of Meſne, Cordus, that of the c lege of phyſicians at London, Quincy, &c.

The apothecaries, in and about London, are obliged to ma up their compound medicines according to the formula's p ſcribed in the *college diſpenſary*, and are injoined to keep ways ready in their ſhops, all the medicines there enumerat

DISPENSARY is likewiſe uſed for a magazine or office of me cines, kept ready to be *diſpenſed* at the prime coſt of the gredients, for the benefit of the ſick poor.

Of which kind we have had two or three in London, maintai ed by the college of phyſicians; one at the college itſelf, f begun in the year 1696. another in St. Peter's alley, Co hill; and a third near Covent-garden: where the beſt me cines were ſold for their intrinſic value, and patients were viſed every day, but Sunday, at one of the three places.

DISPENSATION, in law, &c. a permiſſion to do ſometh contrary to the ſtanding laws; or a relaxation, or ſuſpenſi of a law, on ſome juſt occaſion.

Some confound *diſpenſation* with equity; but they are different things; for, equity is only the correction, or mod cation, of a law which is too general; but a *diſpenſation* pends the obligation of the law itſelf, and can, therefore, only given by the legiſlative power.

The king of France grants *diſpenſations* of age to ſome cers, to be admitted before the legal age: but the grea dealer in *diſpenſations* is the pope, who claims the office, *divino*, and extends it to every thing: indeed, the more of the Romaniſts themſelves deny, that he can give a *diſ ſation* for a thing contrary, either to the divine law, o law of nature, and confine him to what is contrary to po laws, as to things relating to faſts, marriages, holding ſe benefices, &c. and even in theſe things they ſet bounds; ſay they, a *diſpenſation* in the firſt degree of affinity, a father and daughter, brother and ſiſter, would be abuſive null. But it is certain the papal ſee does not apprehend under any ſuch ſevere reſtrictions.

The right of giving *diſpenſations* they thus prove: It is ce the church has power to make laws; a power which apoſtles themſelves exerciſed, and which their ſucceſſors continued to exerciſe after them. Whoever can make a can annul it; and, much more, can he diſpenſe with certain caſes: the church, then, may *diſpenſe* with the itſelf has made, and we find it to have done accordingly ages. In the primitive times it was left to the judgment o biſhops, to diſpenſe with the length of the penance inj by the canons; and the IVth council of Carthage allows tranſlation of biſhops and prieſts, when the church's ocaſions ſhould require it.

The author of a treatiſe of *diſpenſations*, printed in 1713. reduces all the cauſes of *diſpenſation* to the neceſſity and public ſervice of the church, and not to the private advantages of the perſons who ſolicit the *diſpenſation*; otherwiſe cauſes, he obſerves, will never be wanting.

The ſame author maintains, that all *diſpenſations* ſhould be diſpatched *gratis:* Marcellus II. he obſerves, was reſolved to have it ſo. That pope uſed to ſay, that if *diſpenſations* were juſt, they ſhould be granted *gratis*; and if unjuſt, they were to be refuſed. And pope Pius V. refuſed a large ſum of money, offered by a Spaniſh lord, for a *diſpenſation*, which that pope granted, becauſe he judged it juſt. The nine prelates, whom Paul III. conſulted for the reformation of the court of Rome, recommended the ſame thing; except for *diſpenſations* of marriages contracted malgre ſome known impediment.

Dispensation, in pharmacy, the diſpoſition and arrangement of ſeveral medicines, either ſimple or compound, all weighed in their proper doſes, or quantities; in order to be employed in the making a compoſition.

DISPERSION, in dioptrics.—*Point of* Dispersion, is a point from which refracted rays begin to diverge, when their refraction renders them divergent.

It is called *point of diſperſion*, in oppoſition to the *point of concourſe*, which is the point wherein converging rays concur after refraction.

But the latter is more uſually called *focus*, and the former, *virtual focus*.

DISPLAYED, in heraldry, is underſtood of the poſition of an eagle, or other bird, when it is erect, with its wings expanded, or ſpread forth.

DISPONDEE, in the Greek and Latin poetry, a double ſpondee; or a foot conſiſting of four long ſyllables: as *jūrāmentūm*, *dēlēctāntēs*, Θαυμαζοντων.

DISPOSITION, in rhetoric is defined, by Cicero, the act of diſtributing the things, or arguments, invented or found out, into a proper order; or a due placing, or ranging, the ſeveral parts of a ſpeech, or diſcourſe.

The *diſpoſition* makes one of the great branches, or diviſions, of rhetoric.

The *diſpoſition* is of the ſame neceſſity in oratory, as the marſhalling of an army in order to a battle; or a beautiful compoſition in architecture, painting, &c. Horace injoins it expreſly in poetry: *ſingula quæque locum teneant ſortita decenter.*

The *diſpoſition*, then, is the order, or arrangement, of the parts of an oration; which parts are uſually reckoned four, *viz.* the *exordium*, or beginning; the *narration*; the *confirmation*; and the *peroration*, or *concluſion*. Though ſome make them ſix; *viz.* the *exordium*, *diviſion*, *narration*, *confirmation*, *confutation*, and *peroration*; as indicated in that popular verſe:

Exorſus, narro, ſeco, firmo, refuto, peroro.

But the diviſion is more naturally referred to the exordium; and the confutation to the confirmation.

The *diſpoſition* is either *natural* or *artificial*. *Natural*, is the order the parts are above rehearſed in. *Artificial* is, when, for ſome particular reaſon, we recede from the order of nature. See each part under its proper article, Exordium, &c.

Disposition, in architecture, is the juſt placing of all the ſeveral parts of an edifice, according to their proper nature and office. See Building.

DISPROPORTION: a term of relation implying a want of proportion, or ſuitableneſs.

DISPUTE, or **Disputation**, in the ſchools, &c. a conteſt, or combat, either by word or writing, on ſome point of learning or religion, for a degree, prize, exerciſe, or even for the mere ſake of truth, or advantage of a party, or the honour of a triumph. See Thesis.

The Port royaliſts take occaſion to obſerve, that nothing gives ſo many different lights, and openings, for diſcovering the truth, as *diſputation*. The movements of a mind, employed ſingly in the examination of any ſubject, are uſually too cool and languid; the mind needs a certain degree of heat to awake its ideas. Now, by the oppoſitions in a *diſpute*, we come to find wherein the difficulty lies, and the impetus the mind has acquired enables us to ſurmount it.

DISQUISITION, any inquiry into the nature, kinds, and circumſtances of any problem, queſtion, or topic; in order to gain a right notion of it, and to diſcourſe clearly about it.

DISSECTION, in anatomy, the operation of cutting and dividing the parts of an animal body, with a knife, ſciſſars, &c. in order to ſee and conſider each of them apart.

The antients made *diſſections* of living men: as we read of Herophilus and Eraſiſtratus; and, in our own times, of Carpus and Veſalius.

Yet, le Gendre obſerves, that the *diſſection* of a human body, even dead, was held a ſacrilege till the time of Francis I. And the ſame author aſſures us, he has ſeen a conſultation held by the divines of Salamanca, at the requeſt of Charles V. to ſettle the queſtion, whether or no it were lawful, in point of conſcience, to *diſſect* a human body, in order to learn the ſtructure thereof?

DISSEISIN, in law, an unlawful diſpoſſeſſing a man of his land, tenement, or other immoveable and incorporeal right.

Diſſeiſin is of three ſorts; *viz.* *ſimple diſſeiſin*, committed by day, without force and arms: and *diſſeiſin by force*; for which ſee Deforceor; and Fresh *diſſeiſin*. See alſo Redisseisin and Post-disseisin. *Wrongful force* makes no deſcent in law.

Aſſiſes are called *writs of diſſeiſin*, which lie againſt *diſſeiſors* in any caſe: whereof ſome are termed *little writs of diſſeiſin*, as being vicontial, that is, ſuable before the ſheriff in the county-court, becauſe determinable by him without aſſiſe.

Disseisor, he who *diſſeiſeth*, or puts another out of his land: as *diſſeiſee*, is he who is put out.

DISSEMINATE *vacuum*. See Vacuum *diſſeminatum*.

DISSENTERS, a general denomination of equal import with non-conformiſts.

It expreſſes certain ſects, or parties, in England, who, in matters of religion, church-diſcipline, and ceremonies, *diſſent* from, or diſagree with, the church of England, and have a toleration by law for the ſame.

Such, particularly, are the preſbyterians, independents, anabaptiſts, and quakers. See Presbyterians.

DISSIMILAR *leaves*, denote the two firſt leaves of any plant at its firſt ſhooting out of the ground.

They are thus called, becauſe they uſually are of a different form from the common leaves of a grown plant.

Theſe Dr. Grew obſerves to be nothing but the very lobes of the ſeed thus expanded, and thus advanced.

Their uſe is for the protection of the plume; which, being young and tender, is thus guarded on each ſide, and has alſo ſome rain and dew gradually conveyed down to it by this means. See Plume.

Dissimilar, in anatomy.—Authors divide the parts of the body into *ſimilar*, and *diſſimilar*.

Diſſimilar parts, by ſome called alſo *compound*, and *organical* parts, are ſuch as may be divided into various parts of different ſtructure, &c. Thus the hand is diviſible into veins, muſcles, bones, &c. whoſe ſubdiviſions are neither of the ſame nature nor denomination.

DISSIMILITUDE, in geometry, &c. See Similitude.

Dissimilitude, or **Dissimili**, in rhetoric, &c. an argument, wherein, from *diſſimilar*, or unlike things, other *diſſimilars* are deduced.

Thus Cicero, *ſi barbarorum eſt in diem vivere*; *noſtra conſilia ſempiternum tempus ſpectare debent.* Catullus furniſhes a very beautiful argument from *diſſimilitude*.

Soles occidere & redire poſſunt.
Nobis cum ſemel occidit brevis lux,
Nox eſt perpetua una dormienda.

DISSIPATION, in phyſics, an inſenſible loſs, or conſumption, of the minute parts of a body; or, more properly, that flux whereby they fly off, and are loſt. See Effluvia.

We do not ſay *diſſipation*, but loſs of blood, in ſpeaking of the blood diſcharged at a wound, or in any other ſenſible manner: on the contrary, we ſay *diſſipation*, or expence, of ſpirits: this is more copious than that of the ſolid parts; and, conſequently, the reparation thereof ought to be more copious.

DISSOLVENT, ſomething that *diſſolves*, i. e. divides, and reduces a body into its ſmalleſt parts. See Dissolution.

Thus, aqua regia is the *diſſolvent* of gold; aqua fortis of ſilver, and other metals; water, of ſalts and gums; ſpirit of wine, of reſins; ſpirit of vinegar, of pearls, corals, &c.

Sea-ſalt is found the proper *diſſolvent* of gold: this, in almoſt any form, whether as a fluid, or a ſolid, or a ſpirit, does the buſineſs: accordingly, this is the baſis, or fundamental ingredient, of aqua regia.

So nitre is the proper *diſſolvent* of ſilver; and has that effect, in whatever form it is applied: and, accordingly, it is the baſis of aqua fortis.

Spirit of nitre, added to that of ſea-ſalt, makes it *diſſolve* gold the better: but ſpirit of ſea-ſalt, added to ſpirit of nitre, diſables it from having any effect on ſilver. Yet Mr. Homberg furniſhes an inſtance of a *diſſolution* of ſilver made by the *diſſolvent* of gold. An aqua regia may be compoſed of ſpirit of ſalt, and ſpirit of nitre, only in ſuch ſmall quantity each, that they may float ſeparately in a third liquor, and not meet often enough to unite, at leaſt not in any quantity. This water may be made ſo weak as not to *diſſove* gold, but only extract a ſlight yellow tincture from it, that ſcarce takes off any thing of the weight of the metal: nor will it *diſſolve* ſilver, as being too weak; ſo that both metals are ſafe from it. But this aqua regia, after it has *diſſolved* gold as far as it can do; that is, after it has extracted a yellowiſh tincture from it; is ſtill in a condition to *diſſolve* ſilver.

This phænomenon Mr. Homberg accounts for hence: that ſpirit of ſalt, whether alone, or joined with ſpirit of nitre, being employed in keeping thoſe few particles of gold *diſſolved*, will not meddle with the ſilver: which, by this means, receiving the impreſſion of the greater quantity of ſpirit of nitre alone, is *diſſolved* thereby. But the experiment cannot be inverted, *i. e.* aqua regia cannot begin with *diſſolving* ſilver lightly firſt, and afterwards *diſſolve* gold; by reaſon ſpirit of nitre does not hinder ſpirit of ſalt from acting on gold; as ſpirit of ſalt does ſpirit of nitre from acting on ſilver.

Diſſolvents are uſually called by the chemiſts *menſtruums.*

Univerſal **DISSOLVENT.** See the article ALCAHEST.

DISSOLUTION, in phyſics, a diſcontinuation, or analyſis, of the ſtructure of a mix'd body; whereby, what was one, and contiguous, is divided into little parts, either homogeneous, or heterogeneous. See ANALYSIS, and DIVISION.

Diſſolution, then, is a general name for all reductions of concrete bodies into their ſmalleſt parts, without any regard either to ſolidity or fluidity: though, in the uſual acceptation of the word among authors, it is reſtrained to the reduction of ſolid bodies into a ſtate of fluidity; which is more properly expreſſed by *ſolution*, as a branch of *diſſolution.*

According to the opinion of Fr. Tertius de Lanis, now confirmed by that of the learned Boerhaave, in his chemiſtry, the power, or faculty, of *diſſolving*, is lodged in fire alone.

Other fluids, commonly ſuppoſed *diſſolvents*, only produce their effect by means of the fiery ſpicula they abound withal. Even air, which is judged a powerful menſtruum, owes all its force to the rays of light diffuſed therein.

Sir Iſaac Newton accounts for all *diſſolutions*, and the ſeveral phænomena thereof, from the great principle of attraction; and, in effect, the phænomena of *diſſolution* furniſh a great part of the arguments and conſiderations, whereby he proves the reality of that principle.

A ſpecimen of that great author's way of philoſophizing on the ſubject of *diſſolution* take as follows:

When ſalt of tartar *diſſolves* by lying in a moiſt place, is not this done by an attraction between the particles of the ſalt of tartar, and thoſe of the water which float in the air in form of vapours? and why does not common ſalt, or ſaltpetre, or vitriol, do the like, but for want of ſuch an attraction? and when aqua fortis, or ſpirit of vitriol, poured on ſteel filings, *diſſolve* the filings, with a great heat and ebullition, is not this heat and ebullition effected by a violent motion of the parts? and does not that motion argue, that the acid parts of the liquor ruſh towards the parts of the metal with violence, and run forcibly into its pores; till getting between the outermoſt particles and the main maſs of metal, they looſen them therefrom, and ſet them at liberty to float off into the Water? when a ſolution of iron, in aqua fortis, *diſſolves* lapis calaminaris, and lets go the iron; or a ſolution of copper *diſſolves* iron immerſed in, and lets go the copper; or a ſolution of mercury, in aqua fortis, poured on iron, copper, tin, or lead, *diſſolves* the metal, and lets go the mercury; does not this argue, that the acid particles of the aqua fortis are attracted more ſtrongly by the lapis calaminaris than by iron; by iron than by copper; by copper than by ſilver; and by iron, copper, tin, and lead, than by mercury? and is it not for the ſame reaſon, that iron requires more aqua fortis to *diſſolve* it than copper; and copper more than the other metals; and that of all metals iron is *diſſolved* moſt eaſily, and is moſt apt to ruſt; and next after iron, copper? When aqua fortis *diſſolves* ſilver, and not gold; and aqua regia *diſſolves* gold, and not ſilver; may it not be ſaid, that aqua fortis is ſubtile enough to penetrate the pores of gold as well as of ſilver, but it wants the attractive force to give it entrance; and the ſame of aqua regia, and ſilver? and when metals are *diſſolved* in acid menſtruums, and the acids, in conjunction with the metal, act after a different manner; ſo as that the taſte of the compound is milder than that of the ſimples, and ſometimes a ſweet one; is it not becauſe the acids adhere to the metallic particles, and thereby loſe much of their activity? And if the acid be in too ſmall a proportion to make the compound *diſſoluble* in water; will it not, by adhering ſtrongly to the metal, become unactive, and loſe its taſte; and the compound become a taſteleſs earth? for ſuch things as are not *diſſoluble* by the moiſture of the tongue are inſipid. *Newt. Opt. in Calce.*

M. Geoffroy furniſhes ſome curious experiments on *cold diſſolutions:* it is nothing ſurpriſing, that a ſimple *diſſolution* ſhould be cold; that common water, for inſtance, wherein ſea-ſalt, or ſal ammoniac, or vitriol, has been caſt, ſhould become the colder by the mixture of ſuch ſalts; it being obvious, that the ſalts, being of themſelves deſtitute of motion, and coming to ſhare that which the fluidity gives the water, muſt diminiſh it, when they become intimately mixed therewith by *diſſolution*; and it is generally agreed, among philoſophers, that heat is a motion, and cold a ceſſation, or, at leaſt, a diminution of motion.

Yet, notwithſtanding this general principle, it is no great wonder all *diſſolutions* are not cold, as thoſe are of all volatile alcalies in common water; but that ſome are hot, as thoſe of all fixed alcalies. This difference may be accounted for hence, that, all fixed alcalies having been calcined by a vehement fire, they have impriſoned and retained in their pores ſome of the particles thereof.

But it is ſurpriſing, that *diſſolutions*, accompanied with fermentation, *&c.* where the matters boil and ſwell, and that with a great noiſe, ſhould be cold, and make the thermometer fall, when immerged therein.

This coldneſs, with ſo conſiderable an augmentation of motion, is ſomewhat extraordinary. But this is not all; for of theſe cold fermentations, there are ſome that emit hot vapours. Thus it is with a mixture of oil of vitriol, and ſal ammoniac; for a thermometer being plunged in the mixture, and another a little higher, to receive only the fumes thereof; the firſt thermometer is ſeen to fall very haſtily, through the coldneſs of the fermentation; and the latter to riſe, through the heat of the vapours. M. Geoffroy adds an experiment, ſhewing that cold water is rendered ſtill colder, for a few moments, by throwing a large quantity of live coals therein.

DISSOLUTION, in chemiſtry, pharmacy, *&c.* denotes the reduction of a compact, hard, or ſolid body, into a fluid ſtate, by the action of ſome fluid menſtruum, or *diſſolvent.*

Dr. Freind gives us a mechanical account of *diſſolution*, in the inſtance of ſalt *diſſolved* in water, which is the moſt ſimple operation that falls under this head. This motion he aſcribes to that attractive force, which is ſo very extenſive in natural philoſophy, that there is no kind of matter but what is under its influence. It may be obſerved, he ſays, that the corpuſcles of ſalts, which are the moſt ſimple of any, are withal very minute, and, for their bulk, very ſolid; and therefore they exert a very ſtrong attractive force, which, *cæteris paribus*, is proportional to the quantity of matter. Hence it comes to paſs, that the particles of water are more ſtrongly attracted by the ſaline particles, than they are by one another: the particles of water, therefore, cohering but looſely, and being eaſily moveable, approach the corpuſcles of ſalts, and run, as it were, into their embraces; and the motion of them is quicker, or ſlower, according to their leſs or greater diſtances; the attractive force, in all bodies, being ſtrongeſt at the point of contact. Therefore, if ſalt be thrown into the middle of a diſh full of water, we ſhall find the aqueous particles, which are in the middle of the diſh, ſharp, and pungent to the taſte; but the water upon the ſides of the veſſel almoſt inſipid; ſo that, when ſuch a motion once ariſes, the aqueous particles are carried with the ſame force towards the ſalts; and the moment of them is to be eſtimated from the ratio of their weight, and celerity, conjunctly. By the force of this impulſe, they open to themſelves a paſſage into the pores of the ſalts, which are very numerous; and, at length, they ſo break and divide its texture, that all coheſion of the parts is deſtroyed: hereupon, being ſeparated and removed to a convenient diſtance from one another, they are diſperſed, and float here and there about the water.

DISSOLUTION of metals, *&c.* by fire, is particularly called *fuſion.*

DISSOLUTION *of the blood*, is an affection of that humour, directly oppoſite to coagulation.

The *diſſolution* is ſuch a comminution of the fibrous parts of the blood, as indiſpoſes it for that ſeparation of the craſſamentum from the ſerous part, which always enſues in healthy blood on its cooling out of the body.

This *diſſolution* is frequently the conſequence of malignant and peſtilential fevers, and ſhews itſelf in petechiæ, or purple ſpots; alſo of certain poiſons, particularly the bites of venomous beaſts, *&c.*

DISSOLUTION *of parliament.* See PARLIAMENT.

DISSONANCE, or DISCORD, in muſic, a falſe conſonance, or concord.

A *diſſonance* is properly the reſult of a mixture, or meeting, of two ſounds, which are diſagreeable to the ear: ſuch are *ditones*, *tritones*, *falſe fifth*, *redundant fourth*, *ſeventh*, &c.

Diſſonances are ſometimes uſed in muſic, and have a good effect therein, tho' it be only occaſionally. See DISCORD.

DISSYLLABLE, a word of two ſyllables; as *fortune*, *lament*, &c.

The ſpondee, trochee, iambus, and pyrrhichius, are *diſſyllabic* feet. See SPONDEE, *&c.*

DISTANCE, properly denotes the ſhorteſt line between two points, objects, *&c.*

The word is alſo uſed figuratively for an interval, not only in reſpect of place, but alſo of time, or quality.

Thus, we ſay the *diſtance* of the creation of the world, from the nativity of Jeſus Chriſt, is upwards of 4000 years: the *diſtance* between the Creator and creature is infinite.

For the viſion of DISTANCE, or the manner wherein we come by the idea of *diſtance* in objects; ſee VISION.

DISTANCES, in geometry, are meaſured by the chain, decempeda, and the like. See CHAIN, &c.

Inacceſſible DISTANCES are found by taking bearings thereto from the two extremes of a line whoſe length is given. See PLAIN-TABLE, THEODOLITE, &c.

DISTANCE, in geography, is the arch of a great circle interſected between two places.

To find the *diſtance* of two places A and B (Tab. *Geography*, *fig.* 4.), far remote from each other. Aſſume two ſtations, C and D, from which both the places A and B may be ſeen; and with a proper inſtrument find the angles A D C, C D B, A C D, and D C B; and meaſure the *diſtance* C D.

Then in the triangle A C D we have two angles given, A C D and A D C, together with a ſide; from which, by an eaſy rule in trigonometry, delivered under the article TRIANGLE, we find A D.

So alſo, in the triangle C B D, the baſe D C, and the angles at the ſame, being given; D B is found.

Laſtly, in the triangle A D B, having the ſides A D and D B, together with the included angle A D B; the *diſtance* required, A B, is found by the rules given for the reſolution of triangles.

The height of a remote object being known, to find its *diſtance*, when the eye firſt deſcries it; and, again, the height of the eye given, to find the *diſtance* to which the eye can reach on the ſurface of the ſea, or land: add the height of the eye A B (*fig.* 9.) to the ſemidiameter of the earth B C, by which you have A C; and ſince in the rectangle triangle A D C the ſides A C and D C are given, the angle D C A is found by the common rule for reſolution of triangles, the quantity of which angle forms the arch D B; which arch, converted into feet, or the like, gives the *diſtance* required.

Suppoſe, *e. gr.* the height of the eye A B five feet, which is ſomewhat leſs than in a man of ordinary ſtature: ſince B C is 19695539, A C will be 19695544; and the angle D A B will be found 89° 57 minutes, 43 ſeconds: conſequently D C B, or the arch D B, is 2′ 17″, or 137″; and therefore, ſince 1°, or 3600″, make 343752 Paris feet; D B is 13081$\frac{2}{3}$ feet.

After the ſame manner we find the *diſtance* A B, to which an object of a given altitude D B may be ſeen; and, conſequently, we know what *diſtance* we are off from an object of a given altitude, when we firſt diſcover the top thereof.

DISTANCE, in navigation, is the number of miles, or leagues, that a ſhip has ſailed from any point. See SAILING.

DISTANCE, in aſtronomy.—The *diſtance* of the ſun, planets, and comets, is found from their parallax.

That of the fixed ſtars, as having no ſenſible parallax, we can do little more than gueſs at.

The *diſtances* of the planets from the ſun and earth, in ſemidiameters of the earth, ſuppoſing the greateſt horizontal parallax 6″; and the dimenſions of the orbits, as aſſigned by Kepler; are as follow:

Diſt. from the Sun.	Greateſt.	Mean.	Leaſt.	*Diſt.* from the Earth.	Greateſt.	Mean.	Leaſt.
Jupiter	34560	326925	308290	Saturn	380556	327544	274532
Saturn	187254	178640	170026	Jupiter	222250	179259	136268
Mars	57226	52326	47426	Mars	92221	52944	13668
Earth	34995	34377	33758	Sun	34996	34377	33759
Venus	25061	24889	24718	Venus	60056	34548	9041
Mercury	16142	13340	10537	Mercury	51138	37179	23221
				Moon			

Mr. Caſſini makes the *diſtances* ſomewhat leſs; as ſuppoſing the ſun's parallax a greater.

Diſt. from the Earth.	Greateſt.	Mean.	Leaſt.	*Diſt.* from the Earth.	Greateſt.	Mean.	Leaſt.
Jupiter	244000	210000	176000	Venus	38000	22000	6000
Saturn	143000	155000	87000	Mercury	33000	22000	11000
Mars	59000	33500	8000	Moon	61	57	53
Sun	22374	22000	21626				

Dr. Hook, by exact obſervation with a teleſcope of 16 feet, perpendicularly placed, firſt diſcovered, that the *diſtances* of the ſtars from the zenith is not the ſame at all times of the year: particularly the bright ſtar in the dragon's head he found 27 or 30 ſeconds nearer the zenith of Greſham college, in the brumal ſolſtice, than in the eſtival: and, after him, Mr. Flamſteed obſerved the like variations in the pole-ſtar.

DISTANCE *of the ſun from the moon's node, or apogee*, is an arch of the ecliptic intercepted between the ſun's true place and the moon's node, or apogee. See NODE.

urtate DISTANCE is the *diſtance* of the planet's place from the ſun, reduced to the ecliptic. See CURTATE.

ine of DISTANCE, in perſpective, is a right line drawn from the eye to the principal point. Such is the line O F (Tab. *Perſpective*, *fig.* 12.), drawn between the eye O, and the principal point F.

This, as it is perpendicular to the plane, or table, can only be the *diſtance* of the eye from the table.

Point of DISTANCE, in perſpective, is a point in the horizontal line at ſuch *diſtance* from the principal point, as is that of the eye from the ſame.

Such is the point P, and Q (Tab. *Perſpective*, *fig.* 12.), in the horizontal line P Q; whoſe *diſtance* from the principal point F, is equal to that of the eye from the ſame F.

DISTANCE *of the Baſtions*, in fortification, is the ſide of the exterior polygon.

DISTASTE, or DISGUST, a loſs of appetite, or an averſion, or repugnance, to foods which are commonly eaten.

Diſtaſte is held, by phyſicians, one of the principal diſorders of the ſtomach. It ariſes from a want of ſenſation in the upper orifice of the ventricle, which may be occaſioned various ways: as, by a too great abundance of food; thick, heavy humours in the ſtomach; fat, viſcid aliment; obſtructions of the lacteals; ſuppreſſions of the uſual evacuations; intermiſſions of the ordinary exerciſes; a defect in the nerves, in having their natural faculty aboliſhed, or ſuſpended, as in a lethargy, and apoplexy; and, according to Sylvius, by a groſs viſcid ſaliva, or a thick bile, aſcending out of the ſmall guts into the ſtomach.

DISTEMPER, in medicine. See the article DISEASE.

DISTEMPER is alſo uſed, in painting, for the working up of colours with ſomething elſe beſides bare water, or oil.

If the colours be prepared with the former of theſe, that kind of painting is called *limning*; and if with oil, it is called *painting in oil*, or ſimply *painting*.

If the colours be mixed with ſize, whites of eggs, or any ſuch proper glutinous, or unctuous, ſubſtance, and not with oil; they then ſay, it is done in *diſtemper*; as thoſe of the admirable cartoons at Hampton-court.

DISTENSION, the act of ſtretching a thing; alſo the ſtate of a thing violently ſtretched, and *diſtended*. See TENSION.

The calculus is a hard, ſolid body, cauſing a ſtupor, obſtructions, and *diſtenſions*. Degori.

DISTICH, ΔΙΣΤΙΧΟΝ, a couplet of verſes; or a piece of poetry, the ſenſe whereof is comprehended in two lines.

There are excellent morals in Cato's *diſtichs*. See Vigneul de Marville on the *diſtichs* of Cato, T. I. p. 54, 55.

Hexameter and pentameter verſes, otherwiſe called elegiacs, are diſpoſed in *diſtichs*.

DISTICHIASIS*, in medicine, a diſorder of the eye-lids; wherein, inſtead of one, they have two rows of cilia, or hairs.

* The word is formed of δις, twice; and ςιχος, or ςοιχος, order, rank.

In the *diſtichiaſis*, over the common, and natural hairs, there grows another extraordinary row, which frequently eradicates, and tears up the former; and, pricking the membrane immediately inveſting the eye, occaſions pain, and draws defluxions upon it.

It is cured by plucking up the ſecond rows of hairs with nippers, and cauterizing the pores out of which they iſſued.

DISTILLATION, or DESTILLATION, in chemiſtry and pharmacy, the art, or act, of ſeparating, or drawing off, the ſpirituous, aqueous, oleaginous, or ſaline parts, of a mixed body from the groſſer and more terreſtrial parts, by means of fire; and collecting and condenſing them again by cold.

The uſe of *diſtillation* is very great; it being by means hereof that waters, ſpirits, eſſences, and extracts, are chiefly made.

Diſtillation is uſually performed by means of fire raiſed to a greater or leſſer degree, as circumſtances require.

The fire is either applied immediately to the veſſels wherein the matters are to be *diſtilled*; or it is applied mediately, by means of water, ſand, iron filings, &c. Theſe different methods of applying the fire, are called *baths*, *balnea*; *balneum mariæ*, or *maris*; *balneum arenoſum*, &c. They are alſo called *heats*; as ſand-heat, water-heat, &c.

Diſtillation is twofold: 1°, *Per aſcenſum*, by aſcent; when the matter to be *diſtilled* is above the fire, and the ſpirit, or other principle, is raiſed from it.

2°, *Per deſcenſum*, by deſcent; when the matter which is to be *diſtilled* is below the fire, and the vapour drawn from it is precipitated to the bottom of the veſſel.

DISTILLATION *by aſcent* is either *right*, or *oblique*.

Right DISTILLATION is performed with a common alembic, or cucurbit; wherein the liquor is raiſed, and deſcends again, in form of drops, into a receiver: this is chiefly uſed when the texture of the body is ſuch as allows of an eaſy aſcent, as in vegetables.

Oblique DISTILLATION is performed ſideways, and in crooked veſſels, as retorts. Its uſe is, for ſuch bodies as conſiſt of heavier particles, and which cannot be raiſed without a ſtrong impulſe, nor even by the ſtrongeſt ſo high as the top of the alembic; of which kind are almoſt all minerals and metals.

Distillation *by deſcent* is where the fire is applied on the top, and all around the veſſel, whoſe orifice is at the bottom; and, conſequently, the vapour not being able to riſe upwards, it is forced to precipitate, and *diſtil* down to the bottom.

There is a ſecond kind of *diſtillation* by deſcent, called *per deliquium*; which is a natural liquefying, or reſolving, of ſalts into a liquor, by means of moiſture.

In the reſolution of ſimples, an excellent method to preſerve their virtues is, in lieu of fire, or any other foreign heat, which might alter or deſtroy theſe virtues, to make uſe of the heat of a dunghil made of putrefied herbs.

The proceſs and meaſures of *diſtillation* are very different, according to the different ſubjects to be *diſtilled*.

Acid ſpirits are uſually drawn in a reverberatory furnace, and with a vehement fire; ponderous woods, as guaiacum, box, *&c.* are *diſtilled* in a retort, after the ſame manner: in theſe, firſt comes a little phlegm, and then, the fire increaſing, the ſpirits fly out in white clouds: when they ceaſe to come, the matter in the receiver is filtrated through a tunnel, which lets paſs the ſpirits, leaving a black fetid oil behind.

Odoriferous plants, as baum, wormwood, ſage, hyſſop, *&c.* are *diſtilled* by the cucurbit, or veſica; firſt pouring a ſtrong decoction of the ſame plant hot upon the plant itſelf bruiſed, or adding common water to the plant, whether dry or freſh, cut with ſheers into ſmall pieces, and letting the whole digeſt in a cloſe veſſel two days: then about half the water, or ſpirit, is drawn away by *diſtillation*; and what remains, being preſſed, filtrated, and evaporated, to the conſiſtence of honey, is the extract of the plant. Laſtly, drying what remained in the cloth after expreſſion, and burning it, they make a lixivium of its aſhes; which being filtrated, and evaporated to drineſs, what remains is the fixed ſalt of the plant.

Plants not odoriferous, are ſometimes managed thus: the plant, being pounded, and two thirds of the alembic, or retort, filled with it; they pour a good quantity of the expreſſed juice of the ſame plant upon it, ſo as the bruiſed matter may float therein, without ſticking any-where to the veſſel; then they draw off about half as much water as there was juice, which is the *diſtilled* water of that plant: what remains, being preſſed in a cloth, and the juice ſettled, they filtrate, and evaporate it to two thirds; and, ſetting it in a cool place, the eſſential ſalt ſhoots into cryſtals.

There is a method of **Distilling** *cold*; which is thus performed: they take, for inſtance, four pounds of flowers, more or leſs, and put them in three or four pints of water, and put the whole in a limbec, which they lute exactly; then place it in a veſſel half filled with ice, beaten and ſalted, as if they meant to freeze the water; then fit on a receiver, and lute it well: then, wetting a linen cloth in hot water, they cover the limbec-head therewith, repeating this ſeveral times; by which means, the fineſt parts are raiſed from the flowers. But care muſt be taken, that all the ſuperfluous water have been firſt emptied out of the limbec.

Dr. Beal, in the *Philoſophical Tranſactions*, mentions an extraordinary kind of cold *diſtillations*, viz. made by froſt and cold air: his thermometer being expoſed out of doors, during the ſevere froſts of 1665. fine clear drops, like dew, aſcended to the top of the tube, which afterwards, in time, re-deſcended into the ſtem, and filled the ſpace of half an inch; and, though the ſpirit of wine itſelf was tinged very deep, yet this ſecond ſpirit was clearer and brighter than any cryſtal. The like he did by expoſing his thermometer to the hot air in the middle of ſummer: and hence takes occaſion to recommend a further proſecution of this pſychrotechnia.

The aſcent of fluids, we are taught by philoſophy, is effected two ways: 1. On account of their ſpecific gravity; and, 2. By impulſe.

The firſt way of elevation is manifeſt, from this lemma; *viz.* that particles of bodies which ſwim in any fluid, if they be ſpecifically lighter, muſt be borne upwards by that fluid: hence, as *diſtilled* liquors are carried upwards through the air, it is to be inquired, how they come to be ſpecifically lighter than air.

Now, a fluid will be ſpecifically lighter than another, when, under a larger ſurface, it has an equal, or a leſs, gravity: according to this proportion, the bulk of the fluid ought to be increaſed in *diſtillation*; and how eaſily, by the help of fire, it may be increaſed, or, which is the ſame thing, rarefied, will appear, from what we have ſaid under the articles **Rarefaction**, and **Heat**.

It is known, by computation, that the proportion of the ſpecific gravity of water to that of air is ſomething more than as eight hundred to one: ſince, therefore, ſimilar ſpheres, or ſolids, are as the cubes of their diameters; and the ſpecific gravity decreaſes reciprocally in the very ſame proportion as the cubes of their diameters increaſe; in order to make a particle of water lighter than a particle of air, no more is neceſſary than to rarefy it till its diameter becomes ten times greater; which, in this caſe, is but a very ſmall degree of rarefaction: for the cube of the diameter, in a particle ſo rarefied, is one thouſand: if the diameter be made eleven times greater, the cube will be 1331. and if twelve, 1728. ſo that water, when rarefied but twelve degrees, will be above doubly lighter than air: and, if the rarefaction be carried on farther, it may eaſily be collected, from the increaſe of the numbers, that a particle of water may be rendered almoſt infinitely lighter than air. Now, the elevation of bodies equally fluid, and heavy, is always proportionable to their different aptitude to be rarefied; that is, they aſcend quicker, upon the application of any force, the more ſuſceptible they are of rarefaction: but in bodies whoſe aptitude to rarefy is equal, the time of aſcent is to be determined by their ſpecific gravity.

But it is not only ſpecific gravity that ſerves to elevate bodies in *diſtillation*; but an external impulſe may alſo cauſe their aſcent: the impulſe, we have here to do with, comes from the fire; whoſe particles, though extremely ſmall and light, yet may raiſe bodies much heavier than themſelves, by acting upon them with a certain degree of force. For ſince the moment of a body, or that force by which it acts upon another, is in a compound ratio of the quantity of matter, and celerity; the celerity may be ſo increaſed, as to give a ſufficient force to the body, though the quantity of matter in it be ever ſo ſmall. Let ſome heavy body, therefore, be ſuppoſed to deſcend, with no other moment than what it receives from its own gravity; in this caſe, then, the air, which is much lighter, may be moved with ſuch celerity, as not only to ſuſtain that body, but to mount it up higher: and the more rapid the impetus of the air is, or the ſurface of the body more diffuſed, the higher and ſwifter will the elevation be.

So fire, though it be a body of the minuteſt ſize, may be moved with that rapidity, as to acquire and communicate what force can be deſired towards removing any obſtacles. When, therefore, the moment of fire is augmented in the manner explained, ſo as to exceed the force of the *diſtilled* body, it will remove it from its former ſituation; or, what is here the ſame thing, becauſe the direction of its motion tends upwards, it will carry it up. And thus, particles ſpecifically heavier than the air contained in the retort, as thoſe of acid ſpirits are, aſcend by a more violent impulſe of the fire uſed in *diſtillation*.

Another thing to be noted is, that the ſame quantity of matter is elevated ſo much the eaſier, in proportion as the ſurface is enlarged: for the more this is diffuſed, the more particles of fire it receives. Having, therefore, this united force to drive it up, it more eaſily aſcends; ſo that, by the ſame degree of fire, bodies will not equally ariſe, though they are equally heavy, if there be that difference in their ſurfaces already ſuppoſed.

The air, alſo, has no ſmall ſhare in the buſineſs of an impulſe: for, being rarefied by the fire, it is not only impelled upwards itſelf, but it carries other particles up with it: and it may be learned, by many very familiar experiments, what impetus bodies, ſo rarefied, exert. Whoſoever, therefore, well conſiders theſe three things; *viz.* ſpecific levity, an impelling force, and the extent of ſurface; and what may be effected by them; and how many ways, and in what proportions, all of them may be changed; will very eaſily account for all the variety which is found in the ſeveral proceſſes of *diſtillation*.

DISTINCT *notion*, or *idea*, according to Mr. Leibnitz, is, when we can enumerate marks and characters enough whereby to recollect a thing.

Such, *e. gr.* is this; that a circle is a figure bounded with a curve line that returns into itſelf; all the points whereof are equally diſtant from one middle part.

Distinct *baſe*, in optics, is that diſtance, from the pole of convex glaſs, in which objects, beheld through it, appea *diſtinct*, and well defined: ſo that the *diſtinct baſe* coincide with what we otherwiſe call the focus.

The *diſtinct baſe* is cauſed by the collection of the rays proceeding from a ſingle point in the object, into a ſingle poi in the repreſentation: and therefore concave glaſſes, whic do not unite, but ſcatter and diſſipate the rays, can have n real *diſtinct baſe*.

DISTINCTION, a diverſity in things, or conceptions.

Logicians define *diſtinction*, an aſſemblage of two, or mor words, whereby diſparate things, or their conceptions, a denoted.

There are three kinds of *diſtinctions*, taken from the three di ferent modes of exiſtence: the firſt *real*, the second *moda* and the laſt *rational*.

Real **Distinction** is that between things which may e iſt, or be conceived to exiſt, apart from each other: ſu is that between two ſubſtances, or the modes of two ſu ſtances.

Modal **Distinction** is that between ſeveral things, o whereof may exiſt without the other; but not *vice verſa*, t oth other without that: ſuch is that between the mind, and an act of will; between wax, and its hardneſs; water, and its freezing, &c.

DISTINCTIO *rationis*, or *rational* DISTINCTION, is that between ſeveral things, which are really one and the ſame, and whereof one cannot exiſt without the other, nor, *vice verſa*, the other without this: ſuch is that between a thing, and its eſſence; between the eſſence, and properties, &c.

Of this *diſtinction* ſome authors admit two kinds; the one barbarouſly called *rationis ratiocinatæ*, having ſome foundation in things; as when we *diſtinguiſh* the juſtice of God from his mercy: the other called *rationis ratiocinantis*, which has no foundation at all; and therefore is, by many, quite rejected.

Though others contend, that there is no *diſtinctio rationis*, but is, at the ſame time, a *real diſtinction*: thus, ſay they, God, and juſt God, are, to each other, as milk and white milk; and a juſt God, and merciful God, as white milk and ſweet milk. But when I ſay, milk is *diſtinguiſhed* from white milk, or white milk from ſweet milk, the *diſtinction* falls between whiteneſs and ſweetneſs, which is a *real diſtinction.*

Metaphyſical DISTINCTION, called alſo by the ſchoolmen *alietas*, *alteritas*, and *diverſitas*, is a non-agreement of being, whereby this entity is not that, or one thing is not another.

DISTINCTIÒ, or DISTINGUO, in the ſchools, an expedient to evade an argument, or to clear up, and unfold an ambiguous propoſition, which may be true in one ſenſe, and falſe in another. The reſpondent was hard preſſed, but he diſengaged himſelf by a *diſtinguo*. Moliere makes T. D. ſay to his miſtreſs, who had told him, he muſt ſubmit to the will of a perſon he loved: *Diſtinguo*, Mademoiſelle, *pour l'intereſt de ſon amour*, Concedo: *contre ſa paſſion*, Nego.

DISTORTION, in medicine. DISTORTIO *Oris*, or DISTORTION *of the mouth*, is a contraction, or ſhortening of one ſide of the mouth, occaſioned by a convulſion, or a palſy of the muſcles of one ſide of the face.

When a *diſtortion* ariſes from a convulſion, it is on the ſame ſide with the convulſion, the force of the convulſed part being ſuperior to that of the ſound part: on the contrary, when it ariſes from a palſy, it is on the oppoſite ſide, the paralytic part being here ſurmounted by the ſound.

In a *diſtortion of the mouth*, the patient can only ſpit on one ſide; and if you make him laugh, or oblige him to pronounce the letter O, you will eaſily perceive, that he only moves one ſide of his mouth.

The Greeks call this diſorder σπασμος κυνικος, ſpaſmus cynicus.

DISTORTION *of the eye*, called alſo *ſquinting*, or *ſtrabiſmus*. See STRABISMUS.

DISTORTOR *Oris*, in anatomy, a muſcle of the mouth, called alſo *Zygomaticus*. See ZYGOMATICUS.

DISTRACTION, in medicine, ſometimes denotes the act of pulling a fibre, membrane, or the like, beyond its natural extent: and what is capable of this enlargement, is ſaid to be *diſtractile*.

DISTRAIN, in law.—To DISTRAIN is to attach, or ſeize on one's goods, for the ſatisfaction of a debt.

DISTRESS, in law, a compulſion had recourſe to in certain real actions, for bringing a man to appear in court, or to pay rent, or other duty denied.

Diſtreſs is divided, by Briton, into *real*, and *perſonal*.

Perſonal DISTRESS is made by *diſtraining* a man's moveable goods, and ſeizing all the profits of his lands, and tenements, from the teſte, or date of the writ, for the defendant's contempt in not appearing to an action brought againſt him when he was ſummoned, or attached: and the iſſues ſo returned by the ſheriffs, are forfeited to the king, and eſtreated into the exchequer.

Real DISTRESS is made on immoveable goods. It differs from an attachment in this, that it cannot be taken by any common perſon, without the compaſs of his own fee; except it be preſently after the cattle, or other things, are driven, or borne off the ground, on purpoſe to avoid *diſtreſs*.

Diſtreſs is alſo divided into *finite*, and *infinite*.

Finite DISTRESS, is that limited by law, how often it ſhall be made to bring the party to tryal of the action: *viz.* once, twice, &c.

Infinite DISTRESS, is without limitation, till the party come; as againſt a jury, which refuſes to appear upon certificate of aſſiſe, the proceſs is *venire facias*, *habeas corpus*, and *diſtreſs infinite*.

Laſtly, *diſtreſs* is again divided into *grand diſtreſs*, by Fitzherbert called *magna diſtrictio*; and *ordinary diſtreſs*.

Grand DISTRESS, is that made of all the goods and chattels the party hath within the county.

The uſual effect of *diſtreſs* is to drive the party *diſtrained* to replevy the *diſtreſs*, and ſo take his action of treſpaſs againſt the *diſtrainer*; or elſe to compound with him for the debt, or duty, for which *diſtreſs* was made.

There are ſeveral things not *diſtrainable*: for a *diſtreſs* muſt be of a thing, whereof a valuable property is in ſomebody; and, therefore, dogs, bucks, coneys, &c. that are *feræ naturæ*, cannot be *diſtrained*.

Again, although it be of a valuable property, as a horſe (yet when a man or woman is riding on him), or an ax (in a man's hand cutting wood), theſe, and the like, are for that time privileged, and cannot be *diſtrained*.

Again, valuable things ſhall not be *diſtrained* for rent, which are for the benefit and maintenance of trades, and which, by conſequence, are for the commonwealth, and are by authority of the law there; as a horſe in a ſmith's ſhop; materials in the weaver's ſhop for making cloth; cloth, or garments, in the taylor's ſhop; ſacks of corn, or meal, in a mill, or a market; nor any thing *diſtrained* for damage-feaſant; for it is in *cuſtodia legis*.

Again, nothing ſhall be *diſtrained* for rent, which cannot be rendered again in as good a plight, as it was at the time of the *diſtreſs* taken; as ſheaves or ſhocks of corn cannot be *diſtrained* for rent, but for damage-feaſant they may.

Again, beaſts belonging to the plough ſhall not be *diſtrained*.

Laſtly, furnaces, caldrons, or the like, fixed to the freeholds, or doors, or windows of an houſe, or the like, cannot be *diſtrained*: when a *diſtreſs* is taken that has life in it, it muſt be brought into the common pound, or kept in an open place, where the owner may give it food.

DISTRIBUTION, the act of dividing a thing into ſeveral parts, in order to the diſpoſing each in its proper place. See DIVISION.

A dramatic poet ſhould have *diſtributed* his ſubject into acts and ſcenes, before he proceed to the verſification, &c. See ACT, &c. Orators *diſtribute* their harangues into exordium, narration, confirmation, &c.

The Jewiſh nation was *diſtributed* into 12 tribes.

The digeſt is *diſtributed* into 50 books.

The *diſtribution* of the food throughout all the parts of the body, is one of the greateſt wonders in nature.

Manual and *quotidian* DISTRIBUTIONS, denote certain ſmall ſums of money, appointed by the donors, or founders thereof, to be *diſtributed* to ſuch of the canons of a chapter as are actually preſent, and aſſiſtant at certain offices.

DISTRIBUTION, in rhetoric, is a kind of deſcription; or a figure whereby an orderly diviſion and enumeration is made of the principal qualities of a ſubject.

For example, He has underſtanding to ſee our faults, juſtice to reſtrain them, and authority to puniſh them. Their throat is an open ſepulcre; they flatter with their tongues; the poiſon of aſps is under their lips; their mouth is full of curſing, and lyes; and their feet are ſwift to ſhed blood.

DISTRIBUTION, in printing, the taking a form aſunder, ſeparating the letters, and diſpoſing them in the caſes again, each in its proper cell.

DISTRIBUTION, in architecture. DISTRIBUTION *of the plan*, denotes the dividing, and diſpenſing the ſeveral parts, and members, which compoſe the plan of a building.

DISTRIBUTION *of ornaments*, is an equal, orderly placing of the ornaments in any member, or compoſition of architecture. See ORNAMENT.

DISTRIBUTIVE, that *diſtributes*, from *dis*, aſunder; and *tribuere*, to give.

DISTRIBUTIVE *Juſtice*, is that whereby we give every perſon what belongs to him. See JUSTICE.

DISTRIBUTIVES, in grammar. See NUMERALS.

DISTRICT, the territory, or extent of juriſdiction, of a judge.

A judge, or officer, cannot act out of his own *diſtrict*. See JUDGE.

DISTRICT, in law, properly denotes the place wherein a man has the power of diſtraining; or, the circuit, or territory, wherein one may be compelled to appear.—Where we ſay, *hors de ſon fee*; others ſay, *extra diſtrictum ſuum*.

DISTRINGAS, a writ directed to the ſheriff, or other officer, commanding him to diſtrain one for a debt to the king; or for his appearance at a certain day. See DISTRESS.

DISVELOPED, in heraldry, is uſed much in the ſame ſenſe with diſplayed.—Thus colours, ſaid in an army to be flying, are, in heraldry, ſaid to be *diſveloped*.

DITCH, in fortification, called alſo *Foſs*, and *Moat*, a trench dug round the rampart, or wall of a fortified place, between the ſcarp, and counterſcarp.—See *Tab. Fortif. fig.* 21. *lit. h h h*, &c.

Some *ditches* are dry; others full of water: each whereof have their advantage.—The earth dug out of the *ditch* ſerves to form the rampart.

The *Ditch* ſhould be of ſuch breadth as that the talleſt tree may not reach over it, *i. e.* from 15 to 20 fathoms; though the rule others give for the dimenſions of the *ditch*, is, that it afford earth enough to build the rampart of due magnitude. The ſpace between the rampart and *ditch*, being about 6 feet, is called the *berm*, or *liſt*.

DITHYRAMBIC, ſomething that relates to the *dithyrambus*. We ſay, a *dithyrambic* verſe, *dithyrambic* poet, *dithyrambic* heat, &c.—A compound *dithyrambic* word, Mr. Dacier obſerves, has ſometimes its beauty and force. Some moderns call compoſitions in the taſte of the ode, only not diſtinguiſhed into ſtrophes, and conſiſting of all kinds of verſe indifferently, *dithyrambic* odes.

Dithyrambic poetry owes its birth to Greece, and the tranſports of wine. It ſavours ſtrongly of its original; as admitting of no rules, but the ſallies of a fiery imagination. And yet art is not quite excluded; but delicately applied, to guide and reſtrain the *dithyrambic* impetuoſity, and only indulge it in flights that are pleaſing. In effect, what our poets ſay of the ode, is more true of the *dithyrambic*, than of the ode, that its diſorder is an effect of art.

DITHYRAMBUS, ΔΙΘΥΡΑΜΒΟΣ, in the antient poetry, a hymn in honour of Bacchus, full of tranſport, and poetical rage.

The meaſure, which is what diſtinguiſhes this kind of poetry, is ſaid to have been invented by *Dithyrambus*, a Theban; but Pindar attributes it to the Corinthians; and the modern etymologiſts furniſh us with another origin of the word.

In effect, the verſe might be called thus from the god it was conſecrated to, who himſelf was named *Dithyrambus*; either on account of his having been brought twice into the world, according to the fable of Semele and Jupiter, or by reaſon of his having triumphed twice: from δις, twice; and θριαμβος, triumph. Be this as it will, the antients, we are told by Ariſtotle and Horace, gave the appellation *dithyrambus* to thoſe verſes wherein none of the common rules or meaſures were obſerved; much like thoſe called by the French *vers libres*, by the Italians *verſi ſciolti*, and by the modern Greeks *politici*, a name they give to proſe, which theſe verſes reſemble more than poetry.

We have now no remains of the *dithyrambi* of the antient poets, ſo that we cannot ſay preciſely what their meaſure was: all we know is, that it was very bold, and irregular. The poets not only took the liberty to forge new words for the purpoſe, but they made double, and compound words, which contributed very much to the magnificence of the *dithyrambus*.

Horace has ſometimes imitated them. Dacier, Fa. Commire, and ſome other modern writers, have compoſed Latin pieces of all kinds of verſe indifferently, according as the ſubject and words preſented themſelves, without any order, or diſtribution into ſtrophes, and call them *dithyrambi*. See PINDARIC.

DITONE *, DITONUM, in muſic, an interval comprehending two tones, a greater and a leſs. See INTERVAL, and TONE.

* The word is formed of δις, twice; and τονος, tone.

The ratio of the ſounds that form the *ditone* is of 4 to 5; and that of the *ſemi-ditone*, of 5 to 6. Fa. Parran makes the *ditone* the fourth kind of ſimple concords: others make it the firſt diſcord, dividing the *ditone* into 18 equal parts, or comma's, the nine on the acute ſide go to the greater tone. Salomon de Caux.

DITRIGLYPH, in architecture, the ſpace between two triglyphs. See TRIGLYPH.

DITTO *, in books of accounts, written contracted D^{o}. ſignifies the ſame, *viz.* as the preceding article.

* The word is corrupted from the Italian *detto*, the ſaid: as in our law-phraſe "the ſaid premiſes," meaning the ſame as were aforementioned.

DIVAL, in heraldry, the herb night-ſhade, uſed by ſuch as blazon with flowers and herbs inſtead of colours and metals, for ſable, or black. See SABLE.

DIVALIA *, in antiquity, a feaſt held among the antient Romans on the 21ſt of December, in honour of the goddeſs Angerona; whence it is alſo called *Angeronalia*.

* This feaſt was eſtabliſhed on occaſion of a diſeaſe which deſtroyed man and beaſt: that diſeaſe was a kind of ſquinancy, or inflammation and ſwelling of the throat, called in Latin *angina*; whence the appellation Angeronalia, as Macrobius relates, lib. I. Saturn. c. 12.

On the day of this feaſt, the pontifices performed ſacrifice in the temple of Voluptia, or the goddeſs of joy and pleaſure, who, ſome ſay, was the ſame with Angerona; and ſuppoſed to drive away all the ſorrows and chagrins of life.

DIVAN *, a council-chamber, or court wherein juſtice is adminiſtred, in the eaſtern nations, particularly among the Turks.

* *Divan* is an Arabic word, ſignifying the ſame with *ſafa* in the Turkiſh dialect.

The word is alſo uſed for a hall, in the private houſes of the orientals.—The cuſtom of China does not allow the receiving of viſits in the inner parts of the houſe, but only at the entry, in a *divan* contrived on purpoſe for ceremonies. Le Compte.

Travellers relate wonders of the ſilence and expedition of the *divans* of the eaſt.—We ſay, the grand vizir has held a *divan*; meaning, that he has aſſembled the grandees of the port, to deliberate of the affairs of the empire.

DIVAN-BEGHI, the appellation of one of the miniſters of ſtate in Perſia.

The *divan-beghi* is the ſuperintendant of juſtice: his place is the laſt of the ſix miniſters of the ſecond rank, who are all under the athemadauler, or firſt miniſter.

To the tribunal of the *divan-beghi* appeals lie from ſentences paſſed by the governors. He has a fixed ſtipend, or appointment, of 50000 crowns, that he may render juſtice *gratis.* All the ſerjeants, uſhers, *&c.* of the court, are in the ſervice of the *divan-beghi*. He takes cognizance of the criminal cauſes of the chams, governors, and other great lords of Perſia, when accuſed of any fault, and receives appeals from the daruga.

There are *divan-beghi's* not only at court, and in the capital, but alſo in the provinces, and other cities of the empire.

This officer is not confined by any other law, or rule, in the adminiſtration of juſtice, but the Alcoran; which alſo he interprets at pleaſure. He takes no cognizance of civil cauſes.

DIVERGENT, or DIVERGING *Lines*, in geometry, are ſuch whoſe diſtance is continually increaſing. See LINE.

Lines which converge one way, *diverge* the oppoſite way.

DIVERGENT, or DIVERGING, in optics, is particularly applied to rays, which, iſſuing from a radiant point, or having in their paſſage undergone a refraction, or reflexion, do continually recede farther from each other.

In which ſenſe the word is oppoſed to *convergent*, which implies the rays to approach each other; or to tend to a centre, where, being arrived, they interſect; and, if continued farther, become *diverging*.

Concave glaſſes render the rays *diverging*; and convex ones, converging.

Concave mirrors make the rays converge; and convex ones, *diverge*.

It is demonſtrated, in optics, that as the diameter of a pretty large pupil does not exceed $\frac{1}{5}$ of a digit; *diverging* rays, flowing from a radiant point, will enter the pupil, parallel, to all intents and purpoſes, if the diſtance of the radiant from the eye be 40000 feet. See LIGHT, and VISION.

DIVERGING *Hyperbola*, is one whoſe legs turn their convexities towards one another, and run towards quite contrary ways.

DIVERSION, in war, the act of attacking an enemy in one place, where he is weak, and unprovided, with deſign to make him call his forces from another place, where he was going to make an irruption, or is to be attacked with more force.

The Romans had no way to drive Hannibal out of Italy, but to make a *diverſion*, by attacking Carthage.

DIVERSION, in medicine, the turning of the courſe or flux of humours from one part to another, by proper applications.

DIVERSITY. This differs from diſtinction in this, that the latter is the work of the mind; but the former is in things themſelves, antecedent to any operation of the mind. For things that are ſeveral, are different; even though I do not conceive them. See DISTINCTION.

The *diverſity*, or difference of things, therefore, ariſes from their eſſential attributes.

DIVESTING, properly ſignifies undreſſing, or ſtripping off one's garment, in contradiſtinction to *inveſting*.

In law, it is uſed for the act of ſurrendering, or relinquiſhing one's effects. By a contract of donation, or ſale, the donor or ſeller, are ſaid to be diſſeiſed, and *diveſted* of their property in ſuch a commodity, and the donee, or purchaſer, becomes *inveſted* therewith.

A demiſe is a general *diveſtiture*, which the fathers and mothers make of all their effects, in favour of their children.

DIVIDEND, in arithmetic, the number given to be *divided*; or that whereof the *diviſion* is made.

The *dividend* muſt always be greater than the diviſor. The quotient always contains as many units, as the *dividend* contains the diviſor times.

DIVINATION, the act, or art, of foretelling future events. See PROPHECY, ENTHUSIASM, *&c.*

Divination is divided by the antients into *artificial*, and *natural*.

Artificial DIVINATION, is that, which proceeds by reaſoning upon certain external ſigns, conſidered as indications of futurity.

Natural DIVINATION, is that, which preſages things from a mere internal ſenſe, and perſuaſion of the mind, without any aſſiſtance of ſigns.

Natural Divination, again, is of two kinds; the one *native*, the other by *influx*.

The firſt is founded on this ſuppoſition, that the ſoul, collected within itſelf, and not diffuſed, or divided among the organs of the body, has, from its own nature and eſſence, ſome foreknowlege of future things: witneſs what is ſeen in dreams, ecſtaſies, the confines of death, *&c.*

The ſecond is founded on this, that the ſoul receives, after the manner of a mirror, ſome ſecundary illumination from the preſence of God, and other ſpirits.

Artificial divination is alſo of two kinds: the one arguing from *natural cauſes*: ſuch are the predictions of phyſicians about the events of diſeaſes, from the pulſe, urine, *&c.* ſuch alſo are thoſe of the politician, *O venalem urbem, & mox perituram, ſi emptorem inveneris!*

The ſecond proceeds from experiments, and obſervations arbitrarily inſtituted; and is moſtly ſuperſtitious.

Infinite are the ſyſtems of *divination* reducible to this head: by birds, the entrails of beaſts, dreams, lines of the hand, points marked at random, numbers, names, the motion of a ſieve, the air, fire, the ſortes Prænestinæ, Virgilianæ, and Homericæ; with numerous others, the principal ſpecies whereof, and their names, are:

Pſychomancy, or Sciomancy, which conſiſts in calling up the ſouls, or ſhades of the deceaſed, to learn of them ſomething required. Dactyliomancy, performed by means of one, or more rings. Hydromancy, performed with ſea-water. Pegomancy, with ſpring-water. Ornithomancy, or divining by the flight of birds, which was the buſineſs of the augurs. Clidomancy, performed with keys. Coſkinomancy, with a riddle, or ſieve. Cledoniſm, by words, or voice. Extiſpicina, by the entrails of victims. Alphitomancy, or Aleuromancy, by flour. Keraunoſcopia, by the conſideration of thunder. Capnomancy, by ſmoke. Alectryomancy, by cocks. Pyromancy, by fire. Lithomancy, by ſtones. Eychnomancy, by lamps. Necromancy, by the dead, or their bones, &c. Oneirocritica, by dreams. Ooſcopy, by eggs. Lecanomancy, by a baſin of water. Gaſtromancy, by the belly, or by phials. Palpitation, ſaliſ-ſatio, παλμός, by the pulſation, or motion of ſome member. Axinomancy, by a hatchet, or cleaver. Catoptromancy, or Cryſtallomancy, by a mirror. Chiromancy, by the lines of the hand. Geomancy, by the earth. Ceromancy, by figures of wax. Arithmomancy, by numbers. Belomancy, by arrows. Sycomancy, &c. all deſcribed by Cardan, in his IVth book, *de Sapientia*; and under their proper articles in this *Dictionary*.

All theſe kinds of *divination* have been condemned by the fathers, and councils, as ſuppoſing ſome compact with the devil. Fludd has ſeveral treatiſes on the different ſpecies of *divination*: and Cicero has two books of the *divination* of the antients, wherein he refutes the whole ſyſtem.

In Holy Scripture we find mention made of nine different kinds of *divination*: the firſt performed by the inſpection of planets, ſtars, and clouds: it is ſuppoſed to be the practiſers of this, whom Moſes calls מעונן *Meonen*, of אנן *anan*, cloud, Deuter. c. XVIII. v. 10. 2. Thoſe, whom the prophet calls in the ſame place מנחש *Menacheſeh*, which the Vulgate, and generality of interpreters, render *augur*. 3. Thoſe, who in the ſame place are called מכשף *Mecaſheph*, which the Septuagint and Vulgate tranſlate, *a man given to ill practices*. 4. Such authors, whom Moſes in the ſame chapter, v. 11. calls חובר *Hhober*. 5. Thoſe, who conſult the ſpirits called *Python*; or, as Moſes expreſſes it in the ſame book, אשל אוב, thoſe who aſk queſtions of Python. 6. Witches, or magicians, whom Moſes calls ידעני *Judeoni*. 7. Thoſe, who conſult the dead, *necromancers*. 8. The prophet Hoſea, c. IV. 12. mentions ſuch as conſult ſtaves, שאל מקלי, which kind of *divination* may be called *rhabdomancy*. 9. The laſt kind of *divination* mentioned in Scripture is *hepatoſcopy*, or the conſideration of the liver. See RHABDOMANCY, &c.

IVINE, ſomething that comes from, or relates to, God. See GOD.

The word is alſo uſed figuratively, for any thing that is excellent, extraordinary, and that ſeems to go beyond the power of nature, and the capacity of mankind.

In which ſenſe, the compaſs, teleſcope, clocks, &c. are ſaid to be *divine* inventions: Plato is called the *divine author*, the *divine Plato*; and the ſame appellation is given to Seneca: Hippocrates is called *the divine old man*, divinus ſenex, &c. The Arabs give the appellation *divine*, אלהיון *elahioun*, to their ſecond ſect of philoſophers, * conſiſting of ſuch as admit a firſt mover of all things, a ſpiritual ſubſtance free from all kind of matter, in a word, a God. By this name they diſtinguiſh them from their firſt ſect, whom they call *deherioun*, or *thabaioun*, i. e. worldlings, and naturaliſts, as admitting of no principles beyond the material world, and nature.

* The word אלהיון *elahioun* is derived from אלא *Alla*, God: ſo that the *elahioun* are the *divines*, or theologues, as Caſtellus renders it; or, ſuch as own a God.

VING, the art, or act of deſcending under water, to conſiderable depths, and abiding there a competent time.

he uſes of *diving* are very conſiderable, particularly in the ſhing for pearls, corals, ſponges, &c. See PEARL-*fiſhing*.

here have been divers methods propoſed, and engines contrived, to render the buſineſs of *diving* more ſafe and eaſy.

he great point in all theſe is to furniſh the *diver* with freſh r, without which, he muſt either make but a ſhort ſtay, or eriſh.

hoſe who *dive* for ſponges in the Mediterranean, help themlves by carrying down ſponges dipt in oil in their mouths. ut conſidering the ſmall quantity of air that can be contained the pores of a ſponge, and how much that little will be ntracted by the preſſure of the incumbent air, ſuch a ſupply nnot long ſubſiſt the *diver*. For it is found by experiment, at a gallon of air included in a bladder, and by a pipe reciocally inſpired and expired by the lungs, becomes unfit for ſpiration in little more than one minute of time. For ough its elaſticity be but little altered in paſſing the lungs, t it loſes its vivifying ſpirit, and is rendered effete. . I. Nº 46. CHAMB.

In effect, a naked *diver*, Dr. Halley aſſures us, without a ſponge, cannot remain above two minutes incloſed in water; nor much longer with one, without ſuffocating; nor, without long practice, near ſo long; ordinary perſons beginning to be ſuffocated in about half a minute. Beſides, that if the depth be conſiderable, the preſſure of the water in the veſſels makes the eyes blood-ſhotten, and frequently occaſions a ſpitting of blood.

Hence, where there has been occaſion to continue long at the bottom, ſome have contrived double flexible pipes, to circulate air down into a cavity incloſing the *diver*, as with armour, both to furniſh air, and to bear off the preſſure of the water, and give leave to his breaſt to dilate upon inſpiration; the freſh air being forced down one of the pipes with bellows, and returning by the other of them, not unlike to an artery, and vein.

But this method is impracticable when the depth ſurpaſſes three fathoms; the water embracing the bare limbs ſo cloſely, as to obſtruct the circulation of the blood in them; and withal preſſing ſo ſtrongly on all the junctures where the armour is made tight with leather; that if there be the leaſt defect in any of them, the water ruſhes in, and inſtantly fills the whole engine, to the great danger of the *diver*'s life.

The DIVING-*bell* is a machine contrived to remedy all theſe inconveniences. In this the *diver* is ſafely conveyed to any reaſonable depth, and may ſtay more or leſs time under the water, as the bell is greater or leſs.

It is moſt conveniently made in form of a truncated cone, the ſmalleſt baſe being cloſed, and the larger open. It is to be poiſed with lead, and ſo ſuſpended, that it may ſink full of air, with its open baſis downward, and as near as may be in a ſituation parallel to the horizon, ſo as to cloſe with the ſurface of the water all at once.

Under this covercle the *diver* ſitting, ſinks down with the included air to the depth deſired; and if the cavity of the veſſel can contain a ton of water, a ſingle man may remain a full hour, without much inconvenience, at five or ſix fathoms deep.

But the lower you go, ſtill the more the included air contracts itſelf, according to the weight of the water that compreſſes it; ſo as at 33 feet deep, the bell becomes half full of water; the preſſure of the incumbent water being then equal to that of the atmoſphere: and at all other depths the ſpace occupied by the compreſſed air in the upper part of the bell will be to the under part of its capacity filled with water, as 33 feet to the depth of the ſurface of the water in the bell below the common ſurface thereof. And this condenſed air, being taken in with the breath, ſoon inſinuates itſelf into all the cavities of the body, and has no ill effect, provided the bell be permitted to deſcend ſo ſlowly as to allow time for that purpoſe.

One inconvenience that attends it, is found in the ears, within which there are cavities which open only outwards, and that by pores ſo ſmall, as not to give admiſſion even to the air itſelf, unleſs they be dilated and diſtended by a conſiderable force. Hence, on the firſt deſcent of the bell, a preſſure begins to be felt on each ear, which, by degrees, grows painful, till the force overcoming the obſtacle, what conſtringes theſe pores, yields to the preſſure, and letting ſome condenſed air ſlip in, preſently eaſe enſues. The bell deſcending lower, the pain is renewed, and afterwards it is again eaſed in the ſame manner.

But the greateſt inconvenience of this engine is, that the water, entering it, contracts the bulk of air into ſo ſmall a compaſs, that it ſoon heats, and becomes unfit for reſpiration: ſo that there is a neceſſity for its being drawn up to recruit it; beſides the uncomfortable abiding of the *diver*, who is almoſt covered with water.

To obviate the difficulties of the *diving-bell*, Dr. Halley, to whom we owe the preceding account, contrived ſome further apparatus, whereby not only to recruit and refreſh the air from time to time, but alſo to keep the water wholly out of it at any depth: which he effected after the following manner:

His *diving-bell* was of wood about ſixty cubic feet in its concavity, coated externally with lead ſo heavy, that it would ſink empty; a particular weight being diſtributed about its bottom, to make it deſcend perpendicularly, and no otherwiſe. In the top was fixed a glaſs like a window, to let in light from above; with a cock, to let out the hot air: and, below, about a yard under the *bell*, was a ſtage ſuſpended from it by three ropes, each charged with an hundred weight, to keep it ſteady.

To ſupply air to this *bell* when under water, he had a couple of barrels, holding 36 gallons apiece, caſed with lead, ſo as to ſink empty, each having a bung-hole at bottom, to let in the water as they deſcended, and let it out again as they were drawn up again. In the top of the barrels was another hole, to which was fixed a leathern pipe, or hoſe, long enough to hang below the bung-hole; being kept down by a weight appended. So that the air driven to the upper part of the barrel by the encroachment of the water, in the deſcent, could not eſcape up this pipe, unleſs the lower end were lifted up.

Theſe air-barrels were fitted with tackle, to make them riſe and fall alternately, like two buckets; being directed in their deſcent by lines faſtened to the under edge of the *bell*: ſo that they came readily to the hand of a man placed on the ſtage, to receive them; and who taking up the ends of the pipes, as ſoon as they came above the ſurface of the water in the barrels, all the air included in the upper part thereof was blown forcibly into the *bell*; the water taking its place.

One barrel thus received, and emptied; upon a ſignal given, it was drawn up, and at the ſame time the other let down: by which alternate ſucceſſion freſh air was furniſhed ſo plentifully, that the learned doctor himſelf was one of five, who were all together in 9 or 10 fathoms deep of water for above an hour and a half, without the leaſt inconvenience; the whole cavity of the *bell* being perfectly dry.

All the precaution he obſerved, was, to be let down gradually about 12 feet at a time, and then to ſtop, and drive out the water that had entered, by taking in four or five barrels of freſh air, before he deſcended farther. And, being arrived at the depth intended, he let out as much of the hot air that had been breathed, as each barrel would replace with cold, by means of the cock at the top of the *bell*, through whoſe aperture, though very ſmall, the air would ruſh with ſo much violence, as to make the ſurface of the ſea boil.

Thus, he found, any thing could be done that was required to be done underneath. And, by taking off the ſtage, he could, for a ſpace as wide as the circuit of the *bell*, lay the bottom of the ſea ſo far dry as not to be over-ſhoes therein. Beſides, that by the glaſs-window ſo much light was tranſmitted, that, when the ſea was clear, and eſpecially when the ſun ſhone, he could ſee perfectly well to write, or read, much more to faſten, or lay hold of any thing under him that was to be taken up. And by the return of the air-barrels he often ſent up orders written with an iron pen on a plate of lead, directing how he would be moved from place to place.

At other times, when the water was troubled and thick, it would be as dark as night below; but in ſuch caſes he was able to keep a candle burning in the *bell*.

The ſame author intimates, that by an additional contrivance, he has found it practicable for a *diver* to go out of the *bell* to a good diſtance from it; the air being conveyed to him in a continued ſtream by ſmall flexible pipes, which ſerve him as a clue to direct him back again to the *bell*. So that there ſeems little farther wanting to the perfection of *diving*.

Yet, the famous Corn. Drebell had an expedient in ſome reſpects ſuperior even to this; if what is related of it be true. He contrived not only a veſſel to be rowed under-water, but alſo a liquor to be carried in the veſſel, which ſupplied the place of freſh air.

The veſſel was made for king James I. carrying twelve rowers, beſide the paſſengers. It was tried in the river Thames, and one of the perſons in that ſubmarine navigation, then living, told it one from whom Mr. Boyle had the relation.

As to the liquor, Mr. Boyle aſſures us, he diſcovered by a phyſician, who married Drebell's Daughter, that it was uſed from time to time, when the air in that ſubmarine boat was clogged by the breath of the company, and rendered unfit for reſpiration: at which time, by unſtopping the veſſel full of this liquor, he could ſpeedily reſtore to the troubled air ſuch a proportion of vital parts, as would make it ſerve again a good while. The ſecret of this liquor Drebell would never diſcloſe to above one perſon, who himſelf aſſured Mr. Boyle what it was. Boyl. *Exp. Phyſ. Mech. of the ſpring of the air.*

DIVINITY, the quality, nature, and eſſence, of God.

Divinity and humanity are joined together in Jeſus Chriſt. It is falſly, that the atheiſts hold the notion of a *divinity* to be a political invention of the antient legiſlators, to ſecure and enforce the obſervation of their laws: on the contrary, it is certain, the legiſlators made uſe of that opinion, which they found already impreſſed on the minds of the people.

The *heathen divinities* may be reduced to three claſſes: the firſt, *theological*, repreſenting the *divine* nature under divers attributes; thus Jupiter denotes the abſolute power of God, Juno his juſtice, *&c.*

The ſecond claſs of *divinities* are *phyſical*; thus Æolus is that power in nature, whereby vapours and exhalations are collected to form winds, *&c.*

The laſt are *moral divinities.* Thus the furies are only the ſecret reproaches and ſtings of conſcience.

DIVINITY is alſo uſed in the ſame ſenſe with theology.

DIVISIBILITY, a paſſive power, or property in quantity, whereby it becomes ſeparable into parts; either actually, or at leaſt mentally.

The ſchoolmen define *diviſibility*, *capacitas coextenſionis cum pluribus*; a capacity of being coextended with ſeveral things: thus, a ſtaff 4 feet long is *diviſible*, becauſe it may be coextended with 4 feet, or 48 inches, *&c.*

This, the Peripatetics and Carteſians univerſally hold an affection, or property of all matter, or body: the Carteſians, as holding the eſſence of matter to conſiſt in extenſion; for every part, or corpuſcle of the body being extended, has parts without parts, and conſequently is *diviſible.*

The Epicureans, again, hold *diviſibility* to agree to every phyſical continuum, as, without parts adjacent to parts, there can be no continuity; and where-ever there are parts ſo adjacent, there muſt be *diviſibility.* But they deny, that this affection agrees to all bodies: for the primary corpuſcles, or atoms, they hold perfectly inſecable, and indiviſible.

The principal argument they allege, is, that from the *diviſibility* of all body, and of every aſſignable particle of body, even after any repeated number of diviſions, it follows, that the ſmalleſt corpuſcle is infinitely *diviſible*, which with them is an abſurdity. For a body can only be divided into ſuch parts as it actually contains. But to ſuppoſe infinite parts in the ſmalleſt corpuſcle, ſay they, is to ſuppoſe it infinitely extended: for infinite parts placed externally to each other, as the parts of bodies doubtleſs are, muſt make an infinite extenſion.

They add, that there is a world of difference between the *diviſibility* of phyſical, and mathematical quantities. For every mathematical quantity, or dimenſion, they grant, may be increaſed and diminiſhed infinitely: but phyſical quantity, neither the one nor the other.

An artiſt, dividing a continued body, arrives at certain minute parts, beyond which he cannot go; theſe we may call *minima artis.* In like manner, nature, which may begin where art ends, will find bounds; which we may call *minima naturæ*: and God, whoſe power is infinite, beginning where nature ends, may ſubdivide the *minima naturæ*; but he will at length come at certain parts, to which there being no other parts continuous, they cannot be taken away. Theſe minute parts are ATOMS.

All we can ſay to the point, is, that on the one hand it is certain, every extended corpuſcle muſt have two ſides, and conſequently is *diviſible*; for, if it had not two ſides, it were not extended; and, if it had no extenſion, an aſſemblage of divers ſuch corpuſcles would not compoſe a body. And on the other hand, the infinite *diviſibility* ſuppoſes an infinity of parts in the minuteſt corpuſcle: whence it follows, that there is no body, how ſmall ſoever, but may furniſh as many ſurfaces, or parts, as the whole globe of the earth can; nay, and infinitely more; which, to ſay no worſe, is a violent paradox.

The infinite *diviſibility* of mathematical quantity is thus proved, and illuſtrated by the mathematicians: ſuppoſe a line AD (*Tab. Geometry, Fig.* 35.) perpendicular to BF; another, as GH, at a ſmall diſtance from A, alſo perpendicular to the ſame line; with the centres C, C, C, *&c.* and diſtances CA, CA, *&c.* deſcribe circles cutting the line GH in the points e, e, *&c.* Now, the greater the radius AC is, the leſs is the part eG: but the radius may be augmented *in infinitum*, and therefore the part eG may be diminiſhed in the ſame manner; and yet it can never be reduced to nothing; becauſe the circle can never coincide with the right line BF. Conſequently, the parts of any magnitude may be diminiſhed *in infinitum.*

The chief objections againſt this doctrine are: That an infinite cannot be contained by a finite; and that it follows from a *diviſibility in infinitum*, either that all bodies are equal, or, that one infinite is greater than another:—to which it is anſwered, that to an infinite may be attributed the properties of a finite and determined quantity: and who has ever proved, that there could not be an infinite number of parts infinitely ſmall in a finite quantity; or that all infinites are equal? The contrary is demonſtrated by mathematicians in innumerable inſtances. We are not here contending for the poſſibility of an actual diviſion *in infinitum*: we only aſſert, that however ſmall a body is, it may be ſtill farther divided; which we imagine may be called a diviſion *in infinitum*, becauſe what has no limits, is called *infinite.*

It is true, that there are no ſuch things as parts infinitel ſmall; yet the ſubtilty of the particles of ſeveral bodies i ſuch, that they very much ſurpaſs our conception; and ther are innumerable inſtances in nature of ſuch parts actuall ſeparated from one another.

Mr. Boyle gives us ſeveral inſtances of this. He ſpeaks o a ſilken thread 300 yards long, that weighed but two grai and an half. He meaſured leaf-gold, and found by weighin it, that 50 ſquare inches weighed but one grain: if th length of an inch be divided into 200 parts, the eye ma diſtinguiſh them all; therefore there are in one ſquare inc 40000 viſible parts; and in one grain of there are 20000 of ſuch parts; which viſible parts no one will deny to b farther *diviſible.*

Again, a whole ounce of ſilver may be gilt with eight gra of gold, which may be afterwards drawn into a wire thirt thouſand feet long.

In odoriferous bodies we can ſtill perceive a greater ſubtilty parts, and even ſuch as are actually ſeparated from one a other; ſeveral bodies ſcarce loſe any ſenſible part of the weight in a long time, and yet continually fill a very la ſpace with odoriferous particles.

By help of microſcopes, ſuch objects as would otherwiſe eſcape our ſight, appear very large: there are ſome ſmall animals ſcarce viſible with the beſt microſcopes; and yet theſe have all the parts neceſſary for life, as blood, and other liquors: how wonderful muſt the ſubtilty of the parts be, which make up ſuch fluids! whence is deducible the following theorem:

Any particle of matter, how ſmall ſoever, and any finite ſpace, how large ſoever, being given; it is poſſible for that ſmall ſand, or particle of matter, to be diffuſed through all that great ſpace, and to fill it in ſuch manner, as that there ſhall be no pore in it, whoſe diameter ſhall exceed any given line; as is demonſtrated by Dr. Keil. *Introduct. ad Ver. Phyſ.*

DIVISION, the act of ſeparating a whole into the parts it contains.

If the whole be compoſed of parts really diſtinct, called *integral parts*, the *diviſion* made thereof is properly called *partition*: as when a houſe is divided into its apartments.

If the whole be compoſed of parts, called *ſubjective*; that is, if the whole be only one common term, the ſubjects compriſed in the extent whereof are the parts, the *diviſion* thereof is what we properly call *diviſion*: ſuch is the *diviſion* of a genus into its ſpecies, *&c.*

DIVISION in phyſics, or DIVISIO *continui*, is the ſeparation of the parts of a quantity; whereby, what before was one, is now reduced into ſeveral. See CONTINUITY.

This *diviſion* is effected by means of motion, without which there can be no ſeparation of any continuum, or even contiguum.

This motion is performed diverſe ways, by fraction, ſciſſion, ſection, fiſſion, reſolution, dilution, maceration, diſperſion, effuſion, diſtraction, *&c.*

DIVISION, in logic, is the ſeparating any thing into diverſe parts, or idea's. See DISTRIBUTION.

The ſchool-men define it a diſcourſe, explaining a thing by its parts: in which it approaches near to the nature of a definition, whoſe character is to define a thing by its parts.

Diviſion, we have ſaid, is a diſtribution of a whole, *&c.* But there are two ſorts of wholes, as above expreſſed.

The firſt is what conſiſts of integral parts; as the human body, which contains diverſe members.

The ſecond is properly no other than an abſtract idea common to more things than one, as the univerſals: or a compound idea comprehending the ſubſtance, and its accidents, or at leaſt moſt of its accidents.

The whole admits of a triple *diviſion*. 1°, When the genus, or kind, is divided by its ſpecies, or differences; as when ſubſtance is *divided* into body and ſpirit; or into extended, and thinking.

2°, When any thing is *divided* into ſeveral claſſes, by oppoſite accidents; as when the ſtars are *divided* into thoſe which ſhine by their own light, and thoſe that only reflect a borrowed light.

3°, When the accidents themſelves are *divided* according to the ſubjects in which they inhere; as when goods are *divided* into thoſe of the body, the mind, and fortune.

The laws of *diviſion* are, 1. That it be full, and adequate, that is, that the members of the *diviſion* intirely exhauſt the whole thing *divided*: as when all numbers are *divided* into equal, and unequal.

2. That the members of the *diviſion* be oppoſite; as equal, and unequal; corporeal, and not corporeal; extended, and thinking.

3. That one member of the *diviſion* be not contained in another, ſo as the other may be affirmed of it. Though, in other reſpects, it might be included without any fault in the *diviſion*: thus extenſion, geometrically conſidered, may be *divided* into a line, ſurface, and ſolid: though the line be included in the ſurface, and the ſurface in the ſolid.

4. The *diviſion* not to be made into too many, or too general parts. Laſtly, the members, unleſs the ſubject require it, not to be too unequal; as if the univerſe were *divided* into heaven, and earth.

DIVISION *of a word*, is a diſcourſe explaining the latitude, or comprehenſion of a word: the latitude, when the word is univerſal; as when the genus is *divided* into ſpecies, and differences: the comprehenſion, when the word is ambiguous, as *taurus*, bull; which ſometimes denotes a conſtellation, ſometimes a beaſt, and ſometimes a mountain.

DIVISION *of a mode*, divides a quality into its degrees. Philoſophers, after the phyſicians, ſuppoſe eight degrees of every quality: hence when a quality is ſaid to be in the 8th degree, it marks, that it can be no further intended, or heightened.

DIVISION, in arithmetic, is the laſt of the four great rules, being that whereby we find how often a leſs quantity is contained in a greater; and the overplus.

Diviſion, in reality, is only a compendious method of ſubtraction; its effect being to take a leſs number from another greater, as often as poſſible; that is, as oft as it is contained therein. There are, therefore, three numbers concerned in *diviſion*: 1. That given to be divided, called the *dividend*. 2. That whereby the dividend is to be divided, called the *diviſor*. 3. That which expreſſes how often the diviſor is contained in the dividend; or the number reſulting from the *diviſion* of the dividend by the diviſor, called the *quotient*.

There are diverſe ways of performing *diviſion*, one called the *Engliſh*, another the *Flemiſh*, another the *Italian*, another the *Spaniſh*, another the *German*, and another the *Indian* way, all equally juſt, as finding the quotient with the ſame certainty, and only differing in the manner of arranging, and diſpoſing the numbers.

We have likewiſe *diviſion* in integers; *diviſion* in fractions; and *diviſion* in ſpecies, or algebra.

Diviſion is performed by ſeeking how often the diviſor is contained in the dividend; and when the latter conſiſts of a greater number of figures than the former, the dividend muſt be taken into parts, beginning from the left, and proceeding to the right, and ſeeking how often the diviſor is found in each of thoſe parts.

For example, it is required to *divide* 6759 by 3: I firſt ſeek how oft 3 is contained in 6, *viz.* twice; then, how oft in 7, which is likewiſe twice, with one remaining. This 1, therefore, is joined to the next figure 5, which makes 15, and I ſeek how oft 3 in 15; and laſtly, how oft 3 in 9. All the numbers expreſſing how oft 3 is contained in each of thoſe parts, I write down according to the order of the parts of the dividend, that is, from left to right, and ſeparate them from the dividend itſelf, by a line, thus.

Diviſor. Dividend. Quotient.
3) 6759 (2253

It appears, therefore, that 3 is contained 2253 times in 6759; or that 6759 being divided into 3, each part will be 2253. If there be any remainder, that is, if the diviſor repeated a certain number of times is not equal to the dividend, what remains is wrote over the diviſor fraction-wiſe. Thus, if inſtead of 6759 the dividend were only 6758, the quotient will be the ſame as in the former caſe, except for the laſt figure 8; for 3 being only contained twice in 8, the laſt number in the quotient will be 2; and as twice three is only 6, there remains 2 of the dividend; which I write after the quotient, with the diviſor underneath it, and a line to ſeparate the two, thus,

$$3)\ 6758\ (2252\tfrac{2}{3}$$

Proof of DIVISION.

Diviſion is proved by multiplying the quotieut by the diviſor, or the diviſor by the quotient: and adding what remains of the *diviſion*, if there be any thing. If the ſum be found equal to the dividend, the operation is juſt, otherwiſe there is a miſtake.

DIVISION	*in Decimal Fractions.*	See	DECIMAL.
	in Vulgar Fractions.		FRACTION.
	of Proportion.		PROPORTION.

DIVISION, in ſpecies, or algebra, is performed by reducing the dividend and diviſor into the form of a fraction: this fraction being the quotient.

Thus, if ab were to be divided by cd, it muſt be placed thus, $\frac{ab}{cd}$, and that fraction is the quotient: though others chooſe to write it thus, $cd)\ ab$, or $cd : ab$, or $ab \div cd$, which laſt mark ÷ is the moſt common character for *diviſion*.

To perform the work of *diviſion* algebraically, theſe rules are to be obſerved: 1. When the dividend is equal to the diviſor, the quotient is unity, and muſt be placed in the quotient, becauſe every thing contains itſelf once.

2. When the quotient is expreſſed fraction-wiſe (as in ſimple *diviſion*) if the ſame letters are found equally repeated in each member of the numerator, and denominator; caſt away thoſe letters, and the remainder is the quotient: thus, $\frac{ab}{b}(a$, and $\frac{abc}{ab}(c$, &c.

3. When there are any co-efficients, divide them as in common arithmetic, and to the quotients annex the quantities expreſſed by letters: thus, $\frac{360\,ab}{24\,b}(=15a$.

4. The general way of *diviſion* of compound quantities, is like the ordinary way in common arithmetic, reſpect being had to the rules of algebraic addition, ſubtraction, and multiplication; as alſo that like ſigns give +, and unlike — in the quotient: taking care to divide every part of the dividend by its correſponding diviſor (that is, that whoſe letters ſhew it of the ſame kind with the other), to prevent a fraction, which would otherwiſe ariſe: thus,

$$\begin{array}{l} a+b)\ aa+ab-ca-cb\ (a-c \\ \hline \quad aa+ab \\ \quad 0 \qquad 0-ca-cb \\ \qquad\quad\ -ca-cb \\ \hline \qquad\qquad 0 \end{array}$$

That the ſame reaſon for like ſigns giving a poſitive, and unlike a negative quotient, does hold in *diviſion*, as in multiplication,

plication, is clear from conſidering the nature of *diviſion* (which is only reſolving the thing into its parts); conſequently, ſince every dividend is nothing elſe but the product of the diviſor, and quotient multiplied by each other, the quotient muſt conſiſt of ſuch ſigns, which could produce the dividend; therefore, if the dividend be divided by a quantity, that has a ſimilar ſign with it, the quotient muſt be poſitive; if by a quantity having a diſſimilar ſign, the quotient muſt be negative.—It may be a general rule in compound *diviſion* in algebra, always to place ſuch a letter in the quotient, as will, when multiplied into the diviſor, produce the dividend; for that is always a rectangle under the diviſor, and the quotient: as for example,

$$\begin{array}{l} zz-16)\; z^6-8z^4-124\,zz-64\;(z^4+8zz+4 \\ \qquad\quad z^6-16z^4 \\ \hline \qquad\qquad 8z^4-124\,zz \\ \qquad\qquad 8z^4-128\,zz \\ \hline \qquad\qquad\qquad 4\,zz-64 \\ \qquad\qquad\qquad 4\,zz-64 \\ \hline \qquad\qquad\qquad\quad 0 \end{array}$$

Division *by* $\left\{\begin{array}{l}\textit{Nepair's Bones.}\\ \textit{Logarithms.}\end{array}\right\}$ See $\left\{\begin{array}{l}\text{NEPAIR's }\textit{Bones.}\\ \text{LOGARITHM.}\end{array}\right.$

Division, in lines, or *geometrical* **Division**, is alſo called *application*; the deſign of which, when it is employed about the conſtruction of plain problems, is this; *viz.* a rectangle being given, as alſo a right line; to find another right line, the rectangle contained under which, with the right line given, ſhall be equal to the rectangle firſt given:—Such effection, or conſtruction, is called the *application* of a given rectangle to a right line given; and the right line ariſing by ſuch application, is called the *geometrical quotient*.

This is found by the rule of three, by ſaying, as the line given is to one ſide of the rectangle, ſo is the other ſide, to the line ſought.

Not unlike to which is Des Cartes's way of working *diviſion* in lines, by ſcale, and compaſs: thus, ſuppoſe ac (=6) were to be divided by ad (=3) *Tab. Geometry*, *fig.* 17. make any angle at pleaſure, and therein ſet off firſt ad (=3) the diviſor, and then on the ſame leg, au = to unity: then on the other leg of the angle ſet ac (=6) the dividend, and join dc, and to it through u, draw ub parallel to dc, which ſhall cut off ab the quotient ſought; for as $ad : au :: ac : ab$; that is, as the diviſor: is to unity:: ſo is the dividend: to the quotient; on which proportion depends all *diviſion*.

Division, in muſic, imports the dividing the interval of an octave into a number of leſſer intervals.

The 4th, and 5th, each of them, divide, or meaſure the octave perfectly, though differently. When the 5th is below, and ſerves as a baſs to the 4th, the *diviſion* is called *harmonical*; when the 4th is below, the *diviſion* is called *authentic*.

Divisions *of an army*, the ſeveral brigades into which it is cantoned. See BRIGADE.

Divisions *of a battalion*, the ſeveral parcels into which it is divided in marching: conſiſting generally of about 6 files each; led by the lieutenants and enſigns. See BATTALION.

Division, in the ſea-language, the third part of a naval army, or fleet; or of one of the ſquadrons thereof, under the command of ſome flag-officer. See SQUADRON.

Naval battles are uſually ranged in three lines, according to their three *diviſions*.

DIVISOR, the dividing number; or that which ſhews how many parts the dividend is to be divided into. See DIVISION.

DIVORCE, a breach, or diſſolution of the bond of marriage.

In our law *divorce* is of two kinds: the one, *a vinculo matrimonii*; which alone is properly *divorce*: the other, *a menſa & thoro*; a ſeparation from bed and board.

The woman divorced *a vinculo matrimonii*, receives all again that ſhe brought with her: the other has a ſuitable, ſeparate, maintenance allowed her out of her huſband's effects.

The firſt only happens through ſome eſſential impediment, as conſanguinity or affinity within the degrees forbidden, precontract, impotency, adultery, &c. of which impediments the canon-law allows fourteen, comprehended in theſe verſes:

Error, conditio, votum, cognatio, crimen,
Cultus, diſparitas, vis, ordo, ligamen, honeſtas,
Si ſis affinis, ſi forte coire nequibis,
Si parochi & duplicis deſit præſentia teſtis,
Raptave ſit mulier, nec parti reddita tutæ.

Divorce is a ſpiritual judgment, and, therefore is paſſed in the ſpiritual court. Under the old law, the woman *divorced* was to have of her huſband a writing, as St. Jerom and Joſephus teſtify, to this effect: *I promiſe, that hereafter I will lay no claim to thee*; which was called a *bill of divorce*.

Divorce was allowed of in great latitude both among the Pagans and Jews. At Rome, barrenneſs, age, diſeaſe, madneſs, and baniſhment, were the ordinary cauſes of *divorce*. Carvilius, 500, or 600 years after the building of Rome, was the firſt who put away his wife becauſe ſhe was barren. Juſtinian afterwards added impotence, a vow of chaſtity, and the profeſſion of a monaſtic life, as valid reaſons of *divorce*.

Among the Jews, uglineſs, old age, or ill humour in a wife, were ſufficient reaſons for giving her a bill of *Divorce*. Nay, even the man's own pleaſure, or his repenting of his match, were admitted as good reaſons.

It is generally held, that Jeſus Chriſt allowed of *divorce* in the caſe of adultery. But ſome take this for a miſtake; and maintain, that *divorce* is no-where permitted in the New Teſtament for adultery; but only a ſeparation. See Matth. xix. 9. Mark x. 11. Paul 1 Cor. vii. 27. See alſo the counci of Florence; at the end, after the queſtions propoſed to th Greeks. *Tertull. de Monogam.* c. 9. and 10. *Auguſtin. d Bono Conjugio, & de Adult. Conjug.* See alſo what we hav delivered under the article ADULTERY.

Pope Innocent I. in his decretal to Exuperius, declares ſuch as contract a new marriage after *divorce*, adulterers; as well as the perſons they marry withal. The occaſion of this decree was, that ſuch marriages were then allowed of by the Roman laws. There is an exception, however, in the caſe of marriage between two heathens, which the decrees allow to be diſſolved after the converſion of one of the parties. And St. Paul ſays the ſame, 1 Cor. vii. 15. Yet even i this caſe, 1. The marriage is not immediately diſſolved b the converſion of one of the parties, but they may ſtill liv together, and even on ſome occaſions they ought to do ſo. Nor is it even diſſolved by the ſeparation of the infide party; for if ſhe be afterwards converted, he is obliged t take back his wife: as Innocent himſelf decides it, L. IV. *Decret. de Divort. C. Gaudemus.* But the marriage is totally diſſolved by a ſecond marriage of the converted party with another perſon.

2. Though the party converted to the faith may, the minute of his converſion, legally ſeparate himſelf, and contract with another; a liberty the Chriſtian law allows him; as i juſtice he is not deemed to owe any thing to an infidel; yet charity frequently forbids ſuch *divorce* and ſeparation: as *e. gr.* if the infidel conſent to live with him, and do not mo leſt him in his religion; if his faith be not at all in danger; if there be any hopes of converting her; or of gaining th children; if the ſeparation would prove a ſcandal to th heathens, and render Chriſtianity odious, &c. See St. Pau 1 Cor. vii. 13, 14. St. Auguſtine L. I. *de Adult. Conjug. a Pollent.*

The 4th council of Toledo decrees, that in a country whe Chriſtianity is the prevailing religion, the infidel party mu be advertiſed to become Chriſtian; which if ſhe refuſe, th marriage is to be diſſolved.

The council of Trent prohibits *divorce* on any occaſion whatever. The papal diſpenſations, however, are a ſalvo for thi piece of rigour.

In England, *divorce* can only be had by conſent of parliament. Milton has an expreſs treatiſe of the doctrine and diſcipline of *divorce*, where he maintains, that *divorce* ough to be permitted for a mere incompatibility of humours.

DIURESIS *, ΔΙΟΥΡΗΣΙΣ, that ſeparation which is made o the urine by the kidneys.

* The word is formed from *δια*, *through*; and ȣρεω, *I ma water*.

DIURETICS, in medicine, are ſuch remedies as provok or promote the diſcharge of urine.

Such is water drank plentifully; white wine drank in a morning; alcali-ſalts of all kinds; ſea-ſalt, ſal-gemmæ, nitre, borax, alum, tartar, ſal-ammoniac, whey, ſour milk, lemon juice, &c.

Aqueous liquors are generally *diuretic*, eſpecially if mixe with ſalt, and drank cold. Fermented liquors are the lea *diuretic* of all; and the leſs ſo, as they are the fatter. Sharp thin ſour wines, rheniſh, &c. as alſo acid ſpirits of vinegar, ſalt, ſulphur, alum, vitriol, &c. aſparagus, bitter almonds, ſmallage, eryngium, eupatorium, ſaſſafras, &c. are all *diuretics*.

DIURNAL, in aſtronomy, ſomething relating to the day, in oppoſition to nocturnal, which regards the night.

Diurnal *arch*, is the arch, or number of degrees, tha the ſun, moon, or ſtars, deſcribe between their riſing, an ſetting.

Diurnal *circle*, is an immoveable circle, in which any ſtar or point in the ſurface of the mundane ſphere, moves by i *diurnal* motion.

Thus, if a right line be conceived to be continued from the centre of a ſtar, perpendicular to the axis of the world as far as the ſurface of the ſphere of the world; it wi deſcribe a *diurnal circle* thereon, in making one revolutio about its axis.

Diurnal *motion* of a planet is ſo many degrees and minutes &c. as any planet moves in 24 hours.

The **Diurnal** *motion* of the earth is its rotation round i axis, the ſpace whereof conſtitutes the natural day.

The reality of the *diurnal rotation* of the earth is now pa all diſpute.

Diurnal is alſo uſed in ſpeaking of what belongs to the nyct-hemeron, or natural day of 24 hours—In which ſenſe it ſtands oppoſed to annual, menſtrual, *&c.*

The *diurnal* phænomena of the heavenly bodies are ſolved from the *diurnal* revolution of the earth; that is, from the revolution of the earth round its own axis in 24 hours.—To illuſtrate this: ſuppoſe the circle PRTH (*Tab. Aſtronomy, Fig.* 2.), to denote the earth; C the centre of the earth, through which its axis is conceived to paſs, around which its *diurnal* revolution is performed: P denotes any place on the earth; the line EW the viſible horizon of the place; E the eaſt point of the ſaid horizon, W the weſt: the circle abcdef the circumference of the heavens; the circle S the ſun in the heavens; the ſemicircle PRT, the enlightened hemiſphere of the earth; or that half of it oppoſite to the ſun; and laſtly, the ſemicircle PHT the darkened hemiſphere of the earth.

Now, the earth ſuppoſed in this ſituation, and moving round its axis towards the ſun; it is evident, the place P of the earth will then juſt begin to be enlightened by the ſun; and ſo the ſun will appear there to be juſt riſing, or aſcending the horizon at E the eaſt point of it. The earth being moved round its own axis, ſo as the place P of the earth, which afore was under the point a in the heavens, is now under the point b; it is evident, the horizon of the ſaid place P will be now ſo ſituated, as that the ſun will appear to a ſpectator at P, as aſcended conſiderably above E, the eaſt end of the horizon. And while by the revolution of the earth round its axis, the place P paſſes from under the point b in the heavens, to the point c, the horizon of the place P will continually ſink lower and lower in reſpect of the ſun, and ſo the ſun will appear to aſcend higher and higher, till P is come under c, where the ſun will appear in its greateſt height above the horizon for that day; and ſo it will be noon, or mid-day, at the place P. The earth moving on, as the place P paſſes from under c to d, the weſt point of its horizon will aſcend higher and higher, and ſo the ſun will appear more and more to deſcend, as is repreſented by the horizon at the point of the earth under d. The place P being carried by the *diurnal* revolution of the earth from under d to under e, the ſun will then appear juſt in W, the weſt point of the horizon, and ſo will appear to be juſt ſetting. The place P being come under f, it will be then midnight there. Laſtly, the place P being come round again under a, it will be there ſun-riſing again. The ſame holds good as to any other of the celeſtial lights, and the earth, as is obvious from the figure: the circle repreſenting the ſun being taken to denote any other ſtar, planet, *&c.*

It remains to obſerve, that whereas, by the *diurnal* revolution of the earth, all the ſeveral celeſtial lights ſeem to move in the heavens from eaſt to weſt, hence this ſeeming *diurnal* motion of the celeſtial lights is called their *common motion*, as being common to all of them.—Beſides which, all the celeſtial lights except the ſun, have a proper motion; from which ariſe their proper phænomena: as for the proper phænomena of the ſun, they likewiſe ſeem to ariſe from the proper motion of the ſun: but they are really produced by another motion, which the earth has, and whereby it moves round the ſun once every year, whence it is called the *annual motion of the earth.*

DIURNARY, Diurnarius, an officer in the Greek empire, who wrote down, in a book for that purpoſe, whatever the prince did, ordered, regulated, *&c.* every day. See the 8th law of the Theodoſian Code, *de Cohort.*

DIVUS, Diva, in antiquity, appellations given to men and women who had been deified, or placed in the number of the gods. See Deification.

Hence it is, that on medals ſtruck for the conſecration of an emperor, or empreſs, they give them the title of *Divus*, or *Divo*: for example, DIVUS JULIUS. DIVO ANTONINO PIO. DIVO PIO. DIVO CLAUDIO. DIVA FAUSTINA AUG. *&c.*

DIZZINESS. See the article Vertigo.

DOCK, Docking, in law, a means or expedient for cutting off an eſtate tail in lands, or tenements; that the owner may be enabled to ſell, give, or bequeath the ſame.

To effect this, a feigned writ of entry ſur diſſeiſin in le poſt is brought of the lands whereof the party intends to *dock* the intail; and in a feigned declaration made thereon, it is pretended he was diſſeiſed by a perſon, who, by a feigned fine, or deed of bargain and ſale, is named, and ſuppoſed to be tenant of the lands.

The feigned tenant, if it be a ſingle recovery, is made to appear, and vouch the bag-bearer of writs to the cuſtos brevium in the court of common-pleas; who making default, a judgment is by ſuch fiction of law entered, that the demandan ſhall recover, and have a writ of ſeiſin for, the poſſeſſion of the lands demanded; and that the tenant ſhall recover the value of the lands, againſt the lands of the vouchee bag-bearer, a poor, unlanded, illiterate perſon; which is feigned to be a ſatisfaction to the heir in law; tho' he never be to expect any.

Dock, in the ſea-language, a pit, pond, or creek, by the ſide of an harbour, made convenient to work in, in order to build or repair ſhips.

This is of two ſorts: a *dry dock*, where the water is kept out by great flood-gates, till the ſhip is built, or repaired; but afterwards can be eaſily let into it again to float, and launch her.

A *wet dock* is any place in the ouze, out of the tide's way, where a ſhip may be haled in, and ſo *dock* herſelf, or ſink herſelf a place to lie in.

DOCKET ſometimes denotes a little bill tied to wares or goods, and directed to the perſon and place they are to be ſent to.

DOCTOR, a perſon who has paſſed all the degrees of a faculty, and is impowered to teach, or practiſe the ſame.

The title of *doctor* was firſt created towards the middle of the XIIth century; to ſucceed to that of maſter, which was become too common and familiar.

The eſtabliſhment of the *doctorate*, ſuch as now in uſe among us, is ordinarily attributed to Irnerius, who himſelf drew up the formulary. The firſt ceremony of this kind was performed at Bologna, in the perſon of Bulgarus, who began to profeſs the Roman law, and on that occaſion was ſolemnly promoted to the *doctorate*, i. e. inſtalled *juris utriuſque doctor.* But the cuſtom was ſoon borrowed from the faculty of law to that of theology: the firſt inſtance whereof was given in the univerſity of Paris, where Peter Lombard and Gilbert de la Poree, the two top divines of thoſe days, were created *doctors* in theology, *ſacræ theologiæ doctores.*

Spelman gives another turn to the thing: he takes the title of *doctor* not to have commenced till after the publication of Lombard's ſentences, about the year 1140. and affirms, that ſuch as explained that work to the ſcholars, were the firſt that had the appellation of *doctors.*

Others go much higher, and hold Bede to have been the firſt *doctor* at Cambridge, and John de Beverley at Oxford, which latter died in the year 721. But Spelman will not allow *doctor* to have been the name of any title, or degree in England, till the reign of king John, about the year 1207.

To paſs *doctor in divinity* at Oxford, it is neceſſary the candidate have been 4 years bachelor of divinity. For *doctor of laws*, he muſt have been 7 years in the univerſity to commence bachelor of law; 5 years after which he may be admitted *doctor of laws.* Otherwiſe, in three years after taking the degree of maſter of arts, he may take the degree of bachelor in law; and in four years more, that of LL.D. which ſame method and time are likewiſe required to paſs the degree of *doctor in phyſic.*

At Cambridge, to take the degree of *doctor in divinity*, it is required the candidate have been 7 years bachelor of divinity. Though in ſeveral of the colleges, the taking of the bachelor of divinity's degree is diſpenſed with, and they may go out *per ſaltum.* To commence *doctor in laws*, the candidate muſt have been five years bachelor of law, or ſeven years maſter of arts. To paſs *doctor in phyſic*, he muſt have been bachelor in phyſic five years, or ſeven years maſter of arts.

Doctor *of the law* was a title of honour or dignity among the Jews.

The Jews, it is certain, had *doctors* long before Jeſus Chriſt. The inveſtiture, if we may ſo ſay, of this order, was performed by putting a key, and a table-book in their hands; which is what ſome authors imagine our Saviour had in view, Luke XI. 52. where ſpeaking of the *doctors of the law*, he ſays, *Woe unto you*, doctors of the law; *for you have taken away the key of knowlege; you entered not in yourſelves, and them that were entering, you hindered.*

The Greek text of St. Luke calls them νομικοι; and the Vulgate *legiſperiti*; agreeably to which, our Engliſh tranſlators call them *lawyers.* But the French verſion of *docteurs de la loi* ſeems the moſt adequate. In effect, the word *lawyer*, *legiſperitus*, is only found in St. Luke, and St. Paul, Titus III. 13. And νομικος, in St. Matthew XXII. 35. is rendered by the Vulgate, *legis doctor*; though the Engliſh verſion ſtill retains the word *lawyer.*

Theſe Jewiſh *doctors* are the ſame whom they otherwiſe call *rabbins.* See Rabbin.

Doctor *of the church*, a title given to certain of the fathers whoſe doctrines and opinions have been the moſt generally followed and authorized.

We uſually reckon four *doctors* of the Greek church, and three of the Latin. The firſt are St. Athanaſius, St. Baſil, St. Gregory Nazianzen, and St. Chryſoſtom. The latter are St. Jerom, St. Auguſtine, and Gregory the Great.

In the Roman breviary there is a particular office for the *doctors.* It only differs from that of the confeſſors, by the anthem of the *Magnificat*, and the leſſons.

Doctor is alſo an appellation adjoined to ſeveral ſpecific epithets expreſſing wherein the merit of ſuch as the ſchools owned for their maſters, conſiſted.

Thus Alexander Hales is called the *irrefragable doctor*, and the *fountain of life*, as mentioned in Poſſevinus. Thomas Aquinas is called the *angelical doctor*; St. Bonaventure the *ſeraphic doctor*; John Duns Scotus, the *ſubtile doctor*; Raimond Lully the *illuminated doctor*; Roger Bacon the *admirable doctor*; William Ocham the *ſingular doctor*; John Gerſon, and Card. Cuſa, the *moſt Chriſtian doctors*; Dionyſius the Carthuſian, the *extatic doctor*: and an infinity of others to be met withal in eccleſiaſtical writers.

Doctor, ΔΙΔΑΣΚΑΛΟΣ, in the Greek church, is a particular officer, appointed to interpret part of the Scriptures.

He who interprets the goſpels, is called *doctor of the goſpels*: he who interprets St. Paul's epiſtles, *doctor of the apoſtle*: he who interprets the pſalms, *doctor of the pſalter*.

DOCUMENT, in law, ſome written monument produced in proof of any fact aſſerted, eſpecially an antient one.

The antiquity of the foundation of ſuch a church is proved by a number of authentic *documents*.

DODECAGON, a regular polygon, or figure with twelve equal ſides and angles.

Dials are ſometimes drawn on all the ſides of a *dodecagon*.

In fortification, a place ſurrounded with twelve baſtions is called a *dodecagon*: ſuch is Palma Nova in Friuli, *&c.*

DODECAHEDRON, in geometry, one of the regular bodies, comprehended under twelve equal ſides, each whereof is a pentagon.

Or, a *dodecahedron* may be conceived to conſiſt of twelve quinquangular pyramids, whoſe vertices, or tops, meet in the centre of a ſphere conceived to circumſcribe the ſolid; conſequently they have their baſes and altitudes equal.

To find the ſolidity of the **Dodecahedron**; find that of one of the pyramids, and multiply it by the number of baſes, *viz.* 12; the product is the ſolidity of the whole body. Or its ſolidity is found by multiplying the baſe into $\frac{1}{3}$ of its diſtance from the centre, 12 times: and to find this diſtance, take the diſtance of two parallel faces: the half is the height.

The diameter of the ſphere being given, the ſide of the *dodecahedron* is found by this theorem: the ſquare of the diameter of the ſphere is equal to the rectangle under the aggregate of the ſides of a *dodecahedron*, and hexaedron inſcribed in the ſame, and triple the ſide of the *dodecahedron*. Thus, if the diameter of the ſphere be 1, the ſide of the *dodecahedron* inſcribed will be $(\sqrt{\frac{5}{3}} - \sqrt{\frac{1}{3}}) : 2$; conſequently, that is to this as 2 to $(\sqrt{\frac{5}{3}} - \sqrt{\frac{1}{3}})$, and the ſquare of that, to the ſquare of this, as 4 to $5 - \sqrt{3}$. Therefore the diameter of the ſphere is incommenſurable to the ſide of an inſcribed *dodecahedron* both in itſelf, and its power.

DODECATEMORY, the twelfth part of a circle.

The term is chiefly applied to the twelve houſes, or parts of the zodiac of the primum mobile; to diſtinguiſh them from the 12 ſigns.

Dodecatemory is alſo a denomination ſome authors give to each of the twelve ſigns of the zodiac, by reaſon they contain a twelfth part of the zodiac apiece.

DODONÆUS *, **Dodonian**, in antiquity, an epithet given to Jupiter, as adored, or worſhiped, in the temple of *Dodona*, in a foreſt of the ſame name.

* *Dodona*, whence the appellation ariſes, is an antient city of Epirus, celebrated on divers accounts, as the foreſt of *Dodona*, the oracle of *Dodona*, and the fountain of *Dodona*.

Dodona's foreſt was a wood, or grove of oaks, all conſecrated to Jupiter. In this was a temple of that god, wherein was the moſt famous, and, as it is ſaid, the moſt antient oracle of all Greece.

Indeed, it was not in the temple only that oracles were delivered; the very pigeons that inhabited the wood are ſaid to have done the ſame.

The origin, and occaſion of this fable, we have from Herodotus, who obſerves, it was founded on this, that πελειας, which in the Theſſalian language ſignifies a pigeon, does likewiſe ſignify a witch, or propheteſs. But what is more extraordinary is, another tradition among the poets, as if the very oaks of the foreſt of *Dodona* ſpoke, and delivered oracles. This fable is eaſily deduced from the former: the pigeons in the oaks being ſuppoſed to ſpeak, it was no great flight of poetical fancy, to introduce the trees themſelves ſpeaking, *&c.* See *Voſſius de Idololat.* L. I. c. 7. p. 27.

The fountain of *Dodona* was in the temple of Jupiter. The antient naturaliſts aſſure us, it had a property of rekindling torches, *&c.* when newly extinguiſhed. This, no doubt, it did by means of ſome ſulphureous fumes exhaling from it; as we ſtill find a fountain in Dauphiné, called the *burning fountain*, do. It is alſo ſaid to have extinguiſhed lighted torches; which is no great miracle, ſince plunging them into a place where the ſulphur was too denſe, or into the water, muſt have that effect.

DODRANS, in antiquity, a diviſion of the as; being $\frac{3}{4}$ thereof, or 9 unciæ. See **As**.

DOG, in aſtronomy, a name common to two conſtellations, called the *great*, and *little Dog*; but, among aſtronomers, more uſually, *Canis major*, *&* *minor*. See **Canis** *major & minor*.

Dog-draw, in the foreſt-law, a manifeſt deprehenſion of an offender againſt veniſon in a foreſt: when he is found *drawing* after a deer by the ſcent of a hound, led in his hand.

There are four offences in the foreſt, noted by Manwood; *viz. Stable-ſtand*, *Dog draw*, *Back-bear*, and *Bloody-hand*. See **Stable-*ſtand***, &c.

Bite of a mad **Dog**. See the article **Hydrophobia**.

DOGE *, the chief magiſtrate in the republics of Venice, and Genoa.

* The word properly ſignifies *duke*, being formed from the Latin *dux*; as *dogate*, and *dogado*, from *ducatus*, duchy.

The *dogate*, or office and dignity of *doge*, is elective: at Venice, the *doge* is elected for life; at Genoa, only for two years; he is addreſſed under the title of *Serenity*, which among the Venetians is ſuperior to that of Highneſs.

The *doge* is the chief of the council, and the mouth of the republic; he being always to anſwer for her. Yet the Venetians do not go into mourning at his death, as not being their ſovereign, but only their firſt miniſter. In effect, the *doge* of Venice is no more than the phantom, or ſhadow of the majeſty of a prince; all the authority being reſerved to the republic. He only lends his name to the ſenate: the power is diffuſed throughout the whole body, though the anſwers be all made in the name of the *doge*. If he give any anſwers on his own bottom, they muſt be very cautiouſly expreſſed, and in general terms, otherwiſe he is ſure to meet with a reprimand. So that it is abſolutely neceſſary he be of an eaſy and pliable diſpoſition.

Antiently, the *doges* were ſovereigns; but things are much altered; and at preſent, all the prerogatives reſerved to the quality of *doge*, are theſe which follow: He gives audience to embaſſadors; but does not give them any anſwer on his own head, in matters of any importance: only he is allowed to anſwer as he judges good, to the compliments they make to the ſignory; ſuch anſwers being of no conſequence. The *doge*, as being firſt magiſtrate, is head of all the councils; and the credentials which the ſenate furniſhes its miniſters in foreign courts, are written in his name; and yet he does not ſign them; but a ſecretary of ſtate ſigns them, and ſeals them with the arms of the republic. The embaſſadors direct their diſpatches to the *doge*; and yet he may not open them, but in preſence of the counſellors. The money is ſtruck in the *doge*'s name, but not with his ſtamp, or arms. All the magiſtrates riſe, and ſalute the *doge*, when he comes into council; and the *doge* riſes to none, but foreign embaſſadors.

The *doge* nominates to all the benefices in the church of St. Mark; he is protector of the monaſtery delle Virgine; and beſtows certain petty offices of uſhers of the houſhold, called *Commanders of the Palace*. His family is not under the juriſdiction of the maſter of the ceremonies; and his children may have ſtaff-officers, and gondoliers in livery.

His grandeur, at the ſame time, is tempered with abundance of things which render it burdenſome. He may not go out of Venice, without leave of the council; and if he does go out, he is liable to receive affronts, without being intitled to demand ſatisfaction; and, if any diſorder ſhould happen where he was, it belongs not to him, but to the podeſta, as being inveſted with the public authority, to compoſe it.

The children and brothers of the *doge* are excluded from all the chief offices of ſtate. They may not receive any benefice from the court of Rome; but are allowed to accept of the cardinalate, as being no benefice, nor including any juriſdiction. The *doge* may not diveſt himſelf of his dignity, for his eaſe; and after his death, his conduct is examined by three inquiſitors, and five correctors, who ſift it with a deal of ſeverity.

DOGGER, a ſmall ſhip, built after the Dutch faſhion, with a narrow ſtern, and commonly but one maſt; principally uſed in fiſhing on the *Doggers* bank.

DOGMA, a maxim, tenet, ſettled propoſition, or principle; particularly in matters of religion, or philoſophy.

We ſay, the *dogmata of faith*; ſuch a *dogma* was condemned by ſuch a council. The *dogmata* of the Stoics were moſt of them paradoxes. Speculative *dogmata*, which do not lay any reſtraint on men, appear to them more eſſential to religion, than virtues which reſtrain and confine them; nay, they often perſuade themſelves, that it is allowable to maintain thoſe *dogmata*, at the expence of all the virtues. See **Faith**, *&c.*

DOGMATICAL, ſomething relating to a doctrine, or opinion.

In common uſe, a *dogmatical* philoſopher is ſuch a one as aſſerts things poſitively; in oppoſition to a Sceptic, who doubts of every thing.

A *dogmatical* phyſician is he, who, on the principles of the ſchool-philoſophy, rejects all medicinal virtues not reducible to manifeſt qualities.

DOGMATICI, **Dogmatists**, a ſect of antient phyſicians, called alſo *Logici*, logicians, from their uſing the rules of logic and reaſon, in ſubjects of their profeſſion.

They laid down definitions, and diviſions, reducing diſeaſes to certain genera, thoſe genera to ſpecies, and furniſhing remedies for them all; ſuppoſing principles, drawing conſequences, and applying thoſe principles and conſequences to the particular diſeaſes under conſideration.—In which ſenſe the *dogmatiſts* ſtand contra-diſtinguiſhed to empirics, and methodiſts.

The *dogmatiſts* were thoſe who brought phyſic into a form, and arrangement, like thoſe of other ſpeculative ſciences; defining, dividing, laying down principles, and drawing concluſions: and hence they had alſo the appellation of *logici*; *q. d.* reaſoners. They alſo applied themſelves to ſeek the cauſes of diſeaſes, the nature of remedies, *&c.*

Eraſiſtratus, a famous *dogmatiſt*, went ſo far, that, not contented to diſſect dogs, and other brute animals, he begged condemned criminals of the magiſtrates, and opened them while alive, and ſearched in their entrails.

DOLE, in the Saxon tongue, ſignifies a part or portion, moſt commonly of a meadow.

Hence alſo *dole-meadow*; a meadow wherein ſeveral perſons have ſhares.

The word ſtill ſignifies a *ſhare*; a diſtributing, or dealing of alms; or a liberal gift made by a great man to the people.

DOLIMAN, a kind of long caſſock, worn by the Turks, hanging down to the feet, with narrow ſleeves, buttoned at the wriſt.

The Turks, both men and women, wear drawers next the ſkin; over that a ſhift, or ſhirt; and over the ſhirt a *doliman*. In ſummer it is linen, or muſlin; in winter, ſattin, or ſtuff.

DOLLAR, or DALLER, a ſilver coin nearly of the value of the Spain piece of eight, or French crown.

Dollars are coined in diverſe parts of Germany, and Holland; and have their diminutions, as *ſemi-dollars*, *quarter-dollars*, &c.

They are not all of the ſame fineneſs, nor weight. The Dutch *dollars* are the moſt frequent. In the Levant they are called *aſlaini*, from the impreſſion of a lion thereon.

DOLPHIN, *Delphinus*, in aſtronomy. See DELPHINUS.

DOM, or DON, a title of honour, originally Spaniſh, though uſed occaſionally in other countries. See TITLE.

It is equivalent to *Maſter*, *Sir*, or *Lord*, *Monſieur*, *Sieur*, *Mynheer*, &c.

Gollut in his *Mem. des Bourg.* L. V. C. 11. aſſures us, that the firſt, on whom the Spaniards conferred the title, was *Dom* Pelayo; when, upon their being routed, and driven out, by the Saracens, at the beginning of the VIIIth century, they rallied again on the Pyreneans, and made him king.

In Portugal, nobody is allowed to aſſume the title of *Dom*, which is a badge or token of nobility, without the king's leave.

DOM is likewiſe uſed in France among ſome orders of religious, as the Chartreux, Benedictines, *&c.*

We ſay, the reverend father *Dom Calmet*, *Dom Alexis*, *Dom Balthaſar*, &c.

In the plural they write *Doms*, with an *s*, in ſpeaking of ſeveral. RR. PP. *Doms* Claude du Ruble, and Jaques Douceur.

The word is formed from the Latin *domnus*, or *dominus*; of which it is an abbreviature: *domnus* is found in diverſe Latin authors of the barbarous age. Onuphrius aſſures us, it was a title firſt given to the pope alone; then to the biſhops, abbots, and others who held any eccleſiaſtical dignity, or were eminent for virtue and religion. At length it was uſurped by the mere monks.

Some ſay, the religious declined the title *Dominus* out of humility, as belonging to God alone; and aſſumed that of *domnus*, as expreſſing inferiority, *quaſi minor dominus*. Indeed, the appellation *domnus* for *dominus* appears very antient, if we conſider the ſurname of Julia, wife of the emperor Septimius Severus, who is called on medals, IVLIA DOMNA, for JULIA DOMINA.

OMAIN *, the inheritance, eſtate, or poſſeſſion, of any one. See DEMESNE.

[*] Menage derives the word from *domanium*, written in the barbarous Latin for *dominium*. See DOMINIUM.

M-BOOK. See the article DOMES-DAY.

ME, or DOOM, ſignifies judgment, ſentence, or decree—The homagers oath, in the black-book of Hereford, ends thus: o help me God at his holy *Dome*, and by my trowthe.

ME *, in architecture, a ſpherical roof; or a work of a pherical form raiſed over the middle of a building, as a urch, hall, pavilion, veſtibule, ſtair-caſe, *&c.* by way of owning, or acroter.

[*] The word is formed from the barbarous Latin, *doma*, which ſignified a *roof*, or *open porch*; as is obſerved by Papias. 'Tis frequent in the corrupt Latin authors, who borrowed it from the Greeks, among whom Trullus, or Trullum, is a common name for any round building; ſuch as the palace of Conſtantinople, wherein was held the council thence called *in Trullo*.

Domes are the ſame with what the Italians call *cuppola's*; and we frequently *cupola's*: the Latins, according to Vitruvius, *tholi*. See CUPOLA.

They are uſually made round; though we have inſtances of ſquare ones; as thoſe of the Louvre; and others that are polygons, as that of the Jeſuits church in the Rue St. Antoine at Paris. They have uſually columns ranged around their outſides, both by way of ornament, and to ſupport the vault.

A flat DOME is that whoſe ſweep, or contour, is leſs than a hemiſphere.

Eye of a DOME. See the article EYE.

DOME, in chemiſtry, the arched cover of a reverberatory furnace. See REVERBERATORY.

DOMES-DAY, or DOOMS-DAY-*Book*, *liber judiciarius vel cenſualis Angliæ*, the judicial book, or book of the ſurvey of England; a moſt antient record made in the time of William the Conqueror; upon a ſurvey, or inquiſition of the ſeveral counties, hundreds, tithings, *&c.*

Its name is formed from the Saxon *dom*, doom, judgment, ſentence; and *day*, which has the ſame force: ſo that *domeday* is no more than a reduplicative, importing judgment judgment.

The drift, or deſign of the book, is to ſerve as a regiſter, by which ſentence may be given in the tenures of eſtates; and from which that noted queſtion, whether lands be antient demeſne, or not, is ſtill decided. Its contents are ſummed up in the following verſes:

Quid deberetur fiſco, quæ, quanta tributa,
Nomine quid cenſus, quæ vectigalia, quantum
Quiſque teneretur feodali ſolvere jure,
Qui ſunt exempti, vel quos angaria damnat,
Qui ſunt vel glebæ ſervi, vel conditionis,
Quove manumiſſus patrono jure ligatur.

This book is ſtill remaining in the exchequer, fair and legible; conſiſting of two volumes, a greater, and a leſs; the greater comprehending all the counties of England, except Northumberland, Cumberland, Weſtmorland, Durham, and part of Lancaſhire; which were never ſurveyed; and except Eſſex, Suffolk, and Norfolk, which are comprehended in the leſſer volume, which concludes with theſe words: *Anno milleſimo octogeſimo ſexto ab incarnatione Domini, vigeſimo vero regis Wilhelmi, facta eſt iſta deſcriptio non ſolum per hos tres comitatus, ſed etiam alios.*

It is called *liber judicialis*, by reaſon a juſt and accurate deſcription of the whole kingdom is contained therein; with the value of the ſeveral inheritances, *&c.*

It was begun by five juſtices, aſſigned for that purpoſe in each county, in the year 1081. and finiſhed in 1086. Camden calls its, *Gulielmi librum cenſualem*, king William's tax-book.

Our anceſtors had many *dome-books*. We are told by Ingulphus, that king Alfred made a like regiſter with that of William the Conqueror. It was begun upon that prince's dividing his kingdom into counties, hundreds, tithings, *&c.* when an inquiſition being taken of the ſeveral diſtricts, it was digeſted into a regiſter, called *dom-boc*, q. d. the judgment-book, and was repoſited in the church of Wincheſter; whence it is alſo called the *Wincheſter-book*, and *Rotulus Winton*. And upon the model of this domboc it is, that the *doom-day* of the Conqueror was formed.

That of king Alfred referred to the time of king Ethelred; and that of the Conqueror, to the time of Edward the Confeſſor: the entries being thus made, *C. tenet Rex Gulielmus in Dominico, & valet ibi ducatæ*, &c. T. R. E. *valebat*; q. d. it was worth ſo much *Tempore Regis Eduardi*, in the time of king Edward.

There is a third *dom-boc*, or *domes-day-book* in quarto, differing from the other in folio, rather in form, than matter. It was made by order of the ſame Conqueror; and ſeems to be the more antient of the two.

A fourth book there is in the exchequer, called *domes-day*; which, though a very large volume, is only an abridgment of the other two. It has abundance of pictures, and gilt letters at the beginning, which refer to the time of Edward the Confeſſor.

DOMESTIC, a term of ſomewhat more extent than that of ſervant; the latter only ſignifying ſuch as ſerve for wages, as footmen, lacquies, porters, *&c.* whereas *domeſtic* comprehends all who act under a man, compoſe his family, and live with him, or are ſuppoſed to live with him. Such are ſecretaries, chaplains, *&c.*

Sometimes *domeſtic* goes further, being applied to the wife, and children.

DOMESTIC *gown*, *Toga domeſtica*. See TOGA.

DOMESTICUS, Δομεςικος, in antiquity, was a particular officer in the court of the emperors of Conſtantinople.

Fabrot, in his gloſſary on Theophylax Simocatta, defines *domeſticus* to be any perſon intruſted with the management of affairs of importance; a counſellor, *cujus fidei graviores alicujus curæ, & ſolicitudines committuntur.*

Others hold, that the Greeks called *Domeſtici* thoſe who at Rome were called *Comites*; particularly, that they began to uſe the name *Domeſticus*, when that of count was become a name of dignity, and ceaſed to be the name of an officer in the prince's family.

Domeſtici, therefore, were ſuch as were in the ſervice of the prince, and aſſiſted him in the adminiſtration of affairs; both thoſe of his family, thoſe of juſtice, and thoſe of the church.

The *Grand* **DOMESTIC**, *Megadomeſticus*, called alſo abſolutely *the Domeſticus*, ſerved at the emperor's table, in quality of what we occidentals call *Dapifer*. Others ſay, he was rather what we call a *Majordomo*.

DOMESTICUS *Menſæ* did the office of grand ſeneſchal, or ſteward.

DOMESTICUS *Rei Domeſticæ* acted as maſter of the houſhold.

DOMESTICUS *Scholarum*, or *Legionum*, had the command of the reſerved forces called *Scholæ Palatinæ*, whoſe office was to execute the immediate orders of the emperor.

DOMESTICUS *Murorum*, had the ſuperintendance of all the fortifications.

DOMESTICUS *Regionum*, that is, of the eaſt and weſt, had the care of public cauſes, much like our attorney or ſollicitor-general.

DOMESTICUS *Icanatorum*, or of the military cohorts.

There were diverſe other officers of the army, who bore the appellation *Domeſticus*, which ſignified no more than commander, or colonel. Thus, the *Domeſtic of the legion* called *Optimates*, was the commander thereof.

DOMESTICUS *Chori*, or *Chantor*, whereof there were two in the church of Conſtantinople; one on the right ſide of the church, and the other on the left.—They were alſo called *Protopſaltes*.

Dom. Magri diſtinguiſhes three kinds of *Domeſtici* in the church: *Domeſtic of the patriarchal clergy*: *Domeſtic of the imperial clergy*, that is, maſter of the emperor's chapel: and *Domeſticus Deſpoinicus*, or of the empreſs.—There was another order of *Domeſtics*, inferior to any of thoſe above-mentioned, called *Patriarchal Domeſtics*.

DOMESTICI was alſo the name of a body of forces in the Roman empire.—Pancirollus takes them to have been the ſame with thoſe called *Protectores*; who had the chief guard of the emperor's perſon, in a degree above the Prætorians; and who under the Chriſtian emperors had the privilege to bear the grand ſtandard of the croſs.

They are ſuppoſed to have been 3500 before Juſtinian's time, who added 2000 more to the number. They were divided into ſeveral companies, or bands, which the Latins called *Scholæ*, ſome whereof are ſaid to have been inſtituted by Gordian. Some of them were cavalry, and ſome infantry.

Their commander was called *Comes Domeſticorum*.

DOMICELLARY *Canons*. See the article CANONS.

DOMIFYING, DOMIFICATION, in aſtrology, the dividing or diſtributing the heavens into twelve houſes; in order to erect a theme, or horoſcope, by means of ſix great circles, called *circles of poſition*.

There are diverſe ways of *domifying*, according to diverſe authors. That of Regiomontanus, which is the moſt uſual, makes the circles of poſition paſs through the interſections of the meridian, and horizon. Others make them paſs through the poles of the world, or the equator; and others through the poles of the zodiac.

DOMINATION, in theology, the fourth order of angels, or bleſſed ſpirits, in the hierarchy; reckoning from the ſeraphim. See HIERARCHY, and SERAPH.

St. **DOMINGO** *company*. See the article COMPANY.

DOMINI—*Anno* DOMINI. See the article ANNO.

Bull in Coena DOMINI. See the article BULL.

DOMINIAL *Offices*. See the article OFFICES.

DOMINICAL * *Letter*, in chronology, properly called *Sunday-Letter*, one of the ſeven letters of the alphabet ABCDEFG, uſed in almanacs, ephemerides, *&c.* to denote the ſundays throughout the year.

* The word is formed from *Dominica*, or *Dominicus dies*, Lord's day, ſunday.

The *dominical letters* were introduced into the calendar by the primitive Chriſtians, in lieu of the nundinal letters in the Roman calendar.

Theſe letters, we have obſerved, are ſeven: and that, in a common year, the ſame letter ſhould mark all the ſundays, will eaſily appear; inaſmuch as all the ſundays are ſeven days apart; and the ſame letter only returns in every ſeventh place.

But in biſſextile, or leap-year, the caſe is otherwiſe: for by means of the intercalary day, either the letters muſt be thruſt out of their places for the whole year afterwards, ſo, *e. gr.* as that the letter which anſwers to the firſt of March, ſhall likewiſe anſwer to the ſecond, *&c.* or elſe the intercalary day muſt be denoted by the ſame letter as the preceding one. This latter expedient has been judged the better, and accordingly the ſundays after the intercalary day have another *dominical letter*.

Hence, 1°, As the common Julian, and Gregorian year conſiſts of 365 days, *i. e.* of 52 weeks, and one day; the beginning of the year, every common year, goes backwards by one day; thus, *e. gr.* if this year the beginning, or firſt day fall on a ſunday, the next year it will fall on ſaturday, the next on friday, *&c.* Conſequently, if A be the *dominical letter* of the preſent year, G will be that of the next year.

2°, As the Julian, and Gregorian biſſextile, or leap-year, conſiſts of 366 days, *i. e.* 52 weeks, and 2 days, the beginning of the next year after biſſextile goes back 2 days. Whence, if in the beginning of the biſſextile year, the *dominical letter* were A, that of the following year will be F.

3°, Since in leap-years the intercalary day falls on the 24th of February, in which caſe the 23d and 24th days are denoted by the ſame letter; after the 24th day of February the *dominical letter* goes back one place: thus, if in the beginning of the year the *dominical letter* be A, it will afterwards be G.

4°, As every fourth year is biſſextile, or leap-year; and a the number of letters is 7; the ſame order of *dominica letters* only returns in 28 years; which, without the interruption of biſſextiles, would return in 4 years.

5°, Hence the invention of the ſolar cycle of 28 years; up on the expiration whereof the *dominical letters* are reſtore ſucceſſively to the ſame days of the month, or the ſame or der of the letters returns.

To find the DOMINICAL *letter of any given year*: ſeek th cycle of the ſun for that year; as directed under CYCLE and the *dominical letter* is found correſponding theret Where there are two; the propoſed year is biſſextile; an the firſt obtains to the 24th of February; and the laſt f the reſt of the year.

By the reformation of the calendar under pope Gregory, th order of the *dominical letters* was again diſturbed in th Gregorian year: for the year 1582. which at the begi ning had G for its *dominical letter*; by the retrenchme of 10 days after the 4th of October, came to have C f its *dominical letter*; by which means the *dominical letter* the antient Julian calendar is four places before that the Gregorian: the letter A in the former anſwering to in the latter.

DOMINICAL, in church-hiſtory. The council of Auxerr held in 578. decrees, that women communicate with th *dominical*. Some authors contend, that this *dominical* wa linen cloth, wherein they received the ſpecies; as not bei allowed to receive them in the bare hand. Others w have it a kind of veil, wherewith they covered the he The moſt probable account is, that it was a ſort of lin cloth, or handkerchief, wherein they received, and p ſerved the euchariſt in times of perſecution, to be taken occaſion.

DOMINICANS, an order of religious, called in ſome pla *Jacobins*, and in others, *Predicants*, or *Preaching Frye* See JACOBINS, *&c.*

The *Dominicans* take their name from their founder Do nic de Guſman, a Spaniſh gentleman, born in 1170. at C larvega, in Old Caſtile. He was firſt canon and archdea of Oſma; and afterwards preached with great zeal and hemence againſt the Albigenſes in Languedoc, where he the firſt foundation of his order. It was approved of in 12 by Innocent III. and confirmed in 1216. by a bull of Ho rius III. under the rule of St. Auguſtine, and the title *Preaching Friers*.

The firſt convent was founded at Tholouſe, by the bi thereof, and Simon de Montfort. Two years afterw they had another at Paris near the biſhop's houſe; and ſo time after, a third in the Rue St. Jaques, St. James's ſt whence the denomination of Jacobins.

St. Dominic, at firſt, only took the habit of the regular nons, that is, a black caſſock, and rochet; but this he qu in 1219. for that which they now wear, which, it is pre ed, was ſhewn by the bleſſed Virgin herſelf to the bea Renaud d'Orleans.

This order is diffuſed throughout the whole known w It has 45 provinces under the general, who reſides at Ro and 12 particular congregations, or reforms, governe vicars general.

They reckon three popes of this order, above 60 c nals, ſeveral patriarchs, 150 archbiſhops, and about biſhops; beſide maſters of the ſacred palace, whoſe fice has been conſtantly diſcharged by a religious of th der, ever ſince St. Dominic, who held it under Ho III. in 1218.

The *Dominicans* are alſo inquiſitors in many places. dogmata of the *Dominicans* are uſually oppoſite to th the Franciſcans.

There are alſo nuns, or ſiſters, of this order, called in places, *Preaching Siſters*. Theſe are even more antient the friers; St. Dominic having founded a ſociety of re maids, at Prouilles, ſome years before the inſtitution of his order of men; *viz.* in 1266.

There is alſo a *third order* of *Dominicans*, both for men and women.

DOMINIUM, Dominion, in the civil law, denotes the abſolute power, or property, of a thing, to uſe or diſpoſe of it how we pleaſe.

Directum dominium is the right alone of *dominium*; and *dominium utile*, the profit redounding from it. The wife retains the *dominium directum* of her jointure, and the *dominium utile* paſſes to her huſband. With reſpect to ſignory, he who pays rent, has the *dominium utile* of the lands; and the lord he pays it to the *dominium directum*.

Dominium, Dominion, or Domaine, in our antient cuſtoms, denotes a rent due to the lord, where the property is not his.

Affidatio **DOMINORUM**. See the article Affidatio.

DOMINUS, in antient times, a title prefixed to a name, uſually to denote the perſon either a knight, or a clergyman. See Vice-dominus.

Though the title was ſometimes alſo given to a gentleman not dubb'd; eſpecially if he were a lord of a manor. See Dom, Sire, and Gentleman.

Recto quando **Dominus** *remiſit*. See the article Recto.

DONATION, Donatio, an act, or contract, whereby a man transfers to another, either the property, or the uſe, of the whole, or a part of his effects, as a free gift.

A *donation*, to be valid, and complete, ſuppoſes a capacity both in the donor, and the donee; and requires conſent, acceptance, and delivery: and by the French law alſo regiſtry.

DONATISTS, antient ſchiſmatics in Africa, ſo denominated from their leader, *Donatus*.

They had their origin in the year 311. when, in the room of Menſurius, who died in the preceding year, on his return to Rome, Cæcilian was elected biſhop of Carthage; whom the people refuſed to acknowlege, and to whom they oppoſed Majorinus; who, accordingly, was ordained by Donatus, biſhop of Caſæ Nigræ. They were condemned, in a council held at Rome, two years after their ſeparation; and afterwards in another at Arles, the year following.

The errors of the *Donatiſts*, beſide their ſchiſm, were, 1. That baptiſm conferred out of the church, that is, out of their ſect, was null. 2. That there was no church, but in Africa: all the reſt of the churches they held as proſtitute, and fallen.

Donatus ſeems likewiſe to have given into the doctrine of the Arians, with whom he was cloſely allied; and, accordingly, St. Epiphanius, Theodoret, and ſome others, accuſe the *Donatiſts* of Arianiſm. But St. Auguſtine, Ep. 185. to count Boniface, affirms, that the *Donatiſts*, in this point, kept clear of the errors of their leader.

In 344. under the empire of Theodoſius the Great, there aroſe a ſchiſm among the *Donatiſts* themſelves, by which they were broke into two parties. For Parmenian, their biſhop, being dead, ſome elected Primian, and were called *Primianiſts*; and others, Maximian, called *Maximianiſts*. The *Donatiſts* had likewiſe other appellations; as *Circumcelliones*, *Montenſes*, or *Mountaineers*, *Campites*, *Rupites*, &c.

They held three councils, or conciliabules; that of Cirta in Numidia, and two at Carthage. Conſtantine decreed exile, and even death, againſt the *Donatiſts*; Conſtantius, and Honorius, made laws for their baniſhment; and Theodoſius, and Honorius, condemned them to grievous mulcts.

ONATIVE, Donativum, a preſent made any perſon; called alſo *gratuity*.

The Romans made large *donatives* to their ſoldiers. Julia Pia, wife of the emperor Severus, is called, on certain medals, MATER CASTRORVM, by reaſon of the care ſhe took of the ſoldiery, by interpoſing for the augmentation of their *donatives*, &c.

Donative was properly a gift made to the ſoldiery; as *congiarium* was that made to the people. See Congiarium.

Salmaſius, in his notes to Lampridius in his life of Heliogabalus, mentioning a *donative* that emperor gave of three pieces of gold per head, obſerves, that this was the common and legitimate rate of a *donative*. Caſaubon, in his notes on the life of Pertinax by Capitolinus, obſerves, that Pertinax made a promiſe of three thouſand denarii to each ſoldier; which amounted to upwards of 97 pounds ſterling. The ſame author writes, that the legal *donative* was 20000 denarii; and that it was not cuſtomary to give leſs, eſpecially to the prætorian ſoldiers; that the centurions had double, and the tribunes, *&c.* more in proportion.

ONATIVE, in the canon law, a benefice given, and collated o a perſon, by the founder, or patron; without either preentation, inſtitution, or induction by the ordinary.

f chapels founded by laymen be not approved by the dioceſan, and, as it is called, *ſpiritualized*; they are not accounted roper benefices, neither can they be conferred by the biſhop, ut remain to the pious diſpoſition of the founders: ſo that the founders, and their heirs, may give ſuch chapels without the biſhop.

Gwin obſerves, that the king might of antient time found a free chapel, and exempt it from the juriſdiction of the dioceſan: ſo may he, by letters patents, give liberty to a common perſon to found ſuch a chapel, and make it *donative* not-preſentable; and the chaplain, or beneficiary, ſhall be deprivable by the founder, or his heir, and not by the biſhop. And this ſeems to be the original of *donatives* in England.

All biſhopricks in antient time were *donative* by the king: again, where a biſhop has the gift of a benefice, it is properly called a *donative*, becauſe he cannot preſent to himſelf.

DONJON, in fortification, generally denotes a large ſtrong tower, or redoubt, of a fortreſs, where the garriſon may retreat in caſe of neceſſity, and capitulate with greater advantage. See Dungeon.

DONOR, in law, he who gives lands, or tenements, to another in tail.—As donee, is he to whom the ſame are given.

DOOR, in architecture, an aperture in a wall, to give entrance, and exit, in and out of the building, or ſome apartment thereof.

It ought to be a rule, 1. That the *doors* of a houſe be as few in number, and as moderate in dimenſions, as poſſible: for, in a word, all openings are weakenings.

2. That they do not approach too near the angles of the walls; it being a moſt glaring ſoleciſm to weaken that part which muſt weaken all the reſt: a precept well recorded, but ill practiſed, by the Italians themſelves, particularly at Venice.

3. That the *doors*, if poſſible, be right over one another; that void may be over void, and full over full.

4. That, if poſſible, they be oppoſite to each other, ſo as that one may ſee from one end of the houſe to another: which will not only be graceful, but alſo convenient; as it affords a means of cooling the houſe in ſummer, by letting in air; and of keeping out the wind in winter, which way ſoever it ſit.

5. It is not only ornamental, but ſecure, to turn arches over *doors*; as it diſcharges them, in great meaſure, of the ſuperincumbent weight.

The proportions of *doors* are adjuſted by thoſe of a man: in larger buildings they muſt always be larger than in ſmaller; but in none ſhould they be leſs than 6 feet high, to admit a man of juſt ſtature, erect; and as the breadth of a man, with his arms placed a-kimbo, is nearly ſubduple his height, the width ſhould never be leſs than 3 feet.

Some architects give us theſe dimenſions: in ſmall buildings the breadth of the *door* 4 feet, or 4 and a half; in middling buildings, 5 or 6; in large ones, 7 or 8: in chambers of the firſt, 3 and a half, three three quarters, or 4; of the ſecond, 4, or 4 and a half; and of the third, 5, or 6; in churches, 7, or 8; in gates, 9, 10, or 12: hence their height is eaſily determined; except for the gates of cities, which ſhould only be four fifths of their breadth.

It is an obſervation of Palladio, that the principal *door*, or entrance, of a houſe, muſt never be regulated by any certain dimenſions, but by the dignity of the perſon that is to live in it: yet, to exceed rather in the more, than the leſs, is a mark of generoſity; and may be excuſed with ſome noble emblem, or inſcription, as that of the Conte di Bevilacqua over his large gate at Verona, where had been committed a like diſproportion, *Patet Janua, Cor magis*.

Scenography of a **Door**. See the article Scenography.

Architrave **Doors**. See the article Architrave.

DORIC, in grammar.—The Doric *dialect* is one of the five *dialects*, or manners of ſpeaking, which obtained among the Greeks.

It was firſt uſed by the Lacedæmonians, and particularly thoſe of Argos; thence it paſſed into Epirus, Libya, Sicily, the iſlands of Rhodes, and Crete.

In this *dialect*, Archimedes and Theocritus wrote, who were both of Syracuſe; as likewiſe Pindar.

In ſtrictneſs, however, we ſhould rather define *Doric*, the manner of ſpeaking peculiar to the *Dorians*, after their receſs near Parnaſſus, and Aſopus; and which afterwards came to obtain among the Lacedæmonians, *&c.*

Some even diſtinguiſh between the Lacedæmonian, and *Doric*; but, in reality, they were the ſame; ſetting aſide a few particularities in the language of the Lacedæmonians; as is ſhewn by Rulandus, in his excellent treatiſe, *De Lingua Græca, ejuſque Dialectis*, L. V.

Beſide the authors already mentioned to have written in the *Doric* dialect, we might add Archytas of Tarentum, Bion, Callinus, Simonides, Bacchylides, Cypſelas, Alcman, and Sophron.

Moſt of the medals of the cities of Græcia Magna, and Sicily, ſavour of the *Doric* dialect in their inſcriptions: witneſs, ΑΜΒΡΑΚΙΩΤΑΝ, ΑΠΟΛΛΩΝΙΑΤΑΝ, ΑΧΕΡΟΝΤΑΝ, ΑΧΥΡΙΓΑΝ, ΗΡΑΧΛΕΩΤΑΝ, ΤΡΑΧΙΝΙΩΝ, ΘΕΡΜΙΤΑΝ, ΚΑΥΛΩΝΙΑΤΑΝ, ΚΟΠΙΑΤΑΝ, ΤΑΥΡΟΜΕΝΙΤΑΝ, *&c.* Which ſhews the countries wherein the *Doric* dialect was uſed.

The general rules of this dialect are thus given by the Port-royaliſts.

D'ε Ητα, d'ω grand, d'ε, d'ο & d'ι l'α fait le Dore.
D' ει fait ητα ; d'ȣ, ω ; & d'ω au fait encore.
Oſte ι de l'infini : & pour le ſingulier
Se ſert au feminin du nombre plurier.

But they are much better explained in the IVth book of Rulandus; where he even notes the minuter differences of the dialects of Sicily, Crete, Tarentum, Rhodes, Lacedæmon, Laconia, Macedonia, and Theſſaly.

The α abounds every-where in the *Doric*; but this dialect bears ſo near a conformity with the Æolic, that many reckon them but one.

Doric, in architecture, is the ſecond of the five orders; being that between the Tuſcan and Ionic.

The *Doric* order ſeems the moſt natural, and beſt proportioned, of all the orders; all its parts being founded on the natural poſition of ſolid bodies. Accordingly, the *Doric* is the firſt, and moſt antient, of the orders of architecture; and is what gave the firſt idea of regular building.—See Tab. *Archit. fig.* 28. ſee alſo the article ARCHITECTURE.

At its firſt invention it was more ſimple than at preſent; and when in after-times they came to adorn and inrich it more, the appellation *Doric* was reſtrained to this richer manner, and the primitive ſimple manner they called by a new name the Tuſcan order.

The tradition is, that *Dorus*, king of Achaia, having firſt built a temple of this order at Argos, which he dedicated to Juno, occaſioned it to be called *Doric*: though others derive its name, I know not how, from its being invented, or uſed, by the Dorians.

Some time after its invention they reduced it to the proportions, ſtrength, and beauty, of the body of a man: hence, as the foot of a man was judged the 6th part of his height, they made the *Doric* column, including the capital, 6 diameters high, *i. e.* ſix times as high as thick. Afterwards they added another diameter to the height, and made it 7 diameters; with which augmentation it might be ſaid to be nearer the proportion of a man: the human foot, at leaſt in our days, not being a 6th, but nearly a 7th part of the body.

The characters of the *Doric* order, as now managed, are, the height of its column, which is 8 diameters; its frize, which is inriched with triglyphs, drops, and metopes; its capital, which is without volutes; and its admitting of cymatiums.

The antients, we have already obſerved, had two *Doric* orders: the firſt, which was the more ſimple and maſſive, they uſed chiefly in temples; the ſecond, which was the more light and delicate, ſerved in portico's, and theatres.

Vitruvius, indeed, complains of the *Doric* as very troubleſome and perplexing, on account of the triglyphs, and metopes, ſo as ſcarce to be capable of being uſed, except in the pycnoſtyle, by putting a triglyph between each two columns, or in the aræoſtyle, by putting three triglyphs between each two columns.

The moderns, on account of its ſolidity, uſe it in large ſtrong buildings; as in the gates of cities, and citadels, the outſides of churches, and other maſſy works, where delicacy of ornaments would be unſuitable.

The moſt conſiderable antient monument of this order, is the theatre of Marcellus, at Rome; wherein the capital, the height of the frize, and its projecture, are much ſmaller than in the modern architecture.

Vignola adjuſts the proportions of the *Doric* order thus: the whole height of the order, without pedeſtal, he divides into 20 parts, or modules; one of which he allows the baſe, 14 to the ſhaſt, or fuſt, one to the capital, and four to the entablature.

The particular proportions, *&c.* of the ſeveral parts, and members, ſee under their reſpective articles; COLUMN, CAPITAL, ENTABLATURE, PEDESTAL, BASE, ARCHITRAVE, FRIZE, and CORNICH.

Doric *Cymatium*. See the article CYMATIUM.

Doric, in muſic. The DORIC *Mode* is the firſt of the authentic modes of the antients.

Its character is, to be ſevere, tempered with gravity, and mirth: it is proper for occaſions of religion, and war. It begins with *D*, *Sol*, *Re*.

Plato admires the muſic of the *Doric* mode; and judges it proper, to preſerve good manners, as being maſculine. And on this account he allows of it in his commonwealth.

The antients had likewiſe their *Sub-Doric Mode*, which was one of their plagal modes. Its character was to be very grave, and ſolemn. It began with *G Ut*, a diateſſaron lower than the *Doric Mode*.

DORMANT is the herald's term for the poſture of a lion, or other beaſt, borne as ſleeping in a coat of arms.

Dormant-tree, in building, a name the workmen fre-quently give to a great beam lying acroſs the houſe; uſually called a *Summer*.

Dormant, or **Dormar-Tyles**. See the article TYLE.

DORMER, or **Dormant**, in architecture, denotes a window made in the roof of an houſe, or above the entablature; being raiſed upon the rafters.

The Latins call it *Lucerna*, whence the French *Lucerne*, and our *Luthern*.

There are diverſe kinds; ſquare, round, *&c.* See LUTHERN.

DORMITORY*, a gallery in convents, or religious houſes, divided into ſeveral cells, wherein the religious lodge, or lie, *&c.*

* The word is formed from the Latin *dormitorium*; of *dormire*, to ſleep.

It is deemed a crime in a religious to lie out of the *Dormitory*. By chap. XXII. of the rule of St. Benedict, it appears, that the antient *Dormitories* were not divided into cells, but were a kind of large open wards, filled with beds, as in our hoſpitals.

Dormitory is alſo uſed for a burying-place. See the article COEMETERIUM.

DORSAL *Nerves*. See the article NERVES.

DORSI *Latiſſimus*, in anatomy. See the article LATISSIMUS *Dorſi*.

Dorsi *Longiſſimus*, a muſcle common to the loins, and the back. It riſes from the upper-part of the os ſacrum, ilium, and firſt vertebræ of the loins; and in its beginning is confounded, if not the ſame, with the ſacrolumbalis. It runs upwards along the whole tract of the back, and is connected to every tranſverſe proceſs in its way; ending ſometimes in the firſt vertebra of the back, and ſometimes in the firſt of the neck.—See Tab. *Anat.* (Myol.) *fig.* 7. *n.* 17. 17.

Sacer **Dorsi**. See the article SACER.

DORSIFEROUS, or **Dorsiparous** *Plants*, are thoſe of the capillary kind; which are without ſtem, and bear their ſeeds on the backſide of their leaves.

DORSUM, in anatomy, is the hind-part of the thorax; commonly tranſlated the *Back*.

The *Dorſum* includes alſo the loins. See the article LOINS.

Dorsum *Manus*, and *Pedis*, is the outſide of the hand, and foot; or that part oppoſite to the palm, and ſoal.

Dorsum *Naſi* is the ridge of the noſe, which runs the whole length of that part.

In thoſe we call Roman noſes, the *Dorſum* is higher, and more prominent, about the middle, than in the reſt; which part is called the *Spina*, or *Spine*.

DOSE*, in pharmacy, *&c.* the quantity of a medicine to b taken at one time.

* The word is formed from the Greek δοσις, which ſignifies gift, or a thing given; from διδωμι, do, I give.

A ſecret in phyſic is nothing, unleſs the *Doſe* be known. In authors, and diſpenſatories, that deſcribe the ſame remedy, frequently the *Doſe* is different; which occaſions a great difference in its effect.

Dr. Cockburn has given us an eſſay towards determining the *Doſes* of purgative medicines, on mechanical principles.

DOSITHEANS, **Dosithei**, an antient ſect among the Samaritans.

Mention is made in Origen, Epiphanius, Jerom, and diver other Greek and Latin fathers, of one Doſitheus, the chie of a faction among the Samaritans; but the learned are no at all agreed, as to the time wherein he lived. St. Jerom, i his dialogue againſt the Luciferians, places him before our Saviour; wherein he is followed by Druſius, who, in his anſwe to Serrarius, places him about the time of Sennacherib, kin of Aſſyria: but Scaliger will have him poſterior to our Saviour's time. And, in effect, Origen intimates him to hav been contemporary with the apoſtles; where he obſerves, th he endeavoured to perſuade the Samaritans, that he was th Meſſiah foretold by Moſes.

He had many followers; and his ſect was ſtill ſubſiſting a Alexandria in the time of the patriarch Eulogius; as appear from a decree of that patriarch, publiſhed by Photius. I that decree, Eulogius accuſes Doſitheus, of injurioufly treatin the antient patriarchs, and prophets; and attributing to himſelf the ſpirit of prophecy. He makes him contemporary wi Simon Magus; and accuſes him of corrupting the Pentateuc in divers places, and of compoſing ſeveral books, directly contrary to the law of God.

Archbiſhop Uſher takes Doſitheus to be the author of all th changes made in the Samaritan Pentateuch; which he argu from the authority of Eulogius: but all we can juſtly gath from the teſtimony of Eulogius is, that Doſitheus corrup the Samaritans copies ſince uſed in that ſect; but that co ruption did not paſs into all the copies of the Samaritan Pen tateuc tateuch, now in uſe among us, which vary but little from the Jewiſh pentateuch.

And in this ſenſe we are to underſtand that paſſage in a Samaritan chronicle, where it is ſaid, that Douſis, *i. e.* Doſitheus, altered ſeveral things in the law of Moſes.

The author of that chronicle, who was a Samaritan by religion, adds, that their high-prieſt ſent ſeveral Samaritans to ſeize Douſis, and his corrupted copy of the pentateuch. Epiphanius takes him to have been a Jew by birth, and to have abandoned the Jewiſh party for that of the Samaritans. He imagines him likewiſe to have been the author of the ſect of the Sadducees: this is inconſiſtent with his being later than our Saviour. And yet the Jeſuit Serrarius agrees to make Doſitheus the maſter of Sadoc, from whom the Sadducees are derived.

Tertullian, making mention of the ſame Doſitheus, obſerves, that he was the firſt who dared to reject the authority of the prophets, by denying their inſpiration. But he charges that as a crime peculiar to this ſectary, which, in reality, is common to the whole ſect, who have never allowed any but the five books of Moſes for divine.

DOTAL *goods*. See the article Goods.

DOTE—*Recto de* Dote. See the article Recto.

DOUBLE *Aſpect*. See the article Aspect.

Double *Baſtion*. See the article Bastion.

Inſtances of Double *Children*, Double *Cats*, Double *Pears*, &c. are frequent in the *Philoſoph. Tranſact.* and elſewhere. See Monster.

Sir John Floyer in the ſame *Tranſactions*, giving an account of a *double turkey*, furniſhes ſome reflections on the production of *double animals* in general. Two turkeys, he relates, were taken out of an egg of the common ſize, when the reſt were well hatched, which grew together by the fleſh of the breaſtbone; but in all other parts were diſtinct. They ſeemed leſs than the ordinary ſize, as wanting bulk, nutriment, and room for their growth, which latter, too, was apparently the occaſion of their coheſion.

For, having two diſtinct cavities in their bodies, and two hearts, they muſt have ariſen from two cicatricula's; and conſequently, the egg had two yolks; which is no uncommon accident. He had a dried *double chicken*, he aſſures us, that though it had four legs, four wings, *&c.* it had but one cavity in the body, one heart, and one head; and that this, conſequently, was produced from one cicatricula.

So, Paræus mentions a *double infant* with only one heart: in which caſe, the original, or ſtamen of the infant, was one, and the veſſels regular; only, the nerves and arteries towards the extremities, dividing into more branches than ordinary, produced thoſe *double* parts.

The ſame is the caſe in the *double flowers* of plants, occaſioned by the richneſs of the ſoil. So it is in the eggs of quadrupeds, *&c.*

There are, therefore, two reaſons of duplicity in embryo's: 1. The conjoining, or connexion of two perfect animals; and, 2. An extraordinary diviſion, and ramification of the original veſſels, nerves, arteries, *&c.*

Double *Deſcant*, in muſic. See the article Descant.

Double *Dieſis*. See the article Diesis.

Double *Eccentricity*. See the article Eccentricity.

Double *Feaſt*. See the article Feast.

Double *Fever*. See the article Fever.

Double *Fiché*, or Double *Fichy*, in heraldry. A croſs is denominated *double fiché*, when the extremities are pointed at each angle; that is, when each extremity has two points: in contradiſtinction to *fiché*, where the extremity is ſharpened away to one point.

Leigh calls it *double pitchy*, which ſeems to be a miſtake. Gibbon expreſſes it by an octagonal croſs, the two points whereof at each extremity are parted inwards by a ſmall ſpace of a line. By which it is diſtinguiſhed from the croſs of Malta, the two points whereof proceed from a third point; or acute angle between them.

Double *Fine*. See the article Fine.

Double *Fugue*. See the article Fugue.

Double *Letter*, in grammar, a letter, which has the force and effect of two; as the Hebrew *Tſade*, which is equivalent to *T* and *S*; or the Greek ξ, or Latin *x*, &c.

Theſe letters are evidently equal to two; when we pronounce the Latin *axis*, or the Engliſh *axillary*, we give the *x* the ſame ſound, as if it were written with two *cc*, *accis*, *accillary*, or a *c* and *s*, *acſis*, *acſillary*.

The Greeks have three, Z, Ξ, Ψ: the Latins only two, X and Z: and moſt of the modern languages have the ſame.

Double *Meaſure*. See the article Measure.

Double *Pedeſtal*. See the article Pedestal.

Double *Plea*, in law, is where the defendant alleges for himſelf two ſeveral matters in bar of the action; whereof either is ſufficient to effect his deſire, in debarring the plaintiff.

This is not admitted in the common law: for which reaſon it is to be well obſerved, when a plea is *double*, and when not; for if a man allege ſeveral matters, one nothing dependent on another, the plea is accounted *double*; but if they be mutually depending on each other, then it is accounted but *ſingle*.

Double *Plough*. See the article Plough.

Double *Point*, in the higher geometry.—When all the right lines tending the ſame way with the infinite leg of any curve, do cut it in one only point (as happens in the ordinates of the Carteſian, and the cubical parabola; and in the right lines which are parallel to the abſciſſes of hyperbola's, and parabola's), then you are to conceive, that thoſe right lines paſs through two other points of the curve, placed, as I may ſay, at an infinite diſtance. Which coincident interſection, whether it be a finite, or an infinite diſtance, Sir Iſaac Newton calls the *double point*.

Double *Poſition*. See the article Position.

Double *Quarrel*, *duplex querela*, a complaint made by a clerk, or other, to the archbiſhop of the province, againſt an inferior ordinary, for delaying juſtice in ſome eccleſiaſtical cauſe; as to give ſentence, inſtitute a clerk preſented, or the like.

Its denomination ſeems owing to this, that it is commonly made both againſt the judge, and him at whoſe ſuit juſtice is delayed.

Double *Ratio*. See the article Duple.

Double *Roads*. See the article Roads.

Double *Tenaille*. See the article Tenaille.

Double *Time*. See the article Time.

Double *Vault*. See the article Vault.

Double *Veſſel*, in chemiſtry, is when the neck of one bolthead, or matraſs, is put, and well luted into the neck of another.

Of theſe there are divers kinds and forms, uſed in the circulation of ſpirits, in order to their being exalted, and refined, as high as can be. See Circulation.

Double *wheeled plough*. See the article Plough.

Double *winding ſtairs*. See the article Stairs.

Grafting by Double *inciſion*. See the article Engrafting.

Recovery with Double *voucher*. See the article Recovery.

DOUBLED *Column*. See the article Column.

DOUBLINGS, in heraldry, the linings of robes, or mantles of ſtate; or of the mantlings in atchievements.

Doubling, in a military ſenſe, is the putting two ranks, or files of ſoldiers, into one.

When the word of command is, *double your ranks*, then the ſecond, fourth, and ſixth ranks are to march up into the firſt, third, and fifth; ſo that of ſix ranks they make but three, leaving double the interval there was between them before.—But it is not ſo when they *double the half files*, becauſe then three ranks ſtand together, and the three others come up to *double* them; that is, the firſt, ſecond, and third, are *doubled* by the fourth, fifth, and ſixth; or on the contrary.

Double your files, directs each to march to that next to it on the right or left, according to the word of command; in which caſe the ſix ranks are turned into twelve, the men ſtanding twelve deep; the diſtance between the files being now *double* of what it was before.

Doubling *a Cape*, or *Point*, in navigation, ſignifies the coming up with it, paſſing by it, and leaving it behind the ſhip.

The Portugueſe pretend to be the firſt that ever *doubled* the Cape of Good Hope, under their admiral Vaſquez de Gama: but we have accounts in hiſtory, particularly in Herodotus, of the Egyptians, Carthaginians, *&c.* having done the ſame long before them.

DOUBLON, Dubloon, a Spaniſh and Portugueſe coin, being the *double* of a piſtole. See Pistole.

There are alſo *double dubloons* now current among us for 3 pound 12 ſhillings.

DOUBTING, the act of with-holding a full aſſent from any propoſition; on ſuſpicion, that we are not thoroughly appriſed of the merits thereof; or from our not being able peremptorily to decide between the reaſons for, and againſt it.

The Sceptics, and Academics, *doubt* of every thing: the character of their philoſophy is, not to allow any thing for true; but to with-hold the aſſent, and keep the mind free, and in ſuſpenſe. See Sceptics.

The Epicureans truſt their ſenſes, and *doubt* of their reaſon: their leading principle is, that our ſenſes always tell truth; that they are the firſt and only criterions of truth; and that go ever ſo little from them, and you come within the proper province of *doubting*.

The Carteſians, on the contrary, of all things bid us *doubt* our ſenſes; they are perpetually inculcating the deceitfulneſs of our ſenſes; and tell us, that we are to *doubt* of every one of their reports, till they have been examined, and confirmed by reaſon. See Cartesians.

Doubting, in rhetoric, a figure wherein the orator appears ſome time fluctuating, and undetermined what to do, or ſay. What ſhall I do? ſhall I apply to thoſe I once neglected! or implore thoſe who now forſake me!

Tacitus furniſhes us with an inſtance of *doubting*, almoſt to a degree of diſtraction, in thoſe words of Tiberius, written to the ſenate: *Quid ſcribam, P. S. aut quomodo ſcribam, aut quid omnino non ſcribam hoc tempore, dii me deæque pejus perdant quam perire quotidie ſentio, ſi ſcio.*

DOUCINE, in architecture, a moulding, or ornament, on the higheſt part of the corniche, in form of a wave, half convex, and half concave. See Tab. *Archit. fig.* 8.

The *doucine* is the ſame with a *cymatium*, or *gula*. See CYMATIUM, and GULA *recta*, and *inverſa*.

DOVE-TAIL *. in carpentry, the ſtrongeſt of all the kinds of jointings; wherein the tenon, or piece of wood that enters the other, goes widening to the extreme, and ſo cannot be drawn out again, by reaſon the tip, or extreme, is bigger than the hole.

* It has its denomination from the reſemblance the tenon bears to a *dove*'s tail.—The French call it *queue d'aronde*, ſwallow's tail; which name the Engliſh themſelves alſo retain in fortification.

DOVETAILING, in architecture, is a way of faſtening boards, or timbers, together, by letting one piece into another indentedly, with a *dove-tail* joint. See DOVE-TAIL.

DOWAGER, DOTISSA (*q. d.* a widow *endowed*, or that has a jointure), a title, or addition, applied to the widows of princes, dukes, earls, and perſons of high rank only.

Queen DOWAGER. See the article QUEEN.

DOWER, DOTARIUM, or DOARIUM, a portion of lands, or tenements, which a widow enjoys for term of life, from her huſband, in caſe ſhe ſurvives him; and which, at her death, deſcends to their children.

Among the Goths, the *dower* was only the tenth part of the huſband's eſtate; among the Lombards, a fourth; among the Romans, and Sicilians, it was a third: which is the rate that ſtill obtains among us, and moſt other nations.

Our law-books diſtinguiſh five kinds of *dower*; viz. *dower per legem communem*; *per conſuetudinem*; *ex aſſenſu patris*; *ad oſtium eccleſiæ*; and *de la plus belle*.

DOWER *by the common law* is a third part of ſuch lands as the huſband was ſole ſeiſed of in fee during the marriage; which the wife is to enjoy during her life, and for which there lies a *writ of dower*.

DOWER *by cuſtom* gives the wife, in ſome places, half her huſband's lands, ſo long as ſhe lives ſingle, as in gavelkind. And as cuſtom may enlarge, ſo may it abridge, *dower*, and reſtrain it to a fourth part.

In DOWER *ex aſſenſu patris*, and *ad oſtium eccleſiæ*, the wife may have ſo much *dower* as ſhall be aſſigned, or agreed upon; but it ought not to exceed the third part of the huſband's lands. If this be done before marriage, it is called a *jointure*.

DOWER *de la plus belle*. By this ſhe is *endowed* with the faireſt and beſt part of her huſband's eſtate.

Admeaſurement of DOWER. See ADMEASUREMENT.

Aſſignment of DOWER. See the article ASSIGNMENT.

Tenant in DOWER. See the article TENANT.

DOWNS *, a bank, or elevation, of ſand, which the ſea gathers and forms along its ſhores; and which ſerves it as a barrier.

* The word is formed from the French *Dune*, of the Celtic *Dum*, a mountain. Charles de Viſch. in his *Compend. Chronolog. Exord. & Progreſſ. Abbat. Clariſſ. B. Mariæ, de Dunis*, ſays, *Vallem reperit arenarum collibus (quos incolæ* Duynen *vocant) undique cinctam.*

DOWNS are particularly uſed for a famous road for ſhips, along the eaſtern coaſt of the county of Kent; from Dover to the North Foreland.

This road has excellent anchorage, and is well defended by the caſtles of Sandwich, Deal, and Dover.

Here it is, the Engliſh fleets uſually meet. We ſay, the fleet is yet in the *Downs*; ſailed from the *Downs*.

DOWRY, DOS, is properly the money, or fortune, which the wife brings her huſband in marriage, to have the uſe of it, during her marriage, towards ſupporting the charge thereof.

It is otherwiſe called *maritagium*, marriage-goods; by the Romans *dos*: and it differs from *dower*. See DOWER.

Among the Germans, it was antiently cuſtomary for the huſband to bring a *dowry* to his wife. *Romanis non in uſu fuit uxoribus* dotes *retribuere*; *ideo verbo genuino carent quo hoc dignoſcitur*; *& rem ipſam in Germanorum moribus miratur Tacitus*: dotem, *inquit*, *non uxor marito*, *ſed uxori maritus affert*. Spelman.

At preſent, in Germany, the women of quality have but very moderate fortunes. For inſtance, the princeſſes of the electoral houſe of Saxony have only 30000 crowns; thoſe of other branches of the ſame family, 20000 florins; thoſe of Brunſwic, and Baden, only 1500 florins, beſides a ſum for cloaths, toys, and equipages. *Dict. de Trev.*

DOWRY is alſo uſed, in a monaſtic ſenſe, for a ſum of money given along with a maid, upon entering her in ſome religious order.

In France, the *dowry* of perſons entering a monaſtery, to make profeſſion of a religious life, is limited by law. That. *e. gr.* given upon entering a monaſtery of Carmelites, Urſelines, and others, not regularly founded, but eſtabliſhed ſince the year 1600. by letters patents, muſt not exceed the ſum of 8000 livres, in towns where parliaments are held; nor 6000, in other places.

DOXOLOGY, an appellation given by the Greeks to the 14th verſe of the ſecond chapter of St. Luke, *Glory be to God in the higheſt*, &c. becauſe beginning with the Greek word δόξα, *Glory*.

This they diſtinguiſh by the name of *great doxology*; and the *Gloria Patri*, *Glory be to the Father*, they call the *leſs doxology*, as beginning with the ſame word δόξα.

Philoſtorgius, L. III. N. 13. gives three formula's of the *leſſer doxology*. The firſt is, *Glory be to the Father, and to the Son, and to the Holy Ghoſt*: the ſecond, *Glory be to the Father, by the Son, in the Holy Ghoſt*: and the third, *Glory be to the Father, in the Son, and the Holy Ghoſt*.

Sozomen, and Nicephorus, give a fourth; *viz. Glory be to the Father, and the Son, in the Holy Ghoſt*.

The firſt of theſe *doxologies* is that in common uſe throughout the weſtern church. It was firſt inſtituted about the year 350. by the Catholics of Antioch, then called *Euſtathians*.

The three others were compoſed by the Arians: the ſecond was that of Eunomius, and Eudoxus, and which was approved by Philoſtorgius. The three were all made about the year 341. in the council of Antioch, when they firſt began to diſagree among themſelves. Philoſtorgius aſſures us, that Flavian, afterward patriarch of Antioch, was the author of the firſt, or *catholic Doxology*; but Sozomen, and Theodoret, ſay nothing of it: and Philoſtorgius, an Arian author, ſcarce deſerves to be credited, on his ſingle word.

There were antiently very great diſputes, and principally at Antioch, as to the form of *doxology*: that moſtly uſed among the orthodox was, the ſame as ſtill obtains; the reſt were affected by the Arians, and other Antitrinitarians: yet St. Baſil, in his book *On the Holy Spirit*, defends the ſecond as orthodox, and legitimate.

Some authors write hymnology as ſynonymous with *doxology*; but there is a difference: hymnology is applied to pſalms, or the recitation of pſalms; and *doxology* only to the little verſe, *Glory be to the Father*, &c. repeated at the end of each pſalm.

DOZEIN. } See the article DECENNIER.
DOZINERS. }

DRACHM, ΔΡΑΧΜΗ, an antient ſilver coin, uſed among the Greeks. See COIN.

The *drachma* is ſuppoſed by moſt authors to have been the ſame, among the Greeks, with *denarius*, or peny, among the Romans; which was equivalent to four ſeſterces.

Of this opinion is Budæus, *De Aſſe*; who confirms it from the authorities of Pliny, Plutarch, Strabo, and Valerius Maximus; with whom δραχμὴ is ſynonymous with *denarius*.

But this is no ſtrong conviction, that the two moneys were preciſely of the ſame value: thoſe authors, not treating expreſly of coins, might eaſily render the one by the other, provided there were no conſiderable difference between them.

Scaliger, in his diſſertation, *De Re Nummaria*, does not ſay abſolutely, that the *denarius* and *drachma* were the ſame thing: but from a Greek paſſage, in an antient law, C. XXVI. *Mandati*, where the *drachma* is ſaid to be compoſed of ſix oboli; he concludes, that in the age of Severus, at leaſt, the *denarius* and *drachma* were the ſame.

But Agricola, *De Menſ. & Ponder*. L. IV. proves, from Pliny, Celſus, and Scribonius Largus, that the *denarius* only contained 7 ounces; and from Livy, Appian, Cleopatra, &c. that the *drachma* contained 8: and maintains, that, when ſome Greek authors ſpeak of the ounce as only containing 7 *drachms*, they do not mean the Attic *drachm*, but the Roman *denarius*, which Greek authors render by δραχμὴ.

Gronovius agrees with Agricola, *viz.* that the *drachma* was the 8th part of an ounce. The opinion is confirmed by Iſ dore, L. XIV. c. 24. by Fannius, who ſays as much in expreſs terms; and by Voluſius, who divides the ounce into 2 ſcriptuli, or ſcruples, whereof the *drachm* comprehended three. Thus much ſuppoſed, and ſuppoſing likewiſe the antient Roman ounce equal to the modern one, and, of conſequence, 4 grains leſs than the French; it follows, that the antient Roman ounce weighed 536 French grains, and the Attic *drachm* 67 grains. Laſtly, ſuppoſing the ſilver at Athens of the ſam fineneſs with ours; and taking ours at the price it now bears, the Attic *drachma* will be found equivalent to 7 pence 3 fa things ſterling.

The Grecian way of accounting ſums of money, was b *drachmæ*; 10 of which were equal to 6 ſhillings, 5 penc halfpeny; and 100 equal to a mina.

DRACHM is alſo a weight uſed by our phyſicians; containi juſt ſixty grains, or three ſcruples, or the eighth part of a ounce.

DRACHM was likewiſe an antient Jewiſh money; having o one ſide a harp, and on the other ſide a bunch of grapes. This coin was a half-ſhekel; and was ſo called by the Je It is only the Greeks called it δραχμὴ. It was equal to tw Attic *drachmæ*. See SHEKEL.

DRACO, Dragon, in aſtronomy, a conſtellation of the northern hemiſphere; whoſe ſtars, according to Ptolemy, are 31; according to Tycho, 32; according to Bayer, 33; and according to Mr. Flamſteed, 49.

The longitudes, latitudes, magnitudes, &c. whereof are as follows:

Names *and* Situations *of the* STARS.	Sign.	Longit. ° ′ ″	Latitude. North. ° ′ ″	Magni.
Laſt of the Tail.	♌	5 59 03	57 13 24	4
Another ſubſeq. and contiguous.		6 29 10	57 30 55	6
		12 33 10	61 10 10	6
Laſt but one of the Tail.		11 51 58	61 43 40	4
That follows this.	⊙	11 25 15	61 57 45	5
15.				
Preceding the antepenultimate.	♍	0 31 19	65 21 50	5
Antepenultimate of the Tail.		3 03 11	66 21 43	3
Preceding in the laſt Bend.	♎	0 32 27	71 03 49	3
Subſequent in the ſame Bend.		12 20 34	75 25 09	3
Preced. of two follow. the laſt Bend.		9 58 34	78 27 02	3
10.				
North in the third Bend.	♍	0 42 04	81 06 11	6
Laſt of thoſe following the laſt Bend,		29 49 00	81 39 25	6
Middle in the third Bend; double.	♎	0 10 58	83 19 35	6
		1 06 40	83 21 30	6
In the Tongue.	♏	20 11 05	76 14 30	6
15.				
Subſequent in third Bend.	♍	28 35 53	84 47 29	3
That over the eye.	♐	7 21 37	75 18 35	3
In the mouth; double.		5 38 33	78 10 38	5 6
		5 42 55	78 10 07	5 6
Preced. of two follow. the third Bend.	♌	20 24 33	86 51 52	6
20.				
Subſequent in the ſame.		7 18 11	86 54 30	5
	♐	19 06 14	74 11 6	6
Preced. of the preced. △ in the Belly.	♋	9 10 29	84 07 35	4
Againſt the Jaw.	♐	20 21 13	80 19 43	4
Bright one in the crown of the head.		23 35 35	74 58 26	2 3
25.				
Another and following.	♊	29 25 24	84 29 50	5 6
	♒	2 21 19	87 25 03	6
N. of 3. in the firſt Bend of the Neck.	♑	18 12 21	81 48 48	6
South of the preced. △ in the Belly.	♊	6 46 10	84 50 02	4
North of the ſame Triangle.		12 02 00	83 30 27	4
30.				
Middle in the firſt Bend.	♑	21 38 02	79 47 27	6
South in the ſame Bend.		25 31 25	77 44 56	6
Behind in the firſt Bend.	♒	10 55 52	80 49 31	6
		9 35 57	79 06 28	6 7
	♊	3 29 55	81 35 55	5
35.				
	♒	6 44 17	76 57 50	6
		4 52 03	74 40 03	5
Preced. of the 2d. △ in the Belly.	♉	16 04 14	83 09 33	5
	♒	15 20 52	77 13 18	5
40.		18 48 48	77 44 31	6 7
N. in the □ againſt the 2d. Bend. of (the preced. ſide.	♈	13 10 55	82 51 04	3
South of the ſame Side.	♓	29 26 46	81 48 28	4 5
	♊	4 56 12	78 38 10	6
North of the ſecond △ in the Belly.	♉	20 32 52	80 37 38	5
South of that Triangle.	♈	27 11 22	80 53 11	6
45.				
North of thoſe following, in the □		28 34 21	79 26 17	4
Informis near *Cepheus*'s arm; double.		2 07 35	77 29 00	5 6
		1 27 34	77 19 45	7
South of thoſe following in the □	♈	16 17 23	78 07 15	5

RACO *Volans*, among meteorologiſts, a fat, heterogeneous, earthy meteor, appearing long, and ſinuous, ſomething in the ſhape of a flying dragon.

This ſhape is ſuppoſed to ariſe from the hind part of the matter of this meteor being fired with greater impetuoſity than what comes firſt out of the cloud; and it is ſuppoſed, that the broken parts of the cloud, and the ſulphureous matter which adheres to them, from the apparent wings of this imaginary dragon.

ACONARIUS, in antiquity, *Dragon-bearer*. Several ations, as the Perſians, Parthians, Scythians, &c. bore dragons on their ſtandards; whence the ſtandards themſelves ere called *Dracones*, dragons. The Romans borrowed the me cuſtom form the Parthians, or, as Caſaubon has it, from he Dacæ; or, as Codin, from the Aſſyrians.

he Roman *Dracones* were figures of dragons painted in red, n their flags; as appears from Ammianus Marcellinus: but mong the Perſians, and Parthians, they were like the Roman gles, figures in full relievo; ſo that the Romans were frequently deceived, and took them for real dragons.

he ſoldier, who bore the dragon, or ſtandard, was called by e Romans *Draconarius*; and by the Greeks Δρακοναριος, d Δρακονσειοφορος; for the emperors carried the cuſtom ith them to Conſtantinople.

t. Diaconus, *Chron. Caſin.* L. IV. C. 39. obſerves, that the juli, Cercoſtatarii, Staurophori, Aquiliferi, Leoniferi, and raconarii, all marched before king Henry when he entered me.

Caput DRACONIS. See the article Caput, and Dragon.

Cauda Draconis. See the article Cauda.

Sanguis Draconis. See the article Sanguis, and Dragon.

Venter Draconis. See the article Venter.

DRACONTIC *Month*, the ſpace of time wherein the moon going from her aſcending node, called *Caput Draconis*, returns to the ſame.

DRACUNCULI, in medicine, a diſeaſe in children, wherein they feel a vehement itching; ſuppoſed to ariſe from little worms, called *Dracunculi*, generated of a viſcid humour under the ſkin, about the back, ſhoulders, and arms.

Children ſeized with the *Dracunculi*, become hectic, and ſcarce receive any nouriſhment at all, though they eat plentifully.

The diſeaſe, however, is not ſo peculiar to children, but that grown perſons have been ſometimes affected with it. The emperor Henry V. is ſaid to have died of it; having had it from his birth.

The women in Poland cure their children of the *Dracunculi*, after the following manner: the child is waſhed, and bathed in warm water, wherein a quantity of crummed bread, and a handful of aſhes, have been caſt. The water being poured off, and the bread gathered into a maſs; when they come to break it again the next day, they find in it an infinite quantity of fine hairs, which ſome call *Dogs Hairs*, and others, *Worms*; and it is thoſe hairs, or worms, which are ſuppoſed to be the cauſe of the diſeaſe.

After thus bathing the children, they rub their ſhoulders, and arms, with flour ſteeped in vinegar, or honey; upon which immediately there ariſes on the ſkin a great number of tubercles, like poppy-ſeed; ſuppoſed to be the heads of worms. Theſe they ſcrape off as faſt as they appear; otherwiſe they withdraw beneath the ſkin again. The operation is repeated till ſuch time as no more tubercles ariſe.

The *Dracunculi* is a diſeaſe little known in England. The editors of the Leipſic acts, ſpeaking of it, in the tome for the month of October 1682. call the bodies, which put forth at the pores after bathing, thick hairs, *corpuſcula pilorum craſſiorum inſtar denſa & ſpiſſa*, and not fine ſlender hairs, as Degori calls them. They add, that theſe little corpuſcles are hence called *Crinones*; and by reaſon of their devouring the food, which ſhould nouriſh the children, *Comedones*——Velſchius, in a curious diſſertation on the ſubject, calls them *Capillary Worms: exercitatio de vermibus capillaribus infantum.*

As to the nature and figure of theſe little bodies, the ſame editors obſerve, that the microſcopes have put it paſt doubt, that they are real living animals, of an aſh-colour, having two long horns, two large round eyes, and a long tail terminated with a tuft of hair; but that it is difficult to draw them out whole, by ſcraping the child's body; in that being very ſoft, the leaſt rubbing bruiſes them, and breaks them. See Supplement, article Dracunculi.

DRAG, in building.—A door is ſaid to *drag*, when in opening and ſhutting it hangs, or grates upon the floor.

DRAGOMAN *, or Drogman, a term of general uſe through the eaſt, for an interpreter, whoſe office is to facilitate commerce between the orientals, and occidentals.

* The word is formed from the Arabic, *Targeman*, or *Targiman*, of the verb *Taragem, he has interpreted.* From *Dragoman*, the Italians formed *Dragomano*, and, with a nearer relation to its Arabic etymology, *Turcimanno*; whence the French, and our *Trucheman*, as well as *Dragoman*, and *Drogman*.

DRAGON, in aſtronomy. *Dragon*'s *head*, and *tail*, *caput & cauda Draconis*, are the nodes of the planets; or the two points, wherein the ecliptic is interſected by the orbits of the planets; and particularly that of the moon; making with it angles of five degrees.

One of theſe points looks northward; the moon beginning then to have northward latitude: and the other ſouthward; where ſhe commences ſouth.

This her deviation from the ecliptic ſeems (according to the fancy of ſome) to make a figure like to that of a *Dragon*, whoſe belly is, where ſhe has the greateſt latitude; the interſection repreſenting the head and tail, from which reſemblance the denomination ariſes.

But note, that theſe points abide not always in one place, but have a motion of their own in the zodiac, and retrograde-wiſe, almoſt three minutes a day; completing their circle in about 19 years: ſo that the moon can be but twice in the ecliptic, during her menſtrual period; but at all other times will have latitude, as they call it.

It is in theſe points of interſection that all eclipſes happen.

They are uſually denoted by theſe characters ☊ *Dragon*'s head, and ☋ *Dragon*'s tail.

Dragon's *Blood* *, *ſanguis draconis*, in medicine, a reſinous ſubſtance brought from the eaſt, of conſiderable uſe, as an agglutinant, againſt fluxes, &c.

* It derives its name *Dragon's Blood* from the redneſs of its colour, and gives its name *Dragon* to the tree that yields it. Some botaniſts talk of the figure of a *Dragon*, finely repreſented under the rind of the fruit of that tree. But this is a mere fiction.

The antients had a notion, that the *Dragon*, fighting with the elephant, ſucked all its blood through its eyes and ears; that the elephant, falling down dead, cruſhed the *Dragon*; and that from their blood, thus mixed on the ground, aroſe what they called *Dragon's Blood*, which they held in high eſteem.—This is the account given by Solinus, Pliny, Iſidore, and others after them; but this combat is a mere fable, originally invented by the merchants.

The genuine *Dragon's Blood* is the juice, or reſin of a large tree, called *Draco Arbor*, the *Dragon* tree, growing in Africa, and America, as well as in China. The reſin is of a dark red, and eaſily diſſolves when brought towards the fire: if caſt into the fire, it flames; but it diſſolves with much difficulty in any liquor.

It is a good aſtringent; and is uſed in hæmorrhages, and dyſenteries; as alſo to faſten the teeth, and ſtrengthen the gums. There is alſo a counterfeit *Dragon's Blood*, made of the gum of the cherry, or almond-tree, diſſolved, and boiled in a tincture of Brazil wood; but this is of no uſe, except for external diſeaſes of horſes.

DRAGONNEE, in heraldry. A *Lion Dragonnee*, is where the upper half reſembles a *Lion*; the other half going off like the hind part of a *Dragon*.

The like may be ſaid of any other beaſt as well as the lion.

DRAGOONS*, in war, an order of ſoldiery, who march on horſeback, and fight on foot, though ſometimes, too, on horſeback.

* Menage derives the word *Dragoon* from the Latin *Draconarius*, which in Vegetius is uſed to ſignify ſoldier. But it is more probably derived from the German *Tragen*, or *Draghen*, which ſignifies *to carry*; as being infantry carried on horſeback.

The *Dragoons* are uſually poſted in the front of the camp, and march firſt to the charge, like a kind of *enfans perdus*.

They are uſually reputed as belonging to the infantry, and in that quality have colonels, and ſerjeants; but they have cornets, too, like cavalry. In the French army they are ſaid to ride without boots.

Their arms are, a ſword, firelock, and bayonet. In the French ſervice, when the *Dragoons* march on foot, their officers bear the pike, and the ſerjeants the halbert; neither of which are uſed in the Engliſh ſervice.

DRAGS. See the article SEA-DRAGS.

DRAMS. See the article CORDIALS.

DRAMA*, in poetry, a piece, or poem, compoſed for the ſtage.

* The word is Greek, δραμα, which literally ſignifies *Action*; by reaſon in *Drama's*, or dramatic poems, they act, or repreſent *Actions*, as if they really paſſed.

A *Drama*, or, as we popularly call it, a *Play*, is a compoſition either in proſe or verſe, conſiſting, not in the ſimple recitation, but in the actual repreſentation of an action.

Our *Drama's* are, tragedies, comedies, and farces: for thoſe groteſque entertainments, lately introduced upon the ſtage, ſcarce deſerve the appellation.

Some critics take the book of Canticles for a *Drama*, or *Dramatic poem*: others maintain the ſame of the book of Job. Some ſcrupulous authors would reſtrain *Drama* to ſerious pieces, as tragedies: but with reſpect to the etymology, a comedy is as much a *Drama*, as a tragedy.

The primary parts of the *Drama*, as divided by the antients, are the *Protaſis*, *Epitaſis*, *Cataſtaſis*, and *Cataſtrophe*.—The ſecondary parts are, the *Acts* and *Scenes*.——The acceſſary parts are, the *Argument* or *Summary*, the *Prologue*, *Chorus*, *Mimus*, *Satura*, and *Atellana*.—Laſtly, the *Epilogue*, which pointed out the uſe of the piece, or conveyed ſome other notice to the audience in the poet's name.

DRAMATIC, in poetry, is an epithet given to pieces written for the ſtage.

For the laws of *Dramatic* poetry. See UNITY, ACTION, CHARACTER, FABLE, &c.

Stylo **DRAMATICO.** See the article STYLE.

DRAPERY*, in painting, and ſculpture, the repreſentation of the garments, or cloathing of human figures.

* The word is French, *Draperie*, formed from *Drap*, cloth.

In the general ſenſe, *Drapery* includes not only the garments, but alſo the tapeſtry, linens, and moſt other things that are not carnations, nor landſchapes.

The art of *Drapery* conſiſts chiefly in three points, *viz.* the ordering of the folds, or plaits; the different quality of the ſtuffs; and the variety of their colours.

As to the folds, they ſhould be ſo managed, that you may eaſily perceive what it is that they cover, and diſtinguiſh it from any thing elſe. For inſtance, that you ſee it is an arm that is under the *Drapery*, and not a leg, &c. The folds, again muſt be large, as breaking and dividing the ſight the leſs. There ſhould likewiſe be a contraſt between them, otherwiſe the *Drapery* will appear ſtiff.

The quality of the ſtuffs ſhould likewiſe be well conſidered; ſome make their folds abrupt, and harſh, and others more ſoft, and eaſy. The ſurface of ſome, again, has a luſtre; others are dull: ſome are fine, and tranſparent; others ſtrong, and ſolid.

The variety of colours, when well managed, makes the great beauty of a painting; all being not equally amicable, and friendly, with reſpect to each other; and ſome are never to be placed near certain others.

M. de Piles gives abundance of good obſervations, relating to *Drapery*. Their firſt effect, he obſerves, and that which the painter ought to have principally in view, is, that they expreſs the thing they are ſuppoſed to cover: and they muſt never be made to adhere, and ſtick to the parts of the body: a great lightneſs, and motion of the *Drapery*, are only proper for figures in great agitation, or expoſed to the wind. The nudities of the figures ſhould always be deſigned, before the painter proceed to the *Draperies*: Paolo Veroneſe excelled in *Draperies*.

DRASTIC, a ſtrong and powerful medicine; more particularly, a purgative that works with ſpeed and vigour; as jalap, ſcammony, and the other ſtronger cathartics.

DRAUGHT, in medicine. See the article POTION.

DRAUGHT, in trade, is an allowance made in the weight o commodities; the ſame as clough. See CLOUGH.

DRAUGHT, in painting, &c. See the article DESIGN.

DRAUGHT, or, as it is pronounced, DRAFT, in architecture, the figure of an intended building deſcribed in paper; wherein are laid down, by ſcale and compaſs, the ſeveral diviſions and partitions of the apartments, rooms, doors, paſſages, conveniencies, &c. in their due proportion.

It is uſual, and even exceedingly convenient, before a buildin is begun to be raiſed, to have *Draughts* of the ichnography, or ground-plot of each floor, or ſtory; as alſo of the form and faſhion of each front, with the windows, doors, ornaments, &c. in an orthography, or upright.

Sometimes the ſeveral fronts, &c. are taken, and repreſente in the ſame *Draught*, to ſhew the effect of the whole building: this is called a *ſcenogrophy*, or *perſpective*. See SCENOGRAPHY.

Reduction of a **DRAUGHT.** See the article REDUCTION, an PENTAGRAPH.

DRAW.—A ſhip is ſaid to draw ſo much water, according the number of feet ſhe ſinks into it.

Thus, if fifteen feet from the bottom of her be under wate or if ſhe ſink into the water fifteen feet perpendicularly, ſh is ſaid to *draw* fifteen feet water; and according as ſhe *dra* more, or leſs, ſhe is ſaid to be of more, or leſs *Draught*.

DRAW, in the foreſt-law. See the article DOG-*draw*.

DRAW-BACK, in commerce, a rebate, or diſcount upon th price of commodities, purchaſed on certain conditions. S REBATE, and DISCOUNT.

DRAW-BRIDGE, a bridge made after the manner of a floor, be *drawn* up, or let down, as occaſion ſerves, before the g of a town or caſtle.

DRAWING *Medicines*, or DRAWERS. See EPISPASTI and RIPENERS.

DRAWING *of gold*, or *ſilver*, is the paſſing it through a numb of holes in an iron, each leſs than another, to bring it i a wire. See WIRE-*drawing*.

DRAWING *of a bill of Exchange*, is the writing, ſigning, a giving it to the perſon, who has already paid the value, content thereof, to receive it in another place.

A perſon ſhould never *draw* a bill of exchange, unleſs he well aſſured, it will be accepted, and paid. See BILL *Exchange*.

DRAWING, in painting, &c. See DESIGNING, and COU TER-DRAWING.

DRAWING, among hunters, is, when they beat the buſhes a a fox.

DRAWING *amiſs* is, when the hounds, or beagles hit the ſc of their chace the contrary way, ſo as to purſue it up wind, when they ſhould have done it down the wind.

DRAWING *on the ſlot* is, when the hounds touch the ſcent, *draw* on, till they rouſe, or put up the chace.

Fine-**DRAWING.** See the article FINE-*drawing*.

DRAY *Plough*. See the article PLOUGH.

DRENCH, among farriers, a phyſical draught, or po given a horſe, by way of purge.

DRENCHES, or DRENGES, DRENGI, or THRENGI, our old cuſtoms, a term, about which the lawyers and a quaries are a little divided. See THRENGUS.

Drenges, ſays an antient manuſcript, were *tenentes in ca* according to Spelman, they were *e genere vaſallorum non bilium, cum ſinguli qui in domes-day nominantur ſingula p rent maneria*: ſuch as, at the coming in of the Conqueror, ing put out of their eſtates, were afterwards, upon compl reſtored thereto; for, that they, being before owners th were neither in auxilio, nor conſilio, againſt him.

DRESSING *of meats*, the preparing them for food, by m of culinary fire.

The deſign of *dreſſing* is, to looſen the compages, or te of the fleſh, and diſpoſe it for diſſolution, and digeſtion i ſtomach. Fleſh not being a proper food without *dreſ* alleged as an argument, that man was not intended by nature for a carnivorous, or fleſh-eating animal.

The uſual operations are, *roaſting*, *boiling*, and *ſtewing*.—In *roaſting*, it is obſerved, meat will bear a much greater and longer heat than either in *boiling*, or *ſtewing*; and in *boiling* greater and longer than in *ſtewing*. The reaſon is, that *roaſting* being performed in the open air, as the parts begin externally to warm, they extend and dilate, and ſo gradually let out part of the rarefied included air, by which means the internal ſucceſſions, on which the diſſolution depends, are much weakened, and abated; *boiling* being performed in water, the preſſure is greater, and conſequently, the ſucceſſions to lift up the weight, are proportionably ſtrong; by which means the coction is haſtened: and even in this way, there are great differences; for the greater the weight of water, the ſooner is the buſineſs done.

In *ſtewing*, though the heat be infinitely ſhort of what is employed in the other ways, the operation is much more quick, becauſe performed in a cloſe veſſel, and full; by which means the ſucceſſions are more often repeated, and more ſtrongly reverberated. Hence the force of Papin's digeſtor; and hence an illuſtration of the operation of digeſtion.

Boiling, Dr. Cheyne obſerves, draws more of the rank, ſtrong juices from meat, and leaves it leſs nutritive, more diluted, lighter, and eaſier of digeſtion: *roaſting*, on the other hand, leaves it fuller of the ſtrong, nutritive juices, harder to digeſt, and needing more dilution. Strong, grown, and adult animal food, therefore, ſhould be *boiled*; and the younger, and tenderer, *roaſted*.

RESSING *of hops*. See the article HOPS.

RIE, or DRY. See the article DRY.

RIFT *of the foreſt*, an exact view, or examination of what cattle are in the foreſt; that it may be known, whether it be overcharged, or not, and whoſe the beaſts are; and whether they are commonable beaſts, or not. See FOREST, and COMMON.

RIFT-SAIL, in a ſhip, a ſail uſed under water; veered out right a-head, by ſheets, as other ſails are: its uſe being to keep the ſhip's head right upon the ſea, in a ſtorm; and to hinder a ſhip's driving too faſt in a current; with which view it is generally uſed by fiſhermen, eſpecially in the North-ſea.

RINK, a part of our ordinary food, in a iquid form, ſerving to dilute, and moiſten the dry meat.

The *Drinks*, in different countries, are different. Thoſe ordinarily uſed among us, are, water, malt-liquors, and wine.

The extraordinaries, are, cyder, punch, brandy, tea, ſtrong waters, *&c.* See each under its proper article, CYDER, *&c.*

The *Malt-Drink* brewed in England, in one year, Chamberlayne aſſures us, amounts to very near two millions of barrels, ſtrong and ſmall.

Water, Dr. Cheyne obſerves, was without all diſpute the primitive, original drink of man, as it is the only ſimple fluid (for there are but three more in nature, mercury, light, and ir, none of which is fit for human *Drink*) fitted for diluting, moiſtening and cooling; the only ends of *Drink*, appointed by ature: and happy had it been for the race of mankind, had ther mix'd, and artificial liquors never been invented. Water lone is ſufficient, and effectual, for all the purpoſes of human ants in *Drink*. Strong liquors were never deſigned for common uſe. They were formerly kept, here in England, as ther medicines are, in apothecaries ſhops, and preſcribed by hyſicians, as they do diaſcordium, and Venice treacle, to refreſh the weary, ſtrengthen the weak, and raiſe the low-ſpirited. The effect of the ordinary uſe of wine, and ſpirituous iquors, as natural cauſes will always produce their effects, is o inflame the blood into gout, ſtone, and rheumatiſm, fevers, leuriſies, ſmall pox, *&c.* to draw up the juices, and ſcorch and hrivel the ſolids. Thoſe, whoſe appetite and digeſtion are ood and intire, never want ſtrong liquors to ſupply them ith ſpirits: ſuch ſpirits are too volatile, and fugitive, for any olid or uſeful purpoſes of life. Two ounces of fleſh-meat, ell digeſted, beget a greater ſtock of more durable and uſeful ſpirits, than ten times as much ſtrong liquors.

ll ſtrong liquors are as hard to digeſt, and require as much bour of the concoctive powers, as ſtrong food it ſelf. Water is the only univerſal diſſolvent, or menſtruum, and the oſt certain diluter of all bodies proper for food. There are a eat many ſpirituous liquors, which not only will not diſſolve, ut which will harden, and make more indigeſtible, certain rts, eſpecially the ſalts of bodies, wherein their active qualities, that is, thoſe which can do moſt harm to human conſtitutions, conſiſt. And we have known perſons of tender conſtitutions, who could neither eat, nor digeſt, upon *drinking* wine, ho, by *drinking* at meals common water, warm'd, have recovered their appetites, and digeſtion, and have thriven, and grown ump. It is true, ſtrong liquors, by their heat, and ſtimulation the organs of concoction, by increaſing the velocity of the otion of the fluids, and thereby quickening the other animal nctions, will carry off the load that lies upon the ſtomach, ith more preſent chearfulneſs. But then, beſide the future mages of ſuch a quantity of wine to the ſtomach, and the fluids, by its heat, and inflammation, the food is hurried into the habit unconcocted, and lays a foundation for a fever, a fit of the colic, or ſome chronical diſeaſe. *Eſſay on Health*, &c. p. 47, *& ſeqq.*

DRINKING-*Glaſſes*. See the article GLASSES.

DRIP, in architecture. See the article LARMIER.

DRIPS is alſo uſed in building, for a kind of ſteps, on flat roofs, to walk upon.

This way of building is much uſed in Italy; where the roof is not made quite flat, but a little raiſed in the middle; with *Drips*, or ſteps, lying a little inclining to the horizon. See ROOF.

DRIVE, in the ſea-language.—A ſhip is ſaid to *drive*, when an anchor being let fall, it will not hold her faſt, but that ſhe ſails away with the tide, and wind.

The beſt way to prevent this, is to veer out more cable; for the more cable ſhe has, the ſurer, and ſafer ſhe rides; or elſe to let fall more anchors.

Alſo, when a ſhip is a-hull, or a-try, they ſay, ſhe *drives to* leeward, or in with the ſhore, according to the way ſhe makes.

Wool-DIVERS. See the article WOOL.

DROGMAN. See the article DRAGOMAN.

DROIT, JUS, in our law-books, ſignifies *right*, or *law*: whereof ſome diſtinguiſh ſix kinds; *viz.*—1. *Jus recuperandi*, right of recovering: 2. *Jus intrandi*, right of entering; 3. *Jus habendi*, right of having: 4. *Jus retinendi*, right of retaining: 5. *Jus percipiendi*, right of receiving: 6. *Jus poſſidendi*, right of poſſeſſing. See LAW, and RIGHT; as alſo RECTUM, ENTRY, POSSESSION, *&c.*

Monſtrans de DROIT. See the article MONSTRANS.

DROPAX, ΔΡΩΠΑΞ, in pharmacy, an external medicine, in form of a plaiſter, uſed to take off the hairs from any part. See HAIR, and DEPILATORY.

The *Dropax* is of two kinds, *ſimple*, and *compound*.—The *ſimple* is made of an ounce of dry pitch, and two drachms of oil.

The *compound* is made with pitch, wax, colophony, common ſalt, bitumen, ſulphur vivum, pepper, euphorbium, cantharides, and caſtor.—There are alſo other ways of making it, to be found in the diſpenſatories.

It was antiently much in uſe alſo to warm the parts, to draw the blood and ſpirits to them, and to cure atrophies. To this purpoſe it was applied hot on the part affected, after firſt ſhaving it; and was pulled off again before quite cold; then heated afreſh, and applied again; and the operation thus repeated, till the part were rendered very red.

DROPPING, or DRIPPING, a term uſed among falconers, when a hawk mutes directly downwards, in ſeveral *Drops*, not throwing out her dung ſtraigt forwards.

DROPS, in meteorology. See the article RAIN.

The ſpherical form, into which the *Drops* of fluids conform themſelves, is a phænomenon that has a little perplexed the philoſophers.—The ſolution commonly given, was, that the equable, uniform preſſure of the ambient, or incumbent atmoſphere cloſed them into this form.—But this account will no longer paſs; now that we find the phænomenon holds in vacuo as well as in air.

The Newtonian philoſophers, therefore, aſcribe it to their attraction, which being greater between the ſeveral particles of the fluids, than between them, and thoſe of the medium, they are, as it were, concentrated, and brought as near each other, and into as little compaſs, as may be: which cannot be, without their being ſpherical *.

DROPS, in medicine, a liquid remedy, whoſe doſe is eſtimated by a certain number of *Drops*.

A little lowneſs of ſpirits, ſays Dr. Cheyne, ſpeaking of the ſofter ſex under fits of the vapours, *&c.* requires *Drops*, which paſs readily down, under the notion of phyſic: *Drops* beget drams, and drams beget more drams, till they come to be without weight, and without meaſure. Higher, and more ſevere fits, begot by theſe, bring forth farther neceſſity upon neceſſity of *Dorps*, drams, and gills, till at laſt, *&c.* *Eſſay on Health.*

Engliſh DROPS, or *volatile Engliſh* DROPS, *guttæ Anglicanæ*, is a liquor drawn by fire from a great number of ingredients, and found a powerful remedy againſt coagulation of the blood, obſtructions, apoplexies, malignant fevers, ſmall-pox, *&c.*

Its inventor was, Dr. Goddard, a phyſician of London. King Charles II. had much ado to purchaſe the ſecret of him, though he offered 5000 pounds for it: however, he prevailed at length; but the phyſician looked on it as a favour done the prince, to impart it to him on ſuch terms.—Hence it is, that the remedy took the name of *guttæ Anglicanæ*. See GUTTÆ *Anglicanæ*.

DROPS, *Guttæ*, in architecture, an ornament in the Doric entablature, repreſenting *Drops*, or little bells, immediately under the triglyphs.—See *Tab. Archit. fig.* 28. *lit.* e *and* o. See alſo TRIGLYPH.

* Thus, Sir Iſaac Newton: *Guttæ enim corporis cujuſque fluidi, ut figuram globoſam inducere conentur, facit mutua partium ſuarum attractio; eodem modo quo terra mariaque in rotunditatem undique conglobantur, partium ſuarum attractione mutua, quæ eſt gravitas.* Opt. p. 338.

DROPPER. See Fishing.

DROPSY *, 'ΥΔΡΩΨ, in medicine, a preternatural collection of ſerum, or water, in ſome part of the body; or a too great proportion thereof in the blood.

* The word is compounded of the Greek ὕδωρ, *water*.

The *Dropſy* acquires different names from the different parts it afflicts, or the different parts the waters are collected in.—That of the abdomen, or lower belly, called ſimply, and abſolutely, *Dropſy*, is particularly denominated *Aſcites*.—That of the whole habit of the body, *Anaſarca*, or *Leucophlegmatia*.—That of the head, *Hydrocephalus*.—That of the ſcrotum, *Hydrocele*.

There is alſo a ſpecies of this diſeaſe ſuppoſed to be cauſed, inſtead of water, by a collection of wind, called *Tympanites*, and by Hippocrates, the *dry Dropſy*.

We alſo meet with *Dropſies* of the breaſt, pericardium, uterus, ovaries, &c.

The cauſes of *Dropſies*, in general, are whatever may obſtruct the ſerous part of the blood, ſo as to make it ſtagnate in the veſſels; or burſt the veſſels themſelves, ſo as to let the blood out among the membranes; or weaken and relax the tone of the veſſels; or thin the blood, and make it watery; or leſſen the perſpiration.

Theſe cauſes are various; *viz.* ſometimes acute diſeaſes, ſcirrhous tumours of any of the more noble viſcera, exceſſive evacuations, particularly hæmorrhages, hard drinking, &c.

The aſcites, or *Water-Dropſy* of the abdomen, is the moſt uſual caſe, and what we particularly call the *Dropſy*: its ſymptoms are tumours, firſt of the feet, and legs, and afterwards of the abdomen, which keep continually growing; and if the belly be ſtruck, or ſhaken, there is heard a quaſhing of water. Add to this three other attendants, *viz.* a dyſpnœa; intenſe thirſt; and ſparing urine: with which may be numbered heavineſs, liſtleſſneſs, coſtiveneſs, a light fever, and an emaciation of the body.

The curative indications are two; *viz.* the evacuation of the water; and the ſtrengthening of the blood, and viſcera. The firſt is effected by ſtrong purgatives, particularly elaterium, and the infuſion of crocus metallorum, tho' this laſt works upwards more than downwards. For ſuch as are too weak to bear purgatives, Dr. Sydenham recommends diuretics, whereof the beſt are thoſe made of the lixivial ſalts.

For the ſecond intention, exerciſe, and change of air, wine, and other generous liquors, alſo ſtomachics, chalybeats, and other corroborating medicines, are preſcribed.

Where other means fail for evacuating the water, recourſe is to be had to the paracenteſis, or operation of tapping.

Mayerne recommends mercurius dulcis, and nitre, and ants eggs, for the promoting of urine, and draining the tumour. Exerciſe, and change of air; wine, and other generous liquors, cautiouſly taken; have alſo their uſe.

Baglivi notes, that in a *Dropſy* ariſing from a morbid liver, there is always a vehement dry cough; which is never obſerved in any other ſpecies. Tycho Brahe notes, that hydropic perſons uſually die about the full moon. Wainwright extols an infuſion of green tea in rheniſh wine; as alſo briony juice, as excellent in this diſeaſe. Some commend garlick. See Supplement, article Hydrops.

DROWNING, the act of ſuffocating, or being ſuffocated, by water.

People not accuſtomed to diving, Dr. Halley obſerves, begin to *drown* in about half a minute's time.

Drowning was antiently a kind of puniſhment: in the time of Louis XI. of France, the chronicles aſſure us, that they frequently *drowned* their criminals, inſtead of hanging them. *Chron. Scand.*

Natural hiſtorians and phyſicians furniſh us with divers well atteſted inſtances of ſurpriſing recoveries of perſons *drowned*: which, if maturely conſidered, might perhaps let a little light into the dark notion of life and death.

Pechlin, *de Aer. & Alim. def.* c. 10. gives the hiſtory of a gardener of Troningholm, then living, aged 65 years, who 18 years before ſlipped under the ice to the depth of 18 ells, where he ſtood at the bottom, upright as it were, for 16 hours; when, being drawn out with a drag ſtruck into his head, and wrapped up in cloaths, from the common perſuaſion of thoſe people, that he would recover; he was afterwards ſtroked, rubbed with linen ſwaths, and air blown up his noſtrils for ſeveral hours: till the blood began to move. Laſtly, plying him with antapoplectic, and genial liquors, he was reſtored to life. In memory of this accident, the queen-mother ſettled a yearly ſtipend upon him, &c.

Tileſius, keeper of the king's library, gives us a yet leſs probable hiſtory of a woman he himſelf knew, who, he ſays, was under the water three whole days, yet brought to life again after the ſame manner as the Troningholm gardener; and was, at the time of his writing the account, alive.

But what ſhall we ſay to Burmannus, who aſſures us, that, being in the village Boneſs, of the pariſh of Pithou, he aſſiſted at the funeral ſermon of one Laur. Jona, an old man of ſeventy; where the preacher related, that, when a youth of 17, he had been buried ſeven weeks under water, and at length drawn forth, and brought again to life? Pechlin. *ubi ſup. Sit penes ipſum fides!*

DRUG, in commerce, a general name for all ſpices, and other commodities, brought from diſtant countries, and uſed in the buſineſs of medicine, dying, and the mechanic arts.

The *Drugs* uſed in medicine, are very numerous, and make the greateſt part of the commerce of our *Druggiſts*. Some of them grow in England, France, &c. But the greateſt part are brought from the Levant, and the Eaſt-Indies.

A liſt of all of them would be endleſs. Some of the principal are, aloes, ambergris, amber, aſſa fœtida, antimony, bezoar, borax, benjoin, camphor, cantharides, cardamum, caſſia, caſtoreum, coloquintida, civet, coral, cubebs, coffee, cocoa, gum animæ, armoniac, adraganth, elemi, gamboge, labdanum, opopanax, ſagapenum, ſandarac, lacca, jalap, manna, maſtic, myrrh, muſc, opium, pearls, quinquina, hellebore, galanga, zedoary, rhubarb, ſarſaparilla, ſtorax, galbanum, ſanguis draconis, ſenna, ſperma ceti, ſpica nardi, ſcammony, ſal ammoniac, tamarinds, tea, turpentine, turbith, tutia, &c.

The natural hiſtory, &c. whereof ſee under their reſpective articles Aloes, Ambergris, &c.

The *Drugs* uſed by dyers, are of two kinds: the *colouring*, which give a dye or colour; and *non-colouring*, which only diſpoſe the ſtuffs to take the colours the better, or to render the colours more ſhining.—Of the firſt kind, are, paſtels, woad, indigo, kermes, cochineel, madder, turmeric, &c.—Of the ſecond kind, are, alum, tartar, arſenic, realgal, ſaltpetre, common ſalt, ſal gemmæ, ſal ammoniac, cryſtals of tartar, agaric, ſpirit of wine, urine, pewter, iron, bran, ſtarch, lime, aſhes, &c.

There is a third ſort of *Drugs*, which anſwer both intentions; as the root, bark, and leaf, of the walnut-tree, galls, copperas, &c.

DRUGGET, in commerce, a ſort of ſtuff, very thin, and narrow, uſually all wool, and ſometimes half wool and half ſilk; having ſometimes the whale, but more uſually without: and woven on a worſted chain.

Thoſe without the whale are woven on a loom with two treddles, after the ſame manner as linen, camblet, &c.—M. Savery invented a kind of gold, and ſilver *Druggets*; the warp being partly gold and ſilver thread, and the woof linen.

DRUIDS *, Druides, or Druidæ, the prieſts, or miniſters of religion, among the antient Celtæ, or Gauls, Britons, and Germans.

* Some authors derive the word from the Hebrew דרושים *Deruſſim*, or *Druſſim*, which they tranſlate, *contemplatores*. Picard, *Celtopæd.* L. II. p. 58. believes the *Druids* to have been thus called from *Druis*, or *Dryius*, their leader, the 4th or 5th king of the Gauls, and father of Saron, or Naume Pliny, Salmatius, Vigenere, &c. derive the name from δρυς *Oak*; on account of their inhabiting, or at leaſt frequenting and teaching in foreſts; or perhaps, by reaſon, as Pliny ſays they never ſacrificed but under the oak. But it is hard to imagine, how the *Druids* ſhould come to ſpeak Greek. Menage derives the word from the old Britiſh *Drus*, dæmon, magician Borel from the Saxon *Dry*, magician; or rather the old Britiſh *Dru*, Oak; whence he takes δρυς to be derived. Gorop. Becanus, Lib. I. takes *Druis* to be an old Celtic, and German word, formed from *Trowis*, or *Truwis*, a doctor of the trut and the faith: which etymology Voſſius acquieſces in.

The *Druids* were the firſt, and moſt diſtinguiſhed orde among the Gauls, and Britons: they were choſen out of the beſt families; and the honours of their birth, joined wit thoſe of their function, procured them the higheſt veneration among the people. They were verſed in aſtrology, geometry natural philoſophy, politics, and geography; and had th adminiſtration of all ſacred things; they were the interpret ers of religion, and the judges of all affairs, indifferently Whoever refuſed obedience to them, was declared impiou and accurſed.

We know but little as to their peculiar doctrines; only tha they believed the immortality of the ſoul; and, as is generall alſo ſuppoſed, the metempſychoſis: though a late author make it appear highly probable they did not believe this laſt, at lea not in the ſenſe of the Pythagoreans.

They were divided into ſeveral claſſes, or branches; *viz.* th *vacerri*, *bardi*, *eubages*, *ſemnothii*, or *ſemnothei*, and *ſaronidæ* —The *vacerri* are held to have been the prieſts: the *bardi* the poets; the *eubages*, the augurs: and the *ſaronidæ*, th civil judges, and inſtructors of youth.—As to the *ſemnothei* who are ſaid to have been immediately devoted to the ſervic of religion, it is probable, they were the ſame with the *vacerri*.

Strabo, however, Lib. IV. p. 197. and Picard after him, his *Celtopædia*, do not comprehend all theſe different orde under the denomination of *Druids*, as ſpecies under their ge nus, or parts under the whole; but make them quite differe conditions, or orders.

Strabo, in effect, only diſtinguiſhes three kinds; *bardi*, *vate* and *Druids*. The *bardi* were the poets; the *vates*, Ou (apparently the ſame with the *vacerri*) were the prieſts, an naturaliſts; and the *Druids*, beſide the ſtudy of nature, plied themſelves likewiſe to morality.

Diogenes Laertius aſſures us, in his prologue, that the *Druids* were the ſame, among the antient Britons, with the ſophi, or philoſophers, among the Greeks; the magi, among the Perſians, the gymnoſophiſts, among the Indians; and the Chaldeans, among the Aſſyrians.

The *druids* had one chief, or *arch-druid*, in every nation, who acted as high-prieſt, or pontifex maximus. He had abſolute authority over all the reſt; and commanded, decreed, puniſhed, *&c.* at pleaſure. At his death he was ſucceeded by the moſt conſiderable among his ſurvivors; and, if there were ſeveral pretenders, the matter was ended by an election, or elſe put to the deciſion of arms.

The *druids*, we have obſerved, were in the higheſt eſteem. They preſided at ſacrifices, and other ceremonies; and had the direction of every thing relating to religion. The Britiſh and Gauliſh youth flocked to them in crouds, to be inſtructed by them. The children of the nobility, Mela tells us, they retired withal into caves, or the moſt deſolate parts of foreſts, and kept them there, ſometimes, for twenty years, under their diſcipline.

Beſide the immortality, and metempſychoſis, they were here inſtructed in the motion of the heavens, and the courſe of the ſtars; the magnitude of the heavens and the earth; the nature of things; the power and wiſdom of the gods, *&c.* They preſerved the memory and actions of great men in their verſes, which they never allowed to be wrote down, but made their pupils get them off by heart. In their common courſe of learning, they are ſaid to have taught them 24,000 ſuch verſes.

They held the plant miſletoe in ſingular veneration. Pliny relates the ceremony wherewith they gathered it every year, *lib.* xvi. *c.* 44. They placed a world of confidence, alſo, in ſerpents eggs, gathered after a peculiar manner, and under a certain diſpoſition of the moon, deſcribed by Pliny; and imagined them effectual means for the gaining of law-ſuits, and procuring the good graces of princes. And hence the ſame author concludes it is, that the caduceus, or rod encompaſſed with two ſerpents interwoven, has been aſſumed as a ſymbol of peace. Suetonius, in his life of Claudius, aſſures us, they ſacrificed men; and Mercury is ſaid to be the god they offered theſe inhuman victims to. Diod. Siculus, *lib.* vi. obſerves, it was only upon extraordinary occaſions they made ſuch offerings: as, to conſult what meaſures to take, to learn what ſhould befal them, *&c.* by the fall of the victim, the tearing of his members, and the manner of his blood guſhing out. Auguſtus condemned the cuſtom; and Tiberius, and Claudius, puniſhed and aboliſhed it. See Cæſar, *lib.* vi. *c.* 13. and Mela, *lib.* iii. *c.* 2.

We learn from Cæſar, that the *druids* were the judges and arbiters of all differences and diſputes, both public and private; they took cognizance of murders, inheritances, boundaries, and limits, and decreed rewards and puniſhments. Such as diſobeyed their deciſions, they excommunicated, which was their principal puniſhment, the criminal being hereby excluded from all public aſſemblies, and avoided by all the world; ſo that no body durſt ſpeak to him, for fear of being polluted. —Strabo obſerves, they had ſometimes intereſt and authority enough to ſtop armies, upon the point of engaging, and accommodate their differences.

They held an aſſembly, every year, at a certain ſeaſon, about the middle of the country: and there, in a place conſecrated for the purpoſe, they kept their aſſizes, and terminated the differences of the people, who flocked thither from all parts.

Cæſar, who had ſeen ſome of the *druids* in Britain, was of opinion, they had come thence into Gaul: divers among the moderns take this for a miſtake, and believe the very contrary. In effect, it appears pretty probable, that the antient Britons were originally Gauls; that ſome of the Celtæ, or Belgæ, Gauliſh nations, were the firſt that entered our iſland, and peopled it: and that the *druids* went along with them.

Hornius, in his hiſtory of philoſophy, *lib.* ii. *c.* 12. believes all the learning and philoſophy of the *druids* to have been derived from the Aſſyrian magi; who are ſtill called, in Germany, *Trutten*, or *Truttner*; and that, as magus has loſt its antient ſignification, which was honourable, and now ſignifies a magician, or ſorcerer; ſo *druid*, which had the ſame ſenſe, has likewiſe degenerated, and now ſignifies no other than a perſon who has commerce with the devil, or is addicted to magic. And, accordingly, in Frieſland, where there antiently were *druids*, witches are now called *druids*.—Gale, Dickenſon, and ſome others, vainly contend, that the *druids* borrowed all their philoſophy, as well as religion, from the Jews.

There were alſo women who bore the appellation *druides*, or *druidæ*, among the Gauls, *&c.*—The authors of the *Hiſtoria Auguſta*, particularly Lampridius, and Vopiſcus, make mention hereof. A *druide*, ſays Lampridius, *p.* 135. told Alexander Severus ſomething which denoted he ſhould be unhappy. Vopiſcus, in the life of Aurelian, relates, that, having conſulted the Gauliſh *druides*, whether or no the empire ſhould remain in his family, they gave him for anſwer, that no name ſhould be more glorious in the empire, than that of the deſcendants of Claudius. On which the hiſtorian takes occaſion to obſerve, that Conſtantius, the father of Conſtantine, was a Claudius.

Laſtly, the ſame Vopiſcus, in his life of Numerianus, relates, that a *druide* had foretold Diocleſian, that he ſhould be emperor when he ſhould have killed Aper, which ſignifies a boar; and which alſo was the name of a præfectus prætorii, whom he killed with his own hand.

Salmaſius, in his notes on Lampridius, is a little in doubt who theſe women were: but he gives into the moſt eaſy and plauſible opinion, that they were either the wives or the children of the *druids*.

DRUM, *Tympanum*, a military muſical inſtrument, of uſe, principally, among the foot, ſerving to call the ſoldiers together, and to direct their march, attack, retreat, *&c.*

The body of the *drum* is made of very thin oak, which is bent into a cylinder, and covered at each end with parchment, which is ſtrained, or braced, more or leſs, according to the height or depth of the ſound required, by ſtrings; and is then ſtruck with ſticks. The depth of the *drum* is equal to its breadth, which does not exceed two feet and a half, by reaſon no ſkins can be had to cover bigger.—There are alſo *drums* whoſe body is of braſs.

DRUM, or **DRUMMER**, alſo denotes a ſoldier appointed to beat the *drum*.—In each company of infantry there is at leaſt one *drum*, uſually two; and a *drum-major* in every regiment. There are divers beats of the *drum*, as the *march*, *double march*, *aſſembly*, *charge*, *retreat*, *alarm*, *chamade*, &c. See ASSEMBLY, CHAMADE, *&c.*

DRUM, in anatomy, or *Ear*-DRUM, denotes a cavity in the inner ear; thus called from the reſemblance it bears to the the figure of a *war-drum*. See EAR.

Its outer extreme is covered with a membrane, by anatomiſts called alſo *tympanum*, *drum*; but, more properly, *membrana tympani*.

The office of this *drum*, or *membrana tympani*, has been greatly controverted by anatomiſts. The account beſt warranted is, that being a medium for the conveyance of the ſound to the auditory nerve, by its different degrees of tenſion, it ſerves to modify the ſound, and propagate it to the nerve well proportioned, and commenſurate thereto. See SOUND, and HEARING.

String of the DRUM. See CHORDA *Tympani*.

DRUM, in architecture. See the article TAMBOUR.

DRUNGUS, ΔΡΟΥΓΓΟΣ, a body, or company of forces; thus called in the latter times of the Roman empire.

The name *drungus* *, as appears from Vegetius, *lib.* iii. *c.* 16. was at firſt only applied to foreign, and even enemies troops; but, under the Eaſtern empire, it came in uſe for the troops of the empire itſelf; where it amounted, pretty nearly, to what we call a regiment, or brigade.—Leunclavius obſerves, that the *drungus* was not leſs than 1000 men, nor more than 4000.

DRUNKENNESS, *Ebriety*, phyſically conſidered, conſiſts in a preter natural compreſſion of the brain, and a diſcompoſure of its fibres; occaſioned by the fumes, or ſpirituous parts of liquors. It is accounted for thus: an immoderate quantity of wine taken into the ſtomach, is there heated, and undergoes a kind of effervescence; which ariſes the more readily, as the liquor abounds the more in ſulphur. By this action it becomes attenuated and rarefied; ſo that the groſſer parts being left behind, its finer parts are fitted to penetrate, and ſhoot through the veins to the brain, or are conveyed through the veins to the heart; whence, after a further heat and rarefaction, they are ſent through the carotid arteries, *&c.* to the brain: hence neceſſarily ariſes a repletion of the meninges of the brain, and a compreſſion of the fibres of the brain itſelf, from the freſh ſtock of rarefied ſulphur continually exploded into them: hence, alſo, an obſtruction of the pores or paſſages of the brain ariſes a frequent and diſorderly pulſation of the fibres, and the other ſymptoms of this diſtempered ſtate.

Hence it is, that all liquors will not give *drunkenneſs*; but only ſuch as, by their ſulphur, or ſpirit, are diſpoſed for an effervescence in the ſtomach and heart, to diffuſe their ſubtile attenuated parts plentifully to the brain.

It is a popular miſtake, that the only remedy for gluttony, is *drunkenneſs*; or that the cure of a ſurfeit of meat, is a ſurfeit of wine; than which nothing can be more contrary to nature. *Cheyne.*

The antient Lacedæmonians uſed to make their ſlaves frequently *drunk*, to give their children an averſion and horror for this vice. The Indians hold *drunkenneſs* a ſpecies of madneſs; and, in their language, the ſame term *ramjam*, that ſignifies drunkard, ſignifies alſo a phrenetic.

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* The ſame author notes, that Δρȣ̃γγος, among the modern Greeks, ſignifies a ſtaff, or rod, the badge of a dignity, or office, as *agla* among the Turks; and he thinks, that the name may be formed from the Latin *truncus*. But it appears from Vegetius, that *drungus* is a barbarous, not a Latin word. —Spelman takes it for Saxon; becauſe, at this day, *throng*, in Engliſh, ſignifies a multitude. Salmaſius derives it from Ῥυγχος, beak; on account of the *drungus's* being diſpoſed beak-wiſe, or terminating in a point.

DRY *Baths*.	See the article	BATHS.
DRY *Confects*.		CONFECTS.
DRY *Dock*.		DOCK.

DRY *Exchange*, *Cambium Siccum* *, a ſoft appellation, antiently uſed to diſguiſe uſury under; intimating ſomething to paſs on both ſides; whereas, in truth, nothing paſſed but on one: in which reſpect it might be called *dry*. See INTEREST, and USURY.

* Cambium ſiccum, ſays Lud. Lopes, *de contract. & negot. eſt cambium non habens exiſtentiam cambii, ſed apparentiam, adinſtar arboris exſiccatæ*, &c.

DRY *Fiſh*.	See the article	FISH.
DRY *Fruits*.		FRUITS.
DRY *Maſs*.		MASS.
DRY *Moat*.		MOAT.
DRY *Rent*.		RENT.
DRY *Storax*.		STORAX.
DRY *Suture*.		SUTURE.
DRY *Meaſures*.		MEASURES.
DRY *Spavin*.		SPAVIN.

DRYADES, DRYADS, in the heathen theology, the nymphs of the woods; a ſort of imaginary deities, which the antients believed to inhabit the woods and groves, and to hide themſelves under the bark of the oak, called by the Greeks Δρυς.

The *dryades* differed from the *hamadryades*; in that theſe latter were attached to ſome particular tree, with which they were born, and with which they died: whereas the *dryades* were the goddeſſes of the trees and woods in general, and lived at large, in the middle thereof. For, though Δρυς properly ſignifies an oak, it was alſo uſed for tree in general.

We likewiſe find mention made, in divers authors, of a kind of propheteſſes, or witches, among the Gauls, called *dryades*, or rather *druides*. See DRUIDS.

DUBIOUS *Acids*. See the article ACIDS.

DUBITATIVE *Conjunctions*. See CONJUNCTION.

DUCAL. The letters patent granted by the ſenate of Venice, are called *ducals*.—So alſo are the letters wrote, in the name of the ſenate, to foreign princes.

The denomination of *ducal* is derived hence; that, at the beginning of ſuch patents, the name of the duke, or doge, is wrote in capitals, thus, *N—— Dei Gratia Dux Venetiarum*, &c.—The date of *ducals* is uſually in Latin, but the body is in Italian. A courier was diſpatched with a *ducal* to the emperor, returning him thanks for renewing the treaty of alliance (in 1716.) againſt the Turks, with the republic of Venice.

DUCAT, a foreign coin, either of gold or ſilver, ſtruck in the dominions of a duke; being about the ſame value with a Spaniſh piece of eight, or a French crown, or four ſhillings and ſix-pence ſterling, when of ſilver; and twice as much, when of gold. See COIN.

The origin of *ducats* is referred to one Longinus, governor of Italy; who, revolting againſt the emperor Juſtin the younger, made himſelf duke of Ravenna, and called himſelf *Exarcha*, i. e. *without lord or ruler*. And, to ſhew his independence, ſtruck pieces of money of very pure gold, in his own name, and with his own ſtamp; which were called *ducati*, *ducats*: as Procopius relates the ſtory.

After him, the firſt who ſtruck *ducats* were the Venetians, who called them alſo *zecchini*, or *ſequins*, from Zecca, the place where they firſt were ſtruck. This was about the year 1280. in the time of John Danduli: but we have pretty good evidence, that Roger king of Sicily had coined *ducats* as early as 1240. And du Cange ſcruples not to affirm, that the firſt *ducats* were ſtruck in the duchy of Apulia, in Calabria.

The chief gold *ducats* now current, are, the ſingle and double *ducats* of Venice, Florence, Genoa, Germany, Hungary, Poland, Sweden, Denmark, Flanders, Holland, and Zurich. The heavieſt of them weighs 5 peny weights 17 grains, and the lighteſt 5 peny weights 10 grains; which is to be underſtood of the double *ducats*; and of the ſingle in proportion.

The Spaniards have no *ducats* of gold; but, in lieu thereof, they make uſe of the ſilver one; which, with them, is no real ſpecies, but only a money of account, like our pound. It is equivalent to 11 rials. See RIAL.—The ſilver *ducats* of Florence ſerve there for crowns.

DUCATOON, a ſilver coin, ſtruck chiefly in Italy; particularly at Milan, Venice, Florence, Genoa, Lucca, Mantua, and Parma; though there are alſo Dutch and Flemiſh *ducatoons*.

They are all nearly on the ſame footing: and, being a little both finer and heavier than the piece of eight, are valued at 2 pence or 3 pence more, *viz.* at about 4 ſhillings and 8 pence ſterling.

There is alſo a gold *ducatoon*, ſtruck and current chiefly in Holland: it is equivalent to 20 florins, on the footing of 1 ſhilling 11 pence halfpeny the florin.

DUCENARIUS, in antiquity, an officer in the Roman army; who had the command of 200 men.

The emperors had alſo *ducenarii* among their procurators, or intendants, called *procuratores ducenarii*.—Some ſay, that theſe were ſuch whoſe ſalary was 200 ſeſterces; as in the games of the circus, horſes hired for two hundred ſeſterces, were called *ducenarii*.—Others hold, that *ducenarii* were thoſe who levied the two hundredth peny, the officers appointed to inſpect the raiſing of that tribute. In the inſcription at Palmira, the word *ducenarius*, in Greek Δουκηναριος, occurs very often.

DUCES *tecum*, a writ commanding one to appear at a day in chancery, and to bring with him ſome evidences, or other things, which the court would view.

DUCES *tecum licet languidus*, a writ directed to a ſheriff, who, having in his cuſtody a priſoner, in a perſonal action, returns, upon a *habeas corpus*, that he is *adeo languidus*, that, without danger of death, he cannot have his body before the juſtices.

DUCKING, or plunging in water: Olaus Magnus tells us, this was a diverſion antiently practiſed among the Goths, by way of exerciſe; but, among the Celtæ, and Franks, it was a ſort of puniſhment. Tacitus likewiſe aſſures us, that it was executed, among the antient Germans, on the lazy and infamous. At Marſeilles, and Bourbon, their men and women, of ſcandalous life, are condemned to the *cale*, as they call it; that is, to be ſhut up, naked to the ſhift, in an iron cage, faſtened to the yard of a ſhaloop, and *ducked* ſeveral times in the river. The ſame is alſo done, at Tholouſe, to blaſphemers.

DUCKING is alſo a puniſhment for ſeamen; who are thrown into the ſea from the top of the yard of the main-maſt, ſeveral times, according to the quality of their offence.

Sometimes a cannon-ball is faſtened to their feet, to make the fall the more rapid.

There is alſo a kind of *dry ducking*, wherein the patient is only ſuſpended by a rope, a few yards above the ſurface of the water: this is a ſpecies of ſtrapada.

The puniſhment is uſually made public by the diſcharge of a cannon.

DUCKING-*Stool*, in our cuſtoms. See CUCKING-*Stool*.

DUCT, DUCTUS, in anatomy, is applied in a general ſenſe, to all the canals, or tubes, in the animal body, as veins, arteries, &c. through which the humours or juices are conveyed.

DUCT has alſo a more immediate application to ſeveral particular veſſels: as the

DUCTUS *Alimentalis*, a name given by Dr. Tyſon to the gula, ſtomach, and inteſtines; all which make but one continued canal, or *duct*. This *duct* he makes the proper characteriſtic of an animal.

DUCTUS *Adipoſi* are little veſicles in the omentum, which either receive the fat ſeparated from the adipoſe loculi, or cells, or elſe bring it to them; for the extreme fineneſs of theſe veſſels renders it very difficult to trace their origin, or courſe.

Indeed, it remains ſomewhat doubtful, whether they be hollow, and real *ducts*; or, whether they be not real fibres, ſuch as are obſerved in the ſpleen, along which the liquid fat does, as Dr. Drake expreſſes it, drill its way, as the eaſieſt it can find. Malpighi, their firſt diſcoverer, inclines to the former opinion *. All we know for certain, is, that they terminate in little globules of fat, concerning the uſe and progreſs whereof, much remains to be conſidered.

* Malpighi ſtarts a doubt, whether the adipoſe *ducts* may not be propagated from fibres which abound in the ſpleen, or thoſe fibres from them?—As alſo, whether there be not a yet undiſcovered communication between the adipoſe membrane and the omentum?

Aquoſe DUCTS. See the article AQUOSE.

DUCTUS *Chyliferus*, or *Roriferus*; the ſame as *ductus thoracicus*. See THORACIC.

DUCTUS *Communis Choledochus*, a large canal, formed by an union of the *ductus* cyſticus, and hepaticus. This *duct*, deſcending about four inches, diſcharges itſelf into the duodenum, by an oblique inſertion, which does the office of a valve, in preventing the regreſs of the bile, conveyed hereby into the inteſtines.—See *Tab. Anat.* (Splanch.) *fig.* 5. *lit.* k. See alſo the articles BILE, and CHOLEDOCHUS.

The *ductus communis* ſometimes opens into the duodenum at the ſame aperture with the pancreatic *duct*.

DUCTUS *Cyſticus*, or *Meatus Cyſticus*, a canal about the bigneſs of a gooſe-quill, which ariſing from the neck of the gall-bladder, about two inches diſtance therefrom, joins the porus biliarius; and, together with it, conſtitutes the *ductus communis*. See *Tab. Anat.* (Splanch.) *fig.* 1. *lit. d. fig.* 5. *lit.* gg.

Excretory DUCTS. See the article EXCRETORY.

Galactophorous DUCTS. See the article GALACTOPHOROUS.

DUCTUS *Hepaticyſticus*. See the article CYST-HEPATIC.

DUCTUS *Hepaticus*. called alſo *Meatus Hepaticus*, and *Bilary Pore*. See PORUS *Bilarius*.

DUCTUS *Lachrymales*, the excretory veſſels of the glandulæ lachrymales, ſerving for the effuſion of tears. See LACHRYMAL *Ducts*.

DUCTUS *Pancreaticus*, a little canal, ariſing from the pancreas, and opening into the duodenum; ſerving to diſcharge the pancreatic juice into the inteſtines. See PANCREAS, and PANCREATIC *Juice*.

This *duct*, being firſt diſcovered by Wirtſungus, is frequently called *ductus Virtſungianus*. See VIRTSUNGIANUS.

Pecquets **DUCT**. See the article PECQUETS.

DUCTUS *Salivales*, the excretory tubes of the ſalival glands; ſerving to diſcharge the ſecreted ſaliva into the mouth. See SALIVAL *ducts*.

DUCTUS *Thoracicus*. See the article THORACIC *duct*.

DUCTUS *Umbilicalis*. See the article *Funiculus* UMBILICALIS.

DUCTUS *Urinarius*; the ſame as *Urethra*. See the article URETHRA.

DUCTUS *Virtſungianus*. See the article VIRTSUNGIANUS.

DUCT, DUCTUS, in building. See CALIDUCT, VENTIDUCT, SEWER, CLOACA, *&c.*

DUCTILITY, in phyſics; a property of certain bodies, whereby they become capable of being beaten, preſſed, drawn, or ſtretched forth, without breaking; or whereby they are capable of great alterations in their figure and dimenſions; and of gaining in one way as they loſe in another.

Such are metals, which, being urged by the hammer, gain in length and breadth what they loſe in thickneſs; or, being drawn into wire through holes in iron, grow longer as they become ſlenderer.

Such, alſo, are gums, glues, reſins, and ſome other bodies; which, though not malleable, yet may be denominated *ductile*; inaſmuch as, when ſoftened by water, fire, or ſome other menſtruum, they may be drawn into threads.

So that we have two claſſes of *ductile* bodies; the one hard, and the other ſoft: on each of which we ſhall beſtow ſome conſiderations.

The cauſe of *ductility* is very obſcure; as depending, in great meaſure, on hardneſs; than which there is nothing in nature we know leſs of. It is true, we uſually account for hardneſs, from the force of attraction between the particles of the hard body; and for *ductility*, from the particles of the *ductile* body being, as it were, jointed, and entangled within each other.

Inſtead of fanciful hypotheſes to account for *ductility*, we ſhall here entertain the reader with ſome truly amazing circumſtances and phænomena thereof, in the inſtances of gold, glaſs, and ſpiders-webs.

DUCTILITY *of gold*.———One of the properties of gold is, to be the moſt *ductile* of all bodies; of which the gold-beaters, and gold wire-drawers, furniſh us with abundant proof. ——Fa. Merſenne, M. Rohault, Dr. Halley, *&c.* have made computations thereof: but they truſted to the reports of the workmen. M. Reaumur, in the *memoires de l'academie royale des ſciences*, *an.* 1713. took a ſurer way; he made the experiment himſelf. A ſingle grain of gold, he found, even in the common gold-leaf, uſed in moſt of our gildings, is extended into 36 and a half ſquare inches; and an ounce of gold, which, in form of a cube, is not half an inch either high, broad, or long, is beat under the hammer into a ſurface of 146 and a half ſquare feet; an extent almoſt ouble to what could be done 90 years ago. In Fa. Merenne's time, it was deemed prodigious, that an ounce of gold hould form 1600 leaves; which, together, only made a urface of 105 ſquare feet.

But the diſtention of gold under the hammer (how conſiderable oever) is nothing to that it undergoes in the drawing-iron. —There are gold leaves, in ſome parts, ſcarce the $\frac{1}{360000}$ part f an inch thick; but $\frac{1}{360000}$ part of an inch is a notable hickneſs, in compariſon of that of the gold ſpun on ſilk in our old thread.

To conceive this prodigious *ductility*, it is neceſſary to have ome idea of the manner wherein the wire-drawers proceed. —The wire, and thread we commonly call gold-thread, *&c.* hich, every body knows, is only ſilver wire gilt, or covered ver with gold, is drawn from a large ingot of ſilver, uſually bout 30 pounds weight. This they round into a cylinder, or ll, about an inch and a half in diameter, and 22 inches ng, and cover it with the leaves prepared by the goldeater, laying one over another, till the cover is a good deal hicker than that in our ordinary gilding; and yet, even then, is very thin; as will be eaſily conceived from the quantity gold that goes to gild the 30 pounds of ſilver: two ounces, dinarily, do the buſineſs; and, frequently, little more than ne. In effect, the full thickneſs of the gold, on the ingot, rely exceeds $\frac{1}{400}$, or $\frac{1}{500}$ part; and, ſometimes, not $\frac{1}{1000}$ art of an inch.

ut this thin coat of gold muſt be yet vaſtly thinner: the inot is ſucceſſively drawn through the holes of ſeveral irons, ch ſmaller than other, till it be as fine, or finer, than a hair. very new hole leſſens its diameter, but it gains in length hat it loſes in thickneſs; and, of conſequence, increaſes in face: yet the gold ſtill covers it: it follows the ſilver in all extenſion, and never leaves the minuteſt part bare, not en to the microſcope. Yet, how inconceivably muſt it be attenuated while the ingot is drawn into a thread, whoſe diameter is 9000 times leſs than that of the ingot!

M. Reaumur, by exact weighing, and rigorous calculation, found, that one ounce of the thread was 3232 feet long; and the whole ingot 1163520 feet, Paris meaſure, or 96 French leagues; equal to 1264400 Engliſh feet, or 240 miles Engliſh: an extent which far ſurpaſſes what Fa. Merſenne, Furetiere, Dr. Halley, *&c.* ever dreamt of.

Merſenne ſays, that half an ounce of the thread is 100 toiſes, or fathoms, long; on which footing, an ounce would only be 1200 feet: whereas, M. Raumur finds it 3232. Dr. Halley makes ſix feet of the wire one grain in weight, and one grain of the gold 98 yards; and, conſequently, the ten thouſandth part of a grain, above one third of an inch. The diameter of the wire he found one 186th part of an inch; and the thickneſs of the gold one 154500th part of an inch. But this, too, comes ſhort of M. Reaumur; for, on this principle, the ounce of wire would only be 2680 feet.

But the ingot is not yet got to its full length. The greateſt part of our gold thread is ſpun, or wound on ſilk; and, before they ſpin it, they flat it, by paſſing it between two rolls, or wheels of exceedingly well poliſhed ſteel; which wheels, in flatting it, lengthen it by above one ſeventh. So that our 240 miles are now got to 274. The breadth, now, of theſe laminæ, or plates, M. Reaumur finds, is only one 8th of a line, or one 96th of an inch; and their thickneſs one 3072d. The ounce of gold, then, is here extended to a ſurface of 1190 ſquare feet; whereas, the utmoſt the gold-beaters can do, we have obſerved, is to extend it to 146 ſquare feet.

But the gold, thus exceedingly extended, how thin muſt it be! From M. Reaumur's calculus, it is found to be one 175000th of a line, or one 2100000 of an inch; which is ſcarce one 13th of the thickneſs of Dr. Halley's gold. But he adds, that this ſuppoſes the thickneſs of the gold everywhere equal, which is no-ways probable; for, in beating the gold-leaves, whatever care they can beſtow, it is impoſſible to extend them equally. This we eaſily find, by the greater opacity of ſome parts than others; for, where the leaf is thickeſt, it will gild the wire the thickeſt.

M. Reaumur, computing what the thickneſs of the gold muſt be where thinneſt, finds it only one 3150000th of an inch. But what is the one 3150000th part of an inch? Yet this is not the utmoſt *ductility* of gold: for, inſtead of two ounces of gold to the ingot, which we have here computed upon, a ſingle one might have been uſed; and, then, the thickneſs of the gold, in the thinneſt places, would only be the 6300000th part of an inch.

And yet, as thin as the plates are, they might be made twice as thin, yet ſtill be gilt; by only preſſing them more between the flatter's wheels, they are extended to double the breadth, and proportionably in length. So that their thickneſs, at laſt, will be reduced to one thirteenth, or fourteenth millionth part of an inch.

Yet, with this amazing thinneſs of the gold, it is ſtill a perfect cover for the ſilver: the beſt eye, or even the beſt microſcope, cannot diſcover the leaſt chaſm, or diſcontinuity. There is not an aperture to admit alcohol of wine, the ſubtileſt fluid in nature, or even light itſelf. Add, that if a piece of this gold-thread, or gold-plate, be laid to diſſolve in aqua-fortis, the ſilver will be all excavated, or eat out, and the gold left entire, in little tubules.

As to the **DUCTILITY** *of ſoft bodies*, it is not yet carried to that pitch. The reader, however, muſt not be ſurpriſed, that, among the *ductile* bodies of this claſs, we give the firſt place to the moſt brittle of all other, glaſs.

DUCTILITY *of Glaſs*.—We all know, that, when well penetrated with the heat of the fire, the workman can figure and manage *glaſs* like ſoft wax; but, what is moſt remarkable, it may be drawn, or ſpun out into threads, exceedingly fine and long.

Our ordinary ſpinners do not form their threads of ſilk, flax, or the like, with half the eaſe, and expedition, as the glaſs-ſpinners do threads of this brittle matter. We have of them uſed in plumes for childrens heads, and divers other works, much finer than any hair, and which bend and wave like it with every wind.

Nothing is more ſimple and eaſy than the method of making them: there are two workmen employed; the firſt holds one end of a piece of glaſs over the flame of a lamp; and, when the heat has ſoftened it, a ſecond operator applies a glaſs-hook to the metal thus in fuſion, and, withdrawing the hook again, it brings with it a thread of glaſs, which ſtill adheres to the maſs: then, fitting his hook on the circumference of a wheel about two feet and a half in diameter, he turns the wheel as faſt as he pleaſes; which, drawing out the threads, winds it on its rim; till, after a certain number of revolutions, it is covered with a ſkain of glaſs-thread.

The maſs in fuſion over the lamp, diminiſhes inſenſibly; being wound out, as it were, like a pelotoon, or clue of ſilk, upon the wheel; and the parts, as they recede from the flame, cooling, become more coherent with thoſe next to them; and this by degrees: the parts neareſt the fire are always the leaſt coherent, and of conſequence, muſt give way to the effort the reſt make to draw them towards the wheel.

The circumference of theſe threads is uſually a flat oval, being three or four times as broad as thick: ſome of them ſcarce ſeem bigger than the thread of a ſilk-worm; and are flexible to a miracle. If the two ends of ſuch threads be knotted together, they may be drawn and bent, till the aperture, or ſpace in the middle of the knot, do not exceed one 4th of a line, or one 48th of an inch in diameter.

Hence M. Reaumur advances, that the flexibility of glaſs increaſes in proportion to the fineneſs of the threads; and that, probably, had we but the art of drawing threads as fine as thoſe of a ſpider's web, we might weave ſtuffs and cloths hereof, for wear.—Accordingly, he made ſome experiments this way; and found he could make threads fine enough, as fine, in his judgment, as any ſpider's web; but he could never make them long enough to do any thing with them.

Ductility of *Spider-webs*.—The ingenious author, ſo often above cited, obſerves, that the matter, whereof ſpiders and ſilk-worms form their threads, is brittle when in the maſs, like dry gums. As it is drawn out of their bodies, it aſſumes a conſiſtence, much as glaſs-threads become hard, as they recede from the lamp; though from a different cauſe. The *ductility* of this matter, and the apparatus thereto, being much more extraordinary in ſpiders, than in ſilk-worms, we ſhall here only conſider the former. Something, alſo, has already been ſaid of each under the article Silk; which ſee.

Near the anus of the ſpider are the ſix papillæ, or teats, repreſented in *Tab. Nat. Hiſtory*, *fig*. 6. The extremities of the ſeveral papillæ are furniſhed with holes, that do the buſineſs of wire-drawers, in forming the threads. Of theſe holes, M. Reaumur obſerves, there are enough, in the compaſs of the ſmalleſt pin's head, to yield a prodigious quantity of diſtinct threads. The holes are perceived by their effects: take a large garden ſpider, ready to lay its eggs; and, applying the finger on a part of its papillæ, as you withdraw that finger, it will take with it an amazing number of different threads: M. Reaumur has often counted 70 or 80, with a microſcope; but has perceived, that there were infinitely more than he could tell. In effect, if he ſhould ſay, that each tip of a papilla furniſhed a thouſand, he is perſuaded he ſhould ſay vaſtly too little. The part is divided into an infinity of little prominences, like the eyes of a butterfly, *&c.* each prominence, no doubt, makes its ſeveral thread; or rather, between the ſeveral protuberances, there are holes that give vent to threads; the uſe of the protuberances, in all probability, being to keep the threads, at their firſt exit, before yet hardened by the air, aſunder. In ſome ſpiders thoſe protuberances are not ſo ſenſible; but, in lieu thereof, there are tufts of hair, which may ſerve the ſame office, *viz.* to keep the threads a part. Be this as it will, there may threads come out at above a thouſand different places in every papilla; conſequently, the ſpider, having ſix papillæ, has holes for above 6000 threads. It is not enough, that theſe apertures are immenſely ſmall; but the threads are already formed before they arrive at the papilla, each of them having its little ſheath, or duct, in which it is brought to the papilla, from a conſiderable diſtance.

M. Reaumur traces them up to their ſource, and ſhews the mechaniſm by which they are made. Near the origin of the belly he finds two little ſoft bodies, which are the firſt ſource of the ſilk. Their form and tranſparency reſemble thoſe of glaſs-beads (ſee *fig*. 7.), by which name we ſhall hereafter denote them. The tip of each bead, as R, goes winding, and makes an infinity of turns and returns towards the papilla. From the baſe, or root of the bead, proceeds another branch, much thicker; which, winding variouſly, forms ſeveral knots, and takes its courſe, like the other, towards the hind part of the ſpider. In theſe beads, and their branches, is contained a matter proper to form the ſilk, only that it is too ſoft. The body of the bead is a kind of reſervoir, and the two branches, two canals proceeding from it. A little farther backwards there are two other leſſer beads, which only ſend forth one branch a piece, and that from the tip. Beſide theſe, there are three other larger veſſels on each ſide the ſpider, which M. Reaumur takes for the laſt reſervoirs where the liquor is collected. They are repreſented (*fig*. 8.). The biggeſt is near the head of the inſect, and the leaſt near the anus. They all terminate in a point: and, from the three points of theſe three reſervoirs, it is, that the threads, at leaſt the greateſt part of the threads drawn out at the three papillæ, proceed. Each reſervoir ſupplies one papilla. Laſtly, at the roots of the papillæ, there are diſcerned ſeveral fleſhy tubes: probably, as many as there are papillæ. Upon lifting up the membrane, or pellicle, that ſeems to cover theſe tubes, they appear full of threads, all diſtinct from each other; and which, of conſequence, under a common cover, have each their particular one; being kept like knives in ſheaths. The immenſe quantity of threads contained here, M. Reaumur concludes, upon tracing their courſe, does not all come from the points of the reſervoirs; but ſome from all the turns and angles; nay, probably, from every part thereof. But, by what conveyances the liquor comes into the beads, and out of the beads into the reſervoirs, remains yet to be diſcovered.

We have already obſerved, that the tip of each papilla may give paſſage to above a thouſand threads; yet the diameter of that papilla does not exceed a ſmall pin's head. But we were there only conſidering the largeſt ſpiders.

If we examine the young growing ſpiders, produced by thoſe, we ſhall find, that they no ſooner quit their egg, than they begin to ſpin. Indeed, their threads can ſcarce be perceived; but their webs, formed thereof, may; they are, frequently, as thick and cloſe as thoſe of houſe-ſpiders, and no wonder, there being often 4 or 500 little ſpiders concurring to the ſame work. How minute muſt their holes be! The imagination can ſcarce conceive the minuteneſs of their papillæ! The whole ſpider is, perhaps, leſs than a papilla of the parent which produced it.

This is eaſily ſeen: each big ſpider lays 4 or 500 eggs; theſe eggs are all wrapped up in a bag; and, as ſoon as the young ones have broken through the bag, they begin to ſpin. How fine muſt their threads at this time be!

Yet is not this the utmoſt nature does: there are ſome kinds of ſpiders ſo ſmall at their birth, that they are not viſible without a microſcope. There are uſually found an infinity of theſe in a cluſter, and they only appear like a number of red points; and yet there are webs found under them, though well nigh imperceptible. What muſt be the tenuity of one of theſe threads! The ſmalleſt hair muſt be, to one of theſe, what the moſt maſſive bar is to the fineſt gold-wire above-mentioned.

The matter whereof the threads are formed, we have obſerved, is a viſcid juice. The beads are the firſt receptacles where it is gathered, and the place where it has the leaſt conſiſtence. It is much harder when got into the ſix great reſervoirs, whither it is carried by canals from the former: this conſiſtence it acquires, in good meaſure, in its paſſage; part of the humidity being diſſipated in the way, or ſecreted, by parts deſtined for that purpoſe.

Laſtly, the liquor is dried ſtill further, and becomes thread, in its progreſs through the reſpective canals to the papillæ. When theſe firſt appear out at the holes, they are ſtill glutinous; ſo that ſuch as ſpring out of neighbouring holes, ſtick together. The air completes the drying.

By boiling the ſpider more or leſs, the liquor is brought to a greater or leſs conſiſtence, fit to draw out into threads: for it is too fluid for that purpoſe while yet incloſed in its reſervoirs.

The matter contained in theſe reſervoirs, when well dried, appears a tranſparent gum, or glue, which breaks when much bent; like glaſs, it only becomes flexible by being divided into the fineſt threads: and, probably, it was on this account nature made the number of holes ſo immenſe. The matter of ſilk formed in the bodies of ſpiders, being much brittler than that formed in ſilk-worms, needed to be wound ſmaller; otherwiſe, we do not conceive why ſhe ſhould form a great number of threads, which were afterwards to be reunited: a ſingle canal might elſe have done.

DUEL *, a ſingle combat, at a time and place appointed, in conſequence of a cartel, or challenge.

* The word is uſually derived from *Duellum*, uſed by the barbarous Latin writers, *quaſi duorum bellum*.

Duels were antiently allowed by common law, in caſes where proof could not be had.———In which view, Fleta defines *duel*, *ſingularis pugna inter duos ad probandum veritatem litis; & qui vicit, probâſſe intelligitur*. Stat. de Finib. Levat. 27. Edw. I.

This *duelling* was ſo general a method of terminating differences among the nobility, that even eccleſiaſtics, prieſts, and monks, were not excuſed from the ſame; only, to prevent their being ſtained with blood, they obliged theſe to procure champions to fight in their ſtead; as is ſhewn at large by father Dacheri, in the VIIIth tome of his *Spicilegium*.

None were excepted from theſe legal *duels*, but women, ſick people, and cripples, and ſuch as were under 21 years of age, or above 60.

The cuſtom was, for the two champions to enter a liſt, or ſmall incloſure, appointed by the authority of the ordinary judge, not only on criminal occaſions, but on ſome civil ones, for the maintenance of their right.

The monk Sigebert even relates, that a queſtion on a point of law being preſented to the emperor Otho I. *viz.* whether repreſentation had place in direct ſucceſſion? and the doctors finding themſelves embarraſſed in the reſolution thereof; the emperor remitted the deciſion of ſo critical a point to the judgment of arms, and pitched on two bold fellows to maintain the *pro* and the *contra*. The victory fell to him who contended for repreſentation; in favour of whom a law was ſtraitway made, which is in force to this day.

This cuſtom came originally from the northern nations; among whom it was uſual to end all their differences by arms; as we are aſſured by Paterculus. It afterwards paſſed as a law among the Germans, Danes, and Franks; eſpecially after Gondebault, king of the Burgundians, admitted it in lieu of ſwearing. M. Godeau, in his hiſtory of the church, VII. cent. ſays, it was the Lombards who firſt introduced into Italy the barbarity of ſingle combats, whence the cuſtom ſpread throughout the reſt of Europe.

The form of the combat was this: The accuſer and accuſed giving pledges to the judge, on their reſpective behalves; the judge took firſt up that of the defendant, and next that of the demandant. They were then both clapped up in ſafe priſon; and the chief juſtice was to furniſh them with ſuitable arms.—Such as fought on foot had only a ſword and buckler: the horſemen were armed at all points, as well as their horſes. The day of combat being come, they made choice of four cavaliers to guard the field; and performed diverſe ceremonies, prayers, oaths, *&c.* deſcribed by Paſquier, and other authors, and quoted by du Cange, who mentions an ordonnance of king Philip the Fair in 1306. preſcribing the ſeveral rules, conditions, and ceremonies, to be obſerved herein.

The vanquiſhed, whether accuſer, or accuſed, was puniſhed with death, or mutilation of members; or was ignominiouſly dragged out of the camp, and hung on a gibbet, or burnt, according to the circumſtances of the caſe.

The method of trial by *Duel* was inſtituted as a way of conſulting Providence, to learn who was the criminal; and it was imagined, that God, thus interrogated, would not fail to declare himſelf in favour of the innocent. But it happened ſo often, that the unjuſt accuſer came off victorious; that they at length began to be convinced, they muſt not preſcribe to his wiſdom, the neceſſity of interrupting the courſe of ſecond cauſes. This was giving rules to murder, and diſguiſing aſſaſſinations under method and meaſure.

Saxo Grammaticus obſerves, that as early as the year 981, the kings of Denmark had abrogated the proof by *Duel*; and in lieu thereof, appointed the proof by red-hot iron, which was alſo annulled in its turn.

But *Duels* were condemned before by a council held at Valentia, in 855. where the perſon who killed his enemy, was excommunicated; and the perſon killed was pronounced unworthy of burial. Afterwards, the popes Nicolas I. Celeſtine III. and Alexander III. likewiſe interpoſed; and Frederic I. and II. prohibited them in Germany. St. Louis did what he could to aboliſh them in France; but his ordonnance only took place in his own territories, and not in thoſe of his vaſſals. After his example, the counts d'Auvergne and Poictou, and ſeveral other lords, forbad them likewiſe. Philip the Fair, following the footſteps of his grandfather, St. Louis, at one time forbad all gages, or pledges of battle; and yet he permitted them in four caſes, in the ordonnance abovementioned of the year 1306. The laſt *Duel* of note was in the year 1547. before king Henry II. between Jarnac and Chataigneraye, mentioned by Thuanus, and de Serres.

In England, the trial by *Duel* is diſuſed; though the law on which it is founded be ſtill in force.—The laſt trial of this kind admitted, was in the 6th year of king Charles I. between Donald lord Rey, or Rhee, appellant, and David Ramſey eſquire, defendant, in the painted chamber at Weſtminſter.

Duel is alſo uſed for a ſingle combat on ſome private quarrel, or occaſion.

The *Duel* muſt be premeditated; otherwiſe it is only a rencounter.

The folly, or rather madneſs, of *Duelling* reigned for ſome ages in France; where the flower of the nobleſſe periſhed thereby. It is one of the glories of the late Louis XIV. to have uſed all his power and authority for aboliſhing *Duels*. The ſevere edicts and laws he made againſt *Duelliſts* have in a great meaſure put a ſtop to the cuſtom.

Duke*, Dux, a ſovereign prince, without the title, or quality, of king.—Such are the *Duke* of Lorrain, *Duke* of Holſtein, *&c.*

* The word is borrowed from the modern Greeks, who call *Doucas*, what the Latins call *Dux*.

There are alſo two ſovereigns, who bear the title of *Great-Duke*; as, the *Grand-Duke* of Tuſcany, and the *Grand-Duke* of Muſcovy, now called the *Czar*, or emperor of Ruſſia.—The emperor of Germany is *Arch-Duke* of *Auſtria*.

Duke, Dux, is alſo a title of honour, or nobility, the next below princes.

The *Dukedom*, or dignity of *Duke*, is a Roman dignity, denominated *a Ducendo*, leading, or commanding.—Accordingly, the firſt *Dukes*, *Duces*, were the *Ductores Exercituum*, commanders of armies.—Under the late emperors, the governors of provinces in war-time were intitled *Duces*.—In after-times the ſame denomination was alſo given to the governors of provinces in time of peace.

The firſt governor under the name of *Duke*, was a *Duke* of the Marchia Rhætica, or Griſons, whereof mention is made in Caſſiodorus. The Goths, and Vandals, upon their over-running the provinces of the weſtern empire, aboliſhed the Roman dignities where-ever they ſettled. But the Franks, *&c.* to pleaſe the Gauliſh people, who had long been uſed to that form of government, made it a point of politics, not to change any thing therein; and accordingly they divided all Gaul into dutchies, and counties; and gave the names ſometimes of *Dukes*, and ſometimes of counts, *comites*, to the governors thereof.

In England, during the Saxons time, Camden obſerves, the officers and commanders of armies were called *Dukes*, *Duces*, after the antient Roman manner, without any addition. After the Conqueror came in, the title lay dormant, till the reign of king Edward III. who created his ſon Edward, firſt called the *black prince*, *Duke* of Cornwall. After whom, there were more made, in ſuch manner as that their titles deſcended to their poſterity. They were created with much ſolemnity, *per cincturam gladii, cappæque, & circuli aurei in capite impoſitionem.*

Though the French retained the names, and form of the ducal government, yet, under their ſecond race of kings, there were ſcarce any ſuch thing as *Dukes*; but all the great lords were called *Counts*, *Peers*, or *Barons:* excepting, however, the *Dukes* of Burgundy, and Aquitaine; and a *Duke* of France, which was a dignity Hugh Capet himſelf held, correſponding to the modern dignity of Maire de Palais, or the king's lieutenant.

By the weakneſs of the kings, the *Dukes*, or governors, ſometimes made themſelves ſovereigns of the provinces truſted to their adminiſtration. This change happened chiefly about the time of Hugh Capet; when the great lords began to diſmember the kingdom, ſo that that prince found more competitors among them than ſubjects. It was even with a great deal of difficulty they could be brought to own him their ſuperior, or to hold of him by faith, and homage.

By degrees, what with force, and what by marriages, theſe provinces, both dutchies, and counties, which had been rent from the crown, were again united to it. But the title *Duke* was no longer given to the governors of provinces.

From that time *Duke* became a mere title of dignity, affected to a perſon, and his heirs male, without giving him any domain, territory, or juriſdiction over the place whereof he is *Duke*. All the advantages thereof now conſiſt in the name, and the precedence it gives.

The *Dukes* of our days retain nothing of their antient ſplendor, but the coronet on their eſcutcheon; which is the only mark of their departed ſovereignty.—They are created by patent, cincture of the ſword, mantle of ſtate, impoſition of a cap, and coronet of gold on the head, and a verge of gold in their hand.

The eldeſt ſons of *Dukes* are by the courteſy of England ſtyled *Marquiſes*, and the younger ſons, *Lords*, with the addition of their Chriſtian name, as lord James, lord Thomas, *&c.* and they take place of viſcounts, though not ſo privileged by the laws of the land.

A *Duke* has the title of *Grace*; and being writ to, he is ſtyled, in the heralds language, *moſt high, potent, and noble prince. Dukes* of the blood royal, are ſtyled, *moſt high, moſt mighty, and illuſtrious princes.*

Duke-Duke, a quality given in Spain to a grandee of the houſe of Sylva, on account of his having ſeveral dutchies, from the uniting of two conſiderable houſes in his perſon.

Don Roderigo de Sylva, eldeſt ſon of Don Ruy Gomez de Sylva, and heir of his dutchies, and principalities, married the eldeſt daughter of the *Duke* de l'Infantado; in virtue of which marriage, the preſent *Duke* de Paſtrana, who is deſcended therefrom, and is grandſon of Don Roderigo de Sylva, has added to his other great titles, that of *Duke-Duke*, to diſtinguiſh himſelf from the other *Dukes*, ſome whereof may enjoy ſeveral dutchies, but none ſo conſiderable ones, nor the titles of ſuch eminent families.

DULCIFYING, *Sweetening*, a term uſed in phyſic, for rendering a fluid leſs acid, and rough; either by taking away its ſalts, or breaking their points, or by covering them with ſomething ſmooth, and ſoft.

DULCIS, *Aſſa*, or *Aſa*. See the article Assa.

DULIA, ΔΟΥΛΕΙΑ, *Service*. See the articles Worship, Latria, and Hyperdulia.

DULL *Appui*. See the article Appui.

DUMBNESS, the ſtate of a perſon who wants the natural uſe of ſpeech.

People born deaf, are ſaid to be all naturally *dumb*, as not being able to learn words.

Dumbneſs is ſometimes the reſult of the want, or even the ill conformation, of the tongue.—Yet in the third tome of the *Ephem. German.* we have an account of a book, intituled, *Jac. Rolandi Agloſſoſtomographia, ſive deſcriptio oris ſine lingua, quod perfecte loquitur.* See Tongue, and Mute.

DUNG, in agriculture, and gardening. See MANURING, and COMPOST.

DUNGEON *, DONJON, in fortification, the higheſt part of a caſtle built after the antient mode; ſerving as a watch-tower, or place of obſervation.

* The word comes from the French *Donjon*, which ſignifies the ſame; and which Fauchet derives from *Domicilium*, in that the *Dungeon* being the ſtrongeſt part of the caſtle, was uſually the lord's apartment. Menage derives it from *Dominione*, or *Domnionus*, which in ſome antient writings we find uſed in the ſame ſenſe. Others derive it from *Domus Julii Cæſaris*, or *Domus Jugi*; and others from *Domus Juliani*, the emperor Julian having built ſeveral ſuch caſtles among the Gauls, whereof there is one ſtill ſtanding in Lorraine, called *Dom. Julien*. Du Cange derives the appellation from *Duno aut colle ædificatum*, which the barbarous writers have altered into *Dunjo*, *Dungeo*, *Dongio*, *Dangio*, *Domgio*, and *Domnio*.

In ſome caſtles, as that of Vincennes, *&c.* the *Donjon* ſerves as a priſon for perſons they would have the moſt ſecurely kept; whence the general uſe of our word *Dungeon*, for a dark cloſe priſon under ground.

DUO, in muſic, a ſong, or compoſition, to be performed in two parts only; the one ſung, and the other played on an inſtrument; or by two voices alone.

DUO is alſo when two voices ſing different parts, accompanied with a third, which is a thorough baſs.—Uniſons and octaves are rarely to be uſed in *Duo's*, except at the beginning and end.

DUODENA *Arteria*, and *Vena*, a branch of an artery, which the duodenum receives from the cœliac; to which anſwers a vein of the ſame name, returning the blood to the porta.

DUODENUM *, in anatomy, the firſt of the *inteſtina tenuia*, or ſmall guts; being that which receives the food half chylified from the ſtomach.—See *Tab. Anat.* (Splanch.) *fig.* 1. *lit. b and i. fig.* 2. *lit. c.*

* It has its name *Duodenum*, as being above twelve fingers breadth long: on which account, ſome call it *Dodecadactylum.*

The *Duodenum* ariſes from the pylorus, or right orifice of the ſtomach; whence deſcending towards the ſpine, from right to left, quite ſtrait, it terminates where the circumvolutions of the reſt begin.

Its coats are thicker, and its cavity or canal is leſs, than in any of the other inteſtines. At its lower end are two canals, opening into its cavity, one from the liver, and gall-bladder, called the *ductus communis choledochus*; and the other from the pancreas, called *pancreaticus*.

The *Duodenum* is quite ſtrait; but the inteſtinum jejunum makes diverſe windings, and inflexions: the reaſon is, that the bile, and pancreatic juice, mixing at the beginning thereof, or at the end of the *Duodenum*, would otherwiſe precipitate not only the groſs parts of the excrements, but alſo the chyle itſelf, too haſtily.

DUPLA, DUPLE *Ratio*, is where the antecedent term is double the conſequent; or, where the exponent of the *Ratio* is 2:—thus 6 : 3 is in a *Duple Ratio*. See RATIO.

SUB-DUPLE *Ratio*, is where the conſequent term is double the antecedent; or, the exponent of the *Ratio* is $\frac{1}{2}$:—Thus, 3 : 6 is in a *Sub-duple Ratio*.

DUPLA-*Seſquialtera*
DUPLA-*Superbipartiens tertias* } *Ratio.* { See RATIO.

DUPLE *Time*. See the article TIME.

DUPLICATE *, a ſecond inſtrument, or act in writing; or a tranſcript, or copy of another.

* The word is formed from the Latin *Duploma*, or *Duplum*, double.

It is uſual to ſend a *Duplicate*, when it is apprehended the firſt diſpatch, *&c.* is loſt.

DUPLICATE, *in Chancery*, is particularly uſed for a ſecond letter patent granted by the lord chancellor, in a caſe where he had formerly done the ſame. See PATENT.

DUPLICATE *Ratio*, the *Ratio* between the ſquares of two quantities.—Thus the duplicate *Ratio* of *a* to *b* is the *Ratio* of *aa*, to *bb*, or of the ſquare of *a* to the ſquare of *b*.

In a ſeries of geometrical proportions, the firſt term to the third is ſaid to be in a *Duplicate Ratio* of the firſt to the ſecond; or as its ſquare is to the ſquare of the ſecond: thus in 2, 4, 8, 16, the *Ratio* of 2 to 8, is *Duplicate* of that of 2 to 4; or as the ſquare of 2 to the ſquare of 4: wherefore *Duplicate Ratio* is the proportion of ſquares; as triplicate is of cubes, *&c.* and the *Ratio* of 2 to 8, is ſaid to be compounded of that of 2 to 4, and of 4 to 8.

DUPLICATION, DOUBLING, in arithmetic, and geometry, the multiplying a quantity, either diſcrete, or continued, by two.

DUPLICATION *of a cube*, is the finding the ſide of a cube that ſhall be double in ſolidity to a given cube; which is a famous problem cultivated by the geometricians theſe two thouſand years.

It was firſt propoſed by the oracle of Apollo at Delphos; which, being conſulted about the manner of ſtopping a plague then raging at Athens, returned for anſwer, that the plague ſhould ceaſe when Apollo's altar, which was cubical, ſhould be doubled.—Upon this, they applied themſelves, in good earneſt, to ſeek the *Duplicature* of the cube, which henceforward was called the *Delian Problem*.

The problem is only to be ſolved by finding two mean proportionals between the ſide of the cube, and double that ſide; the firſt whereof will be the ſide of the cube doubled, as was firſt obſerved by Hippocrates Chius.

Eutochius, in his comments on Archimedes, gives ſeveral ways of performing this by the meſolabe. Pappus Alexandrinus, and his commentator Commandine, give three ways: the firſt, according to Archimedes; the ſecond, according to Hero; and the third by an inſtrument invented by Pappus, which gives all the proportions required.

The Sieur de Comiers has likewiſe publiſhed an elegant demonſtration of the ſame problem, by means of a compaſs with three legs; but theſe methods are all only mechanical.

Re-DUPLICATION. See the article REDUPLICATION.

DUPLICATUM *Arcanum*. See the article ARCANUM.

DUPLICATURE, in anatomy, a doubling or folding of membranes, or other like parts.

Such are the *Duplicatures* of the peritonæum, of the omentum, of the pleura, *&c.*

In the hiſtory of the French academy for the year 1714. an account is given of a young man, who died at the age of 27 years, in the *Duplicature* of whoſe meninges there were found little bones, that ſeemed to proceed out of the inner ſurface of the dura mater, and with their acute points ſtimulated the pia mater.

That *Duplicature* of the peritonæum, wherein the antients placed the bladder, is not found by the modern anatomiſts. Dionis.

Fabricius ab Aquapendente firſt diſcovered the *Duplicature* of the cuticula.

DUPONDIUS, in antiquity, a weight of two pounds: or a money of the value of two as's. See AS.

As the as, at firſt, weighed a juſt pondo, or libra; the *Dupondius* then weighed two. And hence the name.

And though the weight of the as was afterwards diminiſhed, and of conſequence that of the *Dupondius* alſo; yet they ſtill retained the denomination. See POUND, and LIBRA.

DURA *Mater*, or *Meninx*, a ſtrong, thick, membrane, which lines or covers all the inner cavity of the cranium, and includes the whole brain; being itſelf lined on its inner, or concave ſide, by the pia mater, or meninx tenuis.—See *Tab. Anat.* (Oſteol.) *fig.* 4. *lit. ee. fig.* 6. *lit. cc.*

The *dura Mater* ſticks very cloſe to the baſis of the ſkull, and its ſutures, by the fibres and veſſels it ſends to the pericranium.

It is faſtened to the pia mater, and the brain, by the veſſels which paſs from one to the other. It gives a coat, or covering, to all the nerves which riſe from the brain; and to the medulla ſpinalis, and all the nerves, which riſe from it.

Its ſurface is rough towards the ſkull, and ſmooth towards the brain. It is a double membrane, woven of ſtrong fibres, which may be plainly ſeen on its inſide, but very little on its outſide next the ſkull: It has three proceſſes made by the doubling of its inner membrane.—The firſt reſembles a ſickle, and is therefore called *falx*.—The ſecond ſeparates the cerebrum from the cerebellum, down to the medulla oblongata, that the weight of the cerebrum may not offend the cerebellum, which lies under it. This proceſs is very ſtrong, and thick, and in ravenous beaſts for the moſt part it is bony, becauſe of the violent motion of their brain.—The third is the ſmalleſt, and ſeparates the external ſubſtance of the hind parts of the cerebellum into two protuberances.

In the *dura Mater* are ſeveral ſinus's, or chanels, which run between its internal and external membranes: the four principal ones, are the ſinus longitudinalis; the ſecond and third ſinus's are called *Laterales*; and the fourth, *Torcular*. Beſides theſe, there are more of inferior note, mentioned by anatomiſts, as du Verney, Dr. Ridley, *&c.*—Their uſe is, to receive the blood of the adjacent parts from the veins, to which they ſerve as ſo many trunks, and to diſcharge it into the internal jugulars.

The veſſels of the *dura Mater* are, firſt, a branch from the carotid, while it is in its long canal, which is diſperſed in the fore and lower part of the *dura Mater*; ſecondly, an artery which enters the whole of the ſkull, called *foramen arteriæ duræ matris*: it is diſperſed on the ſides of this membrane, and runs as high as the ſinus longitudinalis: the vein which accompanies the branches of this artery, goes out of the ſkull, by the foramen lacerum. Thirdly, a branch of the vertebral artery, and vein, which laſt paſſes through the hole behind the occipital apophyſis, where they are diſperſed in the hind part of the *dura Mater*.—It has alſo nerves from the branches of the fifth pair, which give it an exquiſite ſenſe. It has a motion of ſyſtole, and diaſtole, which is cauſed by the arteries which enter the ſkull. No doubt, the great number of arteries in the brain contribute more to it, than thoſe few peculiar to itſelf; theſe may aſſiſt a little, though not very ſenſibly, becauſe of their ſmalneſs, and paucity.

The uſe of the *dura Mater* is to cover the brain, the ſpinal marrow, and all the nerves; to divide the cerebrum into two, and to hinder it from preſſing the cerebellum.

Dura *Portio*. See the article PORTIO.

Durable *Fortification*. See the article FORTIFICATION.

DURATION, an idea we get by attending to the fleeting, and perpetual periſhing parts of ſucceſſion.

The idea of ſucceſſion we get by reflecting on that train of ideas, which continually follow one another in our minds, while awake. The diſtance between any parts of this ſucceſſion is what we call *Duration*: and the continuation of the exiſtence of ourſelves, or any thing elſe commenſurate to the ſucceſſion of ideas in the mind, is called our *own Duration*, or that of the thing coexiſting with our thinking. So that we have no perception of *Duration*, when that ſucceſſion of ideas ceaſes.

Duration, in Mr. Locke's philoſophy, is a mode, or modification of ſpace.

The ſimple modes of *Duration*, are any lengths, or parts thereof, whereof we have diſtant ideas; as hours, days, weeks, months, years, time, eternity, &c.

Duration, as marked by certain periods, and meaſures, is what we properly call *Time*.

1. By obſerving certain appearances, at regular, and ſeemingly equidiſtant periods, we get the ideas of certain lengths, and meaſures of *Duration*, as minutes, hours, &c. 2. By being able to repeat thoſe meaſures of time, as often as we will, we come to imagine *Duration* where nothing really endures, or exiſts: thus, we imagine, to-morrow, next year, yeſterday, &c. 3. By being able to repeat ſuch idea of any length of time, as of a minute, year, &c. as often as we will, and add them to one another, without ever coming to an end, we get the idea of eternity.

Time is to *Duration*, as place is to ſpace, or expanſion. They are ſo much of thoſe boundleſs oceans of eternity, and immenſity, as is ſet out, and diſtinguiſhed, from the reſt; and they thus ſerve to denote the poſition of finite, real beings, in reſpect of each other, in thoſe infinite oceans of *Duration*, and ſpace.

Duration *of Action*. See the article ACTION.

Duration *of an Eclipſe*. See the article ECLIPSE.

Scruples of half **Duration**. See the article SCRUPLE.

Duration *of a ſolar Eclipſe*. See the article ECLIPSE.

DURE, Door. See the article SUTH-*Dure*.

DURESSE, *Hardſhip*, in law, is where a perſon is kept in priſon, or reſtrained of his liberty, contrary to order of law; or is threatened to be killed, maimed, or beaten.

In which caſe, if a perſon ſo in priſon, or in fear of ſuch threats, make any ſpecialty, or obligation, by reaſon of ſuch impriſonment, or threats; ſuch deed is void in law: and in an action brought on ſuch ſpecialty, the party may plead, that it was brought by *Dureſſe*.

DUST, minute and almoſt inſenſible particles broken off from any hard body.

Thoſe broken from ſtones, or formed of extremely ſmall ſtones, are more properly called *Sand*. See SAND.

The ſubtile matter of des Cartes is a ſort of *Duſt* produced by the colliſion of the matter of the ſecond element. See SUBTILE MATTER.

Gold-Dust.	See the articles	GOLD.
Lead-Dust.		LEAD.
DUTCH *Coins*.	See the articles	COINS.
Dutch *Fortification*.		FORTIFICATION.
Dutch *Monies*.		MONIES.
Dutch *Pens*.		PENS.
Dutch *Teleſcope*.		TELESCOPE.
Dutch *Tyles*.		TYLES.
Dutch *Trading Companies*.		COMPANY.
Dutch *Meaſures*.		MEASURES.

DUTCHY-COURT, a court wherein all matters belonging to the *Dutchy*, or county palatine of Lancaſter, are decided by decree of the chancellor of that court.

The original of this court was in Henry the IVth's time, who obtaining the crown by depoſition of Richard II. and having the *Dutchy* of Lancaſter, by deſcent, in right of his mother, became ſeiſed thereof as king, not as duke. So that all liberties, franchiſes, and juriſdictions of the ſaid county paſſed from the king, by his great ſeal, and not by livery, or attornment, as the earldom of March, and other poſſeſſions, which deſcended to him by other anceſtors than the king's, did.

Henry IV. by authority of parliament, ſevered the poſſeſſions, liberties, &c. of the ſaid *Dutchy* from the crown: but Edward IV. reſtored them to their former nature.

The officers belonging to this court, are a chancellor, attorney-general, receiver-general, clerk of the court, and meſſenger; beſide the aſſiſtants, as an attorney in the exchequer, another in chancery, and four counſellors. See CHANCELLOR and ATTORNEY *of the Dutchy*.

The *Dutchy* of Lancaſter, ſays Gwyn, grew out of the grant of Edward III. who gave that *Dutchy* to his ſon John of Gaunt, and endowed it with royal rights, equal to thoſe of the county palatine of Cheſter. And foraſmuch as it came afterwards to be extinct in the perſon of king Henry IV. by reaſon of its union with the crown; the ſame king ſuſpecting himſelf more rightfully duke of Lancaſter, than king, of England, determined to ſave his right in the *Dutchy*, whatever ſhould befal the kingdom. Accordingly, he ſeparated the *Dutchy* from the crown; and ſettled it ſo in his own perſon and heirs, as if he had been no king, or politic body at all: in which condition it continued during the reigns of Henry V. and VI. who deſcended from him; till Edward IV. who, by recovery of the crown, recontinuing the right of the houſe of York, appropriated the *Dutchy* to the crown again; yet ſo, as he ſuffered the court and officers to remain as he found them. In this manner, it came, together with the crown, to Henry VII. who taking Henry IV's policy (by whoſe right, indeed, he obtained the kingdom) re-ſeparated the *Dutchy*, and ſo left it to his poſterity, who ſtill enjoy it.

DUTY, in a moral ſenſe. See OFFICE.

DUTY *of marriage*. See the article MARRIAGE.

Duty in policy, and commerce, an impoſt laid by authority of a prince, &c. on merchandizes, and commodities, either of his own country, or brought from abroad; towards ſupporting the expences of the government. See CUSTOMS.

The *Duties* on various kinds of commodities are infinite. The principal are, the

Duties *of exportation*, and *importation*, paid upon the bringing in, or carrying out, of the diverſe kinds of goods, animals, and even perſons; agreeable to the tarifs ſettled between the ſeveral nations. See EXPORTATION, &c.

There is no ſtate in Europe, or perhaps in the world, where the *Duties* of exportation and importation are ſo many, and ſo conſiderable, as in England.—The two principal, are the *Duties* of tonnage, and poundage. The firſt charged on liquors, in proportion to their meaſure, and content. See TONNAGE.—The ſecond on the other commodities, and paid according to their value, ſettled in a tarif. See POUNDAGE.

Theſe two *Duties*, which have a long time been on foot in England, were re-eſtabliſhed at the reſtoration of king Charles II. in 1660. upon the parliament's annulling all the laws made under Cromwell, and decreeing the executing of the antient ordinances.

To theſe there have been eighteen new *Duties* added ſince that time: ten of them for liquids, and the other eight on other kinds of commodities.

The **Duties** *on liquids*, are the antient *Duty* of tonnage, or old ſubſidy: the additional *Duty*; *Duty* of exciſe, *Duty* of coinage, the old impoſition, the additional impoſition, the orphans money, the *Duty* on French wines, the new ſubſidy, the *Duty* on Hungary wines, and the one third, and two thirds ſubſidies.

The **Duties** on other commodities, are the antient *Duty* of poundage: the additional *Duty* of 1660. on linens and ſilks: the new impoſition of poundage, called the *impoſt of* 1690. another impoſition of four fifths in 1693. the *Duty* of 25 *per cent.* on French goods, impoſed in 1695. the new ſubſidy of poundage in 1697. another additional ſubſidy of a third of poundage in 1703. another third in 1704. a *Duty* on fiſh, oils, and whale-fins, in 1709. another on leather, velom, and parchment, in 1711. a ſecond on the ſame goods, in 1712. and laſtly, in the ſame year, a *Duty* on paper, paſteboard, and ſoap.

We ſhall here enter into a more particular detail of the *Duties* on liquids; as wines, brandies, vinegars, cyders, &c.—

Firſt then, the **Duty** *of tonnage*, or the *old ſubſidy*, we have already obſerved, was eſtabliſhed in the twelfth year of king Charles II. It was at firſt only granted to him for life; but afterwards was continued for the firſt year of king James II. and after this during the life likewiſe of that prince. And laſtly, by ſeveral acts, in the reign of queen Anne, it was again continued for 96 years, ending in the year 1808.

This firſt *Duty* of tonnage, is 4 pound 10 ſhillings ſterling *per* ton, on all French wines brought by Engliſh veſſels into the port of London; and only 3 pound, into the reſt. The ſame wine brought by foreign veſſels into the port of London, pays 6 pound; and into the other ports, 4 pound 10 ſhillings ſterling. French vinegar made of wine, pays 4 pound 10 ſhillings, brought by Engliſh veſſels; and ſix pound by foreign. French cyder, and perry, and vinegar made of thoſe liquors, pay as in the preceding article. Rheniſh wine brought into any port of England, pays 1 pound ſterling *per* a wine, a meaſure amounting to the ſixth of a ton, ſo that the *Duty per* ton is about 7 pound 7 ſhillings, which is a fourth more than that of French wine. Spaniſh and Portugueſe wines, muſcadines, malmſeys, and other Greek wines, pay the ſame as French wines; and the like is to be underſtood of vinegars made thereof.

Additional DUTY *of the old ſubſidy.* This firſt augmentation of the old tonnage, was made in 1660. and continued like the ſubſidy itſelf to 1808.

For this *Duty*, French wines pay 3 pound ſterling *per* ton. Rheniſh wines pay as French wines. Spaniſh wines, pay 4 pound; Portugal wines, 3 pound; muſcadines, malmſeys, and other Greek wines, pay the ſame as Spaniſh wines. Vinegar, cyder, and perry, are exempt from this *Duty*. See SUBSIDY.

DUTY *of exciſe*, is not laid on wines, but only on malt-liquor, *&c.*

DUTY *of coinage* was impoſed in the 18th year of king Charles II. to defray the expence of coining the money. It has been continued by diverſe acts to the year 1715. and ſince that time.

Wines of all kinds pay equally 10 ſhillings ſterling *per* ton on this *Duty*. See COINAGE.

DUTY *of old impoſition of tonnage* was eſtabliſhed in the year 1685. and continued by diverſe acts; that of 1711. made it perpetual.

By this *Duty*, French wines pay 8 pound ſterling *per* ton in all ports of England; Spaniſh, Portugal, Muſcadine, and other Greek wines, 12 pound: vinegar 8 pound.

DUTY *of additional impoſition* was eſtabliſhed in 1690. continued by diverſe acts to 1710. and in 1712. made perpetual. This *Duty* none but the French pay, the other nations being exempt from it.

Each ton of French wine pays for this *Duty* 8 pound ſterling in any port of England: vinegar, cyder, and perry, pay 25 *per cent.* of their value.

Orphans-DUTY is only charged on wines brought into the port of London. Its name expreſſes the pious office it is intended for. It had its riſe in the 6th year of king William III. It is fixed at 4 ſhillings *per* ton on all wines indifferently.

Additional DUTY *on French wines*, is one of the *Duties* to which French wines alone are ſubject. It was eſtabliſhed in the year 1695. for 20 years, and ſince continued.—It is rated at 25 pound ſterling *per* ton for wines: and for vinegars at 15 pound.

DUTY, called *new ſubſidy*, was granted to king William III. in 1695. for his life, and after continued to queen Anne for her life.

This is properly a duplicate of the *Duty* of tonnage, to which French and other wines are equally ſubject, whether brought in Engliſh or in foreign veſſels; though there are ſome differences, as to vinegars, cyders, and perry.

DUTY *on Hungary wines*, is very late, only eſtabliſhed in the firſt year of queen Anne. It is the ſame with that paid by Rheniſh wines.

DUTY, called *third ſubſidy*, is a third of the old ſubſidy, firſt eſtabliſhed in 1703. and ſince continued by diverſe acts, to expire in 1805.

DUTY, called *two thirds ſubſidy*, is likewiſe a new *Duty*, firſt eſtabliſhed in 1704. to laſt only for a certain time, though ſince made perpetual.—It conſiſts in two other thirds of the old ſubſidy, ſo that theſe two *Duties* of 1703. and 1704. are equal to the whole ſubſidy.

Beſides theſe DUTIES impoſed on all wines imported, both by natives and foreigners; there are likewiſe the *Duty* of butlerage, another *Duty* called *aliens*, another of Briſtol, and another of Southampton, amounting together to about 40 ſhillings *per* ton: but as theſe *Duties* are only levied on wines imported in foreign veſſels, it is but rarely that they are paid; moſt of the wine-trade being managed by Engliſh veſſels.

From this ſtate of the ſeveral *Duties* paid by wines and other liquors brought into England, it appears that French wines imported by Engliſhmen into the port of London, pay 55 pound 16 ſhillings and 8 pence ſterling *per* ton. Thoſe imported by the ſame into the other ports, 51 pound 13 ſhillings and 6 pence: thoſe brought by foreigners into the port of London, 61 pound 15 ſhillings and 10 pence; and into the other ports, 57 pound 12 ſhillings and 8 pence.

Spaniſh, Italian, Muſcadine, Malmſey, and other Greek wines, imported by the Engliſh into the port of London, pay 27 pound 7 ſhillings and 10 pence ſterling; and brought by the ſame into the other ports, 23 pound 4 ſhillings and 9 pence. The ſame wines brought to London by foreigners, pay 33 pound 7 ſhillings 3 fourths.

Portugal, Rheniſh, and Hungary wines brought to London by Engliſh veſſels, pay 26 pound 10 ſhillings and 3 pence; into the other ports, 22 pound 7 ſhillings and 2 pence: the ſame wines imported to London by foreigners, pay 32 pound 9 ſhillings and 5 pence; and into other ports, 28 pound 6 ſhillings 3 pence.

French vinegars imported to London by the Engliſh, pay 27 pound 10 ſhillings 11 pence; and into the other ports, 26 pound 4 ſhillings 6 pence: imported by foreigners into London, they pay 28 pound 17 ſhllings 3 pence; and in the other ports, 27 pound 10 ſhillings 11 pence.

Spaniſh and Portugal vinegars, imported to London by Enliſh veſſels, pay 12 pound 10 ſhillings 11 pence; in the other ports, 11 pound 4 ſhillings 6 pence: the ſame vinegars imported to London by foreign veſſels, pay 13 pound 17 ſhillings 3 pence; and in the other ports, 12 pound 10 ſhillings 1 peny.—As to cyders, and perries, the importation is not conſiderable.

French brandies imported by any veſſel into any port, pay 78 pound 4 ſhillings ſterling *per* ton; and brandies from any other countries, except France, only 48 pound 4 ſhillings: all other foreign brandies being exempted from *Duties* of 30 pound ſterling, charged on French brandies by act of parliament, under the reign of king William III.

The Engliſh merchants, it is to be obſerved, are not obliged to pay theſe ſeveral *Duties* before 12 months; nor foreigners before 9: giving ſecurity for the ſame. Or, if they pay ready money, there is a deduction made them of 5 *per cent.* on the old new third, and two third ſubſidy, and on the other *Duties* 6, and one fourth *per cent.* Add, that if theſe merchandizes be again exported into other countries, after they have been entered in England, the *Duties* are returned; though this only within the compaſs of a year to natives, and of 9 months to foreigners.

In Spain, the DUTIES of export, and import, are called, *Duties of alcavala*, and amount to about 5 *per cent.* of the valu of the goods: for inſtance, the piece of velvet of 40 Spaniſh vares, or yards, pays 20 rials: hats of Vigonia, 5 rials apiece linens, 224 rials *per* 100 vares: gold and ſilver laces, 2 rial 3 quarters, the mark weight. The *Duties* of exportatio are nearly on the ſame footing.

In Portugal, the DUTIES of importation were antiently th ſame on all kinds of goods; *viz.* 18 *per cent.* of the value But ſince the year 1667. ſilks have been excepted out of th general tarif, and reduced to 13 *per cent.* For exportatio the *Duties* are only 6 *per cent.*

In Holland, the DUTIES of *exportation*, and *importation*, ar nearly alike; both of them being about the rate of 5 *per cen* of the value of the goods.—At Hambourg, and Bremen, th *Duties* are but 1 *per cent.*—At Lubeck, three 4ths *per cen* —In Muſcovy, they are 5 *per cent.*

At Venice, theſe *Duties* are 6 and three 4ths *per cent.* fo what the natives import; and 10 and a half to ſtrangers the *Duties* of exportation are 9 *per cent.*—At Leghorn, th *Duties* of exportation and importation are very inconſidera ble; but, with the addition of a number of petty dues, the become as great as at Venice.

In the ports of the Levant, Conſtantinople, Smyrna, Alepp *&c.* the DUTIES of *exportation*, and *importation*, are near on an equal footing, *viz.* 3 *per cent.* except to the Venetian and Jews, who pay 5 *per cent.*—The conſuls *Duties* are like wiſe to be added for Smyrna, *&c.* which are about 2 p *cent.*

At Cairo, Alexandria, and ſome other cities of Egypt, th DUTIES are of two kinds: one for goods brought in ſhi from Europe; the other for thoſe brought by the caravan from Aſia. The firſt are fixed at 20 *per cent.* The ſecond a arbitrary, but they are always very high. Beſide the ordina *Duty*, they here pay the golden *Duty*, which is the tenth pa of what is paid for the firſt *Duty*.—As to *Duties* of export tion, they may be ſaid to pay none, the 1 and a half *per ce* being rather the cuſtom-houſe fee, than any *Duty* paid the ſ vereign.

DUUMVIR, a general appellation among the antient R mans, given to magiſtrates, commiſſioners, and officers, whe *two* were joined together in the ſame function.—So that th had almoſt as many *Duumviri*, as they had officers joined tw by two in commiſſion.

There were *Duumviri* to direct the building, repairing, a conſecrating, of temples and altars; *capital Duumviri*, w took cognizance of crimes, and condemned to death: D *umviri* of the marine, or navy, *&c.*—But the moſt conſide able of the *Duumviri*, and thoſe uſually thus called by w of eminence, were the

DUUMVIRI *Sacrorum*, created by Tarquin, for the perfor ance of ſacrifices, and keeping of the Sibyls books.—Th were choſen from among the nobility, or patricians; and h their office for life: they were exempted from ſerving in w and from the offices impoſed on the other citizens: and wi out them the oracles of the Sibyls could not be conſulted. The commiſſion laſted till the year of Rome 388. when, the requeſt of C. Licinius, and L. Sextius, tribunes of people, they were changed into *Decemviri*; that is, in lieu t *two* perſons, the truſt was committed to *ten*, who were half patricians, half plebeians.

Sylla added five more to their number, upon which they became denominated *quindecimviri:* their body was afterwards much increaſed, and at length amounted to ſixty; yet ſtill it retained the denomination of *quindecimviri*.

They were intirely aboliſhed, under the emperor Theodoſius, along with the reſt of the heathen ſuperſtitions.

The *capital* Duumviri, *Duumviri perduellionis*, were not ordinary magiſtrates; but created only on certain occurrences.—The firſt commiſſioners of this kind were thoſe appointed to judge the ſurviving Horatius, for killing his ſiſter, after vanquiſhing the Curiatii.

There were alſo Duumviri in the Roman colonies; who held the ſame rank and authority in their reſpective colonies, that the conſuls held at Rome.—They were choſen out of the body of decuriones, and wore the prætexta, or robe bordered with purple.

We alſo read of *municipal duumviri*, whom Vigenere compares to our ſheriffs, or rather mayors of towns.

DUUMVIRATE, Duumviratus, the magiſtrature, office, or dignity, of the *duumviri*. See Duumvir.

The *duumvirate* laſted till the year of Rome 388. when it was changed into a *decemvirate*.

DWALE, or DWAL, in heraldry, the herb night-ſhade; uſed by ſuch as blazon with flowers and herbs, inſtead of colours and metals, for ſable, or black.

DWARF. See Giant, Pygmy, and Stature.

Dwarf-Trees, a ſort of diminutive fruit-trees, frequently planted in the borders of gardens; thus called from the lowneſs of their ſtature.

They ſeldom are ſuffered to grow above four or five feet high; and have uſually a hoop tied within the middle of the branches, to make them ſpread around.

Dwarf-trees are of ſpecial advantage for table-fruit, whether pears, apples, plums, or cherries; the fruit they yield is uſually of the fineſt, and beſt kind; and as ſuch they make a conſiderable article in the gardeners province.

There are divers ways of producing *dwarfs*.—*Dwarf-pears* are uſually had by inoculating on quince-ſtocks, which grow the *dwarf's* height.

As for *dwarf-apples*, the ſtocks they chuſe to graft on are thoſe raiſed of the cuttings of the apple-tree.—In order to provide ſtocks of each kind, they chuſe ſuch ſtems, and branches, as grow ſtraiteſt, in the month of October, from trees whoſe cuttings will grow, and which in the places they are to be grafted in are at leaſt an inch thick: theſe they cut off an hand's breadth below the knots, or burs, which are the places where they uſually put forth their roots; and cut off the top, that they may not be above a yard long. If they cannot be got ſo long of quinces, ſhorter muſt do. They cut off all ſide-branches cloſe to the body, except one ſmall twig near the top, for the ſap to vent itſelf at; ſet them in beds, as ſeed-plants are; and keep them a foot above-ground.

It being ſomewhat difficult, to get enough of ſuch branches as have burs and knots on them; a particular method has been invented to bring thoſe knots and burs artificially, called *circumpoſition*. It is performed by tying ſome earth in a piece of old hat, a foot long, about the place where you intend to cut, in the month of February; and in October it will have ſhot roots therein.

Such trees, alone, as are very apt to put forth roots, are proper for *dwarf*-ſtocks; as the Kentiſh codlin, gennet-moil, ſome ſorts of ſweet apples, bitter ſweets, the quince-tree, and the Paradiſe apple-tree.

Stocks for *dwarf* apple-trees are likewiſe raiſed by cutting down an old tree, which is apt to caſt forth good ſuckers from the old roots: theſe at two years age may be tranſplanted, or elſe inoculated where they ſtand.

As for *dwarf* pear-trees, ſtocks may be raiſed for them from the ſuckers of old pear-trees; elſe, cut off the top of ſome old ill pear-tree, and the root will caſt forth ſuckers.

For *dwarf* cherries and plums, ſuckers of the common red cherry, and ordinary plum-tree, are the beſt.

As to the grafting, or inoculating, of *dwarf-ſtocks*, it muſt be done as low as may be, with two cyons, and thoſe longer than in grafting for long ſtandards; that they may ſpread from the ground.

As to the planting of *dwarf-trees*, it is beſt in a light, hot earth, from the middle of October, to the end of November: in a cold, wet ſoil, it is beſt in March and April; the ſtem of the tree to be cut off ſeven or eight inches above the graft: and remember to cut off half the length of the roots, and hairy fibres; to turn the cut of the tree towards the north; to let the graft be always two or three inches above the ground, leſt it take root; to plant them ſhallow; as being apt of themſelves, in light ground, to ſink a foot deep, which is ſufficient; and to cover the ground, when they are planted, with horſe-litter. See Engrafting, and Planting.

YADIC *Arithmetic*. See the article Arithmetic.

DYE*; in architecture, the trunk of the pedeſtal; or that part between the baſe and the cornice: being ſo named, becauſe it is frequently made in the form of a cube, or *dye*.—See Tab. *Archit. fig*. 24. 26. 28. 30. 32.

* It is alſo called *dado*, by the Italians; and by Vitruvius, *truncus*. See Pedestal.

Dye is alſo uſed for a cube of ſtone, placed under the feet of a ſtatue, and over its pedeſtal; to raiſe it, and ſhew it the more.

DYERS *Black*. See the article Black.

Dyers *Blue*. See the article Blue.

DYING, the art, or act, of tinging cloth, ſtuff, or other matter, with a permanent colour, which penetrates the ſubſtance thereof.

Dying differs from bleaching, or whitening, which is not the giving a new colour, but the brightening of an old one. It alſo differs from painting, gilding, marbling, and printing, or ſtamping; in that the colours in theſe only reach the ſurface.

Dying may be defined, the art of colouring wool, linen, cotton, ſilk, hair, feathers, horn, leather, and the threads and webs thereof; with woods, roots, herbs, ſeeds, and leaves; by means of ſalts, limes, lixiviums, waters, heats, fermentations, macerations, and other proceſſes.

Dying, with regard to the manner of applying the colours, is divided into *hot*, and *cold*.

Dying *hot*, Θερμοβαφη, is that wherein the liquors and ingredients are boiled, before the cloth be dipped therein; or even where the cloths themſelves are boiled in the *dye*.

Dying *cold*, Ψυχροβαφη, is where the ingredients are diſſolved cold; or at leaſt ſuffered to grow cold, before the ſtuffs be put in them.—V. *Savar. D. Comm*. T. 2. p. 1697. *voc. Teinture. Salmaſ. Exerc. ad Solin*. T. 2. p. 1167.

Origin of Dying.—The *dying* art is of great antiquity; as appears from the traces of it in the oldeſt ſacred, as well as profane writers. The honour of the invention is attributed to the Tyrians *; though what leſſens the merit of it is, that it is ſaid to have owed its riſe to chance. The juices of certain fruits, leaves, *&c*. accidentally cruſhed, are ſuppoſed to have furniſhed the firſt hint. Pliny aſſures us, that, even in his time, the Gauls made uſe of no other *dyes* [a]: it is added, that coloured earths, and minerals waſhed and ſoaked with rain, gave the next *dying* materials [b].—But the purple, an animal juice, found in a ſhell-fiſh called *murex*, *conchylium*, and *purpura*, ſeems from hiſtory to have been prior to any of them. This, indeed, was reſerved for the uſe of kings, and princes; private perſons were forbidden, by law, to wear the leaſt ſcrap of it. The diſcovery of its tinging quality is ſaid to have been taken from a dog; which, having caught one of the purple-fiſhes among the rocks, and eaten it up, ſtained his mouth and beard with the precious liquor; which ſtruck the fancy of a Tyrian nymph ſo ſtrongly, that ſhe refuſed her lover Hercules any favours till he had brought her a mantle of the ſame colour **.——[a] V. Plin. *Nat. Hiſt*. Lib. XXII. c. 2. [b] Savar. Lib. cit. p. 1698.—[c] Leg. I. C. *Quæ res ven. non poſſ*. Salmuth *ad Panciroll*. Lib. I. Tit. 1. p. 8, *ſeq*. [d] Poll. Lib. I. *de verb. Idon. ad Commod. Polyd. Virg. de Invent. Rer*. Lib. III. c. 7. See alſo the article Purple.

* Pliny ſeems to aſcribe the invention of the art of *dying* wools to the Lydians of Sardis: *Inficere lanas Sardibus Lydi* [a]; where the word *incepere* muſt be underſtood [b]. But a modern critic ſuſpects a falſe reading here; and, not without reaſon, for *Lydi*, ſubſtitutes *Lydda*, the name of a city on the coaſt of Phœnicia, where the chief mart of the *purple-dye* was [c].——[a] V. Plin. *Hiſt. Nat*. Lib. VII. c. 56. [b] Hardou. not. ad loc. [c] Nurra, *in Bibl. Choiſ*. T. 20. p. 193, *ſeq*.

** After the Phœnicians, the Sardinians ſeem to have arrived at the greateſt perfection in the *dying* art; inſomuch that βαμμα Σαρδινιακον, *Sardinian dye*, paſſed into a proverb among the Greeks. Ariſtophanes in two places, to expreſs a thing red as ſcarlet, compares it to the βαμμα Σαρδινιακον [d]. Salmaſius, Palmerius, and Spanheim, indeed, for Σαρδινιακον ſubſtitute Σαρδιανικο; which they ſuppoſe a poſſeſſive of Sardis; and to denote *Sardian dye*: but Nurra, in a diſſertation expreſly on the ſubject, has ſtrenuouſly ſupported the pretenſions of his country againſt this innovation [e].——[d] Ariſtoph. *in Acharnan*. v. 112. *item Pax*. v. 11. 74. [e] I. Paul. Nurra *Diſſ. de Varia Lectione Adagii* ΒΑΜΜΑ ΣΑΡΔΙΝΙΑΚΟΝ, *tinctura Sardiniaca Flor*. 1709. 4°. Le Clerc *Bibl. Choiſ*. T. 20. p. 187, *ſeqq*.

Till the time of Alexander we find no other ſort of *dye* in uſe but purple, and ſcarlet.—It was under the ſucceſſors of that monarch, that the Greeks applied themſelves to the other colours; and invented, or at leaſt perfected, blue, yellow, green, *&c* [f].—For the antient purple, it has been long loſt; but the perfection to which the moderns have carried the other colours, abuneantly indemnifies them of the loſs. In this, particularly in the ſcarlet and black colours, the French, under the auſpices of that excellent miniſter M. Colbert, ſeem to have out-ſtripped moſt of their neighbours [g]. See Gobelins.——[f] V. Pitiſc. *L. Ant*. T. 1. p. 249. voc. *Baphia*. [g] Savar. lib. cit.

Among the Romans, the *dye-houſes*, *baphia*, were all under the direction of the *comes ſacrarum largitionum* [h]; though they had each their peculiar præpoſitus, as at Alexandria, Tyre, *&c.*[i]—The *dyers* of London make the 13th company of the city, incorporated under Hen. VI. conſiſting of a maſter, warden, and livery[k].=At Paris, and in moſt of the great cities in France, the *dyers* are divided into three companies; *viz.* thoſe *of the great dye, du grand & bon teint*, who are only to uſe the beſt ingredients, and ſuch as ſtrike the ſureſt and moſt laſting colours.—*Dyers of the leſſer dye, du petit teint*, who are allowed to uſe the inferior ſorts of drugs, which only yield falſe and fading colours.—And ſilk, wool and thread *dyers*.—All the higher-priced cloths and ſtuffs are reſerved to the *dyers* of the firſt ſort: thoſe of leſs value, particularly ſuch as are not rated at above 40 ſols the ell in white, are committed to the maſters of the *petit teint*. Blue, red, and yellow, are reſerved more peculiarly to thoſe of the *grand teint*; browns, fallows, and blacks, are common to both ſorts. As to black, it is begun by the *dyers* of the *grand teint*, and finiſhed by thoſe of the *leſſer*[l].—It ſeems there is a tradition among *dyers*, that Jeſus Chriſt was of their profeſſion; which we alſo find delivered in the *goſpel of the infancy of Jeſus*, though on what grounded we know not: but it is hence that the Perſian *dyers*, notwithſtanding all their Mahometaniſm, have choſen Jeſus for the patron of their art; inſomuch that, among them, a *dye-houſe* is called *Chriſt's ſhop*[m].—[h] V. Notit. Imper. Hoffm. L. T. 1. p. 469. [i] Pitiſc. loc. cit. [k] *New View of Lond.* T. 2. p. 601, *ſeqq.* [l] Savar. *D. Comm.* T. 2. p. 1688. voc. *Teint.* [m] Sike *Not. ad Evang. Infant.* p. 55. Hilſcher *De Stud. Chriſt. in Miſc. Lipſ. Obſ.* 96. § 10. T. 5. p. 34.

Requiſites in DYING.—There are three things demanded by the Greek chemiſts to a good *dye*; *viz.*—Αραιωσις, opening, or rarefying, of the body to be *dyed*, to diſpoſe it to imbibe the colour.—Βαφη, the tincture, or *dye*, itſelf.—Κατοχη, or Στυψις, by the Romans called *alligatio*, the binding or fixing the colour, to prevent its fading, or being diſcharged.—Some add a fourth condition, *viz.* Στιλψις, by the Latins called *lumen*, by us *luſtre*, or *brightneſs*.

Among ſome, theſe three were done ſeverally at three different operations, in different liquors, or decoctions: by the firſt, the ſtuff was prepared to receive the *dye*; this was called προβαφιον, and ὑποστυφη: by the ſecond, the deſired colour was given it; and by the third, the colour was fixed on it.—But others did all three at once, with one decoction, and at one dip.—V. Salmaſ. *Exerc. ad Solin.* T. 2. p. 1146, *ſeq.*

Advancement of DYING.—The baſis of a juſt hiſtory of *dying*, muſt be a theory of light and colours. Two things, it may be obſerved, are chiefly aimed at in the inquiry of colours: the firſt, to increaſe the *materia tinctoria*; the ſecond, to fix thoſe colours we have.

In order to theſe, it may be remembered, that ſome colours are *apparent*; as thoſe of flowers, the juices of fruits, and thoſe of animals.—Others are *latent*, and only diſcovered by the effects which the ſeveral ſpecies of ſalts, and other things, have on them.

Concerning the *apparent* colours of vegetables and animals, and the effects of different ſalts in changing them from one colour to another, we have many inſtances in Mr. Boyle, collected and ranged in a new order by Dr. Liſter: as,—*1ſt*, That acid ſalts advance the colours of flowers and berries: thus they make the infuſions of balauſtia, or pomgranate-flowers, red roſes, clove-july-flowers, mezerion, peas-bloom, violets, and cyanus-flowers, of a very fine red; and the juices of the berries of liguſtrum, of black-cherries, and buckthorn-berries, of a much fairer red.—To the ſame purpoſe it is obſerved, that acid ſalts make no great alterations upon the white flowers of jaſmin and ſnowdrops.

2dly, Urinous ſalts and alcalies, on the contrary, quite alter the colours of the flowers laſt named, as well as the juices of the berries above-mentioned, from red to green.

3dly, Urinous ſalts and alcalies advance, at leaſt they do not hurt, the colours of the juices of vegetable-leaves, woods, and roots.—Thus urinous ſpirits and alcalies make the yellow infuſions of madder-roots, red; of Braſil-wood, purpliſh; of lignum nephriticum, blue; the red infuſion of log-wood, purple; and that of the leaves of ſena, red.

4thly, Acid ſalts quite alter the ſaid infuſions from red, or blue, to yellow.

5thly, Cochineal, which of itſelf is red, upon the affuſion of oil of vitriol, an acid ſalt, ſtrikes the moſt vivid crimſon that can be imagined; and with urinous ſalts, and alcalies, it will be again changed into an obſcure colour betwixt a violet and a purple.

6thly, All red, blue, and white flowers, are immediately, upon the affuſion of an alcaly, changed to a green colour; and thence, in no long proceſs of time, they turn yellow.

7thly, All the parts of vegetables which are green, will, in like manner, ſtrike a yellow with an alcaly.

8thly, What flowers are already yellow, are not much changed, if at all, by an alcaly, or urinous ſpirit.

9thly, The blue ſeed-huſks of glaſtum ſylveſtre, old gathered, and dry, diluted with water, ſtain a blue, which, upon the affuſion of lye, ſtrikes a green; which ſaid green, or blue, being touched with oil of vitriol, *dyes* a purple: and all theſe three colours ſtand.

10*thly*, On the tops of the fungus tubuloſus are certain red knots, which, upon the affuſion of lye, will ſtrike a purple, and ſtand.

For the *latent* colours in animals and vegetables, diſcovered to us by the affuſion of ſalts; they likewiſe are very numerous. We will only mention a few.—*1ſt*, The milky juice of the lactuca ſylveſtris coſta ſpinoſa, & ſonchus aſper & lævis, upon the affuſion of lye, will ſtrike a vivid flame-colour, or crimſon; and, after ſome time, quite degenerate into a dirty yellow.

2dly, The milk of the cataputia major, upon the affuſion of lye, eſpecially if it be drawn with a knife, and have any time ſtood upon the blade thereof, will ſtrike a purple or blood-red colour, and ſoon after will change into a dull yellow.

3dly, The common hawthorn-caterpillar will ſtrike a purple, or carnation, with lye, and ſtand.

4thly, The heads of beetles, piſmires, *&c.* will, with lye, ſtrike the ſame carnation colour, and ſtand.

5thly, The amber-coloured ſcolopendra will give, with lye, a moſt beautiful and pleaſant azure, or amethyſtine, and ſtand.

It remains to be obſerved,—*1ſt*, That in all the inſtances above-mentioned, whether vegetable or animal, there is not one colour truly fixed; though there may be ſome uſe made of them, as they are.—By *not truly fixed*, we mean, not proof againſt ſalt and fire: for, what ſeem to ſtand, and be lye-proof, are either wholly deſtroyed by a different ſalt, or changed into a much different colour; which muſt needs prove a ſtain and blemiſh, when it ſhall happen in the uſe of any of them.

2dly, That both the apparent and latent colours of vegetables are fixable: an inſtance whereof we may obſerve in the ſeed-huſks of glaſtum, and the uſe *dyers* make of the leaves of that plant, after due preparation.

3dly, It is probable, from the ſame inſtance, that we may learn from the colour of ſome part of the fruit, or ſeed, what colour the leaves of any vegetable, and the whole plant, might be made to yield for our uſe.

4thly, That the latent colours of vegetables are pre-exiſtent, and not produced; from the ſame inſtance of woad, and likewiſe from this, that the milky juice of lactuca ſylveſtris affords of itſelf a red ſerum.

5thly, That the change of colours in flowers is gradual and conſtant.

6thly, That the colours of flowers, which will not ſtand with lye, ſeem to be wholly deſtroyed by it, and irrecoverable.—Thus one part of a violet leaf, upon the affuſion of lye, is changed very ſoon into yellow, and will never be revived into a red by an acid ſalt; but if another part of the ſame leaf be ſtill green, it will be revived.

7thly, That dryneſs ſeems to be a means, if not of fixing, yet of bringing the vegetable colour into a condition of not wholly and ſuddenly periſhing by the otherwiſe deſtroying alcaly.

8thly, That thoſe plants, or animals, which will ſtrike different, yet vivid colours, upon the affuſion of different ſalts, and ſtand, as the cochineal, and glaſtum, are of all others to be reckoned the beſt.—V. Liſt. in *Phil. Tranſ.* N° 70. p. 2132, *ſeqq.* ſee alſo Boerh. *Elem. Chem.* P. 3. T. 2. p. 467, *ſeqq.* Edit. Lipſ.

DYING *Ingredients*, or the *materia tinctoria*, are beſt reduced under two heads.—*Colorata*, or thoſe which properly give the colour.—And *Non-colorata*, uſed to prepare the ſtuffs for better taking the *dye*, and to heighten the luſtre of the colours.

The *colouring* ingredients are of three ſorts; blue, yellow, and red.—To the firſt ſort belong indigo, woad, weld, wood-wax, and log-wood; to the ſecond, fuſtic; to the third, madder, braſil, cochineal, kermes, ſafflower, and ſanders.—To which may be added arnotto, and young fuſtic, for orange-colours: laſtly, wood-ſoot.

The *non-colouring* ingredients are,—Certain *reſtringent* or *binding materials*; as galls, ſumac, alder-bark, pomgranate-peel, walnut-rinds and roots, ſapling-bark, and crab-tree-bark.—Certain *ſalts*; as alum, argol, ſaltpetre, ſal armoniac, pot-aſhes, lime, and urine.—*Liquors*; as well-water, river-water, aqua vitæ, vinegar, lemon-juice, aqua fortis, honey, and molaſſes.—*Gums*; as tragacanth, arabic, maſtic, and ſanguis draconis.—*Smectics*, or *abſterſives*; as ſoap, fullers-earth, linſeed-oil, ox-gall, *&c.*—*Metals*; as ſteel-filings, ſlipp, and pewter; to which add copperas, verdegreaſe, antimony, litharge, and arſenic.—Laſtly, bran, wheat-flour, yolks of eggs, leaven, cumin-ſeed, fenugreek-ſeed, agaric, and ſena.

Of moſt of theſe ingredients ſome account may be found under their reſpective articles in the courſe of this book; but with regard to their uſe and effect in *dying*, it will be neceſſary to conſider them more particularly, and to bring them together in one view.

Among the *non-colouring drugs*, then, from the mineral kingdom, come, *1ſt*, Copperas, ſteel-filings, and ſlipp (the ſtuff found in the troughs of old grind-ſtones whereon edge-tools have been ground): theſe are uſed for all true or Spaniſh blacks; though not for the Flanders blacks.—*2dly*, Pewter diſſolved in aqua fortis, uſed for the new ſcarlet, or bow-dye.—*3dly*, 3dly, Litharge, though not owned or allowed, is uſed to add weight to dyed ſilks.—4thly, Antimony uſed chiefly for the ſame purpoſe, though it alſo contains a tingent ſulphur, which by precipitation, &c. affords a great variety of colours.—5thly, Arſenic uſed in dying crimſon, on pretence of giving a luſtre.—6thly, Verdegris, uſed by linen dyers, in their yellow and green colours.—7thly, Alum, much uſed, though with what intent is not agreed on; whether to fix the dye to render water a proper menſtruum to extract the tingent particles of certain hard drugs; or to ſcour the ſordes, which may interpoſe between the ſtuff and the dye, and hinder their due adheſion; or to intenerate the hairs of wool, and hair-ſtuffs, that they may better imbibe their colours; or to contribute to the colour itſelf, as copperas does to galls in making black, or juice of lemons to cochineel in carnations, or aqua fortis impregnated with pewter in the bow-dye; or, which ſeems moſt probable, to ſerve as a vinculum between the cloth and the colour, as clammy oils, and gum-waters, do in painting; alum being a ſubſtance whoſe aculeated particles, diſſolved with hot liquors, will enter the pores of ſtuffs, and on which the particles of dying drugs will catch: though it may alſo ſerve another uſe, *viz.* to dry up certain particles which diſagreed with the colour to be ſuperinduced: to which add, that it may alſo ſerve to brighten a colour, by incruſtating the ſtuff to be dyed with its cryſtals, on which the dye coming to be applied, has a finer effect, than if it were applied on a ſcabrous matter, ſuch as an unalumed cloth is. —8thly, Bran, and bran-water, whoſe flower entering the pores of the ſtuff levigates its ſurface, and thus renders the colour laid on it more beautiful; much as woods to be gilded, are firſt ſmoothened over with white colours.—9thly, Salt-petre, uſed chiefly in aqua fortis, in the bow-dye, to brighten colours by back-boiling; for which purpoſe,—10thly, Argol is more commonly uſed.—11thly, Lime, or calke, uſed in the working of blue fats.

Non-colouring ingredients of the animal kind, are,—1ſt, Honey.—2dly, Yolks of eggs.—3dly, Ox-gall: though this, and the two laſt, are only uſed by a few particular dyers to ſcour, promote fermentation, and increaſe weight.—4thly, Stale urine, uſed as a lixivium to ſcour, alſo to help the fermenting, and heating of woad; though it is alſo uſed in the blue fats inſtead of lime: in reality, as it diſcharges the yellow, wherewith blue, and moſt greens, are compounded, it is uſed to ſpend weld withal: yet it is known, that the urine, or old mud of piſſing places, will dye a well-ſcoured piece of ſilver of a golden colour; it being with this (not Bath-water, as imagined) that the Bath ſix-pences, &c. are prepared.

To the claſs of non-colouring ingredients may alſo be added water, by dyers called *white liquor*, which is of two ſorts.—1ſt, Well-water, uſed in reds; and in other colours wanting reſtringency, as well as in dying ſtuffs of a looſe contexture, as callico, fuſtian, and the ſeveral ſpecies of cottons: but naught for blues, and making yellows and greens look ruſty. —2dly, River-water, ſofter and ſweeter than the former, and diſſolving ſoap better, uſed in moſt caſes by the dyers, for waſhing, rinſing, &c. their cloths after dying.—3dly, Liquor abſolutely ſo called, which is bran-liquor made of one part bran, and five of river-water, boiled an hour, and put in a leaden ciſtern to ſettle: four or five days in ſummer turn it too ſour, and unfit for uſe: its office is to contribute to the holding of the colour: it is known, that ſtarch, which is only the flower of bran, makes a clinging paſte, which will conglutinate paper, though not wood or metals. Accordingly, bran-liquors are uſed to mealy dying ſtuffs, as to madder, which is rendred clammy and glutinous by being boiled in bran-water; and thus made to ſtick better to the villi of the ſtuff dyed.—4thly, Gums, tragacanth, Arabic, maſtich, and ſanguis draconis, are uſed in dying ſilk, chiefly to give it a gloſſineſs, which may make it ſeem finer, as well as ſtiffer, and to increaſe its weight.

For the *colouring ingredients*, *colorantia colorata*, we have,—1°, Iron and ſteel, or what is made from them, which, we have obſerved, are uſed in dying blacks; though how they contribute thereto is not ſo obvious: we know that green oaken boards become black by the affriction of a ſaw; a green ſour apple cut with a knife turns of the ſame colour; the white greaſe wherewith the wheels of coaches are anointed becomes likewiſe black by means of the iron boxes wherewith the nave is lined, and the friction between the nave and the axle-tree; and that an oaken-ſtick becomes black by a violent friction againſt other wood in a turning lath; and the black colour on earthen-ware is given with ſcalings of iron vitrified. From all which it ſeems to follow, that the buſineſs of blacking lies in the iron, and particularly in its uſtulation or affriction.

Be this as it will, copperas, the moſt uſual ingredient for dying black, is the ſalt of the pyrites wherewith old iron is incorporated. And, where-ever this is uſed, ſome of the aſtringents are to accompany it.—2°, Redwood chopped, and ground in a mill, is uſed for dying cloth, rugs, &c. of the coarſer ſort. Its tincture, which is a ſort of brick-colour, is got out by long-boiling it with galls, and the cloth with it. It ſtands better than brazil.—3°, Brazil chopped alſo, and ground, dyes a pink-colour, or carnation neareſt approaching cochineel: it is uſed with alum: with pot-aſhes it alſo ſerves for purples. It eaſily ſtains.—4°, Madder gives a colour near approaching the bow-dye, or new ſcarlet: thoſe called baſtard-ſcarlets are dyed with it. It endures much boiling, and is uſed both with alum and argol; and holds well: the brighteſt dyes with madder are made by over-dying the ſtuff, and then diſcharging part of it by back-boiling in argol. It is uſed with bran-water inſtead of white liquor. —5°, Cochineel, uſed with bran-liquor in a pewter veſſel, with aqua fortis, gives the dye called among us, though improperly, *ſcarlet in grain.* Too much acid takes off the intenſe redneſs of this colour, and turns it towards an orange, or flame-colour. With this colour the Spaniſh leather and wool, uſed by ladies, are dyed.—6°, Arnotto gives an orange-colour, eſpecially to ſilks, linens, and cottons; for it does not penetrate cloth: it is uſed with pot-aſhes.—7°, Weld, by the help of pot-aſhes, yields a deep lemon-colour; tho' it is uſed to give all ſorts of yellows.—8°, Wood-wax, or green-wood, called alſo *geniſta tinctoria*, and the *dyer's weed*, has the like effect, as weld, though its uſe is chiefly confined to coarſe cloths. It is ſet with pot-aſhes, or urine. —9°, Fuſtic is of two ſorts, young and old.—The former chopped and ground, yields a kind of rediſh orange-colour: the latter, a hair-colour diſtant ſeveral degrees of yellow from the former. It ſpends with or without ſalts, works either hot or cold, and holds firm.—10°, Wood-ſoot, containing not only a colour, but a ſalt, needs nothing to extract its dye, or make it ſtrike on the ſtuff. The natural colour it yields is that of honey; but it is the foundation of many other colours, on wool, and cloth, only.—11°, Woad ground, or chopped with a mill for the purpoſe, is made up into balls, which being broken, and ſtrewed on lime or urine, is uſed with pot-aſhes, or ſea-weed, and gives a laſting blue. The lime or chalk accelerates the fermentation of the woad, which in three or four days will work like a guile of beer, and be covered with a greeniſh froth or flower. An intenſe woad-colour is almoſt black, that is, of a damaſcene-colour. It is the foundation of ſo many colours, in its different degrees or ſhades, that the dyers have a ſcale whereby to compute the lightneſs and depth of this colour. See WOAD.—12°, Indigo is of the like nature, and uſed for the ſame purpoſe, as woad, only that it is ſtronger.—13°, Logwood, chopped and ground, yields a purpliſh blue: it may be uſed with alum: formerly it was of ill repute, as a moſt falſe and fading colour; but, ſince it has been uſed with galls, it is leſs complained of.—V. Petty's *Apparat.* to *Hiſt. of dying*, in Sprat's *Hiſt. Roy. Societ.* P. 2. p. 288, *ſeqq.* Merr. *Not. on Neri*, c. 110. p. 335, & *ſeqq.*

The *dying* materials are generally applied in decoctions made in water, more or leſs ſtrong, according to the occaſion; ſometimes by only dipping the ſtuff in the vat of dye; ſometimes by boiling it therein; and ſometimes by leaving it a day or more to ſteep.—For the alum, in dying ſilks, it is always applied cold, in which ſtate alone it contributes to the brightneſs of the dye.

The *Art of* DYING may be divided into as many branches as there are different colours to be communicated, and ſorts of different ſtuffs to be the ſubjects of it.

DYING *of Cloths*, *Serges*, *Druggets*, *and other woollen Manufactures.*—For *black*, in cloths and ſtuffs of price, it is begun with a ſtrong decoction of woad and indigo, which give a deep blue; after which, the ſtuffs, being boiled with alum and tartar, or pot-aſhes, are to be maddered with common madder; then dyed black with Aleppo galls, copperas, and ſumac; and finiſhed by back-boiling in weld.—*Scarlet* is dyed with kermes and cochineel, with which may alſo be uſed agaric and arſenic.—*Crimſon ſcarlet* is given with cochineel maſtich, aqua fortis, ſal armoniac, ſublimate, and ſpirit of wine.—*Violet-ſcarlet*, *purple*, *amaranth*, and *panſy-ſcarlets*, are given with woad, cochineel, indigo, braziletto, brazil, and orchal.—For common *reds*, pure madder is uſed, without any other ingredients.—*Crimſon-reds*, *carnations*, *flame and peach-colours*, are dyed according to their ſeveral hues, with cochineel maſtich, without madder, or the like. —*Crimſon-red* is prepared with Roman alum, and finiſhed with cochineel.—*Peach-colour* muſt be back-boiled a little with galls and copperas, or the like.—*Orange-aurora*, or *golden-yellow*, *brick-colour*, and *onion-peel-colour*, are given with woad and madder, tempered according to their reſpective ſhades.—For *blues*, the *dark* are given with a ſtrong tincture of woad: the *brighter*, with the ſame liquor, as it weakens in working.—*Dark-browns*, *minims*, and *tan-colours*, are given with woad, weaker in decoction than for black, with alum and pot-aſhes; after which, they are maddered higher than black: for tan-colours, a little cochineel is added. —*Pearl-colours* are given with galls and copperas; ſome are begun with walnut-tree roots, and finiſhed with the former; tho', to make them more ſerviceable, they uſually dip them in a weak tincture of cochineel.—*Greens* are begun with woad, and finiſhed with weld.—*Pale-yellows*, *lemon-colour*, and *ſulphur-colour*, are given with weld only.—*Olive-colours* of all degrees are firſt put in green, and taken down again with ſoot, more or leſs, according to the ſhade required.—*Feulemort*, *hair-colour*, *muſk*, *and cinnamon-colour*, are given with weld and madder.—*Nacarat*, or *bright orange-red*, is given with weld, and goats hair, boiled with pot-aſhes. Fuſtic here is forbid, as a falſe colour.——V. Savar. *D. de Comm.* T. 2. p. 1690, *ſeqq.* See alſo *le Teinturier Parfait*, *Leid.* 1708, 12°. Salm. *Polygraph.* l. 3. c. 37.

Dying *of wools for tapeſtry*, is performed after the ſame manner as cloths, excepting blacks, which are only to be woaded, and then put in black, as above.

Black wools for cloths and ſerges may be begun with walnut-tree root, and walnut rinds, and finiſhed by dipping in a vat of black.

Dying *of ſilks* is begun by boiling them with ſoap, *&c.* then ſcouring and waſhing them out in the river, and ſteeping them in alum-water cold.—For crimſon they ſcour them a ſecond time before putting them in the cochineel vat.

Red crimſon is dyed with pure cochineel maſtich, adding galls, turmeric, arſenic, and tartar, all put together in a copper of fair water almoſt boiling: with theſe the ſilk is to be boiled an hour and a half; after which, it is ſuffered to ſtand in the liquor till next day.—*Violet crimſon* is alſo given with pure cochineel, arſenic, tartar, and galls; but the galls in leſs proportion than in the former. When taken out, it is to be well waſhed, and put in a vat of indigo.—*Cinnamon crimſon* is begun like the violet, but finiſhed by back-boiling, if too bright, with copperas; if dark, with a dip in indigo.—*Light blues* are given in a back of indigo.—*Sky blues* are begun with orchal, and finiſhed with indigo.—For *citron colours*, the ſilk is firſt alumed, then welded, with a little indigo.—*Pale yellows*, after aluming, are dyed in weld alone.—*Pale* and *brown aurora's*, after aluming, are welded ſtrongly, then taken down with rocou diſſolved with pot-aſhes.—*Flame-colour* is begun with rocou, then alumed, and dipped in a vat or two of brazil.—*Carnation*, and *roſe colours*, are firſt alumed, then dipped in brazil.—*Cinnamon-colour*, after aluming, is dipped in brazil, and braziletto.—*Lead-colour* is given with fuſtic, or with weld, braziletto, galls, and copperas. But the galls, on theſe and other occaſions, are not to be overdoſed, which increaſes the weight to the damage of the purchaſer; for which reaſon, it is puniſhed in France as a fraud: and in reality few but black ſilks need galls.

Black ſilks, of the *coarſer* ſort, are begun by ſcouring them with ſoap, as for other colours; which done, they are waſhed out, wrung, and boiled an hour in old galls, where they are left to ſtand a day or two; after which, they are waſhed again with fair water, wrung, and put in another vat of new and fine galls; then waſhed and wrung again, and finiſhed in a vat of black.—*Fine black* ſilks are only put once into galls, *viz.* the new and fine ſort, which has only boiled an hour; then they are waſhed, and rung out, and dipped thrice in black, to be afterwards brought down by back-boiling with ſoap.—V. Savar. *lib. cit.* p. 1693, *ſeqq.*

Dying *of thread* is begun by ſcouring it in a lye of good aſhes; after which, it is wrung, rinſed out in river water, and wrung again.—For a *bright blue*, it is given with braziletto, and indigo.—*Bright green* is firſt dyed blue, then back-boiled with braziletto, and verdeter, and laſtly woaded.—For a *dark green*, it is given like the former, only darkening more before woading.—*Lemon*, or *pale yellow*, is given with weld, mixt with rocou.—*Orange* and *Iſabella*, with fuſtic, weld, and rocou.—*Red*, both *bright* and *dark*, with *flame-colour*, *&c.* are given with brazil, either alone, or with a mixture of rocou.—*Violet*, *dry roſe*, and *amaranth*, are given with brazil, taken down with indigo.—*Feulemort*, and *olive-colour*, are given with galls and copperas, taken down with weld, rocou, or fuſtic.—*Black* is given with galls and copperas, taken down and finiſhed with braziletto wood.

Dying *of hats* is done with braziletto, galls, copperas, verdegris, diſſolved and boiled in a copper capable of receiving, beſides the liquor, twelve dozen of hats on their blocks, or moulds. Here the hats are ſuffered to boil ſome time; after which, they are taken out, and ſuffered to ſtand and cool; then dipped again; and thus alternately, oftener or ſeldomer, as the ſtuff is of a nature to take the dye with more or leſs difficulty. Savar. *lib. cit.* p. 1697. See alſo the article **Hat**.

Proof of **Dyes**.—There are divers ways of proving the truth of *dyes*, or examining the juſtneſs and legitimacy of their compoſition.—To diſcover whether a cloth have been duly treated by the dyer, and the proper foundation laid, a white ſpot, by the French called *Roſette*, of the bigneſs of a ſhilling, ought to be left; beſides a white ſtripe between the cloth and the liſt.

Farther proof is had by boiling the dyed ſtuff in water with other ingredients different according to the quality of the dye to be proved. If the colour ſuſtain the teſt, *i. e.* do not diſcharge at all, or very little, ſo that the water is not tinctured by it, the dye is pronounced good: otherwiſe it is falſe.

Proofs of the **Dyes** *of ſilks*.—For red crimſon, the proof is made by boiling the ſilk with an equal weight of alum.—For ſcarlet crimſon, it is boiled with ſoap almoſt of the weight of the ſilk.—For violet crimſon, with alum of equal weight with the ſilk, or with citron juice, about a pint to a pound of ſilk.—Theſe ingredients are to be mixed, and put in fair water when it begins to boil; after which, the ſilks are alſo to be put in; and after boiling the whole for half a quarter of an hour, if the dye be falſe, the liquor of the red crimſon will be violet, in caſe it have been dyed with orchal; or very red, if with brazil.—That of crimſon ſcarlet, if rocou have been uſed, will become of an aurora colour, or, if brazil have been uſed, red.—And that of violet crimſon, if brazil, or orchal, have been uſed, will be of a colour bordering on red.—On the contrary, if the three ſorts of crimſon be truly dyed, their liquors will diſcover very little alteration.

A ſtill ſurer way to diſcover whether crimſon ſilks have been rightly dyed, is by boiling a piece of ſtandard dyed crimſon ſilk, kept for that purpoſe at Dyers-hall, after the ſame manner, and then comparing the tinctures of the two liquors.

To diſcover whether other colours have been dyed with galls, the ſilk is to be put in fair boiling water, with pot-aſhes, or ſoap, nearly of the weight of the ſilk; after ſome time, it is taken out; upon which, if it have been dyed with galls, the colour will be all vaniſhed, and nothing but that of the galls left, which is a ſort of feulemort, or wood colour.

The *dying* of ſilk with galls may alſo be detected by putting it in boiling water, with a gallon of citron juice; being taken out, and waſhed in cold water, and then dipped in a black dye, if galls have been uſed, it will turn black; if not, it will be of a brown-bread colour.

To diſcover whether black ſilk have been overdoſed with galls, ſteel filings, or ſlipp, it is boiled in fair water, with twice its weight of ſoap: if it be loaden with galls, it will turn rediſh, otherwiſe it will keep its colour.

To diſcover whether black cloth have been firſt woaded, and maddered; a ſample of it, and, at the ſame time, a ſample of ſtandard black, kept for that purpoſe by the Dyers company, is to be taken; and then as much Roman alum as is equal in weight to both, together with a like weight of pot-aſhes, is to be put over the fire in a pan of bran-water: when it begins to boil, the two ſamples to be put in; and after half an hour to be taken out, and compared.—The piece which has only been woaded will be found bluiſh, with ſomewhat of a dull green; if it have been both woaded and maddered, it will be of a tan, or minim colour; and, if it have been neither woaded, nor maddered, its colour will be dunniſh, between yellow and fallow.

For cloths dyed of a minim colour, the proof is to be made after the ſame manner as that of blacks.

To know whether ſcarlet, or crimſon cloth, have been dyed with pure cochineel, they are to be boiled with an ounce of alum to a pound of cloth.

For cloths of other colours, the proof is to be made in the ſame manner as that of blacks and minims—V. Savar. *lib. cit.* T. 1. p. 1665, *ſeqq.* voc. Debouilli

Theory of **Dying**.—This article we cannot better cloſe, than with ſome general deductions which may let a little neceſſary light into the theory of *dying*. As,

1°, That all the materials, which of themſelves give colour, are either red, yellow, or blue; ſo that out of them, and the primitive fundamental colour, white, all that great variety, which we ſee in dyed ſtuffs, ariſes.—2°, That few of the colouring materials (as cochineel, ſoot, wood-wax, or woad) are, in their outward and firſt appearance, of the ſame colour, which by the ſlighteſt ſolutions in the weakeſt menſtrua, they dye upon cloth, ſilk, *&c.* 3°, That many of the colouring materials will not yield their colours without much grinding, ſteeping, boiling, fermenting, or corroſion by powerful menſtrua; as red-wood, weld, woad, arnotto, *&c.*—4°, That many of the ſaid colouring materials will of themſelves give no colouring at all, as copperas, or galls, or with much diſadvantage, unleſs the cloth, or other ſtuff to be dyed, be firſt covered or incruſtated, as it were, with ſome other matter, though colour-leſs, aforehand; as madder, weld, and brazil, with alum.—5°, That ſome of the colouring materials, by the help of other colour-leſs ones, do ſtrike different colours from what they would alone, and of themſelves; as cochineel, and brazil.—6°, That ſome colours, as madder, indigo, and woad, by reiterated tinctures, will at laſt become black.—7°, That though green be the moſt frequent and common of natural colours, yet there is no ſimple ingredient, which is now uſed alone, to dye green with upon any material; ſap-green, the condenſed juice of the rhamnus or buckthorn-berry, being the neareſt; and thi only uſed by country people.—8°, There is no black thin in uſe which dyes black; though both the coal and ſoot o moſt things burnt, or ſcorched, be of that colour; and th blacker, by how much the matter, before it was burnt, wa whiter, as in the famous inſtance of ivory-black.—9°, The tincture of ſome *dying* ſtuffs will fade even with lying, or with the air, or will ſtain even with water; but very much with wine, vinegar, urine, *&c.*—10°, Some of the dyers materials are uſed to bind and ſtrengthen a colour; ſome to brighten it; ſome to give luſtre to the ſtuff; ſome to diſcharge and take off the colour, either in whole, or in part; and ſome out of fraud, to make the material dyed, if coſtly, to be heavier.—11°, Some *dying* ingredients, or drugs, by the coarſeneſs of their bodies, make the thread of the dyed ſtuff ſeem coarſer; and ſome, by ſhrinking them, ſmaller; and ſome, by levigating their aſperities, finer. 12°, Many of the ſame colours are dyed upon different ſtuffs with different materials; as red-wood is uſed in cloths, not in ſilks; arnotto in ſilks, not in cloth; ſo that they may be dyed at ſeveral prices.—13°, Scouring, and waſhing of ſtuffs to be dyed, is to be done with appropriate materials; as ſometimes with ox-galls, ſometimes with fullers-earth, ſometimes with ſoap; this latter, however, is pernicious in ſome caſes, where potaſhes will ſtain or alter the colour.—14°, Where great quantities of ſtuffs are to be dyed together, or where they are to be done with great ſpeed, and where the pieces are very long, broad, thick, *&c.* they are to be differently handled, both in reſpect to the veſſels and ingredients.—15°, In ſome colours and ſtuffs the tingent liquor muſt be boiling; in other caſes only blood-warm; in ſome it may be cold.—16°, Some tingent liquors are fitted for uſe by long keeping; and in ſome the virtue wears away by the ſame.—17°, Some colours, or ſtuffs, are beſt dyed by reiterated dippings ever into the ſame liquor at ſeveral intervals of time; and ſome by continuing longer, and others leſſer whiles therein.—18°, In ſome caſes, the matter of the veſſel wherein the liquors are heated, and the tinctures prepared, muſt be regarded; as that the kettles be pewter for bow-dye.—19°, Little regard is had how much liquor is uſed in proportion to the *dying* drugs; the liquor being rather adjuſted to the bulk of the ſtuff, as the veſſels are to the breadth of the ſame; the quantity of *dying* drugs being proportioned to the colour higher or lower, and to the ſtuffs both; as likewiſe the ſalts are to the *dying* drugs.

Concerning the weight which colours give to ſilks; for in them it is moſt taken notice of, as being ſold by weight, and being a commodity of great price; it is obſerved, that one pound of raw ſilk loſes four ounces by waſhing out the gums, and natural ſordes.—That the ſame ſcoured ſilk may be raiſed to above thirty ounces from the remaining twelve, if it be dyed black, with certain materials. That the reaſon why black colour may be dyed the heavieſt is, that all ponderous drugs may be dyed black, being all of colours lighter than it; whereas, perhaps, there ſeem to be few or no materials wherewith to increaſe the weight of ſilk, which will conſiſt with fair light colours; ſuch as will having been uſed, as white arſenic to carnations.

Of things uſeful in dying, eſpecially black, nothing increaſes weight ſo much as galls; by means whereof black ſilks recover the weight which they loſt by waſhing out their gum: nor is it counted extraordinary, that blacks ſhould gain about four or ſix ounces in the *dying* upon each pound.—Next to galls, old fuſtic increaſes the weight about 1 $\frac{1}{2}$ in 12.—Madder about an ounce in the pound.—Weld half an ounce.—The blue fat, in deep blues of the fifth ſtall, adds no conſiderable weight. Neither do logwood, cochineel, or arnotto; nor even copperas of itſelf, where galls are not uſed.—Slipp adds much to the weight, and gives a deeper black than copperas, which affords a good excuſe for the dyers that uſe it.—Petty's *Appar. to Hiſt. of Dying*, ap. Sprat. lib. cit. p. 302, *ſeqq.*

DYING, in a more extenſive ſenſe, is applied to all kinds of colourings given to bodies of any ſort.

In which ſenſe, *dying* amounts to the ſame with *coloration*; and includes ſtaining, painting, gilding, marbling, printing, *&c.*—The Chineſe are ſaid to practiſe the *dying* of tea with catechu, which gives the worſe ſorts of green tea-leaf the colour, and its infuſion the tincture, of bohea.—V. Short. *Diſſ. on Tea*, pref. p. 15. See alſo the articles TEA, and CATECHU.

The ſorts of *dying*, or coloration, now commonly uſed in vulgar trades, are, 1°, Whitening of wax, and ſeveral ſorts of linen, and cotton cloths, by the ſun, air, and recriprocal effuſions of water. See BLEACHING.—2°, Staining of wood and leather by lime, ſalt, and liquors, as in ſtaves, canes, marble leathers, marquetry, *&c.*—3°, Marbling of paper by tempering the colours with ox-gall, and applying them upon a ſtiff gummed liquor. See PAPER.—4°, Colouring, or rather diſcolouring ſilks, tiffanies, *&c.* by brimſtone.—5°, Colouring ſeveral iron and copper-works into black with oil.—6°, Giving leather a gold colour, or rather dying ſilver-leaves like gold, by varniſhes; and in other caſes by urine and ſulphur.—7°, Staining of marble and alabaſter, with heat, and coloured oils.—8°, Tinging ſilver into braſs with brimſtone or urine.—9°, Colouring the barrels and locks of guns blue and purple with the temper of ſmall-coal heat.—10°, Colouring glaſs *, cryſtals, and earthen-ware, with the ruſts, and ſolutions of metals. See POTTERY, *&c.*—11°, Colouring live hair, as in Poland, both horſe and man's hair; and alſo of furs **.—12°, Enamelling and annealing. See ENAMELLING.—13°, Application of colours, as in the printing of books, and pictures; and the making of playing cards, japanning, *&c.* See PRINTING, CARDS, and JAPANNING.—14°, Gilding, and tinning with mercury, block-tin, and ſal armoniac. See GILDING, and TINNING.—15°, Colouring metals, as copper with calamine into braſs, and with zink or ſpeltre into falſe gold, or into falſe ſilver with arſenic. See CALAMINE, BRASS, ZINK, ARSENIC, *&c.*—16°, Making painters colours, by preparing of earth, chalk, and ſlates, as in umber, oker, Cologn earth, *&c.* out of the calces of lead, as ceruſs and minium; by ſublimates of mercury and brimſtone, as in vermilion; by tinging of white earths variouſly, as in verdeter, and ſome of the lakes; by concrete juices or fæculæ, as in indigo, pinks, ſap-green, and lakes; and by ruſts, as in verdegris, *&c.* See CERUSS, MINIUM, VERMILION, INDIGO, *&c.*—17°, The applying of theſe colours by the adheſion of ox-gall, as in the marbled paper aforeſaid; or by gum-water, as in limning; or clammy drying oils, as the oils of linſeed, nuts, ſpike, turpentine, *&c.* See PAINTING, LIMNING, *&c.*—18°, Watering of tabbies. See WATERING, CALENDER, TABBY, *&c.*—V. Petty *Appar. Hiſt. of Dying*, ap. Sprat. *Hiſt. Roy. Societ.* p. 285, *ſeqq.*

DYING *of leather, skins*, &c.—A *blue* colour is given by ſteeping the ſubject a day in urine and indigo, then boiling it with alum: or it may be given by tempering the indigo with red wine, and waſhing the ſkins therewith.—*Red* is given by waſhing the ſkins, and laying them two hours in galls; then wringing them out; dipping them in a liquor made with liguſtrum, alum, and verdegris, in water; and laſtly, in a *dye* made of brazil-wood boiled with lye.—*Purple* is given by wetting the ſkins with a ſolution of roche alum in warm water, and, when dry again, rubbing them with the hand with a decoction of log-wood in water cold.—*Green* is given by ſmearing the ſkin with ſap green and alum-water boiled: to darken the colour, a little more indigo may be added.—*Dark-green* is alſo given with ſteel-filings and ſal armoniac ſteeped in urine till ſoft, then ſmeared over the ſkin; which is to be dried in the ſhade.—*Sky-colour* is given with indigo ſteeped in boiling-water, and the next morning warmed, and ſmeared over the ſkin.—*Yellow*, by ſmearing the ſkin over with aloes and linſeed-oil diſſolved and ſtrained: or by infuſing it in weld.—*Orange-colour* is given by ſmearing with fuſtic-berries boiled in alum-water: or for a deep orange, with turmeric.—Vid. Salm. *Polygr.* lib. III. c. 34. p. 272, *ſeq.*

DYING *or ſtaining of wood, for inlaying, veneering*, &c.—*Red* is done by boiling the wood in water and alum; then taking it out, adding brazil to the liquor, and giving the wood another boil in it.—*Black*, by bruſhing it over with log-wood boiled in vinegar, hot; then waſhing it over with a decoction of galls, and copperas, till it be of the hue required.—*Any other colour* may be given by ſqueezing out the moiſture of horſe-dung through a ſieve, mixing it with diſſolved roche alum and gum Arabic; and to the whole adding green, blue, or any other colour deſigned: after ſtanding two or three days, pear-tree, or other wood, cut to the thickneſs of half a crown, is put into the liquor boiling hot, and ſuffered to remain till it be ſufficiently coloured.—Vid. Park. *Treat. of Japann.* c. 27. p. 82, *ſeqq.*

DYING *of bone, horn, or ivory.*—*Black* is performed by ſteeping braſs in aqua fortis till it be turned green: with this the bone, *&c.* is to be waſhed once or twice; and then put in a decoction of log-wood and water, warm.—*Green* is begun by boiling the bone, *&c.* in alum-water; then with verdegris, ſal armoniac, and white-wine vinegar; keeping it hot therein till ſufficiently green.—*Red* * is begun by boiling it in alum-water, and finiſhed by decoction in a liquor compounded of quicklime ſteeped in rain-water, ſtrained, and to every pint an ounce of brazil-wood added: the bone, &c. to be boiled herein till ſufficiently red[a].—Other methods are given by Salmon[b].—And from him by Houghton[c].—[a] V. Park. lib. cit. p. 83, ſeqq. [b] Salm. *Polygraph.* l. 3. c. 35. p. 275, ſeqq. [c] Hought. *Collect.* N° 138. T. 1. p. 361.

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* Glaſs *dyed* is the common matter of artificial jewels: the tinctures are given with zaffer, manganeſe, ferreto, crocus martis, *&c.* The proceſſes are deſcribed at length in Antonio Neri, *de Re Vitraria*, Lib. I. c. 12, 13, 14, *ſeqq.*—See alſo GLASS, GEM, *&c.*

** The Peruvian women, when grown old, *dye* their grey hairs black by a very untoward operation; *viz.* holding the head ſome hours with the hair ſopped in a boiling tincture of the root of a tree called *Cuchau*, by the Spaniards *Maquey* [n].—Thoſe brooks and ſprings mentioned by Strabo, Pliny, and others, were much more commodious, which would change the colour of the hair, as well as of the coats of animals, with only drinking their waters [o]. For the uſe of angling, white hair is *dyed* green by boiling it in ale with alum; then ſteeping it in a decoction of copperas in common water.—It is *dyed* yellow by boiling in alum and ale with walnut-tree leaves ſtamped in it.—And brown, by ſteeping it in ſalt and ale [p].—[n] V. *Mem. de Trev.* Sept. 1707. p. 1606, *ſeqq.* [o] Ariſt. *Hiſt. Anim. de Gener.* Lib. IV. and V. Probl. §. 9. Conring. *de Habit. Germ. Corp. Cauſ.* p. 126. [p] Gent. Angl. p. 9, *ſeqq.*

* The refuſe of the bow-dye given to hogs to feed on, is ſaid to tinge their very bones red. This is a ſpontaneous kind of *dying*, not unlike that in Virgil; who ſpeaks of *dying* wool, on the ſheeps backs, as ſeems in the text, by their feeding on properly coloured plants:

> *Nec varios diſcet mentiri lana colores:*
> *Ipſe ſed in pratis aries jam ſuave rubenti*
> *Murice, jam croceo mutabit vellera luto:*
> *Sponte ſua ſandyx paſcentes veſtiet agnos.*
> Ecl. 4. v. 42, ſeqq.

The difficulty is to conceive how lambs ſhould feed on the ſandyx, which is a mineral ſubſtance; the ſame with what is otherwiſe called *Sandaracha?* It is certain the poet takes it for a plant, as was long ago obſerved by Pliny: *Animadverto Virgilium exiſtimâſſe herbam id eſſe.* Hiſt. Nat. *l.* 35. *c.* 6. This inference is chiefly drawn from the word *paſcentes*, which can mean nothing elſe, but that the lambs, brouſing on the ſandyx, ſhould receive the *dye* in their fleeces from the aliment. Dr. B—— here gives us a correction which ſets all to rights: for *paſcentes* he reads *naſcentes*. On which footing the tenor of the paſſage is this: from that time there will be no need of *dying* wool with beautiful colours: but the ſheep ſhall have their fleeces *dyed* naturally, and ſpontaneouſly; ſome with the *murex*, or purple colour; others with the *luteus*, or yellow; others with *ſandyx*, or red. Thoſe that were already in being, and had white fleeces, ſhall change them *in pratis*, in the meadows; but all the lambs ſhall be *dyed* beautifully, *naſcentes*, at their birth. V. *Mem. of Liter.* T. 2. art. 2. p. 7, ſeqq.

DYNASTY*, a term in hiſtory, ſignifying a race or ſucceſſion of kings of the ſame line, or family. See Race.

* The word is formed from the Greek δυναςεια, of δυναςευω, to be powerful, to be king.

We find frequent mention in antient hiſtory of *dynaſties* of Perſians, Aſſyrians, Medes, &c. Manetho has left us an hiſtorical chronology of Egypt, divided into 30 *dynaſties*.

DYPTYCHA, or rather Diptycha. See Diptycha.

DYSCRASY, an ill temperament or habit of the blood and humours, as in a jaundice, or the like.

DYSENTERY, ΔΥΣΕΝΤΕΡΙΑ, in medicine, a bloody diarrhœa; or a flux of blood by ſtool; attended with pains, and griping.

The word *dyſentery* is formed from the Greek δυς, *difficulty*, and εντερον, *inteſtine*; and properly ſignifies that kind of flux of the belly, characterized by the frequency of ſtools, or ejections, mixed with blood, and accompanied with gripes: the fever, ulcers, &c. which attend it, are not eſſential to the diſeaſe; though many, both of the antients and moderns, think the latter are.

The *dyſentery*, Sydenham obſerves, begins with a chilneſs, and ſhivering; which is followed by a heat: then gripings of the belly enſue, with mucous, or ſanious ſtools, which in progreſs of time are found interſperſed with ſtreaks of blood, and attended with vehement pain.

The ſtools are ſometimes void of blood; and yet, if they be frequent, and attended with gripes, and a mucous colluvies, the ſame author ſays, it is a proper *dyſentery*.

Along with the excrements, beſides a whitiſh mucoſity, frequently there come ſcrapings of the guts, in form of little ſkins. If pure blood be evacuated, the patient's life is in great danger.

Etmuller makes three kinds of *dyſenteries*. 1. When a laudable blood is evacuated, from a mere plethora, or plenitude, without any diſorder of the inteſtines; as in the hæmorrhoidal flux.

2. When a thin, watery blood is evacuated; called the *hepatic flux*, though really ariſing from the hæmorrhoidal veſſels.

The third kind, which is that we more peculiarly call *dyſentery*, is, when blood is caſt out mixed with a purulent matter in the excrements.

This is either *benign*, i. e. without a fever, and not contagious; or *malignant*, which is attended with a peſtilential fever, and frequently ravages whole cities, and provinces: happening moſt commonly in armies. In the laſt ſtage, a ſort of caruncles are frequently ejected along with the purulent matter, which are difficult to be accounted for, unleſs from an excoriation, and ulceration of the inteſtines. Sometimes the inteſtines in this caſe are even gangrened.

The cauſe of the *dyſentery*, as aſſigned by ſome phyſicians, is a ſerous, or other morbid humour, mixed with the maſs of blood: the conſequence of which is a too great fermentation in the blood, and a diſſolution of its parts, which are thus rendered too liquid.—The ſecond cauſe is a vellication, and irritation of the nervous fibres of the inteſtines, occaſioned by ſharp acid humours ſeparated from the blood; which occaſion the ſpiral fibres, that produce the periſtaltic motion of the guts, to move too faſt, and thus to expel the matters too haſtily out of the inteſtines.—The mediate cauſe, in the phyſicians language, is ſome foreign body, adhering ſtrongly to the inteſtines, and, by its ſharp points, vellicating the nervous fibres of the inteſtines, and at length ulcerating them.—The remote cauſes are any thing that corrupts the maſs of blood, as viſcid and crude, ſharp juices; ill foods; autumnal fruits; grapes; new wine drunk in exceſs; poiſons; violent medicines; waters that have corroded leaden pipes; rainy weather in the ſpring, with a dry winter, and a hot ſummer, and autumn.

The ſeat of the diſeaſe is in the inteſtines, either the large, or the ſmall, or both: when the diſeaſe is in the ſmall ones, the gripes begin long before the ſtools, and are felt about the navel; and the blood, and excrements, are more blended; as being longer together. When the larger inteſtines ar ſeized, the pain is leſs vehement, and is felt lower, &c.

Purgatives have rarely any good effect in *dyſenteries*; as increaſing the fermentation of the blood, and irritating th fibres of the inteſtines more and more. Nor are emetic much better, as tending to draw the peccant humours int the ſtomach, or at leaſt into the higher inteſtines, and thu cauſe more frequent ſtools.

Ipecacuanha, however, is excellent on this occaſion: not ſ much as a vomitory, Dr. Freind obſerves, as a ſudorific having this faculty beyond all other emetics, that it correct the *dyſenteric* ferment, in proportion as it evacuates it.—I the *Philoſophical Tranſactions* we have an expreſs diſcourſe o the ſubject; where it is aſſerted to be infallible in all *dyſenteries* and looſeneſſes, how dangerous and inveterate ſoever except in pulmonic and hydropic patients, whoſe fluxes a indications of approaching death.

Sydenham commends phlebotomy: but Willis ſays, no ev cuation is good; and preſcribes hot cardiacs, as ſpirit of wi a little burnt, &c.—Balſamic and ſtyptic medicines are al to be uſed, according to the diverſe cauſes and ſymptoms the diſeaſe.

Borri, in a letter to Bartholine, affirms there is no better m dicament in *dyſenteries* than roſe-water, wherein gold h been extinguiſhed.

Dolæus relates, that he cured above an hundred perſons wi oil of ſweet almonds, mixed with orange-juice. See Suppl ment, article Dysentery.

DYSPEPSY*, ΔΥΣΠΕΨΙΑ, in medicine, a difficulty weakneſs of digeſtion. See Digestion.

* The word is formed from the Greek δυς, *difficulty*, a πεπτειν, *coquere*, to concoct.

The *dyſpeſpy* may ariſe from the too great weakneſs of t ferment of the ſtomach, or its being too ſparing in qua tity; from a relaxation of the fibres of the ſtomach; t want of a proper heat in the ſtomach, &c.—Bitters, a ſubaſtringents, are its proper remedy.

DYSPNOEA*, ΔΥΣΠΝΟΙΑ, in medicine, a difficulty breathing.

* The word is formed from the Greek δυς, *difficulty*, πνεω, *I breathe*.

The *dyſpnœa* admits of three degrees: a ſhort-breath; aſthma; and an orthopnœa.—The ſhort-breath is the and lighteſt degree.—The aſthma is more violent; and is companied with a wheezing.

The orthopnœa is the higheſt of all; the patient affec therewith not being able to lie down, but obliged to k erect, without which he could not reſpire.

The moſt uſual cauſes of *dyſpnœa's* are phlegm lodged in bronchia; or the too ſtrong conſtriction of the bronchia th ſelves, which prevents the eaſy ingreſs of the air into the lu See Asthma and Orthopnoea.

DYSURIA*, ΔΥΣΟΥΡΙΑ, in medicine, a difficulty of mak urine, accompanied with pain, and a ſenſe of heat.

* The word is formed from the Greek δυς, *difficulty*, ουρειν, *to make urine*.

It is alſo called *ardor urinæ*, by reaſon the urine ſeem burn the urethra, as it iſſues forth.

The *dyſuria* differs chiefly from the ſtrangury in this, in the ſtrangury the urine only ouſes out, as it were dro drop; whereas in the *dyſuria*, when it is made, it ſtreams without an interruption, and frequently in the proper q tity.

The ordinary cauſes of the *dyſuria* are, the acrimony ſharpneſs, of the urine; and the excoriation, or exulcera of the neck of the bladder, or of the urinary paſſage.

E.

E, The fifth letter of the alphabet, and the ſecond vowel.

E, is a letter that admits of ſome variety in the pronunciation, in moſt languages; whence grammarians uſually diſtinguiſh ſeveral E's, or kinds of E. The Greeks, *e. gr.* have their ſhort and long *e*, *viz.* ε and η, epſilon and eta.

The Latins have an opener *e*, called *vaſtius*; ſuch was the ſecond *e*, in the word *here*, maſter; and another cloſer, as that in the adverb *here*, yeſterday. This latter *e* they frequently uſed promiſcuouſly with *i*. Thus for *here*, they wrote, *heri*: and, in diverſe places, we meet with *ſibe*, *quaſe*, &c. for *ſibi*, *quaſi*, &c.

The Roman *e*, was likewiſe ſometimes written, by corruption, *æ*: for which reaſon, F. Hardouin takes that medal of Gallienus, GALLIENÆ AUGUSTÆ, not to be any ſatirical medal, as others have imagined; nor to be a dative feminine, but a vocative maſculine, *Galliene auguſte*, wrote with the *æ*.

In Engliſh we eaſily diſtinguiſh three E's, or three ſounds of E: the firſt, *mute*, and not heard at all; as in *Amſterdam*, *ſenſe*, *blue*, &c. The ſecond, *cloſe* or ſhort, pronounced with the lips nearly ſhut; as in *nettle*, &c. The third, *open* or long, as in *fear*, *eaſe*, &c.

The French have, at leaſt, ſix kinds of E; the firſt pronounced like A; as in *emporter*, *orient*, &c. The ſecond, a final mute, in the laſt ſyllable of diverſe words not pronounced at all; as in *bonne*, *donne*, &c. The third, an imperfect mute, pronounced much like the diphthong *ea*, &c. as in *Je*, *de*, *te*. The fourth, *e ferme*, or *e maſculine*, marked at the ends of words with an accent, *é*. The fifth, is *e ouvert*, or *long e*, having the ſame ſound with *ai*, as in *mere*, *feſte*, &c. In the middle of words it is ſometimes marked with a circumflex, and in the end, with an accent, *é*. The ſixth, is an intermediate *e*, between the *ouvert* and *ferme*; as in *cabaret*, *lettre*, &c. Some add a ſeventh kind of *e*, not reducible to any of the former, as that in *grammarien*, *hiſtorien*, &c. And others admit of only three kinds, *viz.* the mute, open, and ſhut; but they make variations therein, which amounts to the ſame thing.

As to the figure of the letter E, we borrow it from the Latins, who had it from the Greeks, and they from the Phœnicians, by Cadmus, who firſt brought it them. Now the Phœnicians had the ſame characters with the Hebrews. Accordingly, the form of the antient Hebrew *He*, was the ſame with that of our E, as may be ſeen in the Hebrew medals, and the Jeſuit Souciet's *diſſertation* thereon, p. 143. All the difference between them conſiſts in this, that the Hebrews, reading from right to left, turn their letters that way; whereas the moderns, reading from left to right, write their letters accordingly.

The little *e*, was formed of the great one, by writing it faſt, and making the croſs ſtrokes at top and bottom without taking pen off paper, and then adding the ſtroke in the middle.

The Greek η, or H, *Eta*, or *Ita*, was no original letter; but was added to the alphabet in after times. Of this we have proofs ſtill extant in the antient monuments; particularly, the Farneſe columns, brought to Rome from the Via Appia, where the *Epſilon*, E, is uſed in lieu of the H: *e. gr.* DEMETΡΟΣ ΚΟΡΕΣ, for ΔΗΜΗΤΡΟΣ ΚΟΡΗΣ. This letter is ſaid to have been added by Simonides. *Bibliand. de Ration. Commun. Linguar. p.* 40.

The pronunciation of the η, ſeems to have been varied; it having been ſometimes the ſame with the Latin *e*, ſometimes with *i*. Terentianus aſſures us of the former; and the Greeks themſelves for many ages have only uſed the latter.

It has been much diſputed how the Latins render the η, in their language? The common opinion is, that they render it by an *e*: as in Δημητριος, βητα, Ημερα, Θησευς, Θησαυρος, &c. which they rendered *Demetrius*, *Beta*, *Hemera*, *Theſeus*, *Theſaurus*, &c. Though there are perſons exceedingly well verſed in antiquity, who hold that they pronounced it like an *i*. Lud. de Dieu, one of the moſt learned grammarians of his age, obſerves as much in his animadverſions on Geneſis vi. 24. Adding, that it is for this reaſon, that the Hebrews, *e. gr.* the paraphraſt Jonathan, expreſs it by a *Hbirik* ; μηςως, מסטר. J. Rod. Wetſtein proves the ſame in his learned oration on the true pronunciation of the Greek tongue from an infinity of inſtances. To this purpoſe he cites a MS. *Pſalter* of the VIIIth century, where all the η's are expreſſed by *ι's*. In effect, Wetſtein ſhews, not only that the Latins pronounced and wrote it as an *i*, which might happen from its being ſo eaſily confounded in writing with an *i*; but alſo that they rendered it by an *æ*, and *ai*; that it was often uſed for Υ and Ei; and that in the time of Plato this letter had a kind of intermediate ſound between the ε and ι. See that author, and Voſſius *de Idolol.* L. II. C. 16.

E on the keys of an organ, or harpſichord, denotes the tones *E*, *mi*, *la*.

On the compaſs, in ſea-charts, *&c.* it marks the eaſt point, or wind. E. Eaſt. E S E. Eaſt South Eaſt. N E. North Eaſt, *&c.*

In the calendar, E makes the 5th of the dominical letters.

Among authors, *E. gr.* ſtands for *exempli gratia*, for inſtance.

In ſeveral *dictionaries* we find it noted, that the letter E, among the antients, was a numeral letter, ſignifying 250, according to the verſe,

> E *quoque Ducentos & Quinquaginta tenebit.*

But it has already been obſerved, that this uſe of numeral letters was unknown among the earlieſt people. Iſidore Hiſpalenſis, an author of the VIIth century, ſays as much in expreſs terms, in the firſt book of his *Origines*, cap. III. In effect, it was firſt introduced in the times of barbariſm and ignorance.

EAGER *Wine*. See the article WINE.

EAGLE, *Aquila*, Αετος, in natural hiſtory, the largeſt, ſtrongeſt, and ſwifteſt, of all the birds that live by prey.

It has a long beak, hooked almoſt from the root; yellow, ſcaly legs; thick crooked talons; and a ſhort tail. Its plumage is cheſnut-coloured, brown, ruddy, and white. Its beak, black at the tip; and, in the middle, blue, though in ſome yellow. The *eagle* is diſtinguiſhed from the hawk by his bigneſs; and from the vultur, by the crookedneſs of his beak.

Its aery, or neſt, is uſually on the higheſt rocks, ſometimes on the tops of old trees. It feeds its young till ſuch time as they are able to fly, and then drives them out of the neſts.

Its food is birds, hares, lambs, kids, and fawns; nay, Sir Robert Sibbald aſſures us, children too, when it can catch them; of which he gives an inſtance in the Orcades iſlands. *Prod. Nat. Hiſt. Scot.* L. III. p. 2. and 14.

Ray mentions an *eagle*'s neſt, found near the river Derwent, in 1668. It conſiſted of large ſtrong ſticks, one end whereof was laid on the crag of a rock, and the other on two beech-trees; it was two yards ſquare: in it was found one *eaglet*, with the carcaſes of one lamb, one hare, and three grygalli. *Synopſ. Method. Av.* p. 6. The *eagle* frequently watches the fiſhing-hawk, and as ſoon as it perceives it to have ſtruck a fiſh, takes wing, purſues the bird till it lets fall its prey, and often catches it before it reaches the earth or water. *Philoſ. Tranſact.* Nº 201.

It lives very long, and, as naturaliſts aſſure us, rarely dies but of hunger; the upper part of its crooked beak growing ſo long with age, that it cloſes up the lower, and ſo diſables it from opening, and taking in food. But this ſeems to be only a popular error.

Its ſight is quick, ſtrong, and piercing, to a proverb. The reaſon why the *eagle*, the fibres of whoſe optic nerves are not ſtronger than thoſe of other animals, is able to face the ſun, and endure its brighteſt rays, the Jeſuit Angelus, in his *Optics*, aſſures us, is, that it has two ſets of eye-lids, the one thick and cloſe, and the other thinner and finer, which laſt it draws over the eye, when it looks at any luminous body, and thus breaks the force of its rays.

The falconers have trained up *eagles* to the game; but they only ſucceed in mountainous countries. On plains they cannot keep any time on the wing, and when they ſtoop, or light, are weak, ſo that the ſaker beats them.

Ariſtotle, and Pliny, reckon up ſix kinds of *eagles*, to which they give names correſponding to the difference of their plumage: as the *eagle-royal*, called by Ariſtotle, γνησιος, and αστεριας, from the ruddy, golden colour of its feathers, which are likewiſe ſpotted as it were with ſtars. The *black eagle*, *valeria*, the ſmalleſt and moſt vigorous of all. The *white-tailed eagle*, or *pygargus*. The *middle-ſized eagle*, with a large tail, living in moraſſes, *morphnus*: the *ſea-eagle*, *haliætus*: and the *bearded-eagle*, a kind of *oſſifraga*.

EAGLE, in heraldry, is the ſymbol of royalty, as being, according to Philoſtratus, the king of birds; and for that reaſon dedicated, by the antients, to Jupiter.

The *eagle*, is the arms of the emperor, the king of Poland, *&c.* It is accounted one of the moſt noble bearings in heraldry, and, according to the learned in that art, ought never to be given, but in conſideration of ſingular bravery, generoſity, *&c.* On which occaſions, either a whole *eagle*, or an *eagle naiſſant*, or only the head, or other parts, agreeable to the exploit, may be granted.

The *eagle* is ſometimes repreſented with one head, and ſometimes with two, though never more than one body, two legs, and two wings opened, or ſtretched out, in which poſture, it is ſaid to be *ſpread* or *diſplayed:* ſuch is that of the empire, which is blazoned a *ſpread eagle*, *ſable*, *diademed*, *langued*, *beaked and membred*, *gules*.

The reaſon why *eagles* are generally given in heraldry diſplayed, is partly, becauſe in that poſture they fill up the eſcutcheon better, and partly, becauſe it is imagined a poſture natural to the *eagle*, when it plumes its feathers, or faces the ſun. However, there are *eagles* borne in other poſtures: and ſome monſtrous ones, with human or wolves heads, &c. The late authors only ſay *diſplayed*, to expreſs the two heads: and ſay an *eagle*, without any addition, when it has but one. The kingdom of Poland bears *gules*, an *eagle argent*, *crowned and membred*, *or*.

The *eagle* has been borne, by way of enſign, or ſtandard, by ſeveral nations. The firſt who ſeem to have aſſumed the *eagle*, are the Perſians; according to the teſtimony of Xenophon. Afterwards, it was taken by the Romans; who, after a great variety of ſtandards, at length fixed on the *eagle*, in the ſecond year of the conſulate of C. Marius: till that time, they uſed indifferently wolves, leopards, and *eagles*, according to the humour of the commander.

Several among the learned maintain, that the Romans borrowed this cuſtom from Jupiter, who had appropriated the *eagle* as his own badge, in commemoration of its ſupplying him with nectar, while he lay concealed in Crete, for fear of being devoured by his father Saturn. Others hold that they borrowed it from the Tuſcans, and others from the Epirotes.

The *Roman eagles*, it muſt be obſerved, were not painted on a cloth, or flag; but were figures in relievo, of ſilver or gold, borne on the tops of pikes; the wings being diſplayed, and frequently a thunderbolt in their talons. Under the *eagle*, on the pike, were piled bucklers, and ſometimes crowns. Thus much we learn from the medals. See Feſchius in his *Diſſert. de Inſignibus*. And Lipſius, *de Militia Romana*, L. IV. Dial. V.

Conſtantine is ſaid to have firſt introduced the *eagle* with two heads, to intimate, that though the empire ſeemed divided, it was yet only one body. Others ſay, that it was Charlemaign, who reſuming the *eagle*, as the Roman enſign, added to it a ſecond head: but that opinion is deſtroyed, by an *eagle* with two heads, noted by Lipſius, on the Antonine column: as alſo by the *eagle*'s only having one head on the ſeal of the golden-bull, of the emperor Charles IV. The conjecture, therefore, of F. Meneſtrier, appears more probable, who maintains, that as the emperors of the eaſt, when there were two on the throne at the ſame time, ſtruck their coins with the impreſſion of a croſs, with a double traverſe, which each of them held in one hand, as being the ſymbol of the Chriſtians; the like they did with the *eagle* in their enſigns; and inſtead of doubling their *eagles*, they joined them together, and repreſented them with two heads. In which they were followed by the emperors of the weſt.

Fa. Papebroche wiſhes, that this conjecture of Meneſtrier were confirmed by antient coins; without which, he rather inclines to think the uſe of the *eagle* with two heads, to be merely arbitrary: though he grants it probable, that it was firſt introduced on occaſion of two emperors in the ſame throne.

The *eagle* on medals, according to M. Spanheim, is a ſymbol of divinity, and providence; and according to all other antiquaries, of empire. The princes on whoſe medals it is moſt uſually ſound, are the Ptolemies and the Seleucides of Syria.—An *eagle* with the word CONSECRATIO, expreſſes the apotheoſis of an emperor.

Eagle, *Aquila*, in aſtronomy, is a conſtellation of the northern hemiſphere, having its right wing contiguous to the equinoctial.

For the ſtars in this conſtellation, their number, longitude, latitude, &c. ſee AQUILA.

There are alſo three ſeveral ſtars, particularly denominated among the Arab aſtronomers, *Naſr*, i. e. *Eagle*. The firſt, *Naſr Sohail*, the *Eagle* of *Canopus*, called alſo *Sitareh Jemen*, the ſtar of Arabia Felix, over which it is ſuppoſed to preſide: the ſecond, *Naſr Althair*, the flying *Eagle*; and the third, *Naſr Alvake*, the reſting *Eagle*.

White **Eagle**, is a Poliſh order of knighthood, inſtituted in 1325. by Uladiſlas V. on marrying his ſon Caſimire, with a daughter of the great duke of Lithuania.

The cavaliers of this order were diſtinguiſhed by a gold chain, which they wore on the ſtomach, whereon hung a ſilver *eagle* crowned.

Black **Eagle**, was a like order, inſtituted in 1701. by the elector of Brandenburgh, on his being crowned king of Pruſſia.

Eagle, in architecture, is a figure of that bird antiently uſed as an attribute, or cognizance of Jupiter, in the capital and friezes of the columns of temples conſecrated to that god.

Eagle-Stone, in natural hiſtory, a ſtone, by the Greeks, called *Ætites*, and by the Italians, *pietra d'Aquila*, as being ſuppoſed to be ſometimes found in the *eagle*'s neſt; it is of famous traditionary virtue, either for the forwarding, or preventing, the delivery of women in labour, according as it is applied above, or below, the womb.

Matthiolus tells us, that birds of prey could never hatch their young without it, and that they go in ſearch for it as far as the Eaſt-Indies. Bauſch. has an expreſs Latin treatiſe on the ſubject. See Supplement, article ÆTITES.

EAGLET, or **Eaglon**, a diminutive of *eagle*, properly ſignifying a young *eagle*.

The *eagle* is ſaid to prove his *eaglets* in the brightneſs of the ſun; and if they ſhut their eye-lids, he diſowns them.

In heraldry, when there are ſeveral *eagles* on the ſame eſcutcheon, they are called *eaglets*.

EALDERMAN, or **Ealdorman**, among the Saxons, was of like import with *earl* among the Danes. Camd. *Britan.* p. 107.

The word was alſo uſed for an elder, ſenator, or ſtateſman. Hence, at this day, we call thoſe *Aldermen*, who are aſſociates to the chief officer in the common-council of a city o corporate town.

EAR, *Auris*, the organ of hearing; or that part whereby animals receive the impreſſion of ſounds.

The *ear* is generally divided into *internal* and *external*.—Th *external*, or *outer ear*, in moſt animals, conſiſts of two principal parts, *viz.* that which appears prominent from th head, called the *auricle*; and an inner part, which ente the ſkull by a narrow paſſage, called the *meatus auditorius* and leads to the *auris* or *ear*, properly ſo called.

The *auricle*, or outer part of the *external ear*, is ſemicirc lar, and contains divers ſinuoſities. Its upper part, which the broadeſt, is called *pinna*, and ſometimes *ala*; and t lower, which is narrower, ſofter, and pendant, the *lobe*, *fibra*, being that to which ladies hang their ear-rings, & The outer area, or extent of the *auricle*, is called the *beli* and the inner, oppoſite thereto, the *anthelix:* the little pr tuberance of the ſide next the face, is called the *tragus*, *tircus*; and the ridge juſt above, and oppoſite to it, the a *titragus:* and the cavity, leading to the beginning of t *meatus*, the *concha*. See each part deſcribed under its prop article.

The *auricle* ſtands out from the head, and is furrowed w divers winding canals, which receive and collect the wander circumambient impreſſions, and undulations of ſound, a modify and forward them to the inner *ear*. It is formed a thin cartilage, covered with a ſkin. It has two muſcl which in men are very ſmall, whence ſome anatomiſts de there are any at all, though others increaſe their number three, one attollent, and two retrahent; and others to fo But in brutes, which move and prick the *ears*, as hor aſſes, &c. they are very large and conſiderable. Thoſe w have loſt their *auricles*, M. Dionis obſerves, have but a c fuſed way of hearing; and are obliged either to form a ca round the *ear* with their hands, or to make uſe of a ho applying the end of it to the *meatus auditorius*.

The inner part of the *external ear* is poſſeſſed by the *mea auditorius*, or auditory paſſage, which commences from bottom of the concha, called the *alvearium*, and is contin in a winding direction, turning ſometimes this way, and ſo times that, to the *membrana tympani*. The *meatus* is dug of the *os temporis*, and lined with a ſkin, or membra which is furniſhed with divers little glands, that ſepara thick, yellow, glutinous humour, called *cerumen*, or *ear-w* ſerving to defend the *ear* from the ingreſs of vermin, other extraneous bodies. This *meatus* is all the *external* in diverſe animals, as reptiles, birds, moles, diverſe fiſhes, The farther end thereof is cloſed by a thin, dry, round, tr parent membrane, called the *membrana tympani*, and im perly, *tympanum*, or drum, which ſeparates the *external* from the *internal*.

Behind the *membrana tympani*, is a cavity called, by diffe authors, the *tympanum*, *cavitas tympani*, *concha interna*, *meatus auditorius internus*. In this cavity are five conſi ble parts, *viz.* four little bones, two apertures, called *f mina*, or *feneſtræ*, as many meatus's, or paſſages; four cles, and a branch of a nerve.

The firſt of the bones, or oſſelets, is the *malleolus*, *malle* hammer: the ſecond, is called the *incus*, or anvil: the t the *ſtapes*, or ſtirrop: and the fourth, the *orbiculare*. T bones are nearly of the ſame bigneſs at the birth of the c as when it is arrived at maturity; ſo that all that age is to harden them.

To give motion to theſe bones, is the office of the four mu of this cavity; three of them belonging to the malleus, the externus, obliquus, and internus; and the fourth to the ſtapes, called the *muſculis ſtapedis.*

The two meatus's are ſituated at the ſides of the cavity; the one opening into the palate, called *aquæductus*; the other, ſhorter and bigger, opening into the ſinus, in the mamillary proceſs.

The two apertures, or feneſtræ, of the tympanum, are in the ſurface of the os petroſum, which is oppoſite to the membrane of the tympanum. The firſt, called *feneſtra ovalis*, by reaſon of its figure, is ſituate a little higher than the other, and receives the baſis of the ſtapes. The other is called *rotunda*, notwithſtanding its figure is oval, like the former, and is cloſed by a thin, dry, tranſparent membrane, reſembling that of the tympanum.

The laſt thing conſidered in the cavity of the tympanum, is a fine chord, which runs over the inner ſurface of the membrane, called *chorda tympani.* Anatomiſts have long diſputed, whether it was an artery, a vein, or nerve, or the tendon of one of the muſcles of the malleus; but it is now diſcovered to be a branch of the fifth pair of nerves, which meets the portio dura of the auditory nerve.

The two feneſtræ above-mentioned open into a cavity dug out of the os petroſum, called the *labyrinth*, as being perplexed with divers windings and meanders: in this cavity is ſuppoſed to be contained the innate air: it is divided into three parts; the firſt called the *veſtible*, by reaſon it leads into the other two: in it are obſerved nine apertures, or foramina. The ſecond, placed on one ſide of the veſtibulum, towards the back of the head, comprehends three round canals, diſpoſed in a ſemicircular form, and thence called *canales ſemicirculares.* The third is the *cochlea*, which conſiſts of two parts, *viz.* a ſpiral ſemi-oval canal; and a lamina, formed into a ſpiral flight. The canal makes two turns and an half round a newel, or axis, ſtill growing leſs as it aſcends: the ſpiral lamina divides this cavity into two, being faſtened by its baſe to this newel, and, by its other extremity, to the ſurface of the canal oppoſite to the newel, by means of a very fine membrane. The cavity of the cochlea, thus divided, forms, as it were, two winding ſtaircaſes, both formed on the ſame newel, one over the other; but without any communication between them. In the aqueduct is the auditory nerve; which conſiſts of two branches, or parts; the one ſoft, called *portio mollis*; and the other, harder, *portio dura:* the ſoft part is ſpent on the organ of hearing, being divided into five branches, which form a delicate web, that lines the veſtibulum, cochlea, *&c.* The hard part, paſſing out of the cranium, is diſtributed among the parts of the external *ear*, &c.

The other veſſels of the internal *ear* are arteries and veins from the carotids and jugulars.—Particular deſcriptions of each part of the *ear*, ſee under the proper articles, FENESTRA, MALLEOLUS, STAPES, ORBICULARE, LABYRINTH, VESTIBLE, COCHLEÆ *Semicirculares*, AUDITORY *Nerve*, &c.

The immediate organ of hearing has been generally ſuppoſed to be the membrane of the tympanum; but later anatomiſts ſhew this to be a miſtake, from divers inſtances, wherein that membrane has been abſolutely deſtroyed, and broken, without the leaſt diminution of the ſenſe of hearing.

The parts that bid the faireſt for this prerogative, are thoſe which compoſe the labyrinth; *viz.* the cochlea, lamina ſpiralis, veſtible, and ſemicircular canals: the portio mollis of the auditory nerve, ramified and diffuſed through theſe parts, eceives the impreſſions of ſounds, and propagates them to the rain.

Behind, and under the external *ear*, are a number of large lands, called *parotides*, wherein is ſeparated a great deal of aliva; which is conveyed, by the extretory ducts, into the outh.

Diſtempers incident to the ear, and adjacent parts, are noiſes, talgia, otocele, deafneſs, *&c.*

he comparative anatomy of the *ear* furniſhes abundant inances of the Creator's wiſdom.—In birds, the outer *ear* is f a form proper for flight; not protuberant, as that would bſtruct their progreſs, but cloſe and covered.

n quadrupeds, its form is agreeable to the poſture and motion f the body, but admirably varied, according to their various ccaſions: in ſome, as the hare, it is large, open, and erect; y which means that timorous, defenceleſs creature, is arned of the leaſt approach of danger: in others, it is overed, to keep out noxious bodies. In the ſubterraneous uadrupeds, who are forced to mine and dig for their food d habitation, as a protuberant *ear* would obſtruct them, d be liable to injuries, their *ears* are very ſhort, and are dged deep, and backwards in the head.

hus moles have no auricle at all, but only a round hole, tween the neck and ſhoulder. Some authors obſerve, that s meatus, or paſſage, is cloſed with a little ſkin, which pens and ſhuts like an eye-lid. The ſea-calf, and the ſeal ſpecies of lizards and ſerpents, are likewiſe without any ternal *ear.* And the tortoiſe, cameleon, and generality of fiſhes, have the paſſage of the *ear* quite ſtopped, or covered over. And there is a ſort of whale, which has the aperture of the *ear* under the ſhoulder.

Among all the varieties in the ſtructure of this organ, none, as Dr. Grew obſerves, are more remarkable than thoſe in the paſſage into the os petroſum; for in an owl, which perches on a tree, or beam, and hearkens after the prey beneath her, it is produced farther out above, than below, for the better reception of the leaſt ſound: in a fox, which ſcouts underneath the prey at rooſt, it is, for the ſame reaſon, produced farther out below: in a pole-cat, which hearkens ſtrait forwards, it is produced behind, for the taking of a forward ſound: whereas in a hare, which is very quick of hearing, and thinks of nothing but being purſued, it is ſupplied with a bony tube, directed backwards, ſo as to receive the ſmalleſt and moſt diſtant ſound that comes behind her.

Schelhammer denies the exiſtence of the innate air, ſo much talked of, in the labyrinth; and with good reaſon, as there is a paſſage out of the labyrinth into the throat, through which the innate air muſt eſcape. This is paſt doubt; ſince, by ſtopping the breath, and ſtraining, we can force the external air into the *ear*, and even hear it ruſhing in: when the paſſage is any way ſtopped, as by a cold, *&c.* the hearing thereby becomes dull and obtuſe; and when, by ſtrong ſwallowing, or other motion of the throat, the paſſage is opened, we perceive it by a ſudden crack, and immediately hear very clearly, the load of feculent air being then diſcharged from the inner *ear.*

Several naturaliſts and phyſicians have held, that cutting off the *ear* rendered perſons barren, and unprolific; and this idle notion was what firſt occaſioned the legiſlators to order the *ears* of thieves, *&c.* to be cut off, leſt they ſhould produce their like.

The *ear* has its beauties; which a good painter ought by no means to diſregard: where it is well formed, it would be an injury to the head to be hidden. Suetonius inſiſts, particularly, on the beauties of Auguſtus's *ears:* and Ælian, deſcribing the beauties of Aſpaſia, obſerves ſhe had ſhort *ears.*

Martial alſo ranks large *ears* among the number of deformities. Felibien.

Among the Athenians, it was a mark of nobility to have the *ears* bored, or perforated. And, among the Hebrews and Romans, this was a mark of ſervitude.

Tingling of the EAR. See the article TINNITUS.

EAR, in muſic, denotes a kind of internal ſenſe, whereby we perceive and judge of harmony, and muſical ſounds.

In muſic, we ſeem univerſally to acknowlege ſomething like a diſtinct ſenſe from the external one of hearing; and call it a good *ear.* And the like diſtinction we ſhould, probably, acknowlege in other affairs, had we got diſtinct names to denote thoſe powers of perception by.

Thus, a greater capacity of perceiving the beauties of painting, architecture, *&c.* is called a *fine taſte.*

EAR-RING. } See the articles { PENDANT.
EAR-WAX. } { CERUMEN.

EAR is alſo applied to a long cluſter of flowers, or ſeeds, produced by certain plants; and uſually called, by botaniſts, *ſpica.* The flowers and ſeeds of wheat, rye, barley, *&c.* grow in *ears.* The ſame holds of the flowers of lavender, *&c.*

We ſay, the ſtem of the *ear*, i. e. its tube, or ſtraw; the knot of the *ear:* the lobes, or cells, wherein the grains are incloſed: the beard of the *ear*, &c. great numbers of *ears* of wheat have been known to ariſe from the ſame root.

Jews EAR. See the article JEW.

EARING *Third.* See the article THIRD.

EARL, an Engliſh title of honour, or degree of nobility, next below a marquis, and above a viſcount.

Earls were antiently attendants or aſſociates of the king in his councils, and martial expeditions; much as comites, counts, were of the magiſtrates of Rome, in quality of deputies, to execute their offices for them.

Hence, alſo, *earls* are called, in Latin, *comites*; in French, *comtes*, counts, *&c.*—The Germans call them *graves*, as landgrave, markgrave, palſgrave, *&c.* the Saxons, *ealdormen*; the Danes *eorlas*; and the Engliſh *earls.*

Originally, the title *earl* always died with the man: William the Conqueror firſt made it hereditary; giving it in fee to his nobles, and annexing it to this or that ſhire or county: for the ſupport of the ſtate thereof, he allotted the third peny out of the ſheriff's court, iſſuing out of all pleas of the ſhire from which the *earl* took his title. But, of later days, the matter is much altered.

Earls are now created by charter, without any authority over, or particular relation to, their counties; and without any profit ariſing thence; except ſome annual ſtipend out of the exchequer, for honour-ſake. The number of *earls* being of late much increaſed, and no more counties being left for them. ſeveral of them have made choice of ſome eminent part of a county, as Lindſey, Holland, Craven, *&c.* Others, of ſome town, as Marlborough, Exeter, Briſtol, *&c.* And others, of ſome village, or their own ſeat, park, *&c.* as Godolphin, Bolton, Danby, Wharton, *&c.*

Two *earls* we have who are not local, *i. e.* not dignified from any places, but from noble families, *viz.* *earl* Rivers, and *earl* Paulet. A third is denominated from his office, *viz.* the *earl* Marſhal.

Earls are created by cincture of ſword, mantle, a cap, and a coronet put on his head, and a charter in his hand. They are ſtiled by the king, *conſanguinei noſtri*, our couſins. Their title is, *moſt potent and noble lord.* Their coronet has the pearls raiſed on points, with leaves between.

Earl was a mighty title among the Saxons: it is obſerved to be the moſt antient of any of the peerage; and that there is no other title of honour, in uſe among the preſent nobility, which was likewiſe uſed among the Saxons, beſide it.—The original titles of honour, among the Saxons, were, Eðelinᵹ, Ealꝺoꞃman, and Ðeᵹen or Ðeᵹn.—The firſt appropriated to thoſe of the royal family; the other two to the reſt of the nobility; only the thani were afterwards diſtinguiſhed into majores and minores.

Earl-Marshal is a great officer; who had, antiently, ſeveral courts under his juriſdiction, as the court of chivalry, now almoſt forgotten; and the court of honour, lately revived.

He has alſo ſome pre-eminence in the court of marſhalſea; where he may ſit in judgment againſt criminals offending within the verge of the court; whence the chief officer under him is called *knight-marſhal.*—Under him is alſo the heralds office, or college of arms.

The office of *earl-marſhal* is hereditary in the moſt noble family of Howard; and enjoyed by the duke of Norfolk, the principal branch thereof; though now, for reaſons of ſtate, it is diſcharged by deputation: but yet it is to be obſerved, it is not given out of the name and family of Howard.

EARNEST, *Arrhæ*, money advanced to complete or aſſure a verbal bargain, and bind the parties to the performance thereof.

By the civil law, he who recedes from his bargain, loſes his *earneſt*: or, if the perſon who received the *earneſt* give back, he is to return the *earneſt* double. But, with us, the effect of *earneſt* is more: the perſon who gave it, is in ſtrictneſs obliged thereby to abide by his bargain; and, in caſe he decline it, is not diſcharged upon forfeiting his *earneſt*; but may be ſued for the whole money ſtipulated.

EARTH, *Terra*, in natural philoſophy, one of the four vulgar, or peripatetical elements: defined a ſimple, dry, and cold ſubſtance; and, as ſuch, an ingredient in the compoſition of all natural bodies.

It ſhould be well obſerved, that the element *earth* is a very different matter from the *earth* whereon we tread. Ariſtotle, having laid down cold and dry as his firſt element, to give it a ſuitable name, looked among the diverſe bodies for that which ſhould come the neareſt thereto; which being *earth*, he gave his firſt element that denomination: though thus borrowing a word that had been uſed for a different thing, occaſioned a great part of his followers to run into an extravagant error, and to ſuppoſe, that this habitable foſſil *earth* was an element.

Earth, in chymiſtry, is the fourth of the chymical elements, or principles, into which all bodies are reſolvible by fire.

After drawing off the ſpirit, ſulphur, and phlegm, and ſalt, *e. gr.* of wine, what remains in the retort is a taſteleſs, ſmelleſs, duſty matter, not capable, either of being raiſed by diſtillation, or diſſolved by ſolution; and is called *earth*, or *terra damnata*, or *caput mortuum*. See Caput *Mortuum*.

This *earth* is ſuppoſed to be the baſis, or ſubſtratum of all bodies; and that wherein the other principles reſide. It is all that is ſolid, *e. gr.* in an animal, or vegetable body, *i. e.* all the real vaſcular parts; the reſt being juices.

Earth, in natural hiſtory, is a foſſil or terreſtrial matter, whereof our globe principally conſiſts; whoſe character is, to be neither diſſoluble by fire, water, nor air; not tranſparent; more fuſible than ſtone; and generally containing ſome degree of fatneſs.

Of ſuch *earths*, ſome are ſimple and immutable; others, compound and fatty. Of the firſt kind is chalk, pumice, and rotten-ſtone; of the ſecond, or compound kind, are boles of all kinds, red, white, and brown; fullers *earth*; the divers kinds of medicinal *earth*, as the Cretica, Hungarica, Turcica, Suecica, Lemnian *earth*, Malta *earth*, terra ſigillata, *&c.* To this claſs are likewiſe referred argillæ, or clay-*earths*, formed into potters ware.

Theſe *earths* are all chymically reſolvible into an oil, a little acid ſalt, *&c.* and a calx, which is the baſis, or the *earth*, properly ſo called. See the diverſe kinds of *earths* deſcribed under their proper articles, Chalk, Pumice, Bole, Sigillata *Terra*, &c.

Naturaliſts generally rank ſand as a ſpecies of *earth*, though with no great propriety: ſands being, in ſtrictneſs, a ſort of cryſtals, or little tranſparent pebbles, calcinable; and, by the addition of a fixed alkaline ſalt, fuſible, and convertible into glaſs; and, therefore, properly reducible to the claſs of ſtones.

By means of ſand it is, that the fatty *earth* is rendered fertile, and fit to feed vegetables, *&c.* for pure *earth* is liable to coaleſce into a hard coherent maſs, as in clay; and *earth* thus imbodied, and, as it were, glued together, would be very unfit to nouriſh plants. But if with ſuch *earth*, ſand, *i. e.* hard cryſtals, which are indiſſoluble in water, and ſtill retain their figure, be intermixed, they will keep the pores of the *earth* open, and the *earth* itſelf looſe and incompact; and, by that means, will give room for the juices to move, aſcend, *&c.* and for plants to be nouriſhed thereby. Thus a vegetable, planted either in the ſand alone, or in the fat glebe and *earth* alone, receives no growth or increaſe; but is either ſtarved, or ſuffocated: but mix the two, and the maſs becomes fertile.

In effect, by means of ſand, the *earth* is rendered, in ſome meaſure, organical: by preſerving a ſort of pores, and interſtices therein, ſomewhat analogous to veſſels is effected; by which the juices of the *earth* may be conveyed, prepared, digeſted, circulated, and, at length, excreted and thrown off into the roots of plants. See Supplement, article Terræ.

Caſting in Earth. See the article Casting.

Earth, in geography, this terraqueous globe, or ball, whereon we inhabit, conſiſting of land and ſea.

The *earth*, conſidered in different relations, or habitudes, makes the ſubject of geography, and geometry.

The figure of the Earth is demonſtrated to be nearly ſpherical.

Thus the moon is frequently ſeen eclipſed by the ſhadow o the *earth*; and, in all eclipſes, that ſhadow appears circular, what way ſoever it be projected, whether towards eaſt, weſt, north, or ſouth, and howſoever its diameter vary, according to the greater or leſs diſtance from the *earth*.

Hence it follows, that the ſhadow of the *earth*, in all ſituations, is really conical; and, conſequently, the body tha projects it, *i. e.* the *earth*, is nearly ſpherical.

The natural cauſe of this ſphericity of the globe is, accordin to Sir Iſaac Newton, the great principle of attraction, whic the Creator has ſtamped on all the matter of the univerſe and whereby all bodies, and all the parts of bodies, mutuall attract one another.

And the ſame is the cauſe of the ſphericity of the drops of rai quick-ſilver, *&c.*

We ſay it is nearly ſpherical; for the inequalities on its ſu face prevent its being perfectly ſo: beſides that, Huygens an Sir Iſaac Newton have ſhewn, that the *earth* is higher an bigger under the equator, than at the poles: ſo that its figur nearly, is that of an oblate ſpheroid, ſwelling out towards th equatorial parts; and flatted, or contracted, towards the pole The ratio of the greater diameter to the leſs, Huygens dete mines to be as 578 to 577.

The reaſon of this inequality is deduced from the diurnal r tation of the *earth* on its axis; as is already ſhewn in that the ſun.

This roundneſs of the *earth* is further confirmed, by its havi been frequently ſailed round: the firſt time was in the ye 1519. when Ferd. Magellan made the tour of the who globe in 1124 days. In the year 1557. our countryma Drake, performed the ſame in 1056 days: in the year 158 Sir Thomas Cavendiſh made the ſame voyage in 777 day Simon Cordes, of Rotterdam, in the year 1590. and, in t year 1598. Oliver Noort, a Hollander, in 1077 day Will. Corn. van Schouten, in the year 1615. in 749 day Jac. Heremites, and Joh. Huygens, in the year 1623. in 8 days. All of whom, ſailing continually from eaſt to weſt, length arrived in Europe, whence they ſet forth: and, the courſe of their voyage, obſerved all the phænomena, b of the heavens and earth, to correſpond to and confeſs t ſpherical fignre.

What the *earth* loſes of its ſphericity by mountains and v leys, is nothing conſiderable; the higheſt eminence be ſcarce equivalent to the minuteſt protuberance on the ſurf of a lemon: what it loſes by the ſwelling of the equato parts is more ſenſible.

Sir Iſaac Newton makes the greateſt diameter 34 miles big than the leſs, fixing the ratio, as 692 to 688. If the e were in a fluid ſtate, its revolution round its axis would ne ſarily make it put on ſuch a figure, by reaſon the centrif force being greateſt towards the equator, the fluid w there riſe and ſwell moſt: and that it ſhould be ſo now, ſe neceſſary, to keep the ſea in the equinoctial regions f overflowing the earth thereabouts.

Add, that experiments, made on pendulums, which mu of different lengths, to ſwing equal times here and at the equator, evince the ſame thing.

M. de la Hire, and M. Derham, indeed, have ſhewn, that this diverſity may ariſe, either from the greater heat, or the greater rarity, of the air there than here; as having obſerved a like variation between pendulums, when heated, and cold; and when in vacuo, and open air. But, beſides that Sir Iſaac Newton, and M. Bernoulli, have ſet aſide theſe cauſes, as inſufficient, M. Caſſini has found, that the degrees of a meridian grow larger, the farther we go towards the line, by one eight hundredth part of every degree; which puts the ſpheroidiſm of the *earth* beyond queſtion.

The antients had various opinions as to the figure of the *earth:* ſome, as Anaximander, held it cylindrical; and others, as Leucippus, in form of a drum. But the principal opinion was, that it was flat; that the viſible horizon was the bounds of the *earth*, and the ocean the bounds of the horizon; that the heavens and *earth* above this ocean were the whole viſible univerſe; and that all beneath the ocean was hades: of which opinion were not only divers of the antient poets and philoſophers, but alſo ſome of the Chriſtian fathers, as Lactantius, St. Auguſtine, *&c.*

Fa. Tacquet draws ſome pretty concluſions from the ſpherical figure of the *earth*; as, 1. That if any part of the ſurface of the *earth* were quite plain, a man could no more walk upright thereon, than on the ſide of a mountain. 2. That the traveller's head goes a greater ſpace than his feet; and a horſeman than a footman, as moving equal arches of greater circles. 3. That a veſſel, full of water, being raiſed perpendicularly, ſome of the water will be continually flowing out, yet the veſſel ſtill remain full; and, on the contrary, if a veſſel full of water be let perpendicularly down, though nothing flow out, yet it will ceaſe to be full: conſequently, there is more water contained in the ſame veſſel at the foot of a mountain, than on the top; by reaſon the ſurface of the water is compreſſed into a ſegment of a leſs ſphere below than above. *Tacq. Aſtronom.* L. I. c. 2.

The magnitude of the EARTH, and the number of miles its diameter contains, has been variouſly determined, by various authors, antient and modern. The way to arrive at it is, by finding the quantity of a degree of a great circle of the *earth:* but this degree is found very different, according to the different methods and inſtruments made uſe of, as well as the different obſervers.

The method obſerved by Mr. Norwood, and the French aſtronomers, Picard, Caſſini, *&c.* viz. by meaſuring the diſtance between two remote places on the ſame meridian, is undoubtedly the beſt; and was performed with ſuch exceeding accuracy, eſpecially by M. Caſſini, that hardly any thing further or better can be expected. According to that author, the ambit, or circumference of the *earth*, is 123750720 Paris feet; or 134650777 Engliſh feet; or 25031 $\frac{1}{2}$ of our ſtatute miles: whence, ſuppoſing the *earth* ſpherical, its diameter muſt be 7967 ſtatute miles; and, conſequently, its radius, or ſemidiameter, may be taken, in a round number, for 200000000 feet; its ſurface will be 199444206 miles; which, being multiplied into $\frac{1}{3}$ of its ſemidiameter, gives the ſolid content of the globe of the *earth* 264856000000 cubic miles. On the ſurface of the *earth*, are conceived the ſame circles, as on the ſurface of the mundane ſphere already deſcribed; *viz.* an EQUATOR, ECLIPTIC, TROPICS, POLAR *Circles*, MERIDIANS, HORIZON, PARALLELS, *&c.* which ſee; as alſo SPHERE, and GLOBE.

The terraqueous globe is now generally granted to have two motions; the one diurnal, around its own axis, in the ſpace of 24 hours, which conſtitutes the natural day, or nycthemeron.

The other annual, round the ſun, in an elliptical orbit, or track, in 365 days, 6 hours, conſtituting the year.

From the former we derive the diverſities of night and day (See NIGHT and DAY); and from the latter, the viciſſitudes of ſeaſons, ſpring, ſummer, *&c.*

See the motion of the *earth* proved, under the article EARTH *in aſtronomy.*

In the terraqueous globe we diſtinguiſh three parts, or regions; *viz.* 1. The external part, or cruſt, which is that from which vegetables ariſe, and animals are nouriſhed. 2. The middle, or intermediate part, which is poſſeſſed by foſſils, extending farther than human labour ever yet penetrated. 3. The internal, or central part, which is unknown to us; though, by many authors, ſuppoſed of a magnetic nature; by others, a maſs, or ſphere of fire; by others, an abyſs, or collection of waters, ſurrounded by the ſtrata of *earth*; and, by others, a hollow, empty ſpace, inhabited by animals, who have their ſun, moon, plants, and other conveniencies, within the ſame: others divide the body of the globe into two parts; *viz.* the external part, which they call the cortex, including the whole depth or maſs of the ſtrata of the *earth*; and the internal, which they call the nucleus, being of a different nature from the former, and poſſeſſed by fire, water, or the like.

The external part of the globe either exhibits inequalities, as mountains and valleys; or it is plain and level; or dug in chanels, fiſſures, beds, *&c.* for rivers, lakes, ſeas, *&c.*

Theſe inequalities in the face of the *earth* are, by moſt naturaliſts, ſuppoſed to have ariſen from a rupture, or ſubverſion of the earth, by the force either of the ſubterraneous fires or waters. The *earth*, in its natural and original ſtate, Des Cartes, and, after him, Burnet, Steno, Woodward, Whiſton, and others, ſuppoſe to have been perfectly round, ſmooth, and equable; and they account for its preſent rude and irregular form, principally from the great deluge. See DELUGE.

In the external, or cortical part of the *earth*, we meet with various ſtrata, which are ſuppoſed to be the ſediments of various floods; the waters whereof, being replete with matters of divers kinds, as they dried up, or ouſed through, depoſited theſe different matters; which, in time, hardened into ſtrata of ſtone, ſand, coal, clay, *&c.*

Dr. Woodward has conſidered the buſineſs of theſe ſtrata, with great attention; *viz.* their order, number, ſituation with reſpect to the horizon, depth, interſections, fiſſures, colour, conſiſtence, *&c.* He aſcribes the origin and formation of them all, to the great flood, or cataclyſmus. At that terrible revolution, he ſuppoſes all the terreſtrial bodies, of all kinds, to have been diſſolved, and mixed with the waters, and ſuſtained therein, ſo as only to conſtitute one common maſs therewith. This maſs of terreſtrial particles, intermixed with water, he ſuppoſes to have been at length precipitated to the bottom; and that generally, according to the laws of gravity, the heavieſt ſinking firſt, and the lighter in their order. By ſuch means were the ſtrata formed, whereof the *earth* conſiſts; which, attaining their ſolidity and hardneſs by degrees, have continued ſo ever ſince. Theſe ſediments he further concludes to have been, at firſt, all parallel and concentrical; and the ſurface of the earth formed thereby, perfectly ſmooth and regular: but that, in courſe of time, divers changes happening, from earthquakes, volcano's, *&c.* the order and regularity of the ſtrata was diſturbed and broken; and the ſurface of the *earth*, by ſuch means, brought to the irregular form, in which it now appears. See further particulars under DELUGE.

EARTH, in aſtronomy, is one of the primary planets, according to the ſyſtem of Copernicus. Its character is ⊖.

In the hypotheſis of Ptolemy, the *earth* is the centre of the ſyſtem.

Whether the earth move, or remain at reſt, *i. e.* whether it be fixed in the centre, with the ſun, heavens, and ſtars moving round the ſame from eaſt to weſt; or whether, the heavens and ſtars being at reſt, the *earth* move from weſt to eaſt; is the great article that diſtinguiſhes the Ptolemaic from the Copernican ſyſtem.

Motion of the EARTH.—The happy induſtry of the aſtronomers of our age has put the mobility of the *earth* beyond all reaſonable doubt: on which account, the names of Copernicus, Gaſſendus, Kepler, Hook, Flamſteed, *&c.* will ever be mentioned wtth the higheſt honour.

Indeed, the ſame motion had been held by many of the antient philoſophers. Cicero, in his *Tuſc. Quæſt.* aſſures us, that Nicetas, of Syracuſe, firſt diſcovered that the *earth* had a diurnal motion, by which it revolved round its axis in the ſpace of 24 hours: and Plutarch, *de Placit. Philoſoph.* tells us, that Philolaus diſcovered its annual motion round the ſun. And, about 100 years after Philolaus, Ariſtarchus the Samian propoſed the motion of the *earth*, in ſtronger and clearer terms, as we are aſſured by Archimedes, in *Arenar.*

But the religious opinions of the heathen world prevented the doctrine's becoming more cultivated. For, Ariſtarchus being accuſed of ſacrilege by Cleanthes, for moving Veſta, and the tutelar deities of the univerſe, out of their places, the philoſophers began to lay aſide ſo perilous a poſition.

Many ages afterwards, Nic. Cuſanus revived the antient ſyſtem, in his *Doct. de Pignorant.* and aſſerted the motion of the *earth:* but the dogma got but little ground till the time of Copernicus, who ſhewed its great uſe and advantages in aſtronomy; and who had, immediately, all the philoſophers and aſtronomers, that durſt think differently from the croud, and were not afraid of eccleſiaſtical cenſures, on his ſide. So that Kepler, his contemporary, made no ſcruple to cry, *Hodierno tempore præſtantiſſimi quique philoſophorum & aſtronomorum Copernico adſtipulantur: ſecta eſt hæc glacies; vincimus ſuffragiis melioribus: ceteris pene ſola obſtat ſuperſtitio, aut metus a Cleanthibus.*

The arguments alleged againſt the motion of the *earth* are weak and frivolous. The principal are,

1. That it is a heavy body, and very unfit form otion.
2. That if the *earth* were to move round its axis in 24 hours, all our houſes, buildings, *&c.* would tumble down.
3. That bodies would not fall upon the places perpendicularly

under them; nor could a bullet, *e. gr.* ſhot perpendicularly from the ground, fall back again upon the ſame ſpot.

4. That it is contrary to the words of ſcripture. And

5. That it is repugnant to our ſenſes; which repreſent the *earth* at reſt, and the ſun in motion.

The arguments for the motion of the *earth* are of another kind, and carry other ſort of evidence with them; being deduced from actual obſervation and phænomena, and not from the fanciful ſurmiſes of timorous zealots. They are theſe:

1. The ſun will equally appear in motion, and the *earth* as ſtanding ſtill, to a ſpectator on the *earth*, whether the ſun really move round the *earth* at reſt, or the *earth* move round the ſun at reſt.

For ſuppoſe the *earth* in T (*Tab. Aſtronom. fig.* 15. n° 2.), and the ſun in 1; the ſun will then appear in ♈. And, ſuppoſe the ſun to proceed in an orbit ſurrounding the *earth*, from 1 to 2, he will then appear in ♉; and, if he proceed farther to 3, he will be ſeen in ♊: and thus will he appear to go on, according to the order of the ſigns in the ecliptic.

Suppoſe, again, the *earth* in 1, and the ſun in S, the ſun will now be ſeen in ♎; let the *earth* go on from 1 to 2, the ſun will appear, to the inhabitants of the *earth*, to have proceeded from ♎ to ♍; and if the *earth* proceed to 3, the ſun will appear to have advanced farther from ♍ to ♐; and ſo on, according to the ſucceſſions of the ſign of the ecliptic.

Thus does the ſun appear alike to move, whether he really move, or ſtand ſtill; ſo that the objection from ſenſe is of no force. But again,

2. If one of the planets be ſuppoſed to have moved a certain ſpace, from weſt to eaſt, the ſun, *earth*, and other planets, together with the fixed ſtars, will all ſeem, to an inhabitant of that planet, to have moved juſt ſo far round it the contrary way.

For, ſuppoſe a ſtar M (*fig.* 16. n° 2.) in the zenith of an inhabitant of a planet placed in T; and ſuppoſe the planet to have revolved on its axis from weſt to eaſt; in a certain ſpace of time, the ſun S will have arrived at the zenith of T; then the ſtar I, then N, then the *earth* L; and at length the ſtar M again. To the inhabitant of the planet, therefore, the ſun S, with the *earth* L, and the ſtars I, N, M, *&c.* will appear to have moved round the planet a contrary way.

Thus, to the inhabitants of the planets (if any ſuch there be), the mundane ſphere, with the ſun, ſtars, and all the other planets, will, as to us, appear to move round them from eaſt to weſt. And, accordingly, the inhabitants of our planet, the *earth*, are only liable to the ſame deluſive appearances with thoſe of the reſt.

3. The orbits of all the planets include the ſun, as the common centre of them all: but it is only the orbits of the ſuperior planets that include the *earth*; which, however, is not in the centre of any of them, as we have already ſhewn, under the articles SUN, and PLANET.

4. The *earth*'s orbit being proved to be between thoſe of Venus and Mars, it follows, that the *earth* muſt turn round the ſun; for, as it lies within the orbits of the ſuperior planets, their motion would indeed appear unequal and irregular; but they would never either be ſtationary or retrograde without this ſuppoſition.

5. From the orbits and periods of the ſeveral planets about the ſun, and of the moon and ſatellites round the *earth*, Jupiter, and Saturn, it is evident, that the law of gravitation is the ſame towards the *earth*, Jupiter, and Saturn, as towards the ſun; and the periodical times of the ſeveral bodies moving around each, are in the ſame ratio to their ſeveral diſtances from them.

Now, it is certain, that, on the hypotheſis of the *earth*'s annual motion, her periodical time exactly ſuits this law, bearing ſuch a proportion between thoſe of Mars and Venus, as the ſeveral other bodies, directed by the ſame law, do bear; *i. e.* the ſquares of the periods are, in all, as the cubes of the diſtances from the centre of their orbits. But ſuppoſing the *earth*, too, at reſt, this law is broken moſt exorbitantly.

For, if the *earth* do not move round the ſun, the ſun muſt move, with the moon, round the *earth*: now, the diſtance of the ſun to that of the moon, being 10000 to 46; and the moon's period being leſs than 28 days, the ſun's period ſhould be found no leſs than 242 years; whereas, in fact, it is but one year. Which ſingle conſideration Mr. Whiſton thinks of weight enough to determine the controverſy between the two ſyſtems, and to eſtabliſh the motion of the *earth* for ever.

Whereas, ſuppoſing our *earth* to have once revolved about the ſun in a circular orbit, whoſe ſemidiameter were equal to the *earth*'s original diſtance from the ſun ſix degrees paſt its perihelion, the annual period would be found exactly and ſurpriſingly equal to the lunar of the antient ſolar year, which were exactly commenſurate; containing 12 ſynodical, or 13 periodical months, *i. e.* 365 days, four hours, 19 minutes.

6. The diſtances of certain of the fixed ſtars from the zenith have been obſerved to be various, at various times of the year. That, particularly, of the pole-ſtar from the pole, has been diſcovered by Mr. Flamſteed from repeated obſervations, for ſeven years ſucceſſively, to be greater about the ſummer ſolſtice, than about the winter, by about 40 ſeconds. Whence it appears, that the earth changes its ſituation; receding from the pole-ſtar, and returning back to it again annually.

Which argument is further confirmed from this, that the *earth* is nearer the ſun at Chriſtmas, than at Midſummer; as appears, both from the ſun's apparent diameter being greater in December than in June; and from its motion being ſwifter, by one 25th part, in the former ſeaſon, than the latter: whence it is, that there are about eight days more in the ſummer half-year, *viz.* from March to September, than in the winter, from September to March.

7. Either the heavenly bodies revolve round the *earth* in 24 hours, or the *earth* revolves round its axis in that time. Now, the planets, revolving round the ſun, perform their revolutions in greater or leſs times, as their orbits are greater or leſs; *i. e.* as they are more or leſs remote from the ſun. Of conſequence, if the ſtars and planets revolved round the *earth*, they would perform their revolutions in unequal times, according as their orbits, or their diſtances, were unequally big. At leaſt, the fixed ſtars, which are at ſuch prodigious diſtances from the *earth*, would never move round it in 24 hours, a the neareſt planet is ſuppoſed to do.

This is an inelegancy, which is avoided in the ſyſtem where the *earth* is ſuppoſed to move; and where every planet is ſ much the longer in deſcribing its annual orbit round the ſun as that orbit is greater.

8. In all the works of nature which we are acquainted withal the Creator appears to act by the ſhorteſt, eaſieſt, and ſimpleſ means. Now, if the *earth* be at reſt, and the ſtars move the velocity of theſe latter muſt be immenſe; and yet all th purpoſes thereof might have been anſwered, by a moderat motion of the *earth* alone.

For the moon's mean diſtance from the *earth* is 57 ſemi diameters of the *earth*; which, ſuppoſing a ſemidiameter the *earth* 3440 geographical miles, amounts to 196080 mile Hence, the circumference of the moon's diurnal circle bein 1231380 ſuch miles, the moon's horary motion muſt 483308 miles; conſequently, in each ſecond, a ſpace le than that of the pulſe of an artery, the moon, though th ſloweſt of all the heavenly bodies, muſt move three miles an five 9ths. Again, the ſun's mean diſtance from the *ear* is 22000 ſemi-diameters of the *earth*, or 75680000 geogr phical miles; conſequently the ſun's diurnal progreſs, whe in the equator, muſt be 475270400 miles: and, therefor in the ſpace of one ſecond, *i. e.* in the twinkling of an ey he muſt move 5480 miles.

Again, the diſtance of the ſun from the *earth* is to th of Mars, nearly as one and a half; to that of Jupiter, one to five and a quarter; and to that of Saturn, as one nine: wherefore, as the diurnal ſpace, and all other thin deſcribed in the ſame time, are in the ſame ratio, Ma in one twinkling of an eye, muſt fly 8222, Jupiter 2868 and Saturn 52060 miles. Laſtly, the fixed ſtars being vaſtly more remote from the *earth* than Saturn, their moti in or near the equator muſt be vaſtly ſwifter than that Saturn.

9. If the *earth* be at reſt, and the ſtars move by any comm motion, the ſeveral planets muſt each day deſcribe ſeve ſpirals running forth to a certain term towards the north, thence returning to the oppoſite term towards the ſout ſometimes narrower, and ſometimes broader.

For the diſtances of the ſeveral planets from the zenith al every day, increaſing to a certain point towards the nor and thence decreaſing again towards the ſouth; conſequent the altitude of the pole being always found the ſame, and planets not returning to the ſame point of the meridian, th do not deſcribe circles, but ſpirals. Add, that as the ſeve planets do not retain the ſame diſtance from the *earth*, but ſometimes nearer, and ſometimes recede farther from it, greater diſtance, a greater ſpiral, and at a leſs, a leſs, is ſcribed.

Further, as their motion is ſlower when the planet is fart from the *earth*, the greater ſpirals are deſcribed in leſſer ti than the leſſer. And, as the greateſt and leaſt diſtance of planets from the *earth* is not affixed to the ſame point of heavens, the planets have moved in different tracts every from the beginning.

10. Bodies let fall from any conſiderable height are found, experiment, not to fall upon the ſpot perpendicularly u them, but to the ſouth-eaſt thereof. See DESCENT.

The experiment was propoſed to Dr. Hook in the year 16 by a perſon who ſuggeſted, that, if the *earth* had any diu motion, the body would fall to the eaſt of the perpendicu Dr. Hook, on that occaſion, read a diſcourſe before the Ro Society, wherein he endeavoured, *a priori*, to aſſign w curve a falling body would deſcribe; aſſerting, particula that the fall of the body would not be directly eaſt, but ſo eaſt: which was confirmed by divers actual trials.

11. The power of gravity is found to decreaſe as you approach nearer to the equator: which is a circumſtance that agrees to all bodies which have a motion on their axis, and them only, as being really the neceſſary reſult of ſuch motion.

For a body, revolving on its axis, the parts, or appendages thereof, are continually endeavouring to recede from the centre. Conſequently, the equator being a great circle, and the parallels all decreaſing towards the poles, the centrifugal force is greateſt in the equator, and decreaſes towards the poles, in the ratio of the diameters of the parallels to that of the equator. Now the power of gravity determines the ſeveral parts or appendages towards the centre of the whole: conſequently the centrifrugal force, acting contrary to the power of gravity, retards the deſcent of bodies, and that moſt where it is greateſt.

Dr. Keil computes, that the force of gravity to the centrifugal force at the equator is as 289 to 1; conſequently, a body placed there, would loſe one 289th part of the weight it would have, were the *earth* at reſt. Conſequently, the centrifugal force at the poles being infinitely ſmall, a body will there weigh 289 pounds, which at the equator only weighs 288.

12. The following is an actual demonſtration of the *earth*'s motion, drawn from phyſical cauſes, for which we are indebted to the diſcoveries of Sir Iſaac Newton; and which Dr. Keil takes for concluſive and unanſwerable.

All planets, it is demonſtrated, gravitate towards the ſun: and obſervations teſtify to us, either that the *earth* turns round the ſun, or the ſun round the *earth*, in ſuch a manner, as to deſcribe equal areas in equal times. But it is demonſtrated further, that whenever bodies turn round each other, and regulate their motion by ſuch a law, the one muſt of neceſſity gravitate to the other: conſequently, if the ſun in its motion do gravitate to the *earth*; action or re-action being equal and contrary, the *earth* muſt likewiſe gravitate towards the ſun. Again, the ſame author has demonſtrated, that when two bodies gravitate to one another, without directly approaching one another in right lines; they muſt both of them turn round their common centre of gravity: the ſun and *earth*, therefore, do both turn round their common centre of gravity; but the ſun is ſo great a body in reſpect of our *earth*, which is, as it were, but a point; that the common centre of gravity of the two bodies, will lie within the body of the ſun itſelf, and not far from the centre of the ſun. The *earth* therefore, turns round a point, which is in the body of the ſun; and therefore it turns round the ſun. Q. E. D.

To ſay no more, to ſuppoſe the *earth* at reſt, confounds and deſtroys all the order and harmony of the univerſe, annuls its laws, and ſets every part at variance with other, robs the Creator of half the praiſe of his work, and mankind of the pleaſure of the contemplation thereof. In effect, it renders the motions of the planets inextricable and uſeleſs, which otherwiſe are plain and ſimple. So that ſuch of the later aſtronomers, as have aſſerted it with the moſt zeal, have been forced to ſet it aſide, when they came to compute the motions of the planets. None of them would ever attempt to compute theſe motions in variable ſpirals; but in all their theories they tacitly ſuppoſe the *earth* to move on its axis, ſo as to turn the diurnal ſpirals into circles.

Thus, the Jeſuit Ricciolus, tho' he, at the pope's command, oppoſed the motion of the *earth* with all his might, as ſomething contrary to holy ſcripture; yet, to frame aſtronomical tables, which ſhould any thing tolerably agree to obſervation, he was forced to have recourſe to the motion of the *earth*, as his only refuge.

This, De Chales, another of the ſame fraternity, frankly confeſſes: ‘ P. Ricciolus—*nullas tabulas aptare potuit, quæ vel* ‘ *mediocriter obſervationibus reſponderent; niſi ſecundum ſyſtema* ‘ *terræ motæ*; notwithſtanding, that he called in all the foreign and forced aſſiſtances of moveable epicycles; ſo that ‘ in his *Aſtronomia reformata*, where he undertakes to give accurate tables of the celeſtial motions, he gives into the hypotheſis of the motion of the *earth*.’ De Chales *Aſtron. Reformat*. l. X. c. 1.

The ſyſtem, then, which ſuppoſes the *earth* at reſt, is, of itſelf, of no uſe, or ſignificancy, in aſtronomy; nor does it avail more in phyſics: for the principal phænomena are noway deducible from it; but the retainers thereto are either forced to fly to the immediate agency of the Deity (which in phyſics is the ſame as the *reductio ad abſurdum* in geometry,) or to reaſons and principles unknown.

Some oppoſe the motion of the *earth*, as contrary to revelation; there being mention made, in holy ſcripture, of the ſun's riſing and ſetting; of his ſtanding ſtill in the time of Joſhua; and his going back in that of Hezekiah.

Now, to take the genuine ſenſe of theſe paſſages, the laws of interpretation muſt be ſettled. 1. Then, we ſuppoſe, that the ſeveral words of ſcripture have their ſeveral ideas correſponding to them; and that a man takes their ſenſe, in whom thoſe ideas are excited by the reading. 2. That the words of ſcripture, attentively read, are ſufficient to excite thoſe ideas in a mind not prepoſſeſſed. Hence, 3. It follows, that either God muſt have exhibited the definitions of the words that occur in ſcripture; or, that he ſuppoſes prior notions, and leaves us to take their ſenſe in the ordinary way. Hence, 4. We argue, that no other ideas are to be affixed to the words of ſcripture, but ſuch as occur to a perſon who looks or attends to the things themſelves ſpoken of.

By the ſun's riſing, therefore, is meant no more than his reappearance in the horizon, after he had been hid below it: and by his ſetting, an occultation of the ſun, which was before viſible in the horizon. When the preacher therefore ſays, Eccleſ. i. 5. *The ſun riſes, and ſets, and returns to his place*; he means, doubtleſs, no more than the ſun, which before was hid, is now ſeen in the horizon; and after being there conſpicuous, is hid again, and at length re-appears in the eaſt. For thus much only appears to a perſon who views the ſun; and therefore thus much, and no more, is expreſſed by the ſacred writers.

In like manner, when in Joſh. x. 12, 13. the ſun and moon are ſaid to have ſtood ſtill; all meant by ſtation is, that they did not change their place, with reſpect to the *earth*. For that general, by *Sun, ſtand thou ſtill over Gibeon, and thou moon, over the valley of Ajalon*; required no more, than that the ſun, which then appeared over that city, ſhould not change its ſituation. And from his bidding the ſun to keep its ſituation, it would be unjuſt to infer, that it moves round the *earth* at reſt.

Gaſſendus, very pertinently to the preſent purpoſe, diſtinguiſhes ‘ two ſacred volumes, the one written, called the *bible*; the ‘ other, *nature*, or the *world*; God having manifeſted himſelf ‘ by two lights, the one of revelation, and the other of de‘ monſtration. Accordingly, the interpreters of the former ‘ are divines, of the latter mathematicians. As to matters ‘ of natural knowlege, the mathematicians are to be con‘ ſulted; and as to the objects of faith, the prophets; the for‘ mer being no leſs interpreters, or apoſtles, from God to ‘ men, than the latter. And as the mathematician would ‘ be judged to wander out of his province, if he ſhould ‘ pretend to controvert, or ſet aſide, any article of faith ‘ from principles of geometry; ſo it muſt be granted, the ‘ divines are no leſs out of their limits, when they venture ‘ to pronounce on a point of natural knowlege, beyond ‘ the reach of any not verſed in geometry, and optics, merely ‘ from holy ſcripture, which does not pretend to teach any ‘ thing of the matter.’

‘ For inſtances, we may quote Lactantius, and Auguſtine; ‘ the firſt of whom rendered himſelf ridiculous by diſputing, ‘ from ſcripture, againſt the roundneſs of the *earth*; and the ‘ latter, againſt the antipodes.’ See ANTIPODES.

The *earth* thus proved to move, it is to be further obſerved, that the altitude of the pole being found at all times of the year, *i. e.* in all points of its annual orbit (the ecliptic), to be the ſame; it follows, that the *earth* proceeds in ſuch manner along its orbit, as that its axis is conſtantly parallel to the axis of the world, and of conſequence parallel to itſelf.

This motion, which Copernicus calls the *motion of libration*, may be well enough illuſtrated, by ſuppoſing a globe, with its axis parallel to that of the *earth*, painted on the flag, or ancient of a maſt, moveable on its axis, and continually driven by the weſt wind, while it makes the tour of an iſland: it is evident, that in every ſituation of the ſhip, the axis of the painted globe will continue parallel to the axis of the world.

According to Sir Iſaac Newton's principles, the *earth*'s axis does, in every annual revolution, incline twice towards the ecliptic, and twice return to its former poſition. On which mutation it is, that the preceſſion of the equinoctial points is ſuppoſed to depend; and as Mr. Flamſteed imagines, the annual parallax of the fixed ſtars likewiſe.

Latitude of the EARTH. } See { LATITUDE.
Longitude of the EARTH. } See { LONGITUDE.

Inclination of the axis of the EARTH. See INCLINATION, AXIS, and ANGLE.

EARTH, in agriculture and gardening. See SOIL, LAND, &c.

Untried EARTH, the ſoil, or *earth*, which is ſix or ſeven inches deep, where neither ſpade nor plough has reached.

This is greatly recommended by Mr. Lawrence, for amendments and improvements, both in the fruit and kitchen garden: he aſſures us, from his own experience, that no kind of compoſt, made with art, exceeds it; and adds, that if the choiceſt fruit-trees be planted herein, they preſently diſcover an uncommon healthfulneſs and vigour: and that if any tender ſort of annuals be diſcretely ſown in this *earth*, made fine by ſifting, their looks, colour, &c. ſoon diſcover that they like the ſoil. Melons and cucumbers need no other compoſt but this *untried earth*: and aſparagus itſelf will proſper, at leaſt, as well in this *untried earth*, if laid a foot and a half deep, as with all the uſual expence of dung. Though for the tenderer flowers, and exotics, this *earth* is not found to have any extraordinary excellencies. For annual plants, produced from ſeed, a coat of this *untried earth*, two inches deep, may ſuffice: on other occaſions, a greater depth is required.

Japan EARTH. See the article JAPAN.

EARTH *black*. See the article BLACK.

Fullers EARTH.	See	FULLERS *Earth*.
Samian EARTH.		SAMIAN *Earth*, &c.
Lemnian EARTH.		LEMNIAN *Earth*.
Sealed EARTH.		SIGILLATA *terra*.
Soap EARTH.		SOAP *earth*.

EARTH-BAGS, *ſacs à terre*, in fortification. See SACKS *of earth*.

EARTH-*flax*. See the article *Plume* ALLUM.

EARTHED *ſugar*. See the article SUGAR.

EARTHEN *floors*. See the article FLOOR.

EARTHING, in the general ſenſe. See INTERRING.

EARTHING, in agriculture, and gardening, denotes the covering of vines, celery, and other ſhrubs and plants, with *earth*.

EARTHQUAKE, in natural hiſtory, a vehement ſhake, or agitation of ſome conſiderable place, or part of the earth; from natural cauſes; attended with a terrible noiſe like thunder, and frequently with an eruption of water, or fire, or elſe of ſmoke or winds.

Earthquakes are the greateſt, and moſt formidable, phænomena of nature. Ariſtotle and Pliny diſtinguiſh two kinds, with reſpect to the manner of the ſhake, *viz.* a *tremor*, and a *pulſe*; the firſt being horizontal, in alternate vibrations, compared to the ſhaking of a perſon in an ague. The 2d perpendicular, up and down: which latter kind are alſo called by Ariſtotle, *βρασται*, from the reſemblance of their motion to that of boiling.

Agricola increaſes the number, and makes four kinds; which Alb. Magnus again reduces to three, *viz. inclination*, when the earth librates alternately from right to left; by which mountains have been ſometimes brought to meet, and claſh againſt each other: *pulſation*, when it beats up and down like an artery: and *trembling*, when it ſhakes and quavers every way, like a flame.

Phænomena of EARTHQUAKES.—The *Philoſoph. Tranſact.* furniſh us with abundance of hiſtories of *earthquakes*; particularly, one at Oxford, in 1665. by Dr. Wallis and Mr. Boyle. Another, at the ſame place, in 1683. by Mr. Pigot. And another in Sicily, in 1692-3. by Mr. Hartop, Fa. Aleſſandro Burgos, and Vin. Bonajutus; which laſt is one of the moſt terrible ones in all hiſtory.

This ſhook the whole iſland, and not only that, but Naples and Malta ſhared in the ſhock. It was of the ſecond kind mentioned by Ariſtotle and Pliny, *viz.* a perpendicular pulſation, or ſuccuſſion. It was impoſſible, ſaid the noble Bonajutus, for any body, in this country, to keep on their legs, on the dancing earth; nay, thoſe that lay on the ground, were toſſed from ſide to ſide, as on a rolling billow: and high walls leaped from their foundations ſeveral paces, *&c. Phil. Tran.* N° 207.

The miſchief it did is amazing: almoſt all the buildings in the countries were thrown down. Fifty-four cities and towns, beſide an incredible number of villages, were either deſtroyed, or greatly damaged. We ſhall only inſtance the fate of Catania, one of the moſt famous, antient, and flouriſhing cities in the kingdom; the reſidence of ſeveral monarchs, and an univerſity. This once famous, now unhappy Catania, to uſe the words of Fa. Burgos, had the greateſt ſhare in the tragedy. Fa. Anton. Serrovita, being on his way thither, and at the diſtance of a few miles, obſerved a black cloud like night, hovering over the city; and there aroſe from the mouth of Montgibello, great ſpires of flame, which ſpread all around. The ſea all of a ſudden began to roar, and riſe in billows: and there was a noiſe, as if all the artillery in the world had been at once diſcharged. The birds flew about aſtoniſhed, the cattle in the fields ran crying, *&c.* His and his companions horſes ſtopped ſhort, trembling; ſo that they were forced to alight. They were no ſooner off, but they were lifted from the ground above two palms; when caſting his eyes towards Catania, he with amazement ſaw nothing but a thick cloud of duſt in the air. This was the ſcene of their calamity: for of the magnificent Catania, there is not the leaſt footſtep to be ſeen. S. Bonajutus aſſures us, that of 18914 inhabitants, 18000 periſhed therein. The ſame author, from a computation of the inhabitants, before and after the *earthquake*, in the ſeveral cities and towns, finds that near 60000 periſhed out of 254900. *Ibid.* N° 202.

Jamaica is remarkable for *earthquakes*. The inhabitants, Dr. Sloan informs us, expect one every year. This author gives us the hiſtory of one in 1687. and another horrible one in 1692. is deſcribed by ſeveral anonymous authors. In two minutes time this ſhook down and drowned nine 10ths of the town of Port-Royal. The houſes ſunk out-right, 30 or 40 fathoms deep. *Phil. Tranſact.* N° 209. The earth opening, ſwallowed up people; and they roſe in other ſtreets; ſome in the middle of the harbour, and yet many were ſaved; though there were 2000 people loſt, and 1000 acres of land ſunk. All the houſes were thrown down throughout the iſland. One Hopkins had his plantation removed half a mile from its place. Of all wells, from one fathom to ſix or ſeven, the water flew
out at the top with a vehement motion. *Ibid.* While th
houſes on one ſide of the ſtreet were ſwallowed up, on th
others they were thrown on heaps; and the ſand in the ſtree
roſe like waves in the ſea, lifting up every body that ſtood o
it, and immediately dropping down into pits; and at the ſam
inſtant a flood of water breaking in, rolled them over an
over; ſome catching hold of beams and rafters, *&c.* ſhips an
ſloops in the harbour were overſet and loſt; the Swan Frigate
particularly, was thrown over by the motion of the ſea, an
ſinking of the wharf, and was driven over the tops of man
houſes. *Ibid.* It was attended with a hollow rumbling noiſ
like that of thunder. In leſs than a minute, three quarters o
the houſes, and the ground they ſtood on, with the inhabit
ants, were all ſunk quite under water; and the little part le
behind, was no better than a heap of rubbiſh. The ſhake wa
ſo violent, that it threw people down on their knees, or the
faces, as they were running about for ſhelter. The groun
heaved and ſwelled like a rolling ſea; and ſeveral houſes, ſti
ſtanding, were ſhuffled and moved ſome yards out of their places
A whole ſtreet is ſaid to be twice as broad now as before; an
in many places, the earth would crack, and open, and ſhu
quick and faſt. Of which openings, two or three hundre
might be ſeen at a time; in ſome whereof, the people we
ſwallowed up; others, the cloſing earth caught by the middl
and preſſed to death; in others, the heads only appeare
The larger openings ſwallowed up houſes; and out of ſom
would iſſue whole rivers of waters, ſpouted up a great heig
into the air, and threatening a deluge to that part the *eart*
quake ſpared. The whole was attended with ſtenches, and o
fenſive ſmells, the noiſe of falling mountains at a diſtanc
&c. and the ſky, in a minute's time, was turned dull and re
iſh, like a glowing oven. Yet, as great a ſufferer as Por
Royal was, more houſes were left ſtanding therein, than o
the whole iſland beſide. Scarce a planting-houſe, or ſuga
work, was left ſtanding in all Jamaica. A great part of the
were ſwallowed up, houſes, people, trees, and all at on
gape: in lieu of which afterwards, appeared great pools
water, which, when dried up, left nothing but ſand, witho
any mark that ever tree or plant had been thereon. Abo
12 miles from the ſea, the earth gaped, and ſpouted out, wi
a prodigious force, vaſt quantities of water into the air: y
the greateſt violences were among the mountains and rocks
and it is a general opinion, that the nearer the mountains, t
greater was the ſhake; and that the cauſe thereof lay ther
Moſt of the rivers were ſtopped up for 24 hours, by the fallin
of the mountains; till ſwelling up, they made themſelves ne
tracks and chanels; tearing up in their paſſage trees, &
After the great ſhake, many of thoſe people who eſcaped, g
on board ſhips in the harbour, where many continued abo
two months; the ſhakes all that time being ſo violent, a
coming ſo thick, ſometimes two or three in an hour, accom
panied with frightful noiſes like a ruffling wind, or a hollo
rumbling thunder, with brimſtone-blaſts, that they durſt n
come aſhore. The conſequences of the *earthquake* were a g
neral ſickneſs, from the noiſome vapours belched forth, whi
ſwept away above 3000 perſons of thoſe who were left. *Ibi*

After the detail of theſe horrible convulſions, the reader w
have but little curioſity left for the leſs conſiderable phæn
mena of the *earthquake* at Lima, in 1687. deſcribed by F
Alvarez de Toledo, wherein above 5000 perſons were d
ſtroyed; this being of the vibratory kind, ſo that the bells
the church rung of themſelves: or that at Batavia in 169
by Witzen: that in the North of England in 1703. by M
Thoreſby: or, laſtly, thoſe in New-England in 1663. a
1670. by Dr. Mather. We will therefore relieve him wi
ſome attempts towards a theory of *earthquakes*.

Cauſes of EARTHQUAKES.—Naturaliſts are here divided. So
aſcribe *earthquakes* to water, others to fire, and others to a
and all of them with ſome reaſon. To conceive which, it
to be obſerved, that the earth every-where abounds in hu
ſubterraneous caverns, veins, and canals; particularly abo
the roots of mountains: that of theſe cavities, veins, &
ſome are full of water, whence are compoſed gulphs, abyſſ
ſprings, rivulets; and others full of exhalations; and th
ſome parts of the earth are replete with nitre, ſulphur, bit
men, vitriol, *&c.*

This premiſed, 1. The earth itſelf may be the cauſe of
own ſhaking; when the roots, or baſis, of ſome large m
being diſſolved, or worn away by a fluid underneath, it fin
into the ſame; and, with its weight, occaſions a tremor of t
adjacent parts; and produces a noiſe; and frequently an i
undation of water.

2. The ſubterraneous waters may occaſion *earthquakes*,
their overflowing, cutting out new courſes, *&c.* Add, th
the water, being heated, and rarefied by the ſubterraneous fi
may emit fumes, blaſts, *&c.* which by their action, either
the water, or immediately on the earth itſelf, may occaſ
great ſuccuſſions.

3. The air may be the cauſe of *earthquakes*: for, air bein
collection of fumes and vapours raiſed from the earth a
water; if it be pent up in the too narrow viſcera of t
earth, the ſubterraneous, or its own native heat, rarefying

expanding it; the force wherewith it endeavours to eſcape, may ſhake the earth: hence there will ariſe diverſe ſpecies of *earthquakes*, according to the different poſition, quantity, *&c.* of the impriſoned aura.

Laſtly, Fire is a principal cauſe of *earthquakes*; both as it produces the aforeſaid ſubterraneous aura, or vapour; and as this aura, or ſpirit, from the different matter and compoſition whereof ariſe ſulphur, bitumen, and other inflammable matters, is kindled either from ſome other fire it meets withal, or from its colliſion againſt hard bodies, or its intermixture with other fluids; by which means burſting out into a greater compaſs, the place becomes too narrow for it; ſo that, preſſing againſt it on all ſides, the adjoining parts are ſhaken; till, having made itſelf a paſſage, it ſpends itſelf in a volcano, or burning mountain.

But to come nearer to the point: Dr. Liſter, in *Philoſoph. Tranſact.* N° 157. is of opinion, that the material cauſe of thunder, lightning, and *earthquakes*, is one and the ſame; *viz.* the inflammable breath of the pyrites, which is a ſubſtantial ſulphur, and will take fire of itſelf.

The difference between theſe three terrible phænomena, he takes only to conſiſt in this; that this ſulphur, in the former, is fired in the air; and in the latter, under-ground. Which is a notion that Pliny had long before him: *quid enim*, ſays he, *aliud eſt in terra tremor, quam in nube tonitru?*

This he thinks abundantly indicated by the ſame ſulphureous ſmell being found in any thing burnt with lightning, and in the waters, *&c.* caſt up in *earthquakes*, and even in the air before and after them.

Add, that they agree in the manner of the noiſe; which is carried on as in a train, fired; the one rolling and rattling through the air, takes fire as the vapours chance to drive; as the other fired under ground, in like manner, moves with a deſultory noiſe.

Thunder, which is the effect of the trembling of the air, cauſed by the ſame vapours diſperſed through it, has force enough to ſhake our houſes; and why there may not be thunder and lightning under-ground, in ſome vaſt repoſitories there, I ſee no reaſon; eſpecially if we reflect, that the matter which compoſes the noiſy vapour above us, is contained in much larger quantities under-ground. *Philoſophical Tranſactions*, N° 202.

That the earth abounds in cavities, every body allows; and that theſe ſubterraneous cavities are, at certain times, and in certain ſeaſons, full of inflammable vapours, the damps in our mines ſufficiently witneſs; which, fired, do every thing as in an *earthquake*, only in a leſſer degree.

That the pyrites alone, of all the known minerals, yields this inflammable vapour, is highly probable: for that no mineral, or ore whatſoever, is ſulphureous, but as it is wholly, or in part, a pyrites; and there is but one ſpecies of brimſtone, at leaſt with us in England, which the pyrites naturally and only yields. The ſulphur vive, of natural brimſtone, which is found in and about the burning mountains, is certainly the effect of ſublimation; and thoſe great quantities of it ſaid to be found about the ſkirts of volcano's, are only an argument of the long duration and vehemence of thoſe fires: poſſibly, the pyrites of the volcano's, or burning mountains, may be more ſulphureous than ours: and, indeed, it is plain, that ſome of ours in England are very lean, and hold but little ſulphur; others again very much: which may be one reaſon why England is ſo little troubled with *earthquakes*; and Italy, and almoſt round the Mediterranean ſea, ſo very much: though another reaſon is, the paucity of pyrites in England, in regard to thoſe places.

Comparing our *earthquakes*, thunder and lightning, with theirs, it is obſerved, that there it lightens almoſt daily, eſpecially in ſummer-time, here ſeldom; there thunder and lightning is of long duration, here it is ſoon over; there the *earthquakes* are frequent, long, and terrible, with many paroxyſms in a day, and that for many days; here they are very ſhort, only of a few minutes, and ſcarce perceptible. To this purpoſe, the ſubterraneous cavities in England are ſmall, and few, compared to the vaſt vaults in thoſe parts of the world; which is evident, from the ſudden diſappearance of whole mountains and iſlands.

Dr. Woorward gives us another theory of *earthquakes*. He endeavours to ſhew, that the ſubterraneous heat, or fire which is continually elevating water out of the abyſs, to furniſh the earth with rain, dew, ſprings, and rivers), being ſtopped in any part of the earth, and ſo diverted from its ordinary courſe, by ſome accidental glut, or obſtruction, in the pores or paſſages, through which it uſed to aſcend to the ſurface, becomes, by ſuch means, preternaturally aſſembled, in a greater quantity than uſual, into one place; and therefore ariſeth a great rarefaction, and intumeſcence of the water of the abyſs; putting it into great commotions, and diſorders, and at the ſame time making the like effort on the earth; which, being expanded upon the face of the abyſs, occaſions that agitation and concuſſion which we call an *earthquake*.

This effort, in ſome *earthquakes*, he obſerves, is ſo vehement, that it ſplits and tears the earth, making cracks and chaſms in it, ſome miles in length, which open at the inſtants of the ſhocks, and cloſe again at the intervals betwixt them; nay, it is ſometimes ſo violent, that it forces the ſuper incumbent ſtrata, breaks them all throughout, and thereby perfectly undermines, and ruins the foundation of them; ſo that, theſe failing, the whole tract, as ſoon as the ſhock is over, ſinks down into the abyſs, and is ſwallowed up by it; the water thereof immediately riſing up, and forming a lake in the place, where the ſaid tract before was. That this effort being made in all directions indifferently, the fire dilating and expanding on all hands, and endeavouring to get room, and make its way through all obſtacles, falls as foul on the water of the abyſs beneath, as on the earth above, forcing it forth which way ſoever it can find vent, or paſſage, as well through its ordinary exits, wells, ſprings, and the outlets of rivers, as through the chaſms then newly opened; through the camini, or ſpiracles of Ætna, or other neighbouring volcano's; and thoſe hiatus's at the bottom of the ſea, whereby the abyſs below opens into it, and communicates with it. That as the water, reſident in the abyſs, is, in all parts of it, ſtored with a conſiderable quantity of heat, and more eſpecially in thoſe, where theſe extraordinary aggregations of this fire happen; ſo likewiſe is the water, which is thus forced out of it; inſomuch that, when thrown forth, and mixed with the waters of wells, or ſprings of rivers, and the ſea, it renders them very ſenſibly hot.

He adds, that though the abyſs be liable to theſe commotions in all parts; yet the effects are no-where very remarkable, except in thoſe countries, which are mountainous, and conſequently ſtony and cavernous underneath; and eſpecially where the diſpoſition of the ſtrata is ſuch, that thoſe caverns open into the abyſs, and ſo freely admit and entertain the fire; which aſſembling therein, is the cauſe of the ſhock; it naturally ſteering its courſe that way, where it finds the readieſt reception, which is towards thoſe caverns. Beſides, that thoſe parts of the earth, which abound with ſtrata of ſtone, or marble, making the ſtrongeſt oppoſition to this effort, are the moſt furiouſly ſhattered; and ſuffer much more by it, than thoſe which conſiſt of gravel, ſand, and the like laxer matter, which more eaſily give way, and make not ſo great reſiſtance; but, above all, theſe countries which yield great ſtore of ſulphur and nitre, are, by far, the moſt injured and incommoded by *earthquakes*; thoſe minerals conſtituting in the earth a kind of natural gunpowder, which, taking fire upon this aſſemblage, and approach of it, occaſions that murmuring noiſe, or ſubterraneous thunder, which is heard rumbling in the bowels of the earth during *earthquakes*; and, by the aſſiſtance of its exploſive power, renders the ſhock much greater; ſo as ſometimes to make miſerable havock and deſtruction.

And it is for this reaſon, that Italy, Sicily, Anatolia, and ſome parts of Greece, have been ſo long, and ſo often, alarmed and haraſſed by *earthquakes*; theſe countries being all mountainous and cavernous, abounding with ſtone and marble, and affording ſulphur and nitre in great plenty.

Further, that Ætna, Veſuvius, Hecla, and the other volcano's, are only ſo many ſpiracles, ſerving for the diſcharge of this ſubterraneous fire, when it is thus preternaturally aſſembled. That where there happens to be ſuch a ſtructure and conformation of the interior parts of the earth, as that the fire may paſs freely and without impediment from the caverns, wherein it aſſembles, unto thoſe ſpiracles; it then readily and eaſily gets out, from time to time, without ſhaking or diſturbing the earth: but where ſuch communication is wanting, or the paſſage is not ſufficiently large and open, ſo that it cannot come at the ſpiracles, it heaves up and ſhakes the earth, with greater or leſs impetuoſity, according to the quantity of fire thus aſſembled, till it has made its way to the mouth of the volcano. That therefore there are ſcarce any countries much annoyed with *earthquakes*, but have one of theſe firy vents; which are conſtantly in flames, when any *earthquake* happens; as diſgorging that fire, which, whilſt underneath, was the cauſe of the diſaſter. Laſtly, that, were it not for theſe diverticula, it would rage in the bowels of the earth much more furiouſly, and make greater havock, than it doth.

Thus we have ſeen what fire and water may do; and that either of them, in good hands, are proved ſufficient for all the phænomena of *earthquakes*: if they ſhould both fail, we have a third agent, ſcarce inferior to either of them: the reader muſt not be ſurpriſed, when we tell him it is air.

M. Amontons, in the *Memoires de l' Acad. des ſciences, an.* 1703. has an expreſs diſcourſe to prove, that, on the foot of the new experiments of the weight and ſpring of the air, a moderate degree of heat may bring the air into a condition capable of cauſing *earthquakes*. It is ſhewn, that at the depth of 43528 fathoms below the ſurface of the earth, air is only one fourth leſs heavy than mercury. Now, this depth of 43528 fathoms is only a 74th part of the ſemi diameter of the earth. And the vaſt ſphere beyond this depth, in diameter 451538 fathoms, may probably be only filled with air; which will be here greatly condenſed, and much heavier than the heavieſt bodies we know of in nature. But it is found by experiment, that the more air is compreſſed, the more does the ſame degree of heat increaſe its ſpring, and the more capable does it render it of a violent effect: and that, for inſtance, the degree of heat of boiling water increaſes in the ſpring of the air above what it has in its natural ſtate, in our climate, by a quantity equal to a third of the weight wherewith it is preſſed. Whence we may conclude, that a degree of heat, which on the ſurface of the earth will only have a moderate effect, may be capable of a very violent one below. And as we are aſſured, that there are in nature degrees of heat, much more conſiderable than that of boiling water; it is very poſſible there may be ſome, whoſe violence, further aſſiſted by the exceeding weight of the air, may be more than ſufficient to break and overturn this ſolid orb of 43528 fathoms; whoſe weight, compared to that of the included air, would be but a trifle.

Artificial EARTHQUAKES. Chemiſtry furniſhes us a method of making *artificial earthquakes*, which ſhall have all the great effects of natural ones: which, as it may illuſtrate the proceſs of nature in the production of theſe terrible phænomena underground, we ſhall here add.

To twenty pounds of iron filings, add as many of ſulphur: mix, work, and temper the whole together with a little water, ſo as to form a maſs, of the conſiſtence of a firm paſte. This being buried three or four feet under ground, in ſix or ſeven hours time, will have a prodigious effect: the earth will begin to tremble, crack, and ſmoke, and fire and flame will burſt through.

Such is the effect even of two cold bodies, in the cold ground: and there only wants a ſufficient quantity of this mixture to produce a true Ætna. If it were ſuppoſed to burſt out under the ſea, it would produce a water-ſpout. And if it were in the clouds, the effect would be thunder and lightning.

EASE, in the ſea-language, ſignifies as much as ſlacken, or let go ſlacker.

Thus they ſay, *eaſe* the bowling, and *eaſe* the ſheet, that is, let them go ſlacker.

Chapels of EASE. See the article CHAPEL.

EASEL-PIECES, among painters, ſuch ſmaller pieces, either portraits, or landſchapes, as are painted on the *eaſel*, i. e. the frame whereon the canvas is laid.

They are thus called, to diſtinguiſh them from larger pictures drawn on walls, cielings, &c.

EASEMENT, in law, a ſervice, or convenience, which one neighbour has of another by charter, or preſcription; without profit: as a way through his ground, a ſink, or the like.

In the civil law, *eaſements* are called *ſervitus prædii.*

EAST *, in coſmography, one of the cardinal points of the horizon; being the point wherein the prime vertical interſects that quarter of the horizon which the ſun riſes in.

* The word *eaſt* is Saxon: in Italy, and throughout the Mediterranean, the *eaſt* wind is called the *levante*. In Greek, ανατολη, and απηλιωτης, becauſe it comes from the ſide of the ſun, απ' ηλιȣ. In Latin, *eurus*.

To find the *eaſt* and weſt line, points, &c. ſee MERIDIAN *Line*.

EAST *Wind*, is that which blows from the *eaſt* point. See WIND.

EAST *Dials*. See the article DIAL.

EAST-*India Companies*. See the article COMPANY.

EAST-*India Silk*. See the article SILK.

Mooring for EAST. See the article MOORING.

EASTERN. See the article ORIENTAL.

EASTER, a feaſt of the church, held in memory of our Saviour's reſurrection.

The Greeks and Latins call it Πασχα, *paſcha*, originally a Hebrew word, ſignifing *paſſage*; applied to the feaſt of the paſſover, which is held among the Jews, much about the ſame time. In Engliſh it is called *eaſter*, from the Saxon Eaꞅꞇꞃe, a goddeſs worſhiped with peculiar ceremony in the month of April.

Eaſter is one of the moſt conſiderable feſtivals in the Chriſtian calendar; being that which regulates and determines the times of all the other moveable feaſts.

The rule for the celebration of *eaſter*, fixed by the council of Nice, in the year 325. is, that it be held on the Sunday which falls upon, or next after, the full moon next after the 21ſt of March; *i. e.* the ſunday which falls upon, or next after, the firſt full moon after the vernal equinox.

The reaſon of which decree was, that the Chriſtians might avoid celebrating their *eaſter* at the ſame time with the Jewiſh paſſover, which, according to the inſtitution of Moſes, was held the very day of the full moon.

To find *eaſter* agreeable to this rule, the method that obtained throughout the church, from the time of Dionyſius Exiguus, to that of the reformation of the calendar under pope Gregory; and which ſtill obtains in England, Sweden, and among the Greeks, where the Gregorian correction is not admitted; is, by means of the golden numbers duly diſtributed throughout the Julian calendar.

The vernal equinox, at the time of the Nicene council, happening on the 21ſt of March, has been, upon Dionyſius's authority, affixed to the ſame day of the Julian year ever ſince; ſo that in the Julian way of computing, no full moon is paſchal, but that immediately after the 21ſt of March. Therefore *eaſter* can never happen earlier than the 22d of March.— Now, by finding the full moons, next after the 21ſt of March, for the ſeveral golden numbers, or years of the lunar cycle, we ſhall have a table for finding of *eaſter* for ever.

Such table being of conſiderable uſe in the Julian computation, we ſhall here ſubjoin.

Gold. Numb.	Full Moons next after Ver. Equin.		Gold. Numb.	Full Moon next after Ver. Equin.	
I	5 April,	D	XI	15 April,	G
II	25 March,	G	XII	4 April,	C
III	13 April,	E	XIII	24 March,	F
IV	2 April,	A	XIV	12 April,	D
V	22 March,	D	XV	1 April,	G
VI	10 April,	B	XVI	21 March,	C
VII	30 March,	E	XVII	9 April,	A
VIII	18 April,	C	XVIII	29 March,	D
IX	7 April,	F	XIX	17 April,	B
X	27 March,	B			

Now to find *eaſter*, for any given year, find the dominical letter, and the golden number of the given year, as directed under the articles DOMINICAL *Letter*, and GOLDEN *Number*.

Then, in the table, ſeeking the dominical letter, with th day of the paſchal full moon, and the Sunday letter annexed thereto; compare this letter with the dominical letter of th given year; that it may appear how many days are to b added to the day of the paſchal full moon, to give *eaſte* day.

E. gr. In the year 1715. the dominical letter is B, and th golded number VI; conſequently, the paſchal full moon i fixed, by the table, to the 10th of April; whoſe Sunday letter being B, the dominical letter given, itſelf is a Sunday and, therefore, *eaſter* will fall on the eighth day following *viz.* on the 17th of April.

But in this computation, the vernal equinox is ſuppoſed a fixed to the 21ſt of March; and the cycle of nineteen years or golden numbers, is ſuppoſed to point out the places of th new and full moons exactly: both which ſuppoſitions are erroneous. Whence it follows, that the Julian *eaſter* neve happens at its due time, unleſs by accident.

For an inſtance of the error, it may be obſerved, that in th year 1715. the vernal equinox falls on the 10th of March 11 days before the rule ſuppoſes it: and the paſchal full moo on the 7th of April, three days earlier than was ſuppoſed *Eaſter*-day, therefore, which is held on the 17th of Apri ſhould be held on the 10th.

This error was grown to ſuch a pitch, in courſe of time, th pope Gregory XIII. thought it neceſſary to correct it. An accordingly, in the year 1582. by the advice of Aloyſi Lilius, he ordered 10 days to be thrown out of October; to bring back the vernal equinox to its old place, *viz.* th 21ſt of March. And hence the Gregorian calendar, Gregorian year, &c.

In the new, or Gregorian computation, in lieu of golde numbers, the time of *eaſter* is found by means of epac contrived for that purpoſe. See EPACT.

The following table renders the finding of *eaſter* in the Gregorian year from the year 1700. to the year 1900. ve eaſy.

Epacts.	Paſchal full Moons.		Epacts.	Paſchal full Moons.	
X	13 April,	E	IX	4 April,	C
XI	2 April,	A	XX	24 March,	F
XXII	22 March,	D	I	12 April,	D
III	10 April,	B	XII	1 April,	G
XIV	30 March,	E	XXIII	21 March,	C
XXV	18 April,	C	IV	9 April,	A
VI	7 April,	F	XV	29 March,	D
XVII	27 March,	B	XXVI	17 April,	B
XXVIII	15 April,	G	VII	6 April,	E
			XVIII	26 March,	A

Now, to find *eaſter* for any given Gregorian year. Seek dominical letter, and the Gregorian epact; as ſhewn un EPACT, &c. Find the epact in the table, and note the chal full moon, with the weekly letter, correſponding to ſame. The reſt is performed, as already taught for the lian *eaſter*.

E.

E. gr. The dominical letter of the year 1715. is F, and the epact XXV. conſequently, the paſchal moon falls on the 18th of April, C: and therefore *Eaſter*-day is the 21ſt of April.

Though the Gregorian calendar be, doubtleſs, preferable to the Julian; yet it alſo has its defects. It cannot, for inſtance, keep the equinox fixed on the 21ſt of March; but it will ſometimes fall on the 19th, and ſometimes on the 23d.

Add, that the full moon happening on the 20th of March, might ſometimes be paſchal; yet is it not allowed as ſuch, in the Gregorian computation: as, on the contrary, the full moon of the 22d of March may be allowed for paſchal, which yet it is not. Scaliger and Calviſius have alſo proved other inaccuracies on this calendar. See Calendar.

EASTER *Term.*	See the articles	Term.
EASTERN *Amplitude.*		Amplitude.
Eastern *Church.*		Church.
Eastern *Horizon.*		Horizon.
Eastern *Ocean.*		Ocean.

EAVES, the margin, or edge, of the roof of a houſe; being the loweſt tiles, ſlate, or the like, which hang over the walls, to throw off the waters to a diſtance from the wall.

Eaves-Leath, a thick, feather-edged board, generally nailed round the *eaves* of a houſe, for the lowermoſt tiles, ſlate, or ſhingles, to reſt upon.

EBIONITES, antient heretics, who roſe in the church, in the very firſt age thereof; denying the divinity of Jeſus Chriſt.

Origen takes them to have been ſo called from the Hebrew word *ebion*, which in that language ſignifies *poor.*; becauſe, ſays he, they were poor in ſenſe, and wanted underſtanding. Euſebius, with a view to the ſame etymology, is of opinion, they were thus called, as having poor thoughts of Jeſus Chriſt; taking him for no more than a mere man.

It is more probable, the Jews gave this appellation to the Chriſtians in general, out of contempt; becauſe in the firſt times there were few, but poor people, that embraced the Chriſtian religion. This opinion Origen himſelf ſeems to give into, in his book againſt Celſus; where he ſays, that they called *Ebionites*, ſuch among the Jews as believed that Jeſus was truly the expected Meſſiah.

It might even be urged, with ſome probability, that the primitive Chriſtians aſſumed the name of themſelves, in conformity to their profeſſion. It is certain, Epiphanius obſerves, they valued themſelves on being poor, in imitation of the Apoſtles.

The ſame Epiphanius, however, is of opinion, that there had been a man of the name *Ebion*, the chief and founder of the ſect of *Ebionites*, contemporary with the Nazarenes and Cerinthians. He gives a long and exact account of the origin of the *Ebionites*; making them to have ariſen after the deſtruction of Jeruſalem, when the firſt Chriſtians, called *Nazarenes*, went out of the ſame to live at Pella.

The *Ebionites*, then, are little elſe than a branch of Nazarites; only that they altered and corrupted, in many things, the purity of the faith held among thoſe firſt adherents to Chriſtianity. For this reaſon, Origen diſtinguiſhes two kinds of *Ebionites*, in his anſwer to Celſus: the one believed, that Jeſus Chriſt was born of a virgin; and the others, that he was born after the manner of other men.

The firſt were orthodox in every thing, except that to the Chriſtian doctrine they joined the ceremonies of the Jewiſh law, with the Jews, Samaritans, and Nazarites: they differed from the Nazarites, however, in ſeveral things, chiefly as to what regards the authority of the Sacred Writings: for the Nazarites received all for Scripture, contained in the Jewiſh canon; whereas the *Ebionites* rejected all the prophets, and held the very names of David, Solomon, Iſaiah, Jeremiah, and Ezekiel, in abhorrence.

They received nothing of the Old Teſtament but the Pentateuch; which ſhould intimate them to have deſcended rather from the Samaritans, than from the Jews. They agreed with the Nazarites in uſing the Hebrew goſpel of St. Matthew, otherwiſe called the goſpel of the twelve apoſtles: but they had corrupted their copy in abundance of places; and, particularly, had left out the genealogy of our Saviour, which was preſerved intire in that of the Nazarites, and even in thoſe uſed by the Cerinthians.

Theſe laſt, whoſe ſentiments, as to the birth of our Saviour, were the ſame with thoſe of the *Ebionites*, built their error on this very genealogy.

Beſide the Hebrew goſpel of St. Matthew, the *Ebionites* had adopted ſeveral other books, under the names of St. James, John, and the other apoſtles: they alſo made uſe of the *travels of St.* Peter, which are ſuppoſed to have been written by S. Clement; but had altered them ſo, that there was ſcarce any thing of truth left in them. They even made that ſaint tell a world of falſhoods, the better to authorize their own practices. See S. Epiphanius, who is very diffuſive on the antient hereſy of the *Ebionites*, Hær. 30.

BONY, Ebenum, in natural hiſtory, a kind of wood, brought from the Indies, exceedingly hard and heavy, ſuſceptible of a very fine poliſh, and on that account uſed in moſaic and inlaid works, toys, &c.

There are divers kinds of *ebony*: the moſt uſual among us are black, red, and green; all of them the product of the iſland of Madagaſcar, where the natives call them, indifferently, *hazon mainthi*, q. d. *black wood.* The iſland of St. Maurice, belonging to the Dutch, likewiſe furniſhes part of the *ebonies* uſed in Europe.

Authors, and travellers, give very different accounts of the tree that yields the black *ebony*: by ſome of their deſcriptions it ſhould be, a ſort of palm-tree; by others, a cytiſus, &c. The moſt authentic of them is that of M. Flacourt, who reſided many years in Madagaſcar, as governor thereof: he aſſures us, that it grows very high, and big; its bark being black, and its leaves reſembling thoſe of our myrtle, of a deep duſky, green colour.

Tavernier aſſures us, that the iſlanders always take care to bury their trees, when cut down, to make them the blacker. F. Plumier mentions another black *ebony*-tree, diſcovered by him at St. Domingo, which he calls *ſpartium portulacæ foliis aculeatum ebeni materiæ*: Candia alſo bears a little ſhrub, known to the botaniſts under the name of *ebenus Cretica.*

Pliny and Dioſcorides ſay, the beſt *ebony* comes from Ethiopia, and the worſt from India; but Theophraſtus prefers that of India. Black *ebony* is much preferred to that of other colours: the beſt is a jet black, free of veins and rind, very maſſive, aſtringent, and of an acrid pungent taſte.

Its rind, infuſed in water, is ſaid to purge pituita, and cure venereal diſorders; whence Matthiolus took guaiacum for a ſort of *ebony*. It yields an agreeable perfume, when laid on burning coals: when green, it readily takes fire, from the abundance of its fat. If rubbed againſt a ſtone, it becomes brown. The Indians make ſtatues of their gods, and ſceptres for their princes, of this wood. It was firſt brought to Rome by Pompey, after his ſubduing Mithridates. It is now much leſs uſed among us, than antiently; ſince the diſcovery of ſo many ways of giving other hard woods a black colour.

As to green *ebony*, beſides Madagaſcar, and St. Maurice, it likewiſe grows in the Antilles, and eſpecially in the iſle of Tobago. The tree that yields it is very buſhy; its leaves are ſmooth, and of a fine green colour: beneath its bark is a white blea, about two inches thick; all beneath which, to the very heart, is a deep green, approaching towards a black; though ſometimes ſtreaked with yellow veins. Its uſe is not confined to moſaic work: it is likewiſe good in dying, as yielding a fine green tincture.

As to red *ebony*, called alſo *grenadilla*, we know little of it more than the name.

The cabinet-makers, inlayers, &c. make pear-tree, and other woods, paſs for *ebony*, by eboniſing, or giving them the black colour thereof: this ſome do by a few waſhes of a hot decoction of galls, and, when dry, adding writing-ink thereon, and poliſhing it with a ſtiff bruſh, and a little hot wax; and others heat, or burn, their wood black. See Dying.

EBRBUHARITES, a ſect, or order, of religious among the Mahometans; thus called from their founder *Ebrbuhard*, a diſciple of Nacſchibendi.

The *Ebrbuharites*, notwithſtanding the extraordinary ſanctity they make profeſſion of, with an abſolute dereliction of all worldly things, are regarded, by the muſſemans, as no better than heretics; by reaſon they do not eſteem themſelves obliged to go in pilgrimage to Mecca. To excuſe themſelves herefrom, they urge, that the pureneſs of their ſouls, their ſublime contemplations, ecſtaſies, &c. ſhew them Mecca, and Mahomet's tomb, without ſtirring out of their cells.

EBULLITION, in phyſics, the act of emitting bubbles, by a vehement agitation of the parts of a fluid, produced by fire, or otherwiſe.

Philoſophers are diſagreed about the cauſe and manner of *ebullition*: ſome account for it from an attenuation of the particles of the fluid, at the bottom of the veſſel; which, by being attenuated, become lighter, and heave upwards againſt the ſuperincumbent load: others, from the particles of fire mixing with, and dilating, the particles of the fluid, and ſo rendering them ſpecifically lighter: and others, not from any attenuation, nor even rarefaction, of the particles of the fluid by the action of heat; but from a rarefaction of the air pent up and intermixed with the fluid; which, coming to expand, tend upwards againſt the preſſure of the leſs heated, leſs rarefied, part of the fluid.

A more preciſe account of the proceſs, ſee under the aforeſaid article, Boiling.

Ebullition, in chemiſtry, &c. is uſed for a violent inteſtine motion, or colluctation, of parts, occaſioned by the mixture of ſalts of different natures.

Dr. Harris will have it properly, and immediately, to ſignify that particular ſtruggle, or effervеſcence, ariſing upon the mingling together of an acid and alcaliſate liquor.

Mr. Boyle has an experiment to ſhew, that a conſiderable *ebullition* may be produced, by ſuch a mixture, without the bodies acquiring any heat; nay, that a degree of cold may be produced with it, greater than was in either of the bodies ſingly; though accompanied with a great ſtruggle, tumult, noiſe, and froth. For, having ſhook one part of oil of vitriol, into 12 parts of common water, the mixture was at firſt ſenſibly warm; then the ball of a thermometer was placed in it, till the included ſpirit had gained the temperament of the mixture; but then a convenient quantity of volatile ſalt of ſal armoniac being gradually put in to ſatiate the acid ſpirits of the mixture, the ſpirit in the thermometer deſcended above an inch.

ECARTELE', in heraldry. See QUARTERLY.

ECCANTHIS, or ENCANTHIS, in medicine. See ENCANTHIS.

ECCE-HOMO *, among painters, a name given to a picture, wherein our Saviour is repreſented in a purple robe, with a crown on his head, and a reed in his hand; ſuch as he was preſented before Pilate by the Jews.

* The phraſe is Latin, borrowed from the words of the Jews themſelves; *q. d.* this is the man.—Such a perſon has a fine *ecce homo*.

ECCENTRIC.	See the articles	EXCENTRIC.
ECCENTRICITY.		EXCENTRICITY.

ECCHYMOSIS, ΕΚΧΥΜΩΣΙΣ, the effuſion of blood from a rupture in ſome of the ſmall veins near the ſkin; cauſing a lividity, or blueneſs thereof.

This is alſo called *ecchymoma*, Εκχυμωμα, and ſtands diſtinguiſhed from the *enchymoſis*, where there is no extravaſation.

The *ecchymoſis* is either *ſimple*, or *with abſceſs*. The former is a mere diſeaſe of the ſkin, wherein the blood extravaſated by ſome blow, or contuſion, upon its arrival between the fleſhy or muſcular parts and the cutis, ſtops there, and turns black, or livid, without any appearance of a wound.—In the latter, the extravaſated blood ſuppurates, and breeds an impoſthume.

ECCLESIA, a Latin, or rather Greek term, ſignifying *church*. See CHURCH.

In our antient law-books, Fitzherbert obſerves that ECCLESIA, ΕΚΚΛΗΣΙΑ, properly ſignifies a *parſonage*. Whence, if a preſentation were made to a chapel, as to a church, by the name of *eccleſia*, it changed the name thereof, and it preſently commenced a church.

When the queſtion was, Whether it were *eccleſia, aut capella pertinens ad eccleſiam?* the iſſue was, Whether it had *baptiſterium & ſepulturam?* For if it had the adminiſtration of the ſacraments, and ſepulture, it was in law judged a church. See CHAPEL.

Reſtitutione extracti ab ECCLESIA.	See	RESTITUTION.
Recto de advocatione ECCLESIÆ.		RECTO.
Warda ECCLESIÆ.		WARDA.

ECCLESIANS, ECCLESIANI, in church-hiſtory.—Upon any falling out, or miſunderſtanding, between the emperors and the churchmen, the adherents to the emperor called ſuch as ſtuck to the intereſts of the church, and churchmen, *eccleſiani*; a term of reproach, anſwering to our high-churchmen.

ECCLESIASTES, one of the books of the Old Teſtament; thus called, by a Greek word ſignifying *preacher*; in regard the author in it declames, or *preaches*, againſt the vices and vanities of the world.

This is Mariana's judgment: Grotius thinks otherwiſe; takeing the book to derive its appellation from its being a collection of fine ſentences, and reflections on the vanity of the things of our earth, &c. from the word קהל, which ſignifies to *amaſs*, or *collect*, συναθροιζειν. Some Hebrew doctors, ſuppoſing the ſame etymon, will have it to have been thus called on account of its *amaſſing* a great deal of wiſdom: others, becauſe the author's aim is to *aſſemble*, and *call* together, all ſuch as are willing to conſult their ſafety, and avoid the dangers of the world; which is the opinion of Gejerus: laſtly, others, with Calovius, deduce it from his *aſſembling* them about him, as a preacher aſſembles his auditory.

There are different ſentiments as to the author of this book: the moſt common is, that it is Solomon's, who is ſuppoſed to have wrote it towards the cloſe of his life, to give tokens of his penitence to poſterity.

Grotius, indeed, takes the work to be poſterior to Solomon; and to have been wrote after his death by I know not what authors, ſix in number; who, to give their book the greater authority, put Solomon's name to it, and repreſented him as repentant. What he founds ſo many poſitive acts on, is, that we meet with words in this book, which are no-where elſe ſeen, but in Daniel, Eſdras, and the Chaldee paraphraſes: but, it is certain, all, both Hebrews, Greeks, and Latins, have always ſpoke of it as a work of Solomon. Indeed, there are authors, who have attributed all the books of Solomon to Iſaiah; but theſe are only to be underſtood as if that prophet had collected them. If it be true, that there are Chaldee words in the *Eccleſiaſtes*, it is eaſier to ſuppoſe Solomon underſtood that language, than to deny him the author of the book. If the book is not Solomon's, becauſe Grotius has found four or five words, which are only to be explained by the Chaldee and Arabic; we are not ſure of the author of any book in the Bible. Moſes muſt not be the author of Geneſis: for even in the very firſt verſe of that book we meet with two or three words, that are only deducible from Arabic roots: and how many authors attribute to Solomon, or to Moſes, the book of Job? which is that, of all the books of the Old Teſtament, where there is the moſt Arabic, and Chaldee, or Syriac.

In fine, Calovius aſſures us, that the true reaſon why Grotius would not allow Solomon the author of the book of *Eccleſiaſtes*, is, that it ſpeaks too clearly, and preciſely, for his time, of the univerſal judgment, eternal life, and the pains of hell: but theſe are truths eſtabliſhed before Solomon, in the Pſalms, the Pentateuch, and Job.

There appears no reaſon, therefore, for denying this book to Solomon; but ſeveral for aſcribing it to him. As, 1°, The title of the book; which aſſerts its author to be the ſon of David, and king of Jeruſalem. 2°, Several paſſages in the book, which agree to no-body but that prince: as c. i. v. 12. c. vii. v. 25. c. xii. v. 9, &c. and, 3°, The conſtant tradition of the antient Jews and Chriſtians.

The Talmudiſts, and other Rabbins, however, note, that the book of *Eccleſiaſtes* was ſome time ere it was put in the canon. See the *Gemara* on the Pirke Abboth, f. 1. col. 1. Maſſech Schabbath, c. 2. fol. 30. col. 2. Aben Ezra on the *Eccleſiaſtes*, vii. 4. Maimonides, Moreh Nebochim, l. III. c. 28. and Mercerus, Calovius, and Gejerus, on this book.

ECCLESIASTIC, or ECCLESIASTICAL, ſomething belonging to, or ſet apart for, the chusch; in contradiſtinction to *civil*, or *ſecular*, which regard the world. See CIVIL, &c.

There are *eccleſiaſtical* things and perſons: *eccleſiaſtical law, juriſdiction, hiſtory, ceremonies, diſcipline, preferments,* &c.

Eccleſiaſtical perſons are either *regular*, or *ſecular*. See REGULAR, and SECULAR.—In the empire there are three *eccleſiaſtical* electors; *viz.* the archbiſhops of Mentz, Treves, and Cologne.—In France, they have *eccleſiaſtical peers*, &c. See PEER.

ECCLESIASTIC *chambers*. See CHAMBER.

ECCLESIASTIC *community*.	See the articles	COMMUNITY.
ECCLESIASTIC *corporation*.		CORPORATION.

ECCLESIASTIC *faith*.	See the articles	FAITH.
ECCLESIASTIC *patronage*.		PATRONAGE.
ECCLESIASTIC *tradition*.		TRADITION.

ECCLESIASTICAL *courts* are, the convocation, court of delegates, of arches, of audience, prerogative court, court o peculiars, biſhops court, and archdeacons court. See eac under its proper article; CONVOCATION, AUDIENCE ARCHES, &c.

Eccleſiaſtical cenſures and puniſhments are, excommunicatio penance, ſuſpenſion, deprivation, and depoſition, or degradation. See EXCOMMUNICATION, &c.

ECCLESIASTICO *primo beneficio habendo*. See the artic PRIMO.

ECCLESIASTICUS, an apocryphal book, compoſed by J ſus the ſon of Sirach, and admitted, by the Romiſh churc into the canon of the Old Teſtament.

It is frequently cited by the abbreviation, *Eccli.* to diſtingui it from the *Eccleſiaſtes*, which is cited by *Eccle.*

Iſidore, l. VI. *Etym.* c. 2. and among the moderns Grotiu and Druſius, deny the author of the *Eccleſiaſticus* to be Je the ſon of Sirach, grandſon of the high-prieſt Jeſus, wh returned from Babylon with Zorobabel. Genebrard aſſert that Jeſus the ſon of Sirach was of the race of Jeſus ſon Joſedec; but this does not appear.

St. Jerome aſſures us, in his preface to the books of Solomo that he had ſeen this book in Hebrew; and that the Hebre intituled it *parables*: from which the jeſuit Mariana conclude that the high-prieſt Jeſus wrote this book in Hebrew; as it a pears likewiſe from the prologue to the book itſelf; and th his grandſon tranſlated it into Greek, which likewiſe appea from the prologue: that he made this tranſlation in Egyp where the author lived in his 38th year; that it was do under the reign of Ptolemy Evergetes, ſucceſſor of Ptole Philadelphus, who began to reign in the year of Rome 5 240 years before Chriſt; that the grandfather had intituled *parables*, which the grandſon changed into *Eccleſiaſticus*: laſt that the book, however, is attributed to the tranſlator by r ſon he changed, and added many things to the original.

Fa. Calmet takes the book of *Eccleſiaſticus* to have been co poſed under the pontificate of Onias III. ſon of Simon, a the reign of Antiochus Epiphanes, king of Syria. He ad that neither the author of the Latin tranſlation, nor the ti when it was made, is known; but being quoted regularly all the antient fathers, there is no doubt of its being very tient. He takes it to have been done by the tranſlator of book of Wiſdom.

ECCOPE *, ΕΚΚΟΠΗ, in chirurgery, the ſame with exciſi or amputation.

* The word is formed from the Greek εκκοπτειν, *exſcindere*, cut off.

Eccope is likewiſe uſed for a kind of fracture, or ſolution of continuity, of the ſkull, by a ſimple inciſion.

ECCOPROTICS *, ΕΚΚΟΠΡΩΤΙΚΑ, in medicine, laxative, or looſening remedies, which purge gently, by ſoftening the humours and excrements, and fitting them for expulſion.

* The word is compoſed of the Greek particle εκ, and κοπρος, excrement.

ECHARPE. See Battery *en Echarpe*.

ECHEVIN. See the article Eschevin.

ECHINATE *ſeeds*, are ſuch as are prickly and rough like the coat of a cheſtnut; or, as ſome ſay, like the ſkin of a hedge-hog.

ECHINUS, in architecture, a member, or ornament, near the bottom of the Ionic, Corinthian, and compoſite capitals; which, from its circular form or contour, is called by the French, *quart de rond*, and by the Engliſh, *quarter round*, or *boultin*; and from its being uſually carved, or cut with figures of eggs, *&c.* is called alſo by the Latins, *ovum*, by the Italians, *ovolo*, the French, *oeuf*, and the Engliſh, *eggs* and *anchors.*—See *Tab. Archit. fig.* 28. *lit.* p. Laſtly, the eggs being encompaſſed with a cover, and thus bearing ſome reſemblance to a cheſtnut cut open; the Greeks have called it εχινος, *echinus*, a word which denotes the prickly cover of a cheſtnut.

Echinus, is alſo uſed by ſome botaniſts for the prickly head, or top of any plant; thus called from its likeneſs to an hedge-hog, or the cover of a cheſtnut.

Echinus, the hedge-hog, and Echinus marinus, the ſea-urchin. See in the Supplement, articles Echinus, and Echinoderma.

ECHIQUETE, in heraldry. See Checky.

ECHO *, or Eccho, a ſound reflected, or reverberated, from a ſolid, concave body, and ſo repeated to the ear. See Sound, and Reflexion.

* The word is formed of the Greek ηχος, ſound, of the verb ηχεω, *ſono*, I ſound.

The Peripatetics, who took ſound for I know not what ſpecies, or image of the ſonorous body, impreſſed on the adjoining air, account for *echo* from a reſilition of that ſpecies, occaſioned by its meeting ſome obſtacle in the way. But the moderns, who know ſound to conſiſt in a certain tremor, or vibration in the ſonorous body communicated to the contiguous air, and by that means to the ear, give a more conſiſtent account of *echo*.

For a tremulous body, ſtriking on another ſolid body, it is evident, may be repelled without deſtroying or diminiſhing its tremor; and conſequently a ſound may be redoubled by the reſilition of the tremulous body, or air.

But a ſimple reflexion of the ſonorous air, is not enough to ſolve the *echo*: for then every plain ſurface of a ſolid hard body, as being fit to reflect a voice or ſound, would redouble it; which we find does not hold.

To produce an *echo*, therefore, it ſhould ſeem that a kind of concameration or vaulting were neceſſary, in order to collect, and by collecting, to heighten and increaſe, and afterwards reflect the ſound; as we find is the caſe in reflecting the rays of light, where a concave mirror is uſed.

In effect, as often as a ſound ſtrikes perpendicularly on a wall, behind which is any thing of a vault, or arch, or even, another parallel wall; ſo oft will it be reverberated in the ſame line, or other adjacent ones.

For an *echo* to be heard, therefore, it is neceſſary the ear be in the line of reflexion: for the perſon who made the ſound to hear its *echo*, it is neceſſary he be perpendicular to the place which reflects it: and for a manifold or tautological *echo*, it is neceſſary there be a number of walls and vaults, or cavities, either placed behind each other, or fronting each other.

A ſingle arch, or concavity, *&c.* can ſcarce ever ſtop and reflect all the ſound; but if there be a convenient diſpoſition behind it, part of the ſound, propagated thither, being collected and reflected, as before, will preſent another *echo*: or if there be another concavity, oppoſed at a due diſtance to the former, the ſound reflected from the one upon the other will be toſſed back again by this latter, *&c.*

Many of the phænomena of *echo's* are well conſidered by the biſhop of Leighs, who remarks, that any ſound, falling either directly or obliquely, on any denſe body of a ſmooth, whether plain or arched, ſuperficies, is reflected, or, in other words, it *echo's* more or leſs. The ſurface, ſays he, muſt be ſmooth, otherwiſe the air, by reverberation, will be put out of its regular motion, and the ſound thereby broke and extinguiſhed. He adds, that it *echo's* more or leſs, to ſhew, that when all things are, as before deſcribed, there is ſtill an *echoing*, though it be not always heard; either becauſe the direct ſound is too weak to beat quite back again to him that made it, or that it does return to him, but ſo weak, that it cannot be diſcerned; or that he ſtands in a wrong place to receive the reflected ſound, which paſſes over his head, under his feet, or on one ſide of him, and which therefore may be heard by a man ſtanding in the place where the reflected ſound does come, provided no interpoſed body intercepts it; but not by him that originally made it.

Echo's may be produced with different circumſtances; for,

1. A *plane* obſtacle reflects the ſound back in its due tone and loudneſs; allowance being made for the proportionable decreaſe of the ſound, according to its diſtance.

2. A *convex* obſtacle reflects the ſound ſomewhat ſmaller, and ſomewhat quicker, though weaker, than it otherwiſe would be.

3. A *concave* obſtacle *echo's* back the ſound, bigger, ſlower, and alſo inverted; but never according to the order of words.

Nor does it ſeem poſſible to contrive any ſingle *echo*, that ſhall invert the ſound, and repeat backwards: becauſe, in ſuch a caſe, the word laſt ſpoken, that is, which laſt occurs to the obſtacle, muſt be repelled firſt, which cannot be. For where in the mean time ſhould the firſt words hang, and be concealed; or how, after ſuch a pauſe, ſhould they be revived, and animated again into motion?

From the determinate concavity, or archedneſs of the reflecting bodies, it may happen that ſome of them ſhall only *echo* back one determinate note, and that only from one place.

4. The *echoing* body being removed farther off, it reflects more of the ſound than when nearer; which is the reaſon why ſome *echo's* repeat but one ſyllable, ſome one word, and ſome many.

5. *Echoing* bodies may be ſo contrived, and placed, as that reflecting the ſound from one to the other, either directly and mutually, or obliquely and by ſucceſſion, out of one ſound, ſhall a *multiple echo*, or many *echo's*, ariſe.

Add, that a *multiple echo* may be made, by ſo placing the *echoing* bodies, at unequal diſtances, as that they may reflect all one way, and not one on the other; by which means, a manifold ſucceſſive ſound will be heard; one clap of the hands like many; one ha like a laughter; one ſingle word like many of the ſame tone and accent; and ſo one muſical inſtrument like many of the ſame kinds, imitating each other.

Laſtly, *echoing* bodies may be ſo ordered, that from any one ſound given, they ſhall produce many *echo's*, different both as to tone and intenſion. By which means a muſical room may be ſo contrived, that not only one inſtrument playing therein, ſhall ſeem many of the ſame ſort and ſize, but even a conſort of different ones; this may be contrived by placing certain *echoing* bodies ſo, as that any note played, ſhall be returned by them in 3ds, 5ths, and 8ths.

Echo, is alſo uſed for the place where the repetition of the ſound is produced, or heard.

Echo's are diſtinguiſhed into divers kinds, *viz.*

1. *Single*, which return the voice but once; whereof ſome are *tonical*, which only return a voice when modulated into ſome particular muſical tone. Others, *polyſyllabical*, which return many ſyllables, words, and ſentences.

Of this laſt kind, is that fine *echo* in Woodſtock-park, which Dr. Plott aſſures us, in the day-time, will return very diſtinctly ſeventeen ſyllables, and in the night twenty. See *Nat. Hiſt. Oxford.* c. 1. p. 7.

2. *Multiple*, or *tautological*, which return ſyllables and words the ſame oftentimes repeated.

In *echo's*, the place where the ſpeaker ſtands, is called the *centrum phonicum*; and the object, or place, that returns the voice, the *centrum phonocampticum*.

At the ſepulcre of Metella, wife of Craſſus, there was an *echo*, which repeated what a man ſaid, five times. Authors mention a tower at Cyzicus, where the *echo* repeated ſeven times. One of the fineſt *echo's* we read of is that mentioned by Barthius, in his notes on Statius's *Thebais*, l. VI. v. 30. which repeated the words a man uttered ſeventeen times: this was on the banks of the Naha, between Coblents and Bingen. Barthius aſſures us, he had proved what he writes; and had counted ſeventeen repetitions. And whereas, in common *echo's*, the repetition is not heard till ſome time after hearing the word ſpoke, or the notes ſung; in this, the perſon who ſpeaks, or ſings, is ſcarce heard at all; but the repetition very clearly, and always in ſurpriſing varieties; the *echo* ſeeming ſometimes to approach nearer, and ſometimes to be further off. Sometimes the voice is heard very diſtinctly, and ſometimes ſcarce at all. One perſon hears only one voice, and another ſeveral: one hears the *echo* on the right, and the other on the left, *&c.*

Addiſon, and other travellers into Italy, mention an *echo* in that country, ſtill more extraordinary, which will return the ſound of a piſtol 56 times, even tho' the air be very foggy. See Addiſ. *Trav.* edit. 1718. p. 32. Miſſon. *Voyag. d' Ital.* T. 2. p. 196. edit. 1691.

Echo, in architecture, is applied to certain vaults, and arches, moſt commonly of elliptical, or parabolical figures; uſed to redouble ſounds, and produce *artificial echo's*.

The method of making an *artificial echo*, is taught by the jeſuit Blancani, in his *Echometria*, at the end of his book on *the Sphere*.

Vitruvius tells us, that in divers parts of Greece, and Italy, there were brazen veſſels, artfully ranged under the ſeats of the theatres, to render the ſound of the actors voices more clear, and make a kind of *echo*; by which means, of the prodigious multitude of perſons preſent at thoſe ſpectacles, every body might hear with eaſe and pleaſure.

ECHO, in poetry, denotes a kind of compoſition, wherein the laſt words, or ſyllables, of each verſe, contain ſome meaning, which, being repeated apart, anſwers to ſome queſtion, or other matter, contained in the verſe.

Such is that famous *echo* of Eraſmus; *Decem annos conſumpſi in legendo Cicerone—one*, i. e. ονε, *aſine*.

The firſt *echo*, in verſe, according to Paſquier, is that in the Sylvæ of Johannes Secundus: but Paſquier is miſtaken; for the antient Greek and Latin poets have wrote *echo's*. This, Martial intimates plainly enough; when, laughing at ſuch ſorts of baubles, he ſays, there is nothing like them among his poems. *Nuſquam Græcula quod recantat echo*: by which, on the one ſide, he ſhews there were Latin poets, in his time, who made *echo's*; and, on the other, that the invention came from the Greeks.

Ariſtophanes, in his comedy intituled Θεσμοφοριαζυσαι, introduces Euripides in the perſon of *echo*: and Callimachus, in the epigram, Εχθαιρω το ποιημα το κυκλικον, ſeems to have intended a kind of *echo*.

ECHOMETER*, in muſic, a kind of ſcale, or rule, with ſeveral lines divided thereon, ſerving to meaſure the duration, or length, of ſounds, and to find their intervals and ratio's.

* The word is formed of the Greek ηχος, ſound; and μετρον, meaſure.

ECLECTIC*, **ECLECTICI**, a name given to ſome antient philoſophers, who, without attaching themſelves to any particular ſect, took what they judged good, and ſolid, from each.

* Hence their denomination; which, in the original Greek, ſignifies, that may be choſen, or that chooſes; of the verb εκλεγω, I chooſe.

Laertius notes, that they were alſo, for the ſame reaſon, denominated *analogetici*; but that they called themſelves *Philalethes*, i. e. lovers of truth.

The chief, or founder, of the *eclectici*, was one Potamon, of Alexandria, who lived under Auguſtus, and Tiberius; and who, weary of doubting of all things with the Sceptics and Pyrrhonians, formed the *eclectic* ſect; which Voſſius calls the *elective*.

ECLEGMA*, or **ECLIGMA**, ΕΚΛΕΙΓΜΑ, in medicine, a pectoral remedy, of the conſiſtence of a thick ſyrup; called, alſo, *lohoch*, *linctus*, and *lambative*.

* The word is Greek; formed of εκ, and λειχειν, to lick; by reaſon the patient is to take it by licking it off the end of a liquorice ſtick dipt therein: in order that, being taken thus by little and little, it may remain the longer in the paſſage, and moiſten the breaſt the better.

There are *eclegma's* of the ſyrups of poppy, others of lentils, others of ſquills, &c. Their intention is to heal or eaſe the lungs, in coughs, peripneumonies, &c. They are uſually compoſed of oils, incorporated with ſyrups.

ECLIPSE*, in aſtronomy, a privation of the light of one of the luminaries, by the interpoſition of ſome opake body, either between it and the eye, or between it and the ſun.

* The word is derived from the Greek εκλειψις; of εκλειπω, *deficio*, I fail.

The antients had frightful ideas of *eclipſes*; ſuppoſing them preſages of the moſt diſmal events. Plutarch aſſures us, that, at Rome, it was not allowed to talk publickly of any natural cauſes of *eclipſes*. They made a great noiſe with brazen inſtruments, and raiſed loud ſhouts, during *eclipſes* of the moon; as thinking, thereby, to eaſe her in her labour: whence Juvenal, ſpeaking of a talkative woman, ſays, *Una laboranti poterit ſuccurrere lunæ*. Others have attributed the *eclipſe* of the moon to the arts of magicians, who, by their inchantments, plucked her out of heaven, and made her ſkim over the graſs. The natives of Mexico keep faſt, during *eclipſes*; and, particularly, their women, who beat and abuſe themſelves; drawing blood from their arms, &c. They imagine the moon has been wounded by the ſun, in ſome quarrel between them.

The duration of an ECLIPSE is the time between the immerſion and emerſion.

Immerſion, or *incidence*, of an ECLIPSE, is the moment when part of the ſun, planet, or moon's diſk, firſt begins to be hid. See IMMERSION.

Emerſion, or *expurgation*, of an ECLIPSE, is the time when the *eclipſed* luminary begins to re-appear, or emerge out of the ſhadow.

To determine the duration of *eclipſes*, they uſually divide the diameter of the luminary *eclipſed* into 12 equal parts, called *digits*, or *digiti ecliptici*.

Eclipſes are divided, with reſpect to the luminary *eclipſed*, into *eclipſes of the ſun*, *of the moon*, and of *the ſatellites*; and, with reſpect to the circumſtances, into *total eclipſes*, *partial*, *annual*, &c. *eclipſes*.

ECLIPSE *of the moon* is a deficiency of light in the moon, occaſioned by a diametrical oppoſition of the earth between the ſun and moon.

The manner of this *eclipſe* is exhibited in Tab. *Aſtronomy*, *fig.* 34. where A repreſents the earth, and B, or C, the moon.

When all the light of the moon is intercepted, *i. e.* when her whole diſk is covered, the *eclipſe* is ſaid to be *total*; when only part, *partial*: when the *total eclipſe* laſts for ſome time, it is ſaid to be *totalis cum mora*, total with continuance; whe only inſtantaneous, *totalis ſine mora*, total without continuance.

Eclipſes of the moon only happen in the time of full moon by reaſon it is only then the earth is between the ſun an moon: nor do they happen every full moon, by reaſon the obliquity of the moon's way with reſpect to the ſun's but only in thoſe full moons which happen either in the nodes or very near them, where the aggregate of the apparent ſemi diameters of the moon and the earth's ſhadow is greater tha the latitude of the moon, or the diſtance between their centres.

The moſt conſiderable circumſtances in the eclipſes *of the mo* are, 1. That as the ſum of the ſemidiameters of the moo and earth's ſhadow is greater than the aggregate of the ſemi diameters of the ſun and moon (that, when leaſt, being $5\frac{1}{3}$ and this, when greateſt, ſcarce $3\frac{1}{5}$); it is evident, *luna eclipſes* may happen in a greater latitude of the moon, and a greater diſtance from the nodes, and, conſequently, a more often obſerved, in any one part of the earth, than *ſola* ones; though, with reſpect to the whole earth, the latter a as frequent as the former.

2. *Total eclipſes*, and thoſe of the longeſt duration, happen i the very nodes of the ecliptic; by reaſon the ſection of th earth's ſhadow, then falling on the moon, is conſiderably great than her diſk. There may likewiſe be *total eclipſes* within little diſtance of the nodes; but the further, the leſs their duration; further off ſtill, there are only partial ones; and, length, none at all: as the latitude and the ſemidiameter the moon, together, are either leſs, equal, or greater than th ſemidiameter of the ſhadow.

3. All *lunar eclipſes* are univerſal, *i. e.* are viſible in all par of the globe which have the moon above their horizon; a are every-where of the ſame magnitude, and begin and en together.

4. In all *lunar eclipſes*, the eaſtern ſide is what firſt immerge and alſo emerges: ſo that though, at firſt, the moon be mo weſterly than the earth's ſhadow; yet her proper motion bein ſwifter than the ſame, ſhe over-takes and out-goes it.

5. The moon, even in the middle of an *eclipſe*, has uſually faint appearance of light; which Gaſſendus, Ricciolus, Kepler, &c. attribute to the light of the earth's atmoſphere tran mitted thither.

Laſtly, She grows ſenſibly paler, and dimmer, before ever ſh enters within the earth's ſhadow; which is attributed to th earth's penumbra.

Aſtronomy of lunar ECLIPSES, *or the method of calculating the times, places, magnitudes, and other phænomena.*—Prelimina

1. To find the length of the earth's ſhadowy cone. Fi the ſun's diſtance from the earth for the given time; ſee Su and DISTANCE. Then, as the ſun's diameter is known ſemidiameters of the earth, the length of the cone will found from the rules given under SHADOW.

Suppoſe, *e. gr.* the ſun's greateſt diſtance from the ear 34996 ſemidiameters of the earth; and the ſun's ſemidiame to be to that of the earth as 153 to 1: then will the length the ſhadowy cone be found $230\frac{1}{4}$.

Hence, as the moon's leaſt diſtance from the earth is ſcar 64 ſemidiameters; the moon, when in oppoſition to the ſu in or near the nodes, will fall into the earth's ſhadow, thoug the ſun and moon be in their apogees: and much more, they be in or near their perigees; by reaſon the ſhadow is th longer, and the moon nearer the baſe of the cone.

2. To find the apparent ſemidiameter of the earth's ſhado in the place of the moon's paſſage, for any given time. Fi the ſun and moon's diſtance from the earth, and thence th horizontal parallaxes; add the parallaxes together, and fro the ſum ſubtract the apparent ſemidiameter of the ſun; the r mainder is the apparent ſemidiameter of the ſhadow.

Thus, ſuppoſe the moon's horizontal parallax $56' 48''$, t ſun's $6'$; the ſum is $56' 54''$: from which the ſun's appare ſemidiameter $16' 5''$ ſubtracted, leaves $40' 49''$ for the ſem diameter of the ſhadow.

Note, M. De la Hire omits the ſun's parallax, as of no co ſideration; but increaſes the apparent ſemidiameter of the ſh dow by a whole minute, for the ſhadow of the atmoſpher which would give the ſemidiameter of the ſhadow, in our i ſtance, $41' 13''$.

3. The moon's latitude, A L, at the time of her oppoſitio together with the angle at the node B, being given; to fi the arch between the centres A I, and the arch I L (*fig.* 35 Since in the ſpherical triangle A I L, rectangular at I, the ſi A L is given; as alſo the angle A L I, as being the comp ment of L A I, or B, to a right angle; the arch between t centres, A I, is found by ſpherical trigonometry: and fin the angle L A I is equal to B, each of them, with I A B, ma ing a right angle; and the moon's latitude A L is given; t arch L I will likewiſe be found by ſpherical trigonometry. S SPHERICAL *triangle*.

To determine the bounds of an ECLIPSE *of the moon.*—Si there is no *eclipſe* poſſible, but when the aggregate of the ſe diameters of the ſhadow and the moon is greater than t moon's latitude (for, without this, the moon will not come the ſhadow) add the apparent ſemidiameters of the moon in perigæo, and of the ſhadow, ſuppoſing the ſun in apogæo; by which you will have the ſide MO, *Fig.* 36. Then, in the ſpherical triangle MNO, having given the angle at the node, whoſe quantity is the moon's greateſt latitude in the conjunctions; the right angle E; and the leg MO; find the moon's diſtance from the node NO: which is the utmoſt bound, beyond which the *eclipſe* cannot reach. After the ſame manner, adding the apparent ſemidiameters of the moon in apogæo, and of the ſhadow of the ſun in perigæo, for the ſake of having the LH in the triangle NLH; the diſtance of the moon, from the aſcending node HN, will be found by ſpherical trigonometry; which is the bound within which the moon will neceſſarily be *eclipſed.*

Thus, *e. gr.* the ſemidiameter of the ſhadow, when the ſun is in apogæo, and the moon in perigæo, according to Kepler, is 49′ 40″. And the apparent ſemidiameter of the moon in perigæo 16′ 22″. Conſequently MO is 66′, or 1° 6′; and therefore there will be no *eclipſe* at all, if the moon's latitude be greater than 1° 6′. Now, as the ſame angle N is ſuppoſed by Kepler to be 5° 18′,

Log. Sin. N	89655337
Sin. MO	82832433
Whole Sine	100000000

Log. of Sine ON 93177096. The number correſponding to which in the tables is 11° 59′ 50″. If, therefore, the moon's diſtance from the aſcending node be greater than 12°; no *eclipſe* can happen. And, in like manner, the ſemidiameter of the ſhadow in the ſun's perigee, and the moon's apogee, is 43′ 50″, and the moon's ſemidiameter in her apogee 15′. Conſequently LH is 58′ 50″. And therefore there will be an *eclipſe*, if the moon's latitude do not exceed 58′ 50″. But here, as before, the argument of the latitude is found 1° 40′.

To determine the quantity of an eclipſe, *or the number of digits* eclipſed.—Add the moon's ſemidiameter IC (*Fig.* 35.) to the ſemidiameter of the ſhadow AM; then will AM+IK=AI+IM+IK=AI+MK. From this ſum, therefore, ſubtract the arch between the centres AI, the remainder gives the ſcruples or parts of the diameter *eclipſed* MK. Say, therefore, as the moon's diameter KH is to the ſcruples or parts thereof *eclipſed*, MK; ſo is 12 to the digits *eclipſed*.

Thus, ſuppoſing KH, 30′ 44″, and conſequently IK 15′ 22″; AM, 41′ 13″; and AL, 43′ 14″: the moon's ſemidiameter will be 15′ 22″, and that of the ſhadow 41′ 13″; the ſum whereof is 56′ 35″. From which the arch between the centres 43′ 14″, being ſubtracted, leaves 13′ 21″ ſcruples, or 801 ſeconds. Then as 1844 : 801 : : 12 : 5 $\frac{98}{461}$ dig. or 5 dig. 13′.

To find the ſcruples of half duration of an eclipſe, *or the arch of the lunar orbit, which her centre deſcribes from the beginning of the* eclipſe *to the middle thereof.*—Add the ſemidiameters of the ſhadow AP, and the moon PN together; the ſum gives AN. From the ſquare of AN ſubtract the ſquare of AI; the remainder is the ſquare of IN. And the ſquare root of this reſidue is the arch IN required.

To find the ſcruples of half duration of total darkneſs in a total eclipſe. Subtract the moon's ſemidiameter SV from the ſemidiameter of the ſhadow AV; the remainder is AS: in the triangular AIS, which is rectangular at I, therefore, we have the arch AS given by the laſt method; and the arch between the centres AI: where the arch IS is found, as in the laſt problem.

To find the beginning, middle, and end, of a lunar eclipſe.—Say, as the moon's horary motion from the ſun is to 3600 horary ſeconds; ſo are the ſeconds of the arch LI, *Fig.* 35. to the horary ſeconds equivalent thereto. Subtract theſe ſcruples, or ſeconds, in the firſt and third quadrant of the anomaly, from the time of full-moon, and add it to the ſame in the ſecond and fourth; the reſult is the time of the middle of the *eclipſe*. Then ſay, as the moon's horary motion from the ſun is to 3600 ſcruples, or ſeconds, ſo are the ſeconds of half-duration IN to the time of half-duration: the double of which gives the whole duration. Laſtly, ſubtract the time of half-duration from the time of the middle of the *eclipſe*, the remainder will be the beginning of the *eclipſe*. And add the ſame to the ſame, the ſum will be its end.

Suppoſe, *e. gr.* LI=4′ 5″=245″, IN 2530″, time of full moon 9h 23′ 49″, horary motion of the moon from the ſun, 30′ 12″, or 1812″, then will

Log. hor. ☽ from ⊙	32581581
Log. 3600	35563025
Log. LI	23891660
	59454685

Log. of time required 26873104; the number correſponding to which, in the tables, is 486″, or 8′ 6″.

Time of full moon	9h 23′ 49″.
Time of middle *eclipſe*	9h 15′ 43″.
Log. hor. ☽ from ⊙	32581581
Log. 3600	35563025
Log. IN.	33404934
	68967959

Log. of half duration 36386378; the number correſponding to which, in the tables, is 4351″, or,

1h 12′ 31″.

Duration of *eclipſe*	2h	25′	2″
Time of middle *eclipſe*	9h	15	43
Half duration ſubtract.	1h	12	31
Beginning of *eclipſe*	8h	3	12
Time of middle *eclipſe*	9h	15	43
Half a duration added	1h	12	31
End of *eclipſe*	10h	28	14

To calculate an eclipſe *of the moon.*—1. For the given time of the mean full moon, compute the moon's diſtance from the node; to find whether there be an *eclipſe* or not: as taught in the firſt problem.

2. Compute the time of the true full moon, with the ſun and moon's true place reduced to the ecliptic.

3. For the time of the true full moon, compute the moon's true latitude, and the diſtance of each luminary from the earth, with the horizontal parallaxes, and apparent ſemidiameters.

4. For the ſame time, find the ſun and moon's true horary motion.

5. Find the apparent ſemidiameter of the ſhadow. And,

6. The arch between the centres AI, with the arch LI.

7. Compute the ſcruples of half duration IN. And thence,

8. Determine the beginning, middle, and end, of the *eclipſe*.

Laſtly, Find the ſcruples *eclipſed*, and thence the quantity of the *eclipſe*: as taught under the preceding problems.

E. gr. anno 1708. the mean full moon fell on the 29th day of September, at 3h 45′ 4″ afternoon: and then the moon's diſtance from the aſcending node was 5° 22′ 36″. Conſequently the full moon was *eclipſed*. Now, for that time we find

True full moon	9h	23′	49″
True place of the ſun	6°	43′	47″
Moon's place in the ecliptic	6	43	47
Moon's true latit. north		43	25
Horizont. parallax. of ⊙			6
of ☽		56	18
Apparent ſemidiam. of ⊙		16	5
of ☽		15	22
True horar. mot. of ☽ from ⊙		30	12
Semidiam. of ſhadow		41	13
Arch between the centres		43	14
Arch LI		4	5
Scruples of half duration		36	30
Scruples *eclipſed*		13	21
Duration of *eclipſe*	2h	25	2
Beginning	8h	3	12
Middle	9	15	43
End	10	28	14
Quantity	5 dig.	13′.	

To draw a type, or figure of a lunar eclipſe *on a plane.*—

1. Let CD (*Fig.* 38.) repreſent the ecliptic; and let the centre of the ſhadow be in A: through which draw a right line GQ perpendicular to DC: and ſuppoſe D the eaſt, C the weſt, A the ſouth, and G the north.

2. From A, with the interval of the aggregate AN, of the ſemidiameter of the ſhadow AP, and of the moon PN, deſcribe a circle DGCQ; and with the interval of the ſemidiameter of the ſhadow AP, draw another concentric circle EMFR, which will exhibit the ſection of the ſhadow in the paſſage of the moon.

3. Let AL be equal to the latitude of the moon at the beginning of the *eclipſe*; and in L erect a perpendicular LN, meeting the greater circle in N, towards the weſt. Then will the centre of the moon, at the beginning of the *eclipſe*, be in N.

4. After like manner, make AS equal to the latitude of the moon at the end of the *eclipſe*; and in S erect a perpendicular OS, parallel to DC: then will the centre of the moon be in O, at the end of the *eclipſe*.

5. Connect the points O and N by a right line: ON will be the arch of the orbit, which the centre of the moon deſcribes during the *eclipſe*.

6. From O and N, with the interval of the moon's ſemi-

diameter, deſcribe circles PV and TX, which will exhibit the moon at the beginning and end of the *eclipſe*.

7. Then, from A, letting fall a perpendicular AI to ON; the centre of the moon will be in I, in the middle of the darkneſs.

Wherefore, laſtly from I, with the interval of the moon's ſemidiameter, deſcribe a circle HK: this will repreſent the moon in the greateſt darkneſs, and at the ſame time the quantity of the *eclipſe*.

ECLIPSE *of the ſun*, is an occultation of the ſun's body, occaſioned by a diametrical interpoſition of the moon between the ſun and the earth.

It is diſtinguiſhed, like that of the moon, into *total* and *partial*, &c. to which muſt be added a third ſpecies called *annular*.

Eclipſes of the ſun, ſome authors obſerve, ſhould in propriety be called *eclipſes of the earth*.

As the moon is found to have a parallax of latitude; *eclipſes* of the ſun only happen when the latitude of the moon, viewed from the ſun, is leſs than the aggregate of the apparent ſemidiameter of the ſun and moon. *Solar eclipſes*, therefore, happen when the moon is in conjunction with the ſun, in or near the nodes, *i. e.* at the new moons. Conſequently, the memorable *eclipſe of the ſun*, at our Saviour's paſſion, happening at the time of full moon, when the ſun and moon are in oppoſition, was preternatural.

Though the new moon cover the ſun from the earth, yet is not there an *eclipſe* every new moon; by reaſon the moon's way is not preciſely under the ecliptic, but is placed obliquely thereto; only interſecting it twice in every period. So that *eclipſes* can only be occaſioned in ſuch new moons, as happen in theſe interſections or nodes, or very near them.

In the nodes, when the moon has no viſible latitude, the occultation is total; and with ſome continuance, when the diſk of the moon, in perigæo, appears greater than that of the ſun in apogæo, and its ſhadow is extended beyond the ſurface of the earth; and, without continuance, at moderate diſtances, when the cuſp, or point of the moon's ſhadow, barely touches the earth. Laſtly, out of the nodes, but near them, the *eclipſes* are partial.

The other circumſtances of *ſolar eclipſes* are, 1. That none of them are univerſal; that is, none of them are ſeen throughout the whole hemiſphere, which the ſun is then above; the moon's diſk being much too little, and much too near the earth, to hide the ſun from the diſk of the earth, which is fifteen times bigger than it.

2. Nor does the *eclipſe* appear the ſame in all parts of the earth, where it is ſeen; but when in one place it is total, in another it is only partial.

Further, when the moon, being in her apogee, appears much leſs than the ſun; as happens moſt ſenſibly, when he is in perigæo: the cuſp of the lunar ſhadow not reaching the earrh, ſhe becomes in a central conjunction with the ſun, yet not able to cover his diſk; but lets his whole limb appear like a lucid ring or bracelet: this is hence called an *annular eclipſe*.

3. It does not happen at the ſame time, in all places where it is ſeen; but appears more early to the weſtern parts, and later to the eaſtern.

4. Its beginning is always on the weſtern ſide the ſun, and on the ſame ſide it ends.

5. In moſt *ſolar eclipſes*, the moon's darkened diſk is covered with a faint, dawning light; which is attributed to the reflexion of the light, from the illuminated part of the earth.

Laſtly, In total *eclipſes* of the ſun, the moon's limb is ſeen ſurrounded by a pale circle of light; which the late aſtronomers take for a manifeſt indication of a lunar atmoſphere. See ATMOSPHERE.

The aſtronomy of ECLIPSES *of the ſun*.—To determine the bounds of a *ſolar eclipſe*.

If the moon's parallax were inſenſible, the bounds of a *ſolar eclipſe* would be determined after the ſame manner as thoſe of a *lunar*: but by reaſon here is a ſenſible parallax, we muſt alter our meaſures a little; *viz.*

1. Add the apparent ſemidiameters of the luminaries both in apogæo and perigæo together.

2. Since the parallax diminiſhes the northern latitude; to the former ſum, add the greateſt parallax of latitude poſſible: and ſince the parallax augments the ſouthern latitude, from the ſame ſum, ſubtract the greateſt parallax of latitude. Thus, in each caſe, will you have the true latitude, beyond which there can be no *eclipſe*.

This latitude given, the moon's diſtance from the nodes, beyond which *eclipſes* cannot happen, is found, as already directed for *lunar eclipſes*.

As different authors follow very different hypotheſes, with regard to the apparent diameters of the luminaries, and the greateſt parallax of latitude; they differ much in aſſigning the bounds at which *ſolar eclipſes* happen. Ptolemy makes the utmoſt bound of *eclipſes* at 19° 25′ diſtance from the node; Copernicus, at 19° 12′; Tycho, at 18° 25′; Kepler, at 17° 16′; Ricciolus, at 18° 49′. Though Ptolemy, in other places, judges 16° 42 minutes diſtance from the node, neceſſary; Copernicus, 16° 25′; Tycho, 17° 9′; Kepler, 15° 55′; and Ricciolus, 15° 58′.

To find the digits eclipſed.—Add the apparent ſemidiameters of the luminaries into one ſum; from which ſubtract the moon's apparent latitude, the remainder is the ſcruples, or parts of the diameter *eclipſed*. Then ſay, as the ſemidiameter of the ſun is to the ſcruples *eclipſed*; ſo are 6 digits reduced into ſcruples, or 360 ſcruples, to the digits *eclipſed*.

To find the ſcruples of half duration, or the line of immerſion.—The method is the ſame as that delivered for *lunar eclipſes*.

To determine the duration of a ſolar eclipſe.—Find the horary motion of the moon from the ſun, for one hour before the conjunction, and another hour after: then ſay, as the former horary motion is to the ſeconds in an hour, ſo are the ſcruples of half duration to the time of immerſion: and as the latter horary motion is to the ſame ſeconds, ſo are the ſame ſcruples of half duration to the time of immerſion. Laſtly, adding the time of immerſion to that of emerſion; the aggregate is the total duration.

To determine the beginning, middle, and end, of a ſolar eclipſe.—From the moon's latitude, for the time of conjunction; find the arch IL (*fig.* 35.), or the diſtance of the greateſt obſcurity. Then ſay, as the horary motion of the moon from the ſun, before the conjunction, is to 3600 ſeconds of an hour; ſo is the diſtance of the greateſt darkneſs, to the interval of time between the greateſt darkneſs and the conjunction.

Subtract this interval, in the firſt and third quarter of the anomaly, from the time of the conjunction; and in the other quarters, add it to the ſame; the reſult is the time of the greateſt darkneſs. Laſtly, from the time of the greateſt darkneſs, ſubtract the time of incidence, and add it to the time of emerſion; the difference, in the firſt caſe, will be the beginning; and the ſum, in the latter caſe, the end of the *eclipſe*.

Indeed, as the interval between the conjunction, and the greateſt obſcurity, is very ſmall, and exceedingly precarious; it is ſcarce worth while to be ſo very preciſe; and accordingly, many authors uſe the time of the apparent conjunction for that of the greateſt darkneſs.

E. gr. in our caſe,

Time of conjunction	21h	36′	59″
Time of incidence	1	2	36
Beginning of *eclipſe*	20	34	23
Or 8h morn.		34	23
Time of conjunction	21	36	59
Time of emergence	1	5	47
End of *eclipſe*	22h	42	46
Or 10 morn.		42	46

Or if you would determine it with more accuracy, ſubtract about two minutes for the diſtance between the conjunction ſeen, and the time of the greateſt obſcurity.

To find the moon's apparent latitude at the beginning and end of an eclipſe.—From the argument of the moon's latitude, computed for the time of the apparent conjunction, ſubtract the ſcruples of half duration, together with the motion of the ſun anſwering to the time of incidence: the remainder is the argument of latitude, at the beginning of the *eclipſe*.

To the ſame ſum add the ſame ſcruples, together with the ſun's motion anſwering to the time of emergence: the aggregate is the argument of latitude, at the end of the *eclipſe*. The argument of the latitude given; the moon's true latitude is found after the common manner.—(See LATITUDE.) And from the true latitude, is ſoon found the apparent one.

The apparent latitude of the moon, at the beginning and end of a ſolar eclipſe, *given*; *to draw a type or figure thereof.*—This is performed, as already taught for *eclipſes* of the moon.

To calculate an ECLIPSE *of the ſun.*—1. Find the mean new moon, and thence the true one; together with the place of the luminaries for the apparent time of the true one.

2. For the apparent time of the true new moon, compute the apparent time of the new moon obſerved.

3. For the apparent time of the new moon ſeen, compute the latitude ſeen.

4. Thence determine the digits *eclipſed*.

5. Find the times of the greateſt darkneſs, immerſion, and emerſion.

6. Thence determine the beginning, and ending, of the *eclipſe*.

From the preceding problems, it is evident, that all the trouble and fatigue of the calculus ariſe from the parallaxes of longitude and latitude; without which, the calculation of *ſolar eclipſes* would be the ſame with that of *lunar* ones.

ECLIPSES *of the ſatellites.* See SATELLITES *of Jupiter.* The chief circumſtances here obſerved are, 1. That the ſatellites of Jupiter undergo two or three kinds of *eclipſes*; where of, the firſt are proper, being ſuch as happen when Jupiter's body is directly interpoſed between them and the ſun: theſe happen almoſt every day. Mr. Flamſteed, and Caſſini, give us tables, wherein their immerſions into Jupiter's ſhadow, and emerſions again, are computed to hours and minutes.

The 2d are occultations, rather than obſcurations; wherein the ſame ſatellites, coming too near to Jupiter's body, are loſt in his light: which Ricciolus calls *occidere zeuſiace*, ſetting jovially. In which caſe, Jupiter's neareſt ſatellite exhibits a third kind of *eclipſe*; being obſerved like a macula, or dark round ſpot, tranſiting Jupiter's diſk, with a motion contrary to that of the ſatellite; juſt as the moon's ſhadow projected on the earth, will appear to do, to the lunar inhabitants.

The *eclipſes* of Jupiter's ſatellites furniſh the beſt means of finding the longitude at ſea. Thoſe, particularly, of the firſt ſatellite, are much ſurer than the *eclipſes* of the moon; and withal they happen much oftener: beſide that, the manner of applying them is very eaſy. See LONGITUDE.

ECLIPTIC, ECLIPTICUS, ſomething belonging to eclipſes.

All new and full moons are not *ecliptic*, *i. e.* eclipſes do not happen every new and full moon, though there be then an interpoſition, either of the earth between the ſun and moon, or of the moon between the ſun and earth. The reaſon is, that the interpoſition is only as to longitude, and not as to latitude. The ſun is always in the *ecliptic*, but the moon is not; ſhe deviates from it about five degrees, ſometimes on the north ſide, and ſometimes on the ſouth. But every five months, or thereabouts, ſhe cuts the *ecliptic*; and it is only about thoſe times, that there can be eclipſes either of the moon or ſun.

The places, wherein ſhe cuts the *ecliptic*, are called the *nodes* of the moon.

ECLIPTIC *bounds*, or *terms*, *termini ecliptici*, denotes the ſpace of about 15 degrees from the nodes of the *ecliptic*; within which, if the moon be, at the time of a conjunction or oppoſition with the ſun, there may be an eclipſe of the ſun, or moon, though ſhe be not preciſely in the nodes.

ECLIPTIC *digits*, *digiti ecliptici*. See DIGITS.

ECLIPTIC, is more particularly uſed for a line, or circle, on the ſurface of the ſphere of the world, under which the centre of the ſun proceeds in its proper motion: or a line, which the ſun's centre deſcribes in his annual progreſs.

It has its name *ecliptic*, by reaſon all eclipſes happen when the two planets are in or near the nodes, or interſections of the *ecliptic*.

It is alſo called the *ſun's orbit*, and *ſun's way*, by reaſon that the ſun never deviates from it, in his annual motion from eaſt to weſt.

The north, or aſcending node of the *ecliptic*, is called the *dragon's-head*; and the ſouth, or deſcending node, the *dragon's-tail*.

The *ecliptic* is placed obliquely with reſpect to the equator, and cuts it into two points, *viz.* the beginning of aries and libra, or into two equal parts; and, accordingly, we find the ſun twice every year in the equator: and all the reſt of the year, either on the north or ſouth ſide thereof.

The *ecliptic* is a great circle of the ſphere, biſected by the horizon; conſequently, the arch of the *ecliptic*, intercepted between the horizon and the meridian, is a quadrant. And gain, the ſolſtitial points of the *ecliptic*, i. e. thoſe moſt remote from the equator, are a quadrant diſtant from the equinoctial ones. Laſtly, as the greateſt declination of the *ecliptic*, from the equator, is an arch of a great circle diſtant by quadrant from the equinoctial points; it will be the meaſure, or quantity, of the obliquity of the *ecliptic*, i. e. of the ngle formed by the interſection of the equator with the *liptic*.

he obliquity of the ecliptic, or the angle wherein it cuts the quator, is uſually fixed at 23° 29′; which, therefore, is the reateſt declination of the *ecliptic* from the equator: the oints of which greateſt declination on each ſide, are called *ſolſtitial points*; through which are drawn the two opics.

he method of obſerving the greateſt declination of the *liptic* is thus: about the time of one of the ſolſtices obſerve ſun's meridian altitude with the utmoſt care, for ſeveral ys ſucceſſively: from the greateſt altitude obſerved, ſubtract height of the equator. And the remainder is the greateſt clination in the ſolſtitial point.

icciolus, *e. gr.* at Bologna, in the year 1646. obſerved the n's meridian altitude, on the 20th of June, to be 68° ′ 55″; on the 21ſt, 69° 0′ 10″; and on the 22d, 68° 59′ ′. The greateſt then was, 69° 50′ 10″; from which the titude of the equator, 45° 29′ 50″, being ſubtracted, left ° 30′ 20″ for the greateſt declination.

has been matter of great diſpute among the late aſtronors, whether the *obliquity of the ecliptic* be fixed or moveable? is certain, the obſervations of the antient aſtronomers reſent it conſiderably greater, than thoſe of the moderns: ence Purbachius, Reinholdus, Regiomontanus, Copernicus, Rheticus, Longomontanus, Tycho, Snellius, Lansbergius, Bullialdus, and others, have concluded it variable.

To determine the point, the obſervations of the aſtronomers, of all ages have been collected together; the chief of which are: that of Pythias, in the year before Chriſt 324. which makes it 23° 52′ 41″: that of Eratoſthenes, in 230. 23° 51′ 20″: and that of Hipparchus, in the year before Chriſt 140. 23° 51′ 20″: that of Ptolemy, in the year after Chriſt 140. 23° 51′ 20″: of Albategnius in 880. 23° 35′: Regiomontanus, in 1460. 23° 30″: Waltherus, in 1476. 23° 30′: Copernicus, in 1525. 23° 28′ 24″: Rothmannus and Byrgius, in 1570. 23° 30′ 20″: Tycho, in 1587. 23° 30 22″: Kepler, in 1627. 23° 30′ 30″: Gaſſendus, in 1636. 23° 31′: Ricciolus, in 1646. 23° 30′ 20″: Hevelius, 23° 30′ 20″: Mouton, 23° 30′: and De la Hire, in 1702. 23° 29′.

Upon the whole, though the oldeſt obſervations make the obliquity the greateſt, yet it appears to be immutable: for it was by miſtake that Eratoſthenes concluded, from his obſervations, the greateſt declination to be 23° 51′ 20′: from the ſame obſervations he ſhould only have made it 23° 31′ 5″; as is ſhewn by Ricciolus. And the like overſight has been found by Gaſſendus and Peireſcius in the obſervation of Pythias; which miſtakes of Eratoſthenes and Pythias were retained by Hipparchus and Ptolemy; and gave occaſion to the forementioned authors to conclude, that the obliquity was continually decreaſing.

Yet the chevalier de Louville, who has examined the merits of the cauſe with great attention, is of another opinion: the reſult of his reſearches, he gives us in the memoirs of the Royal Academy, for the year 1716. *viz.* that the obliquity of the *ecliptic* diminiſhes at the rate of a minute in 100 years. The antients, we know, had no regard to any refractions in their obſervations: and beſides, they made the ſun's horizontal parallax 3′; whereas the modern aſtronomers ſcarce make it 10″. Theſe two inaccuracies have a very ill effect in their obſervations; which M. de Louville is obliged to free them of, before he can build on them.

According to an antient tradition of the Egyptians, mentioned by Herodotus, the *ecliptic* had antiently been perpendicular to the equator; this notion they were led into, by obſerving, for a long ſeries of years, that the obliquity was continually diminiſhing; or, which amounts to the ſame, that the *ecliptic* was continually approaching to the equator. For hence they took occaſion to ſuſpect, that thoſe two circles, in the beginning, had been as far off each other as poſſible. Diod. Siculus relates, that the Chaldeans reckoned 403000 years from their firſt obſervations to the time of Alexander's entering Babylon. This enormous account may have ſome foundation, ſuppoſing the Chaldeans to have built on the diminution of the obliquity of the *ecliptic* of a minute in 100 years. M. de Louville, taking the obliquity ſuch as it muſt have been at the time of Alexander's entrance into Babylon, and going back to the time when the *ecliptic*, at that rate, muſt have been perpendicular to the equator, actually finds 402942 Egyptian, or Chaldean years, which is only 58 years ſhort of the former epocha. In the general, there is no way of accounting for the fabulous antiquity of the Egyptians, Chaldeans, &c. ſo probable, as from the ſuppoſition of long periods of very ſlow celeſtial motions, whereof they had obſerved a little part, and thence calculated the beginning of the period; making the world and their own nation to commence together. If M. de Louville's ſyſtem be true, in 140000 years more, the *ecliptic* and equator muſt coincide and mix in one.

The *ecliptic* is divided into twelve parts, called *ſigns*. See SIGN.

Poles of the ECLIPTIC. See the article POLE.

Reduction of the ECLIPTIC. See REDUCTION.

ECLIPTIC, in geography, &c. is a great circle of the globe, cutting the equator under an angle of 23° 29′. See GLOBE.

The *terreſtrial ecliptic*, therefore, is in the plane of the *celeſtial elliptic*; like which it has its equinoctial and ſolſtitial points, and is bounded by tropics.

ECLOGUE, ΕΚΛΟΓΗ, in poetry, a kind of paſtoral compoſition, wherein ſhepherds are introduced converſing together.

The *eclogue* is properly an image of the paſtoral life: nor do we ſee what fineſſe it was that determined Sannazarius to put fiſhermen in lieu of ſhepherds, who had been time out of mind in poſſeſſion of the *eclogue*.

The beauty of the *eclogue*, M. Fontenelle obſerves, is not attached to what is rural, but rather to what is calm and eaſy in the rural life. Shepherds being agreeable perſonages, the poets abuſe them; and provided they do but talk a little about reeds, and herbage, they conclude of courſe it is an *eclogue*.

There are *eclogues* in Theocritus of a lofty character; and Virgil has ſome in the ſublime ſtyle: the *eclogue*, therefore, occaſionally raiſes its voice. Yet M. Fontenelle eſteems it a fault in ſome modern poets, to have put matters of high concern in their *eclogues*; and to have made their ſhepherds ſing the praiſes of kings and heroes. Ronſard, in particular, has made himſelf ridiculous, by giving the *eloge* of Budæus and Vatable in his firſt *eclogue*, from the ſhepherd Margot. Such folks ſhould have been above the knowlege of the ſimple Margot. The ſentiments, in *eclogues*, the ſame author obſerves, ſhould be finer and more delicate than thoſe of real ſhepherds; only their form ſhould be as ſimple and country-like as can be. But this ſimplicity excludes none but glaring and exceſſive ornaments.

Since the eſtabliſhment of the academy, or aſſembly of Arcadians at Rome, about the year 1690. the taſte for *eclogues* has been greatly improved among the Italians. Thoſe gentlemen, who are the flower of the wits of Italy, take the name of the ſhepherds of Arcadia, and will not allow their aſſembly to be treated as an academy. They have each of them a poetical name, which is always that of ſome ſhepherd; and apply themſelves particularly to *eclogues*, as pieces moſt proper to their profeſſion.

The learned Sig. Creſcimbeni, one of the founders of the aſſembly, who had been long cuſtos, *i. e.* preſident thereof, and bore the name of Alpheſibeo Cario, has written the laws and eſtabliſhment of the ſociety, with the names of all who had been admitted thereof, at the end of his book, intituled, *La Bellezza de la Volgar Poeſie.*

The word *eclogue* is formed from the Greek εκλογη, *choice.* So that, according to the etymology of the word, *eclogue* ſhould be no more than a ſelect or choice piece; but cuſtom has determined it to a farther ſignification, *viz.* a little elegant compoſition in a ſimple natural ſtyle and manner.

Idyllion and *eclogue*, in their primary intention, are the ſame thing: thus the idyllia, ειδυλλια of Theocritus, are pieces written perfectly in the ſame vein with the *eclogæ* of Virgil. But cuſtom has made a difference between them, and appropriated the name *eclogue* to pieces wherein ſhepherds are introduced ſpeaking: idyllion, to thoſe written like the *eclogue*, in a ſimple natural ſtyle, but without any ſhepherds in them. Some imagine the name *eclogue* to have been originally attributed to ſuch poems as were written in imitation of others; ſuch as the *eclogues* of Virgil, which are only imitations of Theocritus.

Others are of opinion, the word was firſt formed from αιξ, αιγος, *goat*, and λογος, *diſcourſe*, q. d. a converſation or diſcourſe of goats, or goatherds. But Ruæus, in his notes on Virgil, thinks they would then have made it Αιγολογια, *ægology*, rather than *eclogue*; or, at leaſt, the word would have been written in Greek with αι, and in Latin by *æ*, not *e*.

Barthius advances another opinion; *viz.* that the name *eclogue* was given to all poetical compoſitions that were of a moderate length, though too ſhort to give them the name of books; and that hence it is that Statius, in the epiſtle at the head of the IIId book of his Sylvæ, and in the preface to his fourth book, calls his poems *eclogues*; though he had not called them ſo in the title.

Auſonius, in the preface to his *Cupid crucified*, calls alſo his idylls *eclogues*. Add, that Cruquius, in his comment on Horace, declares to have ſeen very antient manuſcripts, wherein the ſatires of the poet are called *eclogues*; in which he is ſeconded by our learned countryman Mr. Baxter.

Eclogue is alſo applied to certain compoſitions in proſe. Thus we read of the *eclogues* of Diodorus, of Polybius, of Cteſias, Theophraſtus, Strabo, *&c.* In which ſenſe the word only ſignifies *extract*, or *collection*.

ECPHORA, *projecture*, in architecture, uſually denotes the line, or diſtance, between the extremity of a member, or moulding, and the naked of the column, or other part it projects from.

Some authors, however, account the *ecphora*, or projecture, from the axis of the column; and define it to be the right line intercepted between the axis and the outermoſt ſurface of a member or moulding.

ECPHRACTICS*, ΕΚΦΡΑΚΤΙΚΑ, in medicine, ſuch remedies as have a faculty of opening and unſtopping the veſſels through which the humours are to paſs; or which incide and attenuate tough viſcid humours, and thereby promote their diſcharge.—They are the ſame with *aperients* and *deobſtruents.*

* The word is formed from the Greek εκφραττειν, *to free from obſtructions*; of εκ and φρασσω, *obſtruo, ſepio.*

The chief ſimple *ecphractics* are the little centaury, wormwood, agrimony, hyſſop, chamædrys, bark of tamariſk, roots of capers, ſcolopendrium, *&c.*

ECPIESMA, ΕΚΠΙΕΣΜΑ, in chirurgery, a kind of fracture of the ſkull, *&c.* wherein there are ſeveral ſplinters, that preſs and diſorder the inner membranes. See **Fracture**.

ECTHESIS*, in church-hiſtory, a name which the emperor Heraclius gave to a confeſſion of faith publiſhed by him in 639.

* The word is Greek, εκθεσις, and ſignifies *expoſition.*

The *ecthesis* favoured the error of the Monothelites, and eſtabliſhed only one will in Jeſus Chriſt. Heraclius publiſhed it at the inſtigation of Athanaſius, chief of the Jacobites, Cyrus patriarch of Alexandria, and Sergius patriarch of Conſtantinople: but finding that the Roman church eſteemed it heretical, he diſowned it, and declared by another edict, which he ſpread throughout the eaſt and weſt, that Sergius was the author of *ectheſis.*

ECTHLIPSIS*, in the Latin proſody, a figure whereby an *m* is retrenched, or cut off, chiefly at the end of a word, when the following word begins with a vowel, or an *h*.

* The word is Greek, εκθλιψις, which ſignifies *eliſion.*

Thus, in *multum ille*, &c. In ſcanning the verſe, we drop the *m* at the end of *multum*, and only make three ſyllables in the two words, *mult-il-le.*

Some account the *ecthlipſis* a poetical licence in the Latin verſification; but, in reality, the eliſion of an *m* final, when the following word in the ſame verſe begins with a vowel, is a matter of neceſſity, not of licence.

Antiently, the *s* was likewiſe retrenched before a conſonant as *facundu ſuoque*, for *facundus*, &c. In effect, the *m* and were peculiarly rough and harſh in the Latin pronunciation as appears from Quintilian: and it was this that led the poet to retrench them at the ends of their words; as the lik cauſe did the French, to drop their *e* feminine before a wor beginning with a vowel, to avoid the hiatus, or concourſe vowels.

ECTHYMOSIS*, in medicine, a vehement agitation an dilatation of the blood and ſpirits; ſuch as happens in extra ordinary emotions of joy.

* The word is formed of εκ, *ex*, and θυμος, *animus*, mind.

ECTROPIUM, ΕΚΤΡΟΠΙΟΝ, in medicine, a diſeaſe of th eyes, conſiſting in a ſort of inverſion of the lower eyeli which diſables it from covering its part of the eye.

ECTYLOTICS*, ΕΚΤΥΛΩΤΙΚΑ, remedies proper to co ſume and eat off callus's, warts, and other excreſcence formed on the fleſh.

* The word is formed of εκ, and τυλος, *callus.*

ECTYPE*, ΕΚΤΥΠΟΣ, among medalliſts, an emboſſed figur or impreſſion of a ſeal, ring, or medal; or a figured copy an inſcription, or other antient monument.

* The word is Greek: αρχετυπον denotes the original, or m del: εντυπον, the copy, or image, moulded or ſtruck *creux*: and εκτυπον, *ectypon*, the image in relievo, or e boſſed.

In books of travels, we find abundance of *ectypes* of anti inſcriptions, of the Trajan column, of Chilminar, *&c.*

ECU, or **Escu**, the French crown. See the articles Crow and **Escu**.

ECURY. See the article **Equery**.

ECUSSON, in heraldry, an ineſcutcheon, or little eſcutche See **Escutcheon**.

EDDISH, or **Eadish**, the latter paſture, or graſs, wh comes after mowing, or reaping: otherwiſe called *eagr earſh*, and *etch.*

EDDY, in natural hiſtory, is when the water, at any pl runs back, contrary to the tide, or ſtream, and ſo falls the current again.

The ſeamen call that *eddy water* which falls back; as it w on the rudder of a ſhip under ſail, the *dead water.*

An *eddy wind* is that which returns, or is beat back, f any ſail, *&c.*

EDELING. See **Edhiling**, and **Atheling**.

EDGINGS, in gardening, rows of ſhrubs, herbs, or flow placed by way of borders around beds, compartiments, For the *edgings* of compartiments, box ſeems the moſt pro But they are frequently alſo made of aromatic plants, ſweet marjoram, thyme, lavender, hyſſop, *&c.*

EDHILING, **Edhilingus**, an antient appellation of nobility among the Anglo-Saxons.

The Saxon nation, ſays Nithard, *Hiſt.* l. IV. is divided three orders, or claſſes of people; the *edhilingi*, the *fri* and the *lazzi*: which ſignify the nobility, the freemen, the vaſſals, or ſlaves.

Inſtead of *edhiling*, we ſometimes meet with *atheling ætheling*; which appellation was likewiſe given to the k ſon, and the preſumptive heir of the crown. See At ling.

EDICT, an inſtrument, ſigned and ſealed by a princ ſerve as a law to his ſubjects.

Edicts have no room in England, where the enacting of is not lodged in the king, but in the parliament.

In the Roman law we find frequent mention of the *ed the prætor*, *quod prætor edixit*, which was a phraſe crated to the ordinances of the prætor; though it was times alſo uſed on other occaſions.

In the French law, *edicts*, *edits*, make a great figure: are of various kinds: ſome importing a new law, or r tion, as the *edict* of duels, that of ſecond marriages, Others the erection of new offices, eſtabliſhment of rents, *&c.* Sometimes articles of pacification, as the of Nants, *&c.*—*Edicts* are all ſealed with green w ſhew that they are perpetual and irrevocable.

Edicts with them are much the ſame as proclam with us; but with this difference, that the former ha authority of a law in themſelves, from the power iſſues forth; whereas the latter are only declarations of a law, to which they refer, and have no power in themſelves.

Chamber of the Edict. See the article Chamber.

EDIFICE *, Ædificium, a building. See Building.

* The word is formed of the Latin *ædes*, and *facio*, I make.

EDILE, or rather Ædile. See the article Ædile.

EDITOR, in the commonwealth of learning, a perſon who takes care of publiſhing the work of another author; uſually an antient author: for *editor* is neither properly applied to a working printer, nor to an author who prints his own works.

Eraſmus was a great *editor* of antient writings: the Lovain doctors, Scaliger, Petavius, Fa. Sirmond, biſhop Walton, Mr. Hearn, *&c.* are learned *editors*.

EDUCATION, the art of bringing up, forming, and inſtructing children.

The follies of a too delicate *education* are well expreſſed in that device of an ape, which, by over-careſſing and hugging its young ones, ſtrangles them; with this motto, *complectando necat.* Octavius Ferrarius has a very good Latin treatiſe on the ſubject of *education*, intituled *Chiron*; the name of the centaur, who was Achilles's tutor.

Mr. Locke's excellent treatiſe of *education* is known to every body. Quintilian employs the ſecond chapter of his firſt book in inquiring whether a domeſtic, or a college *education*, be preferable, *i. e.* whether it be better to bring up one's children at home, or to ſend them to the colleges, and public ſchools. After urging all that can be ſaid on either ſide, he concludes for a college, or ſchool *education*.

EDULCORATION, in pharmacy, is the dulcifying, of ſweetening of any food, or remedy, by means of honey, ſugar, or ſyrups.

Edulcoration, in chymiſtry, denotes the freſhening, or purging any thing of its ſalts, by repeated lotions, or waſhings in cold water.

Such is the dulcifying of the precipitates of mercury, metals, *&c.* by waſhing away thoſe ſharp ſalts, by whoſe means they had been diſſolved, or which had been mingled with them, to effect a diſſolution. See Ablution.

EL *fiſhing*. See the article Fishing.

FFARE', or Effrayé, in heraldry, a term applied to a beaſt, when rearing on its hind legs, as if it were affrighted.

FFECT, the reſult or conſequence of the application of a cauſe, or agent, on ſome ſubject.

It is one of the great axioms of philoſophy, that full or adequate *effects* are always proportionable to the powers of their cauſes.

ffect is alſo of ſome further import in the arts: as when we ſay, in painting and architecture, that ſuch a contraſt, or ſuch a drapery, or ſuch an attitude, have a fine, or an ill *effect*, i. e. are beautiful, or noble, *&c.* Too many breaks, and little enrichments, in a building, have a pitiful *effect*, i. e. they give it a mean aſpect.

ffect, in the manage, is applied to the motions of the hand, which direct the horſe.

They diſtinguiſh four *effects* of the hand; *viz.* in uſing the bridle to put a horſe forwards, draw him backwards, and ſhifting it out of the right hand into the left, or *vice verſa*.

ffects, in commerce, *&c.* the goods poſſeſſed by any perſon, whether moveable, or immoveable: particularly thoſe which merchants and dealers acquire by trade.

The *effects* of merchants are uſually diſtinguiſhed into three claſſes, good, bad, and doubtful: by an ordonnance of the French court in 1673. every merchant is obliged to take an inventory, or review every year, of all his *effects* of every kind.

cant Effects. See the article Vacant.

FFECTIONS, in geometry, the geometrical conſtructions of propoſitions.

The term is alſo uſed in reference to problems and practices; which, when they are deducible from, or founded upon, ſome general propoſitions, are called the *geometrical effections* thereof.

FERVESCENCE is popularly uſed for a light ebullition; r a briſk inteſtine motion, produced in a liquor, by the irſt action of heat, without any notable ſeparation of its arts.

ervescence, in chymiſtry, is not applied to all ebultion, or motions produced by fire; but only to thoſe reſultng from the mixture of bodies of different natures, which, y their acting on one another, occaſion a heat, reſembling e ebullition, or boiling produced by fire.

cids, mixed with alkalies, *e. gr.* oil of tartar, and ſpirit of triol, produce an *efferveſcence*, &c.

hauvin defines *efferveſcence*, more ſcientifically, to be a viont expulſion of the air, out of the pores of the particles one body, by the intruſion of the particles of another dy mixed therewith, into thoſe pores before poſſeſſed by r.

In order for *efferveſcence* to take place, the particles of the latter body muſt be ſuppoſed conformable, both in bulk and figure, to the pores of the other; ſo that they may enter, and fill the ſame, like wedges: And, beſide, there muſt be a ſtrong degree of attraction between the particles of the two bodies, ſtronger than the attraction, or force of coheſion, between the particles of either of the bodies alone.

Hence it ſhould ſeem, that *efferveſcence* only differs from fermentation, in the degree of exploſion; which in *efferveſcences*, by reaſon of the greater purity and freedom of the acid and alkali, is greater than in fermentations.

Of *efferveſcences*, ſome are *hot*, and others *cold*. Of the firſt kind are thoſe produced by mixture of oil of tartar *per deliquium*, with ſpirit of vitriol; quicklime with cold water; all acid ſpirits, with alkaline, or earthy bodies; aqua fortis, ſpirit of vitriol, ſpirit of nitre, aqua regia, *&c.* with metallic bodies, marcaſites, and minerals; coral, with lemon or orange-juice; marble, with ſpirit of ſalt; chalk, crabs eyes, mother of pearl, and all ſhells with acids. In all which, the *efferveſcences* are attended with a more or leſs intenſe heat.

Oil of vitriol, and oil of turpentine, particularly mixed together, produce ſuch a vehement heat, that unleſs they be mixed drop by drop, they are apt to burſt forth into a flame, and break the phial.

Powdered coral, mixed with diſtilled vinegar, produces a cold *efferveſcence*, which the ſame philoſophers account for hence, that the pores of the coral being very great, it may be eaſily diſſolved in the acid ſpirit, without any great friction, or colliſion of the parts, ſuch as would be neceſſary to generate any conſiderable heat.

An *efferveſcence* may alſo be produced by the mixture of many other cold liquors. See Dissolution.

EFFICACIOUS, Effectual, in theology. Within theſe 150 years there have been great diſputes on the ſubject of *efficacious* grace. Grace is uſually divided into ſufficient and *efficacious*; though the Janſeniſts hold, that there is no grace ſufficient, but what is *efficacious*, i. e. but what effectually determines the will to act.

Efficacious grace is that which enlightens the mind, and touches the heart, in ſuch manner, as always to produce its effect, however it be oppoſed, or reſiſted by the will. See Grace.

Some divines maintain, that *efficacious* grace is *efficacious* of itſelf. *Efficacious* grace of itſelf, if there be any ſuch thing, is that which produces its effect merely of itſelf, and not in virtue of any conſent of the will. Calvin is the firſt that uſed the term *gratia efficax per ſe*, grace *efficacious* of itſelf.

A late divine holds the *efficacy* of grace in itſelf to conſiſt in this, that *efficacious* grace is always joined with a moral neceſſity of doing the thing it inclines to; and ſufficient grace, joined with a moral impotence of doing it.

The Arminian and Popiſh way of conceiving the neceſſity of *efficacious* grace, is to hold, that this grace is never wanting, at leaſt to the righteous, except through their own default; that they always ſtand in need of other inner graces, truly and properly ſufficient, in order to draw down this *efficacious* grace; and that theſe do infallibly draw it down, when they are not rejected, though they often remain without effect, by reaſon men reſiſt, inſtead of yielding their conſent thereto.

F. Malebranche maintains, that the mutual commerce between ſoul and body, *i. e.* life, has no other vinculum, or principle, but the *efficacy* of God's decrees: and that ſecond cauſes have no proper *efficacy*, &c.

EFFICIENT, in philoſophy.—An Efficient *cauſe* is that which produces an effect. See Cause, and Effect.

Philoſophers uſually diſtinguiſh four kinds of cauſes in nature: the *efficient*, *final*, *formal*, and *material*. See each under its proper article.

The ſchool-philoſophers are exceedingly divided as to the nature and eſſence of an *efficient* cauſe.—Ariſtotle defines it, *id unde*, that from which; or, the firſt principle of change, and reſt, *i. e.* of production and conſervation.

The *efficient* is called *id unde*, that from which; as the end, or final cauſe, is that *propter quod*, for which; the exemplar, *ad quod*, that to which; the matter, *ex quo*, that out of which; and the form, *per quod*, that by which.

It is called the firſt principle, not in reſpect of priority of time, for the end exerts its cauſality before the *efficient*, but of dignity; the *efficient* being a phyſically active principle; and the end only acting objectively.

Others of the ſchoolmen define *efficient* to be *principium per ſe influens in aliud ſine mutatione ſui*. The Ramiſts, after Plato and Cicero, define an *efficient* to be that, *a qua res eſt*, from which a thing is: to which a great author, objecting that a thing may alſo be from its end, adds, that an *efficient* is that, *a qua res vera cauſalitate proficiſcitur*.

Others define *efficient* to be, *quæ per actionem cauſat*, that which cauſes by acting: for to effect, every body knows, is to act; and hence neither a procatarctic, nor an exemplary cauſe, are properly *efficients*, though uſually ranked among them.

Laſtly, others define an *efficient* to be a cauſe, *a qua aliud producatur*, from which ſomething is produced; conſequently, what ariſes from ſuch a cauſe, is called an *effect:* and thus God is the *efficient* cauſe of the world; and the world the effect of God. To which definition of an *efficient*, all the former definitions are reducible.

An *efficient cauſe*, then, is either phyſical, as fire is the *efficient* cauſe of heat; or moral, as an adviſer is the cauſe of a murder; or univerſal; which in various circumſtances produces various effects, as God and the ſun; or particular, as a horſe, which produces a horſe; or univocal, which produces an effect like itſelf, as a horſe begets a horſe; or equivocal, according to the old doctrine, as the ſun producing a frog; or natural, which acts not only without precept in oppoſition to artificial, but alſo from within, and according to its own inclination, in oppoſition to violent, as fire acts when it warms: or ſpontaneous, as a dog eating: or voluntary and free.

Others conſider *efficient* cauſes either as principal, or as inſtrumental. Others, either as next, or remote; or as mediate or immediate. Others, in fine, divide *efficient* cauſes, among all the kinds of beings, natural and ſupernatural; ſpiritual and corporeal; ſubſtantial and accidental; vital and not vital, *&c.*

But the moſt celebrated diviſion of *efficients* is that into *firſt* and *ſecond*.

A *firſt efficient* cauſe is that between which and the effect there is ſome neceſſary connexion. Of which kind there is none but God alone.

A *ſecond efficient* cauſe is that from which an effect follows in conſequence of the will, or conſtitution, of the Creator; and which the Carteſians call an *occaſional cauſe*.

But theſe precarious or occaſional cauſes are, in reality, no cauſes at all, but only antecedent effects.—This is eaſily ſhewn: For, 1. All action, at leaſt all corporeal action, is contained in motion; but motion can only reſult from the firſt cauſe: it being an allowed principle, that body of itſelf is inert and inactive. The true cauſe of motion, therefore, is a ſpiritual, not a corporeal nature. 2. But neither can a finite, ſpiritual nature, be the chief cauſe of motion: for there is no neceſſary connexion between the will, *e. gr.* of an angel, and the motion of a body, nor between that of any other being except God. Thus, when an angel wills, a ſtone moves; by reaſon God has conſtituted ſuch a law between the will of the angel, and the motion of the ſtone: and thus we move our hands when we pleaſe. Not that the ſoul is the principal cauſe of ſuch motion, but only the occaſional cauſe.

EFFICIENTS, in arithmetic, the numbers given for an operation of multiplication; called alſo the *factors*. See FACTOR, and COEFFICIENT.

The *efficients* are the multiplicand and multiplier.

EFFIGY, EFFIGIES, a portrait, or repreſentation of a perſon to the life. See PORTRAIT.

Kings are ſhewn in *effigy* in their ſtate-beds.

EFFIGY is alſo uſed for the print or impreſſion of a coin, repreſenting the prince's head who ſtruck it.

To execute or degrade in EFFIGY, denotes the execution, or degradation, of a condemned, contumacious criminal, who cannot be apprehended, or ſeized.

In France they hang a picture on a gallows, or gibbet, wherein is repreſented the criminal, with the quality, or manner, of the puniſhment: at bottom is written the ſentence, or condemnation.—It is only ſentences to death that are executed in *effigy*.

EFFLORESCENCE, a breaking out of humours in the ſkin: as in the meaſles, or the like. See EXANTHEMA.

EFFLUVIUM, a flux, or exhalation, of minute particles from any body: or an emanation of ſubtile corpuſcles from a mixed, ſenſible body, by a kind of motion of tranſpiration.

That there are ſuch *effluvia*, continually emitted from all bodies, is pretty certain: thus, if a body be immerged in water, or any other humid matter, little bubbles are continually tranſmitted therefrom to the ſurface of the water; which are ſuppoſed to be nothing elſe but little particles, detached from the ſolid body; and which, when they arrive at the ſurface, emerge in form of bubbles. And thus a body, placed in the receiver of an air-pump, is ſeen, as it were, in a kind of efferveſcence, by reaſon of the external particles continually flowing from the ſame.

Odoriferous bodies, every one knows, are continually emitting ſubſtantial *effluvia*; by means whereof it is, that they excite in us the ſenſe of ſmelling. Theſe minute *effluvia* are ſometimes perceived by the eye, in form of fumes and vapours.

The ſchool-philoſophers hold theſe *effluvia* to be intentional qualities, as they call them, and nothing ſubſtantial; but the moderns laugh at the notion, as finding that theſe *effluvia* refreſh and nouriſh both the animal and vital ſpirits.

Some bodies are found to emit *effluvia* for a great number of years, without any conſiderable loſs, either as to bulk or weight; as magnets, electrical bodies, ambers, and divers odorous bodies, the tenuity of whoſe emanant corpuſcles is incredible: not but that the loſs they ſuſtain by the continual emiſſion of *effluvia*, may be made up to them by the reception of other ſimilar *effluvia* of the ſame kinds of bodies, diffuſed through the air.

It is added, that theſe *effluvia* are emitted in manner of *radii*, rays, *in orbem*; and the circumference or bound of the activity of the radiation exhibits the ſame figure as is that of the radiant. This the aſtronomers ſufficiently prove, from the ratio of the refraction of the atmoſphere. For the law of the emiſſion of theſe *effluvia*, ſee QUALITY.

That *effluvia* may conſiderably operate upon, and have great effects on, bodies within the ſphere of their activity, is proved by Mr. Boyle, in an expreſs treatiſe *on the ſubtilty of* effluvia; where he ſhews, 1. That the number of corpuſcles, emitted by way of *effluvia*, is immenſely great. 2. That they are of a very penetrating nature. 3. That they move with vaſt celerity, and in all manner of directions. 4. That there is frequently a very wonderful congruity, or incongruity, in the bulk and ſhape of theſe *effluvia*, with the pores of the bodies they penetrate into, and act upon. 5. That in animal and organical bodies, particularly, theſe *effluvia* may excite great motions of one part of the frame upon another, and thereby produce very conſiderable changes in the œconomy. Laſtly, That they have ſometimes a power of procuring aſſiſtance in their operations from the more catholic agents of the univerſe, ſuch as gravity, light, magnetiſm, the preſſure of the atmoſphere, *&c.*

That *effluvia* are emitted to very great diſtances, we have
notable proof in this: that our wines grow turbid in th
hogſheads and bottles, preciſely at the ſame time when th
grapes are at their maturity in other remote countries, whenc
the wine was imported. Beſide, that odoriferous *effluvi*
are, in many caſes, perceived at the diſtance of man
leagues. Again, that the generality of *effluvia* retain th
proper colour, ſmell, taſte, and other properties and effects
of the bodies whence they proceeded, and this even afte
they have paſſed through the pores of other ſolid bodies, w
have abundant proof: thus, magnetical *effluvia* penetrate all
even the moſt ſolid bodies, without any change of their na
ture, or loſs of force. And the ſame we ſee confirmed i
ſympathetic inks and powders, and in the ſagacity of blood
hounds, *&c.*

EFFLUXION, a flowing out, from *ex*, out of; and *fluer*
to flow.

EFFUSION, the pouring out of any liquid thing with ſo
degree of force.

In the antient heathen ſacrifices there were divers *effuſions*
wine, and other liquors, called *libations*. When our prin
conclude a treaty of peace, they uſually pretend it is to p
vent the *effuſion* of Chriſtian blood.

EFFUSION, or FUSION, in aſtronomy, denotes that part of t
ſign Aquarius, repreſented on celeſtial globes and planiſpher
by the water iſſuing out of the urn of the water-bearer. S
AQUARIUS.

EGG, in natural hiſtory, a part formed in the females of c
tain animals; which, under a ſhell or cortex, includes
embryo or fœtus, of the ſame ſpecies; the parts wher
are afterwards diſplayed and dilated, either by incubation,
by the acceſſion of a nutritious juice.

The ſpecies of animals that lay *eggs* are particularly de
minated *oviparous*; and the part wherein the *egg* is form
the *ovary*.

Of the various kinds of *eggs*, thoſe of hens, or pullets, be
the moſt uſual, and which have been the moſt obſerved,
ſhall ſay ſomewhat of the ſtructure thereof, and the gene
tion of the chick therein.

The exterior part, then, of a hen's *egg* is the ſhell; a wh
thin, friable cortex, including all the other parts, and
fending them from injuries. Immediately under the ſ
lies the membrana communis, which lines the whole ca
of the ſhell, adhering pretty cloſely to it, except at
bigger end, where a little cavity is left between th
which with age grows bigger. Under this membrane
contained two albumina, or whites, each wrapped up in
own membrane. In the middle of the inner white, is
vitellus, or yelk, incloſed likewiſe in its ſeparate involucru
or cover. The outer albumen is oblong or oval, accom
dated to the figure of the ſhell: the inner is ſpherical,
of a more craſs or viſcid ſubſtance; and the yelk is of
ſame figure.

At each end is a chalaza, which are, as it were, the pole
this microcoſm: theſe are white, denſe bodies, conſiſting
of three little globules like hail joined together: by
not only the ſeveral membranes are connected, or knit t
ther, by which means the ſeveral liquors are kept in
proper place and poſition to each other; but they ſerve
to keep one and the ſame part of the yelk uppermoſt,
the *egg* be turned which way it will.

About the middle, between the chalazæ, on the ſide of the yelk, and in the membrane thereof, is a little veſica or bladder, not unlike a vetch, or lentil, called the *cicatricula*, and by ſome the eye of the *egg*. In this veſicle is contained a humour, in and of which the chick is generated.

All theſe parts of a pullet's *egg* are found in all other *eggs*, to which the definition of an *egg* properly and ſtrictly agrees; ſuch *egg* being that, of a part whereof the animal is formed, the reſt ſerving for its food. Accordingly, the firſt ſeed, or ſtamen of the chick, is in the cicatricula.

The albumen is in the nutritious juice, whereby it is diſtended and nouriſhed till it become big; and the yelk ſerves it for food after it is well grown, and partly alſo after it is hatched. For a good part of the yelk remains after excluſion; being received into the chicken's belly, as a ſtore-houſe, and conveyed thence by the appendicula, or ductus inteſtinalis, as by a funnel, into the guts, ſerving inſtead of milk.

An Egg, improperly ſo called, is that, of the whole whereof the animal is formed: ſuch as are the *eggs* of flies, butterflies, *&c.* which Ariſtotle calls *vermiculi*.

The two have this further difference, that whereas the former, after they are excluded from the female, need no external nutriment, nor any thing but warmth and incubation, to bring the fœtus to perfection: the latter, after they are fallen out of the ovary into the uterus, require the nutritious juices of the uterus to diſtend and enlarge them; whence they remain much longer in the uterus than the other.

The principal differences among *eggs*, properly ſo called, are, that ſome are *perfect*, i. e. have all the parts above deſcribed, while in the ovary, or uterus: and others, *imperfect*, as not having all thoſe parts till after they are excreted or laid; ſuch are the *eggs* of fiſhes, which, after they are brought forth, aſſume an albumen to themſelves in the water.

Another difference is, that ſome are *fecundated*, and others not: the firſt are thoſe which contain a ſperm, injected by coition of the maſe, to diſpoſe them for conception: the reſt, not impregnated with this ſperm, never breed young by any incubation, but always putrify.

An *egg* fecundified contains the rudiments of the chick, before ever the hen have ſat upon it. By the microſcope we ſee, in the middle of the cicatricula, the plain carina of the chick, ſwimming in the liquamen or humour; it conſiſts of fine white zones, or threads, which the warmth of future incubation enlarges, by rarefying and liquifying the matter firſt of the albumen, and then of the vitellus, and preſſing them into the veſſels of the cicatricula, for a further preparation, digeſtion, aſſimilation, and accretion; till the chick, too big for its covercle, breaks the ſhell, and is delivered.

It was antiently thought, that none but birds and fiſhes, with ſome other animals, were produced *ab ovo*, from *eggs*; but the generality of the moderns incline to think, that all animals, even man himſelf, is generated the ſame way. Harvey, de Graaf, Kerckringius, and ſeveral other great anatomiſts, have ſo ſtrenuouſly aſſerted this opinion, that it now generally obtains.

In the teſtes of women, are found little veſicles, about the ſize of green peas, which are accounted as *eggs*; for which reaſon theſe parts, which the antients called *teſticles*, the moderns call *ovaries*. Theſe *eggs*, fecundified by the moſt volatile and ſpirituous part of the ſeed of the male, are detached from the ovary, and fall down the fallopian tubes into the uterus, where they grow and increaſe.

This ſyſtem is countenanced and confirmed by abundance of obſervations and experiments. M. de S. Maurice, upon opening a woman at Paris, in 1682. found a fœtus perfectly formed in the teſticle.

M. Olivier, a phyſician at Breſt, atteſts, that in the year 1684. a woman, pregnant ſeven months, was brought to-bed of a whole plate full of *eggs*, faſtened together like a bunch of grapes, and of various ſizes, from that of a lentil, to that of a pigeon's *egg*. Wormius aſſures us, that he had himſelf ſeen a woman who had laid an *egg*. And Bartholin confirms him, Cent. I. Hiſt. Anatom. IV. *p.* 11. The ſame author tells us, he knew a woman at Copenhagen, who, after twelve weeks conception, was delivered of an *egg* wrapped up in a ſoft ſhell. Lanzonus, Dec. II. An. ix. Obſ. 38. *p.* 73. of the *Curioſi Naturæ*, relates the ſame thing of another woman ſeven weeks gone: the *egg* ſhe brought forth was of a ſize between that of a hen and a pigeon; and he adds, was covered with membranes inſtead of a ſhell. The outer membrane, or chorion, was thick and bloody; and the inner, or amnios, thin and tranſparant, including a whitiſh humour wherein the embryo ſwam faſtened by umbilical veſſels, like threads of ſilk.

Bonetus, in a letter to Zuingerus, publiſhed in the ephemerides of the *Curioſi Naturæ*, Dec. II. An. 2. Obſ. 186. p. 417. relates that a young maid had caſt forth a great number of little *eggs*. Con. Virdungius obſerves, that in diſſecting a woman who had a rupture, he found *eggs* of divers ſizes in the cornua of the womb. Laſtly, we meet with divers inſtances of the ſame thing in Rhodius, Cent. III. Obſ. 57. and in ſeveral places of the memoirs of the *Curioſi Naturæ*. Inſomuch that Berger, in his treatiſe *de Natura humana*, L. II. C. I. *p.* 461. makes no ſcruple to give it as his opinion, that the only difference between animals, called *oviparous*, and thoſe denominated *viviparous*, conſiſts in this; that the former caſt their *eggs* out of the body, and lay them in neſts; and that their *eggs* contain all the nouriſhment requiſite for the fruit, or fœtus: whereas in the latter, the *eggs* are only laid from the ovary into the uterus; that they have but little juice; and that the mother furniſhes the reſt.

There is not ſo much as a plant, whoſe generation, according to the ſentiment of Empedocles, and ſince him of Malpighi, Rallius, Fabric. de Aquapendente, Grew, and others, is not effected by the way of *eggs*.

On the other hand, we have numerous inſtances of oviparous animals ſometimes producing their young abſolutely alive, and without *eggs*. Such inſtances we have of a crow, a hen, ſerpent, fiſhes, eels, *&c.* See Iſibord. ab Amelanxen, *Breviar. Memorabil.* N. 28. *in Append. Ephem.* Curioſ. Nat. *Dec.* II. *An.* 4. *p.* 201. Lyſerus, *Obſ.* VI. *Aldrovand. Hiſt. Serp. & Dracon. p.* 309. Sep. Nuremberg. *De Mirac. Natur. in Europ.* C. 41. Franc. Paullin. *de Anguilla*, S. I. C. 2. *&c.*

But this is not all: Naturaliſts tell us of inſtances of males, and even men, caſting out *eggs* by the fundament. The thing will look ſo odd to an Engliſh reader, that we might be cenſured, were we to relate the various accounts of this kind in form. We ſhall therefore content ourſelves to refer the reader, who has curioſity enough that way, to the authors and places where he may meet with them; *viz.* Chriſt. Paulin. *Cynograph. Curioſ.* Sect. I. L. 3. §. 56. *Ephem.* Nat. Curioſ. *Dec.* II. *A.* 8. *Obſ.* 117. p. 261. and *Dec.* I. *An.* 2. *Obſ.* 250. and *Dec.* II. *An.* 4. Append. *p.* 199. Schenck. *Hiſt. Monſt. p.* 129, *&c.*

M. Stolterfoht is of opinion, that at leaſt, in ſome of theſe caſes, what was taken for *eggs* might be no more than certain aliments ill digeſted, and coagulated; an inſtance of which he himſelf had ſeen. As to thoſe of women, Wormius and Fromann. L. III. *de Faſcinat.* P. VI. C. 20. §. 9. *p.* 882. take it for the effect of the devil: but Bartholin and Stolterfoht treat this notion, as it deſerves, with deriſion.

Gouſſet, *de Cauſis Linguæ Hebraicæ*, explodes the modern ſyſtem of generation *ab ovo*, as contrary to Scripture: and others imagine they have ſeen the animal alive, and formed in the ſeed of the male.

Malpighi has made very curious obſervations with the microſcope, of all the changes that happen in the *egg* every half-hour of incubation. Voſſius, and divers other authors, are very ſolicitous about ſettling the queſtion, which was formed firſt, the *egg* or the pullet? *de Idolol.* L. III. C. 78.

In Egypt they hatch their *eggs* by the heat of a furnace, or oven; and frequently have ſeven or eight thouſand chickens come forth at a time. An account of the method hereof we have in the *Philoſophical Tranſactions*.

At Tonquin they are ſaid to keep *eggs* intire for the ſpace of three years, by covering them up in a paſte made of aſhes and brine. The tortoiſe is ſaid to lay no leſs than fifteen hundred *eggs*, which ſhe covers in the ſand, and leaves the ſun to hatch them; and the *eggs* of the oſtrich are hatched after the ſame manner. Willugh. *Ornithol.* L. II. C. 8. §. 1.

In the *Acta Erudit. Lipſ.* An. 1683. *p.* 221. mention is made of a hen's *egg*, in all reſpects like the common ones, in the middle whereof was found another, of the ſize of a pigeon's *egg*.

Eggs with double ſhells are no unuſual phænomenon. Harvey is very large on the rationale of theſe appearances, in his treatiſe *de Generation. Animal.*

Among the antients, the *egg* was the ſymbol of the world; it being a tradition among them, that the world was made of an *egg*; whence *eggs* became of ſingular importance in the ſacrifices of Cybele, the mother of the gods. Some of their deities, they ſaid, were likewiſe produced from *eggs*.

Wind Egg. See the article Wind *Egg*.

Cows Egg is a name which ſome authors give to a kind of bezoard, found in the ſtomachs of the cow kind.

Egg, in architecture, an ornament of an oval form, cut in the echinus, or quarter-round, of the Ionic and compoſite capitals. The profile, or contour of the echinus, is enriched with *eggs* and anchors, alternately placed.—See *Tab. Archit. Fig.* 10.

Philoſophical Egg, in chymiſtry. See Philosophical.

EGUISCE'. See the article AIGUISCÉ.

EGYPTIANS, in our ſtatutes, a counterfeit kind of rogues, who, being Engliſh, or Welſh people, diſguiſe themſelves in uncouth habits, ſmearing their faces and bodies, and framing to themſelves an unknown, canting language, wander up and down; and under pretence of telling fortunes, curing diſeaſes, *&c.* abuſe the common people, trick them of their money, and ſteal all that is not too hot, or too heavy for them.—See ſeveral ſtatutes made againſt them, 28 *Henry* VIII. c. 10. 1 and 2 *Phil. & Mar*. C. 4. 5 *Eliz*. C. 20.

The origin of this tribe of vagabonds called *Egyptians*, and popularly *gypſies*, is ſomewhat obſcure; at leaſt, the reaſon of the denomination is ſo. It is certain, the antient Egyptians had the character of great cheats, and were famous for the ſubtilty of their impoſtures; whence the name might afterwards paſs proverbially into other languages; as it is pretty certain it did into the Greek and Latin. Or elſe, the antient Egyptians, being much verſed in aſtronomy, which in thoſe days was little elſe but aſtrology, the name was on that ſcore aſſumed by theſe *diſeurs de bonne avanture*, as the French call them, or tellers of good fortune.

Be this as it will, there is ſcarce any country of Europe but has its *Egyptians*, though not all of them under that denomination: the Latins call them *Ægyptii*; the Italians, *Cingani* and *Cingari*; the Germans, *Zigeuner*; the French, *Bohemiens*; others, *Saracens*; and others, *Tartars*, *&c.*

Munſter, *Geogr*. L. III. c. 5. relates, that they made their firſt appearance in Germany, in 1417. exceedingly tawny and ſun-burnt, and in pitiful array: tho' they affected quality, and traveled with a train of hunting-dogs after them, like nobles. He adds, that they had paſſports from king Sigiſmund of Bohemia, and other princes. Ten years afterwards they came into France, and thence paſſed into England.

Paſquier, in his *Recherch*. L. IV. c. 19. relates the origin of the *gypſies*, thus: On the 17th of April 1427. there came to Paris twelve penitents, or perſons, as they ſaid, adjudged to penance; *viz.* one duke, one count, and ten cavaliers, or perſons on horſeback: they took on themſelves the character of *Chriſtians of the Lower Egypt*, expelled by the Saracens; who, having made application to the pope, and confeſſed their ſins, received for penance, that they ſhould travel thro' the world for ſeven years, without ever lying in a bed. Their train conſiſted of 120 perſons, men, women, and children, which were all that were left of 1200, who came together out of Egypt. They had lodgings aſſigned them in the chapel, and people went in crouds to ſee them. Their ears were perforated, and ſilver buckles hung to them. Their hair was exceedingly black and frizzled; their women were ugly, thieviſh, and pretenders to telling of fortunes. The biſhop ſoon afterwards obliged them to retire; and excommunicated ſuch as had ſhewn them their hands.

By an ordonnance of the eſtates of Orleans, in the year 1560. it was injoined all theſe impoſtors, under the name of *Bohemians* and *Egyptians*, to quit the kingdom, on penalty of the gallies. Upon this they diſperſed into leſſer companies, and ſpread themſelves over Europe. The firſt time we hear of them in England, was three years afterwards, *viz.* anno 1563. Raph. Volaterranus, making mention of them, affirms, that they firſt proceeded or ſtrolled from among the Uxii, a people of Perſis, or Perſia.

EGYPTIAN *year*. See the article YEAR.

EJACULATION, in medicine, the act of emitting ſeed; from the Latin *ejaculari*, to caſt outwards. See EMISSION.

To evince a man's virility, in a court of juſtice, where he is accuſed of impotency, it is required he give evidence of erection, intromiſſion, and *ejaculation*.

EJACULATOR, in anatomy, a name applied to two muſcles of the genitals, from their office in the ejaculation of the ſeed.

The *ejaculatores* ariſe from the ſphincter of the anus, and advance along the urethra, as far as the middle thereof; where they are inſerted laterally.

The ſame denomination is likewiſe given two muſcles of the clitoris, which, ariſing from the ſphincter ani, advance laterally along the labia, and are inſerted aſide of the clitoris.

EJACULATORY, in anatomy, is a term applied to two little ducts, or canals, ariſing from the veſiculæ ſeminales.

The *ejaculatory* ducts are about an inch in length: towards the veſiculæ, they are pretty wide; but they contract themſelves as they approach towards the urethra, which they penetrate together.

Some authors alſo apply the name *ejaculatory* to the vaſa deferentia.

EICETÆ, called alſo HEICETÆ, and HICETÆ, heretics of the VIIth century, who made profeſſion of the monaſtic life.

From that paſſage in Exodus, where Moſes and the children of Iſrael are ſaid to have ſung a ſong in praiſe of the Lord, after they had paſſed the Red Sea wherein their enemies had periſhed; the *Eicetæ* concluded, that they muſt ſing and dance, to praiſe God aright: and as Mary the propheteſs, ſiſter of Moſes and Aaron, took a drum in her hand, on the ſame occaſion; and all the women did the like, to teſtify their joy, by playing, beating, and dancing; the *Eicetæ*, the better to imitate their conduct herein, endeavoured to draw women to them to make profeſſion of the monaſtic life, and aſſiſt in their mirth.

EJECIT *infra terminum*. See QUARE *ejecit*.

EJECTION, the act of throwing out, or diſcharging any thing at ſome of the emunctories; as by ſtool, vomiting, or the like.

EJECTIONE *firmæ*, a writ which lies for the leſſee for years, who is ejected before the expiration of his term, either by the leſſor or a ſtranger.

EIGHT, *piece of*. See PIECE *of eight*.

EIGHT *pair of nerves*. See the article NERVE.

EIRE, in law. See the article EYRE.

ELABORATION, the act of finiſhing, or perfecting, any thing with labour, and time.

The term is chiefly uſed in medicine, where the chyle, blood, and ſemen, are ſaid to be *well elaborated*, when they are well conditioned, have undergone all the ſecretions, mixions, impregnations, and circulations, neceſſary to bring them to perfection.

If the chyle went directly from its receptaculum to the breaſts, it would not be ſufficiently *elaborated* to afford good milk. See MILK.

ELABORATORY. See the article LABORATORY.

ELASTIC* *body* is that, which, by being ſtruck, or ſtretched, has its figure altered; but endeavours, by its own force, to reſume the ſame.—Or, it is a ſpringy body, which when compreſſed, condenſed, or the like, makes an effort to ſet itſelf at liberty; and to repel the body that conſtrained it.—Such is a ſword-blade, a bow, *&c.* which are eaſily bent, but preſently return to their former figure and extenſion.

* The word is formed from the Greek, ελαϛης, *impulſor*, of ελαυνειν, *to impel*, *puſh*, &c. See SPRING.

Elaſtic bodies are either *natural*, or *artificial*: thoſe moſt eminent for their *elaſtic* power among *artificial* bodies, are ſteel, braſs, ivory, and marble balls; leathers, ſkins, membranes; braſs, ſilver, iron, and ſteel chords or wires; nerves, guts, hemp and flax ſtrings, *&c.*

Amongſt *natural bodies*, the principal are air, ſponges, the branches of green trees, wool, cotton, feathers, *&c.*—It is diſputed, whether or no water have any *elaſtic* force: the moſt common opinion is, that it has none of itſelf; and that if it ſhew any, it is owing to the air contained therein.

The principal phænomena obſerved to obtain in *elaſtic bodies*, are, 1. That an *elaſtic body* (i. e. *a body perfectly elaſtic*, if any ſuch there be) endeavours to reſtore itſelf with the ſame force wherewith it is preſſed or bent. Thus, whatever force is applied to bend a bow, with the ſame force it ſtrives to unbend itſelf, or return to its natural ſtate. For the force, wherewith the ſtring is drawn, is the ſame with that which reſiſts the draught; the bow being bent ſo long, till the force applied, and that which reſiſts it, are in equilibrio.

2. An *elaſtic* body exerts its force equally towards all ſides; though the effect is found chiefly on that ſide where the reſiſtance is weakeſt: as is evident in the caſe of a bow ſhooting out an arrow; a gun exploding a ball, *&c.*

3. *Elaſtic bodies*, in what manner ſoever ſtruck, or impelled, are inflected, and rebound after the ſame manner. Thus a bell yields the ſame ſound, in what manner, or on what ſide, ſoever it be ſtruck.

4. A body perfectly fluid, if any ſuch there be, cannot be *elaſtic*; by reaſon its parts cannot be compreſſed. See FLUID.

5. A body perfectly ſolid, if any ſuch there be, cannot be *elaſtic*; in that, having no pores, it is incapable of being compreſſed. See SOLID.

6. Hard, long, flexible bodies, apt to acquire *elaſticity*, do it chiefly in three manners; either by being extended, by being contracted, or by being bent.

7. Bodies, in dilating themſelves by their *elaſtic* power, exert a greater force at the beginning of their dilatation, than towards the end thereof. By reaſon the bodies are more compreſſed at firſt; and the renitency is always equal to the compreſſion.

8. The motion, whereby compreſſed bodies reſtore themſelves, is uſually an accelerated motion.

For the laws of motion and percuſſion in ELASTIC *bodies*, ſ MOTION, and PERCUSSION.

ELASTICITY, or ELASTIC *force*, in phyſics, a property o power, in natural bodies, which denominates them *elaſtic* and by which they are reſtored to the figure and extenſio they had loſt from any external cauſe. See ELASTIC *body*.

The cauſe, or principle, of this important property *elaſticity*, or ſpringineſs, is variouſly aſſigned: the Carteſians account f it from the materia ſubtilis making an effort to paſs throug pores that are too narrow for it. Thus, ſay they, in bending or compreſſing, a hard, elaſtic body, *e. gr.* a bow, its pa recede from each other on the convex ſide, and approach o the concave: conſequently the pores are contracted o ſtreightened on the concave ſide; and if they were befo round, are now, for inſtance, oval: ſo that the *materia ſubtilis*, or matter of the ſecond element, endeavouring to paſs out at thoſe pores, thus ſtreightened, muſt make an effort, at the ſame time, to reſtore the body to the ſtate it was in when the pores were more patent and round, *i. e.* before the bow was bent: and in this conſiſts its *elaſticity*.

Other later, and more wary, philoſophers, account for *elaſticity* much after the ſame manner as the Carteſians; with this only difference, that, in lieu of the ſubtil matter of the Carteſians, theſe ſubſtitute æther, or a fine ætherial medium, that pervades all bodies.

Others, ſetting aſide the precarious notion of a *materia ſubtilis*, account for *elaſticity* from the great law of nature, attraction, or the cauſe of the coheſion of the parts of ſolid and firm bodies.

Thus, ſay they, when a hard body is ſtruck, or bent, ſo as the component parts are moved a little from each other, but are not quite disjoined, or broke off, or ſeparated, ſo far as to be out of the power of that attracting force whereby they cohere they muſt certainly, on the ceſſation of the external violence, ſpring back to their former natural ſtate.

Others reſolve *elaſticity* into the preſſure of the atmoſphere: for a violent tenſion, or compreſſion, though not great enough to ſeparate the conſtituent particles of bodies far enough to let in any foreign matter, muſt yet occaſion many little vacuola between the ſeparated ſurfaces; ſo that, upon the removal of the force, they will cloſe again, by the preſſure of the aerial fluid upon the external parts.

Laſtly, others attribute the *elaſticity* of all hard bodies to the power of reſilition in the air included within them; and ſo make the *elaſtic force* of the air the principle of *elaſticity* in all other bodies.

Laws of ELASTICITY.—To inquire a little more expreſly into the nature and laws of *elaſticity*, we ſhall conſider the phænomena thereof. Let it be premiſed, then, that all the bodies wherein this power is obſerved, do conſiſt, or may be conceived to conſiſt, of ſmall threads, or fibres, which, laid together, conſtitute ſuch bodies: to examine *elaſticity*, therefore, in its moſt ſimple caſe, we had beſt conſider it in muſical ſtrings, or chords, and particularly in thoſe of metal; for thoſe of cat-gut, having a ſpiral twiſt, cannot be conſidered as the fibres whereof bodies are formed.

Now the *elaſticity* of a fibre, or chord, conſiſts in this; that it may be ſtretched, or extended; and that, upon removing the force whereby it was ſtretched, or lengthened, it returns again to its former dimenſions. Fibres have no *elaſticity*, unleſs they be extended with a certain force; as appears in lax chords, which may be moved a little out of their poſition, without endeavouring to recover it; though what the degree of tenſion is, neceſſary for *elaſticity* to commence, is not yet determined by experiment: add, that when a fibre is too far ſtretched, it loſes its *elaſticity*; though here, too, the degree of tenſion that deſtroys *elaſticity* is unknown: but it is certain, *elaſticity* depends on tenſion, and is confined within a certain ſphere, or boundary thereof, on either ſide.

This, if it do not give us the proper adequate cauſe of *elaſticity*, yet ſhews us the difference between *elaſtic* and *unelaſtic* bodies; how it is that a body loſes its *elaſticity*, and how a body, deſtitute of any ſuch force, comes to acquire it.—Thus, a plate of metal, by repeated blows of a hammer, becomes *elaſtic*; and, being heated, again loſes that property.

Between the limits of tenſion, wherewith *elaſticity* is terminated, there are different forces required to give different degrees of tenſion, in order to ſtretch chords to certain lengths: what the proportion of theſe forces is, can only be determined by experiments made with chords of metal; but as the lengthenings of ſuch chords are ſcarce ſenſible, the proportions cannot be directly meaſured; but a particular apparatus, and a kind of circuit, are neceſſary to arrive thereat. Dr. s'Graveſande has taken a good deal of pains, in order to fix theſe laws, the reſult of whoſe experiments are as follow.

1. That a weight, whereby a fibre is increaſed a certain length, by ſtretching, is, in different degrees of tenſion, as the tenſion itſelf: if, *e. gr.* there be three fibres of the ſame kind, length, and thickneſs, whoſe tenſions are as 1, 2, and 3; any weights, in the ſame proportion, will ſtretch them equally.

2. That the leaſt lengthening of the ſame fibres are to one another, nearly as the forces whereby the fibres are lengthened; which property may likewiſe be applied to their inflexion.

3. In chords of the ſame kind, and thickneſs, and which are equally ſtretched, but of different lengths, the lengthenings produced by ſuperadding equal weights, are to one another as the lengths of the chords; which ariſes hence, that the chord is lengthened in all its parts; conſequently, the lengthening of a whole chord is double the lengthening of half of it, or a chord of half the length.

4. Fibres of the ſame kind, but of different thickneſſes, may be compared together after the like manner; only conſidering them as conſiſting of a greater or leſs number of fine fibres of the ſame thickneſs; the number whereof muſt be taken in the ratio of the ſolidity of thoſe fibres, *i. e.* as the ſquares of the diameters, or as the weights of theſe fibres, when their lengths are equal: ſuch fibres, of conſequence, will be equally ſtretched by forces that are in the ſame ratio of the ſquares of the diameters; which ſame ratio is likewiſe required between the forces whereby the chords are inflected, that the ſagittæ may be equal in the given fibres.

5. The motion of a ſtretched fibre agrees with the motion of a body vibrating in a cycloid; and how unequal ſoever the vibrations are, they are all regularly performed in the ſame time.

6. In two equal chords, unequally ſtretched, unequal forces are required to inflect them equally: their motions may be compared to thoſe of two pendulums, deſcribing ſimilar cycloids, by different forces: conſequently, the ſquares of the times of the vibrations of the fibres are to each other inverſly as the forces whereby they are equally inflected, which are as the weights by which the chords are ſtretched.

7. The motions of ſimilar chords, equally ſtretched, but of different lengths, may be compared with that of pendulums after another manner: for as the times of the vibrations are to be conſidered, the celerities alſo, wherewith the chords are moved, muſt be conſidered. Now theſe celerities are to one another directly as the weights whereby the chords are inflected, and inverſly as the quantities of matter in the chords; that is, inverſly as their lengths: the celerities, therefore, are in an inverſe duplicate ratio of thoſe lengths; that is, they are inverſly as the ſquares of the lengths: and the ſquares of the times of the vibrations are likewiſe in the inverſe ratio: conſequently, the lengths of the chords will be as the times of the vibrations.

Elaſtic laminæ, or plates, may be conſidered as congeries's, or bundles, of *elaſtic* chords. When the plate is inflected, ſome fibres are lengthened; and there are unequal lengthenings in ſeveral points of the ſame plate.

The curve formed by the inflected plate is eaſily determined, from what has been ſhewn concerning chords: in effect, in the vibrations of ſuch plate, or ſpring, the motion thereof is accelerated, after the ſame manner as the motion of a chord, and of a pendulum in a cycloid, are accelerated; and the vibrations of ſuch ſprings are all performed in the ſame time.

Elaſtic balls, ſpheres, *&c.* may be conſidered as conſiſting of ſeveral *elaſtic* plates, or ſprings; and the introceſſions, or yieldings inward, of any point thereof, are proportionable to the forces wherewith the body is compreſſed.

The ELASTICITY *of fluids* is accounted for, from their particles being all endowed with a centrifugal force; whence Sir Iſaac Newton, prop. 23. lib. 2. demonſtrates, that particles, which mutually avoid, or fly off from, one another, by ſuch forces as are reciprocally proportional to the diſtances of their centre, will always compoſe an *elaſtic fluid*, whoſe denſity ſhall be proportional to its compreſſion; and, *vice verſa*, if any fluid be compoſed of particles that fly off and avoid one another, and hath its denſity proportional to its compreſſion; then the centrifugal forces of thoſe particles will be reciprocally as the diſtances of their centres.

ELASTICITY *of the air* is the force wherewith that element dilates itſelf, upon removing the force whereby it was before compreſſed.

The *elaſticity or ſpring of the air* was firſt diſcovered by the great Galileo. Its exiſtence is proved by this experiment of that philoſopher: an extraordinary quantity of air being intruded, by means of a ſyringe, into a glaſs or metal ball, till ſuch time as the ball, with this acceſſion of air, weigh conſiderably more, in the balance, than it did before; upon opening the mouth thereof, the air ruſhes out, till the ball ſink to its former weight.

For hence we argue, that there is juſt ſo much air gone out, as compreſſed air had been crouded in. Air, therefore, returns to its former degree of expanſion, upon removing the force that compreſſed, or reſiſted, its expanſion; and, conſequently, it is endued with an *elaſtic force*.

It muſt be added, that as the air is found to ruſh out, in every ſituation, or direction, of the orifice; the *elaſtic force* of the air acts every way, or in every direction.

The *elaſticity of the air* making a conſiderable article in the new pneumatics, we ſhall here give the principal laws thereof.

1. The *elaſticity* of the lower air is equal to the weight of all the upper incumbent air: for the upper air is eaſily proved to preſs on the lower.

And the *elaſticity of the air* has already been ſhewn equal to the compreſſing power: whence it follows, that the *elaſticity of the air* is equal to the weight of the whole incumbent atmoſphere.

Hence, as the weight of the upper air, incumbent on the lower, is equal to the weight of a column of water of the ſame diameter with the column of air, and the altitude of 31 feet; or to a column of mercury 28 inches high: the ſpring of the lower air is equal to the ſame column of water, or mercury.

Hence, again, the ſpring of the air, included in a veſſel, &c. is likewiſe equal to the weight of the whole incumbent atmoſphere: conſequently, the air, included in a veſſel, preſſes with the ſame force as the weight of the atmoſphere; and therefore the *elaſticity* of the included air is able to ſuſtain mercury to the height of 28 inches, and water to the height of 31 feet, in an empty tube. See AIR-PUMP.

2. The *elaſtic force* of air compreſſed, is to that of the ſame air dilated, reciprocally as the bulk of the dilated air to that of the compreſſed air.

For the *elaſticity of air* more compreſſed, is to that of air leſs compreſſed, as the weight incumbent on that, to the weight incumbent on this: but the bulks of more and leſs compreſſed air are in the ſame reciprocal ratio of theſe weights; therefore the *elaſtic force*, &c.

Hence the *elaſticity of air* more compreſſed, is ſtronger than that of air leſs compreſſed.

3. The *elaſticity* of more compreſſed air, is to that of air leſs compreſſed, *cæteris paribus*, as the maſs, or quantity, of more compreſſed air is to a maſs of air leſs compreſſed of the ſame bulk.

4. The ratio of the ſpace filled by air preſſed only by the weight of the atmoſphere, to the ſpace it is reduced into by further compreſſion, being given; to determine the *elaſtic force* of the compreſſed air.

Since the ſpring of the air, preſſed only by the weight of the atmoſphere, is equal to the weight of a column of mercury, of the ſame baſe with the column of air, and of the height of 28 inches; to the bulk of the compreſſed air, that of the air not compreſſed, and the weight of the column of mercury, ſeek a fourth proportional; this will expreſs the quantity of the *elaſtic force* in the compreſſed air.

Hence ſubtracting the weight of the column of mercury from the quantity of the *elaſtic force* thus determined, the remainder is the force of *elaſticity* whereby it exceeds the reſiſtance of the weight of the atmoſphere.

5. Heat increaſes the *elaſticity* of the air; and cold diminiſhes it. See HEAT, and COLD.

6. The *elaſtic force* of the air, whereby it is expanded, in rarefaction, is to the *elaſticity* of the air condenſed, as the bulk of rarefied air, to the bulk of condenſed air.

ELATERIUM*, ΕΛΑΤΗΡΙΟΝ, in pharmacy, a violently purgative medicine, prepared from the wild cucumber.

* The word is formed from the Greek ελαυνω, I impel, agitate, &c.

Elaterium is made of the juice of the fruit, forced out with the finger, which, ſuffered to ſtand ſome time, lets fall a ſediment, which, carefully dried on chalk-ſtones, is the *elaterium*.

Elaterium is a vigorous purge, and is ſometimes uſed in lethargies, palſies, and hypochondriacal melancholies.

ELBOW, the outer angle made by the flexure, or bend, of the arm.

That eminence whereon the arm reſts, called by us *elbow*, is by the Latins called *cubitus*, and the Greeks *αγκων*, and by others ολεκρανον.

ELBOW is alſo uſed, by architects, maſons, &c. for an obtuſe angle of a wall, building, or road, which diverts it from its right-line.

ELCESAITES, HELCESAITES, or ELCESAIANS, as Theodoret calls them, antient heretics, thus denominated from their great prophet *Elceſai*.

This *Elceſai*, by others called *Elxai*, who lived in the time of Trajan, gave into the ſentiments of the Ebionites, touching Jeſus Chriſt; though he altered and reformed them in ſome things, to denominate himſelf the author of a ſect.

His fundamental doctrines were, that Jeſus Chriſt, who was born from the beginning of the world, had appeared from time to time under divers bodies; that he was a celeſtial power, or virtue, called *the Chriſt*, whereof the Holy Spirit was ſiſter (note, the Hebrew word for ſpirit is feminine); and that both of them had deſcended into Jeſus, the ſon of Mary.

The *Elceſaites*, according to St. Epiphanius, were by ſome alſo called *Sampſeans*, from the Hebrew word *ſames*, ſun.

Scaliger was notoriouſly miſtaken, in holding, that *Elxai* was no more than *Eſſai*, or *Eſſene*; on which ſuppoſition he made the *Elceſaites* the ſame with the ſect of Eſſenes, which is contrary to all antiquity.

Origen makes mention of the *Elceſaites*, in one of his homilies, as a hereſy newly riſen. The retainers hereto, ſays he, do not admit all the books of the canon, but only ſome of them: they allow ſome paſſages out of the Old Teſtament and the evangeliſts, but reject all the epiſtles of St. Paul. Add, that they have produced a book, which, they pretend, deſcended to them from heaven; and maintain, that whoever performs what is injoined therein, ſhall obtain pardon of all their ſins. See Euſebius, *Hiſt.* Lib. VI. c. 38. who remarks, that this hereſy became extinct almoſt as ſoon as it aroſe.

St. Epiphanius is very full on the ſubject of this ſect, *Hær.* 19. where he obſerves, that *Elxai* was a Jew by birth; and that, not being able to live according to the law of Moſes, he invented new opinions, and got himſelf followers. He was a profeſſed enemy of virginity, and obliged all, who followed his doctrine, to marry. He tutored them to hypocriſy in times of perſecution; pretending, it was lawful to adore idols, provided the heart had no ſhare therein.

ELDERS, *ſeniors*, in the Jewiſh hiſtory, were the moſt conſiderable perſons, for age, experience, and virtue, among that antient people.—Moſes, we read, aſſembled the *elders* of the people together, and acquainted them with what the Lord had commanded.

Long afterwards, thoſe who held the firſt rank in the ſynagogues were uſually called *zekenim*, *elders*, in imitation of the 70 *elders*, whom Moſes eſtabliſhed for the judges of the ſanhedrim.

The preſident, or chief, had, in a particular manner, the appellation of *elder*; being, as it were, the *decanus ſeniorum*, dean of the *elders*.

In the aſſemblies of the primitive Chriſtians, thoſe who held the firſt place, or rank, aſſumed the denomination of preſbyters, or *elders*: for the word *preſbyteri*, which occurs ſo frequently in the Old Teſtament, and which includes alike both biſhops and prieſts, does properly ſignify *elders*. See M. Simon's obſervation thereon, in his *Supplement aux ceremonies des Juifs*.

The preſident, or biſhop, as being the chief of the *elders*, did likewiſe aſſume the denomination of *elder*: whence it is, that in the New Teſtament the name *biſhop* is frequently confounded with that of *preſbyter*. See BISHOP, and PRESBYTER.

For the like reaſon, the council of the firſt churches was calle *preſbyterium*, or council of the *elders*, where the biſhop preſided in quality of firſt *elder*, being ſeated in the middle o the other *elders*. The prieſts, or *elders*, who ſat by him had each his judge's chair; for which reaſon they are called by the fathers, *aſſeſſores epiſcoporum*. Nothing of any import ance was done, till it had firſt been examined, and reſolved, i this aſſembly, where the biſhop only made one body with th other *elders*, or prieſts; the juriſdiction which we now ca epiſcopal, not being then dependent on the biſhop alone, bu on all the *elders*, over whom he was only the preſident.

ELDERS is alſo a denomination ſtill retained in the preſbyteria diſcipline.

The *elders* are officers, who, in conjunction with the paſtor or miniſters, and deacons, compoſe the conſiſtories, or kir ſeſſions, meeting to conſider, inſpect, and regulate, matters religion and diſcipline. They are choſen from among t people, and are received publicly with ſomewhat of ce mony. In Scotland, there are an indefinite number of *eld* in each pariſh; generally about twelve.

Chamberlayne makes mention of a *ruling elder* in each pari choſen by the kirk-ſeſſion; the congregation afterwards a proving the choice, after a ſtrict ſcrutiny into his life and ma ners. He adds, that the miniſter ordains him; and that office is for life: his buſineſs being to aſſiſt the miniſter in ov ſeeing and correcting the manners of the people; to att him in viſiting, catechiſing, praying for the ſick, in private a monitions, and at the communion-table.

But this we apprehend to be a miſtake; what that author of *ruling elders*, belonging properly to the *ſimple elders*. A *ruling elders*, there are no ſuch things, but in the gen aſſemblies, where they appear as repreſentatives of the See KIRK-*Seſſions*, SYNOD, and PRESBYTERY.

ELECAMPANE *Wine*. See the article WINE.

ELECT, *choſen*, in theology, particularly in the Scriptures applied to the ſaints, the predeſtinated.—In which ſenſe, *elect* are thoſe perſons whom God has choſen to beſtow glory of heaven upon.

The apoſtles alſo apply the word to the primitive Chriſti —In which ſenſe, the *elect* are thoſe choſen and admitte the favour and bleſſing of Chriſtianity.

God, who has predeſtinated the *elect* to glory, has like predeſtinated them to ſanctification.

ELECT is likewiſe applied to archbiſhops, biſhops, and officers, who are choſen, but not yet conſecrated, or act inveſted with their office, or juriſdiction.

The emperor is ſaid to be *elect*, before he is inaugurated crowned: a lord mayor is *elect*, before his predeceſſor's oralty is expired, or the ſword is put in his hands.

Philip of Savoy was five years archbiſhop of Lyons, wi ever being ordained, or conſecrated; after which, he q his archbiſhoprick to marry the counteſs of Burgundy. that time he bore the title and quality of archbiſhop el Lyons, *electus Lugdunenſis*.

ELECTION, a choice made of any thing, or perſon, wh it is preferred to ſome other.

There ſeems this difference, however, between *choic* *election*; that *election* has uſually a regard to a compan community, which makes the choice; whereas choice dom uſed, but when a ſingle perſon makes it.

We ſay, the *election* of a biſhop, a member of parlia &c. See BISHOP, PARLIAMENT, &c.

The moſt ſolemn *election* is that of a pope; which i formed by the cardinals, in four ſeveral manners.—The firſt, by the Holy Spirit, as they call it; when the firſt cardinal who ſpeaks, having given his vote for any perſon, proceeds to the adoration, and proclaims him pope, as by a ſudden inſpiration of the Holy Ghoſt. In which caſe, he is deemed duly *elected*, if all, or at leaſt two-thirds of the aſſembly be conſenting thereto.

The ſecond, by compromiſe, when the whole college pitches on three cardinals, to whom they give a power of nominating the pope; which power expires upon the burning out of a candle lighted on that occaſion.

The third, by way of poll or ſcrutiny, which laſt is the moſt uſual; the cardinals throwing ſealed tickets, wherein their votes are written, into a chalice, or cup, placed on the altar. Two thirds of the votes are required to determine an *election* by ſcrutiny.

The fourth is by way of acceſſion; when, the votes being too much divided to *elect* any body, ſome of the cardinals deſiſt from their firſt ſuffrage, and accede, that is, give their voices, to him, who has already the majority by ſcrutiny.

The way of acceſſion, however, is always added to the ſcrutiny; it being the conſtant practice for all the cardinals to give their voices, after the laſt ſcrutiny, to him whom they find to have the plurality already. So that all *elections* of popes are, with the unanimous conſent of all the cardinals.

ELECTION is alſo the ſtate of a perſon who is left to his own free-will, to take or do either one thing, or another, which he pleaſes. See LIBERTY.

ELECTION, in theology, ſignifies the choice which God, of his good pleaſure, makes of angels or men, for the objects of mercy, and grace.

The *election* of the Jews, was the choice God made of that people to be more immediately attached to his worſhip and ſervice, and for the Meſſiah to be borne thereof.

ELECTION alſo, ſometimes, ſignifies a predeſtination to grace and glory; and ſometimes to glory only.

It is an article of faith, that predeſtination to grace is gratuitous, merely and ſimply ſo :*gratia, quia gratis data*. But the divines are much divided as to the point, whether *election* to glory be gratuitous, or whether it ſuppoſe obedience and good works, *i. e.* whether it be before, or after, the previſion of our obedience?

Some hold that it is before, and after, at the ſame time: it is before the previſion of our obedience, as glory is intended as antecedent to our obedience: and it is after, as this glory is intended us as a reward, and of conſequence, as a ſequel of our obedience. See GRACE, and REPROBATION.

ELECTION is alſo uſed for a part of pharmacy; being that which teaches how to chooſe the medicinal ſimples, drugs, &c. and to diſtinguiſh the good from the bad.

Some diſtinguiſh a general *election*, which gives the rules and marks for all medicines in general; and a particular one for each medicine in particular. Pomet, in his hiſtory of drugs, gives very good rules for this *election*.

LECTIVE, ſomething that is done, or paſſes by election.

The empire of Germany was hereditary in time of Charlemaign; and did not become *elective*, till after the death of Louis the IIId, the laſt of the race of Charlemaign in the empire. Indeed, it was not intirely *elective* till the time of Frederic II. in 1210.

Some benefices are *elective*, others collative. Municipal offices in England, are generally *elective*; in Spain, venal. Poland is an *elective* kingdom. All prelatures in France are *elective*, ſince the Concordat.

LECTOR *, a perſon who has a right to *elect*, or chooſe another to an office, honour, &c.

* The word is formed of the Latin *eligere*, to chooſe.

We ſay, the *electors* of a burgeſs, a knight of the ſhire, a grand maſter of an order, &c.

LECTOR is particularly, and by way of eminence, applied to certain princes of Germany, in whom lies the right of electing the emperor; being all ſovereigns, and the principal members of the empire.

The origin of *electors* is not well known: ſome refer it to the time of Otho III. in the year 997. others to Frederic II. who died in 1250. and others to Ralph of Hapſburg, founder of the houſe of Auſtria, in the year 1280.

Their number, however, was unſettled, at leaſt till the time of Frederic II. in the 13th century. The golden bull, publiſhed by Charles IV. in 1356. fixed the number of *electors* to ſeven; three of them eccleſiaſtics, *viz.* the archbiſhops of Mentz, Treves, and Cologne; and four ſeculars, *viz* the king of Bohemia, the count palatine of the Rhine, the duke of Saxony, and the marquis of Brandenburgh. By the treaty of Munſter, in 1648. this order was changed: the duke of Bavaria being put in the place of the count palatine, and an eighth electorate erected for the count palatine.

In the year 1692. a ninth electorate was created by the emperor Leopold, in favour of Erneſt duke of Hanover, under the title of *elector* of Brunſwic. Some oppoſition was made to this election; and the princes of Germany ſtood out for ſome time, and refuſed to acknowlege it. But they afterwards acquieſced in it, and it has been ſince recognized by all the foreign princes. The king of France did it at laſt by the treaty of Raſtad.

The ſeveral functions of the *electors* are as follow: the *elector* of Mentz is chancellor of Germany; he convokes the ſtates, and gives his vote before any of the reſt. The *elector* of Cologne is grand chancellor of Italy, and conſecrates the emperor. The *elector* of Treves is grand chancellor of the Gauls, and confers the impoſition of hands on the emperor. The count palatine of the Rhine is grand maſter of the imperial palace, and preſents the emperor with a globe at his coronation. The marquis of Brandenburgh is grandchamberlain, and puts the ring on the emperor's finger. The duke of Saxony, now king of Poland, is grand marſhal, and gives the ſword to the emperor. The king of Bohemia, who was antiently only duke, is grand butler, and puts Charlemaign's crown on the emperor's head. Laſtly, the *elector* of Hanover, now king of Great Britain, is arch-treaſurer; though firſt erected under the title of ſtandard-bearer of the empire.

ELECTORAL, ſomething relating, or belonging, to an elector.

The *electoral* prince is the eldeſt ſon of an *elector*, and the preſumptive heir of his dignity.

Electors are always addreſſed under the title of *electoral highneſſes*.

The *electoral* college, conſiſting of all the electors of the empire, is the moſt illuſtrious and auguſt body in Europe. Bellarmin and Baronius attribute the inſtitution of the *electoral* college to pope Gregory V. and the emperor Otho III. in the Xth century. Of which opinion, are the generality of hiſtorians, and particularly the canoniſts. Wicquefort is of another ſentiment; and endeavours to make it appear, from the elections of the ſucceeding princes, that the number of electors was not then fixed, nor the *electoral* dignity annexed to any particular principalities, excluſive of the other princes of Germany. He adds, that there was nothing ſettled with regard hereto before Charles IV. and that the publication of his golden bull, was only to prevent ſchiſms, and ſecure the repoſe of the kingdom by a regulation in form.

It was the golden bull, therefore, publiſhed in 1356. that conſtituted the *electoral* college, and reduced the number of electors to ſeven.

ELECTORAL *Crown*, or *Coronet*, is a ſcarlet cap, turned up with ermine, and cloſed with a ſemicircle of gold, all covered with pearls. On the top of it there is a globe with a croſs thereon.

ELECTORATE, the dignity of an elector, with the territory, or dominions, to which that quality is annexed. See ELECTOR.

We ſay, the *electorate* of Saxony, of Bavaria, &c. The emperor, of his own ſpecial authority, in the year 1692. erected a ninth *electorate*, in favour of the houſe of Brunſwic-Lunenburg. The princes, who diſputed the validity of this election, were called the *oppoſers of the ninth electorate*.

Though the cuſtom ordinarily be, in Germany, for the ſons of princes to ſhare their fathers lands and territories among them; thoſe whereto the *electorate* is annexed, are not uſed to be divided; but paſs intire to the eldeſt ſon, who ſucceeds to the *electorate*.

ELECTRICITY, or ELECTRICAL *Force*, is that power, or property, whereby amber, jet, ſealing-wax, agate, glaſs, and moſt kinds of precious ſtones, attract ſtraws, paper, and other light bodies, to themſelves.

Electricity differs from *magnetiſm* in this, that the latter only attracts iron, whereas the former indifferently attracts moſt kinds of bodies; though the effect is principally ſenſible in light ones.

The Peripatetics hold this power to conſiſt in I know not what ſecret quality, or ſympathetic power, ſubſiſting between the amber, *e. gr.* and the ſtraw, and reſulting from the ſubſtantial form of each.

But the later philoſophers generally agree to make it the effect of a corporeal effluvium, emitted from, and returning to, the electrical body: though as to the nature of theſe effluvia, and the manner of their acting, they are hitherto greatly divided. Some, with Cabeus, ſuppoſe actual ſteams to iſſue out of the *electrical* body, when agitated by attrition; and that theſe diſcuſs and repel the ambient air, which, after it has been driven off a little way, makes as it were a little vortex, by the reſiſtance it meets withal in the remoter air, to which theſe *electrical* ſteams did not reach: and that theſe ſteams, ſhrinking quickly back again to the attracting body, do, in their return, attract and bring along with them ſuch light and ſmall bodies as they meet in their way.

Others, with Dr. Gilbert, Gaſſendus, Sir Kenelm Digby, &c. hold, that on rubbing, or chafing, the *electrical* body is made to emit rays, or fibres, of an unctuous nature; which coming to be condenſed and cooled by the ambient air, do loſe their agitation, and ſo ſhrink back again into the body from which they ſallied; and by that means carry along with them ſuch light and ſmall bodies, as happen to be faſtened, or ſticking to their further ends. Gaſſendus adds, that theſe unctuous effluvia being emitted all manner of ways, do frequently decuſſate, or croſs each other; and by that means take the better hold of ſtraw, *&c.*

The Carteſians, not being able to imagine how ſo hard and brittle a body, as glaſs, ſhould emit effluvia, attribute *electricity* to the globules of the firſt element; which breaking out through the pores, or chinks of the body, like little darts or ſwords, and not meeting with proper meatus's, or paſſages in the air, return whence they came, and carry the little bodies, whoſe pores they happen to enter, and be entangled in, along with them.

Mr. Boyle, Mr. Hauksbee, *&c.* have made a number of experiments, to aſcertain the nature, and laws of *electricity*; the reſult whereof may be ſummed up under the following articles.

1. That *electrical* bodies do not at all, or very rarely attract, except when warmed, and thereby ſollicited to emit effluvia more copiouſly.

Mr. Hauksbee, having heated a glaſs tube, of about an inch diameter, and 30 inches long, by rubbing it vehemently on paper, and then applying it to ſeveral pieces of leaf braſs, found that they were no ſooner within the ſphere of activity of the effluvia emitted by the tube, than they began to be put into very briſk and ſurpriſing motions; would leap towards the tube, even at the diſtance of 12 or 14 inches; would ſometimes adhere, and faſten to the tube, ſettle on its ſurface, and there remain quiet: and ſometimes be thrown off from it with a great force. And thus would they be alternately attracted and repelled, for ſeveral times ſucceſſively. Sometimes, again, they would move ſlowly toward the tube; ſometimes they would remain ſuſpended between the tube and the table they were firſt laid on; and ſometimes would ſlide along in the direction of the ſide of the tube, without touching it.

2. That bodies, warmed by fire, do not attract ſo forcibly, as when heated by rubbing; though if they be firſt heated, and then rubbed, they will attract the more ſtrongly.

Mr. Hauksbee aſſures us, that the hotter he made the tube by rubbing, to the greater diſtance did the attractive force extend itſelf: but that this would anſwer in proportion, to any degree of heat excited, he will not undertake. When the tube was rendered the hotteſt by the ſtrongeſt attrition, the force of the effluvia was rendered manifeſt to another ſenſe, namely that of feeling, being plainly perceived on the face, or any other tender part, making ſtrokes or impulſes on the ſkin, much like thoſe made by puſhing a number of limber hairs againſt it.

3. That terſion or wiping, is almoſt univerſally neceſſary, as well as attrition or rubbing, to produce *electricity*; by reaſon the effluvia can more readily eſcape, when there is nothing to ſtop up, or choak the pores.

4. That the interpoſition of the fineſt linen, as muſlin, gauſe, or the like, will totally hinder the operation of *electrical* bodies.

5. The effect is leſs ſenſible in thick and cloudy weather: for the air being clogged with vapours and exhalations raiſed from below, the reſiſtance the *electrical* effluvia meet withal, muſt be greater than when the air is free of any ſuch impediments. Hence, alſo, in all probability, ariſes the neceſſity of terſion; the watry particles being apt to run together, and condenſe on the ſurface of the body, and ſo to obſtruct the paſſage of the effluvia.

6. *Electrical* bodies are more forcible, *cæteris paribus*, in hot weather than in cold, in ſummer than in winter; by reaſon the more vigorous action of the ſolar rays, does more effectually ſhake the parts of bodies, and unlock the pores, and ſo make room for a more plentiful emiſſion of effluvia. Beſide, that in warmer weather, the medium being rarer, makes leſs oppoſition to the paſſage of the effluvia.

7. The air being exhauſted out of the tube, it loſes almoſt all its *electricity*: ſo that though rubbed, and heated more vehemently, and leaf gold applied nearer than uſual, it ſcarce attracts at all. And what little attraction remains, Mr. Hauksbee conjectures, may ariſe from the little portion of air remaining in the tube: and ſo the attraction may continue in proportion to the quantity of air. When the air is let into the tube again, the attractive power is immediately reſtored; and that before any new attrition can be given the tube, or before it be removed from the diſtance and poſition it was in when exhauſted. Mr. Boyle, however, found that a piece of amber did ſenſibly attract when the air was pumped out of the receiver.

8. *Electrical* bodies attract all things indifferently, whereas the magnet draws only iron and ſteel.

9. A large piece of very *electrical* amber being ſuſpended by a ſilken thread, and one end of it rubbed ſtrongly on a little cuſhion; the cuſhion being brought nearer, towards the amber at reſt, will plainly make the amber tend towards it, and follow it. Whence it appears that the *electrical* body is attracted by the other bodies, as well as it attracts them. And that it is only by accident that the ſmall attracted bodies approach to the *electrical* ones.

10. After an *electrical* body has been well rubbed, there is a certain nick of time in which the light body, inſtead of being attracted, will be actually repelled, or driven away from the *electrical* one, by the effluvia going briſkly out, and not returning again.

Mr. Hauksbee aſſures us, that two pieces of leaf gold would be ſometimes thrown off from his tube with a great force, even to the diſtance of ſix or ſeven inches. And thus, not only when they adhered to the ſurface of the tube, would they be ſuddenly and precipitantly driven from it; but alſo in their motion of aſcent towards it.

11. A glaſs globe, being contrived to be whirled round, with its axis parallel to the horizon, and a ſemi-circle of wire fitted round the upper hemiſphere thereof, at the diſtance of four or five inches, with ſeveral pieces of woollen thread hung thereon, of ſuch lengths, as that when extended in a direction towards the centre of the glaſs, they would reach within an inch of the circumference thereof; but, when left at liberty, hung down in a parallel poſition: upon applying the hand, and ſo adding an attrition to the former rotation, the threads preſently began to change their direction, and all harmoniouſly pointed to the centre of the globe; and to put it paſt doubt, that this effect depended on the attrition, the experimentator, by ſhifting the place of the attrition hither and thither, could draw the threads towards this or that end of the globe, though they all ſtill went uniformly converging towards ſome centre, in the axis thereof; and ſo formed a kind of conical ſurface.

The ſame phænomena followed upon ſhifting the wire, and putting it on the lower hemiſphere. Add, that upon ſuſpending the motion and attrition, the threads would continue in their ſtrait direct poſture for the ſpace of four or five minutes. And in the mean time, if the finger, or any other body, were applied near the extremity, or points of the threads, they would avoid and fly from the ſame: but if applied about an inch diſtance from the end of ſuch thread, the thread would uſually be attracted towards it. Since theſe a multitude of other curious experiments have been made. See Supplement, article ELECTRICITY.

ELECTRUM, is ſometimes uſed for *amber*. See the article AMBER.

ELECTRUM more frequently ſignifies a mixed metal of great value amongſt the antients. See *Gottlieb Rink de vet. Num. Pot. & Qualitate*, cap. IX.

ELECTUARY *, in pharmacy, a form of medicine, compoſed of powders and other ingredients, incorporated with ſome conſerve, honey, or ſyrup; to be divided into doſes, like bolus's when taken.

Electuaries are either ſoft, or ſolid; and of each kind, ſome are alterative, others corroborative, others purgative, *&c.*—The *ſoft* are of the conſiſtence of honey, and may conſiſt of three ounces of powder to a pound of honey, or conſerve and ſyrup.

The purgatives are uſually of the ſoft kind: but the corroborative only admit of 1 or 1½ ounce of powders to five or ſix ounces of conſerve, with a proper quantity of ſyrup.

Among the ſoft *electuaries* of the ſhops, are reckoned Venice treacle, mithridate, the confection of hamech, that of alkermes, the catholicon, diaprunum, diaphœnicum, Galen's hiera picra, *&c.* which ſee explained under their reſpective articles.

Among the ſolid *electuaries*, are reckoned thoſe of carthamum, roſe juice, violet juice, *&c.* M. Lemery reckons up about 120 ſorts of *electuaries*, and beſide theſe there is an infinite variety in extemporaneous preſcriptions.

ELEEMOSYNA *Carucarum*, or *pro Aratris*, or *Aratri*, in our antient cuſtoms, a peny which king Ethelred ordered to be paid for every plough in England, towards the ſupport of the poor.—Sometimes it is alſo called *eleemoſyna regis*, becauſe firſt appointed by the king.

ELEEMOSYNÆ, is alſo uſed for the poſſeſſions belonging to churches. See ALMS, and FRANK *Almoign*.

ELEEMOSYNARIA. See the article AMBRY.

ELEGANCE, ELEGANCY, denotes a manner of doing, or ſaying things politely, agreeably, and with choice.

With choice, ſo as to riſe above the common manners; politely, ſo as to ſtrike people of a delicate taſte; and agreeably, ſo as to diffuſe a reliſh which hits every body.

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* Some will have it thus called, by reaſon all the parts, or ingredients it conſiſts of, ſhould be well choſen; from the Latin verb *eligere*, to chooſe, whence *electus*, choſen. Others derive it from *lac*; and accordingly the Greeks, under the Eaſtern empire, called it λακτικαριον. Scaliger derives it from λειχω, I lick; and calls it in Latin, *elinctum*. Voſſius obſerves, that all the remedies preſcribed for the ſick, as well as the confections taken by way of regale, were called by the Greeks, εκλειγματα, and εκλεικτα, of the verb λειχω, I lick: whence, ſays he, was formed the Latin *electarium*, and afterwards *electuarium*. This conjecture he ſupports from the laws of Sicily, where it is ordained, that *electuaries*, ſyrups, and other remedies, be prepared after the legal manner. The Bollandiſts, who relate this etymology, ſeem to confirm it. *Act. Sanct. Mart.* T. II. p. 131.

Poetical *elegancies*, *elegantiæ poeticæ*, are of ſervice to ſcholars in making their verſes: by being too regular in the grammatical conſtruction, we loſe certain licences, wherein the *elegance* of language conſiſts. *Elegance*, though irregular, is better than regularity without *elegance*.

The *elegance* of a painting is not founded on the correctneſs of the deſign, as appears in Raphael, and the antique. It is moſt felt in works otherwiſe careleſs and inaccurate; as in Corregio, where, in ſpite of all the defects as to juſtneſs of deſign, there is an *elegance* even in the manner of the deſign itſelf, as well as in the turn of the attitudes, *&c.*

The *elegance* of a deſign, is a manner which embelliſhes and heightens objects, either as to their form, or colour, or both; without deſtroying or perverting the truth.

ELEGIAC, in the Latin poetry, ſomething that belongs to *elegy*.

Elegiac verſes, Ελεγοι, are alternately hexameter, and pentameter.

Quintilian eſteems Tibullus the top of the *elegiac* poets: but the younger Pliny gives the preference to Propertius. They have each of them reaſon on their ſide; and one might make a third choice, as juſt as either of them.

ELEGIT, in law, a judicial writ which lies for him who has recovered debt or damages, or upon a recognizance in any court, againſt one not able in his goods to ſatisfy; and directed to the ſheriff; commanding him to make delivery of half the party's lands, and all his goods, oxen and beaſts for the plough excepted.

The creditor ſhall hold the moiety of the ſaid land ſo delivered to him, till his whole debt and damages are ſatiſfied; and during that time, he is tenant by *elegit*. See Tenant.

ELEGY, Ελεγεια, a mournful, and plaintive kind of poem.

The firſt inventor of the *elegy* is not known: ſome ſay it was one Theocles of Naxus, or, according to others, of Eretria, who, in the heat of his phrenſy, firſt produced this kind of compoſition. But, no wonder we at this time are in the dark as to the matter: Horace aſſures us, it was a point not ſettled among the grammarians even in his time, who the author was.

> *Quis tamen exiguos* elegos *emiſerit auctor,*
> *Grammatici certant, & adhuc ſub judice lis eſt.*

The chief writers of *elegy* among the Greeks, are Callimachus, Parthenius, and Euphorion: and among the Latins, Ovid, Catullus, Tibullus, and Propertius.

The Flemiſh have diſtinguiſhed themſelves among the moderns for this kind of Latin verſe: The *elegies* of Bidermann, Grotius, and eſpecially Sedronius and Vallius, ſeem worthy of the pureſt antiquity. Theounteſs de la Suze has diſtinguiſhed herſelf for *elegies* in the French tongue.

In the Engliſh, we have nothing conſiderable of the *elegiac* kind, but what we have in Milton. The Engliſh and French *elegies* are chiefly in Alexandrine verſes.

In proceſs of time, *elegy* degenerated from its original intention; and not only matters of grief, but alſo joy, wiſhes, prayers, expoſtulations, reproaches, and almoſt every ſubject, were admitted into *elegy*.

The office of *elegy* is well delivered by M. Boileau:

> *La plaintive elegie en long habits de deuil,*
> *Scait, les cheveux epars, gemir ſur un cercueil:*
> *Elle peint des aimans la joye, & la triſteſſe;*
> *Flatte, menace, irrite, appaiſe une maîtreſſe.*
>
> In mourning weeds ſad *elegy* appears,
> Her hair diſhevell'd, and her eyes in tears:
> Her theme, the lover's joys, but more his pains;
> By turns ſhe ſings, ſooths, threatens, and complains.

The diction of *elegy* ought to be clean, eaſy, perſpicuous, expreſſive of the manners, tender, and pathetic; not oppreſſed with ſentences, points, *&c.* No apoſtrophe's are allowed; and the ſenſe ought to be generally cloſed in every diſtich, or two lines; at leaſt, in Latin compoſitions.

ELEMENTARY, ſomething that relates to the principles or *elements* of bodies.

The *elements* of a body are alſo called the *elementary principles* thereof. See Principle.

The whole ſpace, included within the concave, or orbit of the moon, is called the *elementary region*, as being the ſeat, or ſphere, of the four vulgar *elements*, and the bodies compounded thereof.

The author of the *Comte de Gabalis* gives the name *elementary people* to a kind of beings who are ſuppoſed to inhabit the *elements*, and are only known by what they call the *philoſophers*, or *ſages*. According to theſe folks, the *element* of *fire* is inhabited by ſalamanders; *water*, that is, the ſea and rivers, by nymphs, or oridians; *earth* by gnomes and gnomides; and *air* by ſylphs and ſylphides.

Elementary *Air*.	See the articles	Air.
Elementary *Fire*.		Fire.
Elementary *Geometry*.		Geometry.
Elementary *Muſic*.		Music.

ELEMENTS, in phyſics, the firſt principles or ingredients of things, whereof all bodies are compounded; and into which they are all reſolvible.

Elements are conceived as the moſt ſimple, homogeneous parts, or corpuſcles; of an aſſemblage and mixture whereof, all the bodies we ſee, conſiſt.

Authors generally talk wildly, and inconſiſtently, of the *elements*; and confound them with the *principles* of things: yet is there a great deal of difference. And we find by experience, that all things cannot indifferently be made of all; that ſtone, for inſtance, and marble, are not convertible into fleſh, nor are fit to nouriſh or augment an animal body: it ſeems to follow, that all the variety of bodies could never ariſe from the firſt ſimple combination of the two principles, matter and form: but only ſome infinitely ſimple being, or corpuſcles, which being variouſly intermixed, might conſtitute all other bodies. Now thoſe moſt ſimple of all beings, thus formed of the firſt determination and concretion of principles, are what the philoſophers properly call *elements*: ſo that *elements* and principles have this difference between them; that a principle, as matter, is a kind of incomplete nature; but an *element* is a perfect or complete one.

Hence it follows, that there muſt, of neceſſity, be more *elements* than one; ſince otherwiſe all things would be equally ſimple, and there would be no ſuch thing as a compound in nature. Moſt of the antients, not aware of this, confound *element* with principle: by which means the *elements* are ſometimes repreſented as corruptible, and ſometimes as incorruptible.

The retainers to incorruptible *elements*, mean preciſely by *element* what we mean by the firſt matter. In effect, their *elements* are their atoms, or corpuſcles, which are ſuppoſed indiviſible, incorruptible, *&c.*

Democritus is held to have been the firſt author of this tenet; which accordingly is adhered to by Epicurus, and many of their deſcendants, the Epicurean and corpuſcular philoſophers.

Among thoſe who hold the *elements* corruptible, ſome will only have one, and ſome ſeveral. Of the former, the principal are Heraclitus, who held fire; Anaximenes, air; Thales Mileſius, water; and Heſiod, earth; as the only *element*. Heſiod is followed by Bernardin, Teleſius; and Thales, by many of the chemiſts.

Among thoſe who admit ſeveral corruptible *elements*, the principal are the Peripatetics; who, after their maſter Ariſtotle, contend for four *elements*; viz. fire, air, water, and earth. Ariſtotle took the notion from Hippocrates; Hippocrates from Pythagoras; and Pythagoras from Ocellus Lucanus, who ſeems to be the firſt author of the dogma.

But there is a ſtill further variety of *elements*: for the philoſophers not conſidering matter in itſelf, or in the general, but only ſome of the ſenſations it excites in us; ſome of them refer all to the ſenſe of ſight, and aſſert lucid and obſcure, or pellucid and opake, to be the *elements* of all things: and others, regarding only the ſenſe of touch, make hard and liquid, or hot and cold, the *elements* of things.

In this latter claſs we are to reckon Ariſtotle; though his way of proceeding was ſomewhat different from the reſt. For, conſidering the four principal qualities that fall under the ſenſe of touching, heat, cold, drineſs or hardneſs, and humidity or liquidity; and obſerving that two of theſe qualities might be one and the ſame thing taken in two different relations; and that they might be combined four ways; he made four *elements*; the firſt, cold and dry; the ſecond, cold and moiſt; the third, hot and moiſt; and the fourth, hot and dry.

Then, to give proper names to theſe *elements*, he inquired in what things theſe ſeveral *elements* ſeemed chiefly to prevail? Accordingly, taking the earth to be the coldeſt, and, at the ſame time, drieſt of all things, he called the firſt *element*, *earth*.

And water being the coldeſt and moiſteſt of all things, he called his ſecond *element*, *water*.

Again, judging air the moiſteſt, and at the ſame time hotteſt, of all things, his third *element* he called *air*.

Laſtly, fire being the hotteſt and drieſt of all things, his fourth *element* he denominated *fire*.

Theſe denominations gave occaſion to ſome, impertinently enough, to miſtake his meaning; and to take this habitable earth, this potable water, this air we breathe, and this fire we burn on our hearths, to be the four *elements*; notwithſtanding that the word *element* denotes a moſt ſimple thing; whereas the bodies juſt mentioned are all exceedingly compound.

The Carteſians only admit three *elements*; which they pretend are all that could ariſe from the firſt diviſion of matter: to explain their origin, they ſuppoſe the whole maſs of matter in the univerſe, divided into an infinite number of particles of unequal magnitudes, and of any figure at pleaſure. Theſe ſeveral particles they ſuppoſe, further, to have been revolved, or whirled in various manners, each round its centre; ſo as to become truly ſeparate and apart.

Thus much ſuppoſed, it is impoſſible but the angular, eminent, and implicated parts of the ſeveral particles muſt be broken off; and thus, though little before, they muſt be made continually to grow leſs till they arrive at a perfect rotundity. By this means we get two kinds of determinate matter for the two firſt *elements:* the firſt, a fine duſt rubbed, or broken off from the angles of the particles, till they are turned round; which is the matter of the *firſt element*, or the *materia ſubtilis.* The other, the parts themſelves thus turned round, and ſmooth, which makes the *ſecond element.*

And, as it is probable ſome particles of matter may either ſeparately, or conjunctly, ſtill retain irregular, hooked, and intricate forms; theſe conſtitute the *third element.*

It is added, that the *elements* are convertible into each other: for the third *element*, by becoming round, may become the ſecond; and the ſecond, by a continual comminution and ſubtilizing, may become the firſt.

Our great Sir Iſaac Newton conſiders the primary *elements* of bodies on the atomical ſyſtem, thus: All things conſidered, it ſeems probable, that God in the beginning formed matter in ſolid, maſſive, hard, impenetrable, moveable particles of ſuch ſizes, and figures, and with ſuch other properties, and in ſuch proportion to ſpace, as moſt conduced to the end for which he formed them; and that theſe primitive particles, being ſolids, are incomparably harder than any porous bodies compounded of them; even ſo very hard as never to wear out: no ordinary power being able to divide what God made one in the firſt creation. While the particles remain intire, they may compoſe bodies of one and the ſame nature and texture in all ages: but ſhould they wear away, or break in pieces, the nature of things, depending on them, would be changed: water and earth, compoſed of old worn particles, and fragments of particles, would not be of the ſame nature and texture now, with water and earth compoſed of intire particles in the beginning. And, therefore, that things may be laſting, the changes of corporeal things are to be placed only in the various ſeparations, and new aſſociations and motions, of thoſe permanent particles; compound bodies being apt to break not in the midſt of ſolid particles, but where thoſe particles are laid together, and only touch in a few points. It ſeems to him likewiſe, that theſe particles have not only a *vis inertiæ*, with the paſſive laws of motion reſulting therefrom, but are alſo moved by certain active principles; ſuch as is gravity, and that which cauſes fermentation, and the coheſion of bodies. See GRAVITY, FERMENTATION, and COHESION.

ELEMENTS, in chemiſtry, are the principles, or component parts, of natural bodies, into which they are reſolvible by fire, *&c.*

The effect of chemiſtry is, to analyſe or reſolve bodies into their *elements.*

The chemical *elements* are divided into *active* and *paſſive.*

The chemiſts are ſomewhat divided as to their *elements:* the generality of them, to the vulgar peripatetic *elements*, water, which they call phlegm, and earth, which they call *caput mortuum*, add three more; *viz.* ſalt, ſulphur, and mercury. Salt they hold the principle of taſte; and ſulphur, of ſmell, and inflammability: as to mercury, which they alſo call ſpirit, ſome hold it the principal of colours, but others deny this; and, in effect, they agree in nothing, but that it is the moſt ſubtile and ſpirituous part.

The *elements* of foſſils are, 1. Mercury, as the baſe; 2. Sulphur, as the coagulator, or binder; 3. Salt; 4. Earth. The *elements* of metals, are ſulphur and mercury alone; mercury as the baſe, or matter, and ſulphur as the binder, or cement. The *elements* of foſſil ſalts are an acid ſpirit, and inſipid earth. The *elements* of earths are an oil, a little acid ſalt, and a calx. The *elements* of ſulphurs are an acid ſpirit, an oil, and an earthy or metallic matter. Boerhaave.

But, after all, it muſt be added, that there is no aſſigning any preciſe number of chemical *elements*; ſome bodies yielding more, and others leſs. And even theſe very *elements* themſelves are reducible, by a further proceſs, into other *elements.* Thus, by repeated diſtillations of wine, we ſucceſſively get a ſpirit of wine, a vapid water, a ſubacid water, a more acid water, oil, bitter yellow ſpirit, and a caput mortuum, which is reſoluble into earth, oil, *&c.* Now, are theſe ſo many ſeveral *elements?* Add, that what they account an *element*, now that it is ſeparated, is very different from what it was when it exiſted in the mixt; as appears hence, that upon remixing all the *elements* a body is reſolved into, the mixture will bear no reſemblance to the firſt body.

In effect, theſe *elements* ſeem rather to be produced by the fire, than ſeparated by it. Beſide, that they are convertible, or at leaſt reſolvible, into one another.—Thus ſpirit of wine is found to yield an acid, an oil, and a water: and ſalts yield either an acid, or an alcali, with phlegm.

What makes the notion of the chemical *elements* ſtill more precarious, is, that a pot-herb, and a poiſonous herb, ſhall ſometimes yield *elements* perfectly alike; more ſo, than the ſame plant analyſed at two different times. M. Homberg has conſidered the difficulties charged on *elements*, with great attention.

The reſult of numerous experiments made to aſcertain the matter is: that the four principles, ſalt, oil, water, and earth, are always found in all plants, in what manner ſoever analyſed: that theſe principles are more or leſs volatile, or fixed, according to the different manners of analyſing: that this difference ariſes, not only from the different force of fire, but alſo from the fermentation of the mixed, preceding the analyſis: that a vehement fire, rendering different *elements* equally volatile, confounds them in the analyſis: that the fire evaporates, and abſolutely loſes ſeveral parts: and that to have the *elements* as pure as may be, only fermentation, and a gentle fire, muſt be uſed.

ELEMENTS, is alſo uſed figuratively, for the grounds and principles of arts and ſciences.

Thus we ſay, letters are the *elements* of ſpeech: he does not know the firſt *elements* of grammar.

The ELEMENTS of mathematics have been delivered by ſeveral authors in their courſes, ſyſtems, *&c.*—The firſt work of this kind, is that of Peter Herigon, in Latin and French, publiſhed in 1664. in ten tomes; wherein are contained the *elements* of Euclid, Euclid's *data*, *Apollonius Pergæus*, &c. with the *elements* of arithmetic, algebra, trigonometry, architecture, geography, navigation, optics, ſpherics, aſtronomy, muſic, perſpective, *&c.* The work is remarkable for this, that throughout, a kind of real and univerſal characters are uſed; ſo that the demonſtrations may be underſtood by ſuch as only remember the characters, without any dependence on language or words at all.

Since Herigon, the *elements* of the ſeveral parts of mathematics have been laid down by others, particularly the Jeſuit Schottus, in his *curſus mathematicus*, in 1674. Sir Jonas Moor, in his *new ſyſtem of mathematics*, in 1681. De Chales, in 1674. Ozanam, in his *cours de mathematique*, in 1699. And above all, Chriſt. Wolfius, in his *elementa matheſeos univerſæ*, in two vols. 4to. The firſt publiſhed in 1713. and the ſecond in 1715. a work never enough to be commended.

The *elements* of Euclid are the firſt and beſt ſyſtem of geometry. We have abundance of editions, and comments on the XV books of Euclid's *elements.* Orontius Fineus firſt publiſhed the firſt VI books in 1530. with notes to explain Euclid's ſenſe. The like did Peletarius in 1557. Nic. Tartaglia made a comment on all the XV books, about the ſame time, with the addition of ſome things of his own: and the like did Fran. Fluſſates Candalla, a noble Frenchman, in the year 1578. with conſiderable additions as to the compariſon, and inſcription of ſolid bodies; which work was afterwards re-publiſhed with a prolix comment by Clavius, whoſe edition has ſince been reprinted, at various places and times.

De Chales, Herigon, and Commandinus, have likewiſe done well upon Euclid's *elements*; ſo has Dr. Barrow, who is remarkable for the conciſeneſs and ſtrictneſs of his demonſtrations. But as the whole XV books do not ſeem neceſſary, eſpecially for young mathematicians, ſome authors have choſen only the firſt ſix, with the eleventh and twelfth at moſt: it would be endleſs to relate the ſeveral editions hereof: the two beſt are the French one of De Chales, and the Latin one of And. Tacquet: the beſt edition of the former of which is that of Paris in 1709. by Ozanam; and of the latter, that of Cambridge in 1703. by Mr. Whiſton.

Herlinus, and Daſypodius, have thrown all Euclid's demonſtrations into ſyllogiſms; to ſhew how, by a concatenation of ſyllogiſms, a complete demonſtration ariſes. Pet. Ramus diſliked Euclid's order, as appears from his *diſcourſe on the* XV *books of* Euclid; and therefore compiled 23 new books of *elements*, in the order of the ſchools; but unhappily: though his example was afterwards followed by others, particularly the Jeſuit Gaſton Pardies, in 1680. Arnaud, in 1667. and Fa. Lamy, in 1685.; Polynier, a French phyſician, in 1704. digeſted Euclid into a new method: the like did Angelus de Marchettis of Piſa, in 1709. in his *Euclides reformatus.*

ELEMENT *of an area*, called alſo its *differential*, is the rectangle, PMRp (*Tab. Analyſis, fig.* 18.) of the ſemi-ordinate PM, into the differential of the abſciſs, Pp. See DIFFERENTIAL.

ELEMI, or **ELEMY**, in pharmacy, a pellucid reſin, of a whitiſh colour, intermixed with yellowiſh particles, and often much of the colour and conſiſtence of wax; of a pretty briſk bitter, though not diſagreeable taſte; and a ſmell ſomewhat like that of fennel.

It is uſually called *gum elemi*, though very improperly, inaſmuch as it takes fire readily enough, and diſſolves it in oleaginous liquors, which are the characters of a reſin, not a gum. It flows from inciſions made in the trunk, and large branches of a large and tall tree, growing in Ethiopia, and Arabia Felix. It is alſo found in Apulia, a province of the kingdom of Naples.

Pomet in his hiſtory, and Lemery in his dictionary of drugs, deſcribe *elemi* as a white reſin, bordering on green, odoriferous, and brought from Ethiopia, in cakes of two or three pounds apiece, and uſually wrapped up in the leaves of the Indian cane.

It is excellent in diſeaſes of the head; and is proper to digeſt, reſolve, and ſuppurate. It is held a kind of natural balſam; and is ſovereign in the cure of all ſorts of wounds.

The true *gum elemi* is that above deſcribed; but there are ſeveral ſpurious ſorts, ſome natural, and others factitious, frequently ſold for it.

The factitious, or counterfeit, is uſually made of reſin waſhed in oil of aſpic: though the ill ſmell, and white colour of this, might eaſily diſcover the fraud. The natural gums, obtruded for *elemy*, are,

1°, A gum brought from the American iſlands, in cags of different weights, covered up with the leaves of a plant unknown in Europe.

The 2d might be taken for common reſin, but for its ſmell, which is ſomewhat ſweeter, and more aromatic.

The 3d is of an aſh-colour, bordering on brown, brought over in large pieces, and very dry and friable.

Pomet does not take any of theſe for different genuine gums; but rather ſuppoſes them to be originally *elemy*, only impure, and coarſe, ſince melted down, and made up by the fire.

ELENCHUS, ΕΛΕΓΧΟΣ, in logic, by the Latins called *argumentum*, and *inquiſitio*, is a vitious, or fallacious argument, which deceives under the appearance of a truth; the ſame with what is otherwiſe called *ſophiſm*.

ELEOSACCHARUM, rather Elæosaccharon, ΕΛΑΙΟΣΑΚΧΑΓΟΝ, in pharmacy, a mixture of ſugar with a diſtilled oil; in order to bring it to mix with ſome aqueous fluid for preſent uſe.

ELEPHANT *, Elephas, gives the denomination to an antient and honourable military order, conferred by the kings of Denmark, on none but perſons of the higheſt quality, and extraordinary merit.

* It is called the *order of the elephant*, from its badge, which is an *elephant*, with a caſtle on its back, ſet with diamonds, and hung on a watered ſky-coloured ribband, like the George in England.

There are different ſentiments as to the origin and inſtitution of this order: the firſt is that of Mennenius and Hoepingius, who attribute it to Chriſtian IV. who was elected king in 1584. The ſecond, that of Selden and Imhof, who derive it from Frederic II. elected in 1542. Gregorio Leti goes back as far as Frederic I. who reigned about the year 1530. Bernard Robolledus, will have king John to be the author, who began to reign in 1478. Anſhelmius, Roſſærus, and Loeſcher, hold it to have had its riſe under Chriſtian I. father of Frederic I. Laſtly, Voigtius, Becman, and Bircherodius, maintain Canutus VI. to have been the firſt inſtitutor; and the occaſion thereof to have been the croiſades. This prince, according to the chronology of Swaning, reigned towards the cloſe of the XIIth century, from the year 1168. to 1191.

This, at leaſt, we are certain of, that the order was ſubſiſting in the year 1494.; there being a painting ſtill extant, done that year by count Reinden, a knight of this order. And we have even authentic evidences of the marquis of Mantua's being created knight of the ſame order by Chriſtian I. in 1474. There are bulls of pope Pius II. and Sixtus IV. confirming the ſtatutes of the order, authorizing the holding of aſſemblies, or chapters, in the chapel of Roeſchild, and ſetling the privileges of the knights.

The order was at firſt called the *order of St. Mary*, *ordo S. Mariæ*: though it ſeems to have had the appellation of the *elephant*, as early as Chriſtian I. Witneſs the figure of an *elephant*, ſo often ſtruck on his coins, medals, &c.

The manner of its inſtitution is thus related: king Canutus having ſent a fleet againſt the Saracens, in 1189. which took luma and Ptolemais; a gentleman among the Daniſh croiſes, killed an *elephant*; in memory of which extraordinary accident, the order was erected. This account is rendered the more probable by this; that it is referred to an æra, when nothing was more common than to take the ſpoils of a vanquiſhed enemy for armories, or cognizances: and accordingly ſome of the principal arms of the like kind now on foot, *e. gr.* the lions of the Low-countries, had their riſe at the time of the croiſades; as is ſhewn by euterius and Hoepingius. Which circumſtances greatly corroborate the opinion of thoſe, who aſcribe the order to king anutus.

ſſarion brought with him a very antient and rare coin from the eaſt to Rome; whereon was ſeen the image of the Holy Virgin, with an *elephant*. Du Puis takes this to have been the badge, or ſymbol of the Danes, engaged in the croiſades againſt the Saracens; and ſuppoſes it to relate to the order of the *elephant*. The chancellor Fritſchius had another coin of the like kind, whereon was the image of the Holy Virgin, an *elephant*, and a creſcent, which was anciently a bearing in the arms of this order. Boiſſeau relates another antient figure of the arms of this order, being the image of the Holy Virgin with four *elephants*, charged with vers. And Petra Sancta, a fourth, wherein was the Virgin with three keys, and four *elephants*, and ſpurs; whence it appears, that the order was under the protection of the Holy Virgin. Accordingly, it is ſtill denominated the *order of St. Mary*.

To the collar of the order hangs an *elephant*, with a ſilver et on its back, and underneath the *elephant*, an image of the Holy Virgin, incircled with rays. See the abbot Juſtiniani, *Hiſt. de tutti gl' Ord. Milit. e Caval.* T. 2. c. 72.

The chapel of Roeſchild was founded by Chriſtian I. for the aſſemblies, or chapters, of this order to be held in. It was at firſt called the *chapel of the three kings*, *capella trium regum*: afterwards Frederic I. gave it the name of the *royal chapel*.

The order was reſtored by Frederic II. who created abundance of knights at the ceremony of his coronation, which is the only time when the Daniſh kings make any knights of the *elephant*. Chriſtian V. augmented and enriched it very conſiderably. In the year 1694. a grand chapter of the order was held at Fredericsburg, in the chapel of the knights, wherein ſix German princes were admitted into the order.

We have a multitude of writings on the ſubject of this order: whereof that of Janus Bircherodius may ſerve for all the reſt: it is the lateſt, moſt ample, and learned. It was publiſhed at Copenhagen, in 1705. under the title of *Breviarium equeſtre*; *ſeu de illuſtriſſimo, & inclytiſſimo ordine elephantino*, &c.

ELEPHANTIASIS, in medicine, a kind of leproſy, called alſo *lepra Arabum*, in contradiſtinction to the *lepra Græcorum*, which is another diſeaſe.

The *elephantiaſis* is thus denominated, by reaſon thoſe ſeized therewith have their arms, and legs, big, ſwollen, and tuberous; the ſkin bloated, yet rough to the touch, and all wrinkled and rugoſe like the ſkin of an elephant.

The *elephantiaſis* is a diſeaſe unknown in our parts of the world, at leaſt in theſe days. Some authors call it *leontiaſis*, and others *ſatyriaſis*. The Greeks call it ελεφαντιασις; and ſometimes ελεφας, *elephant*, alſo ελεφαντια, and ελεφαντιασμος.

The *elephantiaſis Græcorum*, or *lepra Arabum*, is deſcribed by Deodatus, as a contagious diſeaſe, infecting the body with a croud of evils in it. The ſkin of the face, knees, elbows, thighs, hands, and feet, is beſet with moveable, indolent tubercles of a livid colour, tending to redneſs; in the mouth, palate, and jaws, likewiſe, ariſe tubercles, ſometimes yellow, and ſometimes livid: in the intervals between the toes, and on the ſoles of the feet, eſpecially the hard callous parts thereof, as alſo in other parts of the limbs, break out ulcers, which penetrate the cutis, are very broad, and keep ſpreading, with callous and tumid lips: theſe, upon a little violence, yield blood, and yet are indolent. Add, that ulcers eat the noſe; tumours riſe about the ears; and the lips thicken; and the feet and hands are wonderfully bloated.

Etmuller, Haly Abbas, and others, ſpeak of the *elephantiaſis* as a ruddy livid ſwelling, chiefly of the feet and legs; with varices, and ulcers; which diſtend and make the feet appear like thoſe of elephants.

ELEPHANTINE, ſomething that relates to, or partakes of the qualities of elephants.

The term is chiefly applied to certain books of the antient Romans, wherein were recorded the tranſactions of the emperors, and the proceedings, acts, &c. of the ſenate. This we learn from Pollio, and Vopiſcus in the life of the emperor Tacitus, where he obſerves, that in the 6th preſs of the Ulpian library, was kept one of theſe *libri elephantini*; wherein, for a long courſe of time, were written down the decrees and edicts of the ſenate.

In ſome of theſe books, were regiſtred all the acts and proceedings of the ſenate, and the magiſtrates of Rome; in others, the proceedings and events in the provinces, the armies, &c. There were above thirty-five large volumes of them, as many as there were tribes.—In them were likewiſe contained the births, and claſſes of the citizens; with the muſters, and all things belonging to the cenſus. They were renewed every five years with the cenſors; and were all antiently kept in the ærarium, or public treaſury, in the temple of Saturn.

Vigenere, and ſeveral others, believe theſe books to have been called *elephantine*, by reaſon of their enormous bulk, *q. d.* as big as elephants, or bullocks. But Loiſel, on the XVIIth chapter of the XIth book of Aulus Gellius, gives us a different etymology; and aſſures us they were called *elephantine*, becauſe compoſed of ivory leaves, or tablets, which every body knows is a production of the elephant. And, accordingly, Ulpian, L. 52. *ff. de Legat.* 3. makes mention of an ivory book.—Scaliger and Gerard Voſſius, ſay they were written on the inteſtines of elephants.

Voſſius does not deny, indeed, but that they might have been made of ivory; but being there were ſeveral other books, and tablets, made of that matter, as appears from Martial, L. XIV. epigr. 3. and a hundred other antient authors, and from what we have ſhewn under the term Diptych, it does not appear, why the name *elephantine* ſhould be peculiarly appropriated to theſe.

Martial does not give the name *elephantine*, but eboreus, *of ivory*, to the tablets mentioned in the place laſt quoted, *eborei pugillares*: Alexander ab Alexandro *Genial. Dier.* L. II. c. 2. makes mention of the *libri elephantini*: ſo alſo does Salmaſius on the paſſage in Vopiſcus, juſt quoted; where he refutes Scaliger, maintains that theſe books were of ivory, and ſhews that the antients uſed the word *elephas*, for *ivory*; witneſs Virgil *Æneid.* L. III. v. 464. and Servius on the ſame: and *elephantinus*, for what was of ivory; witneſs Martianus

Capella, and Iſidore in his gloſſes. He ſhews further, that it was no impoſſible thing to write on ivory, as Scaliger had ſuggeſted; that they did not make uſe of a gooſe-quill as we do, nor of ink like ours; but of ruſhes, or reeds, formed after a different manner from our pens; and of ink fit to take upon ivory. The matter of fact, in fine, he aſſerts, is clear from Martial, and Plautus in his Moſtellaria.

ELEVATION *, the altitude, or height, of any thing. See ALTITUDE.

> * The word is formed from *elevare*, to *raiſe*, or *lift up*.

ELEVATION *of a ſtar*, or other point, in the ſphere, is an arch of the vertical circle, intercepted between ſuch ſtar, or other point, and the horizon.

Hence, as the meridian is a vertical circle; a meridian altitude, or *elevation*, i. e. the *elevation* of a point in the meridian, is an arch of the meridian, intercepted between that point, and the horizon.

ELEVATION *of the pole*, denotes the altitude of the pole above the horizon of any place; or an arch of the meridian, intercepted between the pole, and the horizon.

Thus, in *Tab. Aſtronomy*, *fig.* 4. AQ being ſuppoſed the equator, HR the horizon, HZPN the meridian, and P the pole; PR is the *elevation of the pole*.

In which ſenſe *elevation* ſtands oppoſed to *depreſſion* or depth. See DEPRESSION.

The *elevation of the pole* is always equal to the latitude of the place; that is, the arch of the meridian intercepted between the pole, and the horizon, is always equal to the arch of the ſame meridian, intercepted between the equator and the zenith.

Thus the north pole is *elevated* $51^\circ 32'$ above the horizon of London: and there is the ſame diſtance, or number of degrees, between London and the equator; ſo that London is likewiſe in $51^\circ 32'$ of northern latitude.

To obſerve the *elevation* of the pole of any place; ſee POLE, and LATITUDE.

ELEVATION *of the equator*, is an arch of the meridian, leſs than a quadrant, intercepted between the equator, and the horizon of the place.

Thus AQ, as before, repreſenting the equator, HR the horizon, P the pole, and HZPN the meridian; HA is the *elevation of the equator*. See EQUATOR.

The *elevations* of the equator, and of the pole, together, are always equal to a quadrant: conſequently, the greater the *elevation* of the pole, the leſs the *elevation* of the equator; and vice verſa.

Thus, in the figure juſt cited, PA is ſuppoſed by the conſtruction a quadrant; and $HA+AP+PR$ a ſemicircle: conſequently $HA+PR$ is a quadrant.

To find the **ELEVATION** *of the equator*.—Find the *elevation* of the pole, after the manner hereafter directed under the article POLE.

Subtract the *elevation* found, from a quadrant, or 90°; what remains is the *elevation of the equator*. Thus, the *elevation* of the pole $51^\circ 32'$, being ſubtracted from 90°, leaves the *elevation* of the equator $38^\circ 28'$.

ELEVATION, in architecture, denotes a draught, or deſcription of the principal face, or ſide of a building; called alſo its *upright*, or *orthography*. See ORTHOGRAPHY.

ELEVATION, we alſo find uſed in ſome writers of perſpective, for the ſcenography, or perſpective repreſentation, of the whole body, or building. See SCENOGRAPHY.

ELEVATION, in the Romiſh religion, is applied to that part of the maſs, wherein the prieſt hoiſts, or raiſes the hoſt, with the cup, above his head, for the people to adore it; after having firſt conſecrated, and adored it himſelf.

The prieſt, who officiates at maſs, rings a bell at the *elevation*; to appriſe the people to caſt their eyes upon their new-formed Saviour, and adore him.

St. Louis decreed, that they ſhould fall on their knees at the *elevation*, in imitation of certain religious whom he does not name. The Chartreux, and the religious de la Trappe, ſtill obſerve this ceremony of proſtrating themſelves at the *elevation*.

Angle of **ELEVATION**, in mechanics, is the angle ARB (*Tab. Mechanics*, *fig.* 47.) comprehended between the line of direction of a projectile AR, and the horizontal line AB. See PROJECTILE, and ANGLE.

ELEVATION *of a canon, or mortar-piece*, is the angle, which the chaſe of the piece, or the axis of the hollow cylinder, makes with the plane of the horizon.

ELEVATOR, ELEVATORIUM, in chirurgery, an inſtrument uſed to raiſe up bones, as thoſe in fractures of the ſkull, when beaten, or cruſhed in, with blows, or the like.

There are dented *elevators*, and *elevators* with three feet, called *elevatores triploides*.—The *elevator* made lever-wiſe, is a new invention: its uſe is in drawing teeth. One extremity of it is flat, to reſt on the gum, at the bottom of the tooth; and the other hooked, like one of the branches of a pelican, to faſten hold of the tooth.

ELEVATOR, in anatomy, is a name common to ſeveral muſcles, which do the office of raiſing or lifting up the parts they belong to; of equal import with *Attollens* and *Levator*. See LEVATOR, and ATTOLLENS. Such are the

ELEVATOR *alæ naſi*, a muſcle, or pair of muſcles of the noſe, of a pyramidal figure, very narrow, though fleſhy at its origination on the fourth bone of the upper jaw; and very broad and thin at its termination on the ſide of the ala naſi.—Its action is to pull the ala upwards, and turn it outwards. See *Tab. Anat.* (Myol.) *fig.* 1. *lit.* o.

ELEVATOR *auris*, or *attollens auriculam*, is in reality no more than a part of the muſcle of the ſcalp, with ſome fleſh-fibres in it, as it deſcends over the temporal muſcles to the upper part of the concha.—Its action is ſcarce viſible; the auricles being hardly perceived in men to have ordinarily any motion at all.—See *Tab. Anat.* (Myol.) *fig.* 6. *n.* 3. *fig.* 1. *n.* 13.

ELEVATOR *labiorum communis*, a muſcle of the lips, ariſing from the fourth bone of the upper jaw, and terminating at the angle of the lips, under the zygomaticus. See *Tab. Anat.* (Myol.) *fig.* 1. *n.* 4.

ELEVATOR *labii inferioris*, is a muſcle that ariſes from the ſecond bone of the under jaw, below the inciſores. It deſcends, and paſſes under the zygomaticus, and is inſerted into the under lip.

This, aſſiſted by a ſmall, but ſtrong pair of muſcles, ariſing from the gum of the dentes inciſivi, and deſcending directly, is inſerted into the lower part of the ſkin of the chin; and ſerves to pull the ſkin of the chin upwards, and conſequently to thruſt up the lip.

ELEVATOR *labii ſuperiaris*, ariſes from the upper part of the ſecond bone of the upper jaw; and, deſcending obliquely, is inſerted into the upper lip, above the dentes inciſivi.—It draws up the lip. See *Tab. Anat.* (Myol.) *fig.* 1. *n.* 3. and *n.* 5.

ELEVATOR *oculi*, one of the muſculi recti of the eye, ſerving to draw it upwards. See RECTUS, and EYE.

ELEVE, a term purely French; though of late uſed alſo i our language. Literally it ſignifies a diſciple, or ſcholar, bred up under any one; being formed from the Italian, *allievo*, an apprentice or novice.

It was firſt uſed by the French writers in ſpeaking of painters; ſuch a painter was an *eleve* of da Vinci, of Raphael, &c. From painting, it came to be applied to ſuch as ſtudied, o learned any other art under a maſter. In the Royal Academ of ſciences, there were 20 *eleves*: and in that of inſcriptions 10 *eleves*. The *eleves* are to act in concert with the penſionaries. See ACADEMY.

We are not afraid, ſays M. Fontenelle, to compare a ſimpl *eleve*, ſuch as M. Amontons was, to one of the greate members the academy ever had [M. Mariotte]. The nam *eleve*, with us, implies no difference as to merit; it only ſignifies ſomewhat of leſs ſeniority, and ſurvivance.

The denomination *eleve*, however, has been ſince ſuppreſſe and that of *adjoint* ſubſtituted in its room; by reaſon ever body did not know the ſenſe affixed to it by the academ And now the penſionary academiſts have not, as formerl each of them an *eleve*: but the *eleves* are become *adjoints*, o aſſociates of the academy.

ELEUSINIA *, in antiquity, the myſteries of the godde Ceres; or the religious ceremonies performed in her honou thus called from *Eleuſis*, a maritime town of the Athenian wherein was a temple of that goddeſs, famous for the celebra tion of theſe myſteries.

> * Some writers call the city, where the *eleuſinia* were celebrat *Eleuſina*, not *Eleuſis*: Harpocration confirms this orthograph in deriving its name from *Eleuſinus*, a ſon of Mercury; which opinion Pauſanias likewiſe adheres in his Atti Others, who write it Ελευσις, *advent*, ſuppoſe it thus call by reaſon Ceres, after running over the world in ſearch of h daughter, ſtopped here, and put an end to her purſuit. Di dorus Siculus, L. V. will have the name *Eleuſis* to have be given this city, as a monument to poſterity, that corn, and art of cultivating it, were brought from abroad into Attic

The *eleuſinia* were the moſt ſolemn and ſacred ceremonies uſe among the Greeks; for which reaſon they were cal *myſteries* by way of eminence. They are ſaid to have be inſtituted by Ceres herſelf, at *Eleuſis*, in memory of the z and affection wherewith the Athenians received her.

This is the account Iſocrates gives in his panegyric; but D dorus Siculus aſſures us, L. VI. that the *eleuſinia* were in tuted by the Athenians, in gratitude to Ceres, for hav inſtructed them to lead a leſs barbarous, and ruſtic life. the ſame author, in the firſt book of his *Bibliotheca*, rela the thing in another manner.

A great drought, ſays he, having occaſioned a miſerable mine throughout all Greece; Egypt, which had that reaped a moſt plentiful harveſt, beſtowed part of the fr thereof upon the Athenians. It was Erechtheus that brou this extraordinary ſupply of corn; in commemoration of wh benefaction, Erechtheus was created king of Athens, who ſtructed the Athenians in theſe myſteries, and the manner celebrating them.

This account comes near to what we are told by Herodo and Pauſanias; *viz.* that the Greeks learned their gods, their religion, from the Egyptians.

Theodoret, L. I. *Græcanic. Affect.* writes that it was Orphe not Erechtheus, who made this eſtabliſhment; and who i tuted for Ceres, what the Egyptians practiſed for Iſis: w ſentim ſentiment is confirmed by the ſcholiaſt on the Alceſtis of Euripides.

Eleuſis, the city, where theſe myſteries were celebrated, was ſo jealous of the glory thereof, that, when reduced to the laſt extremities by the Athenians, it would not ſurrender but on this condition, that the *eleuſinia* ſhould not be taken away; though theſe were no religious ceremonies, peculiar to the town, but were held common to all Greece.

The matter of theſe myſteries, as related by Arnobius, and Lactantius, was an imitation, or repreſentation of what mythologiſts teach of Ceres. They laſted ſeveral days; during which, the people ran about, with burning torches in their hands; ſacrificed abundance of victims, not only to Ceres, but alſo to Jupiter; made libations, from two veſſels, one of them to the eaſt, and the other to the weſt; marched in pomp to *Eleuſis*, making pauſes from time to time, wherein they ſung hymns, and ſacrificed victims: and this they performed, not only in going to *Eleuſis*, but in returning back to Athens. For the reſt, they were obliged to keep it an inviolable ſecret; and the law condemned to death any one, who ſhould dare to divulge their myſteries. Tertullian, in his book againſt the Valentinians, relates, that the figure ſhewn in the *eleuſinia*, and which was ſo expreſly prohibited to be made public, was that of a man's privy parts: Theodoret, Arnobius, and Clemens Alexandrinus, likewiſe made mention of it: but he ſays, it was the figure of a woman's privities.

The day after the feaſt, the ſenate aſſembled at *Eleuſis*, apparently to examine whether every thing had been managed according to order.

There were two kinds of *eleuſinia*, the *great* and the *leſs*: thoſe we have been hitherto ſpeaking of, were the greater.

The *leſſer* were inſtituted in favour of Hercules: for that hero deſiring to be initiated into the former; and the Athenians not being able to gratify him therein, by reaſon the law prohibited any ſtranger being admitted; being loth, however, to give him an abſolute denial, they inſtituted new *eleuſinia*, whereat he aſſiſted. The greater were held in the month Boedromion, which anſwered to our Auguſt; and the leſſer in the month Antheſterion, which happened in our January.

People were only brought to partake of theſe ceremonies by degrees: at firſt, they were to be purified; then admitted to the leſſer *eleuſinia*; and at laſt initiated in the greater. Thoſe, who were yet only at the leſſer, were called *myſtæ*; and thoſe admitted to the greater, *epoptæ*, or *ephori*, i. e. inſpectors. They were uſually to undergo a probation of five years, ere they paſſed from the leſſer to the greater. Sometimes, indeed, they were contented with a ſingle year; immediately after which, they were admitted to the moſt ſecret religious parts of the ceremony.—Meurſius has an expreſs treatiſe on the *eleuſinia*, where moſt of theſe points are proved.

LEUTHERIUS *, ΕΛΕΥΘΕΡΙΟΣ, in antiquity, a Greek word, ſignifying, *liberator*, or *deliverer*: it was uſed by the Greeks as a ſurname, or epithet of Jupiter, given him, on occaſion of his having gained them the victory over Mardonius, general of the Perſians, and killed, as they ſay, 300,000 men of his army; and, by that means, delivered them from the danger they were in, of being brought under the Perſian yoke.

* The word is formed from ελευθερος, *free*.

There were alſo feaſts ſolemnized on this occaſion, in honour of Jupiter *Eleutherius*, and called *Eleutheria*. They were held every five years, with races of armed chariots, *&c.*—The ſcholiaſt on Pindar, *Olymp. Od.* 7. ſays, they were celebrated at Platea, the place where the victory was obtained.

LICIT, or Elicite, in ethics, is applied to an act of the will, immediately produced by, and of the will, and received within the ſame.

Such are willing, nilling, loving, hating, *&c.* Theſe acts are denominated *elicit*, by reaſon, being before in the power of the will, they are now brought forth into act. But they are ſo far intrinſic, that ſome authors conſider them as the will itſelf; and deny they ought to be diſtinguiſhed from it, any more than light is to be diſtinguiſhed from the ſun.

LIGENDO *Viridario*. See the article Viridario.

LIGIBILITY *, in the Romiſh canon law. A *bull of* Eligibility, is a bull granted by the pope, to certain perſons, to qualify them to be choſen, or inveſted with an office, or dignity, whereof they were before incapable, by reaſon of want of age, birth, or the like.

* The word is formed of the Latin, *eligere*, to chooſe; whence the word *eligibilitas*, &c.

In ſeveral churches in Germany, a perſon, who is not of the chapter, cannot be elected biſhop, without a bull of *eligibility*.

LIRE. See the article Conge *d'elire*.

LISION, in grammar, the cutting off, or ſuppreſſing a vowel, at the end of a word, for the ſake of ſound, or meaſure.

Eliſions are but little known in Engliſh: in Latin, French, *&c.* they are frequent; and conſiſt moſtly in ſuppreſſions of the final *a*, *e*, and *i*.—As in *Phillida amo ante alias.*—*Si ad vitulum ſpectes*, &c.

In writing, *eliſions* are often marked by an apoſtrophe: as *egon' quem quæram?* for *egone. Emin' ego te?* for *emine. Veniſtin'* for *veniſtine*, &c. *Cett' eſperance*, for *cette*: *l'homme*, for *le homme.*

In the pronunciation we make frequent *eliſions*, but do not mark them in writing: thus we write *riſque it*, but pronounce *riſq' it*. So the French pronounce *un' ame*, but write *une ame*. In effect, they never mark any *eliſions* but at the end of the monoſyllables *je*, *ne*, *le*, *te*, *ce*, *que*, and *la*. They never *elide* the *o*, nor *u*, nor *i*, but in the conjunction *ſi* before *il*; nor *a* but in *la*.

In poetry, the ſyllable, where there is a vowel *elided*, is never reckoned: and great care is taken to avoid the claſhing of ſyllables, where there is no *eliſion*; this making what they call a *hiatus*, or *chaſm*.

Some reduce the *ecthlipſis* under the head of *eliſions*: as in *monſtrum, horrendum, ingens*, &c. See Ecthlipsis.

ELIXATION *, in pharmacy, *&c.* the infuſing, ſeething, or boiling of any medicine in a proper liquor, gently, and for a conſiderable time: amounting to what, in the dreſſing of meats, we call *ſtewing*.

* The word is formed from the Latin, *lixare*, to boil, or boil in water.

The liquor ordinarily uſed in *elixations*, is ſpring, or river water: though on ſome occaſions they uſe ſpirit, milk, whey, beer, or the like.

The ordinary purpoſe of *elixation* is, to extract the virtue out of the medicine, and impart it to the liquor. Though it is ſometimes alſo uſed, to free the parts of animals, plants, *&c.* of their crudities; as well as to ſoften, and make them tender; to take away from foods, or medicaments, any diſagreeable taſte, or other ill quality; to ſeparate the earthy, or groſſer parts, and for other intentions.

Decoction is alſo a ſort of *elixation*. See Decoction.

ELIXIR *, in medicine, a compound tincture, or eſſence, drawn from a mixture of ſeveral ingredients, by infuſing them in a proper menſtruum.

* Menage derives the word from the Arabic, *elicſir*, properly ſignifying *fraction*, by reaſon *elixirs* have the force of breaking diſeaſes: others, more naturally, derive it from the Arabic *alecſiro*, an artificial extraction of ſome eſſence: others from the Greek, ελαιον, *oil*, and συρω, *I draw*, q. d. an extract of the oil, which is the eſſential part of mixts. Others from the Greek verb, αλεξεω, *I help*, or *aſſiſt*, by reaſon of the great ſuccours we receive from *elixirs*.

An *elixir* is properly a ſtrong, ſpirituous liquor, or juice, to be taken inwardly; containing the pureſt, and moſt efficacious parts of ſeveral mixed bodies, communicated to it by infuſion and maceration.

Quincy defines it, a ſtrong infuſion in ſome menſtruum, whereby the ingredients themſelves are almoſt diſſolved, and a liquor thus acquired of a thicker conſiſtence than an ordinary tincture.

Boerhaave conſiders an *elixir* as a compound magiſtery, *i. e.* a compound of various bodies, changed after the ſame manner as a ſingle body in a magiſtery.

Spirits drawn from vegetables, *i. e.* the ſtrong, or ſpirituous waters of vegetables, are uſually the baſis of *elixirs*, and the menſtruum, or diſſolvent, whereby the eſſence of the other ingredients is drawn or ſeparated. Spirit of wine is the beſt and moſt commodious menſtruum of all.

The charletans abuſe the term *elixir*, and apply it to abundance of ſimple extracts, or tinctures; only to put them off at the higher price.—Some authors, for *elixir*, uſe the word *quinteſſence*.

Elixir *Proprietatis*, is a remedy firſt invented by Paracelſus; compoſed of aloes, myrrh, and ſaffron; the tincture, or eſſence whereof is drawn, by putting them to diſſolve, or digeſt, with ſpirit of ſulphur.—Some add ſpirit of wine to the ſpirit of ſulphur.

Crollius takes this *elixir* to be the balm, or balſam, of the antients; adding, that it contains all the virtues of the natural balm. It comforts and fortifies the heart and ſtomach, aſſiſts digeſtion, purifies the blood, and promotes ſweat.

Elixir, among the alchymiſts, is uſed for the philoſophers ſtone, or the powder of projection.—And ſometimes, for an univerſal medicine, which will cure all diſeaſes, called, by way of excellence, the *grand elixir*.

Thoſe two things, moſt alchymiſts take to coincide; ſo that what will make gold, they think, will cure all diſeaſes. See Philosophers *Stone*.

The notion of a *grand elixir* is of a long ſtanding. Kircher aſſures us, that the antient Egyptians had a method of drawing an *elixir* from the hardeſt, and moſt precious ſubſtances, which, on account of its ſubtility and perfection, they called *heaven*. And this he takes to be that admirable, and celeſtial water, capable of removing all diſeaſes; called alſo the *ſtone*, and the *philoſophers ſtone*; as being drawn from precious ſtones; and, ſometimes, by the hermetical denominations, *aqua vitæ*, *vegetable ſeed of nature*, *ſolar ſoul*, &c. *Oed. Ægypt.* Tom. II. p. 430.

ELKS *claws*, in pharmacy, a drug, ſuppoſed to be good againſt the epilepſy; known in the ſhops by the name of *ungulæ alcis*.

The animal that yields them, called by the Latins, *alce*; by the Germans, French, *&c.* *ellend*; and by us, *elk*; is a wild beaſt, found in the foreſts of Muſcovy, Sweden, and Pruſſia;

but more abundantly in Canada, and moſt parts of North America.

It is about the ſize and figure of a mule; only its ſnout bigger, its tail ſhort, its feet cloven; and that it bears a large ramage, or horn, like that of a deer, weighing three, and ſometimes four hundred weight. That anatomized in the royal academy of ſciences, was five feet ſeven inches long. Its hair is brown, and about the length of that of a goat, its ears nine inches long, and four broad; and its tail not above two inches: its neck ſhort and thick: its ſkin ſtrong and hard, though thin; its fleſh very delicate, eſpecially that of the female: and the ligaments of its joints exceeding ſtrong; which has occaſioned ſome authors to ſay, that its legs had no joints at all; and that it was this made it ſo ready at ſliding on the ice, to ſave itſelf from the wolves.—It neither runs, nor bounds; but its trot is almoſt equal to the ſwifteſt running of a deer.—Pauſanias ſays, that the male has horns: and Cæſar, that the female hath none: but we find, that both have.

The hunting of the *elk*, is one of the principal, and moſt agreeable employments of the ſavages of Canada, Accadie, &c. They chooſe a time, when the ſnow is on the ground; in which the beaſt is apt to ſink and ſtick. When they have killed enough with their fire-arms, to feaſt for ſeveral days, they flay them, and ſend the ſkins to the French, who dreſs them in oil, like the buffalo-ſkin.

The ſavages likewiſe take care, to cut off the left hind-foot of each beaſt, eſpecially if it be a female; the hoof of which foot is that applauded remedy for the falling ſickneſs.

Antient authors tell us, that, to catch the *elk*, the northern people watch the occaſion when it falls down of the epilepſy; which it frequently does; and that they lay hold of it, ere it can recover ſtrength enough to put its left foot in its ear, which cures it immediately.

And hence it is, that the notion of its virtue, in the cure of that diſeaſe, had its riſe. The Germans call it *elend*, that is, miſery, by reaſon of the miſery it is reduced to, in falling ſo often into the epilepſy; though it has its remedy always about it; which has given people reaſon to ſuſpect, that the virtue attributed to it is fabulous.

Accordingly, Olaus Magnus ſays, it is the outer hoof of the right foot, that the *elk* thus puts in its ear, to cure the epilepſy; which being impoſſible, it ſhould ſeem, as if Olaus only ſpoke of it by way of ſneer.

He adds, that the blows, which the *elk* deals, are ſo ſtrong, that with its hind-feet it will even break the trees; and with its fore feet pierce the hunters through and through.

Pomet gives us the marks to diſtinguiſh the genuine *elks claws*; but as their virtue is very equivocal, not to ſay abſolutely falſe, there is no great harm in being deceived: the opinion alone may ſerve for the reality.

ELL, *Ulna*, a meaſure, which obtains under different denominations, in moſt countries.

The *ell* is the ſtandard, or meaſure, whereby cloths, ſtuffs, linens, ſilks, &c. are uſually meaſured, or eſtimated; anſwering, in good meaſure, to the yard of England, the canna of Italy, the vara of Spain, the palm of Sicily, &c.

Servius will have the *ell* to be the ſpace contained between the two hands when ſtretched forth: but Suetonius makes it only the cubit.

The *ells*, which occur moſt frequently in England, are *Engliſh* and *Flemiſh*: the *ell Engliſh* contains three feet nine inches; or one yard one quarter Engliſh meaſure: the *ell Flemiſh*, contains 27 inches, or three quarters of a yard; ſo that the *ell* Engliſh is to the Flemiſh *ell*, as five to three.

M. Ricard, in his treatiſe of commerce, reduces the *ells* thus: an hundred *ells* of Amſterdam, are equal to ninety-eight three quarters of Brabant, Antwerp, and Bruſſels; to fifty-eight and an half of England and France: to an hundred and twenty of Hambourg, Francfort, Leipſic, and Cologne: an hundred twenty-five of Breſlaw: an hundred and ten of Bergen and Drontheim: and an hundred and ſeventeen of Stockholm.

ELLIPSIS *, in geometry, one of the conic ſections; popularly called an *oval*.

> * The word is formed from the Greek, ελλειψις, *deficiency*, a denomination which the antient Greek geometricians gave this figure, by reaſon, among other properties, this is one, that the ſquares of the ordinates are leſs than, or defective of, the rectangles under the parameters and abſciſſes.

The *ellipſis*, to define it from its form, is a regular, continued curve line, including a ſpace that is longer than broad; wherein are two points equally diſtant from the two extremes of the length; from which, two right lines being drawn to any point, aſſumed at pleaſure in the *ellipſis*, their ſum is equal to the length of the *ellipſis*.

Thus, in the *ellipſis* AEBMD, &c. (*Tab. Conics*, *fig.* 21.) the lines Fa and fa drawn from the two points F and f, equally diſtant from the two extremes A and B, are equal to AB.

Or, taking the *ellipſis*, as geometricians frequently do, for the ſpace contained, or included, within this curve line; it is defined a figure, contained under one ſingle oblong line, and having two unequal axes, or diameters, AB and DE.

The greater axis of the *ellipſis*, or the right line repreſenting the length of the *ellipſis* AB, or of the ſpace included by the *ellipſis*, is called the *tranſverſe axis*, or *diameter*: and the leſſer axis, repreſenting the breadth of the *ellipſis* DE, the *conjugate*, or *ſecond axis*.—The two axes always biſect each other at right angles. See Axis.

The two axes are the two greateſt diameters of the *ellipſis*; but there are an infinity of other different diameters. See Diameter, &c.

The *centre of an* Ellipsis is the point C, wherein the two axes interſect. See Centre.

The two points F and f, in the greater axis, equally diſtant from the extremes thereof A and B, are called the *foci*, or *umbilici of the ellipſis*; from which two lines, drawn to the circumference of the *ellipſis*, as already obſerved, are equal to the greater axis. See Focus.

The *ellipſis*, conſidering it as a conic ſection, that is, as a curve, ariſing from a ſection of the cone, is beſt defined from its geneſis, or the manner of its production, thus: an *ellipſis* is a curve line, produced by cutting the cone ABC (*fig.* 21. n° 2.) by a plane, in ſuch manner, as that the axis of the ſection DE meets with the diameter of the baſe AB, produced to F.

Or, defining it from one of its known properties aſſumed; an *ellipſis* is a curve line, wherein the ſquare of the ſemi-ordinate PM is to the rectangle of the ſegments of the axis AP and PB, as the parameter is to the axis.

Thus, if AB$=$a, the parameter$=$b; PM$=$y; AP$=x$; then will $b:a::y^2:ax-x^2$. Conſequently $ay^2=abx-bx^2$. See Conic *ſection*.

Hence, 1°, $y^2=bx-bx^2:a$. That is, the ſquare of the ſemi-ordinate is equal to the rectangle of the parameter into the abſciſs; abating another rectangle of the ſame abſciſs into a fourth proportional to the axis, parameter and abſciſs.

2°, *To find the axis, parameter, and ſemi-ordinate of an* Ellipsis. The parameter, abſciſs, and ſemi-ordinates, in an *ellipſis*, being given; the axis is found, by making 1. $b:y::y:\frac{y^2}{b}$, 2. $x-\frac{y^2}{b}=\frac{(bx-y^2)}{b}:x=x:a$.

3°, The axis AB, the abſciſs AP (*fig.* 22.), and the ſemi-ordinate PM, being given, the parameter AG is thus found: make AI$=$PM; and from A, through M, draw the right line AL. In I erect a perpendiculat LI: then, ſince AP: PM :: AN : LI; LI$=y^2:x$. Produce PM to O, till PO $=$LI$=y^2:x$; and from B, through O, draw the right line BG. In A erect a perpendicular GA$=ay^2:(ax-x^2)$: this will be the parameter AG.

4°, The axis AB, and the parameter AG, being given, we can aſſign every abſciſs, as BP, its ſemi-ordinate PN; by drawing a line GB to the parameter AG, which is perpendicular to the axis AB: then, erecting a perpendicular PN, make PL$=$PH. Laſtly, on AL deſcribe a ſemicircle.

To find the foci, conjugate axis, ratio of the ordinates, &c. of an *ellipſis*.—1°. from B to L (*fig.* 19.) ſet off half the parameter; then will CL$=\frac{1}{2}a-\frac{1}{2}b$. In the centre C erect a perpendicular CK, meeting the ſemicircle deſcribed on AL. Thus will CK$=\sqrt{(\frac{1}{4}a^2-\frac{1}{4}ab)}$. Therefore, making CF$=$CK; F will be the focus.—The latter equation furniſhes us this theorem.

If the axis AB be cut in the focus F, the rectangle under the ſegments of the axis AF, FB will be ſubquadruple of the rectangle under the parameter and the axis. See Focus.

5°, The parameter and axis AB given, the conjugate axis is eaſily found; as being a mean proportional, between the axis and parameter. Conſequently, the parameter is a third proportional to the greater and leſſer axis. Add, that the ſquare of half the conjugate axis is equal to the rectangle, under the diſtance of the focus from the vertex, and its complement to the axis.

6°, In an *ellipſis*, the ſquares of the ſemi-ordinates PM, pm, &c. are to each other, as the rectangles under the ſegments of the axis. Hence, $DC^2 : PM = CB^2 : AP.PB$. Conſequently $DC^2 : CB^2 = PM^2 : AP.PB$. That is, the ſquare of the leſs axis is to the ſquare of the greater, as the ſquare of the ſemi-ordinate, to the rectangle under the ſegments of the axis.

7°, The right line FD (*fig.* 24.) drawn from the focus F, to the extremity of the conjugate ſemi-axis, is equal to half the tranſverſe axis AC.

Hence, the conjugate axes being given, the foci are eaſily determined. For, biſecting the greater axis AB in C; from C erect a perpendicular CD, equal to the conjugate ſemi-axis. Then from D, with the interval CA, the foci F and f are determined.

8°, To deſcribe an *ellipſis*.—The ſum of two right lines FM and fm, drawn from each focus of an *ellipſis*, F and f to the ſame point of the periphery M, being equal to the greater axis AB; the conjugate axes of an *ellipſis* being given, the *ellipſis* is eaſily deſcribed. For, determining the foci F and f, as already directed; and fixing two nails therein, and about theſe nails tying a thread FMf, equal to the length of the greater axis

AB; the thread being ſtretched, and a ſtyle, or pin, applied at its extent, the duct or ſweep of the ſtyle or thread about the nails will deſcribe an *ellipſis*.

9°, The rectangle under the ſegments of the conjugate axis, is to the ſquare of its ſemi-ordinate, as the ſquare of the conjugate axis, to the ſquare of the greater axis. Hence, the co-ordinates to the conjugate axis have the ſame relation, as there is between the co-ordinates to the greater axis. Conſequently, the parameter of the conjugate axis is a third proportional to the conjugate axis, and the greater axis.

10°, To determine the ſubtangent PT (*fig.* 25.) and ſubnormal PR in an *ellipſis*.—As the firſt axis is to the parameter; ſo is the diſtance of the ſemi-ordinate from the centre, to the ſubnormal.

11°, The rectangle under the ſegments of the axis is equal to the rectangle, under the diſtance of the ſemi-ordinate from the centre, into the ſubtangent. See Subtangent.

12°, As the diſtance of the ſemi-ordinate from the centre is to half of the axis; ſo is the abſciſs to the portion of the ſubtangent intercepted between the vertex of the *ellipſis* and the tangent.

13°, The rectangle under the ſubtangent PT, into the abſciſs PC, is equal to the rectangle under the ſegments of the axis. Hence, the ſquare of the ſemi-axis AC is equal to the rectangle of CT, into PC.

14°, The rectangle under the ſubtangent, and the diſtance of the ordinate from the centre, is equal to the difference of this diſtance, and the ſquare of the tranſverſe ſemi-axis.

15°, In an *ellipſis*, the ſquare of the ſemi-ordinate is to the ſquare of the conjugate ſemidiameter, as the rectangle under the ſegments of the diameter is to the ſquare of the ſemidiameter. Conſequently, the relation of the ſemi-ordinates to the diameters is the ſame as to the axes: and the parameter of the diameter is a third proportional to the diameters.

Infinite ellipſes are thoſe defined by the equation $ay^{m+n} = bx^{m}(a-x^{n})$ which ſome call *elliptoides*, if m be greater than 1, or n greater than 1.

In reſpect of theſe curves; the *ellipſis* of the former kind is called the *Apollonian ellipſis*.

uadrature of the Ellipsis. See Quadrature.

LLIPSIS, in grammar, and rhetoric, is a figurative way of ſpeaking, wherein ſomething is ſuppreſſed, or left out, in a diſcourſe, and ſuppoſed or underſtood.

This chiefly happens, when, being under the tranſport of a violent paſſion, a man is not at leiſure to ſpeak every thing out at length; the tongue being too ſlow to keep pace with the rapid motions of the mind. So that on theſe occaſions we only bring forth broken, interrupted words and expreſſions; which repreſent the violence of a paſſion, better than any conſiſtent diſcourſe.

F. Boſſu conſiders the *ellipſis*, as a way of diſguiſing ſentences; by ſuppreſſing the word which ſhould make the particular ap- lication, and leaving the whole in a kind of ingenious am- biguity.

Thus, the Trojans, in Virgil, being reduced by Turnus to he laſt extremity, and ready to be deſtroyed, ſpy Æneas oming to aſſiſt them: upon which the poet ſays, *ſpes addita uſcitat iras*. Which expreſſion ſignifies either, in particular, hat the hope they conceive, retrieves and augments their ourage: or in general, that the hope of aſſiſtance at hand aturally raiſes courage, and gives people new ſtrength.

f the poet had added a word, and ſaid, *ollis ſpes addita ſuſcitat as*, the paſſage had been expreſly reſtrained to the firſt nſe; and had ceaſed to be a ſentence, and commenced only e application of a ſentence. The ſuppreſſion of that word akes it a ſentence in form.

his, that excellent critic looks on as one of the fineſſes of e Latin tongue: wherein it had vaſtly the advantage of the odern tongues. *Trait. du Poeme Epique*, Pag. 466, *&c.*

LIPTIC, or Elliptical, ſomething that belongs to an *ipſis*.

epler firſt maintained, that the orbits of the planets are not rcular, but *elliptical*; which hypotheſis was afterwards ad- red to by M. Bouillaud: Mr. Flamſteed, Sir Iſaac Newton, . Caſſini, and others, of the later aſtronomers, have con- med the ſame: ſo that this, which was once, by way of con- mpt, called the *elliptic hypotheſis*, is now the prevailing doctrine.

Iſaac Newton demonſtrates, that, if any body revolve und another in an *elliptic* orbit, its centrifugal forces, or vities, will be in a duplicate ratio; or, as the ſquares of diſtances from the umbilicus, or focus.

lio, Hartman, *&c.* endeavour to demonſtrate, that the beſt m for arches, or vaults, is the *elliptical*. See Arch. See Catenaria.

PTIC *Space* is the area, contained within the circumfe- ce, or curve of the *ellipſis*. See Ellipsis.

s demonſtrated, 1°, That the *elliptic ſpace* is to a circle ribed on the tranſverſe axis, as the conjugate diameter is he tranſverſe axis.

2°, That the *elliptic ſpace* is a mean proportional between two circles deſcribed on the tranſverſe and conjugate axes.

Elliptic *Conoid*, is the ſame with the *ſphæroid*. See Sphæroid.

Elliptic *Specula*, or *Mirrors*. See Mirror.

Elliptic *Winding-Stairs*. } See the articles { Stairs.
Elliptic *Wind-mill*. } { Windmill.

Elliptic *Compaſſes*, an inſtrument, made uſually in braſs; for the drawing any ellipſis, or oval, by one revolution of an index.

Elliptic *Dial* is an inſtrument, uſually of braſs, with a joint to fold together, and the gnomon to fall flat; for the ſake of the pocket.

By it are found the meridian, hour of the day, riſing and ſetting of the ſun, *&c.* See Dial.

ELLIPTOIDES, an infinite ellipſis, *i. e.* an ellipſis defined by the equation $ay^{m+n} = bx^{m}(a-x)^{n}$, wherein $m > 1$ or $n > 1$. See Ellipsis.

Of this there are ſeveral kinds or degrees: as the cubical *elliptoid*, wherein $ay^{3} = bx^{2}(a-x)$. A biquadratic or ſurdeſolidal *elliptoid*, or that of the third order, wherein $ay^{4} = bx^{2}(a-x)^{2}$.

If any other ordinate be called *v*, and the correſpondent abſciſs *z*; there will be $av^{m+n} = bz^{m}(a-x)^{n}$. Conſequently, $ay^{m+n} : av^{m+n} :: bx^{m}(a-x)^{n} : bz^{n}(a-z)^{n}$; that is, $y^{m+n} : v^{m+u} :: x^{m}(a-x)^{m} : z^{m}(a-z)^{n}$.

ELOCUTION is defined by Tully, the chooſing and adapting of words, and ſentences, to the things, or ſentiments, to be expreſſed.—To the *elocution* then properly belongs the delectus verborum, or choice of words.

The beauties of *elocution* conſiſt chiefly in the uſe of figures, and figurative dictions or expreſſions, in the periods, and the ſtyle. See Figure, Period, and Style.

ELOGIUM *, Eloge, a praiſe, or panegyric, beſtowed on any perſon, or thing; in conſideration of its merit.

> * The word is Latin, but formed of the Greek *ευλογια*, *commendation*; which is compounded of ευ, *well*; and λέγω, *to ſay*, or *ſpeak*.

In that fine diſcourſe of Iſocrates, intituled, *πανηγυεις*, there is an hiſtorical *eloge* of the city Athens: Fa. Labbe has compoſed an hiſtorical *eloge* of the city Bourges; Fa. Meneſtrier, of the city of Lions; and M. Martignac, of the biſhops and archbiſhops of Paris, for about a century.

The ſecretary of the royal academy of ſciences at Paris compoſes the *eloges* of ſuch members as die; and delivers them at the next public meeting of the company.—Funeral orations are only *eloges* of eminent perſons deceaſed.—Some authors have written *eloges* on deſpicable, and even pernicious things.

Extravagant and improbable *eloges* are of the greateſt differvice to their own deſign; and do, in effect, diminiſh the perſon, whom they pretend to magnify. Any worthy man may paſs through the world, unqueſtioned and ſafe, with a moderate recommendation: but, when he is ſet-off and bedawbed with rhetoric, and embroidered ſo thick, that you cannot diſcern the ground; it awakens naturally (and not altogether unjuſtly) intereſt, curioſity, and envy: for all men pretend a ſhare in reputation, and love not to ſee it engroſs'd, or monopoliz'd; and are therefore apt to inquire (as of great eſtates ſuddenly got) whether the perſon, ſo commended, came honeſtly by it, and of what credit the perſon is, that tells the ſtory.

ELONGATION, in aſtronomy, the digreſſion, or receſs of a planet from the ſun, with reſpect to an eye placed on our earth.

The greateſt diſtance of the planet, *&c.* from the ſun, is called the *greateſt elongation*: which varies on two accounts, *viz.* in that both the earth, and the planet, revolve, not in circles, but in ellipſes.

The *elongation* is chiefly conſidered in Venus and Mercury: the *greateſt elongation* of Venus is 45 degrees, and that of Mercury 30 degrees: that is, the former never recedes from the ſun, or is ſeen diſtant from him, above 45°; nor the latter above 30°. Whence it is, that Mercury is ſo rarely viſible; as being uſually loſt in the light of the ſun. See Mercury, and Venus.

Elongation is alſo uſed, by ſome authors, for the difference in motion, between the ſwifteſt and the ſloweſt of two planets; or the quantity of ſpace, whereby the one has overgone the other: called alſo *ſuperation*.

The ſwifteſt motion of the moon, with regard to the ſun, is called the *elongation* of the moon from the ſun.—We alſo ſay, diurnal *elongation*, horary *elongation*, &c.

Angle of Elongation, or *Angle at the Earth*, is the difference between the ſun's true place, and the geocentric place of a planet.—Such is the angle ETR (*Tab. Aſtronom. fig.* 25.) between the place of the ſun E, and that of the planet R.

Elongation, in chirurgery, is an imperfect luxation; when the ligament of any joint is ſo extended, or relaxed, as to lengthen the limb, but yet not to let the bone go quite out of its place. See Luxation.

ELOPEMENT *, in law, is, when a married woman, of her own accord, departs from her huſband, and dwells with an adulterer; for which, without voluntary reconcilement to the huſband, ſhe ſhall loſe her dowry; nor ſhall the huſband, in ſuch caſe, be compelled to allow her any alimony.

Sponte virum mulier fugiens, & adultera facta,
Dote ſua careat, niſi ſponſo ſponte retracta.

* The word is formed from the Belgic, Ee, *matrimony*; and Loopen, *to run away*.

ELOQUENCE, the art of ſpeaking, or writing well; ſo as to move, and perſuade. See Rhetoric, and Oratory.

Demoſthenes, and Cicero, are the two princes of antient *eloquence*; the one among the Greeks, the other among the Romans. Their manner, however, was exceedingly different; the firſt being cloſe, ſtrong, nervous, conciſe, and ſevere, ſo that a word could not be ſpared; the latter copious, florid, and rich, ſo that a word could not be added.

It was objected to Cicero, that his *eloquence* was Aſiatic, that is, redundant, or ſtuffed with ſuperfluous words, and thoughts.

Pericles was called a *torrent of eloquence*, a *thunderbolt of eloquence*. Pedants do not diſtinguiſh *eloquence* from the heaping up of figures, the uſe of big words, and the rotundity of periods.

True *eloquence* depends principally on the vivacity of the imagination. In ſtrictneſs, it is not that which gives grace and ornament, but life and motion, to diſcourſe. Its mien is that of an Amazon, not that of a coquette.

The authors of the *Art of thinking* remark, that the rules of *eloquence* are obſerved in the converſation of people naturally *eloquent*, though they never think of them, while they practiſe them. They practiſe thoſe rules, becauſe they are *eloquent*; not in order to be *eloquent*.

The *eloquence* of the chair, and pulpit, is much more difficult than that of the bar. Sir George Mackenzy has a treatiſe of the *eloquence* of the bar. *Idea Eloquentiæ forenſis*, &c.

ELUDING, the act of evading, or rendering a thing vain, and of no effect; a dextrous getting clear, or eſcaping out of an affair, difficulty, embarras, or the like.

We ſay to *elude* a propoſition, &c.—The deſign of chicanery is, to *elude* the force of the laws: this doctor has not reſolved the difficulty, but *eluded* it. Alexander, ſays the hiſtorian, in cutting the Gordian knot, either *eluded* the oracle, or fulfilled it; *Ille nequicquam luctatus cum latentibus nodis, Nihil, inquit, intereſt, quomodo ſolvatur; gladioque ruptis omnibus loris, oraculi ſortem, vel* eludit, *vel implevit*. Q. Curt. 13.

ELYSIUM, ΕΛΥΣΙΟΣ, in the antient theology, or rather mythology, a place in the inferi, *i. e.* in the lower world, or, as we ſometimes render it, in hell; furniſhed with fields, meads, agreeable woods, groves, ſhades, rivers, &c. whither the ſouls of good people were ſuppoſed to go after this life.

Orpheus, Hercules, and Æneas, are held to have deſcended into *elyſium*, in their life-time, and to have returned again. Virgil, lib. VI. v. 638, &c. Tibullus, lib. I. eleg. 3. give us fine deſcriptions of the *elyſian fields*.

Virgil oppoſes *elyſium* to tartara: which was the place, where the wicked underwent their puniſhment.

Heic locus eſt, partes ubi ſe via findit in ambas:
Dextera, quæ Ditis magni ſub mœnia tendit:
Hac iter elyſium *nobis: at læva maloram*
Exercet pœnas, & ad impia tartara mittit.

Some authors take the fable of *elyſium* to have been borrowed from the Phœnicians; as imagining the name *elyſium* formed from the Phœnician עלז *alaz*, or עלצ *alats*, or עלס *alas*, to rejoice, or to be in joy; the letter *a* being only changed into *e*, as we find done in many other names; as in Enakim, for Anakim, &c. On which footing, *elyſian* fields ſhould ſignify the ſame thing as a place of pleaſure; or,

——*Locos lætos, & amæna vireta*
Fortunatorum nemorum, ſedeſque beatas. Virg.

Others derive the word from the Greek, λυω, *ſolvo*, *I deliver*, *I let looſe*, or *diſengage*, by reaſon here mens ſouls are freed, or diſincumbered from the fetters of the body. Beroaldus, and Hornius, *Hiſt. Philoſoph.* l. III. c. 2. take the place to have derived its name from Eliza, one of the firſt perſons who came into Greece after the deluge, and the author and father of the Ætolians. Ol. Rudbecks contends, that it was in Sweden the *elyſian* fields were placed.

ELYTROIDES *, ΕΛΥΤΡΟΕΙΔΗΣ, in anatomy, one of the proper coats, or tunics of the teſticles. See Testicles.

* The word is formed of the Greek, ελυτρον, *vagina*, a ſheath, and ειδος *form*.

The *elytroides* is the ſecond proper coat of the teſtes: it reſembles a ſheath, or vagina: whence ſome have alſo called it *vaginalis*.

It is formed of a dilatation of the production of the peritonæum: its inner ſurface is ſmooth and equable; and the outer rough and unequal; which makes it adhere the more ſtrongly to the firſt of the proper coats, called *elytroides*.

EMANATION *, the act of flowing, or proceeding, from ſome ſource, or origin.—Such is the *emanation* of light from the ſun; or that of effluvia from odorous, &c. bodies; of wiſdom from God, &c.

* The word is formed of the Latin, *e*, out of; and *manare*, to flow, or ſtream.

Emanation is alſo uſed for the thing that proceeds, as well as the act of proceeding.—The power given a judge, is an *emanation* from the regal power: the reaſonable ſoul is an *emanation* from the divinity: the Holy Spirit is an *emanation* from the Father and the Son, &c.

Emanation is alſo uſed among the ſchoolmen, for the production of a leſſer thing, in order to the production of a greater, by virtue of ſome natural connexion, or dependence, between them.

For, as when ſeveral moveables are joined together, the ſame power that moves the firſt moves all the reſt (as in pulling up the trunk of a tree, you pull up the roots, branches, &c. or in drawing one link of a chain, you bring forward all the reſt); the ſame is to be underſtood in all conjunct natural effects; *viz.* that the ſame power, whereby the firſt is produced, does alſo produce all the reſt, naturally connected to it: in that, by means of the connexion, the action of the agent is conveyed from one to the other; ſo that the firſt determines the agent to the production of all the reſt.

And hence that is called an *emanative cauſe* (in contradiſtinction to an efficient cauſe) which produces an effect by its mere preſence, without the intervention of any action; as a roſe doth a ſmell, &c.—Others, and with good reaſon, deny, tha there is any ſuch thing as an *emanative* cauſe, to produce a effect without any action. See Cause.

EMANCIPATION *, in the Roman law, was the act of ſetting a ſon free from the power and ſubjection of his father.

* The word is formed from the Latin, *ex*, of; and *mancipiu* a ſlave.

Emancipation differs from *manumiſſion*; as the latter was th act of a maſter in favour of a ſlave; the former that of father in favour of his ſon.

The effect of *emancipation* was, that the goods, and moveab effects, which the ſon ſhould thenceforth acquire, ſhould b his ſole property, and not the property of his father; as th were before *emancipation*. Beſide, that *emancipation* put t ſon in a capacity of managing his own affairs, and of ma rying without his father's conſent, though a minor, or pup and under 25 years of age.

There were two kinds of *emancipation*: the one *tacit*, whi was, by the ſon's being promoted to ſome dignity, or by coming of age, or by marriage: in all which caſes, the became his own maſter of courſe.

The other *expreſs*, where the father declared before the jud that he *emancipated* his ſon. This was not performed wi out ſome formality: the father was firſt to ſell his ſon, i ginarily, to another man, whom the lawyers call *pater f ciarius*, father in truſt; of whom being bought back a by the natural father, he manumitted, or ſet him free, b declaration before the judge. This imaginary ſale was ca *mancipatio*; and the manumiſſion, conſequent thereon, *em cipatio*.

Emancipation ſtill obtains in France, chiefly, with regar minors, or pupils, who are hereby ſet at liberty to ma their effects, without the advice, or direction, of their fa or tutors. It muſt be obſerved, however, that *emanci tion* only extends to the ſelling of moveables, and lettin leaſes, &c. of immoveables; not to the ſelling or mortga of immoveables: which are only done with the conſe a curator, ordinarily appointed a perſon, when *em pated*.

Formerly, *emancipation* was performed in the ordinary c of juſtice, when deſired by the child; but if he were a m the king's letter was alſo required. Though there were ways of *emancipation*, as by marriage; arriving at the a 20 years; and in ſome provinces, by the death of the ther, by reaſon the children were there under the pow the father and mother conjointly; ſo that the death of of them *emancipated* the child.

Emancipation by marriage, in France, gives a power of m ing again, without the father's conſent, though under but among the Romans, Cujas tells us, a widow, un years of age, though *emancipated* by her former ma returned into the power of the father, and might not a ſecond time, without his conſent.

Du Cange obſerves, that the word *emancipation*, was al in the monaſteries, in ſpeaking of monks, promoted dignity, or removed from under the power of their riors: as alſo ſpeaking of monaſteries, chapels, &c. ſelves, when exempted, by the pope, from the juriſdic the ordinary.

EMASCULATION, the act of taking from a male thoſe parts which are characteriſtic of his ſex. See CASTRATION.

EMAUX *de l'Eſcu*, in heraldry, the metals and colours of a ſhield, or ſcutcheon.

EMBALMING *, the opening a dead body, taking out the inteſtines, and filling their place with odoriferous and deſiccative drugs and ſpices, to prevent its putrifying.

* The word is formed from *balm*, which was a principal ingredient in the *embalmings* of the antient Egyptians.

The body of Jacob was 40 days *embalming* in Egypt. See Geneſis l. *v.* 3. Mary Magdalen, and Mary the mother of James, bought perfumes to *embalm* Jeſus. See Matthew, &c.

John king of France dying at London in 1364. his body was *embalmed*, and ſent to France, and there interred at St. Denis. Du Tillet. For the manner of *embalming* among the Egyptians, ſee Thevenot's *Collection*, tome I.

Dr. Grew, in his *Muſeum Regalis Societatis*, is of opinion, that the Egyptians boiled their bodies in a large cauldron, with a certain kind of liquid balſam: his reaſon is, that in the mummies preſerved in the collection of the royal ſociety, the balm has penetrated not only the fleſhy and ſoft parts, but even the very bones; ſo, that they are all as black as if they had been burnt.

The Peruvians had an effectual method of preſerving the bodies of their yncas, or kings, *embalmed*.—Garcilaſſo de la Vega takes their main ſecret to have been the burying of the corps in the ſnow, to harden them; and afterwards applying a certain bitumen, mentioned by Acoſta, which kept them as intire, as if they had been ſtill alive.

MBARCADERO, in commerce, a Spaniſh term, much uſed along the coaſts of America, particularly thoſe on the ſide of the ſouth ſea.

It ſignifies a place which ſerves ſome other conſiderable city further within land, for a port, or place of ſhipping, *i. e.* of *embarking*, and *diſembarking* commodities.

Thus Calao is the *embarcadero* of Lima, the capital of Peru: and Arica the *embarcadero* of Potoſi. There are ſome *embarcaderos* 40, 50, and even 60 leagues off the city which they ſerve in that capacity.

MBARGO, a reſtraint or prohibition, laid by a ſovereign, on merchant-veſſels; to prevent their going out of port; ſometimes to prevent their coming in; and ſometimes both, for a limited time.

Embargo's are uſual in time of war; in apprehenſions of invaſions, &c.—One great occaſion of *embargo's* is, that the government may make uſe of the merchant-veſſels, with their equipage, &c. in armaments, expeditions, tranſporting of ſoldiers, &c. *Embargo's* are of very miſchievous conſequence to commerce.

MBARRAS, a French term, though now naturalized; denoting a difficulty, or obſtacle, which perplexes or confounds a perſon, &c.

The *embarras* was very great in the road, by reaſon of the army which defiled therein. A man lives more in two days of leiſure, and feels more of life therein, than in two years of hurry and *embarras*. Chev. de M.—It diſcovers a decay of paſſion, when lovers are under an *embarras* at finding themſelves alone. La Bruyere.

MBASSADOR *, or AMBASSADOR, a public miniſter, ſent from one ſovereign prince, as a repreſentative of his perſon to another.

* The word is derived from the corrupt Latin *ambaſciator*, formed of *ambactus*, an old word borrowed from the Gauliſh, ſignifying ſervant, client, domeſtic, or officer; ſuch is the origin given by Borel, Menage, and Chiflet, after Salmaſius and Spelman. But the Jeſuits of Antwerp reject this opinion, in the *Acta Sanct. Mart.* tom. II. *p.* 128. by reaſon the Gauliſh *ambact* had been diſcontinued long enough before the Latin *ambaſcia* was ever thought of: which, however, is not ſtrictly true; the word *ambaſcia* occurring in the Salic law, Tit. 19. and being formed of *ambactia*, by pronouncing the *t* as in *actio*; and *ambactia* came from *ambactus*, of *ambact*. Lindenbroeg derives the word from the German *ambacht*, work; as ſignifying a perſon hired to perform a work, or legation; and Chorier, meeting with the ſame word in the laws of the Bourguignons, gives into the ſame ſentiment. Alb. Achariſius, in his Italian dictionary, derives it from the Latin *ambulare*, to walk, or travel. Laſtly, the Jeſuits of Antwerp, in the place laſt cited, obſerving that the word *ambaſcia* occurs in the laws of the Bourguignons, derive thence the words *ambaſſicatores*, and *ambaſciatores*, as ſignifying envoys, or agents, from one prince or ſtate to another. Their opinion is, that, among the barbarians who overſpread Europe, *ambaſcia* ſignified the diſcourſe of a perſon who ſtoops, or humbles himſelf; being formed from the ſame root with *abaiſſer*, viz. of *an*, or *am*, and *bas*.

In Latin we uſually call this kind of miniſter *legatus*, or *orator*; though it is certain, the word *embaſſador*, with us, has a much more extenſive ſignification, than that of *legatus* among the Romans: and, excepting that they are both under the protection of the law of nations, there is ſcarce any thing in common between them.

Embaſſadors are either *ordinary* or *extraordinary*.

EMBASSADOR *in ordinary* is he who reſides ſtatedly in the court of another prince, to maintain a mutual good underſtanding, look to the intereſts of their maſters, and tranſact ſuch affairs as may occur.

Embaſſadors in ordinary are but of modern invention: it is not above 200 years ago ſince they were firſt heard of: till then, all *embaſſadors* were *extraordinary*, and retired as ſoon as they had diſpatched the affair they were ſent upon.

EMBASSADOR *extraordinary* is he who is ſent to a prince's court on ſome particular and emergent occaſion; as to conclude a peace, or marriage; make a compliment, or the like.

Indeed there is no eſſential difference between *ordinary* and *extraordinary embaſſadors*; their errand is all: and they equally enjoy all the privileges and prerogatives which the law of nations decrees.

At Athens the *embaſſadors* from foreign princes and ſtates always mounted the tribunal, or pulpit, of the public orators, and there opened their commiſſion, and acquainted the people with their buſineſs and errand: at Rome they were introduced to the ſenate, and delivered their commiſſion to them: among us, they make their addreſs immediately and ſolely to the king.

Athens and Sparta, ſays M. Tourreil, when in all their glory, were never ſo much delighted, as to ſee and hear a number of *embaſſadors*, in their aſſemblies, ſuing for the protection or alliance of the one or the other ſtate. It ſeemed to them the nobleſt homage that could be paid them; and that ſtate, which received the moſt embaſſies, was judged to have the advantage over the other.

The name of *embaſſador*, Cicero obſerves, is ſacred and inviolable; *non modo inter ſociorum jura, ſed etiam inter hoſtium tela incolume verſatur*. In Verr. Orat. VI.—David, we read, made war againſt the Ammonites, to revenge the injury done his *embaſſadors*, 2 Kings X. Alexander put the inhabitants of Tyre to the ſword, for having inſulted his *embaſſadors*; and the youth of Rome, for affronting the *embaſſadors* of Vallona, were delivered up into their hands, to be puniſhed at diſcretion.

The *embaſſadors* of kings ſhould never attend at any public aſſemblies, marriages, interments, or other ſolemnities, unleſs their maſters have ſome intereſt therein; nor muſt they even go into mourning, or the like, on any occaſions of their own, by reaſon they repreſent the perſons of their princes, and muſt conform, and keep pace with them.

EMBASSY, or AMBASSY, *legatio*, a miſſion from one ſovereign prince, or ſtate, to another, of ſome able experienced perſon, to negotiate ſome affair, in quality of *embaſſador*.

Fa. Daniel obſerves, that under the antient French kings, their *embaſſies* conſiſted of a body, or number of perſons, joined together in commiſſion, and who compoſed a kind of council: ſomething like which is ſtill retained at treaties of peace. Thus the French *embaſſy* at Nimeguen, for the peace, conſiſted of three plenipotentiaries; that of Utrecht, of two, &c.

We likewiſe read of *embaſſadreſſes*: Madame the Marechale de Guebriant, Wicquefort obſerves, was the firſt, and perhaps the only woman, ſent by any court in Europe in quality of *embaſſadreſs*. Matth. L. IV. *Vie d'Henry* IV. tells us, that the king of Perſia ſent a lady of his court on an *embaſſy* to the grand ſignor, during the troubles of the empire.

EMBATTLED, a term in heraldry, when the out-line of any ordinary is notched after the manner expreſſed in *Tab. Herald. Fig.* 56. N° 2. repreſenting the battlements of a wall, or caſtle. See BATTLEMENT.

EMBER *Weeks* * are thoſe wherein the *ember*, or *embering-days* fall.

* In the laws of king Alfred, and thoſe of Canute, thoſe days are called *ymbren*, that is, circular days, from whence the word was probably corrupted into *ember-days*: by the canoniſts they are called *quatuor anni tempora*, the four cardinal ſeaſons, on which the circle of the year turns: and hence Henſhaw takes the word to have been formed, *viz.* by corruption from *temper*, of *tempora*.

The *ember days* are the Wedneſday, Friday, and Saturday, after Quadrageſima Sunday, after Whitſunday, after Holyrood day in September, and after St. Lucy's day in December: which four times anſwer well enough to the four quarters of the year, Spring, Summer, Autumn, and Winter.

Mr. Somner thinks they were originally faſts, inſtituted to beg God's bleſſings on the fruits of the earth. Agreeably to which, Skinner ſuppoſes the word *ember* taken from the aſhes, *embers*, then ſtrewed on the head.

Theſe *ember-weeks* are now chiefly taken notice of on account of the ordination of prieſts and deacons; becauſe the canon appoints the Sundays next ſucceeding the *ember-weeks* for the ſolemn times of ordination. Though the biſhops, if they pleaſe, may ordain on any ſunday or holiday.

EMBLEM *, EMBΛHMA, a kind of painted ænigma, which, repreſenting ſome obvious hiſtory, with reflections, underneath, inſtructs us in ſome moral truth, or other matter of knowlege.

* The word is pure Greek, formed of the verb εμβαλλειν, *to caſt in, to inſert:* Suetonius relates, that Tiberius made the word be eraſed out of a decree of the Roman ſenate, becauſe borrowed from another language.

Such is that very ſignificant image of Scævola, holding his hand in the fire: with the words *agere & pati fortia Romanum eſt:* to do and ſuffer courageouſly is Roman.

The *emblem* is ſomewhat plainer, and more obvious, than the ænigma.—Gale defines *emblem* an ingenious picture, repreſenting one thing to the eye, and another to the underſtanding.

The *emblems* of Alciatus have been in as much reputation among the more learned, as thoſe of Quarles among the vulgar.

The Greeks alſo frequently gave the name EMBLEMS, εμβληματα, to *inlaid*, or moſaic works, and even to all kinds of ornaments of vaſes, moveables, garments, &c. And the Latins uſed *emblema* in the ſame ſenſe: accordingly, Cicero, reproaching Verres with the ſtatues, and fine-wrought works, he had plundered from the Sicilians, calls the ornaments fixed thereto (and which on occaſion might be ſeparated from them) *emblemata*. Add, that Latin authors frequently compare the figures and ornaments of diſcourſe to theſe *emblemata*: thus, an antient Latin poet, praiſing an orator, ſays, that all his words were ranged like the pieces in moſaics.

Quam lepidè λεξεις *compoſtæ, ut teſſerulæ omnes,*
Arte pavimenti, atque emblemate *vermiculata.*

We do not uſe the Engliſh word *emblem* in this ſenſe; though the antient juriſconſulti always retain the Latin *emblema* to expreſs ſuch ornaments; by reaſon the Greek εμβλημα literally denotes any thing applied, or added to a body by way of enrichment.

With us, *emblem* ordinarily ſignifies no more than a painting, baſſo relievo, or other repreſentation, intended to hold forth ſome moral or political inſtruction.

What diſtinguiſhes an *emblem* from a *device*, is, that the words of an *emblem* have a full, complete ſenſe of themſelves; nay, all the ſenſe and ſignification which they have together with the figure.

But there is yet a farther difference between *emblem* and device: for a device is a ſymbol appropriated to ſome particular perſon, or that expreſſes ſomething which concerns him particularly; whereas an *emblem* is a ſymbol that regards all the world alike.

Theſe differences will be more apparent, from comparing the *emblem* above-quoted with the device of a candle lighted; and the words *juvando conſumor*, I waſte myſelf in doing good.

EMBLEMATICAL *characters*. See CHARACTER.

EMBLEMENTS, a term ſtrictly ſignifying the profits of lands ſown; though ſometimes uſed more largely for any profits ariſing, and growing naturally from the ground: as graſs, fruit, &c.

If a tenant for life ſow the land, and die; his executor ſhall have the *emblements*, and not he in reverſion. But if the tenant for years ſow the land, and before ſeverance the term expires, there the leſſor, or he in reverſion, ſhall have the *emblements*, and not the leſſee.

EMBOLISMIC, *intercalary*, is chiefly uſed in ſpeaking of the additional months which chronologiſts inſert to form the lunar cycle of 19 years.

The 19 ſolar years, conſiſting of 6939 days, and 18 hours; and the 19 lunar years only making 6726 days: it was found neceſſary, in order to render the 19 lunar years equal to the 19 ſolar, which make the lunar cycle of 19 years, to intercalate or inſert ſeven lunar months, containing 209 days; which, with the four biſſextile days happening in that interval, make 213 days, and the whole, 6939 days. See CYCLE.

By means of theſe ſeven *emboliſmic*, or additional months, the whole 6939 days and 18 hours of the ſolar years are employed in the calendar.

In the courſe of 19 years there are 228 common moons, and ſeven *emboliſmic* moons. Their diſtribution is thus: every 3d, 6th, 9th, 11th, 14th, 17th, and 19th years are *emboliſmic*, and conſequently contain 384 days apiece. And this was the method of computing time among the Greeks; when they uſed the enneadecæterides, or cycle of 19 years. But they did not keep regularly to it, as the Jews ſeem to have done.

The *emboliſmic* months, like other lunar months, are ſometimes 30 days, and ſometimes only 29. See YEAR.

The *emboliſmic epacts* are thoſe between XIX and XXIX; which are thus called, by reaſon, with the addition of the epact XI, they exceed the number XXX: or rather, becauſe the years, which have theſe epacts, are *emboliſmic*; having thirteen moons apiece, whereof the 13th is the *emboliſmic*.

EMBOLISMUS *, ΕΜΒΟΛΙΣΜΟΣ, in chronology, ſignifies *intercalation*.

* The word is formed of εμβαλλειν, *to inſert*. See EMBOLISMIC.

As the Greeks made uſe of the lunar year, which is only 354 days; in order to bring it to the ſolar, which is 365 days; they had every two or three years an *emboliſm*, i. e. they added a thirteenth lunar month every two or three years; which additional month they called *embolimæus*, εμβολιμαιος, becauſe inſerted, or intercalated.

EMBOLUS, the moveable part of a pump, or ſyringe; called alſo the *piſton*, and popularly the *ſucker*. See PISTON: ſee alſo PUMP, and SYRINGE.

The pipe, or barrel of a ſyringe, &c. being cloſe ſhut, the *embolus* cannot be drawn up without a very conſiderable force; which force being removed, the *embolus* returns again with violence. This phænomenon the Ariſtotelians attribute to nature's abhorrence of a vacuum. See VACUUM.

But the modern philoſophers, finding, that in an exhauſted receiver the *embolus* is eaſily drawn up, though the orifice be ſtopped; prove that it is the preſſure of the atmoſphere on the external parts of the *embolus*, that makes the difficulty of drawing it up. See AIR, ATMOSPHERE, and SUCTION.

EMBOSSING, or IMBOSSING, the act of forming, or faſhioning works in relievo, whether they be caſt, or moulded, or cut with the chiſſel, &c.

Emboſſing is one great part of ſculpture: being that which has to do with figures raiſed, or prominent from the plain or ground; the other part, which makes figures, &c. that are indented, or cut in below the ground, is called *engraving*.

EMBRACEOR, he who, when a matter is in tryal between party and party, comes to the bar with one of the parties (having received ſome reward ſo to do), and ſpeaks in the cauſe, or privately labours the jury, or ſtands there to overlook, awe, or put them in fear.—The penalty hereof is 20 pounds, and impriſonment at the juſtices diſcretion.

EMBRASURE, in architecture, an enlargement of the gap or aperture of a door, or window, within-ſide the wall. See DOOR.

Its uſe is to give the greater play, for the opening of the door, wicket, caſement, &c. or to take in the more light.

The *embraſure* coming ſloping inwards, makes the inner angles obtuſe. When the wall is very thick, they ſometimes make *embraſures* on the outſide.

EMBRASURES, in fortification, denote the holes, or apertures, through which the cannons are pointed; whether i caſemates, in batteries, or in the parapets of walls. See CANNON, ORDNANCE, BATTERY, &c.

The *embraſures* are generally about 12 feet apart, from ſix t nine feet wide without, and from two or three within. Thei height from the platform is uſually three feet on the inſide and a foot and half on the outſide: that ſo the muzzle, o occaſion, may be ſunk, and the piece brought to ſhoo low.

They are ſometimes called *cannonieres*, when big enough t paſs the mouth of a cannon through; and *meurtrieres*, whe only big enough for muſquets.

When the parapet is ſo low, that the cannon may ſhoot without *embraſures*, it is ſaid to ſhoot *en barbe*.

EMBROCATION *, or rather EMBROCHATION, EMBROCHA, ΕΜΒΡΟΧΗ, in pharmacy, denotes the application of remedies, as oils, ſpirits, decoctions, and other liquids, b ſprinkling, or even rubbing them on the part affected: th is called alſo *irrigation*.

* The word is formed from the Greek βρεχω, *irrigo, mad facio*, I ſprinkle, wet, macerate.

Embrocations are only a kind of lotions: they are now little uſed, except in diſeaſes of the head. If the pain do no abate, make an *embrocation* of cows-milk, lukewarm, o the head. Degori. Apply an *embrocation* on the part wit unguent. Dialthæa, or oil of lilies very hot. Dionis.—Th pumping uſed in natural baths is properly an *embrocation*.

EMBROIDERY *, the enriching of a cloth, or ſtuff, b working diverſe figures thereon, with the needle, and threa of gold, or ſilver.

* The word *embroidery* is derived from the French *broiderie*, o *broider*, to *embroider*; which ſome deduce, by tranſpoſition from *bordeur*, by reaſon they formerly *embroidered* only th borders of ſtuffs; whence the Latins alſo call the embroiderers *limbularii*. Du Cange obſerves, that they antiently wrot *aurobruſtus* for *embroidered* with gold, or *bruſtus brudatus*, an *brodatus*; whence *broderie*.

That done with ſilk, flax, or the like, is not now called *embroidery*; though antiently, and properly, the word denote all kind of figuring, or flouriſhing.

The chief uſe of *embroidery* is in church veſtments, cloath houſings, guidons, ſtandards, &c. The invention of *embroidery* is attributed to the Phrygians; whence the Latins ca embroiderers *phrygiones*.

Ther

There are diverſe kinds of *embroidery*: as *embroidery on both ſides*, that which appears on both ſides; only practicable on thin ſlight ſtuffs, as taffetas, gawſe, muſlins, *&c.* *Embroidery on the ſtamp*, where the figures are very high, and prominent, being ſupported on wool, cotton, hair, *&c.* *Low embroidery*, where the figures are low, and without any enrichment between them.

EMBRYO *, in medicine, the firſt beginning, or rudiments, of the body of an animal, in its mother's womb; before it have received all the diſpoſition of parts neceſſary to become animated: which is ſuppoſed to happen to a man on the forty-ſecond day; at which time the *embryo* commences a fœtus.

> * The word is derived from the Greek εμβρυον, which ſignifies the ſame thing: formed of the prepoſition εν and βρυω, *ſcaturio, pullulo*, I ſpring out; by reaſon of the manner of the firſt growth of the *embryo*, which reſembles that of the firſt ſhoots of a plant, as being a kind of zoophyte, and having only a vegetative life.

The moderns have made abundance of fine diſcoveries on the formation and growth of the *embryo*.

M. Dodart, having an *embryo* of 21 days age put into his hands, made a nice examen thereof; to find the order nature obſerves in the formation of the parts, and the firſt riſe of the parts themſelves.

The placenta, he found more than half of the whole; and thence concludes, that the nearer the *embryo* is to the moment of its conception, the greater is the placenta with reſpect to the ſecundines, and the fœtus. Which circumſtance furniſhes a reaſon why miſcarriages are more dangerous than regular deliveries; notwithſtanding that the fœtus in the former caſe is much leſs than in the latter. For though the *embryo* have made a way ſufficient for itſelf, it may not for ſo great a placenta, as is to follow it.

The *embryo* itſelf was only ſeven lines long, from the top of the head to the bottom of the ſpina dorſi, where it terminated. The thighs were not yet unfolded: they only appeared like two little warts at the bottom of the trunk: the arms made the ſame appearance on the ſhoulders. The head was juſt $\frac{1}{3}$ of the length of the whole ſeven lines: on this were ſeen two little black points, which would one day have been eyes. The mouth was very big; which M. Dodart takes for an indication, that the fœtus was fed by the mouth. There was no eminence for the noſe; but two little, almoſt imperceptible, pits for the noſtrils.

The painters uſually make the head $\frac{1}{8}$ of the height of a well-proportioned man; and $\frac{1}{4}$ of that of a young child: in the *embryo* we are ſpeaking of, the head made $\frac{1}{3}$ part of the whole; whence it follows, that the younger the *embryo*, the bigger the head in proportion to the body. The parts nearer the head are alſo bigger in proportion to the reſt; and the legs and feet the ſmalleſt.

The *embryo* was a little crooked forwards, and bore ſome reſemblance to the maggot of a ſilkworm: it weighed leſs than ſeven grains, which is an extraordinary lightneſs for a body ſeven lines long. It was ſo ſoft, that no part of it could be touched, without making a change in its figure.

Upon opening it, M. Dodart diſcovered the heart, and the ight auricle: all the other parts in the thorax, and lower enter, were only ſimple lineaments, or outlines, and all veicular, excepting a part on the left ſide, which may be ſupoſed to be the ſpleen. There was no appearance of any hing on the right ſide for a liver. *Mem. de l'Acad.* See OETUS, and GENERATION.

BRYO is alſo uſed by naturaliſts to expreſs the grain, or ed of a plant; ſometimes the germ, or firſt ſprout appearing ut of the ſeed; by reaſon the whole future plant is ſuppoſed be contained therein. Juſt as the whole chick is ſuppoſed ontained in the cicatricula, or treddle of an egg.

BRYOTHLASTES, ΕΜΒΡΥΟΘΛΑΣΤΗΣ, an inſtrument herewith to cruſh the bones of an embryo, or dead child; as to make it eaſier of extraction, and prepare it for the mbryulcus, to draw it out of the womb.

BRYOTOMY *, ΕΜΒΡΥΟΤΟΜΙΑ, in chirurgery, the peration of cutting off the funiculus umbilicalis, or navelng, of a child juſt born; and tying it up.

> * The word is formed of the Greek εμβρυον, and τεμνω, *I cut*.

BRYULKIA *, or EMBRYOLKIA, ΕΜΒΡΥΟΥΛΚΙΑ, ΕΜΒΡΥΟΕΛΚΙΑ, in chirurgery, an operation of extracting child out of the mother's womb. See CÆSAREAN.

> * The word is formed of the Greek εμβρυον, *fœtus*, and ελκειν, *to draw*.

hat the Greeks call *embryolkia*, the Latins call *cæſarean ion*: which latter name, M. Dionis obſerves, has taken ce, and prevailed over the former; as being more eaſy of nunciation.

NDALS, an old term ſtill uſed in the accounts of the er Temple; where, ſo much *in emendals* at the foot of an ount ſignifies ſo much in the bank, or ſtock of the houſe, reparation of loſſes, and other occaſions.

EMENDATIO *panis & cereviſiæ*, the aſſize of bread and beer; or the power of ſuperviſing and correcting the weights and meaſures belonging to them. See ASSIZE.

EMERALD *, a precious ſtone, when in its greateſt perfection green and tranſparent; and as to hardneſs, nearly equal to the ruby.

> * The word is formed from the French *eſmeraude*, and that from the Latin *ſmaragdus*, which ſignifies the ſame. Others derive it from the Italian *ſmeraldo*, or the Arabic *zomorrad*.

Pliny reckons up twelve kinds of *emeralds*; and denominates each from the provinces, or kingdoms, where he ſuppoſed them to be found; as *Scythian*, *Bactrian*, *Egyptian*, *Perſian*, &c.

But the modern naturaliſts, and jewellers, only know of two fine kinds, *viz.* *Oriental* and *Peruvian*. And if we may credit Tavernier, in his treatiſe of coloured ſtones found in the Indies, inſerted in the ſecond volume of his voyages, theſe two ſhould be farther reduced to one, *viz.* the *Peruvian*.

In effect, he pretends that there is not, nor ever was, any mine of *emeralds*, in the Eaſt-Indies; and that all that are there found, were brought from Peru by the way of the South Sea; which was a method of commerce, carried on by the Peruvians before the diſcovery of America by the Spaniards. But as the point of ſuch commerce is not ſufficiently proved, we muſt keep to the antient diviſion.

The *Oriental emerald* is harder, more brilliant, and tranſparent, than the *Peruvian*; which has generally clouds found in it, and ſparkles leſs. Beſide, that there are ſuch quantities brought from Peru, by the way of Carthagena, that they are much ſunk in value and reputation. There are alſo European *emeralds*, but they are little other than coloured cryſtal.

Some authors ſay, that *emeralds* are uſually taken out of iron mines: and Pomet aſſures us, he had one to which the iron ore was ſtill ſticking. To which, all we have to ſay, is, that it could not be a *Peruvian*, by reaſon there is no iron mine in the country.

The *emerald* is ſuppoſed to grow more and more perfect in the mine like the ruby; and to arrive at its greenneſs by ſlow degrees, as the fruit comes to maturity on trees. It is a common opinion, that the *emerald* grows in the jaſper; and it is certain there are ſome jaſpers ſo perfectly green and fine, that many have taken parts of them for *emeralds*.

But the proper matrix or marcaſite of this ſtone is the *preme d'Emeraud*, which is held among the coarſer precious ſtones; being hard, ſemi-pellucid, and often intermixed with yellow, green, white, and blue, *&c.*

The antients made amulets of *emeralds* againſt all kinds of ſorcery; and ſuppoſed them effectual againſt a thouſand diſferent diſeaſes. At preſent, that we have more experience, or leſs credulity, they are valued for their beauty, not their virtue; though there are ſtill ſome who ſuppoſe, that when reduced into an impalpable powder, and mixed with roſe-water, they may be of ſome uſe in medicine.

We read in authors of ſeveral *emeralds* of incredible magnitude: Roderigo de Toledo tells us, that when the Saracens took that town, king Tarik had for his ſhare of the plunder a table 365 feet long, and all of a piece, which he maintains to be an *emerald*. After this, the reader will not wonder at that pretended to have been ſeen by Theophraſtus, in a temple in Egypt, four cubits long, and three broad; nor even at an obeliſk of *emerald* 40 feet high. But theſe were not properly *emeralds* in our ſenſe of the name, but only green marble, or other ſuch ſtones.

In the *Dictionnaire de Commerce*, we have a very curious and accurate eſtimate of the values of the different kinds of *Peruvian emeralds*; which the reader will not be diſpleaſed to find tranſcribed here.

Rough EMERALDS.—Thoſe of the firſt and coarſeſt ſort, called *plaſmes*, for grinding, are worth 67 ſhillings ſterling the marc, or 8 ounces. The demi-morillons, 8 lib. ſterl. per marc. Good morillons, which are only little pieces, but of fine colour, from 13*l.* to 15*l.* per marc. *Emeralds*, larger than morillons, and called *of the third colour, or ſort*, are valued at from 50*l.* to 60*l.* the marc. *Emeralds*, called *of the ſecond ſort*, which are in larger and finer pieces than the preceding, are worth from 65*l.* to 75*l.* per marc. Laſtly, thoſe of the firſt colour, otherwiſe called *negres cartes*, are worth from 110*l.* to 115*l.*

EMERALDS *ready cut, or poliſhed and not cut, being of good ſtone, and a fine colour, are worth,*

	Lib.	*Sh.*
Thoſe weighing one caract, or four grains	0	10
Thoſe of two caracts —— —	1	7
Thoſe of three caracts — —	2	5
Thoſe of four caracts — —	3	10
Thoſe of five caracts — —	4	10
Thoſe of ſix caracts — —	7	10
Thoſe of ſeven caracts — —	15	0
Thoſe of eight caracts — —	19	0
Thoſe of nine caracts — —	23	0
Thoſe of ten caracts — —	33	0

See Supplement, article SMARAGDUS.

Emerald, or **Emeraud**, in heraldry, is uſed in lieu of vert, or green, in blazoning the arms of dukes, earls, *&c.*

EMERGENT *year*, in chronology, is the epocha, or date, whence we begin to account our time.

Our *emergent year* is ſometimes the year of the creation: the Jews uſe that of the deluge, or the Exodus, *&c.* The *emergent year* of the Greeks was the eſtabliſhment, or at leaſt reſtoration, of the Olympic games by Iphitus. The Romans accounted their years from the building of the city, AB U. C. That is, AB URBE CONDITA.

EMERSION, in phyſics, the riſing of any ſolid above the ſurface of a fluid ſpecifically lighter than itſelf, into which it had been violently immerged, or thruſt.

It is one of the known laws of hydroſtatics, that a lighter ſolid, being forced down into a heavier fluid, immediately endeavours to emerge; and that with a force, or moment, equal to the exceſs of a weight of a quantity of the fluid above that of an equal bulk of the ſolid.

Thus, if a ſolid be immerged in a fluid of double its ſpecific gravity; it will emerge again, till half its bulk, or body, be above the ſurface of the fluid.

Emersion, in aſtronomy, is when the ſun, moon, or other planet, begins to re-appear, after its having been eclipſed, or hid by the interpoſition of the moon, earth, or other body.

The difference of longitude is ſometimes found by obſerving the immerſions and *emerſions* of the firſt of Jupiter's ſatellites.

The immerſions are obſerved from the time of Jupiter's being in conjunction with the ſun, to his oppoſition; and the *emerſions*, from the oppoſition to the conjunction. Which two intervals are uſually ſix months apiece, and divide the year between them.

But when Jupiter is in conjunction with the ſun, and fifteen days before and afterwards; there is nothing to be obſerved: the planet, with his ſatellites, being then loſt in the light of the ſun.

Emersion is alſo uſed when a ſtar, before hid by the ſun, as being too near him, begins to re-appear, and to get out of his rays.

Scruples, or minutes of **Emersion**, an arch of the moon's orbit, as TQ *(Tab. Aſtron. Fig. 46.)*, which the moon's centre paſſes over, from the time ſhe begins to emerge out of the ſhadow of the earth to the end of the eclipſe.

EMERY*, a ſort of metallic ſtone, found in ſeveral mines of metals; but chiefly in thoſe of iron, being properly an iron ore.

* The word comes from the French *emeril*, formed from the Latin *ſmyris*, and that from the Greek *σμυρις*, which ſignifies the ſame thing; and which Lemery derives from the verb *σμαω*, *I clean, ſcour.*

We uſually diſtinguiſh three kinds of *emery*; the *Spaniſh*, *red*, and *common emery.*—The firſt is found in the gold mines of Peru, and other provinces of the Spaniſh America: it is judged a kind of ore of that rich metal; being ſtreaked with little veins, and ſpecks of gold. It is for this reaſon the king of Spain prohibits its being exported: which renders it exceeding rare among us; to the great regret of the ſeekers of the philoſophers ſtone, who build great hopes in the tranſmutation of this precious mineral. The *red emery* is found in copper mines; the little we have of it comes from Sweden and Denmark.

The *common emery* is taken out of iron mines; and is almoſt the only ſort uſed among us. The conſumption hereof is very conſiderable among the armourers, cutlers, lockſmiths, glaziers, lapidaries, maſons, *&c.* Some of whom uſe it to poliſh and burniſh iron, and ſteel works; others, to cut and ſcollop glaſs, marble, and precious ſtones.

This *emery* is of a browniſh colour, ſometimes bordering a little on red; exceedingly hard, and of conſequence difficult to pulverize. The Engliſh are the only people that have got the art of making it into powder; which they do chiefly by means of certain mills contrived for that purpoſe: and thus ſend it in powder to their neighbours.

Pounding it in mortars were in vain; it being ſo hard, that it would pierce or break the mortar, ere it would break itſelf.

Of the powder, the moſt ſubtile and impalpable is the beſt: as to the ſtone, it ſhould be choſen of a high colour, and as free of the rock as poſſible.

Emery fuſed with lead, and iron, hardens them. It is alſo ſaid to increaſe and heighten the weight and colour of gold, It is uſual to mix a little of it with the gold from Madagaſcar, which is naturally pale and ſoft. See Gold.

Putty of **Emery** is a kind of a dirty matter, found on the lapidaries wheels; containing part of the powder of *emery* they uſe.

EMETIC*, in medicine, a remedy that excites vomiting; or that purges the ſtomach by the mouth.

* The word is from the Greek *εμεω*, *I vomit.*

Of theſe there is a great variety; as *Ipecacuanha*, *Carduus Benedictus*, &c.—The uſe of *emetics* is indicated by a foulneſs of the mouth in a morning, reaching, loathing, gnawing of the ſtomach, gradual loſs of appetite, ſpontaneous vomiting, *&c.*

Vomiting is raiſed by irritating the ſpirits with the preſence of ſomething loathed; by an unuſual agitation, as falling, *&c.* by tickling the fibres of the fauces and pharynx with a feather dipped in oil; by drinking quantities of warm water, *&c.* by any thing ſharp and viſcous; as the flowers and ſeeds of dill, leaves of groundſel, *&c.* crocus, and glaſs of antimony; the flowers and regulus thereof; mercurius vitæ, mineral turbith, and mercury ſharpened any way with acids.

The **Emetic** *wine*, *vinum* **Emeticum**, is only white-wine, wherein is infuſed ſome crocus metallorum, or glaſs of antimony.

The **Emetic** *powder*, called alſo *powder of Algaroth*, from the name of its author, is a precipitate of antimony; or butter of antimony ſweetened and ſoftened by repeated lotions.

Emetic *tartar* is prepared from equal parts of crocus metallorum, and cream of tartar, boiled together in water, afterwards filtrated and cryſtallized. See Crystal.

The operation of *emetic* medicines is thus accounted for by Dr. Quincy: the particles of the *emetic*, wedging themſelves into the orifices of the emiſſaries of the glands, placed adjacent to the ſurface of the ſtomach, do dilate the ſame (which by ſome extrinſic cauſe had been contracted); and after the ſame manner, do diſſolve (at leaſt in ſome degree) the coheſion of the ſtagnant morbific matter; rendering it more fluid, and conſequently making its reſiſtance leſs.

Now the natural and conſtant action of the glands being ſecretion; and the impediment (by the dilatation of the orifice, and the attenuation of the fluid) being taken away, or at leaſt made leſs than the natural momentum of the glands; th matter muſt naturally flow into the cavity of the ſtomach, till it be heaped up in ſuch quantity (which not being to b done in an inſtant, muſt require ſome time) as is ſufficient, b its ſtimulus, to vellicate and force the fibres of the ſtomach, abdomen, and diaphragm, by communication of the firſ with the two laſt, into a violent contraction; and thereb throw all out by the œſophagus; and this makes all quiet fo a time, till a new and ſufficient quantity be excerned fro theſe glands to produce the aforeſaid contraction.

Thus there happen fits of vomiting and quiet alternatel till either all the morbific matter be thrown out, or th force of the *emetic* be ſo diluted, that it is no longer able t draw out the morbific matter from the glands.

And the ſtrong contraction in ſo many muſcles, and mu cular canals, as are at work in the action of vomiting, a the violent concuſſion which is produced all over the who body by a power, which, by juſt computation, is not inf rior to 26,000 *l.* weight, may, and often does, take aw the obſtruction in many other canals, beſides thoſe which a adjacent to the ſtomach and gullet; as we plainly ſee, thoſe vaſt ſweats, which plentiful fits of vomiting occaſion.

Emetic and purgative medicines differ only in this, that t particles of the latter do not immediately vellicate the fib of the ſtomach, dilate the orifices, and attenuate the mat contained in the glands of the ſtomach; but act gently, a aſſiſt the natural motion of digeſtion, and ſo are carried do into the guts: and how they operate there, ſee Purg tive.

EMINENCE, in geography, a little hillock, or aſcent, ab the level of the adjoining campaign.

This ſeat is built on an *eminence.* The enemies have t poſſeſſion of ſuch an *eminence*, ſuch a height, from which t can cannonade our rear.

Eminence is alſo a title of honour given to cardinals.

It is his *eminence* the cardinal de——. The decree of pope, whereby it was appointed, that the cardinals ſhoul addreſſed under the quality of *eminence*, bears date the of January 1630. They then laid aſide the titles of *illuſ ſimi*, and *reverendiſſimi*, which they had borne before.

The grand maſter of Malta is likewiſe addreſſed unde quality of *eminence.*

The popes John VIII. and Gregory VII. gave the title to the kings of France. The emperors have lik borne it.

Eminentiſſimus, the ſuperlative of *eminent*, has of late be tributed to the cardinals, *L'eminentiſſime cardinal de Riche*

EMINENTIAL *equation* is uſed by ſome algebraiſts i inveſtigation of the areas of curvilinear figures; for a artificial equation, containing another equation *emi* Hayes *Flux.* p. 97.

EMINENTLY, **Eminenter**, in the ſchools, is u contradiſtinction to *formally*, and in the ſame ſenſe wi *tually*, *viz.* to denote that a thing poſſeſſes, or contai other in a more perfect or higher manner than is requir formal poſſeſſion thereof.

Thus an angel is ſaid to have prudence *eminently*; as it in a higher and more perfect degree than it is in m whom it is formally.

For one thing to contain another *eminently*, there are uſually required two conditions: 1. That the containing be of a more excellent nature than the contained. 2. That the leſs excellent be ſome way contained in the more excellent; *viz.* either as in its productive cauſe, or by ſome ſimilitude, or as to the manner and order of acting, *&c.*

EMIR *, a title of dignity, or quality, among the Turks, and Saracens; attributed to ſuch as are relations, or deſcendants, of their great prophet Mahomet.

* The word is Arabic; where it literally ſignifies prince. It is formed of the verb אמר *amar,* which is originally Hebrew; and in both theſe languages ſignifies to ſay, and to command.

The *emirs* are held in high veneration, and have alone the privilege of wearing a green turban.—On the borders of the Holy Land there are ſeveral *emirs* ſovereign princes; as the *emir* of Gaza, and the *emir* Terabea, over whom the grand ſeignior has but little authority.—The *emir* Hagge, or prince conductor of the pilgrims of Egypt to Mecha, is baſhaw of Jeruſalem, *&c.*

The title *emir*, at firſt, was only given to the caliphs; in Perſia they were alſo called *emir zadeh*, q. d. prince's ſon: whence, by abbreviation of *emir*, they formed *mir*; and of *emir zadeh*, mirza. In after-times, when the caliphs had aſſumed the title of ſultans, that of *emir* remained to their children; as that of Cæſar did among the Romans.

At length, the ſame title of *emir* came to be attributed to all who were judged to deſcend from Mahomet by his daughter Fatimah; and who wear the green turban.

Emir is alſo a title which, being joined to ſome other word, frequently denotes an office, or employ.—As the *emir al omera*, commander of commanders; who, in the time of the caliphs, was chief of the councils and armies.

The appellation Emir is alſo applied, by the Turks, to all viziers, and baſhaws, or governors of provinces. See Bashaw, *&c.*—Add, that *emir akhor*, vulgarly *imrahor*, is maſter of the horſe to the grand ſeignior.

Emir alem, vulgarly *miralem*, ſtandard-bearer, and director of all the ſtandards of the empire.

Emir bazar, the provoſt, or ſuperintendent, of the markets, who regulate the prices of proviſions.

Emir ol moſlemin, or *emir al moumenin*, i. e. commander of the faithful, or the believers, was a title aſſumed by the Almoravides and Almohades, who reigned in Africa and Spain.

EMISSARY *, a truſty, dextrous, able perſon, ſent, underhand, to ſound the ſentiments and views of another; to make him ſome propoſal, or overture; or to ſpread reports, watch the actions, motions, and countenance, of a contrary party, or perſon, in order to make advantages of them all. See Spy.

* The word is formed of the Latin *e*, and *mitto*; *q. d.* I ſend out.

The leaders of parties have abundance of *emiſſaries* employed in their ſervice, who inform them of what paſſes every-where, that they may take their meaſures accordingly. The pope and the chevalier have commonly their *emiſſaries* in England.

Emissary *of a gland*, the ſame with *excretory duct*; being the common canal, or pelvis, in which all the little ſecretory tubes of a gland do terminate.

EMISSION, the act of throwing, or driving, a thing, particularly a fluid, from within, outwards.—The antients took viſion to be performed by the *emiſſion* of viſual rays from the eye.

But the term *emiſſion* is chiefly applied, among us, to the expulſion, or ejaculation, of the ſeed. See Ejaculation.

EMMENAGOGUES *, ΕΜΜΗΝΑΓΩΓΑ, in medicine, ſuch remedies as promote the menſes.

* They are thus called from εν, in; μην, month; and αγω, *duco*, I lead: by reaſon their natural periods of flowing are once a month.

Emmenagogues either act by giving a greater force to the blood in its circulation, whereby its momentum againſt the veſſels is increaſed; or by making it thinner, whereby it will more eaſily paſs through any outlets.

The former intention is helped by chalybeats, which give a greater weight and momentum to a languid heavy blood, and all other ſubſtances of the like gravity and elaſticity: and ſuch is the caſe of a leuco-phlegmatic habit, or, as it is commonly called, the green-ſickneſs, and its cure.

But in the latter caſe, where the blood is florid, and too high; attenuating alteratives and detergents are the only remedies; becauſe fitteſt to render the blood more thin, and give it ſuch a property, as will better carry it through thoſe little apertures deſtined for its diſcharge into the uterus.

MOLLIENTS, in medicine, and pharmacy, remedies uſed to ſoften and looſen indurations, or conſtrictions of the belly, or thoſe of tumors, and ſwellings.—Such are mallows, mercurialis, lily-roots, linſeed, butter, wax, gum ammoniac, *&c.*

The term *emollient* is applied to external as well as internal remedies.—We ſay, a laxative, anodyne, and *emollient* clyſter; an *emollient* emplaſter, an *emollient* cataplaſm, *&c.* Freſh cherries are an *emollient* food; though, when dry, they rather conſtringe than relax, as wanting a great part of the phlegm, which rendered them *emollient*. Ripe grapes, of aſtringent, which they were before, become laxative, and *emollient*. Hogs lard, applied externally, is reſolutive, and *emollient*.

Quincy defines *emollients* to be ſuch things as ſheath and ſoften the aſperities of the humours, and relax and ſupple the ſolids at the ſame time. For it is eaſy to conceive how theſe ſhould be both effected by the ſame medicine, thus:—By what means ſoever (whether in the ſtomach, or any other parts), the juices have obtained a ſharpneſs, or aſperity, ſo as to vellicate, and render uneaſy, the fibres, and nervous parts; which often happens: thoſe things which are ſmooth, ſoft, and yielding, cannot but wrap up their points, and render them imperceptible; whereby they may gradually, by the proper courſe of circulation, be brought to ſome convenient emunctory, without doing any injury by the way.

Such ſharpneſs of parts, likewiſe, draws the fibres into ſpaſms, keeps them too tenſe, and frequently thereby occaſions obſtructions of the worſt kind.

In all ſuch caſes, therefore, *emollients* lubricate and moiſten the fibres, ſo as to relax them into their proper dimenſions; whereupon, ſuch diſorders ceaſe.

EMOLUMENT * is properly applied to the profits ariſing daily from an office, or employ.

* The word is formed of the Latin *emolumentum*; which, according to ſome, primarily ſignifies the profits redounding to the miller from his mill: of *molo, molere*, to grind.——

The patent, or other inſtrument, whereby a perſon is preferred to an office, gives him a right to enjoy all the dues, honours, profits, and *emoluments*, belonging thereto.

In our law-books, *emolument* is uſed, in a ſomewhat greater latitude, for profit, or advantage, in the general.

EMPALEMENT *, or Impalement, a cruel kind of puniſhment, whereby a ſharp *pale*, or ſtake, is thruſt up the fundament, and through the body.

* The word comes from the French *empaler*, or the Italian *impalare*; or, rather, they come, all alike, from the Latin *palus*, a ſtake; and the prepoſition *in*, in, into.

We find mention of *empaling* in Juvenal. It was frequently practiſed in the time of Nero, and continues to be ſo in Turkey.

Empalement, in botany, denotes the cup, or outmoſt part, of the flower of a plant; or that incompaſſing the foliation of the attire.

It is compounded of the three general parts of all plants; the ſkin, the cortical, and the woody, bodies; each *empaler* being (whether conſiſting of one or more pieces) as another leaf, and deſigned to be a guard and a band to the flower, where it is weak and tender: ſo that ſuch plants as have flowers, with a firm and ſtrong baſis, as tulips, *&c.* have no *empalement*, nor need any.

EMPANELLING, or Impanelling, in law, ſignifies the writing and entering into a parchment ſchedule, or roll of paper, by the ſheriff, the names of a jury ſummoned by him to appear for the performance of ſuch public ſervice as juries are employed in.

EMPARLANCE, or Imparlance, in law, a deſire, or petition in court, of a day to conſider, or adviſe, what anſwer the defendant ſhall make to the action of the plaintiff.

The civilians call it *petitio induciarum*. Kitchin mentions *emparlance general*, and *ſpecial*: the firſt ſeems to be only that made in one word, or in general terms; *emparlance ſpecial*, is where the party requires a day to deliberate, adding theſe words, *ſalvis omnibus advantagiis tam ad juriſdictionem curiæ, quam ad breve & narrationem*.

Briton alſo uſes *emparlance* for the conference of a jury upon a cauſe committed to them. See Imparlance.

EMPASMA *, ΕΜΠΑΣΜΑ, in pharmacy, a powder thrown, or ſprinkled, over the body, to correct ſome ill ſmell thereof, or to prevent unneceſſary ſweats.

* The word is formed from the Greek εμπασσω, I ſprinkle.

EMPASTING *, or Impasting, a term uſed, in painting, for the laying on of colours thick, and bold, or applying ſeveral lays of colours, ſo as they may appear thick. See Colouring.

* It is formed of the French *empaſter*, which has the ſame ſignification; of *paſte*, or *pâte*, paſte.

A painting is ſaid to be well *empaſted* with colours, when the colours are beſtowed plentifully, or it is well ſoaked, and ſaturated with colours.

The term is alſo uſed when the colours are laid diſtinct, and aſunder; and not ſoftened, or loſt in each other.—This head is not painted: it is only *empaſted*.

EMPERESS, *Imperatrix*, the feminine of emperor; applied either to an emperor's wife, or to a woman who rules ſingly over an empire, with all the authority of an emperor: as, at this time, the *empereſs* of Ruſſia. See Emperor, Queen, *&c.*

Emperess is alſo uſed, in the antient French poetry, for a particular kind of rhime, thus denominated by way of excellence.

The *rhime emperiere* was a ſort of crowned rhime, wherein the ſyllable that made the rhime was immediately preceded by two other like ſyllables, of the ſame termination; which made a kind of echo, called the *triple crown*; and which, to the ſhame of the nation (as ſome of their late authors expreſs it), their beſt antient poets took for a wonderful beauty and excellence.

Fa. Mourgues, in his treatiſe of French poetry, gives us an inſtance very proper to raiſe contempt of the miſerable taſte of that age, which knew no way of expreſſing that the world is impure, and ſubject to change, ſo excellent, as by ſaying,

Qu' es tu qu' un immonde, monde, onde.

EMPEROR, *imperator*, among the antient Romans, ſignified a general of an army, who, for ſome extraordinary ſucceſs, had been complimented with this appellation.

Afterwards, it came to denominate an abſolute monarch, or a ſupreme commander, of an empire; a Roman *emperor*, &c.

In ſtrictneſs, the title *emperor* does not, cannot, add any thing to the rights of ſovereignty: its effect is, only to give precedence, and pre-eminence above other ſovereigns; and, as ſuch, it raiſes thoſe, inveſted with it, to the top of all human greatneſs.

The *emperors*, however, pretend, that the imperial dignity is more eminent than the regal; but the foundation of ſuch prerogative does not appear: it is certain, the greateſt, moſt antient, and abſolute monarchs, as thoſe of Babylon, Perſia, Aſſyria, Egypt, Macedonia, *&c.* were called by the name of *kings* in all languages, both antient and modern. See KING.

It is diſputed, whether or no *emperors* have the power of diſpoſing of the regal title? It is true, they have ſometimes taken upon them to erect kingdoms; and thus it is, that Bohemia and Poland are ſaid to have been raiſed to the dignity: thus, alſo, the *emperor* Charles the Bald, in the year 877. gave Provence to Boſon; putting the diadem on his head, and decreeing him to be called *king*; *Ut more priſcorum* imperatorum *regibus videretur dominari.*

Add, that the late *emperor* Leopold erected the Ducal Pruſſia into a kingdom, in favour of the elector of Brandenburg: and though ſeveral of the kings of Europe refuſed, for ſome time, to acknowlege him, in that capacity; yet, by the treaty of Utrecht, in 1712. they all came in.

In the eaſt, the title and quality of *emperor* are more frequent than they are among us: thus, the ſovereign princes of China, Japon, Mogol, Perſia, *&c.* are all *emperors* of China, Japon, *&c.*

In the weſt, the title has been a long time reſtrained to the *emperors* of Germany. The firſt who bore it was Charlemagne, who had the title *emperor* conferred on him by pope Leo III. though he had all the power before.

In the year 1723. the czar of Muſcovy aſſumed the title of *emperor of all Ruſſia*; and procured himſelf to be recognized, as ſuch, by moſt of the princes and ſtates of Europe.

The authority of the *emperor* of Germany, over the ſtates of the empire, conſiſts, 1°, In preſiding at the imperial dyets, and in having a negative voice therein: ſo that his vote, alone, can prevent all the reſolutions of the dyet. 2°, In that all the princes and ſtates of Germany are obliged to do him homage, and ſwear fidelity to him. 3°, That he, or his generals, have a right to command the forces of all the princes of the empire, when united together. 4°, That he receives a kind of tribute from all the princes and ſtates of the empire, called the *Roman month.*—For the reſt, there is not a foot of land, or territory, annexed to his title.

The kings of France were antiently alſo called *emperors* at the time when they reigned with their ſons, whom they aſſociated to the crown: thus, Hugh Capet, having aſſociated his ſon, Robert, took the title of *emperor*; and Robert, that of king: under which titles they are mentioned, in the hiſtory of the council of Rheims, by Gerbert, *&c.* King Robert is alſo called *emperor* of the French, by Helgau of Fleury. Louis le Gros, upon aſſociating his ſon, did the ſame. In the firſt regiſter of the king's charters, *fol.* 166. are found letters of Louis le Gros, dated in 1116. in favour of Raymond, biſhop of Maguelonne, wherein he ſtyles himſelf, *Ludovicus, Dei ordinante providentia, Francorum* imperator *auguſtus.*

The kings of England had likewiſe, antiently, the title of *emperors*; as appears, from a charter of king Edgar: *Ego Edgarus Anglorum baſileus, omniumque regum inſularum oceani quæ Britanniam circumjacent*, &c. imperator *&* *dominus.*

Add, that we ſay, the king of England, *Omnem habet poteſtatem in regno ſuo, quam* imperator *vendicat in imperio*: whence the crown of England has been long ago declared, in parliament, to be an imperial crown.

EMPEROR *elect.* See the article ELECT.

EMPHASIS, in rhetoric, a force, ſtreſs, or energy, in expreſſion, action, geſture, or the like. See ENERGY.

* The word is Greek, εμφασις, which ſignifies the ſame.

This orator ſpeaks with a world of *emphaſis*; all his words have an *emphaſis*: what greater puniſhment, ſays De la Bruyere, than to hear ſorry verſes rehearſed with all the *emphaſis* of an ill poet?

Some conſider *emphaſis* as a figure, whereby a thing is repreſented in the fineſt and ſtrongeſt terms:—ſuch, *e. gr.* is that of Auguſtus; *Forum aleatorium calefecimus*: which is much more energical, than if he had ſaid, *Studioſe multumque luſimus alea.*

EMPHATICAL is uſed, by the antient philoſophers, to expreſs thoſe apparent colours which are often ſeen in clouds before the riſing, or after the ſetting, of the ſun; or thoſe in the rainbow, *&c.*

Theſe, becauſe they are not permanent and laſting, they will not allow to be true colours: but, ſince theſe *emphatical* colours are light modified chiefly by refraction, and with a concurrence of reflexions, and ſome other accidental variations; and ſince they are the proper objects of ſight, and capable as truly to affect it, as other permanent colours are; there is no reaſon for excluding them from the number of true and genuine colours; ſince all other colours are only modifications of light, as theſe are.

EMPHRACTIC*, in pharmacy, the ſame with *emplaſtic.*

* The word is formed from the Greek εμφραττω, I ſtop.

EMPHYSEMA, ΕΜΦΥΣΗΜΑ, in medicine, a windy ſwelling, or bloating, of the whole outer habit of the body; like that in the parts of divers animals, when blown up, after they are killed.

The wind, or air, which is the matter of the *emphyſema*, is lodged under the cutis, and principally in the cellulæ adipoſæ.

Hence the ſeat of the *emphyſema*, or the place wherein the wind is chiefly lodged, is in the adipoſe cells, under the ſkin covering the thorax. The ordinary occaſion is, ſome wound in the thorax.

Mr. Littre accounts for it thus: when a perſon is wounded in the breaſt, there enters air in at the wound; now, it may happen, either from the narrowneſs of the wound, or the fleſh's cloſing again readily, or ſome other cauſe, that the air, thus admitted, cannot readily get out again, at leaſt not all of it; and thus air comes to be incloſed in the capacity of the breaſt.

Now, at every inſpiration, the lungs are to fill this capacity, by their ſwelling with the air which is naturally received; but here they cannot ſwell without preſſing upon the other extraneous air: the conſequence of which is, that this latter is made to ſlip between the interſtices of the fleſhy fibres, and perhaps to enter the little oſcula of the minuteſt veins, or lymphatics: immediately, another force comes to take place, contrary to that of inſpiration; *viz.* expiration: in this, the breaſt, contracting itſelf, preſſes the extraneous air ſtill more than the lungs had done in their dilatation; and the two oppoſite moments, or actions, conſpire to the ſame effect.

The air, thus continually impelled, will be propagated along the paſſages it firſt opened itſelf; till, at length, it meets and becomes collected in ſome place: now this place muſt be the cellules of the fat, rather than any-where elſe, by reaſon of the thinneſs and flexibility of their membranes; and as the air came from within the cavity of the breaſt, it will be in the fat that covers the breaſt under the ſkin, rather than elſewhere, that the windy tumor, or *emphyſema*, will lie.

Now, ſuch tumor cannot be very conſiderable, when onl formed by the air received in at a wound; but if we ſuppo the wound to have pierced the ſubſtance of the lungs; then beſide the air taken in by the wound, there will be part of tha taken by inſpiration; ſo much as was contained in the bronchiæ, or veſiculæ, thus perforated, or opened, eſcaping int the cavity of the breaſt, and driven along with the forme into the fleſh: and as a freſh quantity of this is ſupplied ever moment, there will be a continual acceſſion, ſo long as th wound of the lungs remains open.

Hence, an *emphyſema*, from a wound in the lungs, ſometim poſſeſſes the whole habit; the air being carried to all the par of the body.

EMPHYTEUSIS*, in the civil and canon law, the lettin out of poor barren lands for ever, or at leaſt for a long ter of years, on condition of the tenants cultivating, melioratin or mending them; and paying a certain yearly conſideration.

* The word is formed of the Greek εμφυτευσις, which ſignifies engraftment; and, by metaphor, a *melioration*, or amen ment: for as we only graft trees to mend them; ſo a man o alienates his land by *emphyteuſis*, on condition of having amended.

Emphyteuſes are a kind of alienations, differing from ſales, that they only transfer the *dominium utile*, the benefits of ground; not the property, or fee-ſimple.—Among the R mans they were at firſt temporary; afterwards perpetual.

The 20th canon of the council of Carthage prohibits the ſhop's ſeizing the church's *emphyteuſis* out of the hands of p vate perſons, unleſs they have been three years without pay rent.

EMPIRE, the territory, or extent of land, under the comm and juriſdiction of an emperor. See EMPEROR.

We ſay, the Roman *empire*, the *empire* of the eaſt, the em of the weſt, or the weſtern *empire*, the *empire* of the g mogul, *&c.*

Tacitus obſerves, of Galba, that all the world would h thought him worthy the *empire*, had he never been empe Antiquaries diſtinguiſh between the medals of the *upper* *lower*, or *bas empire.*—The curious only value thoſe of up upper *empire*, which commences with Cæſar, or Auguſtus, and ends in the year of Chriſt 260.

The lower *empire* comprehends near 1200 years, reckoning as low as the deſtruction of Conſtantinople, in 1453.—They uſually diſtinguiſh two ages, or periods, of the lower *empire*: the firſt beginning where the upper ends, *viz.* with Aurelian, and ending with Anaſtaſius, including 200 years: the ſecond beginning with Anaſtaſius, and ending with the Palæologi, which includes 1000 years. See MEDAL.

EMPIRE, or *the* EMPIRE, uſed abſolutely, and without any addition, ſignifies the *empire* of Germany, called alſo, in juridical acts and laws, the *holy Roman empire*, *S.R.I.* q. d. *ſacrum imperium Romanum*; which conſtitutes what we otherwiſe call the *Germanic* body.

The empire had its beginning with the IXth century; Charlemaign being created firſt emperor by pope Leo III. who put the crown on his head in St. Peter's church on Chriſtmas-day in the year 800.

'Authors are at a loſs under what form of government to range the *empire*: ſome of them will have it a monarchical ſtate, by reaſon all the members thereof are obliged to aſk the inveſtiture of their ſtates of the emperor, and to take an oath of fidelity to him.

Others maintain it a republic, or ariſtocratic ſtate, by reaſon the emperor cannot reſolve, or determine any thing, without the concurring ſuffrages of the princes: it is added, that if they require inveſtiture from, and ſwear fealty to him, it is only as head of the republic, and in the name of the republic, and not in his own: juſt as, at Venice, every thing is tranſacted in the name of the doge. See DOGE.

Laſtly, others will have the *empire* to be a monarcho-ariſtocratic ſtate, *i. e.* a mixture of monarchy and ariſtocracy; for that though the emperor, in many caſes, ſeems to act ſovereignly, yet his decrees and reſolves have no force, in caſe the ſtates refuſe to confirm them.

In fine, we ſhould rather chooſe to call it an ariſto-democratic ſtate; by reaſon the diet, wherein the ſovereignty is lodged, is compoſed of princes, and the deputies of cities; and is divided into three orders, or bodies, called *colleges*, viz. the colleges of electors, the college of princes, and the college of cities.

We ſay, diet of the *empire*, circles of the *empire*, fiefs of the *empire*, princes of the *empire*, eſtates of the *empire*, members of the *empire*, capitulations of the *empire*, receſſus of the *empire*, &c. See DIET, CIRCLE, FIEF, BAN, PRINCE, CAPITULATION, and RECESSUS.

The ſtates or eſtates of the *empire* are of two kinds, *mediate* and *immediate*.—The *immediate* ſtates are thoſe who hold immediately of the *empire*; whereof, again, there are two kinds: the firſt, ſuch as have ſeats, and voices in the imperial diet; the ſecond, ſuch as have none.—The *mediate* ſtates are thoſe who hold of the *immediate*.

The ſtates which now compoſe the *empire*, are the princes of the *empire*, the counts of the *empire*, the free barons of the *empire*, the prelates of the *empire*, the princeſſes, or abbeſſes of the *empire*, the nobles of the *empire*, and the imperial cities.

MPIRIC *, a name given, by antiquity, to ſuch phyſicians as formed themſelves rules, and methods, on their own practice, and experience; and not on any knowlege of natural cauſes, or the ſtudy of good authors; and who preſcribed, without inquiring into the nature of the diſeaſe, or the properties and virtues of their medicines; depending wholly on the authority of ſome general experienced remedies.

* The word is formed of the Greek, εμπειρικος, and that of εμπειρος, knowing, able; but, particularly, knowing and learned by experience; the root being πειρα, eſſay, trial, experiment.

Medicine was almoſt altogether in the hands of *empirics*, till he time of Hippocrates; who firſt introduced reaſon, and he uſe of theory, therein: and hence there aroſe a new ſect, alled *theoretici*.

liny, and Celſus, make mention of the *empirics*, and their rofeſſion, which the Greeks, and the Latins after them, all *empirice*; as attributing all to experience, and nothing o the authority of the maſters of the art, or the deductions f reaſon.

liny relates, that the ſect of *empirics* had its riſe in Sicily: he firſt who profeſſed it, he ſays, were Apollonius and Glauias; others ſay, Acron Argentinus. They, and their followrs, made great oppoſition to the diſſecting of human bodies; nd particularly to that practiſed by Herophilus, and Eraſiratus, on living bodies, of criminals who were condemned o death. But the word *empiric* is now more odious than ver; being confounded with that of *charletan*, or *quack*, and pplied to perſons who practiſe phyſic at random, without a roper education, or underſtanding any thing of the princiles of the art.

ndeed, it is poſſible, the word may be abuſed even on this de of the queſtion; for thoſe of the phyſicians ſervilely atched to the train and method of the ſchools, the reaſonings Hippocrates and Galen, and the ſtatutes of the faculty, we all know, have been ever forward to treat thoſe who think more freely, and are leſs ſtiffly devoted to antiquity, cuſtom, and the reigning practice, or mode, as *empirics*, charletans, and quacks. See MEDICINE.

EMPLASTER *, ΕΜΠΛΑΣΤΡΟΣ, popularly called PLASTER, a medicine of a ſtiff, glutinous conſiſtence, compoſed of divers ſimple ingredients, ſpread on leather, or linen, and applied externally.

* The word is formed from theGreek, εμπλαττω, or εμπλασσω, to put in a maſs, or to ſmeer over: by reaſon the *emplaſter* is made of divers kinds of ſimple drugs, worked up into a thick tenacious maſs; or becauſe it covers over the piece of leather, or linen, to be applied on the part affected.

Emplaſters are made up in a ſtrong ſolid body, that by remaining a long time on the part, the medicinal ingredients, they are chiefly compoſed of, may have time enough to produce their effect.

The drugs, uſed to give a body and conſiſtence to *emplaſters*, are uſually wax, pitch, gums, fats, litharge, and other preparations of lead.

There are *emplaſters* of divers kinds, and uſed with divers intentions: ſtomachic *emplaſters*; cephalic, ſtyptic, hepatic, diaphoretic, reſolutive, deterſive, emollient, incarnative, aſtringent, conglutinative, *&c. emplaſters*.

The moſt uſual *emplaſters*, are thoſe of diapalma, and diachylon: the *emplaſtrum* polychreſton, the divinum, the manus Dei, the magnetic, the plaſter of ſaffron, de ranis, *&c.*

EMPLASTICS *, in pharmacy, are ſalves, or medicines, which ſtop up, and conſtipate, the pores of the parts they are applied on: otherwiſe called *emphractics*.

* The word is formed from the Greek εμπλασσειν, to ſtop up.

Such are fats, mucilages, wax, the whites of eggs, *&c.*—The plaſter is covered over with a very *emplaſtic* unguent, that it may ſtick the ſtronger to the ſkin. Dionis.

EMPLASTRA *Amyntica*. See the article AMYNTICA.

EMPORETICA *Charta*. See CHARTA, and PAPER.

EMPROSTHOTONOS *, ΕΜΠΡΟΣΘΟΤΟΝΟΣ, in medicine, a kind of tonic convulſion, wherein the head is drawn forwards, till the chin touch the breaſt.

* The word is Greek, compoſed of εμπροσθεν, before; and τονος, tenſion, ſtiffneſs, of the verb τεινω, I ſtretch.

Sometimes too, it is ſo general, that the whole body is bent forward, and makes a kind of bow; and even ſometimes, a kind of circle, the knees meeting the head.

The cauſe of this diſorder is a contraction of the anterior muſcles, particularly thoſe of the head called *maſtoides*.

EMPYEMA *, ΕΜΠΥΗΜΑ, inmedicine, a collection of pus, or purulent matter, in the cavity of the breaſt; diſcharged thither upon the burſting of ſome abſceſs, or ulcer, in the lungs, or membranes, that incloſe the breaſt.

* The word is formed of the Greek, εν, in, and πυον, pus; the letter ν, being here changed into μ: a thing often done; when the *n* happens to come, in compoſition, before the labials *b* and *p*. As in the words *embamma*, *emblema*, *emporium*, &c.

The *empyema* ſometimes ſucceeds a quinzy, ſometimes a peripneumony, but more uſually than either, a pleuriſy; as being ordinarily the effect of a peripneumonic or pleuritic abſceſs.

It uſually comes 15 or 20 days after thoſe diſeaſes. Sometimes, alſo, it is generated of extravaſated blood, iſſued out of a burſten, broken, or putrified vein: it is diſtinguiſhed by a difficulty of breathing, a dry cough, a heavineſs about the diaphragm, a noiſe, and fluctuating of the matter upon moving; a ſlow fever, ruddy cheeks, hollow eyes, the tips of the fingers hot, and a ſwelling of the abdomen.

The cure is difficult, from the difficulty of abſorbing or evacuating ſuch extravaſated matter: if nature ſhews any endeavour to throw it off by vomiting, or urine, or the like, ſhe muſt be ſeconded, and aſſiſted therein. Thus, if the urine be purulent, adminiſter diuretics; if the ſtools, laxatives; if the ſpitting, expectorants, or even emetics; otherwiſe, recourſe muſt neceſſarily be had to a paracenteſis, or tapping.

In order to this, an aperture muſt be made in the thorax, by a proper inſtrument, on the ſide affected, between the 4th and 5th, or the 5th and 6th ribs, reckoning from the loweſt; and through this, the pus muſt be ſlowly drawn.

There is alſo a kind of *ſpurious*, or *baſtard empyema*, proceeding from a pituitous, or ſerous humour, brought by ſome duct, or paſſage, into the thorax: where corrupting, it degenerates into a matter like pus.

An *empyema*, in courſe of time, breeds a phthiſis; and death often is the conſequence.

EMPYREUM *, among divines, denotes the higheſt of the heavens, wherein the bleſſed enjoy the beatific viſion: called alſo *empyrean heaven*, and *paradiſe*.

* The word is formed of εν, and πυρ, *fire*; by reaſon of its ſplendour.

Some of the fathers take the *empyreum* to have been created before the heavens we ſee: St. Baſil, and Euſtathius of Antioch,

tioch, maintain this in expreſs terms. Being the abode of God, they ſuppoſe it muſt be luminous in the higheſt degree; and are in pain to account for the darkneſs, which our part of the world was in, before the creation of the ſun, *&c.* As judging that the infinitely vivid luſtre of the *empyreum* muſt diffuſe itſelf to the greateſt depths of this lower world.

They have, therefore, recourſe to an hypotheſis; our viſible heavens, according to them, did the office of a ſcreen, or curtain, and ſheltered the earth and waters from the light of the *empyreum.* See Fa. Souciet, *Diſſert.* p. 171, 172.

EMPYREUMA *, ΕΜΠΥΡΕΥΜΑ, in chemiſtry, *&c.* a ſmell or taſte of burning; a quality, or change in bodies that have been burnt, or much ſcorched with fire, ſenſible to the taſte and ſmell; or, perhaps, it may be ſome extraneous matter impreſſed, or added by the fire, and remaining on the burnt or ſcorched part, that gives the new offenſive ſmell and flavour.

* The word is formed of the Greek, εμπυρευειν, to inflame, kindle.

The term is chiefly uſed when in boiling, or diſtilling any thing, it ſticks and burns to the bottom of the veſſel, or alembic; the offenſive ſmell and taſte whereof are expreſſed by the word *empyreuma.*

EMPYREUMA is alſo uſed for the heat remaining upon the declenſion of a fever.

EMRODS, or rather *Hæmorrhoids.* See the article HÆMORRHOIDS.

EMULATION *, a noble jealouſy, between perſons of virtue, or learning, contending for the ſuperiority therein.

* The word comes originally from the Greek, αμιλλα, diſpute, conteſt; whence the Latin *æmulus,* and thence our emulation.

Plato obſerves of *emulation,* that it is the daughter of envy: if ſo, there is a deal of difference between the mother and the offspring: the one is a virtue, and the other a vice. *Emulation* admires great actions, and ſtrives to imitate them; envy refuſes them the praiſes that are their due: *emulation* is generous, and only thinks of ſurpaſſing a rival; envy is low, and only ſeeks to leſſen him.

EMULGENT, in anatomy, an epithet, beſtowed on thoſe arteries, which bring the blood to the kidneys; and thoſe veins, which carry back what is ſuperfluous thereof to the cava.—See *Tab. Anat.* (Splanch.) *fig.* 1. *lit. k.* (Angeiol.) *fig.* 1. *n.* 49. *fig.* 6. *lit. s, s.*

The *emulgent* arteries ſpring from the deſcending trunk of the aorta; and the *emulgent* veins terminate in the aſcending trunk of the cava.

EMULSION *, in medicine, a ſoft, liquid remedy, of a colour, and conſiſtence, reſembling milk.—It is compoſed of oleaginous ſeeds, kernels, or fruits, pounded in a mortar, and diſſolved in diſtilled waters, or light decoctions, and afterwards, expreſſed, or ſtrained and ſweetened with ſugar, or ſyrup.

* The word is formed from the Latin *emulgere,* to milk.

Emulſions ſerve to temper, dilute, and ſoften, acrimonies of the breaſt; to moderate the heat of the kidneys; ſoften the ſharpneſs of the urine, and give the patient reſt and eaſe.

The ſeed of the melon is one of the four greater cold ſeeds, much uſed in *emulſions:* the ſeed of the great gourd is alſo uſed in *emulſions,* broths, and decoctions.

EMUNCTORY *, in medicine and anatomy, a part of the body deſtined for the ſeparation of ſome humour judged uſeleſs, or even hurtful, to the animal; after its having circulated ſome time with the blood.

* The word is formed from the Latin verb, *emungere,* to wipe away.

The term *emunctory* alſo implies a cavity, adjoining to the part that ſeparates; wherein the excrementitious humour is collected, and preſerved in readineſs for evacuation.

The kidneys, urinary bladder, and miliary glands of the ſkin, are *emunctories:* the parotides are not properly *emunctories,* becauſe deſtined to ſeparate the ſaliva, which is no uſeleſs, or excrementitious humour, but neceſſary for the digeſtion of the food.

Some, without much propriety, confine *emunctory* to the receptacle into which the ſecreted excrement is diſcharged; as, the pituitous humour of the brain into the noſtrils, the cerumen into the ears, the excrements into the inteſtines, *&c.* Though theſe laſt indeed have not undergone any circulation.

ENÆMON, ΕΝΑΙΜΩΝ, an external medicine which ſtops, or ſtanches the blood; or which, by binding, cooling, or drying, cloſes the paſſages of the veſſels before open; or diminiſhes the fluidity and motion of the blood. See STYPTIC.

ENÆOREMA, ΕΝΑΙΩΡΗΜΑ, expreſſes ſuch contents of the urine, as float about in the middle, reſembling a cloud; and thence alſo called *nubecula.* See NUBECULA, and URINE.

ENALLAGE *, in rhetoric, a figure whereby we change, and invert the order of the terms in a diſcourſe; againſt the common rules of language.

* The word is derived from the Greek, εναλλαγη, formed of εναλλαττειν, which ſignifies to change, as well as the ſimple verb αλλαττειν.

The grammarians, too, have a kind of *enallage,* whereby one part of ſpeech, or one accident of a word, is put for another.

Such is the change of a pronoun, as when a poſſeſſive is put for a relative, *e. gr. ſuus* for *ejus*; or of a verb, as when one mood or tenſe is put for another.

ENALURON, in heraldry, is uſed by Guillim, to expreſs a bordure charged with birds; as an *enaluron* of martlets, *&c.* —But Mackenzy charges this as a miſtake ariſing from ignorance of the French tongue; *enaluron* properly ſignifying orle, or in manner of a bordure, and being applicable to a bearing of any thing in that form.

ENAMEL, popularly AMEL, a kind of metalline colour, by the Latins called *encauſtum*; uſed in enamelling, and painting in enamel.

The baſis of *enamels* is the fineſt cryſtal glaſs, made of th beſt kali from Alicant, and ſand, vitrified together. Se GLASS.—To theſe are added, tin and lead in equal quantities, calcined by a reverberatory fire.

Such is the fundamental compoſition of *enamels*; to whic are added other metallic or mineral matters, to give them th colour required.—As, æs uſtum for green, crocus martis fo yellow, *&c.*

We may diſtinguiſh three kinds of *enamel:* the firſt intende for the counterfeiting and imitating of precious ſtones: th ſecond, for painting in enamel: and the third uſed by th enamellers, jewellers, and goldſmiths, on gold, ſilver, an other metals; with which laſt kind, particularly the whit it is that the makers of the Dutch ware give the gloſs their works.

The *enamels* uſed in imitating precious ſtones, and thoſe f painting, are uſually prepared by the workmen themſelve employed in thoſe arts: the reſt are brought from Venice a Holland. The compoſition is the ſame, in the main, in a the three kinds: all the difference conſiſts in giving the c lour, or tranſparency.

ENAMELS *for painting.*—The white *enamel,* or colour uſed the painters in enamel, is the ſame with the common ſort u by enamellers: only, it is to be prepared by grinding a cleanſing it with aqua fortis. After which, waſhing it w in fair water, it is ground, or pounded afreſh in a flint agat mortar.

The ruddy brown, is made with fæces of vitriol, and ſ petre, or with iron ruſt, well ground on an agat, with of aſpic.

Black is made of perigeux well calcined, and ground w oil of aſpic; to which is added an equal quantity of the go ſmiths, or *enamellers* black.

Yellow is the ſame with the goldſmiths yellow, the com ſition whereof will be given hereafter.

Blue is made of the lapis lazuli, uſed by the painters in well purified and prepared with ſpirit of wine, and expo in a bottle five or ſix days to the rays of the ſun.

Vermilion red is made with vitriol calcined between t crucibles, luted together; then waſhed in aqua fortis, and terwards in fair water: the fire is to be moderate, and to main about half an hour.

The lake red, is compoſed of fine gold diſſolved in aqua gia with ſal armoniac, or common ſalt. The diſſolution ing compleated, it is put in a cucurbit with ſpring-water mercury, over hot ſand for 24 hours. The powder rem ing at the bottom of the cucurbit, when the water is po off, is ground up with double its weight of flower of ſulp and put in a crucible over a gentle fire. And when the phur, which takes fire, is exhaled, the red powder remai is ground with rocaille.

Laſtly, white copperas calcined makes a colour much the amber colour uſed by limners.

Theſe ſeven or eight colours, or *enamels,* ſerve for the c poſition of all the reſt, by a diſcreet mixture and combina thereof.—Thus, blue and yellow make green; blue and violet; and ſo of the reſt.

ENAMELS, uſed by the jewellers, goldſmiths, and enameller Theſe, we have obſerved, come chiefly from Venice and land: they are in little thin cakes of different ſizes; u ly four inches in diameter, and ½ an inch thick. Every has the maker's mark ſtruck on it with a puncheon. moſt uſual marks are the name Jeſus, a ſiren, mo ſun, *&c.*

Thoſe brought from Venice are chiefly white, ſlate-co ſky-blue, carnation, yellow, green, and a deep blue, a *falſe lapis.* Theſe ſeven are the principles of all the o which ariſe out of the mixture of theſe. And the whi particular, is, as it were, the baſis of all the other ſix cipal colours.

White is made, as already obſerved, of cryſtal glaſs, tin lead, calcined by a reverberatory fire. And this *enamel* is not only by the jewellers and enamellers on metal, but alſo by the painters in enamel, the makers of Dutch ware, &c. By adding azure thereto it becomes a ſlate-colour; by adding copper, and Cyprus vitriol, it makes a ſky-blue; by perigueux, a fleſh-colour; and, by iron-ruſt, a yellow: to make a green, they add copper-filings, &c.

ENAMELLING, by the antients called Εγκαυςικη, encauſtice, the art, or act, of applying enamels of various colours, on metals, &c. either in the way of painting, or by the lamp.

Painting in **Enamel**, is a method of painting with enamels, or metalline colours, ground, reduced to powder, and uſed, like other colours, with a pencil; then fuſed, baked again, and vitrified by force of fire.

The art of *painting in enamel* is very antient; and appears to have been firſt practiſed on earthen veſſels, or potters-ware. As early as in the age of Porſenna, king of Tuſcany, we hear of beautiful vaſes made in his territories, *enamelled* with various figures; though far ſhort of thoſe afterwards made at Faenza, and Caſtel Durante, in the duchy of Urbino, in the time of Raphael, and Michael Angelo. There are ſtill ſome of thoſe vaſes extant in the cabinets of antiquaries; in all which, the deſign, or drawing of the figures, is much better than the colouring: for they were, at that time, only acquainted with two colours, *viz.* black, and white, either for earthen, or metal works; excepting a faint kind of carnation, for the faces, and other parts.

In the time of Francis I. of France, the art was retrieved in that country, particularly at Limoges; where there were produced abundance of very valuable pieces, in the manner of the antients; that is, well performed as to the draught, and the clair-obſcure chiefly in two colours.

There are two ways of *painting in enamel*: the one with clear and tranſparent, and the other with thick and opake colours. —To uſe the firſt they are only ground up with water; the ſecond are ground with oil of aſpic.

The firſt are laid on the metal flat, and bordered, or edged, with a rim of metal, to keep the colours aſunder; though, we have ſeen pieces laid on contiguous, and without any partition; which is very difficult to practiſe; by reaſon the tranſparent colours, in melting, are apt to run into each other, eſpecially in the ſmaller works.

The invention of opake colours is much later, and is greatly preferable to that of tranſparent ones.—All metals, however, will not equally admit of both kinds. Copper, for inſtance, which bears all the opake colours, will not bear the tranſparent ones; but, to employ theſe latter upon copper, they are forced, firſt, to cover it with a layer, or couch, of black enamel; over which they lay a ſilver leaf, and, on this, apply the other ſuitable colours; that is, the colours, or enamels, proper for ſilver, which itſelf does not allow of all kinds.

Thoſe which ſuit it beſt are, purple, green, azure, and aquamarina. But gold receives all the kinds, and colours, both opake, and tranſparent, perfectly well. It muſt be added, however, that only the fineſt gold muſt be uſed herein; for, the tranſparent colours, being laid on a baſe gold, grow dim and livid; there being a kind of ſmoke that ſettles on it, not unlike black lead.

Of tranſparent *enamels*, the hardeſt are always the beſt; tho' there is a difference, even among theſe; ſome loſing their colour in the fire, and others retaining it. As to the reds, they are only red by accident, being only yellow when made, and applied on the gold, and becoming red in the furnace. The beſt tranſparent reds are thoſe made of calcined copper, iron-ruſt, orpiment, and calcined gold, melted, with the due proportions of ſand, and ſalt of glaſs.

But it is the method of painting with opake, or thick *enamel*, to which we owe all our fine modern pieces of *enamel*; particularly thoſe curious ones on gold, repreſenting portraits, to as much perfection as the beſt painting in oil; and even ſome hiſtory-pieces; with this great advantage, that their beauty and luſtre never decay, being equally ſecure from injuries of time and weather.

This art we are indebted for to the French; nothing of the kind having been attempted before the year 1630. when ames Toutin, a goldſmith, of Chaſteaudun, and a great aſter in the common way of painting with tranſparent *amel*, firſt applied himſelf to find a way to uſe thick colours, f different teints, which ſhould melt with fire, and yet retain heir luſtre, purity, &c.

Toutin ſucceeded in his attempt: and, having got the ſecret, ommunicated it to his fellow-artiſts; who, in their turns, ontributed to the bringing it to perfection: the firſt who diinguiſhed himſelf was Dubie, a goldſmith; who wrought the galleries of the Louvre. After him came Morliere, a tive of Orleans; who applied himſelf, chiefly, to the paintg on rings, and watch-caſes. His diſciple, Robert Vauquer, Blois, exceeded them all, both in his deſigns, and his lours. After him, Pierre Chartier of Blois, applied himſelf to painting of flowers, wherein he ſucceeded to admition.

By this time the Engliſh were fallen into the way; who, as is allowed by foreigners themſelves, ſeem to have been the firſt that applied it, with ſucceſs, to the painting of portraits; which was now become mightily in vogue, in lieu of thoſe in miniature.

M. Felibien obſerves, that the firſt, and moſt finiſhed portraits, and thoſe in the fineſt colours, were brought into France by Petitot, and Bordier, from England. This occaſioned Louis Hance, and Louis du Guernier, ſoon after (two good painters in miniature), to attempt the like; in which the latter ſucceeded beyond every body. He likewiſe invented ſeveral new teints for the carnations; and, had he lived, had, probably, merited the glory of carrying the art to its laſt perfection.

This kind of painting, to be in perfection, muſt be on plates of gold; for copper, beſide that it emits a fume which tarniſhes the colours, is apt to ſcale and crackle; and ſilver turns the whites yellow.

Theſe plates are made a little hollow one ſide, and raiſed on the other, either in a circular, or oval manner, to prevent the gold's fretting by the fire, and making the colours crack and fly; nor muſt they be made too thick: it is ſufficient they can bear the colours; though it is uſual to ſtrengthen them, all around, with a circle ſomewhat thicker.

The plate being hammered very evenly throughout, they apply a white *enamel* on both ſides, though the deſign be only to paint on one of them: the intent of this is to prevent any ſwelling and warping by the fire; for, otherwiſe, in large pieces, and eſpecially if the colours be laid on any thing unequally, they are apt to riſe up in puffs, or bliſters. Now, this firſt lay, which is white, remaining ſmooth, and uniform, ſerves as a ground for all the other colours. The compoſition of the white *enamel*, with the other opake colours, is already delivered, under the article Enamel.

The gold plate, thus *enamelled* in white, the draught, or deſign, to be painted, muſt be chalked thereon; and, afterwards, the whole accurately drawn out, in a ruddy brown. The draught, or out-line, thus finiſhed, the piece is ſet to the fire, and then painted with the colours above preſcribed.

The white ground they paint on ſerves all the colours for white. The method being to ſpare the ground, from firſt to laſt, in the places where the lights are to be, after the ſame manner as in miniature; though they have another white, to lay over the other colours, when there is occaſion to raiſe them.

Add, that as the painters in oil retouch their paintings ſeveral times, and let them dry; ſo, in this ſort of painting, they touch the piece as often as they pleaſe, ſetting it, each time, to a reverberatory fire, and taking it away again as ſoon as they perceive, that the *enamel* has got its full poliſh.

The reverberatory fire is made in a little furnace; wherein there is fire both a-top and all around, only a void place in the middle, where the piece is to be put for the *enamels* to neal. The colours are laid on with the tip or point of the pencil, as in miniature; with this only difference, that they uſe oil of aſpic to dilute them, inſtead of gum-water. See Miniature.

Method of **Enamelling** *by the lamp.*—The works of this kind are all performed by the flame of a lamp; wherein, in lieu of oil, is put horſes greaſe; by ſome called caballine oil. The lamp is of copper, or tin, and conſiſts of two parts, the box and the lamp; in the latter of theſe, which is a kind of flat oval, is put the oil and out of this riſes the wick. All the uſe of the box is, to receive the oil; which the ebullition, occaſioned by the intenſe heat, might throw abroad.

This lamp, or even, where two or three artiſts work together, two or three more lamps, are placed on a table of a proper height, &c. under which, about the middle of its height, is a double bellows, like thoſe of an organ; which one of the workmen raiſes and falls with his foot, to increaſe and quicken the flame of the lamps; which is, by ſuch means, excited to a degree of vehemence almoſt incredible.

The wind of the bellows is conveyed to the ſeveral lamps, though never ſo many, by means of grooves, cut along the thickneſs of the table, and covered with parchment, extending, from the bellows, to a tube, or pipe, placed before each lamp. Theſe tubes are of glaſs; and, that the *enamellers* may not be incommoded with the heat of the lamp, each tube is covered, at about ſix inches diſtance, with a piece of tin, called a fan; which is fixed in a hole of the table. In works that do not take up much time, they content themſelves with a glaſs blow-pipe, to heighten the flame of the lamp.

Applying their cake of *enamel* to the flame of this lamp, they draw it out into threads inconceivably fine. Thoſe made uſe of in artificial plumes of feathers are ſo very ſlender, that they may be wound on a reel, like ſilk or thread.

The factitious jets, of divers colours, ſometimes uſed in embroideries, are alſo made of *enamel*; and that with ſo much art, that each piece has its hole to paſs the ſilk through, wherewith it is ſewed. Theſe holes are made by blowing them in long pieces, which are afterwards cut off with a proper tool. See the proceſs of drawing out the *enamel* illuſtrated under the article Ductility *of Glaſs*.

It is rare that the Dutch, or Venetian *enamels*, are uſed pure; the common way is to melt them in an iron ladle, with an equal quantity of glaſs, or cryſtal: and, when the two matters are in perfect fuſion, they draw it out into threads of different ſizes, as occaſion requires, by taking a quantity between two pipe-ſtopples, held in the two hands, and removing them aſunder as far as the arms will reach. If the thread is to be longer than the workman can ſtretch, a ſecond perſon takes one of the ends, and continues to draw it out, while the firſt continues to keep the *enamel* to the flame. All the threads drawn after this manner are round; ſo that if the nature of the work require them to be flat, they are afterwards drawn through a pair of pinchers, while yet hot. They have another iron inſtrument, in manner of plyers, to draw out the *enamel* by the lamp, when it is to be worked, or diſpoſed in figures, or otherwiſe, Laſtly, they have glaſs tubes, of various ſizes, ſerving to blow the *enamel* into various figures, and preſerve the neceſſary vacancies therein; as alſo to ſpare the ſtuff, and form the contours.

When the enameller goes to work, he ſeats himſelf before his lamp, with his foot on the treddle; and, holding in his left hand the piece of work he is to *enamel*, or the braſs or iron wires his figures are to be formed with; with his right hand he draws out the thread from the *enamel* held to the lamp; and this is done with a dexterity and patience equally ſurpriſing.

There is nothing but may be thus repreſented in *enamel*; and there are figures ſo finely finiſhed of this kind, that one would take them to have come out of the hands of the ableſt ſculptors.

ENARTHROSIS, ΕΝΑΡΘΡΩΣΙΣ, a kine of jointing, or articulation, wherein the cavity that receives is deep, and the bone received is oblong.

Such is that of the huckle-bone, *&c.* See ARTICULATION.

ENCÆNIA, ΕΓΚΑΙΝΙΑ, a Greek term, ſignifying *reſtauration*, or *renovation*.—Being compounded of the prepoſition εν, and *καινος*, *new*.

ENCÆNIA is more particularly uſed for the name of a feaſt, celebrated by the Jews, on the 25th of the ninth month, in memory of the dedication, or rather purification, of the temple, by Judas Maccabæus, after its having been polluted and plundered by Antiochus Epiphanes.

The Jews had alſo two other *encænia*, viz. the dedication of the temple by Solomon; and that by Zorobabel, after the return from the captivity.

ENCÆNIA is likewiſe applied in the fathers, and church-hiſtory, to the dedication of Chriſtian churches.

St. Auguſtine aſſures us, that, in his time, the uſe of the word *encænia*, was even transferred to profane matters; and that they called it *encæniare*, when they put on a new ſuit of cloaths.

Our tranſlators of the bible do not retain the word *encænia*, in St. John X. 22. where mention is made thereof: in lieu of that, they call it, *feaſt of the dedication*; which is leſs proper. In effect, it is not the feaſt of the dedication, but of the purification or re-conſecration of the temple profaned, that is there ſpoken of.

ENCANTHIS *, in medicine, denotes a tumour of the caruncula lachrymalis, in the great canthus, or angle of the eye.

* The word is Greek, *εγκανθις*, formed of the prepoſition εν, and *κανθος*, *corner of the eye*.

It is oppoſed to rhyas; which is a diminution, or conſumption, of the ſame caruncle. See RHYAS.

The *encanthis* is occaſioned by a defluxion on that part; or an ulcer therein, not ſpeedily enough dried.

ENCAUSTICE, the art of enamelling. See ENAMELLING.

ENCEPHALI *, in medicine, an epithet applied to worms generated in the head; where they occaſion violent pains, inſomuch as, ſometimes, to produce diſtraction.

* The word is compounded of the prepoſition εν, *in*; and κεφαλη, *head*.

There are four kinds of *encephali*; thoſe properly ſo called, which are found in the brain; the narenarii, in the noſe; auriculares, in the ears; and the dentales, in the teeth.

The *encephali*, properly thus called, are rare; but there are certain diſeaſes wherein they ſwarm; and we are told of peſtilential fevers, that have ariſen wholly from them.

In one of theſe fevers, the phyſicians having opened the perſon it had carried off, they found a little, ſhort, red worm in the head. Hereupon, they tried various medicines, to find what might deſtroy it; but all in vain, till Malmſey wine, wherein horſe-radiſh had been boiled, was applied; this was no ſooner thrown on the worm, than it died. The ſame remedy was afterwards tried on the ſick, and it recovered them almoſt all. The like worms have alſo been taken out by trepanning, and the patient recovered.

ENCEPPE', in heraldry, denotes chained, or girt round the middle; as is uſual with monkeys, *&c.*

ENCHANTMENT. See FASCINATION, MAGIC, SORCERY, and WITCHCRAFT.

ENCHASING, INCHASING, or CHASING, the art of enriching and beautifying gold, ſilver, and other metal-works, by ſome deſign, or figures repreſented thereon, in low relievo. See SCULPTURE, RELIEVO, *&c*,

Chaſing is only practiſed on hollow, thin works; as watch-caſes, cane-heads, tweezer-caſes, or the like.—It is performed by punching or driving out the metal, to form the figures, from within-ſide, ſo as to ſtand out prominent from the plane, or ſurface of the metal.

In order to this, they have a great number of fine ſteel blocks, or puncheons, of divers ſizes; and, the deſign being drawn on the ſurface of the metal, they apply the inſide, upon the heads, or tips, of theſe blocks, directly under the lines, or parts of the figures. Then, with a fine hammer, ſtriking on the metal ſuſtained by the block, the metal yields, and the block makes an indenture, or cavity, on the inſide; correſpondent to which, there is a prominence on the outſide; which is to ſtand for part of the figure.

Thus the workman proceeds to *chaſe* and finiſh all the parts, by ſucceſſive applications of the block, and hammer, to the ſeveral parts of the deſign.

And it is ſurpriſing, with what beauty, and juſtneſs, by this ſimple piece of mechaniſm, the artiſts in this kind will repreſent foliages, groteſques, animals, hiſtories, *&c.*

ENCHEIRESIS, ΕΓΧΕΙΡΗΣΙΣ, in anatomy, denotes manual operation; as diſſection.

ENCLAVE', in heraldry, is where one thing is let into another, particularly where the jointure is ſquare.

ENCLITICA, in the Greek and Latin grammar, certain particles, united ſo cloſely to the preceding word, that they only ſeem to form one word therewith: and the word which ſuſtains them, does, generally, likewiſe bear the accent that governs them; eſpecially when the *enclitic* is a monoſyllable. —As in *dominuſque*, κυριός τε.

There are three *enclitic* particles in the Latin, *viz. que*, *ne*, and *ve*; but, in the Greek, many, as του, μου, μοι, με, σου, σοι, σε, πως, πη, τε, γε, φημι, ειμι, ποτε, and others.

ENCRATITÆ *, a ſect of antient heretics; thus called from their making profeſſion of continence, and abſolutely rejecting all uſe of marriage.

* The word is formed from the Greek εγκρατης, *ſtrong*, *continent*.

The founder of this ſect was Tatian, a diſciple of Juſtin, and one of the moſt learned perſons of all antiquity. After the death of that martyr, he made a ſeparation from the church, and ſoon had his followers; who, beſide the dogma juſt mentioned, borrowed a great many things from Saturninius, and Marcian; beſide ſeveral errors, which they adhered to in common with the Gnoſtics, and Valentinians.

They abſtained from eating any thing that had life; and denied that Adam was ſaved. They looked on ſuch as drank wine to be great ſinners; and, for this reaſon only, made uſe of water in celebrating the euchariſt: as holding, that wine came from the devil.—To countenance this tenet, they produced paſſages out of ſcripture, where mention is made of what befel Noah and Lot, when they were drunk.

They only admitted ſuch of the books of the Old Teſtament as they thought good: but, in lieu thereof, they owned ſeveral ſpurious and apocryphal writings, for canonical and divine. Such were the acts of St. Andrew, John, and Thomas.

ENCROACHMENT, or ACCROACHMENT. See INCROACHMENT.

ENCYCLOPÆDIA *, the circle, or chain, of arts and ſciences.

* The word is compounded of the prepoſition εν, *in*; κυκλος, *circle*; and παιδεια, *ſcience*, *doctrine*, *diſcipline*, *learning*: the root being παις, *child*, *infant*.

The Greeks uſed the term for the knowlege of the ſeven liberal arts, and the poſſeſſion of all the ſciences. *Orbis ille doctrinæ, quem Græci* εγκυκλοπαιδειαν *vocant*, ſays Quintilian. It is ſometimes alſo written κυκλοπαιδεια, *cyclopædia*. Vitruvius, in the preface to his 6th book, calls it, *encyclios diſciplina*. See CYCLOPÆDIA.

ENDECAGON, or HENDECAGON, in geometry. See HENDECAGON.

ENDECASYLLABUS, or HENDECASYLLABUS. See HENDECASYLLABUS.

ENDEMIC *Diſeaſe*, that which affects many people together, in the ſame country; as proceeding from ſome cauſe, peculiar to the country where it reigns.

Such are the ſcurvy, in the northern climes; intermitting fevers, in marſhy places, *&c.*

ENDENTED, DENTED, or INDENTED, in heraldry. See INDENTED.

ENDENTED is alſo applied to a feſs, or pale, and other triangular pieces, when divided, alternately, between two different colours. Coupé, or *endented* with or and azure.

ENDITEMENT, or INDICTMENT, in common law. See INDICTMENT.

ENDLESS *Rolls*. } See the articles { ROLLS.
ENDLESS *Screw*. } { SCREW.

ENDORSE, in heraldry, an ordinary, containing the eighth part of a pale.

This, Leigh ſays, is never uſed, but when a pale is between two ſuch: though others hold, that an *endorſe* may be borne between birds, fiſhes, beaſts, *&c.*—Sir J. Ferne adds, that it ſhews the ſame coat has been ſometimes two coats, and afterwards conjoined within one eſcutcheon, for ſome myſtery of arms.—He bears azure an *endorſe* argent.—V. *Tab. Herald. fig.* 56. N° 3.

ENDORSED, ENDOSSE', in heraldry, is where things are borne back to back.

ENDORSEMENT, is particularly uſed in commerce, for a writing on the back of a bill of exchange, by the proprietor, or bearer; either, thereby, to transfer it to ſome other, or to render it payable to the order of ſome other; or elſe to ſerve for an acquittance, or receipt. See EXCHANGE.

The *endorſement* is only the name of the proprietor, or *endorſer*. Note, when the *endorſement* of a bill of exchange is to render it payable to another, it is called an order.

To an order, it is neceſſary the *endorſement* be dated, and contain the name of him who paid the value thereof; in which caſe, the bill belongs to the perſon with whoſe name the order is filed, without any other transfer; without theſe conditions, the bill is judged to belong to the perſon who *endorſed* it. The bearer of a bill of exchange proteſted, has a remedy againſt the *endorſers*, for the payment of the rechange of the places where the bill was negotiated by their order. In caſe a bill, or note, is refuſed to be paid, *&c.* the bearer has a remedy againſt any one of the *endorſers*, where there are ſeveral. See BILL.

ENDORSING, or INDORSING, in law, implies the writing on the back-ſide of a deed, inſtrument, *&c.* ſomething relating to the matters contained therein.

ENDOWMENT, or INDOWMENT, the giving, or aſſigning, of a dower to a woman.

The word is alſo uſed figuratively, for the ſetting forth, or ſeveting a ſufficient portion for a vicar, towards his perpetual maintenance, when the benefice is appropriated; whence ſuch a vicarage is called a vicarage *endowed*. See VICARAGE.

ENEMA, in medicine, denotes a *clyſter*. See the article CLYSTER.

ENEMY. See the articles HOST, and ALIEN.

ENERGICI, an appellation given to a religious ſect, of the ſixteenth century; by reaſon that they held the euchariſt was the energy, and virtue of Jeſus Chriſt; not his body, nor a repreſentation thereof.

ENERGUMENUS *, ΕΝΕΡΓΟΥΜΕΝΟΣ, a term ſometimes uſed by divines, and ſchoolmen, to ſignify a perſon poſſeſſed with a devil, or an evil ſpirit.

* The word is formed from the Greek ενεργεισθαι, *to be agitated, worked*; of εν, and εργον, *opus*.

Though, Papius ſays, the *energumeni* were ſuch as counterfeited the actions of the devil, performing things which ſeemed ſupernatural. The council of Orange debars, or deprives, the *energumeni*, of the functions of the prieſthood.

ENERGY *, an uncommon force, or ſtrength, in a diſcourſe, a ſentence, or a word. See EMPHASIS.

* The word is Greek, ενεργεια, formed of the prepoſition εν, and εργον, *work, labour*.

ENERVATING, the act of deſtroying the force, uſe, or office, of the nerves; either by cutting them, by weakening them with debauchery; or by ſome other violence.

Exceſs of wine, and other ſtrong, hot, ſpirituous liquors, *enervate*, or weaken the nerves. When they would render a horſe uſeleſs, they *enervate* him, or cut his nerves.

ENERVATING is particularly uſed, in the manage, for the cutting two tendons on the ſide of a horſe's head, under the eyes, which meet on the tip of the noſe: they thus *enervate* horſes, to make their heads ſmall and lean.

The word is alſo uſed figuratively.—It is no ſmall artifice in diſputing, to be able to *enervate*, and extenuate the allegations of one's antagoniſt. This author has a weak, *enervate* ſtyle. See NERVE.

ENERVATION, a term in the antient anatomy; applied to the tendons of the recti, or ſtrait muſcles of the abdomen.

The fibres of the recti of the abdomen do not go from one extreme of the muſcles to the other, but are interſected by ſeveral nervous places, called by the antients, *enervations*; though they be real tendons.

Their number is not alike in all; ſome having three, others four, *&c.*

ENFANS *Perdus* *, a French phraſe, uſed in war, to ſignify the ſoldiers who march at the head of a body of forces appointed to ſuſtain them, in order to begin an attack, make an aſſault, or force a poſt.

* The word literally imports *loſt children*; on account of the imminent danger they are expoſed to.

In Engliſh they are called the forlorn, or forlorn hope.

At preſent, it is the grenadiers that uſually begin ſuch attacks.

ENFILADE *, a French term, ſometimes uſed in Engliſh; ſignifying a ſeries, or continuation of ſeveral things, diſpoſed, as it were, in the ſame thread, or line.—As, an *enfilade* of rooms, of doors, of buildings, *&c.*

* The word is formed of the French verb *enfiler*, to ſtring a thing; which is compounded of *en*, in; and *fil*, of *filum*, thread: *q. d.* a thread, or ſtring, of any thing.

ENFILADE, in war, is applied to thoſe trenches, and other lines, which are ranged in a right line; and ſo may be ſcoured, or ſwept, by the cannon lengthwiſe, or in the direction of the line, and rendered almoſt defenceleſs.

Care muſt be taken, that the lines be not *enfiled*, or *enfiladed*: on the contrary, the covert line muſt be *enfiladed*; that the enemy may be driven out of it.—The laſt boyau, or gut of the trenches, is ſubject to be *enfiladed*, that is, to be ſcoured, according to its length.

A *battery d'enfilade*, is that where the cannon ſweep a right line.

A *poſt*, or command *d'enfilade*, is a height from which one may ſweep a whole line at once.

ENFRANCHISEMENT, the incorporating any man into a ſociety, or body politic. See FREEDOM, and FRANCHISE.

Thus, he that by charter is made denizen of England, is ſaid to be *enfranchiſed*.—The like is underſtood of a perſon made a citizen of London, or other city, or corporate town; by reaſon he is thereby made partaker of the liberties appertaining to the corporation whereof he is *enfranchiſed*.

ENGASTRIMYTHUS *, ΕΓΓΑΣΤΡΙΜΥΘΟΣ, or ENGASTRIMANDER, a perſon who ſpeaks from, or with, the belly, without opening the mouth; or, if open, without ſtirring the lips.

* Thus called by the Greeks, from εν, γαστηρ, *belly*; and μυθος, *ſpeech*; and, by the Latins, *ventriloquus, quaſi ex ventre loquens*.

The antient philoſophers, *&c.* are divided on the ſubject of the *engaſtrimythi*: Hippocrates mentions it as a diſeaſe.—Others will have it a kind of divination; and aſcribe the origin, and firſt diſcipline thereof, to one Euryclus: whom nobody knows any thing of.—Others attribute it to the operation, or poſſeſſion, of an evil ſpirit: and others, to art and mechaniſm.

The moſt eminent *engaſtrimythi* were the Pythians, or prieſteſſes of Apollo, who delivered oracles from within, without any action of the mouth or lips.

St. Chryſoſtom, and Oecumenius, make expreſs mention of a ſort of divine men, called by the Greeks *engaſtrimandri*; whoſe prophetic bellies pronounced oracles.

M. Schottus, library-keeper to the king of Pruſſia, in a diſſertation on the apotheoſis of Homer, maintains, that the *engaſtrimythi* of the antients were only poets; who, when the prieſteſs could not ſpeak in verſe, ſupplied the defect, by explaining, or delivering in verſe, what Apollo dictated in the cavity of the baſon, placed on the ſacred tripod.

Leo Allatius has an expreſs treatiſe on the *engaſtrimythi*; intituled, *De Engaſtrimytho ſyntagma*.

ENGENDERING, or INGENDERING, the act of begetting, or producing the kind, by way of generation.

The term is likewiſe applied to other productions of nature: thus, meteors are ſaid to be *engendered* in the middle region of the air. Crude fruits *engender* worms. The antients believed, that inſects were *engendered* of putrefaction.

ENGINE *, a compound inſtrument, conſiſting of ſeveral ſimple ones, as wheels, ſcrews, levers, or the like, combined together, in order to lift, caſt, or ſuſtain a weight, or produce ſome other conſiderable effect, ſo as to ſave either time, or force.

* The word is formed of the French, *engine*; of the Latin, *ingenium*, wit; by reaſon of the ingunity required in the contrivance of *engines*, to augment the effect of moving powers.

The kinds of *engines* are infinite; ſome for war, as the baliſta, catapulta, ſcorpio, aries, *&c.* others for the arts of peace, as mills, cranes, preſſes, clocks, watches, *engines* to raiſe water, to extinguiſh fire, *&c.* which ſee under their reſpective articles, MILL, CLOCK, WHEEL, PRESS, and HYDROCANISTERIUM. See alſo INSTRUMENT.

ENGINEER, or INGINEER, in its general ſenſe, is applied to a contriver, or maker, of any kind of uſeful engines, or machines.

In its more proper ſenſe, it denotes an officer in an army, or fortified place, whoſe buſineſs is to contrive and inſpect attacks, defences, works, *&c.*

An *engineer* ſhould be an able and expert mathematician, particularly verſed in military architecture, and gunnery; being often ſent to view and examine the places intended to be attacked, to chooſe out, and ſhew the general, the weakeſt place, to draw the trenches, aſſign the places of arms, galleries, lodgments on the counterſcarp, and half-moons; conduct the works, ſaps, mines, *&c.* and appoint the workmen their nightly taſk: he is alſo to make the lines of contravallation; with the redoubts, *&c.*

Under the new eſtabliſhment of the office of his majeſty's ordnance, there are ſix *engineers*, and four *ſub-engineers.* See ORDNANCE.

ENGISOMA, ΕΓΓΕΙΣΩΜΑ, a ſpecies of fracture of the ſkull, wherein one of the extremities of the fractured bone is thruſt inwards upon the dura mater, and the other extremity raiſed outwards. Dion. *ap. Bibl. Anat.* T. 1. p. 559.

ENGLECERIE, ENGLECHERIE, or ENGLESCHYRE, a term of great import among our anceſtors, though now obſolete: properly ſignifying the quality of an Engliſhman.

If a man were privately ſlain, or murdered, he was, antiently, accounted *francigena* (which comprehended every alien, eſpecially Danes); till *englecerie* was proved, *i. e.* till it was made appear that he was an Engliſhman. Bracton, *lib.* 3. See FRANCIGENA.

The origin of the cuſtom was thus: king Canutus having conquered England, at the requeſt of the nobles, he ſent back his army into Denmark, only reſerving a guard of Danes for his perſon; and made a law, that if any Engliſhman killed a Dane, he ſhould be tried for the murder; or, if he eſcaped, the village where the man was ſlain ſhould be charged to pay 66 marks into the exchequer. After this law, whenever a murder was committed, it was neceſſary to prove the party ſlain an Engliſhman, that the penalty of 66 marks might not be charged on the village.

ENGLISH, in a general ſenſe, ſomething that relates to the country or people of England.

We ſay, the *Engliſh* crown, *Engliſh* copperas, *Engliſh* names, *Engliſh* money, *Engliſh* meaſures, *Engliſh* weights, *&c.*

The ſweating ſickneſs is called, by foreigners, *ſudor Anglicanus*, the *Engliſh* ſweat. Dr. Cheyne calls the vapours the *Engliſh* malady. See SUDORANGLICUS.

ENGLISH *Drops*, *Guttæ Anglicanæ*. See DROP.

ENGLISH, or the ENGLISH *Tongue*, the language ſpoken by the people of England; and, with ſome variation, by thoſe of Scotland, as well as part of Ireland.

The *Engliſh* is of Gothic, or Teutonic extraction: this was the root, or ſtock, upon which ſeveral other dialects have been ſince grafted, particularly the Latin and French. See TEUTONIC, *&c.*

The language antiently ſpoken in our iſland was the Britiſh, or Welſh, which was common to the Britons and Gauls; and which ſtill ſubſiſts, in more or leſs purity, in the principality of Wales, the county of Cornwal, the iſlands and highlands of Scotland, part of Ireland, and ſome provinces of France, particularly Bretagne.

As the Roman empire, extending itſelf towards the weſtern parts of Europe, came to take in Gaul, and Britain, the Roman tongue became propagated therewith; all the edicts, *&c.* relating to the public affairs, being deſignedly wrote in that language.

The Latin, however, it is certain, never got ſo much ground, or prevailed ſo far in England, as in Lombardy, Spain, and the Gauls; partly on account of its great diſtance from Rome, and the ſmall reſort of Romans hither; and, partly, for that the intire reduction of the kingdom was not effected till ſo late as the reign of Claudius, when the empire was on the declining hand, and the new province was forced to be ſoon deſerted by its conquerors, called to defend their territories nearer home.

Britain, thus left naked, became an eaſy prey to the Angli, or Anglo-Saxons, a ſtrolling nation, from Jutland and Norway, who took an eaſy poſſeſſion thereof, much about the time that the Franks, another German nation, entered Gaul. The Gauls, and Franks, it ſeems, at length, came to terms; found means to unite into one nation; and thus, the antient Gauliſh, with its mixture of Latin, continued the prevailing tongue; only farther intermixed with the Francic, or lingua Franca of their new inmates: but the Britons were more conſtant, and determined abſolutely to refuſe any ſuch coalition: they had embraced Chriſtianity, and their competitors were heathens: rather than admit of ſuch an union, therefore, they choſe to be ſhut up, with their language, in the mountainous parts of Cambria, or Wales.

The Engliſh Saxons, thus left abſolute lords, changed every thing; their own language was now fully eſtabliſhed; and the very name of the country was, henceforth, to be Anglo-Saxon. The new language remained, in good meaſure, pure and unmixed, till the Norman invaſion: the attempts of the Danes, and the neighbourhood of the Britons, indeed, wrought ſome leſſer innovations therein; but, in the main, it preſerved itſelf; for, as to the Danes, their language was not much different therefrom. Edward the Confeſſor, however, who had lived long in France, might, poſſibly, bring in a little mixture of the dialect of that country.

But William I. and his Normans, having got poſſeſſion of England, an alteration was ſoon attempted: the conqueſt was not complete, unleſs the Conqueror's language, the French, or Franco-Gallic, were introduced; and, accordingly, all his acts, diploma's, edicts, pleadings, and other judicial matters, were written, *&c.* in that tongue.

But his attempts proved unſucceſsful; the number of Normans he brought over being very ſmall, in compariſon of the Engliſh, with whom they were incorporated, they loſt o forgot their own language, ſooner than they could make any change in the *Engliſh*. This, however, did not hinder, but by the endeavours of the Conqueror, abundance of French words, though many of them of Latin original, crept into the *Engliſh*; and many *Engliſh* words, by degrees, grew ou of uſe.

Hence, as to the origin and etymology of many of our words, Dr. Wallis lays it down, that ſuch words of German original as we have, in common with the French, are to b reckoned as our own, rather than as words borrowed from them and that the old Gauliſh words, common to the French and the Welſh, which are found in our language, have been likewiſe taken from the Welſh, rather than from the French. Hence, alſo, the ſame author accounts, why the names o the divers ſorts of cattle are Saxon; as ox, cow, calf, ſheep hog, boar, deer, *&c.* and yet that their fleſh, when prepared for food, is French; as beef, veal, mutton, pork brawn, veniſon, *&c.* the Norman ſoldiers, forſooth, no concerning themſelves with paſtures, parks, and the lik places, where ſuch creatures are fed and kept, ſo much a with markets, kitchens, feaſts, and entertainments, wher the food was either prepared, ſold, or eaten.

Under Henry II. Dr. Swift obſerves, the French made a ſti greater progreſs; by reaſon of the large territories he poſſeſſe on that continent, both from his father, and his wife, whic occaſioned frequent journeys thither, with numerous retinue *&c.* And, for ſome centuries after, there was a conſtan intercourſe between France and England, by the dominio we poſſeſſed there, and the conqueſts we made; ſo that th language, two or three hundred years ago, ſeems to have ha much more French than at preſent.

Beſides this alteration from the conquerors, the language, i proceſs of time, underwent divers others; and, at length, cam to have numerous words and phraſes of foreign dialects i grafted into it, in lieu whereof the antient Saxon ones ga way; particularly by means of negotiations, and commer with other nations; by the marriages of royal families; the affectation of many writers, in moſt ages, who are fo of coining new words, and altering the uſual forms of ſpee for the greater delicacy; and, by the neceſſity of framing, borrowing, new words, according as new things and inve tions turn up. And, by ſuch means, was the old Angl Saxon converted into the preſent *Engliſh* tongue.

Having traced the riſe and progreſs of our language hiſto cally, we think it may be no incurious amuſement to repr ſent, by actual examples, the ſeveral ſucceſſive changes a ſtages it has paſſed through, to arrive at its preſent perfectio in order to which, we ſhall make uſe of the collections of t ingenious Mr. Greenwood.

From the Saxon invaſion in 440. we have no memorial e tant of the language for 250 years: the oldeſt Saxon writi in being is a gloſs on the Evangeliſts, written in the year 70 by Eadfride, biſhop of Holy iſland: in which the three fi articles of the lord's prayer run thus.

‘ Uren Fader thic arth in heoſnas, ſic gehalg
Our Father who art in heaven, be hallow
‘ thin noma, ſo cymeth thin ric. Sic thin wi
thy name, come thy kingdom, be thy
‘ ſue is heoſnas, and in eortho, *&c.*
ſo as in heaven, and in earth.

Two hundred years after, in the year 900. the ſame rendered thus:

‘ Thu ure Fader the eart on heofenum, ſi thin na
‘ gehalgod; cume thin rice, ſi thin willa on eorth
‘ ſwa, ſwa on heofenum.

In the following age it was turned thus in the Saxon homili ſaid to be tranſlated by king Alfred.

‘ Fæder ure thu the earth on heofenum, ſi t
‘ nama gehalgod, to be cume thin rice, gewur
‘ thin willa on eorthan ſwa, ſwa on heofnum, &

About the year 1160. under Henry II. it was thus rende by pope Adrian, an Engliſhman, in rhyme:

‘ Ure Fader in heaven rich,
‘ Thy name be hayled ever lich,
‘ Thou bring us thy michell bliſſe:
‘ Als hit in heaven y-doe
‘ Evar in yearth beene it alſo, *&c.*

About 100 years after, in the time of Henry III. it turned thus:

‘ Fadir that art in heaven bliſſe,
‘ Thin helge nam it wurth the bliſs,
‘ Cumen & mot thy kingdom,
‘ Thin holy will be it all don,
‘ In heaven and in erdh alſo, *&c.*

Two hundred years after, under Henry VI. it was rend thus:

> ‘Our Fadir that art in hevenes, halewid be thi name, thi kingdom come to thee, be thi will don in eerthe, as in hevene.’

An extraordinary ſpecimen of the Engliſh, as ſpoken in the year 1385. Dr. Hickes furniſhes us withal, in his *Theſaur. Liter. Septent.* which we ſhall the rather entertain the reader withal, as it is on this very ſubject, the Engliſh tongue; and contains not only the hiſtory, but the reaſons, of the changes and differences therein.

‘As it is knowe how meny maner peple beeth in this lond; there beeth alſo ſo many dyvers longages and tonges. Notheleſs Walſche men and Scots that beeth nought medled with other nations, holdeth wel nyh hir firſte longage and ſpeche; but yif the Scottes that were ſometime confederat and woned with the Pictes drawe ſomewhat after hir ſpeche; but the Flemynges that woneth in the weſte ſide of Wales, haveth left her ſtrange ſpech, and ſpeketh ſexonliche now. Alſo Engliſhe men, they had from the bygynnynge thre maner ſpeche: northerne, ſowtherne, and middel ſpeche in the middel of the londe, as they come of three maner of peple of Germania: notheleſs by commyxtion and mellynge firſt with Danes, and afterwards with Normans, in meny the contrary longage is apayred [corrupted]. This appayrynge of the burthe of the tunge is bycauſe of tweie thynges, oon is for children in ſcole agenſt the uſage and maner of all other nations, beeth compelled for to leve hire own longage, and for to conſtrue hir leſſons and here thynges in French, and ſo they haveth ſethe Normans come firſt into Engelond. Alſo gentlemen children beeth taught to ſpeke Frenſche from the tyme that they beeth rokked in here cradel, and kunneth ſpeke and play with a childes broche; and uplondiſſche men will likne hymſelf to gentilmen, and fondeth with great beſyneſſe for to ſpeake Frenſche to be told of.—Hit ſeemeth a greet wonder how *Engliſche* men and her own longage and tonge, is ſo dyverſe of ſown in this oon ilond; and the langage of Normandie is comlynge of another land, and hath oon manner ſoun amonge alle men that ſpeketh hit arigt in Engelond.—Alſo of the foreſaid Saxon tonge that is deled [divided] a three, and is abide ſcarceliche with few uplondiſſche men, is greet wonder. For men of the eſt, with men of the weſt, is, as it were, under the ſame partie of hevene acordeth more in ſownynge of ſpeche, than men of the north, with men of the ſouth. Therefore it is that Mercii, that beeth men of myddel Engelond, as it were parteners of the endes, underſtondeth bettre the ſide longages northerne and ſoutherne, than northerne or ſoutherne underſtondeth either other.—All the longage of the Northumbers, and ſpecialliche at York, is ſo ſcharp, ſlitting and frotynge, and unſchape, that we ſoutherne men may that langage unnethe underſtonde. I trow that that is by cauſe that they beeth nyh to ſtrange men and nations, that ſpeketh ſtrongliche, and alſo bycauſe that the kinges of Engelond wonneth alwey fer from that cuntry,’ &c.

How the Engliſh ſtood about the year 1400. may be ſeen in Chaucer, who refined and improved it very conſiderably; though he is charged with the affectation of mixing too many French, and Latin words with his *Engliſh*, and by that means with too much altering and corrupting the primitive language.

In the year 1537. the Lord's prayer was printed according to the following verſion:

> ‘O oure Father which arte in heven, halowed be thy name: let thy kingdome come, thy will be fulfiled as well in erth as it is in heven,’ &c.

Where the reader will obſerve the diction almoſt brought to the preſent ſtandard; the variations being principally in the orthography.

Spencer, who lived in the ſame age, contributed not a little to the improvement and refining of the tongue: he threw aſide abundance of the outlandiſh ornaments, and wrote a purer *Engliſh*, yet with more elegance and variety, than had been known before. He was ſucceeded in order, by Shakeſpear, Ben. Johnſon, lord Bacon, Milton, Cowley, Waller, Tillotſon, and Dryden, whoſe works are in every body's hands; and by whom the language has been tranſmitted to us under all its preſent advantages.

The perfections aſcribed to the *Engliſh*, and that in a degree ſuperior to any of the other modern tongues, are,—1°, That it is very ſtrong and ſignificant: to which our finely compounded words, formed on the model of the Greeks, do ot a little contribute.

2°, Copious: of which Mr. Greenwood gives us inſtances in he word ſtriking: which we have above 30 different ſyno-ymous expreſſions for; as, to ſmite, bang, beat, baſt, buffet, uff, hit, thump, thwack, ſlap, rap, tap, kick, ſpurn, box, erke, pummel, punch, &c. And the word anger, for hich he enumerates above 40. So we ſay, to ſeeth or oil fleſh, ſtew prunes, poche eggs, coddle apples, bake read; for which expreſſions to ſeeth, ſtew, poche, coddle, nd bake, the Latins, with all the boaſted copia of the ongue, have only one word, *coquere*; and the French, as much as they abound with terms of cookery, not many more; the word *cuire*, ſerving indifferently for ſeething, boiling, baking, ſtewing, and codling.

3°, Muſical and harmonious; in which reſpect Mr. Dennis makes no ſcruple to aſſert it ſuperior even to the French. This, which ſome may think ſtrange, he proves hence, that we have blank verſe which is harmonious by mere force of numbers, and quantity; whereas the French have long ago deſiſted from all pretenſions to poetical numbers, without the aſſiſtance of rhyme.

It may be added on this laſt head, from Mr. Welſtead, that the Engliſh has many meaſures, the iambic and trochee for inſtance, in common with the Greek and Latin; an advantage ariſing from the variation of the accent: and that rhyme is peculiarly natural to it, varying itſelf to the ear with exceſſive ſweetneſs; not to mention the cæſuras, pauſes, tranſpoſitions, and numberleſs other graces, which the Engliſh verſification is capable of, probably beyond any other living language.

Some object to the *Engliſh*, that it conſiſts too much of monoſyllables; which others make a piece of merit, as it argues the greater antiquity, if what Salmaſius ſays be true: *certum quippe eſt, linguas omnes, quæ monoſyllabis conſtant, cæteris eſſe antiquiores*; he adds, that the *antient Greek abounded herein, as appears from the antient poets, and ſuch as affected antiquity.* De re Helleniſt.

But we have a further advantage from our monoſyllables, *viz. conciſeneſs*; we being hereby enabled to expreſs more matter in the ſame compaſs of letters, than any other modern tongue. The only thing we ſuffer by it, is, ſomething in point of ſoftneſs and numbers; and yet we have verſes compoſed wholly of monoſyllables, that do not want harmony; as that of Creech, "Nor could the world have borne ſo fierce a flame."

Others object to our language, that it does not come up to the ſoftneſs, the delicacy, of the more ſouthern languages, France, Spain, and Italy. It ſeems, it retains ſomewhat of the Gothic roughneſs of the people who framed and introduced it; the ſoil and the climate it was planted in, not tending much to mellow and refine it.

To this purpoſe does Dr. Swift ſpeak, who accounts for the effect hence, that the Latin tongue was never in its purity in our iſland; and beſide, ſuch as it was, was called away ere it could have time to incorporate with the language of the country, and ſubdue, and ſoften it: as it did in the other provinces of France and Spain, &c.—But it is to be obſerved, that, upon the whole, this, ſuppoſing it true, does not fall as an objection againſt the language, but the people: our manners are alſo leſs poliſhed, than ſome of our neighbours; we are not yet arrived, and may we never hereafter arrive! at that pitch of moleſſe, of delicateſſe, of ſoupleſſe, which we cenſure in them; and it is but juſt our language correſpond with the reſt of our character. We have ſomewhat more of the rough virtues of human nature unſubdued, unpoliſhed away by art; and when theſe are gone, we may talk as ſoftly, and as prettily, as the diſſolute, enervate, [effeminate, I would have ſaid, but for the catachreſis] nations on the other ſide the Alps, where we ſee politeneſs in its perfection.

But the reverend doctor ventures yet further: ‘Our language, he affirms, is extremely imperfect; its improvements are in no proportion to its corruptions; and in many inſtances it offends againſt every part of grammar.’—What this ingenious author means by offending againſt grammar, we do not apprehend. Is it, that the *Engliſh* tongue offends againſt the grammar of the ſame tongue? that were abſurd: a language is not to be judged of, and regulated, by any preconceived forms or rules of grammar; but the grammar is to be taken from the language: it is the language directs the grammar; not vice verſa; ſo that if there be any diſagreement between them, the fault muſt be charged on the grammar, which is ſo far deficient.—Does he mean, that it offends againſt the grammar of the Latin, or Greek? that may well be, without any fault; for the grammars of all languages widely differ: and it would be unjuſt to cenſure any language for varying from the grammar-rules of another.—If he means, that in the *Engliſh* there are many anomalies or departures from the general rules; we know of no language without them: idiotiſms are perhaps as numerous in Latin or Greek as in *Engliſh*.

Mr. Welſtead is of opinion, that the *Engliſh* language is not capable of a much greater perfection, than it has already attained: we have trafficked, he obſerves, with every country for the enriching it: the antients and moderns have both contributed to the giving it ſplendor and magnificence; the faireſt cyons that could be had from the gardens of France and Italy, have been grafted on our old ſtocks, to refine the ſavageneſs of the breed; we have laid aſide moſt of our harſh, antique words, and retained few but thoſe of good ſound and energy: the moſt beautiful poliſh is at length given our tongue that it will bear, without deſtroying and altering the very baſis and ground-work of it: its Teutonic ruſt is worn away; and little or nothing is wanting, either of copiouſneſs, or harmony. He goes on to argue the maturity and perfection of the *Engliſh*, from another very extrinſic principle; *viz.* by comparing the time, and circumſtances of the improvements, made ſince the firſt refiners of it; with thoſe of the Greek, Latin, French, and other tongues, that confeſſedly have riſen to their height.

Every civilized nation, that author thinks, has its claſſical age; and he ſuggeſts, that the *Engliſh* are not far from it. So that what remains to be done for the *Engliſh* tongue, ſhould not be to advance, but to fix it where it is, and prevent its declining. There is, in effect, a point of perfection, which when a language has once arrived at, it cannot exceed, though it may degenerate from it; and thus it happened to the two fineſt languages the world has known.

It may ſeem odd to talk of fixing ſo unſtable a thing as language: the Greek liturgies of St. Baſil, and St. Chryſoſtom, ſtill uſed in that church, the one for ſolemn, the other for common days, have been a long time unintelligible to the people: ſo much is the vulgar Greek degenerated from its original purity! Polybius teſtifies, that the articles of truce between the Romans and Carthaginians could ſcarce be underſtood by the moſt learned Roman antiquaries, 350 years after the time of their making. In effect, from the days of Romulus, to thoſe of Julius Cæſar, the Latin was perpetually changing; and what was written three hundred years before Tully, was as unintelligible in his time, as the *Engliſh* and French of the ſame period are now: and theſe two have changed as much ſince William the Conqueror, in about 700 years, as the Latin appears to have done in the like term.

Whether our language will decline as faſt as the Roman did, may admit of ſome doubt; there being many circumſtances in the affairs of the nation, which contributed to that ſpeedy corruption, that may not, in all probability, find place among us.—The French, for theſe 50 years paſt, has been poliſhing as much as it will bear; and it appears to be now declining, by the natural inconſtancy of that people, and the affectation of ſome late authors, to introduce cant words, which is the moſt ruinous corruption in any language. But without ſome ſuch conſideration, there does not ſeem any abſolute neceſſity, why a language ſhould be perpetually changing.

We find examples to the contrary: from Homer to Plutarch, are above a thouſand years; and ſo long, at leaſt, Dr. Swift thinks, we may allow the purity of the Greek: the Grecians ſpread their colonies round all the coaſts and iſlands of Aſia minor, and the Egean ſea, where the language was preſerved intire for many ages after they themſelves became provinces to Rome, and were over-run by the barbarous nations. The Chineſe have books in their language above 2000 years old; neither have the frequent conqueſts of the Tartars been able to alter it. And the German, Spaniſh, and Italian, have admitted few or no changes for ſome ages paſt.

On ſuch conſiderations, that author moved the then prime miniſter, the earl of Oxford, to eſtabliſh a ſociety, or academy, for the ſettling, and aſcertaining, the purity of our tongue; to ſet a mark on the improprieties which cuſtom has made familiar, to throw out vicious phraſes and words, to correct others, and perhaps retrieve ſome others now grown obſolete, and to adjuſt the orthography, pointing, *&c.*

Without ſome ſuch means, he complains, that the fame any writer can expect will be ſo ſhort and ſcanty, as by no means to be a ſufficient motive to call forth, and engage a man to exert his genius. Our language is chiefly confined to theſe two iſlands; and it is hard our authors fame ſhould be limited in time as well as place. Were it not for the Bible and Common-Prayer, we ſhould hardly have been able to underſtand any thing written a hundred years ago.

It is a melancholy reflection, that Petrarch ſtill ſpeaks good Italian; whereas Chaucer, who lived an hundred years later, is not to be underſtood by an Engliſh reader without a Saxon and French gloſſary. And what ſecurity has Dryden himſelf, while things continue on their preſent footing, that he ſhall not in a like ſpace of time become as obſolete as Chaucer is?

Grammars, and dictionaries, with whatever care and judgment they are compoſed, will prove but a feeble ſtay to a fleeting language, unleſs they have ſome extraordinary ſanction, and authority. And, what is to be lamented, ſuch writings have contributed to the corruption almoſt as much as the perfection of our tongue.

Dr. Gill, Ben. Johnſon, and Hexham, it is certain, by forcing the *Engliſh* tongue to the Latin method, have clogged and perplexed it with abundance of uſeleſs precepts concerning caſes, genders, and declenſions of nouns, tenſes, moods, and conjugations of verbs, and other things which our language has nothing to do withal. Nor have even Dr. Wallis, Greenwood, *&c.* though ſenſible of the fault in thoſe others, been able wholly to keep clear of it themſelves.

Borough ENGLISH. See the article BOROUGH.

ENGONASIS, ΕΓΓΟΝΑΣΙΣ, in aſtronomy, *Hercules*; one of the northern conſtellations. See HERCULES.

ENGRAFTING, GRAFTING, or GRAFFING, in agriculture and gardening, the art, or act, of inſerting, or fixing, a cyon, ſhoot, or bud, of one tree in the ſtock of another; in order to correct, and improve its fruit.

Engrafting is the art of applying a *graft*, or ſhoot, of one plant, to the ſtock of another; in ſuch manner, as that the ſap paſſing freely through both, the tree *grafted* on may produce the ſame kind of fruit with that whence the *graft* is taken.

Engrafting only differs from *inoculation*, in this, that the latter is performed when the ſap is at the higheſt, in ſummer; and the former before it riſes, at leaſt, in any quantity.

Engrafting is one of the principal operations in gardening, and that whereon the goodneſs of great part of our fruit greatly depends.

It is very extraordinary, that the ſeeds, or kernels, or ſtones of a fruit, as an apple, pear, peach, plumb, cherry, *&c.* being ſown, degenerate in the ground; ſo that the tree ariſing from it is of another kind, a ſort of wilding, harſher, ſourer, and coarſer, than that of the parent tree. To correct this, trees thus reared, muſt always be *grafted* from other better kinds.

Apples are commonly raiſed by *engrafting* the intended kinds on crab-ſtocks, procured by ſowing the kernels: ſo are pears procured by *grafting* on the wild pear-ſtock: though for dwarf, or wall-trees, they generally chooſe to *engraft* on the quince-ſtock.

They will alſo do, if *grafted* on the white-thorn. Peaches are produced by *grafting* on an almond or plumb-ſtock. Indeed, in this fruit, it ſometimes happens, that the ſtone ſown produces better fruit than that from which it was taken: but this is not common; beſide that the tree in ſuch caſe is long ere it comes to bear. Plumbs are raiſed by *engrafting* on a damaſcene, or wild plumb-ſtock: and cherries, on the black-cherry, or merry-ſtock, raiſed from ſtones.

Our beſt gardeners, likewiſe, *engraft* their leſs kindly trees from other better of the ſame ſort, to mend them; as alſo, the ſmaller and ſingle flowers, as gilliflowers, *&c.* from the larger and finer.—*To produce ſtocks for* engrafting *on*; ſee STOCK.

The curious furniſh us with other extraordinary and anomalous inſtances of *engrafting*: as of apples on plane, elder, thorn, cabbage-ſtalk, *&c.* and the like of pears, *&c.* pears on apple-trees, on elms, *&c.* cherries on the laurel, coral-berries on the plumb: beech on the cheſnut, oak on the elm, gooſeberry on the currant, the vine on the cherry-tree, *&c.*

> *Inſeritur lauro ceraſus, partuque coacto*
> *Tingit adoptivus virginis ora pudor.* Auſon.
> Ev'n Daphne's coyneſs thou doſt mock,
> And wedſt the cherry to her ſtock. Cowl. to Evel.
> ——*Mutatumque inſita mala*
> *Ferre pyrum, & prunis lapidoſa rubeſcere corna.*
> Virg. Geor. l.
>
> ———*Steriles platani, malos geſſere valenteis;*
> *Caſtaneæ, fagos; ornuſque incanuit albo*
> *Flore pyri; glandemque ſues fregêre ſub ulmis.* Id. ibid.

The origin, and invention of *engrafting*, is differently relat by naturaliſts: Theophraſtus tells us, that a bird, havi ſwallowed a fruit whole, chanced to caſt it forth into a cle or cavity, of a rotten tree; where mixing with ſome of t putrified parts of the wood, and being waſhed with the rai it budded, and produced within this tree, another tree of different kind. This led the huſbandman to certain flections, from which, ſoon afterwards, aroſe the art of *grafting*.

Pliny ſets the thing in a different light: a countryman hav a mind to make a paliſade in his grounds, that it might dure the longer, he bethought himſelf to fill up, and ſtrengt the bottom of the paliſade, by running, or wattling it w the trunks of ivy. The effect of this was, that the ſtake the paliſade, taking root, became *engrafted* into the tru and produced large trees; which ſuggeſted to the huſba man the art of *engrafting*.

The reaſon, or philoſophy, of *engrafting*, is ſomewhat ſcure; and had not hazard given the firſt hint, all our kn lege of nature would never have led us to it. The effe ordinarily attributed to the diverſity of the pores, or duct the *graft*, from thoſe of the ſtock, which change the fi of the particles of the juices in paſſing through them to reſt of the tree.

Mr. Bradley, on occaſion of ſome obſervations of Agri ſuggeſts ſomething new on this head: the ſtock *grafted* o thinks, is only to be conſidered as a fund of vegetable ma which is to be filtred through the cyon, and digeſted, brought to maturity, as the time of growth in the veſſels o cyon directs. A cyon, therefore, of one kind, *grafted* tree of another, may be more properly ſaid to take root i tree it is *grafted* in, than to unite itſelf with it: for it is v that the cyon preſerves its natural purity and intent, tho be fed and nouriſhed with a mere crab; which is, without d occaſioned by the difference of the veſſels in the cyon thoſe of the ſtock; ſo that *grafting* may be juſtly compared to planting.

In proſecution of this view of that ingenious author, we add, that the natural juices of the earth, by their ſecretion and comminution, in paſſing through the roots, *&c.* before they arrive at the cyon, muſt doubtleſs arrive there half elaborated and concocted; and ſo diſpoſed for a more eaſy, plentiful, and perfect aſſimilation and nutrition; whence the cyon muſt neceſſarily grow and thrive better and faſter than if it were put immediately in the ground, there to live on coarſe diet, and harder of digeſtion: and the fruit produced, by this further preparation in the cyon, muſt be finer and further exalted, than if fed immediately from the more imperfectly prepared and altered juices of the ſtock.

The cyon, to ſay no more, is ſomewhat in the condition of the fœtus in utero, fed from the mother's blood: or, at leaſt, it is in that of the infant after excluſion, fed with the mother's milk.

The methods, or kinds of *engrafting* are various; as *grafting* in the cleft, *grafting* in the rind, whip *grafting*, *grafting* by approach, ſcutcheon *grafting*, root *grafting*, reiterated *grafting*, *grafting* on branches, *&c.*

The apparatus, or inſtruments uſed herein, are ſaws to cut off the heads of ſtocks; knives to make clefts; a chiſſel to pare away the wood; clay, mixed with horſe-dung, to prevent freezing, and with tanners hair, to prevent cracking; alſo baſs ſtrings, or woollen yarn, to tie the *grafts* with, and *grafting* wax. See WAX.

AFTING *in the cleft*, or *ſtock*, called alſo *ſlit*-GRAFTING, the moſt antient, and ordinary way. We have a very beautiful deſcription of it in Virgil, II. Georg. v. 78. it is chiefly uſed for middle-ſized ſtocks, from one to two inches diameter. Its ſeaſon is in the months of January, February, and March.—The method, as now practiſed, is thus:

The head of the ſtock being ſawn, or cut off, ſmooth and clean; a perpendicular cleft is made therein, nearly two inches deep, with a ſtrong knife, or chiſſel, as near the pith as may be to miſs it. In this cleft, the *grafting* chiſſel, or wedge, is put to keep it open. The *graft*, or cyon, is prepared by cutting it aſlope, in form of a wedge, to ſuit the cleft; only leaving a ſmall ſhoulder on each ſide: and, when cut, is to be placed exactly in the cleft, ſo, as that the inner bark of the cyon may aptly, and cloſely, join to the inner part of the bark, or rind of the ſtock; in the dextrous performance of which, the chief ſecret conſiſts. If the cleft pinch too tight, a ſmall wedge may be left in it to bear the ſtreſs. And, laſtly, the cleft is covered over with clay; or rather, as M. Gentil adviſes, with moſs, or the freſh bark of a tree bound on with oſier.

The reader, who would have this in more elegant terms, may be furniſhed with them from Virgil:

> *Aut rurſum enodes trunci reſecantur, & alte*
> *Finditur in ſolidum cuneis via: deinde feraces*
> *Plantæ immittuntur: nec longum tempus, & ingens*
> *Exiit ad cœlum ramis felicibus arbos,*
> *Miraturque novas frondeis, & non ſua poma.*

AFTING *in the rind*, or *ſhoulder*-GRAFTING, called alſo *ſlicing*, and *packing*; is practiſed in the latter end of April, or beginning of May.—The method is as follows:

The top of the ſtock is cut off in a ſmooth, ſtrait place: then the cyon, or *graft*, is prepared by cutting it on one ſide from the joint, or ſeam, down ſlopewiſe, making the ſlope about an inch long; and obſerving its bent, that ſo, when the cyon is fixed to the ſtock, it may ſtand nearly upright. At the top of the ſlope, they make a ſhoulder, whereby it is to reſt on the ſlope of the ſtock. The whole ſlope is to be plain and ſmooth, that it may lie even to the ſide of the ſtock. As to the length of the cyon, for a ſtandard-tree, it may lie about four inches from the ſhoulder; but for a dwarf, or wall-tree, ſix inches. The cyon being prepared; the outſide is applied to the weſt, or ſouth-weſt ſide of the ſtock, and its length and breadth meaſured thereon; which done, the bark of the ſtock is cut away to thoſe dimenſions, that the cut part of the cyon may fit it. Wherein, regard is to be had to the bigneſs of the ſtock, and the thickneſs of the bark, to proportion the length and breadth of the chip thereto; otherwiſe the paſſages of the juice in the ſtock and cyon will not meet. Laſtly, laying the cut-part of the cyon on that of the ſtock, they bind them together with woollen yarn, and cover the whole with clay an inch above, and as far below the ſtock's head: working it round the cyon, till it become ſharp at top, that the rain may run down it.

This method has ſeveral advantages over the former: as that the wound heals up ſooner; and that, in the mean time, it is in leſs danger from the weather; that it does leſs injury to the ſtocks and *grafts*, as avoiding thoſe ſevere ſplittings and pinchings: that the bark is more eaſily placed in the paſſage of the ſap here, than in the cleft: that the *graft* thrives and ſhoots with greater vigour, and bears ſooner, in this way than in that: and that it is practicable on ſmaller ſtocks than the other, which muſt have a good body, and conſiſtence, before they can bear cleaving.

GRAFTING *in the bark*, is performed thus:—Prepare the ſtock, and cyon, as in *grafting in the rind*; but, inſtead of cutting the bark of the ſtock, ſlit the ſame on the ſouth-weſt ſide, from the top, almoſt as long as the ſloped part of the cyon, and at the top of the ſlit looſen the bark, with the top of your knife. Thruſt an inſtrument, made of ivory, ſilver, or the like, and formed at the end like the ſlope-end of the cyon, but much leſs, down, between the bark and wood, to make room for the cyon; which being put in, the bark is to be ſo managed, as that it may fall cloſe to the ſtock, and edges of the cyon.

GRAFTING *by approach*, called alſo *inarching*, and *ablactation*. See ABLACTATION.

Whip-GRAFTING, or *Tongue*-GRAFTING, is a ſort of *grafting* in the rind, proper for ſmall ſtocks, from an inch diameter to a quarter of an inch. Mr. London ſpeaks of it as the moſt effectual way of any, and that moſt in uſe.

In this, the ſtock and cyon are always to be of the ſame bigneſs. The cyon to be ſloped off a full inch, or more; and the like is to be done to the ſtock; and ſo the one to be tied to the other. Otherwiſe, the top of the ſtock being cut off, a ſhoulder is to be made in the *graft*: and the reſt to be performed as already ſhewn under *grafting in the rind*.

This method is alſo improved by what they call *tipping*, or *tonguing*; which is, the making a ſlit with a knife in the bare part of the ſtock, downwards; and the like in the ſloped face of the cyon, upwards: then joining them, by thruſting one ſlice into the other, till the bare place of the cyon cover that of the ſtock.

Side-GRAFTING. In this, the cyon is prepared as in *whip-grafting*; but the head of the ſtock is not cut off. Only, from a ſmooth part on the weſt ſide, ſo much of the bark is pared off as the cyon will cover; then ſlitting both cyon and ſtock, as in the laſt article, they bind the two together, and cloſe them up with clay. At the year's end, the top of the ſtock is cut off at the grafted place, ſlopewiſe; and the place is covered with clay.

Scutcheon-GRAFTING, is another method of *grafting* in the rind, practiſed in June, July, and Auguſt; when the bark will not part from the ſtock. It is performed, by ſlitting the bark of the ſtock in form of the capital letter T, looſening it with the point of a knife, and clapping in a cyon, prepared as above. See SCUTCHEON.

Crown-GRAFTING, is when four or more *grafts* are placed round the ſtock, between the bark and the rind, ſomewhat in the manner of a crown.—This is only practiſed in the larger trees, which are capable of receiving a number of *grafts*, and are too big to be cloven.—The method is in all reſpects the ſame as that already delivered for *grafting in the rind*.

Root-GRAFTING, is a modern invention, treated on at large by Agricola: its intention is ſomewhat different from the former, being for the propagation, or multiplication, of plants.

To perform this, take a *graft*, or ſprig of a young tree, which you intend to propagate; and a ſmall piece of the root of another tree of the ſame kind, or of a kind very like it; or elſe pieces of roots cut off of other trees, in tranſplanting; and *whip-graft* them together: obſerving, that the two but-ends of the *graft* and root be united, and that the rind of the root join that of the *graft*. Theſe may, afterwards, be planted out at pleaſure, and the piece of root will draw the ſap, and feed the *graft*, as the ſtock does the other way.

This way of propagation is very eaſy and expeditious; roots being more plentiful than ſtocks: by this method the pieces of roots of one crab-ſtock, or apple-ſtock, will ſerve for 20 or 30 apple *graffs*, and the like of other trees. The ſame is alſo an excellent way for raiſing of tender trees, that will hardly bear being *grafted* in the ſtock. Add, that trees thus *grafted*, bear ſooner, and are more eaſily dwarfed, than thoſe done any other way.

Reiterated GRAFTING, or *grafting by a double*, or *triple inciſion*, is another method mentioned by Agricola: to perform which, firſt *graft* a good cyon on a ſtock, and cut it away to one half, or a third part; then fix another *graft* to it, of a better kind; and a third to that: for ſtill, the oftener a tree is *engrafted*, the finer fruit it produces.

By this method, that author aſſures us, he produced Muſcat pears, that were admirable; making, at firſt, uſe of a ſtock *grafted* with a pound-pear, on which he *grafted* a ſummer Bon Chretien; and when the branch of this latter had ſhot, he *grafted* on it a cyon of Bergamot; which he alſo cut, and *grafted* on it a cyon of a Muſcat pear.

ENGRAFTING *of branches*, Agricola mentions as a very certain and profitable operation, beſt practiſed on large, full-grown, and even old trees.

To do this, half or more of the branches muſt be lopped off, and *grafts* of three or four years old be applied to them; taking care to have ſtakes, or other things, to ſupport them againſt the wind, *&c.*

He adds, that by this method, you will have, perhaps, the ſame year, at leaſt, the ſecond or third, ſuch a quantity of fruit, as the youngeſt and ſoundeſt tree would hardly produce.

Engrafting of the ſmall-pox. See Inoculation.

ENGRAILED, or **Ingrailed**, in heraldry (from the French *Ireſle*, hail) is when a thing is repreſented with its edges ragged, or notched circularly, as if broken by ſomething falling on it.—See *Tab. Herald. fig.* 56.

It differs from *indented*, in that the breaches there are all in ſtrait lines; but here ſemicircular: and from *invected*, in that the points of the little arches are turned inwards towards the middle of the field; which, in invected, are turned outwards. See Indented, and Invected.—Spelman expreſſes it in Latin by *imbricatus*, others by *ingrediatus*, and others by *ſtriatus*.

ENGRAVING *, or **Graving**, the art, or act, of cutting metals, and precious ſtones, and repreſenting figures, letters, and other matters, thereon.

* The word is a compound of the prepoſition *in*, and the Greek γραφω, *I write*. Though Menage, after Salmaſius, derives it from the Latin *cavare*, to hollow; others from the Latin, *graphiare*; and others from the German, *graben*, q. d. *effodere*, to dig out. In Latin it is called *ſculptura*, and *cælatura*.

Engraving is properly a branch of ſculpture; though with us it generally ſtands contradiſtinguiſhed from ſculpture; as the latter, popularly called *carving*, expreſſes the forming of figures, &c. emboſſed, or in relievo; and the latter, thoſe indented, or in creux.

Among the French, the term *engraving*, *graveure*, is of more extent. It includes all kind of ſculpture, both that performed with the chiſſel and knife, on marbles and woods, in relievo; and that in metals, ſtones, &c. with the graver, indented.

Engraving is divided into ſeveral branches, according to the matters it is practiſed on, and the manner of performing it. The original way of *engraving* on wood is now diſtinguiſhed by the name of *cutting in wood*; that on metals with aqua fortis, is called *etching*; that by the knife, burniſher, punch, and ſcraper, *mezzotinto*; that on ſtones, for tombs, &c. *carving* or *ſtone-cutting*; and laſtly, that performed with the graver on metals, as copper, braſs, ſteel, ſilver, &c. as alſo on precious ſtones, cryſtals, &c. retains alone the primitive denomination of *engraving*.

Engraving is an art, for the greateſt part, of modern invention; having its riſe no earlier than the 16th century. The antients, it is true, practiſed *engraving* on precious ſtones and cryſtals, with very good ſucceſs; and there are ſtill many of their works remaining, equal to any production of the later ages. But the art of *engraving* on plates, and blocks of wood, to afford prints, or impreſſions, was not known till after the invention of painting in oil.

The diſcovery is aſcribed to Maſo Finiguerra, a goldſmith of Florence; who having uſed to take impreſſions of every thing he cut, in clay; and to caſt melted ſulphur in this mould; at length hit on a way of taking the impreſſions thereof on paper, by ſmearing this figure of ſulphur with oil and lamp-black. See Printing.

The ſecret ſoon got abroad, and coming to the hands of Albert Durer and Lucas, they greatly improved it, and began to engrave on wood and copper, in which they ſucceeded to admiration.

Engraving *in copper*, is employed in repreſenting diverſe ſubjects, as portraits, hiſtories, landſchapes, foliages, figures, buildings, &c. either after paintings, or after deſigns made for the purpoſe.

It is performed either with the graver, or with aqua fortis.—For the firſt, there needs but little apparatus, and few inſtruments. The plate you work on, being well poliſhed, is covered over with a thin ſkin of virgin wax, and on this, the draught, or deſign, done in black lead, red chalk, or other ungummed matter, is laid; and rubbed down for the wax to take off. The deſign thus transferred upon the wax, is traced through on the copper, with a point or needle: then heating the plate, and taking off the wax, the ſtrokes remain; to be followed, heightened, &c. according to the tenor of the deſign, with the graver, which is to be very ſharp, and well tempered.

In the conduct of the graver conſiſts all the art; for which there are no rules to be given; all depending on the habitude, diſpoſition, and genius, of the artiſt.

The other inſtruments are, a cuſhion, or ſand-bag, to lay the plate on, to give it the neceſſary turns and motions.—A burniſher, round at one end, and uſually flattiſh at the other, to rub out ſlips and failures, and to ſoften the ſtrokes, &c.—A ſcraper, to pare off the ſurface, on occaſion. And a rubber of black cloth, or hat, to fill up the ſtrokes, that it may appear how the work proceeds.

Engraving *in copper with* aqua fortis. See the article Etching.

Engraving *on precious ſtones*, is the repreſenting of figures, or devices, either in relievo, or indented, on diverſe kinds of hard, poliſhed ſtones.

The art of *engraving* on precious ſtones, is one of thoſe wherein the antients excelled; there being diverſe antique agats, cornelians, and onyx's, which ſurpaſs any thing of that kind the moderns have produced. Pyrgoteles among the Greeks, and Dioſcorides under the firſt emperors of Rome, are the moſt eminent engravers we read of: the former was ſo eſteemed by Alexander, that he forbad any body elſe to engrave his head: and Auguſtus's head, engraven by the latter, was found ſo beautiful, that the ſucceeding emperors choſe it for their ſeal.

All the polite arts having been buried under the ruins of the Roman empire, the art of *engraving* on ſtones met the ſame fate. It was retrieved in Italy, at the beginning of the 15th century; when one John of Florence, and after him Dominic of Milan, performed works of this kind no way to b deſpiſed.

From that time, ſuch ſculptures became common enough i Europe, and particularly in Germany, whence great number were ſent into other countries; but they came ſhort of th beauty of thoſe of the antients; eſpecially thoſe on preciou ſtones; for as to thoſe on cryſtal, the Germans, and afte their example, the French, &c. have ſucceeded well enoug in them.

In this branch of *engraving*, they make uſe either of the dia mond or emery.—The diamond, which is the hardeſt, an moſt perfect of all precious ſtones, is only cut by itſelf, with its own matter.

The firſt thing is to cement two rough diamonds to the en of two ſticks, big enough to hold them ſteady by, in th hands; and to rub or grind them againſt each other, till the be brought to the figure deſired. The duſt, or powd rubbed off, ſerves afterwards to poliſh them; which is pe formed with a kind of mill, that turns a wheel of lea pewter, or copper.

The diamond is fixed in a braſs diſh, and thus applied the wheel, which is covered with a diamond-duſt, mixed with oil of olives: and when the diamond is to be c facet-wiſe, they apply firſt one face, then another, to t wheel.

Rubies, ſapphires, and topazes, are cut and formed t ſame way, on a copper wheel; and poliſhed with tripo diluted in water.

As to emeralds, hyacinths, amethyſts, garnets, ag and other of the ſofter ſtones, they are cut on a leaden whe moiſtened with emery and water; and poliſhed with tripo on a pewter-wheel. Lapis lazuli, opal, &c. are poliſhed a wooden wheel.

To faſhion and engrave vaſes of agat, cryſtal, lapis lazuli, the like, they have a kind of lathe, like that of the pewtere excepting, that whereas the latter is to hold the veſſels, wh are to be wrought with proper tools; the former gener holds the tools, which are turned by a wheel, and veſſel is held to them to be cut and engraved; either in lievo, or otherwiſe: remembring from time to time, moiſten the tools with diamond-duſt and oil; or, at le with emery and water.

To engrave figures or devices on any of theſe ſtones, w poliſhed; ſuch as medals, or ſeals, &c. they uſe a little wheel, the two ends of whoſe axis are received within pieces of iron placed upright, as in the turners lathe; an be brought cloſer, or ſet farther apart, at pleaſure. At end of one of the axes, are fitted the proper tools, being tight by a ſcrew. Laſtly, the wheel is turned by the foot; the ſtone applied by the hand to the tool; and thus ſhi and conducted as occaſion requires.

The tools are generally of iron, ſometimes of braſs. A their form, it is various, but it generally bears ſome reſembl to chiſſels, gouges, &c. Some have ſmall round heads like tons; others, like ferrels, to take the pieces out; others &c. Theſe tools are not applied directly againſt the ſto but, as it were, ſidewiſe; thus wearing, and as it grinding off the ſubſtance. And ſtill, whether it be fig or letters, or characters, the manner of application is ſame. The tools, as above obſerved, are to be frequ moiſtened with diamond-duſt, and oil of olives. Whe ſtone is engraven, they poliſh it on a wheel of bruſhes, of hogs-briſtles, with tripoli. For the larger, and leſs de works, they have copper, or pewter tools, on purpo poliſh the ground, or plain parts, with tripoli, &c. they apply after the ſame manner, as thoſe wherewit graving is performed.

Engraving *on Steel*, is chiefly employed in cutting pun matrices, and dies, proper for ſtriking coins, medals, counters.

The method of *engraving*, with the inſtruments, &c. a ſame for coins, as for medals and counters: all the diffe conſiſts in their greater, or leſs relievo; the relievo of being much leſs conſiderable than that of medals; and t counters ſtill leſs than that of coins.

The engraver in ſteel uſually begins with punches, or punchions, which are in relievo, and ſerve for making the creux, or cavities of the matrices, and dies: though, ſometimes, he begins immediately with the creux; but it is only when the intended work is to be cut very ſhallow. The firſt thing is, to deſign his figures; then he moulds them in white wax, of the ſize and depth required; and from this wax he graves his punch.

This punch is a piece of ſteel, or, at leaſt, of iron and ſteel mixed; on which, before they temper or harden it, the intended figure, whether a head, or a reverſe, is cut, or carved, in relievo. The inſtruments uſed in this *graving* in relievo, which are much the ſame as thoſe wherewith the finiſhing of the work in creux is effected, are of ſteel: the principal are, gravers of divers kinds, chiſſels, flatters, *&c.* when the punch is finiſhed, they give it a very high temper, that it may the better bear the blows of the hammer, wherewith it is ſtruck, to give the impreſſion to the matrice.

What they call *matrice*, or *matrix*, is a piece of good ſteel, of a cubic form, called alſo the *dye*; whereon the relievo of the punch is ſtruck in creux: it is called *matrix*, becauſe in the cavities, or indentures, thereof, the coins, or medals, ſeem formed, or generated, as animals are in the matrix of their mother. To ſoften this ſteel, that it may more eaſily take the impreſſions of the punch, they make it red-hot; and, after ſtriking the punch thereon in this ſtate, they proceed to touch up, or finiſh, the ſtrokes and lines, where, by reaſon of their fineneſs, or the too great relievo, they are any thing defective, with ſome of the tools above-mentioned.

The figure thus finiſhed, they proceed to engrave the reſt of the medal; as the mouldings of the border, the engrailed ring, letters, *&c.* all which, particularly the letters, and graining, or engrailment, are performed with little ſteel punches, well tempered, and very ſharp. Add, that as they ſometimes make uſe of punchions, to engrave the creux of the matrix; ſo, on ſome occaſions, they make uſe of the creux of the matrix, to engrave the relievo of the punch.

To ſee, and judge of the *engraving* in creux, divers means have been deviſed, to take the impreſſions therefrom, as the work proceeds: ſometimes they make uſe of a compoſition of common wax, turpentine, and lamp-black; which, always retaining its ſoftneſs, eaſily takes the impreſſion of the part of the *graving* it is applied to: but this only ſerving to ſhew the work piece-meal, they have had recourſe to other ways, to ſhew the whole figure. The firſt, by pouring melted lead on a piece of paper, and clapping the matrice thereon; the ſecond, with melted ſulphur, managed the ſame way; and the third, proper only where the *graving* is ſhallow, by laying a piece of ſoft paper on the *graving*, and over the paper a leaf of lead; when, giving two or three blows with a hammer on the lead, the paper takes the impreſſion of the work.

When the matrix is quite finiſhed, they temper it, rub it well with a pumice-ſtone, and clean out the ſtone again with a hair-bruſh; and, laſtly, poliſh it with oil and emery: in this condition it is fit for the mill, to be uſed to ſtrike coins, medals, *&c.*

After the like manner are the matrices for caſting of printing letters engraven. See *Letter* FOUNDERY.

NGRAVING *of ſeals*, *ſtamps*, *punchions*, *marking irons*, *gilding irons*, and other matters, for goldſmiths, pewterers, bookbinders, *&c.* either in relievo, or indenture, is performed after the manner laſt deſcribed.

NGRAVING *in wood.* See CUTTING *in wood.*

NGROSSING, the writing a deed over fair, and in proper legible characters. See COPY, CALLIGRAPHUS, *&c.*

NGROSSING, in matters of trade, ſignifies the buying up any commodity in the groſs; or foreſtalling the market. See FORESTAL.

NGUICHE, in heraldry, is applied to the great mouth of a hunting horn, when it has a rim of a different colour from the horn itſelf.

NGYSCOPE, a machine better known under the name of *microſcope.* See MICROSCOPE.

NHARMONIC, the laſt of the three genera, or kinds, of muſic.

The *enharmonic* genus is ſaid to have been thus called by reaſon of its ſuperior excellence; though wherein that conſiſts, ſays Mr. Malcolm, we do not ſee. It was by all acknowledged ſo difficult, that few could practiſe it.

The ſeveral genera are divided into diaſtems, upon which the differences depend. Thoſe of the *enharmonic* are, the *dieſis*, and *ditonum*; thoſe of the *chromatic*, the *hemitonium*, and *trihemitonium*; and, in the *diatonic*, the *hemitonium*, or *limma*, and the *tonus*.

But under theſe general names, which diſtinguiſh the genera, there are ſeveral different intervals, or ratio's, which conſtitute the *chroai*, or *colores generum*, or ſpecies of *enharmonic*, *chromatic*, and *diatonic*. See DIATONIC, and CHROMATIC.

NHARMONICAL *Dieſis.* See the article DIESIS.

NHERITANCE. See the article INHERITANCE.

NIGMA. See the article ÆNIGMA.

ENIXUM *Sal*, among many of the chemiſts, a neutral ſalt, neither acid nor alcaline, but participating of both.

Such are, common ſalt, nitre, alum, vitriol, *&c.* See SALT, NITRE, ALLUM, VITRIOL, *&c.* others apply it to peculiar ſalts of this general kind.

ENMANCHE', in heraldry, is when a chief has two lines drawn from the middle of the upper edge, to the ſides, the depth of half the chief; the two lines including an obtuſe angle, whoſe vertex is the centre of the top of the chief. See Tab. *Herald. fig.* 49.

The heralds conceive this, as bearing ſome reſemblance to *ſleeves*; whence the etymology of the word, from the French *manche*, ſleeve. It differs from *chappe*, where the lines come from the top to the bottom of the chief.

ENNEADECAETERIS*, in chronology, a cycle, or period, of nineteen ſolar years.

* The word is Greek, εννεαδεκαετηρις; formed of εννεα, nine; δεκα, ten; and ετος, year.

Such is the lunar cycle invented by Meton, at the end whereof the moon returns to the ſame point from which it departed. Whence the Jews, Athenians, and other nations, who were minded to accommodate the lunar months to the ſolar year, made uſe of the *enneadecaeteris*; allowing to ſeven of the years thirteen months apiece, and to the reſt twelve.

The Jewiſh ENNEADECAETERIS is properly a cycle of 19 lunar years, beginning from molad tohu, and returning again and again; whereof, every 3d, 6th, 8th, 11th, 14th, 17th, and 19th, are emboliſmic, or of 383 days, 21 hours, apiece; the reſt common, or of 354 days, 8 hours, apiece. See YEAR.—Conſequently, the Jewiſh *enneadecaeteris* is 6939 days, 18 hours.

ENNEAGON*, in geometry, a figure of nine angles, and nine ſides.

* The word is formed of εννεα, nine; and γωνια, angle.

In fortification, ENNEAGON denotes a place with nine baſtions. See FORTIFIED *Place.*

ENNEATICAL *Days* are every ninth day of a ſickneſs; which, ſome imagine, naturally occaſion a great alteration, either for the better, or worſe.

ENNEATICAL *Years* are every ninth year of a man's life. See CLIMACTERIC.

ENORMOUS*, ſomething exceſſive, or monſtrous, eſpecially in bulk.—The Coloſſus of Rhodes was of an *enormous* ſtature.

* The word is formed of the privative *e*, and *norma*, rule; *q. d.* void of, or contrary to, rule, or meaſure; *contra normam.* In the corrupt ages of Latinity, they uſed *innormis*, and *inormis*.

In the French *juriſprudence*, *læſio enormis*, *enormous* damage, is that which exceeds half the value of the thing ſold.

ENQUEST, or INQUEST, in law, denotes an inquiſition of a jury by hearing of witneſſes.

This is the moſt uſual manner of trial, in all cauſes, both civil and criminal, within this realm.—In civil cauſes, after proof is made, on either ſide, of ſo much as each party thinks good for himſelf; if the doubt be in the effect, it is referred to the diſcretion of twelve indifferent men, impanelled by the ſheriff for that purpoſe; and as they bring in their verdict, ſo judgment paſſeth: for the judge ſaith, *the jury findeth the fact thus.*—For the *enqueſt* in criminal cauſes, ſee JURY.

ENRICHED *Column.* See the article COLUMN.

ENROLLMENT. See the article INROLLMENT.

Clerk of the ENROLLMENT *of Fines.* See CLERK *of the Enrollments.*

ENS, ENTITY, *Being*, in metaphyſics, is applied, in a general ſenſe, to every thing which the mind any way apprehends, and whereof it affirms, denies, proves, or diſproves, any thing.—This, other philoſophers call *cogitable*, and *intelligible*; and the logicians, *thema*.

ENS, in a leſs general ſenſe, ſignifies ſomething that is, or exiſts, ſome way further than by being conceived, or being capable of being conceived, in the mind.—This is particularly called, *ens poſitivum*, or *reale*; poſitive, or real, being.—In oppoſition to which ſtands *non ens*.

ENS, in its proper, or reſtrained ſenſe, is that to which there are real attributes belonging; or that which has a reality, not only out of the intellect, but in itſelf.—This is what is properly meant by *res*, thing; and what we otherwiſe call *ens reale*, and alſo *ſubſtance*.

ENS *rationis* is that which depends wholly on the mind, or which exiſts only in the imagination.—Of which they diſtinguiſh three kinds: *ens rationis affectivum*, which is done, or produced, by the mind; as knowlege: *ens rationis ſubjectivum*, which is received into the mind; as ſcience: and *ens rationis objectivum*, which is repreſented by the mind; as a chimæra, a golden mountain, or the like.

Which laſt, if it have no other manner of being, *i. e.* if it be repreſented ſo as it does not, or cannot be; it is what we moſt properly call *ens rationis*.—The generality of ſchool philoſophers, and the Peripatetics among the reſt, aſſert, that there are of theſe *entia rationis objectiva.*—Others deny there are, or can be, any ſuch thing.

Ens, or **Ens** *primum*, among chemiſts, denotes the moſt efficacious part of any natural mixt body, whether animal, vegetable, or foſſil; wherein all the qualities, or virtues, of the ingredients of the mixt, are comprehended in a little compaſs.

Paracelſus pretends to have been able to ſeparate the *ens primum* from bodies, and with it to effect prodigious things towards the renovation and reſtoration of youth: but his proceſſes are ſo obſcurely delivered, that nobody has been induced to try them.

Mr. Boyle gives us a proceſs, from M. Le Febure, whereby the *ens primum*, or eſſence of baum, is eaſily obtained: he adds, that the effects of an *ens* of baum, thus drawn, are no ways inferior to thoſe of Paracelſus; and inſtances in a ſpecial friend of his, upon whoſe taking it only for a fortnight, the nails of his hands and feet fell off, and were ſucceeded by a ſet of new ones; which convinced him ſo far of its efficacy, that he left off taking it himſelf: but, giving ſome of it to an old woman of ſeventy years of age, who ſerved in the houſe, it produced the menſes again; and that ſo copiouſly, as wonderfully to ſtartle the woman.

Upon giving a little of it to an old hen, her feathers began to moult on the ſixth day, and ſhe grew ſtark-naked; but, before a fortnight was over, ſhe had others in their room, which were fairer, and better coloured, than the former.

The relation is odd enough: yet, conſidering the hand we have it from, and how eaſily the thing is tried, it is much no-body has yet attempted to proſecute it.—The proceſs is thus:

Having gathered, *e. gr.* ſome baum, or other fitting plant, at the proper ſeaſon and time; beat it into a pulp in a marble mortar; and, putting it into a bolt-head hermetically ſealed, digeſt it forty days in a dunghil, or other analogous heat: this done, take out the matter, which will now be more liquid than before; and, ſeparating from it the dregs, or groſſer parts, digeſt it anew in a gentle bath, that the remaining groſſer parts may alſo ſubſide: filtrate it, and add to it the fixed ſalt drawn from the former dregs, dried and calcined: to the liquor, thus prepared, add equal parts of the liquor of good ſea-ſalt, well purified and melted, and then let to run *per deliquium:* laſtly, ſeal up the mixture in a bolt-head, and expoſe it to the ſun ſix weeks longer; at the end of which term, the *ens primum* of the plant will be found ſwimming on the liquor, in a liquid, tranſparent form, ſometimes of a green, and ſometimes a rediſh, colour, according to the plant uſed.

Ens *Veneris*, or *Flower of Venus*, a chemical preparation from vitriol, firſt publiſhed by Mr. Boyle; held a ſpecific in the rickets, and much commended in nervous caſes, obſtinate cachexies, loſs of appetite, and obſtructions of all kinds.

It is prepared by ſubliming equal parts of the powder of Cyprus vitriol (calcined till it is of a dark colour), and of ſal ammoniac, into the form of yellow flowers.—It has its name from the particles of Venus, copper, therein, imparted by the vitriol.

ENSCONCED, in the military art. See the article Insconced.

ENSEMBLE, a French term, ſometimes uſed in our language; literally ſignifying *together*, or *one with another*:—being formed from the Latin *in*, and *ſimul*.

In architecture we ſay, *the enſemble*, or *tout enſemble*, of a building; meaning the whole work, or compoſition, conſidered together, and not in parts; and ſometimes, alſo, the relative proportion of the parts to the whole.—All thoſe pieces of building make a fine *enſemble*.

To judge well of a ſtatue, or other work, of ſculpture, one muſt firſt examine, whether the *enſemble* be good.

The *tout enſemble* of a painting is that harmony which reſults from the diſtribution of the ſeveral objects, or figures, whereof the whole is compoſed.—This picture is good, taking the parts ſeparately; but the *tout enſemble* is naught.

ENSIFORMIS *Cartilago*. See the article Xiphoides.

ENSIGN, in the military art, a banner, or colours, under which the ſoldiers are ranged, according to the different companies, or parties, they belong to. See Flag, Colours, and Standard.

The Turkiſh *enſigns* are horſes tails; thoſe of the Europeans are pieces of taffety, with divers figures, colours, arms, and devices, thereon. Xenophon tells us, that the *enſigns*, borne by the Perſians, was a golden eagle on a white flag; the Corinthians bore the winged horſe, or Pegaſus, in theirs; the Athenians, an owl; the Meſſenians, the Greek letter M; the Lacedæmonians, the Λ.

The Romans had a great diverſity of *enſigns:* the wolf, minotaur, horſe, boar, and, at length, the eagle; where they ſtopped. This was firſt aſſumed in the ſecond year of the conſulate of Marius.

A military *enſign*, on a medal of a Roman colony, denotes it a colony peopled with old ſoldiers.

Ensign is alſo uſed for an officer, in the infantry, who bears the *enſign*, or colours; by the Latins called *ſignifer*, and *vexilliſer*. He has the charge of the *enſign* in battle; and, if he be killed, the captain is to take it in his ſtead.—The *enſign* is under the command of the lieutenant, and, in his abſence, ſupplies his poſt.

ENTABLATURE*, in architecture, is that part of an order of column which is over the capital; comprehending the architrave, frize, and corniche. See Architrave, Frize, and Corniche.

* The word ſeems formed of the Latin *tabulatum*, or *intabulamentum*.

The *entablature* is alſo called the *trabeation*; and, by Vitruvius and Vignola, *ornament*. It is different in the different orders: indeed, it conſiſts of the three grand parts, or diviſions, above-mentioned, in all; but thoſe parts conſiſt of a greater, or leſs, number of particular members, or ſubdiviſions, as the orders are more or leſs rich.

Vignola makes the *entablature* a quarter of the height of the whole column, in all the orders.

In the Tuſcan and Doric, the architrave, frize, and corniche, are all of the ſame height; in the Ionic, Corinthian, and Compoſite, the whole *entablature* being fifteen parts; five of them are allowed for the architrave, four for the frize, and ſix for the corniche. See Ionic, Corinthian, &c.

Entablature, or **Entablament**, is ſometimes alſo uſed for the laſt row of ſtones on the top of the wall of a building, whereon the timber and the covering reſt.

As this is frequently made to project beyond the naked of the wall to carry off the rain, ſome authors call it, in Latin, *ſtillicidium*, or drip.—Such an *entablature* does not ſtand out far enough: it lets the water fall on the foot of the wall.

ENTAIL, in law, ſignifies *fee tail*, or *fee entailed*; that is, abridged, curtailed, or limited to certain conditions. See Fee, and Tail.—For the docking of an *entail*; ſee Docking, and Recovery.

ENTE', in heraldry, literally implies *engrafted*; and is uſed, by the foreign heralds, to expreſs a method of marſhalling, little known among us.—Yet we have an inſtance of it in the fourth grand quarter of his majeſty's royal enſign; whoſe blazon is, Brunſwic and Lunenburgh impaled with antient Saxony, *enté in pointe*.

ENTELECHIA, ΕΝΤΕΛΕΧΕΙΑ, a Greek term, by which Ariſtotle defines the ſoul; and which, not occurring in any other author, has given the critics and philoſophers infinite perplexity to diſcover its true meaning. See Soul.

Hermolaus Barbarus is even ſaid to have conſulted the devil about it; after which, in his paraphraſe on Themiſtius, whether from the devil, or himſelf, we know not, he renders it by *perfectihabia*, which is not a whit the clearer.

Cicero, whoſe interpretation ſhould be preferable to that of any modern, defines *entelechia* (*Tuſcul. q. L.* I. *C.* 1.) to be, *a certain, continued, and perpetual motion:* whence it ſhould ſeem, that Ariſtotle took the ſoul for the mode of the body; a *continuous motion* being, doubtleſs, a mode of body.

The common Peripatetics hold *entelechia* to ſignify *act*; and, under it, ſuppoſe the form of the compound, or animal, to be underſtood.—Accordingly, ſome define it, any *act*, whether ſubſtantial, or accidental, conſidered as capable of performing ſome operation in the body.—Others define it, a ſubſtantial *act*, whereby a thing is, what it is, in ſubſtance.

Laſtly, Other, and thoſe the lateſt Peripatetics, agree, tha the *act*, or *entelechia*, whereby Ariſtotle meant to explain th nature of the ſoul, is either ſome mode of the body, as motion or it is nothing at all.—And thus the Peripatetic notion come round to that of Cicero.

ENTENDEMENT, in law. See the article Intendment.

ENTERFERING, in the manage. See the article Cutting.

ENTEROCELE*, ΕΝΤΕΡΟΚΗΛΗ, in medicine, a ruptur or deſcent, of the inteſtines.

* The word is formed of the Greek εντερον, inteſtine; and κηλ tumor.

The *enterocele* is a kind of hernia, or rupture, wherein th inteſtines, and particularly the ilium, fall either into the groi or the ſcrotum. See Hernia.

There are two kinds of *enterocele*; the *perfect*, which ha pens when the inteſtine falls into the ſcrotum; and the *impe fect*, when it only falls into the groin.

The next cauſe of the *enterocele* is, the relaxation, or exte ſion, of the lower part of the peritonæum, wherein the i teſtines are contained.—The remote cauſes are, great lifts, t violent exerciſes, great coughs, frequent vomiting, much cr ing, &c. whence it is, that children are much ſubject there —The remedy is chiefly by external applications; as truſſ and boulſters.

ENTERO-EPIPLOCELE, ΕΝΤΕΡΟΕΠΙΠΛΟΚΗΛΗ, a kind rupture, wherein the inteſtines, and epiploon, or caul, fall t gether into the ſcrotum. See Hernia.—The cauſes are t ſame as thoſe of the enterocele. See Enterocele.

ENTERO-EPIPLOMPHALUS*, a kind of exomphalus, wherein the inteſtines, and epiploon, or caul, bunch out at the navel.

* The word is compoſed of εντερον, inteſtine; επιπλοον, caul; and ομφαλος, *umbilicus*, navel.

ENTERO-HYDROMPHALUS*, in medicine, a kind of exomphalus, wherein, beſide a diſplacing and bunching out of the inteſtine, there is a deal of watery humours collected along with it.

* The word is formed of the Greek εντερον, inteſtine; υδωρ, water; and ομφαλος, navel.

ENTEROLOGY (from εντερον, *inteſtinum*, a gut; and λογος, *ſermo*, diſcourſe) is properly a treatiſe of the bowels.—Though the word is generally underſtood to include the contents of three cavities, head, breaſt, and all the viſcera, or belly.

ENTEROMPHALUS*, ΕΝΤΕΡΟΜΦΑΛΟΣ, in medicine, a kind of exomphalus, wherein the inteſtines, being fallen out of their place, occaſion a tumor in the navel. See EXOMPHALUS.

* The word is formed of the Greek εντερον, inteſtine; and ομφαλος, *umbilicus*.

ENTERPLEDER, in law, the diſcuſſing, or trying, a point incidentally falling out before the principal cauſe can be determined.

Thus, two perſons being found heirs to land, by two ſeveral offices in one county; the king is brought in doubt, to which of them livery ought to be made. Before livery, therefore, they muſt *enterplede*; that is, formally try between themſelves which is the right heir.

ENTERRMENT, or INTERRMENT. See INTERRMENT.

ENTHUSIASM*, ΕΝΘΟΥΣΙΑΣΜΟΣ, a poetic, or prophetic, rage, or fury, which tranſports the mind, inflames and raiſes the imagination, and makes it conceive and expreſs things extraordinary, and ſurpriſing.

* The word is derived from the Greek ενθεος, or ενθους, a man animated, in an extraordinary manner, with the ſpirit of God; in whom God is, or whom God animates. Whence the verb ενθουσιαζω, or ενθουσιαω, and the noun ενθουσιασμος, enthuſiaſm; and ενθουσιαστης, enthuſiaſt, a perſon ſubject to ſuch tranſports.

M. De Piles defines *enthuſiaſm* to be, a tranſport of the mind, whereby it is led to think and imagine things in a ſublime, ſurpriſing, yet probable, manner.

The ſublime he thinks a neceſſary ingredient in the definition; as being the proper effect, and production, of *enthuſiaſm*.—*Enthuſiaſm*, he adds, contains the ſublime; as the trunk, the branches.

This is the *enthuſiaſm* felt in poetry, oratory, muſic, painting, ſculpture, &c. but this *enthuſiaſm*, which belongs to the works of art, is very different from that attributed to the ſibyls, and prieſteſſes of the oracles, and heathen gods; which was little elſe but fanaticiſm, and conſiſted principally in grimace, and contorſions of the body. See ORACLE, and PYTHIAN; ſee, alſo, the preface to this book.

There is a degree of aſſent, ſays Mr. Locke, which, with ſome men, has the ſame authority as either faith, or reaſon; and that is *enthuſiaſm*: which, laying by reaſon, would ſet up revelation without it; whereby, in effect, it takes away both reaſon and revelation, and ſubſtitutes, in the room of it, the ungrounded fancies of a man's own brain, and aſſumes them for a foundation, both of opinion and conduct.

Immediate revelation being a much eaſier way for men to eſtabliſh their opinions, and regulate their conduct by, than the tedious labour of ſtrict reaſoning; it is no wonder, that ſome have been very apt to pretend to it; eſpecially in ſuch of their actions and opinions as they cannot account for by the ordinary methods of knowlege, and principles of reaſon.

Hence we ſee, that in all ages men, in whom melancholy has mixed with devotion, or whoſe conceit of themſelves has raiſed them into an opinion of a greater familiarity with God, than is allowed others; have often flattered themſelves with the perſuaſion of an immediate intercourſe with the Deity, and frequent communications from the Divine Spirit.

Their minds being thus prepared, whatever groundleſs opinion comes to ſettle itſelf ſtrongly upon their fancies, is an illumination from the ſpirit of God; and whatſoever odd action they find in themſelves an inclination to do, that impulſe is concluded to be a call, or direction, from heaven, and muſt be obeyed.

This we take to be properly *enthuſiaſm*; which, though riſing from the conceit of a warm, or over-weening, brain; works, where it once gets footing, more powerfully on the perſuaſions and actions of men, than either reaſon, or revelation, or both together; men being moſt forwardly obedient to the impulſes they receive from themſelves.

When men are once got into this way of immediate revelation, of illumination without ſearch, and certainty without proof, reaſon is loſt upon them; they are above it: they ſee the light infuſed into their underſtanding, and they cannot be miſtaken; like the light of bright ſun-ſhine, it ſhews itſelf, and needs no other proof but its own evidence: they feel the hand of God moving them within, and the impulſes of the ſpirit, and cannot be miſtaken in what they feel.—But, of this ſeeing and feeling, is it a perception of an inclination to do ſomething, or of the ſpirit of God moving that inclination? theſe are two very different perceptions, and ſhould be carefully diſtinguiſhed.

If they know the thing to be a truth, they muſt do it, either by its own ſelf-evidence, or by the rational proofs that make it out to be ſo: if they know it to be a truth, either of theſe two ways, they in vain ſuppoſe it to be a revelation; for thus all truths, of what kind ſoever, that men uninſpired are enlightened with, come into their minds. If they ſay, they know it to be true, becauſe it is a revelation from God; the reaſon is good: but then it will be demanded, how they know it to be a revelation from God? if they ſay, by the light it brings with it; they ſhould conſider, whether this be ſaying any more, than that it is a revelation, becauſe they believe it to be true: for all the light they ſpeak of, is but a ſtrong perſuaſion of their own minds, that it is a truth; which is a very unſafe ground to proceed on, either in our tenets, or actions.

True light in the mind, is nothing elſe but the evidence of the truth of any propoſition; and, if it be not ſelf-evident, all the light it can have, is from the clearneſs of thoſe proofs upon which it is received. See EVIDENCE.

God, when he makes the prophet, doth not unmake the man: he leaves his faculties in their natural ſtate, to enable him to judge of his inſpirations, whether they be of Divine original, or no. If he would have us aſſent to the truth of any propoſition, he either evidences that truth by the uſual methods of natural reaſon, or elſe makes it known to be a truth which he would have us aſſent to by his authority; and convinces us, that it is from him, by ſome marks, which reaſon cannot be miſtaken in.

The holy men of old, who had revelations from God, had ſomething elſe, beſides internal light, of aſſurance in their own minds, to teſtify to them, that it was from God: they had outward ſigns to convince them, of the author of thoſe revelations; and when they were to convince others, they had a power given them to juſtify the truth of their commiſſion from heaven; and, by viſible ſigns, to aſſert the Divine authority of the meſſage they were ſent with. Moſes ſaw the buſh burn without being conſumed, and heard a voice out of it. God, by another miracle, of his rod turned into a ſerpent, aſſured him, likewiſe, of a power to teſtify his miſſion, by the ſame miracle repeated before thoſe to whom he was ſent.

ENTHUSIAST, ΕΝΘΟΥΣΙΑΣΤΗΣ, a perſon poſſeſſed with *enthuſiaſm*. See ENTHUSIASM, FANATIC, &c.

The word is uſually underſtood in an ill ſenſe.—It was applied, by the antients, to a ſect of heretics, called alſo *Maſſalians*, and *Euchites*; who, as Theodoret expreſſes it, were denominated *enthuſiaſts*, by reaſon that, being poſſeſſed by the devil, they believed themſelves divinely inſpired. See MASSALIANS, and EUCHITES.

Among us, *enthuſiaſt* is of like import with *fanatic*; and is applied to the Quakers, the antient Anabaptiſts, and modern prophets; from their pretences to extraordinary lights, revelations, viſions, impulſes, &c. from heaven.

ENTHYMEME*, in logic, an argument conſiſting only of two propoſitions; an antecedent, and a conſequent deduced from it.

* The word is Greek, ενθυμημα; formed of the verb ενθυμεισθαι, to think, conceive; a compound of εν, and θυμος, mind.

Ariſtotle calls it, the *rhetorical*, or *probable*, *argument*; the ſchools, the *imperfect ſyllogiſm*: in contra-diſtinction to the perfect, which conſiſts of three propoſitions; and is called, the *dialectical argument*.

It muſt be obſerved, however, that the *enthymeme* is really a perfect ſyllogiſm in the mind, and only imperfect in the expreſſion, by reaſon one of the premiſes is ſuppreſſed, as being ſufficiently clear and obvious, and eaſily ſupplied by the underſtanding of thoſe with whom we diſcourſe.

Thus, in every right-lined triangle, the three angles are equal to two right ones; and, conſequently, they are ſo in an iſoſceles triangle; is an *enthymeme*: the propoſition, that an iſoſceles is a right-lined triangle, being omitted, as being ſufficiently known, and granted.

The *enthymeme* is the moſt ſimple and elegant of all argumentations; being what a man, in arguing cloſely, commonly makes, without attending at all to the form thereof. Thus, that verſe remaining of Ovid's tragedy, intitled, *Medea*, contains an *enthymeme*: *Servare potui*; *perdere an poſſum rogas?* I was able to ſave you; conſequently, to have deſtroyed you. All the beauty would have been loſt, had all the propoſitions been expreſſed; the mind is diſpleaſed with a rehearſal of what is no ways neceſſary.

Sometimes, alſo, the two propoſitions of an *enthymeme* are both included in a ſingle propoſition; which Ariſtotle calls, an *enthymematical ſentence*; and gives this inſtance thereof: *Mortal* *do not bear an immortal hatred.* The whole *enthymeme* would be, *Thou art mortal: let not, therefore, thy hatred be immortal.*

ENTIRE *Tenancy*, in law, is contradiſtinguiſhed to *ſeveral tenancy*; and ſignifies a ſole poſſeſſion in one man: whereas the other denotes a joint, or common one, in ſeveral. See Tenant, and Joint-tenant.

Entire *Arms*. See the article Arms.

ENTITATIVELY, Entitative, implies an abſtraction, or ſeparation, of all the circumſtances, from a thing under conſideration.

Thus, a thing is ſaid to be taken, or conſidered, *entitatively*, or *ſecundum entitatem*, when conſidered nakedly, and preciſely, according to what it is in itſelf, without any thing extrinſic. —*E. gr.* Peter *entitatively* taken, is Peter, as a thing, a ſubſtance, a man, *&c.* without any regard to his being a lord, a huſband, learned, *&c.*

ENTITY, in the ſchool-philoſophy, a phyſical ens, or being, conſidered according to what it is in its natural capacity.

Some dealers in diſtinctions give us ſeveral kinds of *entity*.— In its proper ſenſe, they apply it to a compages of diſſimilar parts: ſuch as is the *entity* of a houſe, of the world, *&c.*— In a more limited ſenſe, they apply it to a congeries of ſimilar parts: ſuch as is the *entity* of water, heat, *&c.*—And, in its general ſenſe, to any reality: ſuch as the *entity* of God, of angels, *&c.*

But this is mere ſubtilty: perhaps *entity* were beſt defined the actual eſſence, or exiſtence, of any thinking thing.

ENTOYER, or Entoire, in heraldry, is uſed to expreſs a bordure, charged intirely with things without life. See Bordure.

ENTRAILS *, the inteſtines, or guts, of an animal. See Inteſtines.

* Menage derives the word from the barbarous Latin, *interalia*; formed of the Greek εντερον, inteſtine.

In embalming they take out the *entrails*.

Poiſon leaves its chief marks in the *entrails*.

Entrails is alſo uſed, in a more extenſive ſenſe, for the viſcera; or all the parts contained in the cavities of the bodies of animals. See Viscera.

The aruſpicina of the antients was employed in conſidering the *entrails* of victims, as the heart, lungs, liver, *&c.* See Aruspices, *&c.*

ENTRIES, amongſt hunters, thoſe places in thickets, thro' which deer are found lately to have paſſed; by means whereof their bigneſs, or ſize, is gueſſed at; and at which the hounds, or beagles, are put to them for the view.

ENTRUSION, or Intrusion, in law, denotes a violent, or unlawful entrance into lands, or tenements, void of a poſſeſſor; by a perſon who has no right to them.

Thus, when a man ſteps into lands, the owner whereof lately died, ere the right heir, either by himſelf, or any other, hath taken poſſeſſion, it is *entruſion*.

Entruſion and *abatement*, are ſometimes taken for the ſame thing: though there is a difference.

Entrusion, in the canon law See Intrusion.

ENTRY, or Entrance, in its general ſenſe, denotes a door, gate, paſſage, *&c.* through which to *enter*, or arrive within a place.

Entry, in book-keeping. See Book-keeping.

Bill of Entry. See the article Bill.

Entry is ſometimes alſo uſed to denote a duty, or impoſt, laid on commodities imported into a ſtate, either by land or ſea.

The duties of *entry*, or importation, are paid according to a tariff ſettled for that purpoſe. Where the duty of *entry* of any commodity is not fixed by the tariff, it is paid by eſtimation, *i. e.* in proportion to what ſome other commodity, of nearly the ſame quality and value, uſes to pay. See Importation, Exportation.

Entry alſo denotes a ſolemn reception; or a ceremony performed by kings, princes, embaſſadors, legates, *&c.* upon their firſt *entring* a city, or their return in triumph from ſome expedition.

Entry, in law, ſignifies alſo the taking poſſeſſion of lands, or tenements, in virtue of a title thereto. See Possession.

Forcible Entry. See the article Forcible.

Entry is alſo uſed for a writ which grants poſſeſſion of lands or tenements to a perſon, on account of a legal right thereto.

Writs of entry, ſays Briton, ſavour much of the right of property: ſome, *e. gr.* are to recover cuſtoms, and ſervices; and in theſe are contained the two words, *ſolet* and *debet*.—Such are the writs *quo jure*, *rationalibus diviſis*, *rationabili eſtoverio*, &c.

In the *plea of entry* there are three degrees: the firſt, where a man demandeth lands or tenements, of his own ſeiſin, after the term is expired.—The ſecond, where one demandeth lands or tenements, lett by another after the term is expired. —The third, where one demandeth lands or tenements of that tenant, who had *entry* by one to whom ſome anceſtor of the plaintiff did lett for a term now expired: and according to theſe degrees, the writs for remedy are varied.—Beſide which, there is a fourth form, without degrees, and in caſe of a more remote ſeiſin, to which the other three degrees do not extend.

The writ in the ſecond degree is called a *writ of entry in le per*.—In the third, *in le per & cui*.—And in the fourth, without degrees, a *writ of entry in le poſt*; that is, after diſſeiſin, made by ſuch a one to ſuch a one.

If a *writ of entry* be conceived out of the right caſe, ſo that one form is brought for another, it is abatable.

A *writ of entry* differs from an *aſſiſe*, in that it lies, for the moſt part, againſt him who entered lawfully, but holdeth againſt law; whereas an aſſize lieth againſt him, who unlawfully diſſeiſed: yet, ſometimes, a *writ of entry* lieth upon an entruſion. See Assise.

ENVELOPE, in fortification, denotes a mount of earth, ſometimes raiſed in the ditch of a place, and ſometimes beyond it; being either in form of a ſimple parapet, or of a ſmall rampart bordered with a parapet.

Theſe *envelopes* are made, where weak places are only to be covered with ſingle lines; without advancing towards the field; which cannot be done but by works which require a great deal of room; ſuch as horn-works, half-moons, *&c.*— *Envelopes* are ſometimes called *ſillons*, *contregards*, *conſerves*, *lunettes*, &c.

ENVIRONNE', in the French heraldry, is when a lion, or other figure, is *environed*, or encompaſſed round with other things.—*Environné* with ſo many bezants, *&c.* in orle.

ENUMERATION, the act of numbering, or counting.

God challenges Abraham in ſcripture, to *enumerate* the ſtars: at the time of our Saviour's birth, Auguſtus Cæſar had commanded an *enumeration* to be made of all the world, or rather of all the people under his empire. Though ſeveral able authors are of opinion, that the cenſus, tax, or *enumeration*, mentioned by St. Luke, did not extend to the whole empire, but only to the people of Judæa. See Perizonius *de Cenſu Judaico*: and Berger *de Viis Militaribus*.

At Rome, it was an uſual thing to have an *enumeration* made of all the families: the firſt of theſe was under Servius Tullus, when the men amounted to 80 thouſand. Pompey and Craſſus made another, when they reached to 400 thouſand. That o Cæſar did not exceed 100 thouſand: ſo that the civil war muſt have deſtroyed 300 thouſand Roman citizens. Under Auguſtus, in the year 725. the Roman citizens throughout the empire were numbered at 4 million 63 thouſand. In the year of Rome 746. the citizens being numbered again, were found 4 millions, 2 hundred 33 thouſand. In the year 766. being the laſt year of Auguſtus's reign, that prince, together with Tiberius, made another *enumeration* of the citizens of Rome, when they were found 4 millions 137 thouſand perſons. Claudius made a new compution, in the year of Chriſt 48. when, as Tacitus relates it, the Roman citizens, throughout the whole empire, amounted to 6 millions 964 thouſand; though others repreſent the number a conſiderably greater.—A very rare, yet indiſputable medal o Claudius, never yet made public, expreſſes the preciſe number in this liſt made by Claudius, which was called *oſtenſi* to be 7 millions of people fit to bear arms, beſide all the ſoldiers on foot in the armies, which amounted to 50 legions, 57 cohorts, and 60 ſoldiers.—After this *enumeration* we find no more till that of Veſpaſian, which was th laſt.

Enumeration, in rhetoric, denotes a part of the peroration wherein the orator, collecting the ſcattered heads of what ha been delivered throughout the whole, makes a brief and artful rehearſal, or recapitulation thereof.

Enumeration *of the parts*, in rhetoric, amounts to the ſame with what we more uſually call *diſtribution*. See Distribution.

ENUNCIATION, a ſimple expreſſion, or declaration, of thing, in terms either of affirmation, or denial.

The ſchoolmen uſually diſtinguiſh three operations of the u derſtanding; apprehenſion, *enunciation*, and reaſoning.

Enunciation, among logicians, denotes the ſame as *propoſition*. See Proposition.

ENVOICE. See the article Invoice.

ENVOY, a perſon deputed, or ſent purpoſely to negotia ſome particular affair with a foreign prince, or republic.

Thoſe ſent from the courts of England, France, *&c.* to G noa, the princes of Germany, and other petty princes an ſtates, do not go in quality of embaſſadors, but of *envoys*. Add, that thoſe ſent from one great prince, or ſtate, to a other; as from the king of England to the emperor, *&c.* whe the affair they go upon is not very ſolemn and importan have frequently no other character but that of *envoys*. S Embassador.

Envoys are either *ordinary*, or *extraordinary*.

Both kinds are under the protection of the law of nations, and enjoy all the privileges of embaſſadors; only differing from them in this, that the ſame ceremonies are not performed to them.

The quality of *envoy* extraordinary, Wicquefort obſerves, is very modern; more modern than that of reſident: the miniſters inveſted therewith, at firſt, took on them moſt of the airs of embaſſadors; but they have ſince been taught otherwiſe.

In the year 1639. the court of France made a declaration, that the ceremonies of conducting *envoys* extraordinary to their audience in the king and queen's coaches, with diverſe others, ſhould no longer be practiſed to *envoys*.

S. Juſtiniani, the firſt *envoy* extraordinary from Venice, after that regulation, offered to cover, in ſpeaking to the king; but it was refuſed him. And the king of France himſelf declared, that he did not expect his *envoy* extraordinary at the court of Vienna ſhould be regarded any otherwiſe than as an ordinary reſident.—Since this time, thoſe two kinds of miniſters have been treated alike. Wicquefort.

ENURNY is the herald's term for the bordure of a coat of arms being charged with any kind of beaſts.

EOLIC, or rather ÆOLIC. See ÆOLIC.

EON, or ÆON. See the article ÆON.

EPACTS, in chronology, the exceſſes of the ſolar month above the lunar ſynodical month; and of the ſolar year above the lunar year of 12 ſynodical months: or of ſeveral ſolar months, above as many ſynodical months; and ſeveral ſolar years above as many dozen of ſynodical months.

The *epacts*, then, are either *annual* or *menſtrual*.

Menſtrual EPACTS are the exceſſes of the civil or calendar month above the lunar month.

Suppoſe, *e. gr.* it were new-moon on the firſt day of January: ſince the lunar month is 29 days $12^h\ 44'\ 3''$; and the month of January contains 31 days: the menſtrual *epact* is 1 day $11^h\ 15'\ 57''$.

Annual EPACTS are the exceſſes of the ſolar year above the lunar.

Hence, as the Julian year is 365 days 6 hours, and the Julian lunar year 354 days $8^h\ 48'\ 38''$; the annual *epact* will be 10 days $21^h\ 11'\ 22''$; that is, nearly 11 days. Conſequently, the *epact* of 2 years is 22 days; of 3 years, 33 days; or rather 3, ſince 30 days make an emboliſmic, or intercalary month.

Thus, the *epact* of 4 years is 14 days, and ſo of the reſt: and thus, every 19th year, the *epact* becomes 30 or 0; conſequently the 20th year the *epact* is 11 again: and ſo the cycle of *epacts* expires with the golden number, or lunar cycle of 19 years, and begins again with the ſame, as in the following table.

Gold. Numb.	*Epacts.*	*Gold. Numb.*	*Epacts.*	*Gold. Numb.*	*Epacts.*
1	XI	7	XVII	13	XXIII
2	XXII	8	XXVIII	14	IV
3	III	9	XIX	15	XV
4	XIV	10	XX	16	XXVI
5	XXV	11	I	17	VIII
6	VI	12	XII	18	XIX
				19	XXX

Again, as the new moons are the ſame, that is, as they fall on the ſame day every 19 years, ſo the difference between the lunar and ſolar years is the ſame every 19 years. And becauſe the ſaid difference is always to be added to the lunar year, in order to adjuſt, or make it equal to the ſolar year; hence the ſaid difference reſpectively belonging to each year of the moon's cycle is called the *epact of the ſaid year*, that is, the number to be added to the ſaid year, to make it equal to the ſolar year; the word being formed from the Greek επαγω, *induco*, *intercalo*.

Upon this mutual reſpect between the cycle of the moon, and the cycle of the *epacts*, is founded this rule for finding the *epact* belonging to any year of the moon's cycle. Multiply the year given of the moon's cycle into 11; and if the product be leſs than 30, it is the *epact* ſought: if the product be greater than 30, divide it by 30, and the remainder of the dividend is the *epact*. For inſtance, I would know the *epact* for the year 1712. which is the third year of the moon's cycle. Wherefore 3 is the *epact* for 1712. for $11 \times 3 = 33$, and 33 being divided by 30, there is left 3 of the dividend for the *epact*.

By the help of the *epact* may be found what day of any month in any year the new moon falls on, thus: to the number of the month, from March incluſively, add the *epact* of the year given; if the ſum be leſs than 30, ſubtract it out of 30; if greater, ſubtract it out of 60; and the remainder will be the day whereon the new moon will fall.

If the new moon be ſought for in the month of January or March, then nothing is to be added to the *epact*; if for February or April, then only 1 is to be added.

For example: I would know what day of December the new moon was on *A. D.* 1711. the *epact* whereof is 22. By the aforeſaid rule, I find it will be December the 28th; for $22 + 10 = 32$, and $60 - 32 = 28$. See MOON.

The day whereon the new moon falls being thus found, it is eaſy to infer from thence what the age of the moon is on any day given. See MOON, and AGE.

However, there is a peculiar rule commonly made uſe of to this purpoſe; which is this: add the *epact* of the year, the number of the month, from March incluſively, and the given day of the month, all into one ſum; this, if it be leſs than 30, ſhews the age of the moon; if it be greater than 30, divide it by 30, and the remainder of the dividend ſhews the age of the moon, or how many days it is from the laſt new moon: this method will never err a whole day.

For inſtance: what was the age of the moon on December 31ſt, *A. D.* 1711? By this rule, I find, that the moon was then three days old; that is, it was then three days from the laſt new moon. For $22 + 10 + 31 = 63$, and 63 being divided by 30, there will remain of the dividend 3. And this exactly agrees to the other foregoing rule, whereby it was found, that the new moon was on December 28. 1711.

It muſt be obſerved, that as the cycle of 19 years anticipates the new moons by one day in 312 years; the ſame cycle of *epacts* will not always hold: the moon's anticipation leſſening the ſeveral *epacts* by one, every 312 years.

To have the *epacts*, therefore, point out the new moons perpetually; that *epact* given in the calendar is not ſufficient; but all the 30 *epacts* ſhould be beſtowed throughout the whole year, that the calendar may exhibit all the cycles of *epacts*.

And again, as in 300 Gregorian years there is one biſſextile year dropped; the new moons are thus thrown on the following day. Conſequently, by the moon's poſt-poſition, there is one added to every *epact*.

EPANORTHOSIS *, in rhetoric, a figure whereby the orator revokes and corrects ſomething before alleged, as too weak; and adds ſomething ſtronger, and more conformable to the paſſion he is agitated by.

* The word is Greek, επανορθωσις, formed of ορθος, *right*, *ſtrait*; whence ορθοω, *I ſtraiten*, ανορθοω, επανορθοω, *I redreſs*, *ſtraiten*, *correct*, and επανορθωσις, *correction*.—Accordingly the Latins call it *correctio*, and *emendatio*.

Such, *e. gr.* is that of Cicero for Cœlius: *O ſtultitia! ſtultitiamne dicam, an imprudentiam ſingularem?* Oh folly! folly did I call it, or rather intolerable impudence?—And in the firſt Catilinarian: *Quanquam quid loquor? te ut ulla res frangat? tu ut unquam te corrigas? tu ut ullam fugam meditere? tu ut ullum exilium cogites? utinam tibi iſtam mentem dii immortales donarent.*—Thus alſo Terence, in the *Heautontimorumenos*, introduces his old man Menedemus ſaying,

Filium unicum adoleſcentulum
Habeo. Ah! quid dixi habere me? imo habui, Chreme.
Nunc habeam necne, incertum eſt.

EPAULE *, or ESPAULE, in fortification, the ſhoulder of the baſtion; or the angle made by the face and flank; otherwiſe called the *angle of the epaule*. See BASTION, and ANGLE.

* The word is pure French, and literally ſignifies *ſhoulder*.

EPAULEMENT, in fortification, a ſide-work haſtily thrown up, to cover the cannon, or the men.

It is made either of earth thrown up, of bags filled with ſand or earth, or of gabions, faſcines, &c. with earth: of which latter ſort the *epaulements* of the places of arms, for the cavalry, behind the trenches, uſually are.

EPAULEMENT is alſo uſed for a demi-baſtion, conſiſting of a face and flank, placed at the point of a horn or crown-work.—Alſo, for a little flank, added to the ſides of a horn-work, to defend them when too long.—Alſo, for the redoubts made on a right line to fortify it.—And laſtly, for an orillon, or maſs of earth almoſt ſquare, faced and lined with a wall, and deſigned to cover the cannon of a caſemate. See BASTION, and ORILLON.

EPENTHESIS *, in grammar, the addition, or inſertion of a letter or ſyllable, in the middle of a word.—As, *relligio* for *religio*, *mavors* for *mars*.

* The word is Greek, επενθεσις, formed of επι, εν, and τιθημι, q. d. επεντιθημι, *inſero*, *immitto*.

EPHA, a dry meaſure in uſe among the Hebrews. See MEASURE.

The *epha* was the moſt ordinary meaſure they uſed; and that whereby the reſt were regulated. It is commonly ſuppoſed, that the *epha*, reduced to the Roman modius, contained four modii and a half. Now the Roman modius of grains, or flour, contained 20 libræ, or pounds; conſequently the *epha* weighed 90 pounds. Dr. Arbuthnot reduces the *epha* to three pecks, three pints, Engliſh meaſure.

The hoſpitality of Gideon is extolled for baking an *epha* of flour for a ſingle angel; which might have ſerved 45 men a whole day; the uſual portion allowed the workmen being two pound of bread *per diem*.

EPHEMERA *, in medicine, an epithet applied to ſomething that only laſts a day.—Particularly to a ſort of fever, which terminates in the compaſs of twenty-four hours; called by

Galen, εφημερος πυρετος, *febris ephemera*, by the Latins *diaria*. See FEVER.

* The word, and the following one, *ephemerides*, are formed of the prepoſition επι, *de*, of; and ἡμερα, *dies*, day.

EPHEMERON, or EPHEMERA, in natural hiſtory, denotes an animal that only lives five hours: within the term whereof it is produced, grows, and extends its members, breeds eggs, propagates its ſpecies, and dies.

Ariſtotle, who gives the firſt account thereof, in his book *de Animal.* calls it by the name εφημερον, becauſe its life is bounded within the day.—Aldrovandus, Johnſton, and Cluſius, furniſh us accounts of the *ephemeron*; and above all, Swammerdam, in an expreſs work *de Ephem. Vita.*—He calls it *ephemera*, *hemerobios*, and in Latin *diaria*.

The *ephemeron* is of the winged, or fly kind; and appears uſually about St. John's tide. It is produced about ſix a clock in the evening, and dies about eleven.

It muſt be obſerved, however, that before it aſſumes this figure, it has lived three years under that of a worm, in a clay cell, or caſe.

It never eats from the time of its change to its death; nor is it furniſhed with the parts neceſſary for the reception and concoction of food. Its metamorphoſis ſeems intended merely for the ſake of generating and multiplying its kind.

The buſineſs of its life is ſummed up in a few words. In the beginning, it ſheds its clay coat; which done, and the poor little animal thereby rendered light and agile, it ſpends the reſt of its ſhort and winged ſtate in friſking over the waters. During which, the female drops her eggs on the waters, and the male does his office to impregnate them. Theſe eggs, thus impregnated, deſcend to the bottom of the water by their own gravity, and are hatched by the warmth of the ſun into little worms, which make themſelves caſes in the clay, and feed on the ſame, without any need of parental care; till the time of their change or metamorphoſis come.

EPHEMERA is alſo applied, among botaniſts, to a kind of flowers which open and expand themſelves at ſun-riſing, and wither or cloſe up again at his ſetting.—Such are the dent-de-lion, vulgarly dandelion, and diverſe others.

Travellers into Arabia tell us of ſeveral *ephemeron-trees*, which they ſay grow up every day, from morn to noon, and then diſappear; though it is not known, whether they wither away intirely, or ſink back into the ſands among which they grow.

EPHEMERIDES, in aſtronomy, tables calculated by aſtronomers, ſhewing the preſent ſtate of the heavens for every day, at noon; that is, the places wherein all the planets are found at that time.

It is from theſe tables, that the eclipſes, conjunctions, and aſpects of the planets, are determined; horoſcopes, or celeſtial ſchemes, conſtructed, *&c.*

We have *ephemerides* of Origan, Kepler, Argoli, Heckerus, Mezzaracchis, Wing, de la Hire, Parker, *&c.*—Sig. Caſſini has calculated *ephemerides* of the ſidera medicæa, or ſatellites of Jupiter, which are of good uſe in determining the longitude.

EPHETÆ, in antiquity, a ſort of magiſtrates among the Athenians, inſtituted by king Demophon to take cognizance of murders committed by accident.

Their number was 100, whereof 50 were Athenians, and 50 Argians: they were not admitted to the poſt till upwards of 60 years of age.—Draco extended their authority: Ubbo Emmius *de Rep. Athen.* ſays, he transferred to them part of the juriſdiction of the Areopagites.

EPHIALTES, ΕΦΙΑΛΤΗΣ, or ΕΠΙΑΛΤΗΣ, in medicine, a diſeaſe, by the Engliſh called the *night-mare*, and by the Latins *incubus*; chiefly affecting perſons aſleep, when laid on their back, and having the ſtomach loaded with food of difficult digeſtion.

In this ſtate they are oppreſſed, as it were, with a great weight on the breaſt, and imagine ſome ſpectre or dæmon ſtopping their breath.

The diſeaſe does not ariſe, as was antiently imagined, from groſs vapours filling the ventricles of the brain; but chiefly from a too great repletion of the ſtomach, which hinders the motion of the diaphragm, and of conſequence the dilatation of the breaſt neceſſary for inſpiration.

The preſſure of the cerebrum on the cerebellum, and that of the full ſtomach on the deſcending trunk of the aorta, ſeem alſo to be concerned in this matter: for neither of theſe can happen without affecting the nerves that paſs to the muſcles of reſpiration. Without ſuppoſing one or both of theſe, it will be hard to aſſign a reaſon why perſons ſhould be rather affected when laid on the back, than in any other poſture.

Etmuller obſerves, that they are but rarely affected with this diſorder, who uſe a laudable diet, and ſup ſparingly: lying on the ſide, with the head pretty high, generally prevents it.

The Arabs call it the *nocturnal epilepſy*, becauſe, when habitual, it uſually degenerates into the epilepſy, being the uſual forerunner thereof, eſpecially in young people.—In old, it frequently terminates in an apoplexy.

Menjoitius accounts for its being moſt uſual in boys, from their being too voracious, and eating more than they can digeſt.—Aurelianus aſſures us, it has killed ſeveral; adding from Symmachus, that there was a contagious or epidemic *ephialtes* at Rome, which deſtroyed numbers, like a plague.

EPHIPPIUM, ΕΦΙΠΠΙΟΝ, in anatomy, a part of the ſphenoides, called alſo *ſella equina*, and *ſella turcica*.

EPHOD *, a ſacerdotal garment, in uſe among the antient Jews, ſuppoſed to have been a kind of linen alb, or ſurplice; the ſame with what the Latins call *ſuper-humerale*.

* The word is Hebrew, אפד, *ephod*, derived from אפד *aphad*, ſignifying *to cloathe*.

It is very hard to ſay preciſely what the *ephod* was; and there is room enough for the interpreters to be divided about it. The only point they are agreed upon is, that it was an upper garment worn over all the reſt, immediately under the pectoral, or breaſt-plate. Some hold it had ſleeves; others deny it. The generality agree that it was very ſhort, though ſome hold, that it hung down to the feet behind.

There were two kinds of *ephods*; the one, common to all who aſſiſted in the temple; being only made of common linen, mentioned in the 1ſt book of Samuel, ii. 18. The other, peculiar to the high-prieſt, mentioned Exod. xxviii. 6. 15. to be made of gold, of blue, and of purple, of ſcarlet, and fine twined linen, with cunning work; having two ſhoulder-pieces, with a curious girdle of the ſame matter, whereon were two onyx's, with the names of the children of Iſrael engraved thereon.

It is alſo expreſſed, in the 2d book of Samuel, vi. 14. that upon the removal of the ark of the covenant from the houſe of Obed-Edom, David danced for joy, girt with a linen *ephod*; whence ſome authors have concluded, that the *ephod* was alſo a regal garment worn on ſolemn occaſions.

EPHORI *, ΕΦΟΡΟΙ, magiſtrates eſtabliſhed in antient Sparta, to balance and check the power and authority of the kings: as, at Rome, there were tribunes created to controul the power of the conſuls.

* The word is formed of the Greek εφοραω, *intueor*, formed of the prepoſition επι, and the verb οραω, *to ſee*; whence εφορος, q. d. *inſpector*, *overſeer*.

Lycurgus, being ſenſible that a perfect underſtanding between the prince and the people, was the baſis and foundation of both their happineſs; to maintain that good underſtanding, eſtabliſhed *ephori*, or inſpectors, as a kind of mediators, who ſhould have an eye to the meaſures and conduct of both ſides, and preſerve ſo equal a balance between them, that the regal power ſhould never decline into ſeverity and tyranny; or the liberty of the people run into licence and rebellion.

The authority of the *ephori* was very great: on certain occaſions they expelled, and even put to death, the kings; and aboliſhed or ſuſpended the power of the other magiſtrates; calling them to account at pleaſure. Ageſilaus, in the heigh of all his conqueſts, which even ſtruck terror on the grea king of Perſia, ſtopped, and turned back, out of deferenc to the *ephori*, when they recalled him.

Some authors deny, that the *ephori* were eſtabliſhed by Lycurgus; dating their origin 130 years after the time of tha legiſlator.

EPIBATERION, a poetical compoſition, in uſe among th antient Greeks.—When any perſon of condition and quali returned home after a long abſence, or journey, into anoth country; he called together his friends and fellow-citizen and made them a ſpeech, or rehearſed them a copy of verſe wherein he returned ſolemn thanks to the immortal gods, fo his happy return; and ended with an addreſs, by way of compliment, to his fellow-citizens.

Theſe verſes made what the Greeks call επιβατηριον, *epibaterium*, of επιβαινω, *I go abroad.*—At going away, they ha another, called *apobaterium*.

EPIC *poem*, an heroic poem; or a poem reciting ſome gr and ſignal tranſaction of a hero; called alſo *epopæia*.

Such are the Iliad and Odyſſee of Homer, the Æneid of Vi gil, the Gieruſalemme of Taſſo, and the Paradiſe Loſt o Milton; which are the principal poems of the *epic* kind.

An *epic poem*, according to Sir R. Blackmore, is a probab marvellous narration of an important enterprize, or gr ſuffering of ſome illuſtrious perſon, related with dignity, verſe of the ſublime ſtile, to give delight and inſtruction.

The *epic* poem is more accurately and ſcientifically defin by Boſſu, a diſcourſe invented with art, to form the manne by inſtructions diſguiſed under the allegory of an import action, related in verſe, in a probable, entertaining, and ſu priſing manner.

The *epic* poem is diſtinguiſhed from comedy, in that th action of the latter is not important, nor is it related by th poet, but acted by the perſons introduced for that purpoſe which circumſtance, likewiſe, diſtinguiſhes it from tragedy. Nor is it a philoſophical poem, as that of Lucretius, or th Creation of Sir R. Blackmore; nor a treatiſe of agricultu or the like, as the Georgics of Virgil; thoſe poems not b intended to form the manners: beſide, that the inſtructions they contain are naked, ſimple, and direct, without any diſguiſe or allegory. Which ſecond circumſtance likewiſe diſtinguiſhes it from a treatiſe of morality written in verſe: or a ſimple hiſtory in verſe, as the Pharſalia of Lucan; the Punic war of Silius; or the Civil wars of Sam. Daniel: add, that its being confined to one important action, diſtinguiſhes it from a poem which relates all the actions of a perſon's life; as the Theſeid and Achilleid of Statius, which are what we properly call *heroic poems*.

M. de la Motte, indeed, in his controverſy with Madam Dacier, on the ſubject of Homer, maintains, that the whole life of a hero may juſtly be made the ſubject of an *epic* poem; and even, that the Lutrin of M. Boileau might paſs for an *epic* poem: but he ſeemed afterwards to return to the common ſentiment. In effect, the queſtion is not as to the ſenſe, which may be annexed to the words *epic* poem, but the ſenſe which cuſtom has actually annexed to them.

If we had only regard to the etymology of the word *epic* (of επος, *verſe*, *poetry*, from ειπω, *dico*, *I ſpeak*, *relate*), all poems wherein the poet ſpeaks or rehearſes things himſelf, without making the perſons of his poems ſpeak, except at ſecond-hand, as he relates what they ſpoke on this or that occaſion, would be properly *epic* poems; and ſo there is not an epigram, ſonnet, or madrigal, but would come under that denomination. But this were wild.

In effect, the term *epic* poem is only attributed to a compoſition whoſe ſubject is great, inſtructive, and ſerious; that only comprehends one ſingle principal event, to which all the reſt refer; which principal action is to be terminated in a certain ſpace of time, ordinarily about a year. It is true, all this is arbitrary; but the ſenſe of all words is ſo too: and in matters of language we muſt be guided by cuſtom.

If M. de la Motte had only pretended, that one might make a fine, inſtructive poem on the whole life of a hero; or an agreeable and diverting poem on ſome humourous adventure; all the world would have been of his ſide. But it is enough that cuſtom has not thought good to apply the term *epic* either to ſubjects of too much extent, and that are ſtuffed with too many incidents no-way connected together; or to burleſque poems, as the Batrachomyomachia of Homer; the Secchia Rapita of Taſſoni; the Défaite de Dulot; the Lutrin of Boileau; the Hudibras of Butler; the Rape of the lock of Mr. Pope; or the Diſpenſary of Dr. Garth.

The *epic* poem, then, as appears from what was above obſerved, bears a relation or analogy to four things; hiſtory, morality, fable, and poetry.—To *hiſtory*, as both of them relate one or more actions; but then the actions of hiſtory are ſingular; ſo that the epopœia is no hiſtory, nor kind of hiſtory.

To *moral philoſophy*, as both of them conſiſt of inſtructions for forming the manners; but the action and allegories diſtinguiſh it herefrom.

But it relates intirely to poetry and fable, as being ſtrictly a poem, and a fable.

The nature of the *epic* poem is finely drawn by the great critic above-mentioned: the *epic* poets, ſays fath. Boſſu, have done that with regard to morality, which the antient heathen divines did with regard to the divinity. The too great diverſity of divine actions and perfections, ſo very diſproportionate to our comprehenſion, obliged the latter to divide a ſingle idea of a ſimple eſſence, God, into ſeveral perſons; to whom they attributed ſeveral names, Jupiter, Juno, Neptune, &c. And, on the contrary, the nature of moral philoſophy, which never preſcribes rules for particular things, led the poets to collect into one ſingle idea, or into one and the ſame perſon, and one apparently ſingular action, whatever of that kind was found in different perſons, and different actions.

Thus Ariſtotle, Ου ϛοχαζεται η ποιησις ονοματα, &c. Poetry, ſays he, teaches moral philoſophy, not by relating only, in manner of an hiſtorian, what Alcibiades, for inſtance, did or ſuffered; but by propoſing what ſome perſon, named as the poet thinks fit, would probably or neceſſarily have done on the like occaſion. And thus it is that he ſhews either the unhappy conſequences uſually attending imprudent ſchemes, or ill actions; or the reward of good actions, and the ſatisfaction reſulting from a deſign laid in virtue, and conducted with prudence. So that in the *epic* poem, according to Ariſtotle's ſentiment, the perſons and actions, however named, are all to be feigned, allegorical, and univerſal, not hiſtorical and ſingular.

But the poets, thus taking on them the office of moral philoſophers, did not ceaſe to be divines. On the contrary, their morality itſelf frequently obliges them to introduce the deity in their works; as the knowlege, fear, and love of God, are the firſt and moſt ſolid foundations of all morality. The preſence of the divinity, and the ſhare ſo auguſt a perſonage was ſuppoſed to have in the action, obliged the poet to make the action great and important, and to have it tranſacted by kings and princes. The ſame likewiſe obliged them to think and ſpeak in a manner elevated above the common pitch of men; and equal, in ſome meaſure, to the dignity of the divine perſons introduced. To which end ſerves the poetical and figurative language, with the majeſty of heroic verſe. Add, that as ſo much of the divine and miraculous might ruin the probability, they were hereby obliged to have recourſe to ſeveral rules to maintain the ſame.

Thus much the poets were driven to by the ſubſtance of the things they had choſen for the matter of their poems and inſtructions. The manner of delivering them uſefully and methodically, obliged them to ſeveral other neceſſary rules.

The *epic* poem is intended more for the manners and habits, than for the paſſions. Theſe latter riſe all at once, and their violence is but of ſhort duration; but the habits are more calm and impreſſed, or quitted more leiſurely. Conſequently the *epic* action could not be included in the ſpace of a day, as that of the theatrical. A longer time was neceſſary than is required for tragedy, which is altogether for the paſſions.

This diſtinction has introduced a world of difference between tragedy and *epic* poetry. The tragic violence requires a more lively and animated repreſentation, than a mere recital. Accordingly it is wholly thrown into action, and the poet never ſpeaks at all, as he does in the epopœia, where there are no actors.—See farther of the nature of the *epic* poem under FABLE.—For its matter, ſee ACTION. For its form, ſee NARRATION. See alſo MANNERS, CHARACTER, MACHINE, &c.

EPICARPIUM *, ΕΠΙΚΑΡΠΙΟΝ, in medicine, a kind of remedy, uſually in form of a cataplaſm, or plaiſter; conſiſting of ſharp, penetrating ingredients, as garlick, or onion, ſpiders-webs, hellebore, camphor, Venice treacle, &c. applied round the wriſt, at the beginning of the acceſs of a fever, to prevent the growth of the ſame.

* The word is formed of the Greek επι, *ſuper*, on; and καρπος, *carpus*, wriſt.

EPICEDION *, ΕΠΙΚΗΔΙΟΝ, in the Greek and Latin poetry, a poem, or poetical compoſition, on the death of a perſon.

* The word is Greek, formed of επι, *upon* and κηδος, *funeral*.

At the obſequies of any man of figure, there were three kinds of diſcourſes uſually made: that rehearſed at his buſtum, or funeral pile, was called *nenia*; that engraven on his tomb, *epitaph*; and that ſpoken in the ceremony of his funeral, *epicedion*. We have two beautiful *epicedions* in Virgil; that of Euryalus, and that of Pallas.

EPICERASTICS *, ΕΠΙΚΕΡΑΣΤΙΚΑ, in medicine, remedies, which, by their temperate moiſture, ſoften the acrimony of an humour, and aſſwage the painful ſenſatſon of a part irritated or afflicted by it: ſuch are the roots of althæa, mallows, liquorice; leaves of lettuce, mallows, water-lily, purſlain; the ſeeds of flax, poppy, &c.

* The word is formed of επι, and κεραννυμι, *tempero*, I moderate, correct.

EPICHIREMA, ΕΠΙΧΕΙΡΗΜΑ, in logic, an argumentation, conſiſting of four or more propoſitions; ſome whereof are proofs of others.

Thus that oration of Cicero for Milo may be reduced to the *epichirema*: "Thoſe who way-lay a man to kill him, "it is lawful for him to kill; as is allowed by the laws of "nature and nations, and by the practice of the beſt men: "but Clodius way-laid Milo with that view, as appears from "his forming an ambuſcade before his country-houſe, and "from his proviſion of weapons, ſoldiers, &c." Therefore it was lawful for Milo to kill Clodius.

EPICŒNE, ΕΠΙΚΟΙΝΟΝ, in grammar, a term applied to nouns, which, under the ſame gender and termination, mark, indifferently, two kinds or ſexes. See GENDER.

Such, in Latin, is *aquila*, *veſpertilio*, &c. which ſignify equally a male or female eagle or bat.

Grammarians diſtinguiſh between *epicœne* and common.—A noun is ſaid to be common of two kinds, when it may be joined either with a maſculine, or a feminine article; and *epicœne*, when it is always joined to ſome one of the two articles, and yet ſignifies both genders.

EPICOLIC *regions* (from επι, *ſupra*, upon; and *colon*, the gut ſo called) a game given by Dr. Gliſſon to that ſpace, on both ſides, over the colon.

EPICUREANISM, or EPICUREAN *philoſophy*, the doctrine, or ſyſtem of philoſophy maintained by Epicurus, and his followers.

The noble poet Lucretius, who has given us a beautiful ſyſtem of *Epicureaniſm* in fine Latin verſe, prefers its father Epicurus to all other philoſophers, whom, he makes no ſcruple to ſay, he obſcured as much as the ſun does the other ſtars.

It is ſaid he firſt taught grammar; till, upon reading Democritus's books, he began to apply himſelf to philoſophy.

From Democritus he learnt the doctrine of atoms, or corpuſcles, which he afterwards made the baſis of his phyſics. Clem. Alexand. *ſtrom.* 6. advances, that Epicurus ſtole his chief doctrines from Democritus. But it is certain he greatly improved and illuſtrated them. Diog. Laertius aſſures us, he compoſed an infinite number of volumes.

This philoſophy conſiſted of three parts: *canonical*, *κανονικον*, *phyſical*, *φυσικον*, and *ηθικον*, *ethical*; which he explained briefly in three epiſtles.

The firſt, as Laertius relates, was about the canons or rules of judging; wherein, rejecting the uſe of logic, he eſtabliſhed the ſenſes, paſſions, and anticipations, as the criterions or judges of truth.

In the ſecond, he laid down atoms, ſpace, and gravity, as the firſt principles of all things. The univerſe, he taught, conſiſted of atoms or corpuſcles, of various forms, magnitudes, and weights, which, having been diſperſed at random through the immenſe inane, or ſpace, fortuitouſly concurred into innumerable ſyſtems, or worlds, which were thus formed, and afterwards, from time to time, increaſed, changed, and diſſolved again, without any certain cauſe or deſign; without the intervention of any deity, or the intendence of any providence.

Not that he denied the exiſtence of a God: on the contrary, he aſſerted it; but he thought it beneath the majeſty of the deity to concern himſelf with human affairs: Laertius aſſures us, he held him, *το μακαριον, και αφθαρτον, ουτε αυτο πραγματα εχει, ουτε αλλῳ παρεχει*, *a bleſſed, immortal being, having no affairs of his own to take care of, and above taking care of thoſe of others.*

As to ethics; his firſt principle, or the ſupreme felicity of man, he held, was pleaſure. Which ſome, as hereafter obſerved, underſtand of mental, and others of carnal pleaſure.

EPICUREANS, a ſect of antient philoſophers, who adhered to the doctrines and opinions of *Epicurus*. See EPICUREANISM.

The *Epicureans* have, in all ages, been decried for their morals, and their attachment to the pleaſures of ſenſe: ſeveral authors, particularly Cicero among the antients, and Gaſſendus among the moderns, have endeavoured to vindicate them from this charge; by ſhewing that the pleaſure wherein their maſter *Epicurus* places the ſummum bonum, or ſupreme happineſs of this life, was not any ſenſual, or brutal pleaſure, but a contentment, and tranquillity of mind, exempt from all tumultuary paſſions, &c.

This opinion ſeems juſt, and well-grounded: but, without entering into the queſtion, which Gaſſendus, Du Rondel, and others, have exhauſted; it is certain, that in the common uſe of the word, *Epicurean* ſignifies an indolent, effeminate, and voluptuous perſon, who only conſults his particular and private pleaſure, without concerning himſelf with any thing ſerious.

In effect, there were always two kinds of *Epicureans*; the rigid, and remiſs: the rigid *Epicureans* were thoſe ſtrictly attached to the ſentiments of *Epicurus*, who placed all their happineſs in the pure pleaſures of the mind, reſulting from the practice of virtue. The looſe or remiſs *Epicureans*, taking the words of that philoſopher in a more groſs ſenſe, placed all their happineſs in pleaſures of the body, in eating, drinking, loving, &c. The former kind, who were the genuine *Epicureans*, called the other the *ſophiſts of their ſect*.

The *Epicureans* take their name from the chief of their ſect, Epicurus, whom, ſome, however, deny to be the author of the philoſophy he taught; charging him with retailing for phyſics the doctrine of Democritus; and for ethics, that of Ariſtippus.

Be this as it will, he was an Athenian, and the ſon of Neocles; born in the 109th Olympiad, and conſequently 342 years before Chriſt. He began to form his ſchool at Mitylene and Lampſacus, about the 32d of his life; though he afterwards removed to Athens, where he philoſophized chiefly in his garden: he died of the ſtone at ſeventy-two years of age.

EPICYCLE *, in aſtronomy, a circle whoſe centre is on the circumference of another circle which bears it, and which for that reaſon is called its *deferent*.

* The word is formed of the Greek *επι*, *upon*, and *κυκλος*, *circle*, q. d. a circle on a circle.

As aſtronomers invented an eccentric circle to ſolve the apparent irregularity of the planets, and their different diſtances from the earth; they likewiſe invented a little circle to ſolve the ſtations and retrogradations of the planets: this circle, which they call *epicycle*, has its centre in the circumference of another greater, which is the eccentric of a planet.

In this eccentric, the centre of the *epicycle* moves; carrying with it the planet fixed in its circumference, the centre of the planet, all the way, moving regularly along the circumference of the *epicycle*, when downwards, according to the order of the ſigns, and then upwards, contrary to it.

The higheſt point of the *epicycle* is called the *apogee*, and the loweſt the *perigee*.

The great circle, in whoſe circumference the centre of the *epicycle* is placed, is alſo called the *deferent of the epicycle*, whoſe centre is in the orbit of the earth, according to the hypotheſis of Copernicus; but in that of Ptolemy, who ſuppoſed the heavens ſolid, the *epicycle* was a ſphere, which r volved with the moon of the thickneſs allowed its heaven o orbit; and which ſometimes ſhewed it higher, and ſometim lower. See *Ptolemaic* SYSTEM.

'The aſtronomers, who deny the motion of the earth, i 'order to render the phænomena of the motions of the pla 'nets more conſiſtent with the motion of the ſun, have a 'fixed the orbit of the earth, as an *epicycle* to the orbit o 'the planets: ſo that the planet ſhould proceed in an *epicycl* 'while it is carried through its orbit round the ſun: but th 'is far from anſwering their expectations.' *Wolf. Elem Math.* T. 2. p. 501.

'Ricciolus, though a zealous enemy of the motion of th 'earth, could not make any aſtronomical tables that ſhoul 'but tolerably agree with obſervation, without ſuppoſing th 'earth to move; not, though he called in all the foreig 'and forced aſſiſtances of changeable *epicycles*, liable 'continual increaſe and decreaſe, and variouſly inclined 'the ecliptic.' *De Chales Aſtron. Reform.* lib. X. c. f. 353, &c.

EPICYCLOID, in geometry, denotes a curve generated b the revolution of a point of the periphery of a circle, alon the convex or concave part of another circle.

A point of the circumference of a circle, proceeding along plane, in a right line, and at the ſame time revolving on i centre, deſcribes a *cycloid*.

And the generating circle, if, in lieu of moving on a rig line, it move along the circumference of another circle, wh ther equal or unequal, the curve deſcribed by any point in circumference is called an *epicycloid*.

If the generating circle proceed along the convexity of t periphery, it is called an *upper*, or *exterior epicycloid*: if alo the concavity, a *lower*, or *interior epicycloid*.

In an *epicycloid*, the part of the circle the generating po moves along, is called the *baſe of the epicycloid*: thus in *T Geom. Fig.* 58. DB is the baſe of the *epicycloid*, V its ve tex; VB its axis; DPV half of the *exterior epicycloid*, ma by the revolution of the ſemicircle VLB (which is called *generant*) along the convex ſide of the baſe DB: as DP is the *interior epicycloid*, formed by the generant's revolvi along the concave ſide of the baſe.

The length of any part of the curve, which any given po in the revolving circle has deſcribed, from the time it touch the circle whereon it revolved, is to double the verſed ſine half the arch which all that time touched the quieſcent c cle, as the ſum of the diameters of the circles to the ſe diameter of the quieſcent circle: provided the revolving cir moves upon the convex ſide of the quieſcent circle; but upon the concave ſide, as the difference of the diameters the ſemidiameter.

Dr. Halley gives us a general propoſition for the meaſurin all *cycloids* and *epicycloids*; thus: the area of a cycloid, *epicycloid*, either primary, or contracted, or prolate, is the area of the generating circle; and alſo the area's of parts, generated in thoſe curves, to the area's of analog ſegments of the circle; as the ſum of double the velocity the centre, and velocity of the circular motion, to the ve city of the circular motion. The demonſtration hereof, in *Phil. Tranſact.* № 218.

EPIDEMIA, ΕΠΙΔΗΜΙΑ, in antiquity, feaſts of Apollo Delphos, and Miletus; and of Diana at Argos.

Theſe feaſts bore the name *epidemia* (from *επι*, *in*; *δημος*, *people*) by reaſon theſe gods were imagined to preſent on thoſe days among the people. Accordingly, the laſt day of the *epidemia* they ſang an hymn called *απο πτικος*, to bid them adieu, and ſet them forwards on t journey.

As thoſe gods could not be every-where, and yet were noured in abundance of different places; there were time lowed them to paſs from one place to another, to receive vows of their adorers. See *Scaliger*, *Poet.* lib. III. c. 1

EPIDEMIC *, ΕΠΙΔΗΜΙΟΣ, denotes a general or ſprea diſorder, as a plague, ariſing from ſome corruption or lignity in the air, which ſeizes great numbers of people little time.

* The word is Greek, formed of *επι*, and *δημος*, *p* people; ſuch diſeaſes running among all kinds of pe of whatever age, ſex, quality, &c. as ariſing from a mon or general cauſe.

The Latins call them *populares morbi*, popular diſeaſes oppoſition to thoſe called *ſporadici*, which are only here there, as ariſing from private or particular cauſes. See S RADIC.

EPIDERMIS *, in anatomy, the cuticle, or ſcarf-ſkin.

* The word is formed of the Greek *επι*, *on*, *over*; and *δ ſkin*.

Some hold the *epidermis* to be formed of the excremen the *derma*, or true ſkin: Hippocrates is of opinion, it i gendered by cold; as, on blood, broth, or the like, cold, we ſee a pellicle formed.

But it is now paſt doubt, that it is produced at the ſame t and after the ſame manner, with the other parts: it b found in fœtus's of all ages, in the womb: it has ne veins, arteries, nor nerves: whence it is inſenſible.

EPIDIDYMIS *, in anatomy, a little, round body, on the back of each teſticle; called alſo *paraſtata*. See PARASTATA.

* The word is formed of the Greek, επι, *upon*, and διδυμος, *twin*, *teſticle*.

EPIGASTRIC *Region*, is a name given to the upper part of the abdomen; reaching from the cartilago xiphoides, almoſt to the navel.

It is uſually divided into three parts: the ſides, or lateral parts, called *hypochondria*; and the middle, the *epigaſtrium*.

There are alſo two *epigaſtric* veins, and as many arteries.

The arteries are branches of the iliac external arteries: the veins diſcharge themſelves into the iliac external veins.—See *Tab. Anat.* (Angeiol.) *fig.* 1. n° 57. *fig.* 6. n° 3.

EPIGASTRIUM *, ΕΠΙΓΑΣΤΡΙΟΝ, in anatomy, the middle part of the *epigaſtric* region.

* The word is formed of the Greek, επι, *upon*, and γαστηρ, *belly*.

EPIGLOTTIS *, ΕΠΙΓΛΩΤΤΙΣ, in anatomy, the cover, or lid, of the larynx.

* The word is formed of επι, *upon*, and γλωσσα, or γλωττα, *tongue*.

The *epiglottis* is a thin, moveable cartilage, made in form of a leaf of ivy, or a little tongue, and therefore likewiſe called *lingula*; ſerving to cover the cleft, or rima, of the larynx, called *glottis*.

Galen takes the *epiglottis* to be the principal organ, or inſtrument, of voice; ſerving to vary, modulate, and render it harmonious.

Its baſe, which is pretty broad, is in the upper part of the cartilago ſcutiformis, and its point, or tip, turned towards the palate. It is only ſhut by the weight of the piece in ſwallowing; but not ſo exactly, but that a crum, or a drop, ſometimes eſcapes through into the trachea.

EPIGRAM *, in poetry, a ſhort poem, or compoſition in verſe, treating of one only thing, and ending with ſome point, or lively, ingenious thought.

* The word is formed of the Greek, επιγραμμα, *inſcription*, of επιγραφειν, *to inſcribe*, or *write upon*.

Epigrams, then, originally ſignify *inſcriptions*, and they derive their origin from thoſe inſcriptions placed by the antients on their tombs, ſtatues, temples, triumphal arches, *&c.* See INSCRIPTION.

Theſe, at firſt, were only ſimple monograms: afterwards, increaſing their length, they made them in verſe, to be the more eaſily retained: Herodotus, and others, have preſerved us ſeveral of them.

Such little poems retained the name of *epigrams*, even after the deſign of their firſt inſtitution was varied, and people began to uſe them for the relating of little facts, and accidents, the characterizing of perſons, *&c.*

The Greeks confine their *epigrams* to a very narrow compaſs: for though, in the anthology, we here and there meet with a very long one; yet ordinarily, they do not exceed ſix, or at moſt, eight verſes. The Latins were not always ſo ſcrupulous, and the moderns much leſs, as to theſe bounds.

M. le Brun, in the preface to his *epigrams*, defines an *epi*-*ram* a little poem, ſuſceptible of all kinds of ſubjects, and ending with a lively, juſt, and unexpected thought: which re three qualifications eſſential to the *epigram*; particularly he firſt and laſt of them, *viz.* brevity, and the point, or cloſe of the *epigram*.

To attain brevity, only one thing is to be aimed at in the oem, and that to be purſued in the conciſeſt tetms poſſible. Authors are much divided, as to the length the *epigram* is to e confined to: the ordinary limits are from two to twenty verſes; though we have inſtances, both among the antients, nd moderns, where they extend to fifty. But ſtill it is alowed, that the ſhorter the better, and more perfect, as it parakes more of the nature and character of this kind of poem.

he point or turn is a quality much inſiſted on by the critics, ho require the *epigram* conſtantly to cloſe with ſomething ignant, and unexpected, to which all the reſt of the comſition is only preparatory. Others there are, who exclude e point, and require the thought to be equally diffuſed roughout the whole poem, without laying the whole ſtreſs the cloſe: the former is uſually Martial's practice, and the ter that of Catullus. Which is the moſt beautiful and perſt manner, is diſputed by a third claſs of critics.

he Greek *epigrams* have ſcarce any thing of the point, or iſkneſs, of the Latin ones: thoſe collected in the anthology, ve moſt of them a remarkable air of eaſe and ſimplicity, ended with ſomething juſt and witty: ſuch as we find in a ſible peaſant, or a child that has wit. They have nothing t bites, but ſomething that tickles. Though they want ſalt of Martial, yet to a good taſte they are not inſipid; cept a few of them, which are quite flat and ſpiritleſs. wever, the general faintneſs, and delicacy of the pleaſantry them, has given occaſion for *a Greek epigram*, or *epigram a Greque*, to denote among the French, an *epigram* void alt or ſharpneſs.

s principally the point that characterizes the *epigram*, and inguiſhes it from the madrigal. See POINT.

I. N° 54. CHAMB.

In the modern verſification, as obſerved by Fa. Mourgues, the *epigram*, and madrigal, are diſtinguiſhed by the number of verſes, and the cloſe. 1°, By the number of verſes, which in the modern *epigram* does not go beyond eight, nor in the modern madrigal, comes ſhort of ſix: and 2°, In that the cloſe, or period, of the *epigram* has always ſomething more lively and ſtudied than that of the madrigal.

The *epigram* is the loweſt, and leaſt conſiderable, of all the productions of poetry; and it is in general rather an effect of good luck, than of art, to ſucceed therein. The fineſſe, and ſubtility, of the *epigram*, M. Boileau obſerves, ſhould turn on the words, rather than the thought; which ſeems very little to the credit of this kind of compoſition, as it reduces it to the nature of the pun, or equivoque. Fa. Bouhours confirms the hint, in adding, that the equivoque is what uſually ſhines the moſt in the *epigram*.

One great beauty of the *epigram* is, to leave ſomething for the reader to gueſs, or ſupply. Nothing pleaſes the mind ſo much, as to find ſomething of itſelf in the objects preſented it; nor does any thing diſguſt it more than to preclude it from ſhewing and exerciſing a faculty it values itſelf for. Segrais.

M. B. L. M. the author of a new collection of French *epigrams*, in the year 1720. has a deal of good obſervations on the nature of *epigram*. He defines it an ingenious thought delivered in a few verſes; and conceives it as a generical name, including under it diverſe kinds of ſhort, lively poeſies, as the *ſonnet*, *rondelay*, *madrigal*, and little *tales* which only turn on ſome merry thought. Epitaphs and inſcriptions, he thinks, may be alſo reduced to the head of *epigrams*.

The *epigram* admits of great variety of ſubjects: ſome are made to praiſe, and others to ſatirize, which laſt are much thee aſieſt; ill-nature ſerving inſtead of point and wit. Boileau's *epigrams* are all ſatires on one or another. Thoſe of des Reaux, are all made in honour of his friends. And thoſe of Mad. Scudery are ſo many eloges. The *epigram* being only a ſingle thought, it would be ridiculous to expreſs it in a great number of verſes; it muſt have its unity like the drama. The comedy has an action for its ſubject; and the *epigram* a thought.

EPIGRAPHE *, ΕΠΙΓΡΑΦΗ, an inſcription on a building, to ſignify its uſe, occaſion, the time when, and the perſons by whom, it was built.

* The word is Greek, and ſignifies *ſuperſcription*.

EPILEPSY *, ΕΠΙΛΗΨΙΑ, in medicine, a convulſion, either of the whole body, or of ſome of its parts; attended with a deprivation of the ſenſes and underſtanding; and returning from time to time in fits, or paroxyſms.

* The word is formed of the Greek, επιλαμβανω, *I ſurpriſe*, *ſeize hold of one*, by reaſon the diſeaſe ſeizes and overcomes the ſenſes, ſo that the patient ſeems as if dead.

In Engliſh it is uſually called the *falling ſickneſs*, by reaſon people fall down when attacked therewith. The Latins call it *comitialis morbus*, by reaſon when any-body was ſeized therewith in a comitia, or aſſembly of the Roman people, they preſently broke up the aſſembly, as deeming it an unhappy preſage.

Some call it the *morbus ſacer*, as ſuppoſing it ſent by way of immediate puniſhment from God. Others, *morbus caducus*; others *Herculeus*, *ſonticus*, *lues deifica*, &c.

The patient ſeized herewith, falls inſtantly and ſuddenly down; or, rather, as it were, throws and precipitates himſelf violently to the ground. When down, he grinds his teeth, foams at mouth, and frequently ſhakes his head; his arms, legs, neck, back, *&c.* either becoming rigid, or variouſly diſtorted. And as all the parts are in a violent contraction, there is frequently an involuntary flux of urine, ſeed, and fecal matter. After ſome time he returns to himſelf; only retaining a head-ach, heavineſs, wearineſs of the limbs, *&c.*

Etmuller more accurately diſtinguiſhes the diſeaſe into three degrees: the firſt, or loweſt, is much the ſame with the higheſt degree of a vertigo.

In the ſecond, there ariſe various agitations and geſticulations; and the ſenſes, both external and internal, either remaining, or being tranſported into a delirium, they dance, ſing, laugh, weep, talk idly, ſhreek, and beat their breaſts. Sometimes they remember all after the fit is over, and ſometimes nothing at all of what has paſſed.

In the third degree, which alone is ordinarily called the *epilepſy*, they loſe the uſe both of reaſon and ſenſe; fall, or fling themſelves down, foam, grind their teeth, and bite their lips, with the other circumſtances above related. Thoſe affected with the ſecond degree, have been often ſuppoſed to be *poſſeſſed by the devil*.

The cauſe of this diſeaſe, Boerhaave attributes to too much action of the brain on the motory nerves, and none on the ſenſative ones. Some are pleaſed to account for it, from the abundance of ſharp humours mixing with the animal ſpirits, and giving them extraordinary and irregular motions, and directions; whence ariſes its diſtinction from a ſyncope, and apoplexy, which take away all motion as well as ſenſe. See SYNCOPE, and APOPLEXY.

The *epilepſy* is either *idiopathic*, or *ſympathetic*: it is idiopathic, when it ariſes merely from a diſorder of the brain, or ſpirits: and ſympathetic, when it is preceded by ſome other diſeaſe which brings it on.

The *epilepſy* ſometimes hangs many years to a perſon, without much danger: though when its paroxyſms return faſt, it renders the patient more or leſs paralytic, delirious, or ſtupid. In young people there is hope of its going off about the time of puberty. Hippocrates obſerves, that when it ſeizes a perſon after 25 years of age, it laſts for life; but this does not always hold.

The cure of a confirmed *epilepſy* is very difficult: the principal anti-epileptics are, the roots of peiony, leaves of lily of the valley, ſeeds of rue, miſletoe of the oak, or hazle, box-wood, ſpirit of black cherries, ſpirit of human blood, human ſecundines, human cranium, tooth of the ſea-horſe, caſtoreum, peacocks dung, camphor, and the ſalt and oil of amber.

To recover a perſon in a fit, tobacco-ſmoke, or that of burnt feathers, is recommended. Barbette above all things directs the flowers and ſpirits of ſal-ammoniac againſt this diſeaſe; Crato, native cinnabar. Sir John Colbatch has an expreſs treatiſe on the miſletoe of the oak, to ſhew it a ſpecific in this diſeaſe. Elks claws have long had the reputation of the ſame. See each remedy, its pretenſions, *&c.* under its proper term, as MISLETOE, ELKS *Claws*, &c.

M. Poupart, from a diſſection of an *epileptic* perſon, wherein, immediately under the dura mater, was found a deal of white, thick, viſcid, pituita, glued, and, as it were, incorporated with the membrane; thinks, that this might be the cauſe of the diſeaſe; the exceſſive quantity of ſuch thick lympha loading the brain, and obſtructing its neceſſary motions. The firſt cauſe, he judges, might be the ſpongiouſneſs of the cura mater, which imbibed the ſeroſities of the brain.

He adds, that he knew an *epileptic* perſon, who, upon the firſt approach of his diſorder, rubb'd his forehead with his hand, and bent his head as far backward as he could, reſting it againſt a wall; and by that means ſecured himſelf againſt the convulſion. It is probable, that by this he gave a motion to the lympha, and drove it from the place which before it diſturbed.

EPILOGUE *, EPILOGUS, in oratory, *&c.* The peroration, or laſt part of a diſcourſe, or treatiſe; containing ordinarily a recapitulation of the principal matters delivered.

* The word is Greek, επιλογος, formed of the verb επιλεγω, *I ſay after*, the *epilogue* being the end, or concluſion, of a diſcourſe.

EPILOGUE, in dramatic poetry, is a ſpeech addreſſed to the audience, when the play is over, by one of the principal perſonæ, or actors therein; containing uſually ſome reflections on certain incidents in the play, particularly thoſe of the part of the perſon who ſpeaks it.

In the modern tragedy, the *epilogue* has uſually ſomewhat of pleaſantry in it; intended, we ſuppoſe, to compoſe the paſſions raiſed in the courſe of the repreſentation, and ſend away the audience in good humour: though how far that deſign is good and laudable, will bear ſome diſpute: an ingenious author in the Spectator compares it to a merry jig on the organ, after a good ſermon, to wipe away any impreſſions that might have been made thereby, and ſend the people away juſt as they came.

In effect, though the *epilogue*, in this ſenſe, may ſeem an abuſe; yet has it the countenance of antiquity: the Romans had ſomething of the ſame nature, though under another name. Their exodium was a kind of farce, brought on the ſtage when the tragedy was over; *ut quicquid lacrymarum ac triſtitiæ cepiſſent ex tragicis affectibus, hujus ſpectaculi riſus detergeret*, ſays the ſcholiaſt of Juvenal.

The *epilogue* is but of modern date, much later than the prologue. Many, indeed, have taken the exodium of the antient Greek drama, for an *epilogue*; by reaſon Ariſtotle defines it, to be a part rehearſed after the chorus had ſung for the laſt time; but in reality, it was of a quite different nature. The exodium was the laſt of the four parts of the tragedy; containing the unravelling and cataſtrophe of the plot, and anſwering to our laſt, or fifth act.

EPINICION *, ΕΠΙΝΙΚΙΟΝ, in the Greek and Latin poetry, denotes, 1°, A feaſt, ceremony, or rejoicing, on occaſion of a victory obtained. 2°, A poem, or compoſition, on the ſame ſubject.—Scaliger treats expreſly of the *epinicion* in his poetics, l. I. c. 44.

* The word is formed from the Greek, επι, *on*, and *νικη*, *victory*.

EPIPHANY, in eccleſiaſtical antiquity, the feaſt of kings; a double feſtival, of the firſt rank, ſolemnized on the 6th of January, in honour of the appearance of Jeſus Chriſt to the three kings, or magi, who came to adore, and bring him preſents.

The *feaſt of epiphany*, now held in honour of the adoration of the magi, had its firſt inſtitution among the Greeks, from a different object, *viz.* our Saviour's birth; and was called *theophany*, and *epiphany*, that is, appearance, and manifeſtation, of God.

Pope Julius, who reigned from the year 337. to 352. was the firſt who taught the church to diſtinguiſh the feaſts of the nativity, and *epiphany*. *Papebroch. paral. ad Conat.* p. 23. *Act. SS. Maii*, *T.* VII.

The word in the original Greek, Επιφανεια, ſignifies *appearance*, or *apparition*; and was applied, as ſome critics will have it, to this feaſt, on account of the ſtar which appeared to the magi.—St. Jerom, and St. Chryſoſtom, take the *epiphany* for the day of our Saviour's baptiſm, when he was declared to men by the voice, *Hic eſt Filius meus dilectus, in qu mihi complacui*: This is my beloved Son, in whom I am well pleaſed. And accordingly it is ſtill obſerved by the Cophtæ and Ethiopians in that view. See Ludolph. *Hiſt. Æthiop.* Lib XXI. c. 2.—Others contend, that the feaſt of Chriſtmas, o the nativity of our Saviour, was held in diverſe churches o this day; which had the denomination *epiphany*, or *appearance*, by reaſon of our Saviour's firſt appearance on earth, a at that time. And it muſt be allowed, that the word i uſed among the antient Greek fathers, not for the appearanc of the ſtar to the magi, but for that of our Saviour to th world. In which ſenſe, St. Paul uſes the word *epiphania*, i his ſecond epiſtle to Timothy, c. 1. v. 10.

Add, that the Armenians, to this day, celebrate the feaſt o the nativity, on the day of *epiphany*, according to the practic of the antient church; which ſome Romiſh miſſionarie have impertinently cenſured them for, not knowing that th *epiphany*, originally, and properly, was the nativity of ou Saviour.

Ammianus Marcellinus makes mention of this feaſt, Lib XXI. c. 2. and obſerves that it was held in January Upon which paſſage, Valeſius, in his notes, endeavours t ſhew, that the hiſtorian meant by *epiphany*, the feaſt of th nativity.

The heathen writers uſed the word *epiphania* in the lik ſenſe, *viz.* to expreſs the appearance of their gods o earth. And the Chriſtians, after their example, applied i in the general, to expreſs any appearance, or manifeſtation of the Deity.

EPIPHONEMA, ΕΠΙΦΩΝΗΜΑ, in rhetoric, a ſententiou ſort of exclamation, which is frequently added after a na rative, or rehearſal of any thing remarkable; containin uſually, a lively, cloſe reflection, on the ſubject there ſpoke of.

Such is that of St. Paul, when, after diſcourſing of th rejection of the Jews, and the vocation of the Gentiles, h cries out,

O the depth of the wiſdom and knowlege of God!

Such alſo is that of Lucretius, after relating the ſtory of Ag memnon's ſacrificing his daughter Iphigenia:

Tantum religio potuit ſuadere malorum!

Such, laſtly, is that of Virgil, upon occaſion of Juno's pe ſecuting Æneas:

—Tantæne animis cæleſtibus iræ!

Which M. Boileau has imitated in,

Tant de fiel entre t'il en l'ame des devots!

And Mr. Pope in,

And dwells ſuch rage in ſofteſt boſoms then?
And lodge ſuch daring ſouls in little men?

EPIPHORA *, ΕΠΙΦΟΡΑ, in medicine, a diſeaſe of the ey conſiſting in a preternatural defluxion of rheum, or the ma of tears; accompanied, frequently, with heat, redneſs, a twitching.

* The word is Greek, formed of επιφερειν, *inferre*, to d or bring into; by reaſon of the pain it occaſions.

Pitcairn calls it a *catarrh of the glands of the eye.* See CATARRH.

The internal cauſes of the *epiphora*, or rheum in the eyes, a relaxation of the glands of the eyes, and a too great ac mony, or ſharpneſs, of the ſerous humour ſeparated there which, fretting and vellicating the eye, draws an unu quantity of blood and lympha thereto; by which, at leng the cheek becomes excoriated, *&c.*—Children are moſt li to it, from the frequent uſe and ſtraining of the glands of eye in crying.

The external cauſes of the *epiphora*, are ſharp duſts, ſtrea *&c.* entering the eye, and irritating the ſame. Alſo a too c and ſharp air has frequently the like effect.—An invete *epiphora* often degenerates into a fiſtula lacrymalis.

The cure of the *epiphora*, is, 1°, By cauſing a revulſion, derivation of the peccant humour, to ſome other parts, by veneſection, cupping, bliſtering, or cathartics. 2°, correcting its acrimony by proper remedies. And, 3°, applying aſtringents externally. Lapis calaminaris is m commended.

EPIPHYSIS *, ΕΠΙΦΥΣΙΣ, in anatomy, a leſſer bone, adhe or growing to another, by ſimple contiguity.

* The word is formed of the Greek, επι, *on, upon*; and *to grow, adhere.* The Latins call it *appendix*, *additam adnaſcentia*, &c.

The ſubſtance of the *epiphyſis* is rare and lax; in yo children it is merely cartilaginous; but hardens as they g in age, and, at length, becomes quite bony.

It is commonly laid down, that there is no regular artic tion between the *epiphyſis* and the bone; though it is certain, that there is a reciprocal admiſſion of the heads or extremities of each, into the cavities of the other. See ARTICULATION.

There are ſome bones that have no *epiphyſes* at all, as the lower jaw: others have no leſs than five, as the vertebræ. The deſign of adding *epiphyſes* to bones, was, to ſupply their defects, and render them longer and bigger at the extremes.

IPHYSES *vermiformes*, are two eminences of the cerebellum, ſhaped like worms, which keep open the paſſage from the third, to the fourth ventricle.

In dilating the third ventricle of the brain, we perceive four eminences, two upper and bigger, called *orbicular protuberances*; and two lower and leſs, called *epiphyſes* of the orbicular protuberances. Dionis.

IPLASMA, the ſame with *cataplaſma*. See CATAPLASM.

IPLOCELE, ΕΠΙΠΛΟΚΗΛΗ, in medicine, a kind of hernia, or tumour, occaſioned by the deſcent of the epiploon, or caul, into the ſcrotum. See HERNIA, and ENTERO-*Epiplocele*.

IPLOIC, or EPIPLOID, a term applied to the arteries and veins, diſtributed through the ſubſtance of the *epiploon*, or caul.—See *Tab. Anat. Angeiol. fig.* 1. *n.* 37. See alſo EPIPLOON, and GAS[illegible]EPIPLOON.

IPLOIS *Dextra*, is a branch of the cœliac artery, which runs through the right ſide of the inner, or hinder leaf of the caul.

IPLOIS *Poſtica*, is a branch of the cœliac artery, ſpringing out of the lower end of the ſplenica, and running to the hinder leaf of the caul.

IPLOIS *Siniſtra*, is a branch of the cœliac artery, which is beſtowed on the lower and left ſide of the caul.

IPLOMPHALUS *, or EPIPLOOMPHALON, ΕΠΙΠΛΟΟΜΦΑΛΟΝ, in medicine, a ſpecies of exomphalus, or navel-rupture; being a tumour or ſwelling of the part, occaſioned by the epiploon's falling into it. See EXOMPHALUS, and ENTERO-EPIPLOMPHALUS.

* The word is compounded of the Greek, επιπλοον, *caul*, and ομφαλος, *navel*.

IPLOON *, in anatomy, a fatty membrane, ſpread over the inteſtines, and entering even into the ſeveral ſinuoſities thereof; called alſo the *omentum*, and popularly the *caul*. See OMENTUM.

* The word is formed of the Greek, επιπλεειν, *to ſwim upon*, by reaſon it ſeems to float on the inteſtines.

IPLOSARCOMPHALUS *, in medicine, a ſort of tumour, of the exomphalous kind. It is formed of the epiploon, and the fleſh. See EXOMPHALUS.

* The word is compounded of the three Greek words, επιπλοον, *epiploon*; σαρξ, *fleſh*; and ομφαλος, *umbilicus*, navel.

SCOPACY, the quality of epiſcopal government, or that form of church-diſcipline, wherein dioceſan biſhops are eſtabliſhed, diſtinct from, and ſuperior to, prieſts or preſbyters. See BISHOP, EPISCOPAL, EPISCOPALIAN, and HIERARCHY.

Epiſcopacy, and *preſbytery*, have been alternately eſtabliſhed and aboliſhed in Scotland.

SCOPACIDE, the crime of murdering a biſhop by one of his own clergy.—By the antient laws of England, the ſame obedience is due from a clergyman to his biſhop, as from a child to his father: and therefore the offences of *epiſcopacide* and parricide are made equal, that is, they are both petty-treaſon.

SCOPAL *, ſomething that belongs to a biſhop.

* The word is formed of the Greek, επισκοπος, *overſeer*, derived from επισκοπεω, *inſpicio*, I inſpect, or overlook.

Epiſcopal government, is the government of a dioceſe, wherein one ſingle perſon, legally conſecrated, preſides over the clergy of a whole diſtrict, in quality of head, or ſuperintendent thereof; conferring orders, and exerciſing a ſort of juriſdiction.

The Preſbyterians reject the *epiſcopal* eſtabliſhment, and condemn the *epiſcopal* order as a human inſtitution, the mere reſult of pride and ambition.

Among the *epiſcopal* functions, the principal is that of holding frequent viſitations of the dioceſe.

SCOPALIA, is ſometimes uſed in the ſame ſenſe with *Pontificalia*. See PONTIFICALIA.

SCOPALIA, is alſo uſed to denote ſynodals, or cuſtomary payments, due to the biſhops from the clergy of their dioceſe; called alſo *onus epiſcopale*.

SCOPALIANS, a name given to thoſe who adhere to the church of England, and particularly to the eccleſiaſtical hierarchy, ſuch as it was in the Romiſh church before the reformation; who affect the diſcipline of biſhops, prieſts, canons, the office, or liturgy, &c. and retain the greateſt part of the canon law, with the decretals of the popes, more cloſely than the catholics themſelves of ſeveral countries. Though, as to matters of doctrine, or faith, they agree in moſt points with the calviniſts, or reformed.

In Scotland, the principal diſſenters are the *epiſcopalians*: lay *epiſcopalians* enjoy all the ſame civil privileges with thoſe of the eſtabliſhed church. They are under no reſtrictions; tied to no teſts; but are employed in all places of truſt, upon taking the oaths to the government. But the *epiſcopal* miniſters are liable to ſeveral penal laws; the greateſt part of them being nonjurors.

EPISCOPI *multa*. See the article MULTA.

EPISCOPUS *puerorum*, *biſhop of the boys*; a ludicrous kind of office, formerly exerciſed in churches, in that called the *feaſt of fools*, or the feaſt of the kalends.

The cuſtom was for ſome youth in the feaſt of epiphany to plait his hair, that he might ſeem to have the tonſure, and to put on epiſcopal garments; and then to exerciſe a ſhew of juriſdiction, and do ſeveral ludicrous actions: for which reaſon he was called the *biſhop of the boys*. This cuſtom obtained among us, long after ſeveral conſtitutions were made to aboliſh it. See INNOCENTS-*Day*. See diverſe curious particulars concerning this *epiſcopus puerorum*, in John Gregory's *Poſthumous Works*; or, for want of that, in the *Antiquities of the Cathedral Church of* Saliſbury, p. 71.

EPISODE *, ΕΠΕΙΣΟΔΙΟΝ, is commonly conceived to be a ſeparate incident, ſtory, or action, which an hiſtorian, or poet, inſerts, and connects with his principal action; to furniſh out the work with a greater diverſity of events: though, in ſtrictneſs, all the particular incidents, whereof the action or narration is compoſed, are called *epiſodes*.

* The word is formed from the Greek, επι, *upon*; and εισοδος, *ingreſſus*, entry.

EPISODE, in dramatic poetry, was the ſecond part of the antient tragedy.

The origin and uſe of *epiſodes* is deſcribed by M. Hedelin, and F. Boſſu. Tragedy, in its original, being only a hymn, ſung in honour of Bacchus, by ſeveral perſons, who made a kind of chorus, or concert of muſic, with dancing, and the like; to diverſify the repreſentation a little, and divert the audience, they bethought themſelves at length to divide the ſinging of the chorus into ſeveral parts; and to have ſomething rehearſed in the intervals.

At firſt, a ſingle perſon, or actor, was introduced, then two, then more; and what the actors thus rehearſed, or entertained the audience withal, being ſomething foreign, or additional to, or beſide, the ſong of the chorus, and no neceſſary part thereof, was called Επεισοδιον, *epiſode*.

And hence tragedy came to conſiſt of four parts, the *prologue*, *epiſode*, *exode*, and *chorus*.

The *prologue* was all that preceded the firſt entrance of the chorus.

The *epiſode*, all that was interpoſed between the ſingings of the chorus.

The *exode*, all that was rehearſed after the chorus had done ſinging.

And the *chorus*, was the grex, or company, that ſung the hymn.

And as this recitation of the actors was in ſeveral parts, and inſerted in ſeveral places; it might either be conſidered together, as a ſingle *epiſode*, conſiſting of ſeveral parts; or each part might be called a diſtinct *epiſode*.

Theſe ſeveral *epiſodes* in the ſame tragedy might either be taken from ſo many different ſubjects; or from the ſame ſubject divided into a proper number of recitations, or incidents.

To conſider only the firſt occaſion, and inſtitution, of theſe foreign, or additional pieces; it appears no ways neceſſary, that they ſhould all be taken from one and the ſame ſubject: three or four recitations of different actions, no-wiſe related, or connected to each other, would eaſe the actors, and amuſe the people, in the intervals of the chorus, as well as if they were all ſo many parts of the ſame action. By degrees, what was at firſt only an addition to the tragedy, became the principal part thereof. Then, the ſeveral pieces, or *epiſodes*, began to be conſidered as one ſingle body, which was not to have parts, or members of different nature, and independent of each other.

The beſt poets took the thing in this light, and drew all their *epiſodes* from the ſame action; which practice was ſo fully eſtabliſhed in Ariſtotle's time, that he lays it down as a rule. Thoſe tragedies wherein this unity and connexion was not obſerved, he calls *epiſodic pieces*.

EPISODE, in epic poetry. The term *epiſode*, by being tranſplanted from the ſtage to the *epopœia*, did not change its nature. All the difference Ariſtotle makes between the tragic and epic *epiſodes*, is, that the latter are more ample than the former.

Ariſtotle uſes the word in three different ſenſes: the firſt taken from the enumeration already made, of the parts of the tragedy, *viz.* *prologue*, *chorus*, *epiſode*, and *exode*. Whence it follows, that in tragedy, every thing is *epiſode* that is none of the other parts: ſo that as, among us, there are tragedies without either *prologue*, *chorus*, or *epilogue*, the tragic *epiſode* includes the whole tragedy: conſequently, the epic *epiſode* muſt be the whole poem, in like manner. All there is to retrench from it, being the propoſition, and invocation, which ſtand in lieu of the prologue. In this ſenſe, the epopœia, and tragedy, have each only one *epiſode*; and if the parts, or incidents, be ill connected together, the poem will be *epiſodic*, and defective,

But further, as all that was ſung in the tragedy, was called the *chorus*, in the ſingular number; yet this ſingularity did by no means prevent every part or diviſion of the ſame from being called a *chorus*, without making ſeveral *chorus's*; ſo it was with the *epiſode*: each incident, and part of the fable and action, is not only a part of the *epiſode*, but is an *epiſode* itſelf.

The term *epiſode*, therefore, in this ſenſe, ſignifies every part of the action expreſſed in the plan, or firſt draught, of the fable; as the abſence and wandrings of Ulyſſes, the diſorders in his family, and his preſence, which retrieved and ſet all to rights again.

Ariſtotle furniſhes us with a third kind of *epiſode*; in ſhewing, that what is contained and expreſſed in the firſt plan of the fable is proper, and that all the reſt is *epiſode*.

By *proper*, he means what is abſolutely neceſſary; and by *epiſode* what in one ſenſe is neceſſary, and in another not; ſo that the poet is at liberty to uſe, or let it alone.

Thus, Homer, having made the firſt draught of the fable of his Odyſſee, was not at liberty either to make Ulyſſes abſent from his country, or not. His abſence was eſſential; and therefore Ariſtotle ranks it among the things he calls *proper*. But he does not beſtow that appellation on the adventures of Antiphates, Circe, the Sirens, Scylla, Charybdis, &c. The poet was at liberty to have left theſe alone, and to have choſen others in their room; ſo that they are *epiſodes*, diſtinct from the firſt action, to which they are not immediately neceſſary. Indeed, in one ſenſe, they may be ſaid to be neceſſary; for Ulyſſes's abſence being neceſſary, it follows, that, not being in his own country, he muſt be ſomewhere elſe. If therefore the poet was at liberty, not to have uſed thoſe particular adventures above-mentioned; yet he was not at liberty not to have uſed any: but if he had omitted thoſe, he muſt neceſſarily have ſubſtituted others in their room. Otherwiſe, he would have omitted a part of the matter contained in his plan, and his poem would have been defective.

This third ſenſe, therefore, of the word *epiſode*, comes to the ſecond: all the difference between them is, that what we call *epiſode*, in the ſecond ſenſe, is the ground, or plan, of the *epiſode*, in the third: and that the third adds to the ſecond, certain circumſtances which are only probable, and not neceſſary, as the places, princes, and people, among whom Ulyſſes was caſt by Neptune.

It muſt be added, that in an *epiſode* in the third ſenſe, the incident, or *epiſode* in the firſt ſenſe, whereon it is grounded, is to be extended and amplified; otherwiſe, an eſſential part of the action and fable does not become an *epiſode*.

Laſtly, it is in this third ſenſe that we are to underſtand that precept of Ariſtotle, not to make the *epiſodes*, till after the names of the perſons have been choſen. Homer would not have ſpoken of the fleet and ſhips as he has done; if, in lieu of the names of Achilles, Agamemnon, and Iliad, he had choſen thoſe of Adraſtus, Capaneus, and Thebaid.

Upon the whole, the term *epiſode*, in the epic poem, as uſed by the father of the critics, Ariſtotle, does not ſignify any foreign, or accidental adventure; but the whole narration of the poet, or a neceſſary and eſſential part of the action and ſubject, amplified with probable circumſtances.

Thus, Ariſtotle injoins, that the *epiſode* be not added to the action, or fetched from elſewhere; but that it be a part of the action; and never uſes the word *adding*, in ſpeaking of *epiſodes*, though it occurred ſo naturally to his interpreters, that they have generally uſed it in their tranſlations and comments. He does not ſay, that after laying the plan, and chooſing the names, the poet is to add the *epiſodes*; but uſes a derivative of the word *epiſode*, ἐπεισοδιοῦν, as if in Engliſh we ſhould ſay, *epiſodify* his action.

Add, that to ſhew the different extenſion of tragedy and epopœia, that is, how the one becomes longer than the other; he does not ſay, that there is but little *epiſode* in tragedy; but more accurately, that the *epiſodes* of tragedy are ſhort and conciſe; whereas the epopœia is lengthened out and extended by them. In one word, the taking vengeance of the wicked people in Ulyſſes's court, as expreſſed in a few words by Ariſtotle, in his plan of the Odyſſee, is a ſimple proper action, neceſſary to the ſubject. It is no *epiſode*, but the baſis, and, as it were, ſtamen of an *epiſode*. And this ſame puniſhment explained and opened, with all the circumſtances of time, place, and perſons, is no ſimple and proper action, but an action *epiſodified*, or a real *epiſode*; which, though at the diſcretion of the poet, is yet neceſſary and proper to the ſubject.

From what has been ſaid, we may venture to define *epiſodes* to be neceſſary parts of the action, extended and filled up with probable circumſtances. Now, an *epiſode* is only a part of an action; and not a whole action. And this part of the action, which is the baſe, or ground of the *epiſode*, muſt not, when *epiſodified*, retain any thing of the ſimplicity which it had when firſt expreſſed in general, in the plan of the fable.

Ariſtotle, rehearſing the parts of the plan of the Odyſſee, ſays expreſly, that they are proper; and by that, diſtinguiſhes them from *epiſodes*. Thus, in the Oedipus of Sophocles, the ceaſing of the plague at Thebes is no *epiſode*. It is only the ground and matter of an *epiſode*, which the poet might have uſed, had he pleaſed. And Ariſtotle, obſerving that Homer, in the Iliad, had taken but few things for his ſubject, but that he had uſed abundance of his *epiſodes*, intimates, that the ſubject contains in itſelf abundance of *epiſodes*, which the poet may uſe, or let alone, at pleaſure. That is, it contains the grounds, or ſtamina thereof, which may either be left in their general and ſimple brevity, as Seneca has done the ceaſing of the plague; or may be extended and unfolded, as the ſame author has done the puniſhment of Oedipus.

The ſubject of a poem may be lengthened two ways: either, by the poet's making uſe of a great many of his *epiſodes*; or by his amplifying, and giving a great extent to every one. By this latter method, chiefly, it is, that the epic poets lengthen their poems much beyond the dramatic. It muſt be added, that there are certain parts of an action, which, of themſelves, do not naturally preſent or afford more than one *epiſode*; ſuch as the death of Hector, of Turnus, or the like: whereas there are other parts of the fable more copious and fertile, and which oblige the poet to make diverſe *epiſodes* on each; though laid down in the firſt plan, with as much ſimplicity as the reſt: ſuch are the battles of the Trojans and Grecians; the abſence of Ulyſſes; the wandrings of Æneas, &c. For Ulyſſes's abſence ſo many years from his own country, required his preſence elſewhere; and the deſign of the fable was to throw him into ſeveral dangers, and different countries. Now each peril, and each new country, furniſhed an *epiſode*, which the poet might uſe, if he pleaſed.

The reſult of the whole is, that *epiſodes* are not actions, but parts of actions; that they are not added to the action and matter of the poem, but what makes the action and matter themſelves, as the members make the body: that, of courſe, they are not to be fetched from elſewhere, but raiſed from the ground, or baſis, of the action: that they are not united and connected with the action, but with one another: that all the parts of an action are not ſo many *epiſodes*, but only ſuch as are amplified, and extended with particular circumſtances: and, laſtly, that their union with each other is neceſſary in the ground of the *epiſode*, and probable in the circumſtances thereof.

EPISODIC, in poetry. A fable is ſaid to be **EPISODIC**, when it is ſwelled with unneceſſary incidents; and its epiſodes are not neceſſarily, nor properly, connected with each other.

Ariſtotle lays it down, that thoſe tragedies are moſt defective, whoſe epiſodes have no connexion, or dependence on each other; which he calls *epiſodic*, q. d. *ſuperabundant in epiſodes*; by reaſon ſo many little epiſodes can never compoſe one whole one; but neceſſarily remain in a vicious plurality.

The moſt ſimple actions are moſt ſubject to this irregularity; in that, having fewer incidents, and fewer parts, than others, they afford leſs matter. An unwary poet will ſometimes have conſumed his whole ſtock in the firſt or ſecond time that his actors appear between the chorus; and be driven to a neceſſity of looking out for other actions, to ſupply the remaining intervals. Ariſt. *Poet.* c. 9.

The firſt French poets did the like: To fill each act, they took ſo many different actions of a hero; which had no other connexion between them, but that they were done by the ſame perſon. Boſſu, p. 106.

If an epiſode be uſed, the names and circumſtances whereof are unneceſſary, and whoſe ground and ſubject makes no part of the action, that is of the matter of the poem; ſuch an epiſode renders the fable *epiſodic*. This irregularity is diſcovered, when one may take away a whole epiſode, without ſubſtituting any thing in its room; and yet leave no chaſm, or defect, in the poem. The hiſtory of Hypſipyle, in Statius's Thebaid, affords an inſtance of theſe faulty epiſodes. If the whole ſtory of that illuſtrious nurſe were retrenched, the ſequel of the principal action would be the better for it. Nor would any body imagine he had forgot any thing, or that there was any member of his action wanting. Boſſu.

EPISPASTIC *, in medicine, a remedy, which, being externally applied, draws or attracts ſome humour to the part; called alſo an *attractive*.

* The word is Greek, formed of ἐπὶ, and σπάω, *traho*, I draw.

Of *epiſpaſtics*, there are ſome which act very gently, and others with a deal of violence. Thoſe of the latter kind ſwell, and bloat the ſkin, make it red, and even raiſe bliſters thereon. See **VESICATORY**.

The principal ſimple *epiſpaſtics* are pellitory, garlick, muſtard, onions, yeaſt, gooſe-dung, and that of pigeons, and cantharides. A bliſter-plaiſter is now commonly denoted by the name of an *Epiſpaſtic*.

EPISTATES*, ΕΠΙΣΤΑΤΗΣ, in antiquity, a perſon who has the command and direction of an affair, or of a people.

* The word is derived from the Greek επι, *ſuper*, over; and ιςημι. *ſto*, I ſtand.

The term is of conſiderable uſe, in ſpeaking of the antient government of Athens; where the *epiſtates* was the ſenator in command for that day, or whoſe turn it was to preſide that day. The conſtitution was this: the ten tribes of Athens elected every year by lot, each of them, fifty ſenators; which made a ſenate of five hundred: every tribe had the precedence in its turn, and ſurrendered it again, ſucceſſively, to another. The fifty ſenators in office were called *prytanes*; the particular place where they aſſembled *prytaneum*; and the term, or duration, of their office, *viz.* thirty-five days, *prytanea*: during theſe thirty-five days, ten of the fifty *prytanes* preſided weekly, under the name of *proedri*; and of theſe *proedri*, there was one to preſide each day of the week, under the title of *epiſtates.*

No perſon was allowed to hold this office more than once in his whole life, leſt he ſhould fall too much into the taſte of dominion: the ſenators of all the other tribes ſtill voted, according to the order the lot had given them; but the *prytanes* alone convened the aſſemblies; the *proedri* laid the buſineſs before them, and the *epiſtates* took their votes and opinions.

It muſt be added, that of the ten *proedri*, of each week, there were but ſeven that would preſide, each his day, in quality of *epiſtates:* the ten *proedri* elected the ſeven *prytanes.*

EPISTEMONARCH*, a dignitary, in the antient Greek church, appointed to watch over the doctrines of the church; and to inſpect, or ſuperintend, every thing relating to the faith, in quality of a cenſor thereof. His office anſwered pretty much to that of *magiſter ſacri palatii* at Rome.

* The word is derived from the Greek επιςημη, ſcience, knowlege; and αρχη, command, precedence.

EPISTLE*, ΕΠΙΣΤΟΛΗ, a letter miſſive.

* The word is formed of the Greek επιςελλω, *mitto*, I ſend.

The term *epiſtle* is now ſcarce uſed, but for letters wrote in verſe, and letters dedicatory.

In ſpeaking of letters written by moderns, or rather in the modern languages, we never uſe the word *epiſtle.* Thus, we ſay, the letters, not *epiſtles*, of the cardinal D'Oſſat; of Voiture, of Balzac, of Howel, of Pope, *&c.* but thoſe wrote by the antients, or rather in the antient languages, we call *epiſtles:* as the *epiſtles*, not letters, of Cicero, Pliny, Seneca, Buſbequius, Launoy, *&c.* of St. Auguſtine, St. Jerome, *&c.* The *epiſtles* of St. Paul, St. Peter, St. John, *&c.* to the Romans, Corinthians, *&c.*

James Altingius wrote 5000 letters, of which a few only are publiſhed in Bayle, *in vit.*—Druſius, beſide Hebrew, Greek, French, Engliſh, and Flemiſh letters, received 2300 in Latin, which were found among his papers. *Curiand. in Vit. p.* 11. See LETTER.

EPISTOLARY, a term chiefly uſed in the phraſe, *epiſtolary ſtyle.*

EPISTOLARY is ſometimes alſo applied to authors who have wrote *epiſtles*, or letters. The principal *epiſtolary* authors are, Sidonius Apollinaris, Tully, the younger Pliny, Seneca the philoſopher, Petrarch, Politian, Buſbequius, Eraſmus. Lipſius, Muretus, Aſcham, Milton, Petau, Launoi, Sarau, Balzac, and Voiture.

EPISTOMIUM, ΕΠΙΣΤΟΜΙΟΝ, in hydraulics, a plug, or inſtrument, by the application whereof, the orifice of a veſſel may be opened, and ſhut again, at pleaſure.

EPISTROPHEUS, in anatomy (from επιςρεφω, *converto*, I turn about), the ſame with *cardo.*

EPISTYLE*, ΕΠΙΣΤΥΛΙΟΝ, in the antient architecture, a term uſed, by the Greeks, for what we call *architrave*; viz. a maſſive of ſtone, or a piece of wood, laid immediately over the capital of a column.

* The word is derived from the Greek επι, *ſuper*, upon; and ςυλος, column.

The *epiſtyle* is the firſt, or loweſt, member of the entablature. See ENTABLATURE.

EPITAPH*, ΕΠΙΤΑΦΙΟΝ, a monumental inſcription, in honour, or memory, of a perſon defunct; or an inſcription engraven, or cut, on a tomb, to mark the time of a perſon's deceaſe, his name, family, and uſually ſome eloge of his virtues, or good qualities.

* The word comes from επι, upon; and ταφος, ſepulchre.

The ſtyle of *epitaphs*, eſpecially thoſe compoſed in Latin, is ſingular.

At Sparta, *epitaphs* were only allowed to people who died in battle. Boxhornius has made a collection of *epitaphs*, not very ample, but exceedingly well choſen. Fa. Labbe has likewiſe given a collection of the like kind, in French, intituled, *Treſor des epitaphes.* Camden and Weaver have done ſomething in the ſame way in our Engliſh *epitaphs.* An *epitaph* is ſaid to be yet wanting to the duke of Marlborough's monument, though a premium of 500 pounds was offered, by his dowager, to him that ſhould compoſe one worthy of the hero deceaſed.

In *epitaphs*, the dead perſon is ſometimes introduced, by way of proſopopœia, ſpeaking to the living; of which we have a fine inſtance, worthy the Auguſtan age: wherein the dead wife thus beſpeaks her ſurviving huſband.

Immatura peri: ſed tu, felicior, annos
Vive tuos, conjux optime, vive meos.

The French have a proverb, *Menteur comme une epitaphe*; He lyes like an *epitaph:* in alluſion to the eloges ordinarily contained therein, which are not always over-juſt.

EPITAPH is alſo applied to certain eloges, either in proſe or verſe, compoſed without any intent to be engraven on tombs.

In the anthologies, or collections of epigrams, we have abundance of ſuch *epitaphs*; ſome of them ludicrous and ſatirical, others grave.—For a ſpecimen, we ſhall here add a very beautiful one, compoſed by Mr. Cowley, on himſelf, to be put on a little country-houſe, whither he retreated from the court and town, to ſpend his laſt days.

Hic, O viator, ſub lare parvulo,
Couleius *hic eſt conditus, hic jacet*
Defunctus humani laboris
Sorte, ſupervacuaq; vita;
Non indecora pauperie *nitens,*
Et non inerti nobilis otio,
Vanoq; dilectis popello,
Divitiis, animoſus *hoſtis.*
Poſſis ut illum dicere mortuum,
En terra jam nunc quantula *ſufficit?*
Exempta ſit curis, viator,
Terra ſit illa levis, precare.
Hic ſparge flores, *ſparge breves* roſas;
Nam vita gaudet mortua floribus;
Herbiſq; odoratis corona
Vatis adhuc cinerem calentem.

EPITASIS*, in the antient poetry, denoted the ſecond part, or diviſion, of a dramatic poem; wherein the plot, or action, propoſed and entered upon in the firſt part, or protaſis, was carried on, heightened, warmed, and worked up, till it arrived at its ſtate, or height, called the *cataſtaſis.*

* The word is pure Greek, επιτασις; formed of επιτεινω, *intendo*, I heighten.

This diviſion is laid aſide in the modern drama; in lieu whereof, our plays are divided into acts. See ACT.

The *epitaſis* might, ordinarily, take up about our ſecond or third act.

EPITASIS, ΕΠΙΤΑΣΙΣ, in medicine, denotes the increaſe, or growth, and heightening of a diſeaſe; or the beginning of a paroxyſm; particularly in a fever.

EPITHALAMIUM*, ΕΠΙΘΑΛΑΜΙΟΝ, in poetry, a *nuptial ſong*; or a compoſition, uſually in verſe, on occaſion of a marriage between two perſons of eminence.

* The word is formed of επι, and θαλαμος, bride-chamber.

The topics it chiefly inſiſts on are, the praiſes of matrimony, and of the married couple; with the pomp and order of the marriage ſolemnity: it concludes with prayers to the gods for their proſperity, their happy offspring, *&c.*—Catullus exceeded all antiquity, in his *epithalamiums*; and the cavalier Marino, all the moderns.

EPITHEM*, EPITHEMA, in pharmacy, a kind of fomentation, or remedy, of a ſpirituous, or aromatic kind; applied externally to the regions of the heart, liver, *&c.* to ſtrengthen and comfort the ſame, or to correct ſome intemperature thereof.

* The word is formed from the Greek επι, upon; and τιθημι, *pono*, I put.

There are two kinds of *epithems*; the one *liquid*, the other *ſolid:* the *liquid epithem* is a fomentation of a more ſpirituous nature than the reſt; the *ſolid* is uſually a mixture of conſerves, theriaca, confections, and cordial powders, generally ſpread on a piece of ſcarlet, or leather.

EPITHET*, ΕΠΙΘΕΤΟΝ, a noun adjective, expreſſing ſome quality of a ſubſtantive to which it is joined.

* The word is formed of επι, upon; and θεσις, *poſitio*, putting.

As, a fruitful vine, a ſtately pile, an echoing vault, *&c.*

Epithets are engines of mighty uſe, and conveniency, among the poets, and orators; who ſupply in *epithets*, what they want in things. Card. Perron even blames Homer on the head of *epithets*; obſerving, that he frequently hooks in *epithets*, without any ſenſe, or ſignificancy, at all, to help out his meaſures; and that he equips every hero with an *epithet*, not according to the exigence of the caſe, but the meaſure of the verſe.

EPITHET is alſo uſed for a ſurname, or a perſon's ſecond appellation.

Epithets were antiently beſtowed very frankly, either on account of any defects of the body, or mind: kings themſelves were not exempted from them. Hence, thoſe *epithets* ſo frequent in hiſtory; as Henry Long-ſhanks, Edward Iron-ſides, Richard Crook-back, John Lack-land, *&c.*

Nor have the French uſed their kings any better: witneſs their Charles the Simple, Louis the Lazy, *faineant* (Ludovicus *nihil faciens*), Pepin the Short, Louis the Stammerer, *le begue*.

EPITHYME, ΕΠΙΘΥΜΟΝ, *Dodder of Thyme*, a medicinal plant, of a very extraordinary nature, and figure. Its ſeed is very ſmall, from which ariſe long threads like hairs, which ſoon periſh, as well as the root, unleſs they meet with ſome neighbouring plant, both to ſuſtain and feed them.

The *cuſcuta*, in Engliſh called *dodder*, grows, indifferently, on all kinds of herbs; and, of conſequence, the kinds thereof are infinite: to which writers uſually attribute the particular virtues of the plants they grow on.

The moſt known of theſe plants, and thoſe moſt uſed in medicine, are, ſuch as grow on thyme; which are the proper *epithymes*; and thoſe on flax. There are two kinds in the ſhops; the one from Venice, the other from Candia: they have both an aromatic taſte, but that of Venice has the ſtrongeſt. Their uſe is, to ſtrengthen the parts, and prevent obſtructions of the viſcera, &c.

EPITOME *, an *abridgment*; or a reduction of the principal matters of a larger book, into a little compaſs.

* The word is Greek, ἐπιτομη; formed of ἐπιτεμνειν, *reſecare*, to retrench, abridge, or cut off.

The *epitome* of Baronius's annals is done by De Sponde (Spondanus): Bernier has given an *epitome* of the philoſophy of Gaſſendus.

It is a popular objection againſt the *epitomizing* of authors, that it frequently occaſions the loſs of the originals. Thus the loſs of the hiſtorian Trogus Pompeius is attributed to his epitomizer Juſtin; and the loſs of a great part of Livy to Luc. Florus.

EPITRITUS, in proſody, a foot conſiſting of four ſyllables; three long, and one ſhort.

Grammarians reckon four ſpecies of *epitrites*: the *firſt* conſiſting of an iambus and ſpondee; as ſălūtāntēs: the *ſecond* of a trochee and ſpondee; as cōncĭtātī: the *third* of a ſpondee and an iambus; as cōmmūnĭcāns: and the *fourth* of a ſpondee and trochee; as incāntārĕ.

EPITROPE, in rhetoric, a figure of ſpeech, by the Latins called *conceſſio*; whereby the orator grants ſomething which he might deny; that, by this ſhew of impartiality, it may be more eaſily granted which he requires, in his turn.

This figure is frequently invidious; "Let them extol his "probity; I acquieſce, and am ready to be ſilent: but when "they propoſe him for a pattern of wit, my ſpleen is raiſed," &c.

EPITROPUS, a kind of judge, or rather an arbitrator, which the Greek Chriſtians, under the dominion of the Turks, elect, in the ſeveral cities, to terminate the differences that ariſe among them, and avoid carrying them before the Turkiſh magiſtrates.

There are ſeveral *epitropi* in each city: M. Spon, in his travels, obſerves, that at Athens there are eight, taken out of the ſeveral pariſhes, and called *vecchiardi*, *i. e.* old men.—But Athens is not the only place where there are *epitropi*: they are in all the iſlands of the Archipelago.

Some Latin authors, of the Vth century, call *epitropi* thoſe who more antiently were called *villici*, and ſince, *vidames*.

In times ſtill earlier, the Greeks uſed the term ἐπιτροπος, in the ſame ſenſe as the Latins did *procurator*; viz. for a commiſſioner, or intendant.

Thus the commiſſioners of proviſions, in the Perſian army, are called, by Herodotus and Xenophon, *epitropi*: in the New Teſtament, ἐπιτροπος denotes the ſteward of a houſhold, rendered, in the Vulgate, *procurator*.

EPLOYE', in heraldry. An eagle EPLOYE' is what, in Engliſh, we more uſually call an *eagle diſplayed*, or *a ſpread eagle*.

EPOCHA *, in chronology, a term, or fixed point, of time, whence the ſucceeding years are numbered, or accounted.

* The word is Greek, ἐποχη; q. d. *inhibitio*, *repreſſio*: formed of ἐπεχειν, to ſuſtain, ſtop; by reaſon the *epocha* defines, or limits, a certain ſpace of time.

Different *epocha's* obtain in different nations; and no wonder: for there being no aſtronomical conſideration to render one preferable to another, their conſtitution is purely arbitrary.

That principally regarded among Chriſtians is, the *epocha* of the *nativity*, or incarnation, of Jeſus Chriſt; that of the Mahometans, the *hegira*; that of the Jews, &c. the *creation of the world*; that of the antient Greeks, the *olympiads*; that of the Romans, the *building of the city*; that of the antient Perſians and Aſſyrians, the *epocha* of Nabonaſſar, &c.

The doctrine and uſe of *epochas* is of very great extent in chronology.

To reduce the years of one *epocha* to thoſe of another, *i. e.* to find what year of one correſponds to a given year of another; a period of years has been invented, which, commencing before all the known *epocha's*, is, as it were, a common receptacle of them all, called the *Julian period*. To this period all the *epocha's* are reduced; *i. e.* the year of this period, whereon each *epocha* commences, is determined. All that remains, therefore, is, to add the given year of one *epocha* to the year of the period correſponding with its riſe; and from the ſame to ſubtract the year of the ſame period correſponding to the other *epocha*: the remainder is the year of that other *epocha*.

EPOCHA *of Chriſt*, or *of our Lord*, is the *vulgar epocha* throughout Europe; commencing from our Saviour's nativity, December 25. or rather, according to the uſual account, from his circumciſion, that is, from the firſt of January; but particularly, in England, from the incarnation, or annunciation of the bleſſed virgin, on the 25th of March; nine months prior to the nativity.

Now, the year of the Julian period whereon Chriſt was born, and circumciſed, is uſually computed to be the year 4713. conſequently, the firſt year of the æra of Chriſt correſponds to the year 4714. of the Julian period.

Hence, 1°, If to any given year of Chriſt, you add 4713, the ſum will be the year of the Julian period correſponding thereto. *E. gr.* If to the year 1725. be added 4713, the ſum, 6438, is that year of the Julian period.

2°, On the contrary, ſubtracting 4713 from any given year of the Julian period; the remainder is the current year of Chriſt. *E. gr.* From the year of the Julian period 6438. ſubtracting 4713, the remainder is the year of Chriſt 1725.

In effect, the *epocha* of our Lord ſerves not only for the computation of the years elapſed ſince the *epocha* commenced; but even of thoſe before it.

Now, to find the year of the Julian period, correſponding to a given year before Chriſt; ſubtract the given year from 4714, the remainder is the correſpondent year required. Thus, *e. gr.* the year before Chriſt 752. is the year 3956. of the Julian period. On the contrary, ſubtracting the year of the Julian period from 4714, the remainder is the year before Chriſt.

The author of the vulgar *epocha*, or way of computing from Chriſt, is an abbot of Rome, one Dionyſius Exiguus, by nation a Scythian; who flouriſhed, under Juſtinian, about the year 507. though this Dionyſius borrowed the hint from Panodorus, an Egyptian monk. Till his time, the generality of Chriſtians computed their years, either from the building of Rome, or according to the order of the emperors and conſuls, and other ways in uſe with the people they lived among.

This diverſity occaſioning a great diſtraction between the churches of the eaſt and weſt; Dionyſius, to compoſe the ſame, firſt propoſed a new form of the year, with a new general æra, which in a few years time was generally admitted.

Dionyſius began his account from the conception, or incarnation, by us popularly called *lady-day*, or the *annunciation*: which method ſtill obtains in the dominions of Great-Britain, and there only; ſo that the Dionyſian, and Engliſh *epocha*, is the ſame. In the other countries of Europe, they reckon from the firſt of January; except in the court of Rome, where the *epocha* of the incarnation ſtill obtains for the date of their bulls.

It muſt be added, that this *epocha* of Dionyſius is charged with a miſtake: the common opinion is, that it places our Saviour's nativity a year too late; or, that he was born the winter preceding the time preſcribed by Dionyſius for his conception.

But, the truth is, the fault lies on Beda, who miſinterpreted Dionyſius, and whoſe interpretation we follow; as has been ſhewn by Petavius, from Dionyſius's own epiſtles. For Dionyſius began his cycle from the year of the Julian period 4712. but his *epocha* from the year 4713. wherein the vulgar æra ſuppoſes Chriſt to have been incarnate.

The year, therefore, which, according to the vulgar *epocha*, is the firſt year of Chriſt; according to Dionyſius's æra, is the ſecond: ſo that the year which we call 1749. ſhould, in juſtice, be 1750. though ſome chronologers, inſtead of one year, will have the error two.

To this vulgar æra, as a ſure, fixed point, chronologers uſe to reduce all the other *epocha's*; though there is not one of them but what is controverted: ſo much uncertainty there is in the doctrine of time. We ſhall exhibit them as reduced to the Julian period.

EPOCHA *of the creation*, *orbis conditi*, according to the computation of the Jews, called alſo the *Jewiſh epocha*, is the year of the Julian period 953. anſwering to the year before Chriſt 3761. and commencing on the ſeventh day of October. Hence, ſubtracting 952 years from any given year of the Julian period, the remainder is the year of the Jewiſh *epocha* cor correſponding thereto. Thus, *e. gr.* the year 1725. being the 6438th year of the Julian period; it is the 5486th year of the Jewiſh *epocha*, or ſince the creation of the world.

This *epocha* is ſtill in uſe among the Jews.

The EPOCHA *of the creation*, uſed by the Greek hiſtorians, is the year before the Julian period 787. anſwering to the year before Chriſt 5500.

Hence, to any given year of the Julian period, adding 787, the ſum gives the year of this *epocha*. *E. gr.* 6438 being the year 1725. of the Julian period; 7390 is that year of this *epocha*, or the age of the world, according to this computation.

The author of this *epocha* is Julius Africanus, who collected it from the hiſtorians. But when it came to be admitted into civil uſe, 8 years were added to it; that ſo every year thereof, divided by 15, might exhibit the indiction, which the eaſtern emperors uſed in their charters and diploma's.

The *epocha of the creation* uſed by the later Greeks and Ruſſians, is the year 795. before the Julian period; or the year 5509. before Chriſt; commencing from the 1ſt day of September. Though the Ruſſians, having lately admitted the Julian calendar, begin their year from the 1ſt of January.

Hence, adding 795 to the year of the Julian period, the ſum gives the year of this *epocha*. Thus, *e. gr.* the Julian period of the year 1725. being 6438. that year of this *epocha*, i. e. the years from the creation, on this footing, are 7233. Again, from that year 7233. ſubtracting 5508. the remainder is the year of the common æra 1725.

This æra was uſed by the emperors of the eaſt, in their diplomata, *&c.* and thence alſo called the *civil æra of the Greeks*. In reality, it is the ſame with the *epocha* of the Conſtantinopolitan period; whence ſome call it the *epocha of the period of Conſtantinople.*

The *Alexandrian* EPOCHA *of the creation* is the year 780. before the Julian period; anſwering to the year before Chriſt 5493. and commencing on the 29th day of Auguſt.

Hence, adding 5493. to the year of Chriſt 1725. the ſum, 7218. gives that year of this *epocha:* or years elapſed ſince the creation, according to this computation.

This *epocha* was firſt concerted by Panodorus, a monk of Egypt, to facilitate the computation of Eaſter; whence, ſome call it, the *Greek eccleſiaſtical epocha.*

The *Euſebian* EPOCHA *of the creation*, is the year of the Julian period 486. anſwering to the year before Chriſt 4228. and commencing in autumn.

Hence, ſubtracting 486. from the Julian period of the year 6438. or adding 4228. to the year of Chriſt 1725. the reſult 5953. will be that year of this *epocha*.

This *epocha* is uſed in Euſebius's chronicon, and the Roman martyrology.

EPOCHA *of the olympiads*, is the year of the Julian period 3938. anſwering to the year 776. before Chriſt, and the year 2985. from the creation; commencing at the full moon next the ſummer ſolſtice; and each olympiad containing four years.

This *epocha* is very famous in antient hiſtory: it was uſed principally by the Greeks, and had its origin from the olympic games, which were celebrated at the beginning of every fifth year.

EPOCHA *of the building of Rome*, or *urbis conditæ*, U. C. is the year of the Julian period 3961. according to Varro; or 3962. according to the Faſti Capitolini; anſwering to the years before Chriſt 753. or 752. and beginning on the 21ſt of April.

Hence, if the years of this *epocha* be fewer than 754, ſubtracting them from 754, or 753, you have the year before Chriſt. And, on the contrary, if they be more than 745, adding them to the ſame, the ſum is the number of years ſince Chriſt. Laſtly, adding the year before Chriſt, to 753, or 752, the ſum will give the year of this *epocha*, or the time ſince the building of Rome. Thus, *e. gr.* the year 1725. according to Varro, is the year of Rome 2488.

EPOCHA *of Nabonaſſar*, is the year of the Julian period 3967. anſwering to the year before Chriſt 747. commencing on the 26th day of February.

This æra takes its denomination from its inſtitutor, Nabonaſſar king of Babylon; and is that uſed by Ptolemy in his aſtronomical obſervations, by Cenſorinus and others.

Diocleſian EPOCHA, or EPOCHA *of martyrs*, is the year of the Julian period 4997. anſwering to the year of Chriſt 283. called the *æra of martyrs* from the great number of Chriſtians, who ſuffered martyrdom under the reign of that emperor.

The Abyſſinians, among whom it is ſtill uſed in all eccleſiaſtical computations, call it the *year of grace*. Though they do not reckon their years in a continued ſeries from this *epocha*. But when the Dionyſian period of 534 years is expired, they begin their computation afreſh from 1, 2, *&c.*

EPOCHA *of the hegira*, or *Mahometan* EPOCHA, is the year of the Julian period 5335. anſwering to the year of Chriſt 622. It commences on the 16th of July, the day of Mahomet's flight from Mecca to Medina.

This *epocha* is uſed by the Turks and Arabs, and even all who profeſs the Mahometan faith: it was firſt introduced by Omar, the third emperor of the Turks. The aſtronomers, Alfraganus, Albategnius, Alphonſus, and Ulugh Beigh, refer Mahomet's flight to the 15th of July; but all the people who uſe the *epocha*, agree to fix it on the 16th. See HEGIRA.

EPOCHA *of the Seleucidæ*, which is uſed by the Macedonians, is the year of the Julian period 4402. anſwering to the year before Chriſt 312. See SELEUCIDÆ.

Yezdegerdic, or *Perſian* EPOCHA, is the year of the Julian period 3545. anſwering to the year of Chriſt 632. and commencing on the 16th of June.

This *epocha* is taken from the death of Yezdegerdis, the laſt king of Perſia, ſlain in battle by the Saracens.

Julian EPOCHA, or EPOCHA *of Julian years*, is the year of the Julian period 4668. anſwering to the year before Chriſt 45.

This *epocha* had its origin from the year of the reformation of the calendar under Julius Cæſar, called the *year of confuſion.*

Gregorian EPOCHA. See GREGORIAN.

Spaniſh EPOCHA, is the year of the Julian period 4676. anſwering to the year before Chriſt 38. See ÆRA.

Actiac, or *Actian* EPOCHA, is the year of the Julian period 4684. anſwering to the year before Chriſt 30. Commencing on the 29th day of Auguſt.

Other memorable *epocha*'s are, that of the deluge, in the year of the creation 1656. that of the birth of Abraham in 2039. the Iſraelites exodus or departure out of Egypt, in 2544. the building of the temple of Jeruſalem in 2023. and the deſtruction of the ſame in the year of Chriſt 70. the taking of Conſtantinople by the Turks, in 1453. *&c.*

EPODE, ΕΠΩΔΟΣ, in lyric poetry, the third or laſt part of the ode; the antient ode, or ſong, being divided into ſtrophe, antiſtrophe, and *epode*.

The *epode* was ſung by the prieſts ſtanding ſtill before the altar, after all the turns and returns of the ſtrophe, and antiſtrophe.

The *epode* was not confined to any preciſe number, or kind of verſes; as the ſtrophe and antiſtrophe were.—But when the ode contained ſeveral *epodes*, ſtrophes, *&c.* they were all alike.

As the word *epode*, then, properly ſignifies the end of the ſong; and as in odes, what they called the *epode*, finiſhed the ſinging; it became cuſtomary, as M. Dacier ſhews, for any little verſe, which, being put after another, cloſed the period, and finiſhed the ſenſe which had been ſuſpended in the firſt verſe, to be called *epode*, επωδος.

And hence it is, that the Vth book of Horace's odes is intituled *Liber Epodωn*, book of *epodes*, by reaſon the verſes thereof are all alternately long and ſhort; and that the ſhort one, generally, though not always, cloſes the ſenſe of the long one.

But the ſignification of the word is extended ſtill further; *epode* being become a general name for all kind of ſhort verſes, that follow one or more long ones, of what kind ſoever they be: and, in this ſenſe, a pentameter is an *epode*, after an hexameter, which in reſpect thereof is a pro-ode.

EPOMIS *, ΕΠΩΜΙΣ, in anatomy, the upper part of the ſhoulder, reaching up to the neck.

* The word is Greek επωμις, where it primarily ſignifies a ſhort cloak or mantle made to cover the ſhoulders.

Some authors apply the word *epomis* to the upper part of the os humeri: but the antient Greek phyſicians only uſe it for the muſcular, or fleſhy part, placed as above-mentioned.

EPOPOEIA, ΕΠΟΠΟΙΙΑ, in poetry, the hiſtory, action, or fable, that makes the ſubject of an epic poem.

* The word is derived from the Greek επος, *carmen*, verſe; and ποιεω, *facio*, I make.

In the common uſe of the word, however, *epopoeia* is the ſame with *epos*, or *epic* poem itſelf: in which ſenſe it is defined a diſcourſe invented with art, or a fable agreeably imitated from ſome important action, and related in verſe, in a probable and ſurpriſing manner; with a view to form the manners, *&c.* See EPIC *Poem.*

EPULO, in antiquity, the name of a miniſter of ſacrifice among the Romans.

The pontifices, not being able to attend all the ſacrifices, performed at Rome, to ſo many gods, as were adored by that people, appointed three miniſters, whom they called *epulones*, by reaſon they conferred on them the care and management of the *epula*, feaſts in the ſolemn games and feſtivals.

To them belonged the ordering and ſerving the ſacred banquet, offered on ſuch occaſions to Jupiter, *&c.* They wore a gown bordered with purple, like the pontifices. Their number was at length augmented from three to ſeven, and afterwards by Cæſar to ten.

Their firſt eſtabliſhment was in the year of Rome 558. under the conſulate of L. Furius Purpureo, and M. Claudius Marcellus.

EPULOTICS *, ΕΠΟΥΛΩΤΙΚΑ, in medicine, drying, aſtringent remedies, proper to harden, cicatrize, and incarnate wounds, and ulcers.

* The word is formed of the Greek επι, *ſuper*; and ουλη, *cicatrix*, *eſchar*. Whence the verb επουλοω, *cicatricem infero*, I cicatrize.

Such are emplaſters of ceruſs, and diapalma; the unguent of pompholyx, &c.

EPULUM, in antiquity, *banquet*; a holy feaſt prepared for the gods.

The ſtatues of the gods were commonly laid upon a bed, and ſerved in the *epula* as if they had been very hungry; to perform which, was the function of the miniſters of ſacrifice, hence called *epulones*.

EQUABLE *Motion*, is that whereby the moveable body proceeds with the ſame continued velocity; neither accelerated nor retarded.

EQUABLE *Pulſe.* } See the articles { PULSE.
EQUABLE *Style.* } { STYLE.

EQUAL, a term of relation between two or more things of the ſame magnitude, quantity, or quality.

Wolfius defines *equals* to be thoſe things which may be ſubſtituted for each other, without any alteration of their quantity.

It is an axiom in geometry, that two things which are *equal* to the ſame third, are alſo *equal* to each other. And again, if, to or from *equals*, you add or ſubtract *equals*, the remainder will be *equal*.

EQUAL *Circles*, in geometry, are thoſe whoſe diameters are equal. See CIRCLE.

EQUAL *Angles*, are thoſe whoſe ſides are inclined alike to each other; or which are meaſured by ſimilar arches of their circles.

EQUAL *Arches.* See the article ARCH.

EQUAL *Figures*, are thoſe whoſe area's are equal; whether the figures be ſimilar, or not.

The ſegments of a ſphere, or circle, are of an *equal* concavity, or convexity, when they have the ſame ratio, or proportion to the diameters of the ſpheres, or circles, whereof they are parts.

EQUAL *Solids*, are thoſe which comprehend, or contain, each as much as the other; or whoſe ſolidities, or capacities, are *equal*. See SOLID.

EQUAL *Hyperbola*'s, are thoſe, all whoſe ordinates to their indeterminate axes, are *equal* to each other; taken at *equal* diſtances from their vertices.

EQUAL *Numbers.* } See the articles { NUMBER.
EQUAL *Hours.* } { HOUR.

EQUAL *geometrical ratio*'s, are thoſe whoſe leaſt terms are ſimilar, aliquot, or aliquant parts of the greater.

EQUAL *arithmetical ratio*'s, are thoſe wherein the difference of the two laſt terms is equal to the difference of the two greater. See RATIO.

EQUAL, in optics.—We ſay, that things ſeen under *equal* angles, are *equal*. *Equal* parts of the ſame interval, or magnitude, if unequally diſtant from the eye, appear unequal.—*Equal* objects, and at *equal* diſtances, only the one placed directly, and the other obliquely, ſeem unequal; and that placed directly, the bigger.

Maſonry by EQUAL *courſes.* See MASONRY.

EQUALITY, in aſtronomy. *Circle of* EQUALITY, or the EQUANT, is a circle uſed in the Ptolemaic aſtronomy, to account for the eccentricity of the planets, and reduce them more eaſily to a calculus. See EQUANT.

Ratio, or *Proportion of* EQUALITY, in geometry, is that between two equal numbers, or quantities.

Proportion of EQUALITY *evenly ranged*, or *ex æquo ordinata*, is that wherein two terms in a rank, or ſeries, are proportional to as many terms in another ſeries, compared to each other in the ſame order, *i. e.* the firſt of one rank to the firſt of another; the ſecond to the ſecond, &c.

Proportion of EQUALITY *evenly diſtributed*, called alſo *ex æquo perturbato*, is that wherein more than two terms of a rank, are as proportional to as many terms of another rank, compared to each other, in a different and interrupted order; *viz.* the firſt of one rank to the ſecond of another; the ſecond to the third, &c.

EQUALITY, in algebra, is a compariſon of two quantities, that are equal both really, and repreſentatively, *i. e.* which are ſo both in effect and letters.

A compariſon of two quantities, equal in effect, but unequal in letters, to render them equal; is called an *equation*.

Equality, in algebra, is uſually denoted by two parallel lines, as =: thus, 2+2=4, *i. e.* 2 plus 2, are equal to 4.

This character was firſt introduced by Hariot. Des Cartes, and ſome after him, in lieu thereof, uſe ∝: thus, 2+2 ∝ 4, ſo z—y=b+c, ſignifies that z minus y, is equal to b plus c.

From an equation we arrive at an *equality*, by changing an unknown letter into another, whereby the two members of the equation, *i. e.* the two quantities compared together, and connected by the ſign of *equality*, are rendered equal. See EQUATION.

Thus, in the equation aax=bcd; ſuppoſing $x=\frac{bcd}{aa}$, we change *x* into $\frac{bcd,}{aa}$ and by this ſubſtitution arrive at the *equality* bcd=bcd.

In the ſolution of a numerical problem, which is to be rendered rational; if there be only one power to be equaled to a ſquare, or other higher power; it is called *ſimple equality*. When there are two powers to be equaled, each to a ſquare, it is called *double equality*, &c.

Diophantus hath given us a method for *double equalities*, and Fa. de Billy, another for *triple equalities*, in his *Diophantus Redivivus*.

Union of EQUALITY. See the article UNION.

EQUANT, or ÆQUANT, in aſtronomy, a circle, imagined by aſtronomers, in the plane of the deferent, or eccentric; for the regulating and adjuſting of certain motions of the planets. See DEFERENT, ECCENTRIC, &c. See alſo APOGEE, and CIRCLE.

EQUATED *Anomaly*, See the article ANOMALY.

EQUATION, or ÆQUATION, in algebra, an expreſſion of the ſame quantity, in two different, that is, diſſimilar, but equal terms or denominations.

As, when we ſay, 2, 3=4+2; that is twice three is equal to four and two.

Stifelius defines *equation* to be the ratio of equality between two quantities differently denominated; as when we ſay 3 ſhill.=36 pence. Or 50 ſhill.=2 lib. 10 ſhill.=600 pence,=2400 farth. Or, b=d+e. Or, $12=\frac{a--P}{5}$, &c.

Hence, the reduction of two heterogeneous, or diſſimilar quantities to the ſame value, *i. e.* to an equality, is called the *bringing them to an equation.* See EQUALITY.

The character, or ſign of an *equation*, is = or ∝.

The reſolving of problems, by means of *equations*, is the buſineſs of algebra.

Terms of an EQUATION, are the ſeveral quantities, or parts, of which an *equation* is compoſed, connected together by the ſigns + and —. Thus, in the *equation* b+c=d; the terms are b, c, and d. And the tenor or import of the *equation* is, that ſome quantity, repreſented by d, is equal to two others repreſented by b and c.

Root of an EQUATION, is the value of the unknown quantity in the *equation*. *E. gr.* if $a^2+b^2=x^2$, the root will be $\sqrt{}(a^2+b^2)$. See ROOTS *of equations*.

Equations are divided, with regard to the powers of the unknown quantities, into *ſimple*, *quadratic*, *cubic*, &c.

Simple EQUATION, is that wherein the unknown quantity is only of one dimenſion, or in the firſt power. As, $x=(a+b):2$.

Quadratic EQUATION, is that wherein the unknown quantity is of two dimenſions, or in the ſecond power. As, $x^2=a^2+b^2$. See QUADRATIC *equation*.

Cubic EQUATION, is that wherein the unknown quantity is of three dimenſions. As $x^3=a^3—b^3$, &c. See CUBIC *equation*.

If the unknown quantity be of four dimenſions, as $x^4=a^4—b^4$, the equation is called a *biquadratic*; if of 5, a *ſurdeſolid*, &c.

Equations are conſidered two ways: either as the ultimate concluſions we arrive at in the ſolution of problems; or as means, by the help whereof, we arrive at thoſe final ſolutions.

An *equation* of the firſt kind conſiſts only of one unknown quantity, which is intermixed with other known quantities. Thoſe of the latter kind conſiſt of ſeveral unknown quantities, which are to be compared, and connected together, till out of them all ariſe a new *equation*, wherein there is but one unknown quantity, mixed with the known. To get the value of which unknown quantity, the *equation* is generally turned, and transformed various ways, till it be brought as low, and rendered as ſimple, as poſſible.

The doctrine and practice of *equations*, that is, the ſolution of queſtions by *equations*, conſiſts of ſeveral ſteps, or parts; *viz.* 1°, The denominating of the ſeveral quantities, or expreſſing them in proper ſigns, or ſymbols. 2°, The bringing the quantities thus denoted to an *equation*. 3°, The reducing that *equation* to its loweſt and ſimpleſt terms. To which, 4°, may be added the conſtructing of the *equation*, or repreſenting it in geometrical lines.

With regard to the firſt; a queſtion, or problem, being propoſed; we conceive the thing ſought, or required, as already done: and accordingly note, or expreſs it by one of the vowels, as *a*, or more uſually, by one of the laſt letters of the alphabet, *x*, *y*, or *z*; noting the other known quantities, by the conſonants, or the beginning letters of the alphabet, *b*, *c*, *d*, &c.

The queſtion being thus ſtated in ſpecies; it is conſidered whether, or no, it be ſubject to any reſtrictions, *i. e.* whether it be determinate, or no: which is found by theſe rules.

1°, If the quantities ſought, or required, be more than the number of *equations* given, or contained in the queſtion; it is indeterminate, and capable of innumerable ſolutions. The *equations* are found, if they be not expreſly contained in the problem itſelf, by the theorems of the equality of quantities.

2°, If the *equations* given, or contained in the problem, be juſt equal in number with the unknown quantities; the queſtion is determinate, or admits but of a limited number of anſwers.

3°, If the unknown quantities be fewer than the given *equations*, the queſtion is yet more limited; and ſometimes it diſcovers itſelf impoſſible, by ſome contradiction between the *equations*.

Now, *to bring a queſtion to an* EQUATION, that is, to bring the ſeveral mediate *equations*, to one final one; the principal thing to be attended to, is to expreſs all the conditions thereof, by ſo many *equations*. In order to which, it is to be conſidered, whether the propoſitions, or ſentences, wherein it is expreſſed, be all of them fit to be noted in algebraic terms; as our conceptions uſe to be in Latin, or Greek characters. And if ſo, as is generally the caſe in queſtions about numbers, or abſtract quantities; then let names be given both to the known and unknown quantities, as far as occaſion requires: and thus the drift of the queſtion will be couched, as we may call it, in the *algebraical language*: and the condition, thus tranſlated to algebraic terms, will give as many *equations* as are neceſſary to ſolve it.—To illuſtrate this by an inſtance: ſuppoſe it required to find three numbers, in continual proportion, whoſe ſum is 20, and the ſum of their ſquares 140; putting x, y, z, for the names of the three numbers ſought, the queſtion will be tranſlated out of the verbal to the ſymbolical expreſſion, thus:

The queſtion in words.	*In ſymbols.*
Required three numbers, on theſe conditions.	x, y, z?
That they be continually proportional.	$x : y :: y : z$, or $xz = yy$
That the ſum be 20.	$x + y + z = 20$
And the ſum of their ſquares 140.	$xx + yy + zz = 140$.

Thus, is the queſtion brought to theſe *equations*, viz. $xz = yy$, $x + z + y = 20$; and $xx + yy + zz = 140$, by the help whereof, x, y, and z, are to be found, by the rules already laid down.

The ſolutions of queſtions are, for the moſt part, ſo much the more expedite and artificial, by how much the unknown quantities, you have at firſt, are the fewer. Thus, in the queſtion propoſed, putting x for the firſt number, and y for the ſecond, $\frac{yy}{x}$ will be the third continual proportional; which being put for the third number, bring the queſtion into *equations*, as follows:

The queſtion in words.	*Symbolically.*
There are ſought three numbers in continual proportion.	$x\ y\ \frac{yy}{x}$?
Whoſe ſum is 20.	$x + y + \frac{yy}{x} = 20$.
And the ſum of their ſquares 140.	$xx + yy + \frac{y^4}{xx} = 140$.

You have therefore the *equations* $x + y + \frac{yy}{x} = 20$, and $xx + yy + \frac{y^4}{xx} = 140$, by the reduction whereof, x and y are to be determined.

Take another example: a merchant increaſes his eſtate annually by one third part, abating 100 *l.* which he ſpends yearly in his family; and after three years he finds his eſtate doubled. *Query*, What is he worth?—To reſolve this, it muſt be obſerved, that there are (or lie hid) ſeveral propoſitions, which are all thus found out, and laid down.

In words.	*Algebraically.*
A merchant has an eſtate —	x
Out of which the firſt year he ſpends 100 *l.*	$x - 100$
And augments the reſt by one third. —	$x - 100 + \frac{x-100}{3}$, or $\frac{4x-400}{3}$
And the ſecond year he ſpends 100 *l.*	$\frac{4x-400}{3} - 100$, or $\frac{4x-700}{3}$
And augments the reſt by one third. —	$\frac{4x-700}{3} + \frac{4x-700}{9}$, or $\frac{16x-2800}{9}$
And ſo the third year he ſpends 100 *l.*	$\frac{16x-2800}{9} - 100$, or $\frac{16x-3700}{9}$
And by the reſt gains likewiſe one third.	$\frac{16-3700}{9} + \frac{16x-3700}{27}$, or $\frac{64x-14800}{27}$
And he becomes at length twice as rich as at firſt.	$\frac{64x-14800}{27} = 2x$

Therefore the queſtion is brought to this *equation*, $\frac{64x-14800}{27} = 2x$, by the reduction whereof you will find the value of x.

Viz. Multiply it into 27, and you have $64x - 14800 = 54x$; ſubtract $54x$, and there remains $10x - 14800 = 0$, or $10x = 14800$; and dividing by 10, you have $x = 1480$. So that the value of his eſtate at firſt was 1480 *l.*

It appears then, that to the ſolution of queſtions about numbers, or the relations of abſtract quantities, there is ſcarce any thing more required, but to tranſlate them out of the common, into the algebraic language; *i. e.* into characters, proper to expreſs our ideas of the relations of quantities. Indeed, it may ſometimes happen, that the language wherein the queſtion is ſtated, may ſeem unfit to be rendred into the algebraical; though by making a few alterations therein, and attending to the ſenſe, rather than the ſound of the words, the tranſlation becomes eaſy enough. The difficulty here reſults merely from the difference of idioms, which is as obſervable between moſt languages as between the common and ſymbolical. However, to render the ſolution of ſuch problems a little more eaſy and familiar, we ſhall add an example or two thereof.

1°, *Given the ſum of two numbers* a, *and the difference of their ſquares* b; *to find the numbers themſelves.* Suppoſe the leſſer, x; the other will be $a - x$; and their ſquares xx and $aa - 2ax + xx$: whoſe difference, $aa - 2ax$ is called b. Conſequently, $aa - 2ax = b$. Whence, by reduction, $aa - b = 2ax$; or $\frac{aa-b}{2a}\left(= \frac{1}{2}a - \frac{b}{2a}\right) = x$.

E. gr. Suppoſe the ſum of the numbers, or a, to be 8, and the difference of their ſquares, or b, 16: then will $\frac{1}{2}a - \frac{b}{2a}(= 4 - 1) = 3 = x$. And $a - x = 5$. Therefore the numbers are 3 and 5.

2°, *To find three quantities* x, y, *and* z, *the ſum of each pair whereof is given.* Suppoſe the ſum of the pair x and y be a; that of x and z, b; and that of y and z, c. To determine the three numbers required, x, y, and z; we have three *equations* $x + y = a$; $x + z = b$; and $y + z = c$: now, to exterminate two of the unknown quantities, *e. gr.* y and x; take away x, both from the firſt and ſecond *equations*; and we ſhall have $y = a - x$, and $z = b - x$. Which values being ſubſtituted for y and z in the third *equation*; there will ariſe $a - x + b - x = c$; and by reduction $x = \frac{a+b-c}{2}$. Having found x, the former *equations*, $y = a - x$ and $z = b - x$ will give y and z.

Thus, *e. gr.* if the ſum of the pair x and y be 9; of x and z, 10; and of y and z, 13: then, in the value xy, and z, write 9 for a, 10 for b, and 13 for c; and you will have $a + b - c = 6$; and conſequently $x\left(= \frac{a+b-c}{2}\right) = 3$, y $(= a - x) = 6$, and z $(= b - x) = 7$.

3°, *To divide a given quantity into any number of parts, ſo as that the greater parts ſhall exceed the leaſt by any given differences.* Suppoſe a to be a quantity which is to be divided into four ſuch parts, the firſt and ſmalleſt whereof is x; the exceſs of the ſecond part above this, b, of the third, c, and the fourth, d: then will $x + b$ be the ſecond part, $x + c$ the third, and $x + d$ the fourth: the aggregate of all which $4x + b + c + d$ is equal to the whole line a. Now, taking away from each, $b + c + d$, and there remains $4x = a - b - c - d$, or $x = \frac{a-b-c-d}{4}$.

Suppoſe, *e. gr.* a line of 20 feet to be divided into 4 parts, in ſuch manner, as that the exceſs of the ſecond above the firſt may be 2 feet, of the third 3 feet, and of the fourth 7 feet. Then the four parts will be $x\left(= \frac{a-b-c-d}{4} \text{ or } \frac{20-2-3-7}{4}\right) = 2$, $x + b = 4$, $x + c = 5$, and $x + d = 9$. And after the ſame manner, may a quantity be divided into a greater number of parts on the like conditions.

4°, *A perſon diſpoſed to diſtribute a little money among ſome beggars wants eight-pence, of three-pence for each of them: he therefore gives them two pence a-piece, and has three-pence left: the number of beggars is required.* Let the number of beggars be called x; and the perſon want 8 pence of giving them all $3x$ pence. Conſequently he has $3x - 8$; out of which he gives $2x$ pence; and the remaining pence $x -$ are 3. That is $x - 8 = 3$, or $x = 11$.

5°, *The power or ſtrength of one agent being given*; *to determine how many ſuch agents will produce a given effect* a, *in a given time* b. Suppoſe the power of the agent ſuch, as that it may produce the effect c, in the time d; then, as the time d is to the time b, ſo is the effect c, which the agent can produce in the time d, to the effect it can produce in the time b, which accordingly will be $\frac{bc}{d}$. Then, as the effect of one agent $\frac{bc}{d}$ is to the joint effect of them all, a; ſo is that one agent, to all the agents. Conſequently the number of agents will be $\frac{ad}{bc}$.

Thus, *e. gr.* if a clerk, or writer, in 8 days time, tranſcribe 15 ſheets; how many ſuch clerks are required to tranſcribe 405 ſheets in 9 days? *Anſw.* 24. For if 8 be ſubſtituted for d, 15 for c, 405 for a, and 9 for b, the number $\frac{ad}{bc}$ will become $\frac{405 \times 8}{9 \times 15}$ that is $\frac{3240}{135}$ or 24.

6°, *The powers of ſeveral agents being given; to determine the time x, wherein they will jointly perform a given effect.* Suppoſe the powers of the agents, A, B, C, ſuch as that in the times e, f, g, they would produce the effects a, b, c, reſpectively: and theſe, in the time x, would produce effects $\frac{ax}{e}$, $\frac{bx}{f}$, $\frac{cx}{g}$. Conſequently $\frac{ax}{e} + \frac{bx}{f} + \frac{cx}{g} = d$, and by reduction $x = \frac{d}{\frac{a}{e} + \frac{b}{f} + \frac{c}{x}}$.

Suppoſe, *e. gr.* that three workmen could finiſh a certain work in ſuch and ſuch times, *viz.* A once in three weeks, B thrice in eight weeks, and C five times in twelve weeks: and it is required, in what time they will finiſh it together? here, the powers of the agents A, B, C, are ſuch as in the times 3, 8, and 12, reſpectively produce effects 1, 3, 5; and it is inquired in what time they will produce the effect, 1. For a, b, c, d, e, f, g, write 1, 3, 5, 1, 3, 8, 12; and there will come out $x = \frac{1}{\frac{1}{3} + \frac{3}{8}} + \frac{5}{12}$ or $\frac{8}{9}$ of a week, that is, 6 days, 5 $\frac{1}{3}$ of an hour; the time they will finiſh it in together.

7°, *Given the ſpecific gravities of a mixture, and of the ſeveral ingredients thereof; to find the proportion of the ingredients therein.* Suppoſe e the ſpecific gravity of the mixture $A+B$; a that of A, and b that of B: ſince the abſolute gravity, or weight, is compounded of the bulk of the body, and its ſpecific gravity; aA will be the weight of A; bB that of B; and $eA+eB$ the weight of the aggregate $A+B$. Conſequently, $aA+bB=eA+eB$; and therefore $aA-eA=eB-bB$ or $e-b.\ a-e :: A.\ B.$

Thus, *e. gr.* ſuppoſe the ſpecific gravity of gold to be as 19, that of ſilver as 10 $\frac{1}{3}$, and that of K. Hiero's crown as 17; then will 10. 3 $(:: e-b.\ a-e :: A.\ B.) ::$ the bulk of gold in the crown, to the bulk of ſilver: or 190. 31 $(:: 19 \times 10.\ 10\frac{1}{3} \times 3 :: a \times \overline{e-b}.\ b \times \overline{a-e}) ::$ the weight of the gold in the crown, to the weight of the ſilver, and 221. 31 :: the weight of the crown to the weight of ſilver.

To bring geometrical problems to EQUATIONS.—Geometrical queſtions, or thoſe relating to continued quantities, are ſometimes alſo brought to *equations*, after the ſame manner as arithmetical ones. So that the 1*ſt* rule to be here preſcribed, is, to obſerve every thing directed for the ſolution of numerical problems.

Suppoſe, *e. gr.* it were required to cut a right line, as AB (*Tab. Algebra, Fig.* 6.), in mean and extreme proportion in C; that is, ſo as that BE, the ſquare of the greater part, ſhall be equal to the rectangle BD, contained under the whole and the leſſer part.

Here ſuppoſing $AB=a$ and $CB=x$; then will $AC=a-x$; and $xx=a$ into $a-x$. An *equation*, which, by reduction, gives $x=-\frac{1}{2}a+\sqrt{\frac{5}{4}aa}$.

But it is very rare that geometrical problems are thus brought to *equation*; as being generally found to depend on various complex poſitions, and relations of lines; ſo that, here, ſome further artifice, and certain ſpecial rules, will be required, to bring them to algebraic terms. Indeed, it is very difficult to preſcribe any thing preciſe in ſuch caſes: every man's own genius ſhould be the rule of his procedure.

Something, however, ſhall be ſaid in the general, for the ſake of ſuch as are nothing verſed in ſuch operations, and that principally from Sir I. Newton.

Obſerve then, 2°, That problems concerning lines related to each other in any definite manner, may be variouſly ſtated, by ſuppoſing ſuch or ſuch quæſita, or things ſought, to be required from ſuch or ſuch data: yet ſtill, with whatever data and quæſita the queſtion is propoſed, its ſolution will ariſe after the very ſame manner, without the leaſt alteration of any circumſtance, except in the imaginary ſpecies of lines, or in the names whereby the data are diſtinguiſhed from the quæſita.

Suppoſe, *e. gr.* the queſtion were about an iſoſceles triangle, BCD (*Fig.* 7.), inſcribed in a circle; whoſe ſides, BC, BD, and baſe CD, were to be compared with the diameter of the circle AB. Here the queſtion may be either propoſed, of the inveſtigating of the diameter, from the given ſides and baſe; or inveſtigating the baſe, from the ſides and diameter given. Or, laſtly, of finding the ſides, from the baſe and diameter given: and propoſe it under which form you will, it will be brought to an *equation*, by the ſame algebraic ſeries.

Thus, if the diameter be ſought, put $AB=x$, $CD=a$, and BC, or $BD=b$. Then, drawing AC, as the triangles ABC and CBE are ſimilar; $AB : BC :: BC : BE$, or $x : b :: b : BE$. Wherefore $BE=\frac{bb}{x}$ and $CE=\frac{1}{2}CD$ or $\frac{1}{2}a$. And, by reaſon the angle CEB is a right angle, $CEq+BEq=BCq$, that is, $\frac{1}{4}aa+\frac{b^4}{xx}=bb$. Which *equation* being reduced, gives the diameter required, x. Again, If the baſe be ſought, put $AB=c$, $CD=x$, and BC, or $BD=b$. Then drawing AC, as the triangles ABC and CBE are ſimilar; $AB : BC :: BC : BE$, or $c : b :: b : BE$. Wherefore $BE=\frac{bb}{c}$. And $CE=\frac{1}{2}CD$ or $\frac{1}{2}x$. And ſince the angle CEB is right, $CEq+BEq=BCq$; that is, $\frac{1}{4}xx+\frac{b^4}{cc}=bb$; an *equation*, which, reduced, gives the baſis ſought, x.

Laſtly, If the ſide BC, or BD, were ſought, put $AB=c$; $CD=a$, and BC or $BD=x$. Then drawing AC, the triangles ABC, and CBE, being ſimilar, we have $AB : BC :: BC : BE$; or $c : x :: x : BE$. Wherefore, $BE=\frac{xx}{c}$. And $CE=\frac{1}{2}CD$ or $\frac{1}{2}a$; and the angle CEB being right, $CEq+BEq=BCq$. That is, $\frac{1}{4}aa+\frac{x^4}{cc}=xx$. An *equation*, which by reduction gives x required.

Thus is the calculus for arriving at the *equation*, as well as the *equation* itſelf, the ſame in all the caſes; except that the ſame lines are deſigned by different letters, according as they are data, or quæſita. Indeed, as the data or quæſita differ, there ariſes a difference in the reduction of the *equation* found: but there is no difference in the *equation* itſelf. So that we need make no difference between given and ſought quantities; but are at liberty to ſtate the queſtion with ſuch data and quæſita, as we think moſt favourable to the ſolution of the queſtion.

3°, A problem, then, being propoſed, compare the quantities it includes; and, without making any difference between data and quæſita, conſider what dependences they have on each other; that you may learn which of them will, by compoſition, give the reſt. In the doing of which, it is not neceſſary you ſhould at firſt contrive, how ſome may be deduced out of others, by an algebraic calculus: it ſuffices you remark in the general, that it may be deduced by ſome direct connexion. Thus, *e. gr.* if the queſtion be about the diameter of a circle, AD (*Fig.* 8.), and three lines AB, BC, CD, inſcribed in a ſemicircle; whereof, the reſt being given, BC is required: it is evident at firſt ſight, that the diameter AD determines the ſemicircle; as alſo, that the lines AB and CD, by inſcription, determine the points B and C, and conſequently BC required, and that by a direct connexion. Yet does not it appear how BC is deduced from the ſame data, by any analytical calculus.

4°, Having conſidered the ſeveral manners wherein the terms of the queſtion may be explained and decompounded; chooſe ſome of the ſynthetic methods; aſſuming ſome lines, as given, from which there is the moſt eaſy acceſs, or progreſſion to the reſt, and to which the regreſſion is the moſt difficult. For, though the calculus may be carried on diverſe ways, yet muſt it begin with theſe lines. And the queſtion is more readily ſolved, by ſuppoſing it to be of theſe data, and ſome quæſitum readily flowing from them; than by conſidering the queſtion as it is actually propoſed.

Thus, in the example already given, if from the reſt of the quantities given, it were required to find AD: perceiving that this cannot be done ſynthetically; yet that if it were ſo done, I could proceed in my ratiocination on it in a direct connexion from one thing to others; I aſſume AD as given, and begin to compute as if it was given indeed, and ſome of the other quantities, *viz.* ſome of the given ones, as AB, BC, or CD, were ſought. And thus, by carrying on the computation, from the quantities aſſumed to the others, as the relations of the lines to one another direct, there will always be obtained an *equation* between two values of ſome one quantity; whether one of thoſe values be a letter ſet down as a repreſentation, or name, at the beginning of the work, for that quantity; and the other, a value of it found out by computation: or whether both be found by computation made different ways.

5°, Having thus compared the terms of the queſtion in general, there is ſome further thought and addreſs required, to find the particular connexions, or relations of the lines, fit for computation. For, what te a perſon who does not ſo throughly conſider them, may ſeem immediately, and by a very near relation, connected together; when we come to expreſs that relation algebraically, are often found to require a longer circuit; and ſhall even oblige you to begin your ſchemes anew, and carry on your computation ſtep by ſtep; as may appear by finding BC, from AD, AB, and CD. For you are only to proceed by ſuch propoſitions, or enunciations, as can be fitly repreſented in algebraic terms, whereof there are ſeveral ariſe from Eucl. ax. 19. prop. 4. book 6. and prop. 47. lib. I. Elem.

To facilitate this diſcovery, of the relations of the lines in the figure, there are ſeveral things that contribute; as firſt, the ad-

addition and ſubtraction of lines; ſince from the values of the parts you may find the value of the whole; or from the value of the whole, and one of the parts, you may obtain the value of the other part. Secondly, by the proportionality of lines; ſince, as above ſuppoſed, the rectangle of the mean terms, divided by either of the extremes, gives the value of the other; or, which is the ſame thing, if the values of all four of the proportionals be firſt had, we make an equality (or *equation*) between the rectangles of the extremes and means. But the proportionality of lines is beſt found out by the ſimilarity of triangles; which, as it is known by the equality of their angles, the analiſt ought in particular to be converſant in. In order to which, it will be neceſſary he be maſter of Euclid, Prop. 5. 13. 15. 29. and 32. *Lib.* I. and of Prop. 4, 5, 6, 7, 8. *Lib.* VI. and of the 20, 21, 22. 27. and 31. *Lib.* III. To which may be added, the 3d Prop. *Lib.* VI. or the 35th and 36th Prop. *Lib.* III. Thirdly, the calculus is promoted by the addition or ſubtraction of ſquares; *viz.* in right-angled triangles we add the ſquares of the leſſer ſides, to obtain the ſquare of the greater; or from the ſquare of the greater ſide we ſubtract the ſquare of one of the leſſer, to obtain the ſquare of the other. On which few foundations, if we add to them Prop. 1. of the VIth Elem. when the buſineſs relates to ſuperficies, and alſo ſome propoſitions taken out of the 11th and 12th books of Euclid, when ſolids come in queſtion; the whole analytic art, as to right-lined geometry, depends. Indeed, all the difficulties of problems may be reduced to the ſole compoſition of lines out of parts, and the ſimilarity of triangles: ſo that there is no occaſion to make uſe of other theorems; becauſe they may all be reſolved into theſe two, and conſequently into the ſolutions that may be drawn from them.

6°, To accommodate theſe theorems to the ſolutions of problems, the ſchemes are oft-times to be farther conſtructed, by producing out ſome of the lines, till they cut ſome others, or become of an aſſigned length; or by drawing lines parallel or perpendicular, from ſome remarkable point; or by conjoining ſome remarkable points; as alſo, ſometimes, by conſtructing them after other methods, according as the ſtate of the problems and the theorems, which are made uſe of to ſolve it, ſhall require.

As for example: if two lines that do not meet each other, make given angles, with a certain third line; perhaps we produce them ſo, that when they concur, or meet, they ſhall form a triangle, whoſe angles, and conſequently the ratio of their ſides, ſhall be given; or if any angle be given, or be equal to any one, we often complete it into a triangle given in ſpecie, or ſimilar to ſome other, and that by producing ſome of the lines in the ſcheme, or by drawing a line ſubtending an angle. If the triangle be an oblique-angled one, we often reſolve it into two right-angled ones, by letting fall a perpendicular. If the buſineſs concern multilateral or many-ſided figures, we reſolve them into triangles, by drawing diagonal lines, and ſo in others; always aiming at this end, *viz.* that the ſcheme may be reſolved either into given, or ſimilar, or right-angled triangles.

Thus, in the example propoſed, draw the diagonal BD, that the trapezium ABCD may be reſolved into two triangles, ABD, a right-angled one, and BDC, an oblique-angled one (*Fig.* 8. n° 2.); then reſolve the oblique-angled one into two right-angled triangles, by letting fall a perpendicular from any of its angles B, C, or D, upon the oppoſite ſide; as from B upon CD produced to E, that BE may meet it perpendicularly. But ſince the angles BAD and BCD make in the mean while two right ones (by 22 Prop. 3 Eucl.), as well as BCE and BCD, the angles BAD and BCE are perceived to be equal; conſequently the triangles BCE and DAB to be ſimilar. And ſo the computation (by aſſuming AD, AB, and BC, as if CD were ſought) may be thus carried on; *viz.* AD and AB (by reaſon of the right-angled triangle ABD) give you BD. AD, AB, BD, and BC (by reaſon of the ſimilar triangles ABD and CEB), give BE and CE. BD and BE (by reaſon of the right-angled triangle BED) give ED: and ED—EC gives CD. Whence there will be obtained an *equation* between the value of CD ſo found out, and the ſmall algebraic letter that denotes it. We may alſo (and for the greateſt part it is better ſo to do, than to follow the work too far in one continued ſeries) begin the computation from different principles, or at leaſt promote it by diverſe methods, to one and the ſame concluſion; that at length there may be obtained two values of any of the ſame quantity; which may be made equal to one another. Thus AD, AB, and BC, give BD, BE, and CE, as before; then CD+CE gives ED; and laſtly, DB and ED (by reaſon of the right-angled triangle BED) give BE.

7°, Having concerted your method of procedure, and drawn your ſcheme; give names to the quantities that enter the computation (that is, from which aſſumed, the values of others are to be derived, till you come to an *equation*) chooſing ſuch as involve all the conditions of the problem, and ſeem beſt accommodated to the buſineſs, and which may render the concluſion (as far as you can gueſs) more ſimple, but yet not more than what ſhall be ſufficient for your purpoſe. Wherefore do not give new names to quantities, which may be denominated from names already given. Thus, of a whole line given, and its parts, of the three ſides of a right-angled triangle, and of three or four proportionals, ſome one of the leaſt conſiderable we leave without a name; becauſe its value may be derived from the names of the reſt. As in the example already brought, if I make $AD = x$, and $AB = a$, I denote BD by no letter, becauſe it is the third ſide of a right-angled triangle ABD, and conſequently its value is $\sqrt{xx - aa}$. Then if I ſay $BC = B$, ſince the triangles DAB and BCE are ſimilar, and thence the lines ADAB::BC. CE proportional, to three whereof, *viz.* to AD. AB, and BC, there are already names given; for that reaſon I leave the fourth CE without a name, and in its room I make uſe of $\frac{ab}{x}$ diſcovered from the foregoing proportionality. And ſo if DC be called c, I give no name to DE, becauſe from its parts DC and CE, or c and $\frac{ab}{x}$, its value $c + \frac{ab}{x}$ comes out.

8°, By this time the problem is almoſt reduced to an *equation*. For after the aforeſaid letters are ſet down for the ſpecies of the principal lines, there remains nothing elſe to be done, but that out of thoſe ſpecies, the values of other lines be made out, according to a pre-conceived method; till after ſome foreſeen way they come to an *equation*. And there is nothing wanting in this caſe, except that by means of the right-angled triangles BCE and BDE, I can bring out a double value of BE, *viz.* $BCq - CEq$ $\left(\text{or } bb - \frac{aabb}{xx}\right) = BEq$; as alſo $BDq - DEq$ $\left(\text{or } xx - aa - cc - \frac{2abc}{x} - \frac{aabb}{xx}\right) = BEq$. And hence $\left(\text{blotting out on both ſides } \frac{aabb}{xx}\right)$ you ſhall have the *equation* $bb = xx - aa - cc - \frac{2abc}{x}$; which being reduced, becomes $x^3 = + aa + bbx + 2abc$, as before, $+ cc$.

9, For the geometry of curve lines: we uſe to denote them either by deſcribing them by the local motion of right lines, or by uſing *equations* indefinitely expreſſing the relation of right lines diſpoſed in order, according to ſome certain law, and ending at the curve lines.

The antients did the ſame by the ſections of ſolids; but they effected it leſs commodiouſly. The computations, which regard curves, deſcribed after the firſt manner, are performed as above directed: thus, ſuppoſe AKC (*Fig.* 9.) a curve line, deſcribed by K the vertical point of the ſquare $AK\varphi$, whereof one leg AK freely ſlides thro' the point A given in poſition, while the other $K\varphi$ of a determinate length is carried along the right line AD, alſo given in poſition; and it is required to find the point C, in which any right line CD, given alſo in poſition, ſhall cut this curve: draw the right lines AC, CF, which may repreſent the ſquare in the poſition ſought, and the relation of the lines (without any difference or regard of what is given or ſought, or any reſpect had to the curve) being conſidered, you perceive the dependency of the others upon CF, and any of theſe four, *viz.* BC, BF, AF, and AC, to be ſynthetical; two whereof you aſſume, as $CF = a$, and $CB = x$; and beginning the computation from thence, you preſently obtain $BF = \sqrt{aa - xx}$, and $AB = \frac{xx}{\sqrt{aa - xx}}$, by reaſon of the right angle CBF; and that the lines BF. BC::BC. AB are continual proportionals. Moreover, from the given poſition of CD, AD is given, which therefore call b; there is alſo given the ratio of BC to BD, which ſuppoſe as d to e, and you have $BD = \frac{ex}{d}$, and $AB = b - \frac{ex}{d}$.

Therefore $b - \frac{ex}{d} = \frac{xx}{\sqrt{aa - xx}}$, an *equation*, which (by ſquaring its parts, and multiplying by $aa - xx$) will be reduced to this form.

$$x^4 = \frac{2bdex^3 \begin{matrix} -bbdd \\ +aaae \end{matrix} xx - 2aabdex + aabbdd.}{dd + ee}$$

Whence, laſtly, from the given quantities a, b, d, and e; x may be found by rules given hereafter; and at that interval, or diſtance x or BC, a right line drawn parallel to AD will cut CD in the point ſought, which is C.

If, inſtead of geometrical deſcriptions, we uſe *equations* to denote the curve lines by; the computations will thereby become as much ſhorter and eaſier, as the gaining of thoſe *equations* can make them. Thus, ſuppoſe the interſection C of the given ellipſis ACE, *Fig.* 10. with the right line CD given in poſition, be ſought: to denote the ellipſis, take ſome known *equation* proper to it, as $r x - \frac{r}{q} x x = y y$, where x is indefinitely put for any part of the axis A b, or A B, and y for the perpendicular b c, or B C, terminated at the curve; and r and q are given from the given ſpecies of the ellipſis. Since therefore C D is given in poſition, A D will be alſo given, which call a; and B D will be $a - x$; alſo the angle A D C will be given, and thence the ratio of B D to B C, which call 1 to e; and B C (y) will be $= e a - e x$, whoſe ſquare $e e a a - 2 e e a x + e e x x$, will be equal to $r x - \frac{r}{q} x x$. And thence by reduction there will ariſe $x x = \frac{2 a e e x + r x - a a e e}{e e + \frac{r}{q}}$, or $x =$

$$\frac{a e e + \frac{1}{2} r \pm e \sqrt{a r + \frac{r r}{4 e e} - \frac{a a r}{q}}}{e e + \frac{r}{q}}.$$

Add, that though a curve be denominated by a geometrical deſcription, or by a ſection of a ſolid, yet thence an *equation* may be obtained, which ſhall define the nature of the curve, and conſequently all the difficulties of problems propoſed about it, may be reduced hither. Thus, in the former example, if A B be called x, and B C, y, the third proportional B F will be $\frac{y y}{x}$, whoſe ſquare, together with the ſquare of B C, is equal to C F q; that is, $\frac{y^4}{x x} + y y = a a$; or $y^4 + x x y y = a a x x$. And this is an *equation*, by which every point C, of the curve A K C, agreeing or correſponding to any length of the baſe (and conſequently the curve itſelf), is defined; and from whence conſequently you may obtain the ſolutions of problems propoſed concerning this curve.

After the ſame manner almoſt, when a curve is not given in ſpecie, but propoſed to be determined, you may feign an *equation* at pleaſure, that may contain its general nature; and aſſume this to denote it, as if it was given; that from its aſſumption you ſome way arrive at *equations*, by which the aſſumptions may be determined.

What remains of the doctrine and practice of *equations*, relates to their reduction to the loweſt and ſimpleſt terms, the better to come at the value of the unknown quantity in the *equation*; and their geometrical conſtruction. See REDUCTION *of equations.*

Extraction of the roots of EQUATIONS. See EXTRACTION *of roots of equations.*

Conſtruction of EQUATIONS. See CONSTRUCTION *of equations*, and CURVE.

Converſion of EQUATIONS. See CONVERSION.

Adfected EQUATION.
Eminential EQUATION. } See the articles { ADFECTED. EMINENTIAL.
Exponential EQUATION.
EXPONENTIAL.

Tranſcendental EQUATIONS. See TRANSCENDENTAL.

EQUATION *of time*, in aſtronomy, denotes the difference between mean and apparent time; or the reduction of the apparent unequal time, or motion of the ſun, or a planet, to equable and mean time, or motion.

Time is only meaſured by motion: and as time, in itſelf, flows ever equably; to meaſure it, ſuch a motion muſt be uſed as is equable, or which always proceeds at the ſame rate.

The motion of the ſun is what is commonly uſed for this purpoſe; as it is the moſt eaſy to be obſerved: yet it wants the great qualification of a chronometer, which is equability. In effect, the aſtronomers find, that the ſun's apparent motion is no-ways equal, that he now-and-then ſlackens his pace, and afterwards quickens it again: and conſequently, equal time cannot be meaſured thereby. See SUN.

Hence, the time which the ſun's motion ſhews, called the *apparent time*, becomes different from the true and equable time, wherein all the celeſtial motions are to be eſtimated, and accounted.

This inequality of time is thus accounted for: the natural, or ſolar day is meaſured, not, properly, by one intire revolution of the equinoctial, or 24 equinoctial hours; but by the time which paſſes while the plane of a meridian, paſſing through the centre of the ſun, does, by the earth's converſion round its axis, return again to the ſun's centre: which is the time between one mid-day and the next.

Now, had the earth no other motion but that round its axis; all the days would be preciſely equal to each other, and to the time of the revolution of the equinoctial: but the caſe is otherwiſe; for while the earth is turning round its axis, it is likewiſe proceeding forward in its orbit. So that when a meridian has completed a whole revolution from the ſun's centre, its plane has not yet arrived at the ſun's centre again: as will appear from the figure.

Let the ſun be S (*Tab. Aſtronom. fig.* 50.); and let A B be a portion of the ecliptic: let the line M D, repreſent any meridian, whoſe plane produced, paſſes through the ſun when the earth is in A. Let the earth proceed in its orbit, and in making one revolution round its axis, let it arrive at B; then, will the meridian M D be in the poſition m d parallel to the former M D; and conſequently this has not yet paſſed through the ſun, nor have the inhabitants under that meridian yet had their mid-day. But the meridian d m muſt ſtill proceed with its angular motion, and deſcribe the angle d B f before its plane can paſs through the ſun.

Hence it appears, that the ſolar days are all longer than the time of one revolution of the earth round its axis.

However, were the planes of all the meridians perpendicular to the plane of the earth's orbit; and did the earth proceed with an equal motion in its orbit; the angle d B f would be equal to the angle B S A, and the arches A f and A B would be ſimilar: conſequently, the times would be always equal; the arch A B, and the angle d B f, of the ſame quantity: all the ſolar days equal to each other; and the apparent and real time agree.

But, as it is, neither of thoſe is the caſe: for the earth does not proceed in its orbit with an equable motion; but in its aphelion deſcribes a leſs arch, and in its perihelion a greater, in the ſame time; beſide, that the planes of the meridians are not perpendicular to the ecliptic, but to the equator. Conſequently, the time of the angular motion d B f, which is to be added to the intire revolution, in order to make a whole day, is not always of exactly the ſame quantity.

The ſame will be found, if, ſetting aſide the conſideration of the real motion of the earth, we conſider the apparent motion of the ſun in lieu thereof; as being what we meaſure time by. On this principle we obſerve, that the day not only includes the time of one reverſion of the globe on its axis, but is increaſed by ſo much as anſwers to that part of the ſun's motion, performed in that time. For when that part of the equinoctial, which, with the ſun, was at the meridian yeſterday at noon, is come thither again to-day; it is not yet noon; the ſun not being now at the place where he yeſterday was, but gone forward near a degree more or leſs. And this additament above the 24 equinoctial hours is upon a double account unequal.

1°, In that the ſun, by reaſon of his apogee and perigee, does not at all times of the year diſpatch an equal arch of the ecliptic in one day; but greater arches near the perigæum, which is about the middle of December; and leſſer nearer the apogæum, which is about the middle of June.

2°, In that though the ſun ſhould always move equably in the ecliptic, yet equal arches of the ecliptic do not, in all parts of the zodiac, anſwer to equal arches of the equator, by which we are to eſtimate time; by reaſon ſome parts thereof, as the two ſolſtitial points, lie nearer to a parallel poſition to the equinoctial than others, *e. gr.* thoſe about the equinoctial points, where the ecliptic and equinoctial interſect. Whereupon an arch of the ecliptic, near the ſolſtitial points, anſwers to a greater arch of the equinoctial, than an arch equal thereto near the equinoctial points.

The apparent motion of the ſun to the eaſt, then, being unequal; the natural and apparent days are no-ways proper to be applied to meaſure the celeſtial motions, which have no dependence on that of the ſun.

And hence aſtronomers have been obliged to invent other days for the uſe of their calculations: thoſe others are equal; and are a mean between the ſhorteſt and longeſt of the unequal ones.

Theſe are had by conſidering the number of hours in the whole revolution of the ſun in the ecliptic, and dividing the whole time into as many equal parts as there are hours, 24 of which conſtitute the day: and this reduction of the days conſtitutes the *equation* of natural days.

Conſequently, computing thoſe motions, according to equal time, it is neceſſary to turn that time back again into apparent time, that they may correſpond to obſervation: on the contrary, any phænomenon being obſerved, the apparent time thereof muſt be converted into equal time, to have it correſpond with the times marked in the aſtronomical tables.

As we do not know of any body in nature that moves equably; yet ſuch a motion is alone proper to meaſure equal days and hours; it has been thought fit to imagine ſome body, *e. gr.* a ſtar, moving in the equator, eaſtward; and never quickening, or ſlackening its pace, but going through the equator in preciſely the ſame time, as the ſun finiſhes his period in the ecliptic.

The motion of ſuch a ſtar will repreſent equal time; and its diurnal motion in the equator, will be 59′ 8″; the ſame as the mean, or equated motion of the ſun in the ecliptic. Conſequently, the mean or equable day is determined by the arrival of this ſtar at the meridian; and is equal to the time wherein the whole circumference of the equator, or 360°, paſs the meridian, and 59′ 8″ more. Which addition of 59′ 8″ remaining always the ſame, theſe mean or equated days will be conſtantly equal.

Since then the ſun goes unequally eaſtwards with reſpect to the equator, it will ſometimes arrive at the meridian ſooner than this imaginary ſtar, and ſometimes later: the difference is the difference between true and apparent time; which difference is known by having the place of the imaginary ſtar in the equator, and the point of the equator which comes to the meridian with the ſun. For the arch intercepted between them, being converted into time, ſhews the difference between equal and apparent time, which, as before, is called the *equation of time.*

The *equation* of time, then, may be defined, the time that flows while the arch of the equator intercepted between the point determining the right aſcenſion of the ſun, and the place of the imaginary ſtar, paſſes the meridian; or, as Tycho, and, after him, Street, ſtate it, it is the difference between the ſun's true longitude and his right aſcenſion.

To EQUATE *ſolar days*, that is, *to convert apparent into mean time, and mean into apparent time.*—1°, If the ſun's right aſcenſion be equal to his mean motion, the imaginary and true ſun will paſs the meridian at the ſame time; conſequently, the true coincides with the apparent time.

2°, If the right aſcenſion be greater than the mean motion, ſubtract the latter from the former; and turning the difference into ſolar time, either ſubtract it from the apparent time, to find the mean time; or add it to the mean time, to find the apparent.

3°, Laſtly, if the right aſcenſion be leſs than the mean motion, ſubtract the former from the latter, and turning the difference into ſolar time, either add it to the apparent time, to find the mean time; or ſubtract it from the mean time, to find the apparent.

This method of *equation* obtains, if the calculus be progreſſive; if it be retrograde, that is, if the time be reckoned backwards, the operation muſt be juſt the reverſe.

This doctrine of the inequality and *equation* of natural days is not only of uſe in aſtronomical obſervations, but alſo in the adjuſting and directing of clocks, watches, and other time-keepers: hence we ſee, why a pendulum, or other movement, which meaſures equal time, does not keep pace with the ſun, which meaſures apparent time; but is ſometimes before, and ſometimes later than the ſame. Whence ſuch automata and ſun-dials are neceſſarily found almoſt perpetually at variance.

The variations of the two kinds of time are exhibited in the following table, for every day throughout the year. It is borrowed from Mr. Flamſteed; one part of whoſe praiſe it is, that he was the firſt who fully demonſtrated and cleared this inequality of natural days: though others, and even Ptolemy, had a partial notion of it.

The uſe of the table is obvious: a clock or watch, that is to be kept to true or equal time, muſt be ſo many minutes and ſeconds faſter or ſlower than a ſun-dial, as is aſſigned in the table, for the reſpective day: or, if you would have it go by the ſun-dial, it goes well, if it gains or loſes each day the number of minutes and ſeconds in the table.

A TABLE *of the* EQUATION *of Natural Days, with a Regulation of a Movement by the ſame.*

DAYS.	January.		February.		March.		April.		May.		June.		July.		Auguſt.		Septemb.		October.		Novemb.		Decemb.	
	W. too faſt.		W. too faſt.		W. too faſt.		W. too faſt.		W. too ſlow.		W. too ſlow.		W. too faſt.		W. too faſt.		W. too ſlow.		W. too ſlow.		W. too ſlow.		W. too ſlow.	
	Min.	Sec.	Min.	Sec.	Min.	Sec.	Min.	Sec.	Min.	Sec.	Min.	Sec.	Min.	Sec.	Min.	Sec.	Min.	Sec.	Min.	Sec.	Min.	Sec.	Min.	Sec.
1	8	59	14	48	10	08	0	48	4	07	1	02	4	43	4	30	3	48	13	14	15	23	5	02
2	9	21	14	47	9	51	0	32	4	09	0	51	4	51	4	20	4	08	13	28	15	15	5	13
3	9	43	14	45	9	34	0	16	4	11	0	39	4	58	4	10	4	28	13	42	15	06	4	44
4	10	04	14	42	9	17	0 *	01	4	12	0	27	5	05	3	59	4	49	13	55	14	56	4	15
5	10	24	14	38	8	59	0 *	14	4	12	0	15	5	11	3	48	5	10	14	08	14	45	3	46
6	11	44	14	33	8	41	0	29	4	11	0	* 02	5	17	3	36	5	31	14	20	14	33	3	17
7	11	03	14	28	8	23	0	44	4	10	0	* 11	5	22	3	24	5	52	14	31	14	20	2	48
8	11	21	14	22	8	05	0	58	4	08	0	24	5	27	3	11	6	13	14	42	14	06	2	18
9	11	39	14	16	7	47	1	12	4	06	0	37	5	31	2	58	6	34	14	52	13	52	1	48
10	11	55	14	09	7	29	1	25	4	04	0	50	5	36	2	44	6	54	15	02	13	37	1	18
11	12	12	14	01	7	11	1	38	4	01	1	03	5	38	2	30	7	14	15	11	13	21	0	48
12	12	28	13	53	6	53	1	50	3	57	1	16	5	41	2	16	7	34	15	19	13	04	0 *	18
13	12	43	13	44	6	35	2	02	3	52	1	29	5	43	2	01	7	54	15	26	12	40	0 *	12
14	12	57	13	34	6	16	2	14	3	47	1	42	5	45	1	46	8	14	15	32	12	28	0	42
15	13	10	13	24	5	57	2	25	3	41	1	54	5	46	1	30	8	34	15	38	12	09	1	12
16	13	22	13	13	5	38	2	36	3	35	1	06	5	46	1	34	8	54	15	43	11	50	1	42
17	13	34	13	02	5	19	2	46	3	29	2	18	5	45	0	57	9	14	15	48	11	30	2	11
18	13	45	12	50	5	00	2	56	3	22	2	30	5	44	0	40	9	33	15	52	11	09	2	40
19	13	55	12	38	4	41	3	05	3	15	2	42	5	42	0	25	9	52	15	55	10	47	3	09
20	14	04	12	25	4	22	3	13	3	07	2	54	5	40	0*	05	10	11	15	58	10	29	3	38
21	14	12	12	12	4	03	2	21	2	58	3	05	5	38	0*	13	10	30	16	00	10	02	4	07
22	14	19	11	58	3	44	2	28	2	49	3	16	5	37	0	31	10	48	16	01	9	38	4	35
23	14	25	11	43	3	25	2	35	2	40	3	27	5	31	0	50	11	06	16	01	9	14	5	03
24	14	31	11	28	3	07	3	41	2	30	3	38	5	27	1	09	11	24	16	00	8	49	5	30
25	14	36	11	13	2	49	3	46	2	20	3	49	5	22	1	28	11	41	15	58	8	24	5	37
26	14	40	10	57	2	31	3	51	2	10	3	59	5	16	1	48	11	58	15	56	7	58	6	24
27	14	43	10	41	2	13	3	55	2	00	4	09	5	10	2	08	12	14	15	53	7	52	6	50
28	14	46	10	25	1	55	3	59	1	49	4	18	5	03	2	28	12	30	15	49	7	05	7	16
29	14	48			1	38	4	02	1	38	4	27	4	56	2	48	12	45	15	44	6	38	7	41
30	14	49			1	21	4	05	1	27	4	35	4	48	3	08	13	00	15	38	6	10	8	05
31	14	49			1	04			1	15			4	39	3	28			15	31			8	29

Watch too Faſt ſo far as the two Stars.

Watch too Slow ſo far as the two Stars.

Watch too Faſt as far as the two Stars.

Watch too Slow as far as the two Stars.

ſolute EQUATION. See the Article ABSOLUTE.

EQUATION *of the centre*, called alſo *proſthaphæreſis*, and *total proſthaphæreſis*, is the difference between the true and mean place of a planet; or the angle made by the lines of the true and mean place; or, which amounts to the ſame, between the mean and equated anomaly.

The motions of the ſun and moon are affected with various inequalities; whence ariſes the neceſſity of ſo many *equations*. From theſe inequalities, the moon's place became exceeding difficult to be determined; to remove which difficulty, is the great deſign of Sir Iſaac Newton's *new Theory of the Moon*; wherein we are furniſhed with *equations* for all the inequalities of the mean motion. The principal of theſe are,

nnual EQUATIONS *of the mean motion of the ſun and moon, and of the apogee and nodes of the moon.*

The annual *equation* of the ſun's centre being given, the three other correſponding annual *equations* will be alſo given; and therefore a table of that will ſerve for all. For if the annual *equation* of the ſun's centre be taken from thence, for any time, and be called P, and let $\frac{1}{10}P=Q$, $Q+\frac{1}{60}Q=R$, $\frac{1}{8}P=D$, $D+\frac{1}{30}D=E$, and $D-\frac{1}{60}D=2F$; then ſhall the annual *equation* of the moon's mean motion for that time be R, that of the apogee of the moon will be E, and that of the node F.

Only obſerve, that if the *equation* of the ſun's centre be required to be added, then the *equation* of the moon's mean motion muſt be ſubtracted, that of her apogee muſt be added, and that of the node ſubducted. And, on the contrary, if the *equation* of the ſun's centre were to be ſubducted, the moon's *equation* muſt be added, the *equation* of her apogee ſubducted, and that of her node added.

There is alſo an *equation of the moon's mean motion*, depending on the ſituation of her apogee in reſpect of the ſun; which is greateſt, when the moon's apogee is in an octant with the ſun; and is nothing at all, when it is in the quadratures, or ſyzygies. This *equation*, when greateſt, and the ſun in perigæo, is 3 min. 56 ſeconds. But, if the ſun be in apogæo, it will never be above 3 min. 34 ſeconds. At other diſtances of the ſun from the earth, this *equation*, when greateſt, is reciprocally as the cube of that diſtance. But when the moon's apogee is any-where but in the octants, this *equation* grows leſs, and is moſtly at the ſame diſtance between the earth and ſun, as the ſine of the double diſtance of the moon's apogee, from the next quadrature or ſyzygy, to the radius. This is to be added to the moon's motion, while her apogee paſſes from a quadrature with the ſun to a ſyzygy; but is to be ſubtracted from it, while the apogee moves from the ſyzygy to the quadrature.

There is, moreover, another *equation of the moon's motion*, which depends on the aſpect of the nodes of the moon's orbit with reſpect to the ſun: and this is greateſt, when her nodes are in octants to the ſun, and vaniſhes quite, when they come to their quadratures of ſyzygies. This *equation* is proportional to the ſine of the double diſtance of the node from the next ſyzygy, or quadrature; and at the greateſt, is but 47 ſeconds. This muſt be added to the moon's mean motion, while the nodes are paſſing from their ſyzygies with the ſun, to their quadratures with him; but ſubtracted while they paſs from the quadratures to the ſyzygies.

From the ſun's true place take the equated mean motion of the lunar apogee, as was above ſhewed; the remainder will be the annual argument of the ſaid apogee. From whence the eccentricity of the moon, and the ſecond *equation* of her apogee, may be compared.

Excentric EQUATION. See the article EXCENTRIC.

EQUATOR, or ÆQUATOR, in aſtronomy and geography, a great moveable circle of the ſphere, equally diſtant from the two poles of the world, or having the ſame poles with thoſe of the world.

Such is the circle D A (*Tab. Aſtronom. fig.* 52.); its poles being P and Q.—It is called the *equator*, by reaſon when the ſun is therein, the days and nights are *equal*; whence alſo it is called the equinoctial; and when drawn on maps and planiſpheres, the *equinoctial line*, or ſimply the line.

Every point of the *equator* is a quadrant's diſtance from the poles of the world; whence it follows, that the *equator* divides the ſphere into two hemiſpheres, in one of which is the northern, and in the other the ſouthern pole.

By the paſſages, or tranſits of arches of the *equator* over the meridian, its equal or mean time is eſtimated: hence we have frequent occaſion for the converſion of degrees of the *equator* into time; and again, for the re-converſion of parts of time into degrees, or parts of the *equator*.

For performance whereof, we ſubjoin the following table; wherein are exhibited the arches of the *equator*, which paſs the meridian in the ſeveral hours, minutes, &c. of equated or mean time.

Converſion of Parts of the *Equator* into Time, and *vice verſa*.

Deg. of *Equat.*	Hours.	I	Hours.	Deg. of *Equat.*	Hour. Min.	Deg. of *Equat.*	I
Min.	I	II			Sec.		II
Sec.	II	III			Third.		III
Third.	III	IV			Fourth.		IV
1	0	4	1	15	1	0	15
2	0	8	2	30	2	0	30
3	0	12	3	45	3	0	45
4	0	16	4	60	4	1	0
5	0	20	5	75	5	1	15
10	0	40	6	90	6	1	30
15	1	0	9	135	10	2	30
30	2	0	12	180	20	5	0
60	4	0	15	225	30	7	30
90	6	0	18	270	40	10	0
180	12	0	21	315	50	12	30
360	24	0	24	360	60	15	0

The uſe of the table is obvious; ſuppoſe, *e. gr.* it were required to turn $19^{\circ}\ 13'\ 7''$ of the *equator* into time: againſt 15 deg. in the firſt column, we have $1^{h}\ 0'\ 00''$: againſt 4 deg. we have $16'\ 0''$: againſt 10 minutes $40''$: againſt 3 minutes, $12''\ 0'''$: againſt 5 ſeconds, we have $0''\ 20'''$: and againſt 2 ſeconds, $8'''$: which added together, give $1^{h}\ 16'\ 52''\ 28'''$.

Again, ſuppoſe it were required to find how many degrees, minutes, &c. of the *equator* anſwer to 23 hours 25 min. 17 ſec. and 9 thirds. Againſt 21^{h} in the fourth column of the table, you have 315°: againſt 2 hours, 32°: againſt $20'$, 5°: againſt 10 ſec. $2'\ 30''$: againſt 5 ſec. $1'\ 15''\ 0'''$: againſt 2 ſec. $30''\ 0'''$: againſt 6 thirds, $1''\ 30'''$: which added together, give $351^{\circ}\ 19'\ 17''\ 15'''$.

Elevation, or *altitude of the* EQUATOR, is an arch of a vertical circle, intercepted between the *equator* and the horizon. The *elevation of the equator*, with that of the pole, is always equal to a quadrant.

EQUERY*, or ECURY, a grand ſtable, or lodge for horſe furniſhed with all the conveniences thereof; as ſtalls, mange rack, &c.

* The word is formed from the French *eſcurie*, which ſignifi the ſame thing. Some, again, derive *eſcurie* from the Lati *ſcuria*, which not only denotes a place for beaſts to be p up in, but alſo a grange, or barn. But a more probab derivation is from *equile*, a ſtable for horſes, of *equ* horſe.

Some hold that the word *ſtable*, in propriety, relates only bullocks, cows, ſheep, hogs, &c. And *equery* to horſe mules, &c.

A *ſimple equery*, is that provided for one row of horſes: *double equery*, that provided for two, with a paſſage in t middle, or two paſſages; the horſes being placed head to hea as in the little *equery* at Verſailles.

Under *equery* are ſometimes alſo comprehended the lodgin and apartments of the *equeries*, grooms, pages, &c.

EQUERY, *eſcuyer*, is alſo an officer, who has the care and m nagement of the horſes of a king or prince.

EQUERIES, or EQUERRIES, popularly called QUERRIES, a particularly uſed among us, for officers of the king's ſtable five in number, who, when his majeſty goes abroad, ride the leading coach, are in waiting one at a time monthly, a have a table with the gentlemen uſhers during the time.

They uſed to ride on horſeback by the coach-ſide, when t king travelled; but that being more expenſive to the than neceſſary to the ſovereign, it has been diſcontinued.

EQUERIES *of the crown ſtable* have that appellation, as bei employed in managing and breaking the ſaddle-horſes, a preparing them for the king's riding.

Theſe are two in number; whereof one is, or always ſhou be, in cloſe waiting at court; and when his majeſty rid holds the ſtirrup, while the maſter of the horſe, or one of t *equeries*, in his abſence, aſſiſts in mounting him; and wh his majeſty rides, they uſually attend him.

EQUES *Auratus*, is uſed to ſignify a knight bachelor; ca *auratus*, q. d. *gilt*, becauſe antiently none but knights mi gild or beautify their armour, or other habiliments of war, w gold.

In law, this term is not uſed; but inſtead of it *miles*; a ſometimes *chevalier*.

EQUESTRIS*, EQUESTRIAN, a term chiefly uſed in t phraſe, *equeſtrian ſtatue*, which ſignifies a ſtatue repreſent a perſon mounted on horſeback.

* The word is formed of the Latin, *eques*, knight, horſema of *equus*, horſe.

The *Fortuna equeſtris*, in antient Rome, was a ſtatue of t goddeſs on horſeback.—We ſometimes alſo ſay, *equeſtri* *column*.

EQUESTRIAN *order*, among the Romans, ſignified the order knights, or *equites*.

EQUIANGULAR, or ÆQUIANGULAR, in geometry, is plied to figures, whoſe angles are all equal. See ANGLE.

A ſquare is an *equiangular* figure. See SQUARE.—All eq lateral triangles are alſo *equiangular*.

When the three angles of one triangle are ſeverally equal the three angles of another triangle, ſuch triangles are alſo to be *equiangular*.

EQUICRURAL, or ÆQUICRURAL *Triangle*, is what we m uſually call an iſoſceles. See ISOSCELES.

EQUICULUS, EQUULEUS, or EQUUS *minor*, a conſtellat of the northern hemiſphere. See EQUULEUS.

EQUIDIFFERENT, or ÆQUIDIFFERENT, in arithme If in a ſeries of three quantities, there be the ſame differe between the firſt and ſecond, as between the ſecond and th they are ſaid to be *continually equidifferent*: but, if in a ſe of four quantities, there be the ſame difference between firſt and ſecond, as between the third and fourth, they are to be *diſcretely equidifferent*.

Thus 3, 6, 7, and 10, are diſcretely *equidifferent*; and 3 and 9, continually *equidifferent*.

EQUIDISTANT, or ÆQUIDISTANT, in geometry, a t of relation between two things, which are every-where an equal or the ſame diſtance from each other. See STANCE.

Thus, parallel lines are ſaid to be *equidiſtant*, as they nei approach nor recede.

EQUILATERAL, or ÆQUILATERAL, is applied to any th whoſe ſides are all equal.

Thus, an *equilateral* triangle is that whoſe ſides are al equal length.—In an *equilateral* triangle, all the angles likewiſe equal.

All regular polygons, and regular bodies, are *equilateral*. POLYGON, REGULAR, &c.

EQULATERAL *Hyperbola*, is that wherein the conjugate a as AB, and DE, are equal.—*Tab. Conics, fig.* 20.

Hence, as the parameter is a third proportional to the conju axes, it is alſo equal thereto. Conſequently, if in the equa $y^2=bx+bx^2 : a$, we make $b=a$; the equation $y^2=ax+$ defines the nature of an *equilateral hyperbola*. See HYP BOLA.

EQUILIBRIUM, or ÆQUILIBRIUM, in mechanics, a term implying an exact equality of weight between two bodies, compared with each other.

A balance is in *equilibrio*, when the two ends are ſo exactly poiſed, that neither of them aſcends or deſcends, but both retain their parallel poſition to the horizon. From this circumſtance the word is originally taken, as being a compound of *æquus*, equal; and *libra*, balance.—Whence we frequently uſe the word *balance* in lieu thereof.

The *equilibrium* of fluids makes a conſiderable part of the doctrine of hydroſtatics. See FLUID.

EQUILIBRIUM is alſo uſed figuratively on other occaſions. A painter muſt take care to obſerve the *equilibrium* of his figures, *i. e.* diſpoſe them well on their centre of gravity, that they may not ſeem ill ſupported, or ready to tumble.

Thus, *e. gr.* if one arm be moving forward, the other muſt be proportionably backward, to poiſe the figure.

In a picture, there ſhould always be an *equilibrium* between one part and another: that is, the objects are to be diſtributed ſo, as to balance and contraſt each other; and not too many, *e. gr.* be crouded on one ſide, and the other left bare.

EQUIMULTIPLE, in arithmetic and geometry, is applied to ſimple magnitudes, when multiplied equally, *i. e.* by equal quantities, or multipliers.

Thus, taking A as many times as B, or multiplying them equally, there will ſtill remain the ſame ratio between the magnitudes thus multiplied, as between the primitive magnitudes before multiplication.

Now, thoſe magnitudes, thus equally multiplied, are called *equimultiples* of the original ones A and B: whence we ſay, that *equimultiples* have the ſame ratio as the ſimple quantities.

In arithmetic, we generally uſe the term *equimultiples* for numbers which contain equally, or an equal number of times, their *ſubmultiples*.

Thus, 12 and 6 are *equimultiples* of their *ſubmultiples* 4 and 2; inaſmuch as each of them contains its *ſubmultiple* three times.

EQUINA *Sella*. See the article SELLA.

EQUINOCTIAL, or ÆQUINOCTIAL, in aſtronomy, a great and immoveable circle of the ſphere, under which the equator moves in its diurnal motion,

The *equinoctial*, or *equinoctial line*, is ordinarily confounded with the *equator*; but there is a difference, the equator being moveable, and the *equinoctial* immoveable; and the equator being drawn about the convex ſurface of the ſphere, but the *equinoctial* on the concave ſurface of the magnus orbis.

The *equinoctial* is conceived, by ſuppoſing a ſemidiameter of the ſphere, produced through a point of the equator, and there, by the rotation of the ſphere about its axis, deſcribing a circle on the immoveable ſurface of the primum mobile.

Whenever the ſun, in his progreſs through the ecliptic, comes to this circle, it makes equal days and nights all around the globe: as then riſing due eaſt, and ſetting due weſt, which he never does at any other time of the year.

And hence the denomination, from *æquus*, and *nox*, night; *quia æquat diem nocti*.

The *equinoctial*, then, is the circle which the ſun deſcribes, or appears to deſcribe, at the time of the equinoxes; that is, when the length of the day is every-where equal to that of the night: which happens twice per annum. See EQUINOX.

QUINOCTIAL, in geography. See the article EQUATOR.

People who live under this circle, by geographers and navigators called the *line*, have their days and nights conſtantly equal. And at noon, the ſun is in their zenith, and therefore caſts no ſhadow.

From this circle, is the declination, or latitude of places, accounted in degrees of the meridian.

QUINOCTIAL *Points*, are the two points wherein the equator and ecliptic interſect each other.—The one, being in the firſt point of Aries, is called the *vernal*; and the other in the firſt point of Libra, the *autumnal point*.

QUINOCTIAL *Colure*, is that paſſing through the *equinoctial* points. See COLURE.

QUINOCTIAL *Dial*, is that whoſe plane lies parallel to the *equinoctial*. See DIAL.

QUINOCTIAL *Hours*.	See the articles	HOUR.
QUINOCTIAL *Line*.		LINE.
QUINOCTIAL *Orient*.		ORIENT.

QUINOX, or ÆQUINOX, in aſtronomy, the time when the ſun enters one of the equinoctial points.

The time when he enters the vernal point is particularly denominated the *vernal*; and that when he enters the autumnal point, the *autumnal equinox*.

The equinoxes happen when the ſun is in the *equinoctial* circle; when, of conſequence, the days are equal to the nights throughout the world, which is the caſe twice a year; *viz.* about the 10th of March, and the 12th of September, the firſt of which is the *vernal*, and the ſecond the *autumnal equinox*.

As the ſun's motion is unequal, that is, ſometimes ſwifter, and ſometimes ſlower (from the cauſes already explained under the article EQUATION), it comes to paſs, that there are about eight days more from the vernal to the autumnal *equinox*, than from the autumnal to the vernal: the ſun ſpending ſo much more time in travelling through the northern, than the ſouthern ſigns.

According to the obſervations of M. Caſſini, the ſun is 186^{d}. 14^{h}. $53'$. in the northern ſigns; and only 178^{d}. 14^{h}. $56'$. in the ſouthern. The difference of which is 7^{d}. 23^{h}. $57'$.

The ſun being continually advancing forwards in the ecliptic, and gaining a degree every day, he makes no ſtay in the equinoctial points; but the moment he arrives in them, he alſo leaves them.

Of courſe, therefore, though the day the ſun enters the equinoctial point, is called the *equinox*, as being reputed equal to night; yet is not it preciſely ſo, unleſs the ſun enter the equator at mid-day. For if the ſun riſing, ſhould enter the *vernal equinox*, at ſetting, he will have departed from it, and have got northwards about 12′: conſequently, that day will be ſomewhat longer than 12 hours, and the night proportionably ſhorter.

The time of the *equinoxes*, *i. e.* the moment in which the ſun enters the equator, is found by obſervation; the latitude of the place of the obſervation being given.

Thus, in the equinoctial day, or near it, take the juſt meridian altitude of the ſun; if this be equal to the altitude of the equator, or the complement of the latitude, the ſun is that very moment in the equator. If it be not equal, the difference is the ſun's declination. The next day, obſerve the meridian altitude as before, and find his declination: if the declination be of different kinds, *viz.* the one north, and the other ſouth, the *equinox* has happened in the interval of time between them. Otherwiſe, the ſun has either not entered the equinoctial, or had paſſed it at firſt. From theſe two obſervations, a trigonometrical calculus gives the time of the *equinox*.

It is found by obſervation, that the equinoctial points, and all the other points of the ecliptic, are continually moving backward, or in antecedentia, that is, weſtward. This retrograde motion of the equinoctial points, is that famous and difficult phænomenon, called the *preceſſion of the equinoxes*. See PRECESSION *of the equinoxes*.

EQUINUS *Venter*. See VENTER *Equinus*.

EQUIPAGE, in navigation. See CREW.

EQUIPOLLENCE, in logic, is when there is an equivalence between any two or more terms, or propoſitions; *i. e.* when they ſignify one and the ſame thing, though they expreſs it differently.—Such propoſitions, &c. are ſaid to be *equipollent*. See EQUIVALENT.

EQUIPPE′, in heraldry, expreſſes a cavalier equipped, *i. e.* armed at all points.

EQUITY, ÆQUITAS, denotes juſtice, or right mitigated and tempered by the conſideration of particular circumſtances; or a correction and abatement of the ſeverity of ſome law; or a temperament, which, without being unjuſt, abates the rigour of ſome juſt law.

This is what the Greeks call επιεικεια.—The utmoſt ſeverity of a good law is frequently contrary to juſtice; it ſhould always have *equity* for its rule and guide. *Summum jus, ſæpe ſumma injuria.*

The foundation of *equity* is not that there is any miſtake in the law; but that the law was laid down univerſally, by reaſon all circumſtances could not be conſidered, or taken in under one law.

Equity, therefore, is not ſo much a correction of a law, as an amendment; nor yet ſo properly an amendment of the law itſelf, as of ſome concluſion ariſing from its being ill underſtood, or ill applied.

In this it is diſtinguiſhed from a *diſpenſation*, which takes away the obligation of the law in ſome particular caſe; whereas a correction does not take away any thing of the obligation, but only ſhews in what ſenſe that is to be taken, leſt there ſhould be imagined any obligation, where there is none.

For an inſtance, ſuppoſe it an expreſs law, that the city being now beſet with an enemy, the gates be all ſhut; and ſuppoſe it fall out, that the enemy is then in purſuit after ſome of the citizens by whom it is defended, ſo that it would be highly prejudicial thereto not to open them the gates; *equity* here decrees the gates to be opened, contrary to the expreſs word of the law.

Thom. Aquinas propoſes another inſtance: ſuppoſe it law, that whoever refuſes to reſtore what had been committed in truſt to him, ſhall pay a grievous mulct; and ſuppoſe ſome perſon refuſe to reſtore a ſword left with him to a mad-man. This caſe is comprehended in the ſenſe and intendment of the law, though not in the words thereof; and the legiſlator himſelf, if he were preſent, would except it. *Equity*, therefore, muſt here ſtep in, to correct or ſupply the defect of the judge, and acquit the man of the mulct.

In this view, *equity* is of two kinds; and thoſe of contrary effects: the one abridges, and takes from the letter of the law; and the other enlarges, and adds thereto.

The firſt is defined, the correction of a law, made generally in that part wherein it fails: as, ſuppoſe a ſtatute made, "That whoſoever does ſuch a thing, ſhall be a felon, or ſuf-" "fer death:" yet if a mad-man, or an infant, who hath no diſcretion, do the ſame, he ſhall neither be a felon, nor ſuffer death.

The other is defined, an extenſion of the words of the law, to caſes which are not expreſſed, which yet come under the ſame reaſon; ſo that, when one thing is enacted, all other things, which are of the like degree, are ſo too.

Thus, the ſtatute which ordains, that in action of debt againſt executors, he who appears by diſtreſs ſhall anſwer, extends, by *equity*, to adminiſtrators; and ſuch of them as ſhall appear firſt by diſtreſs, ſhall anſwer, by the *equity* of the ſaid act, *quia ſunt in æquali genere.*

EQUITY is alſo uſed for the virtue of juſtice. See JUSTICE.

EQUITY, in our laws, *&c.* is alſo frequently uſed for the court of chancery, where controverſies are ſuppoſed to be determined according to the exact rules of *equity* and conſcience, by mitigating the rigour of the common law.

Æquitas ſequitur legem is an old maxim in law; but, from the great increaſe of ſuits in chancery, ſome have thought fit to give it this conſtruction, that, in all cauſes after a man has been at law, he muſt go to *equity.*

EQUIVALENT, is underſtood of ſomething that is equal in value, force, or effect, to another.

Equivalence is of various kinds, in *propoſitions*, in terms, and in *things.*

EQUIVALENT *Terms* are, where ſeveral words that differ in ſound, have yet one and the ſame ſignification: as, *every body was there*, and no body was abſent; *nihil non*, and *omne.*

EQUIVALENT *Things*, are either *moral*, *phyſical*, or *ſtatical.*—*Moral*, as when we ſay, that the commanding or adviſing a murder, is a guilt *equivalent* to that of the murderer.—*Phyſical*, as when a man, who has the ſtrength of two men, is ſaid to be *equivalent* to two men.—*Statical*, whereby a leſs weight becomes of equal force with a greater, by having its diſtance from the centre increaſed.

EQUIVOCAL, EQUIVOCUM, denotes a word or expreſſion that is dubious and ambiguous; or that may have ſeveral ſenſes, one true, and another falſe.

Equivocal terms anſwer to what are otherwiſe called *homonyma*, or *homonymous terms.*

Such is the word *emperor*, which is both the name of a dignity, the proper name of a perſon, and the name of a plant. So alſo the Latin *gallus*, which ſtands indifferently for a cock, and a Frenchman.

In theſe caſes, one word denotes diverſe conceptions, one word diverſe things: whence that common definition of *equivocals* in the ſchools, *quorum nomen eſt commune, ratio vero eſſentiæ ſecundum illud nomen diverſa.*

Philoſophers diſtinguiſh *equivocals* into *active* and *paſſive*; or *æquivoca æquivocantia*, and *æquivocata.*

Æquivoca æquivocantia, or thoſe that denominate and ſignify things, are words common to ſeveral things in a very different ſignification, *i. e.* to ſeveral things which have a ſimilar eſſence, correſpondent to the ſimilar denomination. *E. gr.* The word *taurus*, which ſtands for a ſign, a mountain, and an animal; and in one ſignifies a lowing animal; in another, a heap of ſtones and earth; and in the third, a conſtellation, or ſyſtem of ſtars.

Æquivoca æquivocata, or thoſe that are called or denominated, are the things ſignified by ambiguous names, *e. gr.* a ſign, a mountain, and an animal. Which laſt ſpecies of *equivocals* alone Ariſtotle ſeems to have had in view in his definition, which agrees to theſe, and theſe only.

EQUIVOCAL *Action.* } See the article { ACTION.
EQUIVOCAL *Cauſe.* } { CAUSE.

EQUIVOCAL *Generation* is a method of producing animals and plants, not by the uſual way of coition between male and female, but by I know not what plaſtic power, or virtue in the ſun, *&c.*

Thus, inſects, maggots, flies, ſpiders, frogs, *&c.* have uſually been ſuppoſed to be produced by *equivocal generation*, i. e. by the heat of the ſun warming, agitating, and impregnating the duſt, earth, mud, and putrified parts of animals.

This method of generation, which we alſo call *ſpontaneous*, was commonly aſſerted and believed among the ancient philoſophers; but the moderns, from more and better obſervations, unanimouſly reject it, and hold, that all animals, nay, and vegetables too, are univocally produced, that is, from parent animals, and vegetables of the ſame ſpecies and denomination.

It were a thing, one would imagine, ſufficient to diſcredit the Ariſtotelian, or rather the Egyptian doctrine of *equivocal generation*, to find flies, frogs, lice, *&c.* to be male and female, and accordingly to ingender, lay eggs, *&c.*

To imagine, that any of thoſe creatures could be ſpontaneouſly produced, eſpecially in ſo romantic a manner, as in the clouds, as they particularly thought frogs were, and that they dropped down in ſhowers of rain, were, certainly, highly unphiloſophical.

Yet ſome, even to this day, credit the ſtories of raining of frogs; and, among the reſt, the very curious and learned Dr. Liſter ſeems inclined to the opinion; inſtancing in frogs found on the leads of the lord Aſton's gatehouſe at Tixel in Staffordſhire, which, he imagines, came thither by ſome ſuch means. But we may make a judgment of this, and an hundred the like reports to be met with in conſiderable authors, from ſome other the like relations that have been better inquired into. Such are ſeveral reports of the raining of millet-ſeed, wheat, whitings, *&c.* An account of which, with the grounds of the deceit, ſee under RAIN, and SHOWER.

The doctrine of *equivocal generation* we call an *Egyptian doctrine*, as having, in all probability, had its riſe in Egypt, to ſolve the hypotheſis of the original production of men, and other animals, out of the earth, by the help of the ſun's heat.

To prove which, the Egyptians, as Diodorus Siculus obſerves, produce this obſervation, that about Thebes, when the earth is moiſtened by the Nile, and afterwards impregnated by the intenſe heat of the ſolar rays, an innumerable ſwarm of mice do come forth: whence he infers, that all kinds of animals might equally have ariſen out of the earth at the beginning of things. And from theſe, biſhop Stillingfleet takes the other writers, and adherents to the doctrine of *equivocal generation*, Mela, Pliny, Ovid, *&c.* to have borrowed the hypotheſis, without inquiring into its truth. Derham's *Phy. Theol.* lib. IV. c. 15.

EQUIVOCATION, ÆQUIVOCATIO, the uſing a term, or expreſſion, that has a double ſignification.

Equivocations are expedients to ſave telling the truth, and yet without telling a lye for the matter. The fathers are great patrons of *equivocations*, and mental reſervations; holding, that the uſe of ſuch ſhifts, and ambiguities, is in many caſes allowable.

St. Auguſtine, particularly, is reproached with endeavouring to vindicate Iſaac for ſaving his wife from a crime, by an *equivocation: tacuit aliquid veri, & non dixit aliquid falſi.* To advance a dubious propoſition, knowing it will be underſtood in a ſenſe different from that you give it in your mind, is an *equivocation*, and a breach of good faith and ſincerity.

EQUIVOCATION, in moral theology, is ſtrictly underſtood of a term, or phraſe, with two different ſignifications; the one common, and obvious; the other more unuſual, and remote: the latter of which being underſtood by the ſpeaker, but the former by the hearers, they conceive ſomething different from one another.

Of this we have an inſtance in St. John, chap. XI. where our Saviour is repreſented as ſaying, *Lazarus ſleepeth:* for the diſciples, who took the word *ſleeping* in the uſual ſignification, concluded that Lazarus, who they had been told was ſick, began to take reſt, and would ſoon recover; but Jeſus, uſing the word in a leſs direct and uſual ſignification, meant, that Lazarus was dead.

When the *equivoque* conſiſts of ſeveral words, it is properly called an *amphibology:* of which we have an inſtance in St. John, chap. II. *Deſtroy this temple*, ſays Jeſus Chriſt, ſpeaking to the Jews, *and I will raiſe it again in three days.*

The lawfulneſs of the uſe of *equivocations* has been greatly diſputed among the modern caſuiſts: many grave authors deny that it is allowable to uſe them on any occaſion whatever. Their reaſon is, that an *equivoque* is, to all intents and purpoſes, the ſame thing with a lye.

Others, on the contrary, particularly Cabaſſut, a divine famous among the prieſts of the oratory, hold a world of difference between an *equivocation* and a lye; maintaining, that it is always criminal to tell a lye; but that there are ſome occaſions where an *equivocation* may be uſed innocently: and ſuch, in effect, is the ſentiment of St. Thomas, St. Antonin, St. Raymond, and eſpecially St. Auguſtine, as Fa. Cabaſſut ſeems to have demonſtrated, Lib. IV. *Theor. de Prax. Jur. Can. Edit. Lugd.* 1685. cap. 4.

EQUULEUS, or ECULEUS, in antiquity, a kind of rack, or engine of torture, uſed for extorting the truth; at firſt chiefly on ſlaves, but afterwards turned againſt the Chriſtians.

The patient's arms and legs being faſtened on the *equuleus* with cords, he was hoiſted aloft, and extended in ſuch manner, that all his bones were diſlocated. In this ſtate, red-hot plates were applied to his body; and he was alſo goaded in the ſides with an iron forked inſtrument, called *ungula.*

The *equuleus* was of wood, and had holes at certain diſtances, with a ſcrew, by which the criminal was ſtretched to the third, ſometimes to the fourth or the fifth hole: at intervals, the ſcrew was ſlackened again, by which he had ſome reſpite; but then was he tormented with queſtions.

Hieronymus Magius, when a priſoner among the Turks, wrote an expreſs treatiſe *de Equuleo*; and another of bells; merely, as it is ſaid, from his memory, without any aſſiſtance of books. Sigonius had another treatiſe on the ſame ſubject.

Equuleus, in aſtronomy, a conſtellation of the northern hemiſphere; whoſe ſtars in Ptolemy's catalogue are 4; in Tycho's 4; in Mr. Flamſteed's 10. The longitudes, latitudes, magnitudes, &c. whereof are as follow:

Names and ſituations of the ſtars.	Sign.	Longit. °	′	″	Latitude North. °	′	″	Magn.
	♒	14	12	57	20	32	56	5
		15	59	37	23	2	36	6
		16	2	30	21	16	1	6
		16	25	37	21	38	31	6
Preced. of two in the mouth.		19	6	24	25	13	12	4
5								
		19	7	7	25	6	52	6
Subſeq. of the ſame.		20	7	30	24	46	57	4
Preced. of two in the head.		18	47	48	20	9	9	4
		20	51	5	21	42	53	6
Subſeq. in the ſame.	♒	21	7	2	21	3	6	4

Equuleus, in the arts and manufactures. See Horse.

ERADICATIVE, in medicine. See Radical.

ERANARCHA *, ΕΡΑΝΑΡΧΗΣ, a public officer among the antient Greeks, whoſe buſineſs was to preſide over, and direct the alms given, and proviſions made, for the poor.

* The word is formed of the Greek, ερανος, *alms, contribution*, and αρχη, *command*.

The *eranarcha* was properly the adminiſtrator, or ſteward of the poor: when any perſon was reduced to poverty, taken captive, or had a daughter to marry, which he could not effect for want of money, &c. this officer called an aſſembly of friends and neighbours, and taxed each, according to his means and eſtate, to contribute towards his relief. This is what we learn from Corn. Nepos, in his life of Epaminondas.

ERASED, in heraldry, expreſſes any thing that ſeems violently torn off from its proper place.—It is uſed in contradiſtinction to *couped*, which ſignifies a thing clean cut off.—The family of Card bears ermine, a demy lion rampant *eraſed*, azure, &c.

ERASTIANS, a religious ſect, or faction, which aroſe in England during the time of the civil wars; thus called from their leader Tho. Eraſtus; whoſe diſtinguiſhing doctrine it was, that the church had no right to diſcipline, that is, no regular power to excommunicate, exclude, cenſure, abſolve, decree, or the like.

ERECT *Flowers*, are ſuch as grow upright, without hanging, or reclining the head. See Flower.

Erect *Viſion*. See the article Vision.

Erect $\left\{\begin{array}{l}\textit{Direct,}\\ \textit{Declining, \&c.}\end{array}\right\}$ *Dials*. See Dial.

ERECTION, the act of raiſing, or elevating a thing, in a right line.

The *erecting* a perpendicular on a line given, is a popular problem in geometry.

The term Erection is alſo uſed figuratively.—As, the *erection* of a marquiſate into a duchy; biſhopricks can only be *erected* by the king.

It was antiently the practice to *erect* ſtatues to great men. Cato the cenſor, being aſked why a ſtatue was not *erected* him? I had rather, ſays he, hear that queſtion made, than hear it aſked why a ſtatue was *erected* me.

Erection is particularly uſed, in medicine, for the ſtate of the penis, when ſwelled and diſtended by the action of the muſcles, called *erectores*.

There is alſo an *erection* of the clitoris, which is performed by muſcles provided for that purpoſe. See Clitoris, and Erector.

An alteration of *erection*, and flaccidity in the penis, Dr. Drake obſerves, is of abſolute neceſſity: the firſt to the performance of its office; the ſecond for the ſecurity of the part. Without an *erection* it were impoſſible to emit and lodge the ſeed where it ought to be; and with a conſtant one, almoſt as impoſſible to ſecure the part from external injuries.—To ſay nothing of the loſs of inſtigation, which muſt be a neceſſary conſequence of conſtant *erection*.

The *erection* of the penis conſiſts in a diſtenſion of its corpora cavernoſa, by an extraordinary quantity of blood pent up therein.

That the blood is the matter which diſtends the penis in *erection*, is evident from abundance of experiments; though the moſt convincing is that of firmly tying the penis of an animal (as has been frequently done to a dog) in coitu; wherein, nothing has been found but blood to diſtend it. Hence, in the bodies of criminals, that hang long after death, the penis becomes *erected*; the blood, in that poſition, falling to the inferior parts, and ſtopping there.

By blowing into the blood-veſſels of the penis after death, the part becomes *erected*. This was firſt diſcovered by Mr. Cowper upon viewing its veins, after he had diſtended them with wind; whence it plainly appeared, that the external trunks paſſed, ſome under its ſkin only, and ſome over the oſſa pubis: beſides that a vaſt number of other veins on the dorſum penis, unite and empty themſelves into one trunk, called *vena penis*, which paſſes immediately under a tranſverſe ligament of the oſſa pubis, which is compreſſed by the approximation of the dorſum penis to the ligament of the pubis. This application of the dorſum penis is effected by its muſculi directores pulling down the crura of the corpora cavernoſa penis, which are tied up at their juncture in the body of the penis to the os pubis, by the ligamentum ſuſpenſorium. Now, this cannot happen to the cavernous body of the urethra, by reaſon there is no bone, whoſe poſition can give riſe to a ligament, which can have that effect on its veins: wherefore the muſculi acceleratores, embracing the veins of the bulb, do that office, though not ſo effectually as in the penis itſelf.

Accordingly the glans is not always perfectly diſtended with the penis, and it is this part that ſooneſt becomes flaccid on an *erection*.

The blood, by ſuch means, being precluded from its return; the corpora cavernoſa muſt of neceſſity become diſtended, if we conſider their ſtructure above-mentioned, with reſpect to the veins. The arteries, which before were flaccid, have now their trunks alſo diſtended, and do more plentifully import blood into the corpora cavernoſa.

But ſince it is abſolutely neceſſary ſome part of the detained blood ſhould be ſtill paſſing off, leſt it become grumous, and unfit for a reflux; the venæ præputii communicate with thoſe of the penis itſelf; whereby part of the blood may be returned from the penis during its *erection*, and give way to a freſh ſupply from the arteries, and preſerve the circulation uninterrupted.

ERECTORES *Clitoridis*, in anatomy, a pair of muſcles ariſing from the protuberances of the iſchium, and inſerted into the ſpongious body of the clitoris; which they ſerve to erect in coition.

Erectores *Penis*, a pair of muſcles ariſing fleſhy from the protuberances of the iſchium below the beginning of the cavernous bodies of the yard, into whoſe thick membranes they are inſerted.

Their uſe is to pull the yard upwards towards the os pubis, whereby the greateſt vein is compreſſed, and the refluent blood denied its paſſage under thoſe bones; which makes it ſwell. See Erection.

EREMIT. See the article Hermit.

ERICHTHONIUS, in aſtronomy, a conſtellation, the ſame as *auriga*. See Auriga.

ERIDANUS, in aſtronomy, a conſtellation of the ſouthern hemiſphere, in form of a river.

The ſtars in the conſtellation *Eridanus*, in Ptolemy's catalogue, are 30: in Tycho's 19: in Mr. Flamſteed's 68: the longitudes, latitudes, magnitudes, &c. whereof are as follow:

Names and ſituations of the ſtars.	Sign.	Longit. °	′	″	Latitude South. °	′	″	Magnit.
Firſt from the turn of the river to	♈	27	43	50	32	46	3	4
the breaſt of cetus.) A ſecond.		28	17	41	35	32	44	4
Firſt in the river before the breaſt	♉	4	24	50	24	33	38	3
of cetus.)	♈	28	40	53	38	43	48	6
	♉	7	23	4	18	42	23	6
5								
	♈	28	59	23	38	33	16	6 7
	♉	7	31	58	19	10	52	6
Preced.		6	2	44	23	45	20	5 6
Middle.		6	26	39	23	54	37	6
Second before the breaſt of cetus.		6	52	9	23	57	16	5
10								
Third of thoſe following turn of riv.		0	35	0	39	0	1	5 4
Inform. within the laſt ſinus.		0	11	14	44	45	1	3
Third before the breaſt of cetus.		9	29	25	25	57	22	3
		9	35	13	26	19	6	6
		5	6	42	39	9	28	6
15								
Fourth behind the turn of the river.		5	45	3	38	32	17	4
		14	30	20	23	22	27	4 5
Fourth before the breaſt of cetus.		13	35	20	27	46	30	3
Fifth behind the turn.		9	51	32	39	28	14	4
Preced. of two informes over the riv.		17	39	24	18	26	20	5
20								
		12	8	57	35	40	15	5 6
		17	6	37	24	8	18	5
Fifth before the breaſt of cetu		16	30	56	28	46	16	3
		19	11	36	20	27	17	5
		19	30	50	19	38	34	6
25								
Subſeq. and more ſouth.		16	37	28	31	9	15	4
Sixth behind the turn.		13	4	15	41	53	9	4
More ſouth. but contiguous to this.		13	0	52	42	34	32	6
		20	18	16	24	42	25	7
		20	16	20	25	0	38	5 6
30								
Subſeq. inform. over the river.		21	17	38	22	45	43	4 5
Eighth behind the turn.		14	31	20	43	40	50	5
In the ſecond bend of the river.	♈	19	31	34	33	13	35	3
		23	32	24	21	47	28	5
Ninth beyond the turn.		16	38	37	43	30	44	4
35								
		24	40	24	27	29	56	6
North. of two beyond the firſt bend.		25	5	51	27	30	0	3 4

Names and ſituations of the ſtars.	Sign.	Longit. ° ′ ″	Latitude. South. ° ′ ″	Magn.
Next before the ſecond bend.	♈	25 00 50	30 57 28	5
South. beyond the firſt bend.		26 07 45	28 13 03	4
Preced. of two beyond the 2d bend.		18 07 00	53 58 54	5
40 Preced. in the firſt bend.		28 59 47	25 01 01	5
Subſeq. beyond the ſecond bend.		20 06 13	54 33 15	5
	♊	1 15 15	20 11 27	5 6
		1 53 24	21 43 53	5 6
		1 12 38	28 24 50	5
45		1 00 31	29 53 52	4
Subſeq. in the firſt bend.	.	2 29 15	25 08 39	4
(weſt.		3 35 35	20 54 06	5 6
North. in the 2d bend toward the	♉	25 08 20	50 56 43	4
Small one contiguous to the ſubſeq.	♊	2 59 03	24 20 37	6
50 (in the 1ſt bend.				
South. in the ſecond bend.	♉	25 32 21	51 51 01	3
	♊	0 56 10	36 01 48	3 4
		0 23 41	41 25 03	3 4
		3 33 10	30 49 18	6
		3 45 58	30 28 21	6
55 Preced. before the firſt bend.		5 00 53	25 24 13	4
		3 11 25	30 01 49	5 6
		3 36 38	38 27 13	6
		4 07 47	38 24 20	6
Middle before the firſt bend.		6 43 03	27 50 40	5
60 Small one contiguous to it.		7 43 46	27 30 49	6
		7 59 51	32 49 13	6
		7 41 00	35 04 52	6
Subſeq. before the firſt bend.		8 53 02	29 48 30	5
That next the riſe of the river.		10 41 18	27 16 56	6
65 North. in the riſe of the river to-		19 57 20	27 53 48	3
wards Orion's leg.)		11 15 23	27 17 50	6
South. in the riſe of the river.	♊	10 52 55	31 34 10	4

ERIGENS *Penis*. See **Erector** *Penis*.

ERMIN, or **Ermine**, in heraldry, denotes a white field, or fur, powdered, or interſperſed with black ſpots. See Fur.

It is ſuppoſed to repreſent the ſkin of an animal, of the ſame denomination; which ſome will have a water-rat, others a ſort of weazle, and others an Armenian mouſe. In effect, there is no animal whoſe ſkin naturally correſponds to the herald's *ermin*.

The animal is milk-white; and ſo far is it from ſpots, that the tradition has it, that it will rather die, or be taken, than fully its whiteneſs. Whence its ſymbolical uſe.

But white ſkins having for many ages been uſed for the linings of the robes of magiſtrates, and great men; the furriers, at length, to add to their beauty, uſed to ſew bits of the black tails of thoſe creatures upon the white ſkins; to render them the more conſpicuous. Which alteration was introduced into armoury. See *Tab. Herald. fig.* 57.

The ſable ſpots in *ermin* are not of any determinate number, but they may be more or leſs, at the pleaſure of the painter or furrier.

ERMINE′. A *Croſs* **Ermine′**, is a croſs compoſed of four *ermine* ſpots, placed in the figure repreſented *Tab. Herald. fig.* 58.

It muſt be obſerved, that the colours in ſuch arms are not to be expreſſed; by reaſon, neither the croſs, nor the arms, can be of any colour but a white and black.

Colombiere blazons it *quatre queues d' ermine en croix*. The editor of Guillim deſcribes it thus; a croſs of four *ermines*; or, more properly, four *ermine* ſpots in croſs. It is the coat of Hurſton in Cheſhire.

Timbre of **Ermine**. See the article Timbre.

ERMINES, is uſed by ſome Engliſh writers for the reverſe of *ermine*, i. e. for white ſpots on a black field: but on what foundation nobody can tell; for the French, from whom we have our heraldry, have no ſuch term; but call this black powdered with white, *contre-ermine*; as denoting the counter, or reverſe of *ermine*; which is white powdered with black. See *Tab. Herald. fig.* 59.

ERMINITES, ſhould ſeem a diminutive of *ermines*, and naturally to ſignify little *ermines*; but it is otherwiſe. *Erminites* expreſſes a white field powdered with black; only that every ſpot has a littla red hair therein.

Some authors uſe the word *erminites*, for a yellow field powdered with black; which the French expreſs much better by *or ſemé d' ermines de ſable*.

EROSION, in medicine, the act of ſharp, acrid fluids, or humours, gnawing and tearing off parts from the fleſh, and other ſubſtances.—Arſenic, and other poiſons, make *eroſions* in the inteſtines.

EROTIC *, is applied to any thing which has a relation to the paſſion of love.

* The word is derived from the Greek, ερως, *love*; whence ερωτικος.

In medicine, we particularly uſe the phraſe *delirium eroticum*, for a kind of melancholy contracted through exceſs of love.

Though, among the ſeveral ſpecies of pulſes, there be no amorous pulſe, that is, no pulſe peculiar to that paſſion; yet we can certainly diſcover where the diſorder is *erotic*, by the beating of the pulſe, which, in that caſe, is changeable, unequal, turbulent, and irregular. Speak to the patient of the perſon he loves, and his pulſe inſtantly changes, becoming higher and quicker: and the minute you change the converſation, the pulſe is loſt again, and is diſturbed anew.

ERRANT, in law, the ſame with *itinerant*; the term is attributed to judges who go the circuit; and to bailiffs at large.

Knight **Errants**. See the article Knight.

ERRATA, a liſt uſually placed at the beginning or end of a book, containing the faults that have eſcaped in the impreſſion, and, ſometimes, even in the compoſition of the work.

Lindenberg has an expreſs diſſertation on typographical errors, *de erroribus typographicis*; wherein he obſerves, that there is no book exempt from them, not even the ſacred books. He ſets himſelf to inquire into all the cauſes thereof; and propoſes means to prevent them. But he advances nothing on that article, but what is either common, or impracticable. The authors, compoſitors, and correctors of the preſs, he ſays, muſt do their duty; who diſputes it? Each author muſt have his own printing-preſs at home, as Calixtus and Opitius had; who can do it?

Fa. Hardouin's book on medals might be intituled the *errata of the antiquaries*; and the critiques on hiſtory by Perizonius, the *errata of the antient hiſtorians*. In the ſame ſenſe, M. Bayle's dictionary might be called the *errata of Moreri*.

ERRATIC, in aſtronomy, an epithet applied to the planets, which are called *erratic* or wandering ſtars, in contradiſtinction to the fixed ſtars.

There is alſo a kind of fever called *erratic*. See Fever.

Erratic *Winds*. See the article Wind.

ERRHINA, **Eppina**, in medicine, are remedies taken by the noſe, to enliven the ſpirits, ſtop bleeding, &c. but principally to purge the humidities of the head.

Of theſe, ſome are taken in powders, as betony, tobacco, marjoram, iris, white hellebore, euphorbium, &c.—Others in a liquid form, made of the juice of marjoram, ſage, beet, cyclamen, iris, &c.—Others in form of liniments, incorporated with unguent roſat.—Others, ſolid, formed like pyramids, to ſtop bleeding at the noſe; compoſed of Armenian bole, terra ſigillata, maſtic, human or hogs-blood dried, &c. Such *errhines* as are dry, and made up in powders, to excite ſneezing, are properly called *ſternutatories*.—Some moderns call them *caputpurgia*.

ERROUR, or **Error**, a miſtake of the mind, in giving aſſent to a thing, or propoſition, which is not true. See Fallacy.

Some philoſophers define *error* an act of the mind, whereby things that ſhould be joined, are ſeparated; or, things that ſhould be ſeparated, are joined: or a wrong judgment, diſagreeing with the things whereon it is paſſed.

Error ſtands in oppoſition to *truth*, which conſiſts in an agreement between the propoſition, and the thing whereof it is affirmed, or denied.

However, a bare failure, or non-attainment of truth, does not conſtitute *error*; that being common both to ignorance and doubting.

Error only ſtands diſtinguiſhed from *falſhood*, in that the former is in the mind, and the latter only in the propoſition.

The great origin of all *error*, i. e. of believing that to be true which is falſe, is a liberty, or power, in the human mind, of giving its aſſent to ideas, or propoſitions, that are obſcure, as if they were perſpicuous and plain.

Particular cauſes of *error* are, 1°, An inadvertency, or negligence, in paſſing judgment, without uſing or attending to the means proper to aſſiſt the judgment. As if a perſon ſhould attempt to judge of the height of the pole, without proper inſtruments, or obſervations: or determine about nations without knowing their hiſtory.

2°, Ignorance, in not having informed the underſtanding by ſtudy and application; or furniſhed it with the ideas that have an immediate relation to the matter in hand.

3°, Impatience of the labour and fatigue of going through a long chain of reaſons and arguments; or of waiting for the neceſſary number of experiments: with a fondneſs for the opinion of being knowing; and a prejudice for, or againſt ſome particular perſon, ſect, &c.

4°, The fallacious rules of probability, and opinion. See Probability, and Opinion.

5°, Intereſt, which makes us incline to believe thoſe things true, from which we are like to derive advantage.

6°, Authority: education: and vulgarly received opinions, imbibed ere we were qualified for judging. See Faith.

Againſt all which, there is this one general rule or caution laid down, by Fa. Malebranche and others; *viz.* never to give our full aſſent to any propoſition, unleſs the evidence for it be ſo ſtrong, as that we can no longer with-hold it, without incurring the ſecret reproaches of our own reaſon.

Mr. Locke reduces the cauſes of all our *errors* to theſe four; *viz.* 1°, Want of proofs. 2°, Want of ability to uſe them. 3°, Want of will to uſe them. And, 4°, Wrong meaſures of probability.

F. Malebranche conſiders five occaſional cauſes of *error*, or rather five different kinds of *errors*, accommodated to the different manners we have of perceiving things. 1°, *Errors of ſenſe.* 2°, Of the *imagination.* 3°, Of the *underſtanding.* 4°, Of our *inclinations.* And, 5°, Of the *paſſions.* See Sense, Imagination, Understanding, Inclination, and Passion.

Popular Errors. See the article Popular.

Errour, in law, generally denotes a fault, or overſight, either in pleading, or in proceſs; upon either of which is brought a writ, by way of remedy, called a *writ of error*; in Latin, *de errore corrigendo.*

Fitzherbert defines a writ of *error* to be, that which lies to redreſs falſe judgment given in any court of record, having power by charter, or preſcription, to hold plea of debt or treſpaſs of above xx ſh.—There is alſo a *writ of error* for reverſing a fine, *&c.*

To aſſign Error. See the article Assign.

Clerk of the Errors. See the article Clerk.

ERUCTATION, *Belching*, the ſame as ructation. See Ructation.

ERUDITION, denotes learning, or knowlege; and chiefly that of antiquity.

The Scaligers were men of deep *erudition:* the writings of M. Launoy, a prieſt of the oratory, are full of *erudition.*

Mr. Locke ſays, it is of more uſe to fill the head with reflections, than with points of *erudition.* If the mind be not juſt and right, ignorance is better than *erudition*, which only produces confuſion and obſcurity: M. Balzac calls a heap of ill-choſen *erudition*, the luggage of antiquity.

ERUPTION, a burſting forth, or excluſion of ſomething which was before covered, or concealed,

The *eruption of puſtles* in the ſmall-pox, ordinarily begins on the 4th day.—In the inoculated kind, the *eruption* often does not begin till the 9th day, or later.

The *eruption* of volcano's, or burning mountains, is frequently the effect, and iſſue, of earthquakes. See Earthquake, *&c.*

The *eruptions* of mount Ætna, and Veſuvius, are obſerved to be ſomewhat periodical: they are of two kinds; the one leſs violent, happening once in 2 or 3 months, and laſting uſually three or four days, without much damage to the adjacent country.—The other more furious, and of longer continuance, happening to mount Veſuvius about once in 80 years. That in 1632. was ſo violent, that, by the beſt of S. Peccacio's obſervations, it caſt the rocks three miles into the air. Hartop in *Philoſoph. Tranſact.* N° 202.

M. Oldenburg gives us an hiſtorical account of the ſeveral *eruptions* of mount Ætna, recorded in authors. The firſt, whereof we have any credible account, was at the time of the expedition of Æneas, deſcribed by Virgil, *Æneid.* lib. III. The 2d, deſcribed by Thucydides, was 476 years before Chriſt: in the time of Roman conſuls there were four: another in Cæſar's time, ſo fierce, that Diodorus aſſures us, the ſhips near the iſland of Lipara were injured with the extreme heat of the water: another under Caligula: another at the time of the martyrdom of St. Agatha, ſaid to have been ſtopped at her interceſſion: another in the year 812. ſeveral between the years 1160. and 1169. others in 1284. 1329. 1408. 1444. 1536. 1633. 1650. *Phil. Tranſact.* N° 48.

Another extraordinary *eruption* happened in 1669. particularly deſcribed in the ſaid *Tranſactions*, N° 51. It was preceded, for the ſpace of 18 days, with a dark thick ſky, thunder, lightning, and frequent concuſſions of the earth: the place of the *eruption* was 20 miles from the old mouth. The matter here yielded, was a ſtream, or river, of melted metals and minerals, rendered liquid by the fierceneſs of the fire, and boiling up, and guſhing forth, as water does at the head of ſome great river; till, having run in a full body for a ſtone's caſt, or more, the extremity thereof began to cruſt and curdle, and turned, when cold, into hard, porous ſtones, called *ſciarri*, as reſembling huge cakes of ſea-coal, full of a fierce fire. Theſe came rolling and tumbling over one another, and where they met a bank, wall, building, *&c.* would fill up, and ſwell over; by their weight bearing down any common building, and burning up what was combuſtible. The progreſs of this inundation was at the rate of a furlong a day; which it continued for 15 or 20 days; running, at firſt, into the ſea, but afterwards into the city of Catanea; in its courſe, it overwhelmed 14 towns and villages, containing three or four thouſand inhabitants. The noiſe of the *eruption* at the mouth was heard 60 miles.

Dr. St. Clair in the *Philoſoph. Tranſact.* gives an account of a conſtant *eruption* of fire, on one ſide of one of the Apennines, between Bologna and Florence: a ſpot of ground 3 or 4 miles in diameter, he obſerves, inceſſantly ſends up a flame, riſing very high, without noiſe, ſmoke, or ſmell; though it gives a very great heat. In great rains it ſometimes intermits, but rekindles with greater vigour and heat. Within 3 or 4 yards of it, he adds, there grows corn. The flame he conjectures to ariſe from a vein of bitumen, or naphtha. There are three other ſuch fires on the ſame hills.

ERUPTIVE *Fevers.* See the article Fever.

ERYSIPELAS *, ΕΡΥΣΙΠΕΛΑΣ, in medicine, a diſeaſe of the ſkin; called alſo *ſacer ignis*, and St. *Antony's fire.*

* The word is formed of the Greek, ερυειν, *trahere*, to draw, and πελας, *prope*, near: whence it is alſo called by the Latins *vicinitraha*, and *vicinirubia.*

Its ſeat is any part of the body, but principally in the face: it ſhews itſelf in a ruddy inflammation of the part, with a little ſwelling of the ſame; attended with an intenſe pain, and a croud of little puſtles, which, as the inflammation increaſes, grow into veſiculæ.

The diſeaſe ſpreads itſelf apace; ſhifting from one place to another, with a fever attending it. It attacks the patient all at once, and chiefly when out in the air; whence the country-people call it *blaſting*, *ſideratio.*

Dr. Quincy accounts for the *eryſipelas*, from a too ſizy blood, which, obſtructing the capillaries, occaſions inflammations: others, from a too ſharp and bilious blood, which, on account of its great ſubtility, occaſions no ſenſible tumour; but ſpreads, or diffuſes itſelf all around. Its colour, though red, generally inclines towards a yellow, on account of the mixture of bile; and always the more there is of the bile, the more dangerous the diſeaſe.

There is another ſpecies of *eryſipelas*, though leſs uſual than the former; moſt commonly ariſing from a too copious drinking of ſpirituous liquors. It begins with a fever, after which there is an univerſal eruption of puſtles, almoſt over the whole body, much like thoſe after the ſtinging of nettles, and ſometimes riſing into veſiculæ. At going off, they leave an intolerable itching, and as often as ſcratched return again.

Etmuller gives it as the diſtinguiſhing character of an *eryſipelas*, that when preſſed very lightly by the finger, there follows a white ſpot, which preſently after becomes red again; which does not happen in an ordinary inflammation, unleſs when violently preſſed. Scorbutic people are moſt ſubject to this diſeaſe.

It is diſputed, whether purging be good in the *eryſipelas*? Sydenham recommends it the next day after bleeding. Etmuller cautions us againſt them both; and recommends diaphoretics.

Dr. Freind obſerves, that in the laſt ſtage of an *eryſipelas* of the head, attended with a coma, delirium, *&c.* unleſs cathartics will do good, the caſe is deſperate. All unctuous, aſtringent, and cold applications, externally, are dangerous, and ſometimes make the *eryſipelas* degenerate into a gangrene.

The *eryſipelas* is either ſimple, or attended with an ulcer. See Supplement, article Erysipelas.

ERYTHROIDES, ΕΡΥΘΡΟΕΙΔΗΣ, in anatomy, the firſt of the proper membranes that incloſe the teſticles.

It is interſperſed with fleſhy fibres, derived to it from the cremaſter muſcle, which make it appear rediſh *.

* And hence its name from the Greek, ερυθρος, *red*, and ειδος, *form.*

ESCALADE, or Scalade, a furious attack of a wall, or a rampart; carried on with ladders, to mount by; without proceeding in form, breaking ground, or carrying on regular works to ſecure the men. See Scalade.

ESCAMBIO, was antiently a licence granted any one for the making a remittance, or giving a bill of exchange, to another beyond ſea.

For, by ſtat. 5. Rich. II. no perſon might exchange, or return money beyond ſea, without the king's licence.

ESCAPE, in law, an evaſion out of ſome lawful reſtraint, either by violence or ſtealth.

Eſcapes are either *voluntary*, or *negligent.*

Voluntary, as when one arreſts another for felony, or other crime, and afterwards lets him go; in which *eſcape*, the party that permits it, is by law guilty of the fault, committed by the perſon who *eſcapes:* be it felony, treaſon, or treſpaſs.

Negligent eſcape is, when one is arreſted, and afterwards *eſcapes* againſt his will that arreſted him; and is not purſued by freſh ſuit, and taken again, before the party purſued hath loſt ſight of him.

ESCARTELE', in heraldry, *quartered*, or *quarterly.* See Quartering, and Quarterly.

ESCHAR *, ΕΣΧΑΡΑ, in chirurgery, a hard cruſt, or ſcab, formed on the fleſh, by means of a hot iron, or a cauſtic medicine, or ſome ſharp, corroſive humour within.

* The word is Greek, εσχαρα, *cruſt*, or *ſcab*; which ſome authors derive from ες and καιω, *I burn*; but this comes with ſome difficulty, by reaſon καιω is written with a κ; and εσχαρα with a χ.

The cauſtic ſtone, or lapis infernalis, produces a round *eſchar* in the place where it has burnt. See Escharotics, Cauſtic, and Cautery.

ESCHAROTICS *, medicines, which, being applied externally, produce *eſchars*, or ſcabs, by burning the fleſh. See Eschar.

* The word is derived from the Greek, εσχαρα, *eſchar*.

Such are the lapis infernalis, red precipitate, *&c.*—Theſe are alſo called *cauſtics*.

ESCHEAT, in law, ſignifies lands, or other profits, falling to a lord within his manor, either by way of forfeiture, or the death of his tenant dying without heir general or ſpecial, or leaving his heir within age, and unmarried.

The civilians call ſuch *eſcheats*, or forfeitures, *bona caduca*; and in the ſame ſenſe as we ſay, the fee is *eſcheated*, they ſay *feudum aperitur*.—

The word *eſcheata* ſometimes alſo ſignifies a lawful inheritance deſcending on the heir. But then, it is uſually diſtinguiſhed by the addition of *recta*: as *recta eſcheata*.

Escheat is alſo uſed for the place or circuit within which the king, or other lord, hath eſcheats of his tenants.

Escheat is alſo ſometimes uſed for a writ, lying where the tenant having eſtate of fee-ſimple, in any lands or tenements holden of a ſuperior lord, dies ſeiſed, without heir general, or ſpecial: in which caſe, the lord brings this writ againſt him that poſſeſſes the lands, after the death of his tenant; and thereby recovers the ſame in lieu of his ſervices.

ESCHEATOR, an officer, who antiently took care of the king's eſcheats in the county, and certified them into the exchequer, or chancery.

He was appointed by the lord treaſurer; held his office only for one year; nor could any perſon be *eſcheator* above once in three years. But this office, having its chief dependence on the court of wards, is now out of date.

ESCHEQUER. See the article Exchequer.

ESCHEVIN, or Echevin, *Scabinus*, in the French and Dutch polity, a magiſtrate elected by the inhabitants of a city, to take care of their common concerns, the good order, conveniency, and decoration of the city, *&c.*

At Paris, there is a prevot, and four *eſchevins*; in moſt other cities, a maire, or mayor, and *eſchevins*.—In Languedoc, Provence, and Dauphiné, they are called *conſuls*: at Toulouſe, *capitouls*: and *jurats* at Bordeaux.

Antiently, the *eſchevins* were the aſſeſſors, and counſellors of the comites, or judges of cities: on which account they were called in ſome places, *pairs*, *pares*: they even took cognizance of petty cauſes themſelves.

Du Cange obſerves, that the judges, and their aſſeſſors, who were choſen by the inhabitants, were called *ſcabini*, *eſchevins*, and their college, *ſcabinagium*, or *eſchevinage*. He adds, that ſome authors call them *paciarii*, by reaſon their office and juriſdiction extended to the ſecuring peace in their city and banlieue, called *pax villæ*.

In Holland, the *ſcabins*, or *eſchevins*, judge of all civil affairs at firſt hand. They alſo take cognizance of criminal matters, and if the criminal confeſs himſelf guilty, they can ſee their ſentence executed without appeal. They can even give torture.—The number is not the ſame in all cities: at Amſterdam there are nine, at Rotterdam ſeven, *&c.*

ESCHRAKITES, or Esrakites, a ſect of philoſophers, among the Mahometans, who adhere to the doctrines and opinions of Plato.

* The word is derived from the Arabic שרק, *ſchraka*, which in the fourth conjugation אשרק *aſchraka*, ſignifies *to ſhine*, *glitter like the ſun*: ſo that *eſchrakite* ſeems to import *illumined*.

The *Eſchrakites*, or Mahometan Platoniſts, place their higheſt good and happineſs in the contemplation of the divine majeſty; deſpiſing the groſs imaginations of the Alcoran touching paradiſe. See Mahometanism.

They are very careful in avoiding all vice, they preſerve an equal and eaſy temper, love muſic, and divert themſelves with compoſing little poems, or ſpiritual ſongs.—The Sheics, or prieſts, and the chief among the preachers of the imperial moſques, are *Eſchrakites*.

ESCHYNOMENOUS *plants*. See Æschynomenous.

ESCLAIRCISSEMENT, a French term, which we find retained in ſome late Engliſh writers: it properly ſignifies the act, or effect, of clearing a thing, or rendering it more bright and tranſparent; being formed from the verb *eſclaircir*, to clear, *&c.*

It is chiefly uſed in a figurative ſenſe, for an explanation of an obſcurity, or difficulty.—The *eſclairciſſement* of difficult paſſages in the bible, is to be ſought for from ſimilar paſſages, or paſſages of the like kind occurring in other places.

ESCLATTE', in heraldry, is applied to a thing violently broken.—Thus a bend, or other partition, *eſclatté*, is repreſented torn, or broken off, like a ſhield ſhattered with the ſtroke of a battle-ax.

ESCORT *, a French term, ſometimes uſed in Engliſh authors, to denote a convoy, or company of armed men, attending ſome perſon or thing, in a journey or voyage, to defend or ſecure it from inſults.

* Some derive the word from the Latin *cohors*.

A ſupply was ſent to the camp before Arras, with an *eſcort* of 1200 men. In times of war, merchant-veſſels ſeldom ſtir much abroad without an *eſcort* of men of war. People that travel in Turky generally take Janizaries to *eſcort* them.

After the victory, the general ſent the priſoners under a ſtrong *eſcort* into the neighbouring towns.

ESCOUADE, is uſually the third part of a company of foot; ſo divided for mounting guards, and for the more convenient relieving of one another.—It is equivalent to a brigade of a troop of horſe. See Brigade.

ESCROL, or Scroll, in heraldry, a long ſlip, as it were, of parchment, or paper, whereon a motto is placed.

Leigh obſerves, that no perſon, under the degree of a knight, might, long after king Henry V. place his creſt on a wreath; as is now uſually done, but only on an *eſcrol*.

ESCU, or Ecu, the French crown, of 60 ſols, or three livres. The *eſcu* was thus called by reaſon the eſcutcheon, or arms of France, which they call *eſcu*, was ſtruck thereon.

Emaux de l' Escu. See the article Emaux.

ESCUAGE, or Scutage, an antient kind of knight's ſervice, called alſo *ſervice of the ſhield*; the tenant holding by which, was obliged to follow his lord to the Scottiſh or Welſh wars, at his own expence. See Scutage.

He who held a whole knight's fee, was bound to ſerve with horſe and arms for 40 days: and he who held half a knight's fee, 20 days.

Escuage is alſo uſed for a ſum of money, paid by ſuch as held by this tenure, when they neither attended the wars, nor provided another in their room.

Escuage was alſo a reaſonable aid, demanded by the lord of his tenants, who held of him in knight's ſervice *. See Aid.

* *Conceſſerunt domino regi ad maritandum filiam ſuam de omnibus qui tenent de domino rege in capite de ſinglis* ſcutis 20 *ſolidos ſolvendos.* Matt. Paris. *Anno* 1242.

ESCULENTS, a term uſually applied to vegetables which are fit for food, as artichokes, carrots, turneps, parſneps, cabbages, cauliflowers, *&c.*

ESCURIAL, by the Spaniards written Escorial, a term that occurs pretty frequently in our gazettes, and news-papers, for a place of reſidence of the kings of Spain.

Eſcurial originally denotes a little village in Spain, ſituate in the kingdom of Toledo, ſeven leagues to the weſt of Madrid, and nine to the eaſt of Avila, on the ſide of a chain of mountains, called by ſome the *Carpetane*, or *Carpentanian* mountains, and by others the *Pyreneans*, as being the branch of the Pyrenean ridge.—Here king Philip II. built a ſtately monaſtery of the order of St. Jerom, held by the Spaniards for one of the wonders of the world, and called *the eſcurial*.

Fa. Franciſco de los Padros, in a deſcription thereof, intituled, *deſcription breve del monaſterio de S.* Lorenzo *el rea* *del* Eſcorial, *&c.* aſſures us it was built by that prince in memory of the battle of S. Quintin, gained on the day of S Laurence, Lorenzo, a famous Spaniſh ſaint, and at his interceſſion.

The king and queen have their apartments therein; the reſ being poſſeſſed by the monks.—Whence, many of the grea tranſactions of that court are dated from the *eſcurial*.

The *eſcurial* has a very fine church, to which Philip IV built a beautiful chapel, called the *pantheon*, or *rotond* wherein the kings and queens of Spain, who leave any poſ erity, are interred; the reſt being laid in another vaul of the ſame church, together with the infanta's, and othe princes.

ESCUTCHEON *, or Scutcheon, in heraldry, the ſhiel or coat, wherein the bearing, or arms, of any perſon are repr ſented.

* The word *eſcutcheon* is formed of the French *eſcuſſon*, and th from the Latin *ſcutum*, ſhield; which was the place arms we originally borne on, before ever they came on banners; a ſtill, where-ever they are placed, it is on ſomething repreſenti the form of a ſhield.—The Latin *ſcutum*, no doubt, ca originally from the Greek, σκυτος, *leather*, wherewith t ſhields were uſually covered. See Shield.

The *eſcutcheon* is of a ſquare figure, excepting the bottom pa which is uſually a little rounded, ending in a point in th middle.—See *Tab. Herald. fig.* 38.

Till within a few hundred years, the *eſcutcheons* of the Frenc and Engliſh were triangular: thoſe of the Spaniards, are ſ quite round at bottom without any point: thoſe of the I lians, are oval: and thoſe of the Germans, in form of ca toozes.

The antient *eſcutcheons* were generally couched, or incline and they only began to place them upright, when crow *&c.* were put over them by way of creſt.

In France, eſcuſſon, *eſcutcheon*, was formerly reſtrained to ſhield, or coat, pointed at bottom; by which it was diſti guiſhed from the *eſcu*, which was quite ſquare, and was on allowed to be borne by the counts and viſcounts. Thoſe inferior quality were confined to the eſcuſſion, or pointed eſcu.

The ſeveral parts and points of the *eſcutcheon* have their ſeveral names: the point A, for inſtance, is the *dexter chief point*; B the *middle chief*; and C the *ſiniſter chief point*: D is the *honour point*; E the *feſſe point*; F the *nombril point*; G the *dexter baſe*; H the *middle*, and I the *ſiniſter baſe* point.

The *eſcutcheon* is diverſely denominated, according to its diviſions. It is called *dextered*, when the perpendicular line, that divides it, is to the right of a third part of the *eſcutcheon*; *ſiniſtered*, when on the left: *tierced in pale*, when this line is double, and divides the whole *eſcutcheon* into three equal parts; *paled*, when increaſed to the number of ſix, eight, or ten. A horizontal line makes the *chief*, when at one third part from the top; the *plein*, when at a third from the bottom: and when double, in the middle, at an equal diſtance from both extremes, it makes the *feſſe*, and the *tierced in feſſe*: when it is multiplied, it denominates it, *feſſed*; when there are 8 or 10 equal ſpaces, *burrellé*. A diagonal from the dexter point of the chief to the ſiniſter of the baſe, makes it *tranché*; the contrary, *doublé*: if it be doubled at equal diſtances, the firſt makes *bandé*, and the *tierce in bend*; and the other *barré*, or *tierce in bar*: increaſing the number of the firſt makes *bandé*, and *cotticé*; and increaſing that of the ſecond, *barré*, and *traverſé*.

Escutcheon *of pretence* is an *ineſcutcheon*, or little *eſcutcheon*, which a man, who has married an heireſs, and has iſſue by her, may bear over his own coat of arms, and in it the arms of his wife: and, in this caſe, the ſurviving iſſue will bear both coats quarterly. See Tab. *Heraldry*, *fig.* 63.

Escutcheon-Grafting, in gardening. See Engrafting.

ESDRAS. See the article Ezra.

ESPALIER, in the French gardening, a wall-tree; or a fruit-tree, which is not left to grow at liberty in full air, but has its branches nailed, or faſtened, to a wall, or ſome other flat ſurface, near which it is planted; and, thus growing, it is made to conform itſelf to the flat, though unnatural, figure thereof. See Fruit-*Tree*, Wall, *&c.*

Espaliers, in our gardening, are rows of trees, planted regularly round the outſide of a garden, or plantation, for the general ſecurity thereof from the violence and injury of the winds; or elſe only round ſome part of a garden, for the particular ſecurity of a plantation of orange-trees, lemon-trees, myrtles, or other tender plants; or, laſtly, for the bounding of borders, walks, avenues, *&c.*

Eſpaliers are now come into mighty uſe, with reſpect to the firſt of theſe intentions: in effect, it is found, by experience, that the beſt brick, or ſtone-walls, are not of themſelves ſufficient ſecurity, to fruit-trees, from the ravages of blighting winds.

The reaſon may be, that, being built cloſe and compact, they repel the winds; and, by that means, damage the tender plants, that lie within the reach of the repulſion: but theſe *eſpaliers* ſerve to deaden the violence of the winds, ſo as the tender greens, or plants, encompaſſed by them, reſt ſerene and quiet.

Thus, if the *eſpaliers*, for inſtance, be of ſpruce, fir, holly, or yew, they give way to the force of tempeſtuous winds beating againſt them, without occaſioning any reſilition thereof. Meſſ. London, and Wiſe, direct them to be planted at ſome diſtance, without the outmoſt bounds, or walls, of gardens, *&c.* Two or three rows of trees they think ſufficient, from 18 or 20 to 25 foot apart; and as to the method, or order, of diſpoſing the trees, the moſt commodious is, where the middle row makes every-where equilateral triangles with the extreme rows, in the following manner. See Quincunx.

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The trees recommended for making, or planting, theſe *eſpalier* fences, are, the elm, lime, beech, Scotch fir, oak, pine, and ſycamore; but, particularly, the two firſt.

As for *eſpalier hedges*, or hedge-rows, for defence of tender greens and plants from deſtructive winds in the ſummer ſeaſon; if there be occaſion to uſe them the firſt or ſecond year after they are planted, a ſubſtantial frame, of wood, muſt be made, ſeven or eight feet high, with poſts and rails; and to this *eſpalier*-frame muſt the ſide-boughs of the young trees be tied, to cauſe the *eſpalier* to thicken the ſooner.

For the form of ſuch an *eſpalier*, it muſt be oblong, running north and ſouth.—It may be planted with apples, pears, holly, laurel, lime, maple, white-thorn, yew, *&c.*

To prevent the diſorders that might befal *eſpalier* fruit-trees, when in bloſſom, Mr. Bradley mentions a nurſery-man, at Brentford, who, having moſt ſorts of fruit in *eſpaliers*, had portable hedges made of reeds in frames, which he ſet both at the back and front of his *eſpaliers*, as he ſaw occaſion. See Supplement, article Espalier.

ESPAULE, Espaulement, *&c.* in fortification. See Epaule, Epaulement, *&c.*

ESPLANADE, in fortification, called alſo *glacis*; a part which ſerves the counterſcarp, or covert way, for a parapet; being a declivity, or ſlope, of earth, commencing from the top of the counterſcarp, and loſing itſelf, inſenſibly, in the level of the campaign.

Esplanade alſo ſignifies the ground which has been levelled from the glacis of the counterſcarp, to the firſt houſes; or the vacant ſpace between the works and the houſes of the town.

The term is alſo applied, in the general, to any piece of ground which is rendered flat, or level, and which before had ſome eminence that incommoded the place.

ESQUADRILLE, } See the articles { Quadril.
ESQUADRON, } { Squadron.

ESQUINANCY, in medicine, a diſeaſe called alſo *angina*, *ſquinancy*, and, popularly, *quinzy*.

ESQUIRE, a title of nobility, next below that of knight, and above that of a ſimple gentleman.

The origin, both of the name, and the thing, *eſquire*, is very dark: the Engliſh denomination is confeſſedly borrowed from the French, *eſcuyer*; and that from the Latin, *ſcutum*, ſhield, as ſome will have it; or, as others, from *ſcutarius*, or *ſcutiger*, ſhield-bearer; or from *ſcuria*, ſtable; or from *equiſo*, groom. So many different opinions of the formation of the word, have given riſe to as many about the primitive office of *eſquires*; unleſs, perhaps, the latter hath given occaſion to the former. Paſquier, in his *Recherches*, L. II. C. 15. maintains the title of *eſquire*, *eſcuyer*, *ſcutarius*, to be very antient. From the time of the declenſion of the Roman empire, he obſerves, there were two extraordinary kinds of ſoldiery, in the Roman army; the one called *gentiles*, and the other *ſcutarii*.

Ammian. Marcellin. L. XIV. C. 7. and L. XVI. C. 4. ſpeaks of theſe *ſcutarii* as men of redoubted proweſs; and even deemed invincible: it is added, that Julian the apoſtate ſet a mighty value on thoſe troops, when he was in the Gauls; and hence, probably, it was, that the Gauls, or, perhaps, only the Franks, finding the braveſt among the Roman forces were called *gentiles*, and *ſcutarii*, gave the like names to the boldeſt and braveſt among themſelves: ſuch, according to that curious antiquary, is the origin of *eſquires*.

Eſquire, however, afterwards came to be uſed in a ſomewhat different ſenſe; *viz.* for a gentleman who attended a knight in the wars, and on other military occaſions; bearing his ſhield, *ſcutum*, before him (whence he was called *ſcutarius*, *ſcutiger*, or *ſcutifer*), as alſo his lance, and other weapons: whence his other Latin appellation, uſual among us, *armiger*, q. d. armour-bearer.—And hence, likewiſe, it is, that, in all our antient romances, the hero is conſtantly attended by a gentle and truſty *ſquire*.

After all, the moſt probable derivation of *eſcuyer* is not from *eſcu*, *ſcutum*, as is the common opinion; but from *equus*, horſe; the primitive *eſquires* being no other than what the Latins call *equiſones*, who had the care and intendance of the equeries, or ſtables, only.

Be this as it will, the title *eſquire*, *armiger*, as now eſtabliſhed among us, is the next below that of knight, *eques*. They who bear this title, are all younger ſons of noblemen, and the eldeſt ſons of ſuch younger ſons; the eldeſt ſons of knights, and their eldeſt ſons ſucceſſively; the four *eſquires* of the king's body, and *eſquires* created by the king, by putting about their necks a collar of S S's, and beſtowing on them a pair of ſilver ſpurs. Laſtly, divers others, in the ſuperior public offices, are reputed *eſquires*, or equal to *eſquires*; as ſheriffs of counties, ſerjeants at law, juſtices of peace, mayors of towns, counſellors at law, batchelors of divinity, law, phyſic, *&c.* though none of them are really ſo: laſtly, the heads of ſome antient families are likewiſe *eſquires* by preſcription.

ESQUISSE, in the French painting, a term ſignifying the firſt ſlight ſketch, or draught, of a picture; the firſt thought of a deſign drawn haſtily with a crayon, or in colours, on paper, canvas, or the like; in order to be finiſhed, and painted, or engraven, afterwards.

He had not the trouble of making a finiſhed and correct deſign; but went to work upon the *eſquiſſe*.—The word is formed of the Italian *ſchizzo*, a ſplaſh; by reaſon an *eſquiſſe* of a painting only repreſents, as it were, ſplaſhes, or dabs, of colours.

ESRAKITES. See the article Eschrakites.

ESSÆANS. See the article Esseni.

ESSART*, or Assart. See the article Assart.

* Du Cange derives the word from ſome of the barbarous Latin words, *exartus*, *exartum*, *eſſartum*, *aſſartum*, *ſartum*, and *ſartus*; which all ſignify a foreſt cut down, or dug up: though Spelman chooſes to deduce it from the Latin *exertum*, torn up, or unrooted: others from *ſarrire*, to weed; and others, laſtly, from *exaro*, I plow, whence *exarare*; and, by contraction, *exartum*. In our antient law-books, *exartum facere in ſylva*, is to *eſſart* a place in a foreſt.

To *aſſart*, is to grub up, or extirpate, buſhes, trees, old roots, ſtumps, or the like; in order to fit the ground for tillage.

ESSAY *, a trial, or experiment, to prove whether a thing be of the requiſite quality, or goodneſs.

* The word is French, *eſſai*; which ſome authors derive farther from the Latin *examen*.

ESSAY is alſo uſed for an attempt, or tentative, to learn whether or no a thing will ſucceed.

Eſſays of machines ſhould be made in large; it is not enough that they ſucceed in little.

ESSAY, in monaſteries, is particularly uſed for a trial which a perſon makes of the monaſtic life, in a ſecular habit.

This *eſſay* is of one, two, and, in ſome monaſteries, of three months.—The *eſſay* is not reckoned in the noviciate. See PROBATION.

ESSAY, or ASSAY, or ſimple SAY, in coinage. See ASSAY.

ESSAY, in matters of learning, is a peculiar kind of compoſition; whoſe character is to be free, eaſy, and natural; not tied to ſtrict order, or method, nor worked up, and finiſhed, like a formal ſyſtem.

The matter of an *eſſay* is ſuppoſed to conſiſt principally of ſudden and occaſional reflections, which are to be wrote much at the rate, and in the manner, a man thinks; ſometimes leaving the ſubject, and then returning again, as the thoughts happen to ariſe in the mind.

At leaſt, this has hitherto been the practice; and Montagne, who has got no ſmall reputation by this way of writing, ſeldom keeps many lines to the ſubject he propoſes: though it is our opinion, that my lord Bacon, in many of his works, is a better pattern in the *eſſay* kind.

Mr. Locke, however, and a few other authors, uſe *eſſay* in a ſeverer ſenſe: the *Eſſay of human underſtanding*, every-body knows, is a regular, artful, and laboured, work.

ESSAY-*Maſter*. See the articles MINT, and ASSAY.

ESSE *, in the ſchool philoſophy, is uſed in the ſame ſenſe with eſſence: principally for that which is actual, or actually exiſting.

* The word is pure Latin; being the infinitive of the verb *ſum*, I am: whence *eſſe*, to be.

From *eſſe* ariſes *eſſatum*, a barbarous term, now almoſt obſolete, ſignifying that which is endued with eſſence, or nature; or affected with the virtue, or efficacy, of another. Some diſtinguiſh *eſſe* into *real* and *intentional*; and, again, into *eſſatum* and *volitum*.

ESSENCE, that which conſtitutes, or determines, the nature of a thing; or which is abſolutely neceſſary to its being what it is.

In philoſophy, the *eſſence* of a thing is defined to be, that whereby a thing is diſtinguiſhed from every other thing.

The Carteſians hold the *eſſence of matter* to conſiſt in extenſion; and, on that principle, deny that there is any ſuch thing as mere ſpace, or vacuity: but the hypotheſis is falſe, as is ſhewn under the articles MATTER, SPACE, VACUITY, PLENUM, *&c.*

Gaſſendus, and moſt of the corpuſcular philoſophers, hold the *eſſence* of matter to conſiſt in ſolidity, or impenetrability, or reſiſtance, or, more adequately, in a ſolid impenetrability reſiſting the touch; which, it muſt be allowed, of all the properties of matter, ſeems to have the faireſt title to it.

The ſchool philoſophers give us two ſignifications of the word *eſſence*: the firſt denotes the whole eſſential perfection of a being, and, conſequently, its entity, with all its intrinſic, or eſſential, and neceſſary attributes, taken together: in which ſenſe, *eſſence* may be defined to be, all that whereby a thing is, and is what it is. In which caſe, the *eſſence* of a thing is to the thing itſelf, what humanity, *e gr.* is to man.

The ſecond ſignification of *eſſence* is, that whereby it denotes the principal, and moſt intimate, of all the attributes of a thing; or that which agrees to every ſuch thing, and ſuch alone, and that always, and in ſuch manner, as that the mind, with all its attention, cannot perceive any thing prior thereto: by which, *eſſence* is diſtinguiſhed from the eſſential attributes, *i. e.* from ſuch as flow from its *eſſence*, or firſt attribute. Thus, the *eſſence* of the human mind is commonly ſuppoſed to conſiſt in the power of thinking; by reaſon all its other perfections ſeem to pre-ſuppoſe this; but this pre-ſuppoſes none. And thus the powers of underſtanding, doubting, aſſenting, willing, *&c.* do all flow from the power of thinking; and cannot exiſt without it, though this may without any of them.

It muſt be allowed, however, that the eſſential properties of a thing do ſo cloſely cohere, nay, and inhere, in the *eſſence* itſelf, that it is ſcarce poſſible to diſtinguiſh the one from the other. Hence, what ſome urge, that, ſetting aſide all the attributes and properties of a thing, and what remains is its *eſſence*; is a mere chimera. For ſet aſide, *e. gr.* from the mind, the powers of underſtanding and willing, with the reſt of its attributes; and what will there remain to call its *eſſence?*

It is greatly diſputed, in the ſchools, whether the *eſſences* of created things be eternal? or, whether the *eſſences*, as well as the exiſtences, had their origin in time? The Carteſians hold, that the *eſſences* of things depend abſolutely on the free concurring will of God.

ESSENCE, in medicine and chymiſtry, denotes the pureſt, moſt ſubtil, and balſamic part of a body, extracted from the reſt by means of fire.

Of theſe there are a great variety, drawn from flowers, fruits, and the like, uſed on account of their agreeable ſmells, and taſtes, by the apothecaries, perfumers, *&c.*—The principal are, *eſſence* of roſmary; of turpentine; of aniſe; of cloves; of cinnamon; and of citron.

The *eſſences* commonly ſold by the perfumers, are only the diſtilled oils of behn, and of bitter almonds; to which they give the ſmell of certain flowers, or ſpices; as violets, jeſſamine, cinnamon, *&c.*

The *eſſences* to be drank, or mixed, with liquors, are of a more elaborate compoſition: the moſt uſual, and beſt, is prepared with ſpirit of wine, cloves, cinnamon, mace, long-pepper, and coriander. The whole, being put up in a very cloſe veſſel, is expoſed to the ſun for ſix weeks, or two months, during the day-time, and in the night ſet near the fire.

In winter they uſe the fire alone. This *eſſence* being exceedingly ſtrong, it is frequently uſed only to give a ſtrength to other weaker liquors. After the ſame manner may the *eſſences* of ambergriſe, muſk, *&c.* be drawn.

The *eſſence* of odoriferous flowers, to give a fine ſmell to liquors, are drawn by diſpoſing ſtrata, or lays, of the flowers, and of ſugar, alternately, in a proper veſſel, and leaving them to infuſe, in a cellar, for 24 hours; and, after that, as long in the ſun; and, laſtly, ſtraining, or percolating, the whole thro' a ſieve, without ſqueezing the flowers.

ESSENI, ESSENES, or ESSÆANS, an antient ſect among the Jews.

Joſephus, making mention of the ſeveral ſects among his countrymen, diſtinguiſhes three; *viz.* the Phariſees, Sadducees, and *Eſſeni*; which laſt he prefers to the two former, as to their manner of life. He aſſures us, further, that they were Jews, by original; from which it ſhould appear, that S. Epiphanius was miſtaken, in ranking them among the Samaritans.

In effect, the *Eſſeni* appear to have been true Pythagorean philoſophers, in every thing that related to their manner of living: for they greatly affected ſolitude and retirement, and avoided all converſation with women, to devote themſelves more intirely to the contemplative life.

The *Eſſeni* ſeem to have been, among the Jews, what the moſt retired and auſtere monks are, or were, among the Chriſtians; which was what gave them their denomination of Ιȣδαιοι ασκηται, *Jewiſh aſcetics.*

Many catholic writers have even deduced the origin of monks from them; building, principally, on what Philo relates of them, who divides them into two branches, or ſects; the one who married, and the other who lived in celibate.

Joſephus ſeems likewiſe to have had an eye to theſe two ſorts of *Eſſeni*. Serrarius, who has wrote very amply on the ſubject, follows Philo, in making two claſſes of *Eſſeni*. The firſt are thoſe whom he calls *practici*, and who lived in community; the ſecond, thoſe called *theoretici*, who lived in ſolitude, and led a life of pure contemplation. He adds, that Joſephus only makes mention of the firſt; paſſing, untouched, over the contemplative kind, whom Philo calls *Therapeutæ*, and who were principally found in Egypt. See THERAPEUTÆ.

Grotius will have the *Eſſeni* the ſame with the antient חסידים *Haſidim*, or *Haſidæi*; thus called, according to Philo, from their ſingular piety, humility, and devotion. Among theſe, Gale obſerves, it was, that the Hebrew philoſophy chiefly flouriſhed. Porphyry is very prolix in his praiſes of the *Eſſeni*: Εισι τοινυν οι Εσσαιοι Ιȣδαιοι μην το γεν϶, φιλαλληλοι, &c. He repreſents them as deſpiſers of pleaſure, riches, glory, and delicacy; and ſtrenuous retainers to continency, auſterity, ſtudy, *&c.* He adds, they decline marriage, and adopt and educate other peoples children in the principles of religion and philoſophy: they are all on a level, hold every thing in common, neither buy nor ſell, *&c.* By long habit they arrived at ſuch a degree of patience, that Porphyry aſſures us, flames and tortures had not the leaſt effect on them. They ſcorned to intreat their torturers; nor ever ſhed a tear but would ſmile under all their agonies, *&c.* As to thei learning, Philo Judæus, in his treatiſe, *That every good man i free*, tells us, that they deſpiſed logic, as uſeleſs to the acquiring of virtue; phyſics they left to the ſophiſts and diſputers, as judging it to tranſcend the human faculties; and applied themſelves wholly to morality. Porph. *de Abſtin.* l. IV §. 11, *ſeqq.* Gale, *Philoſ. Gener.* l. I. c. 1. §. 11.

Euſebius holds, that the *Eſſeni*, called *Therapeutæ*, were rea Chriſtians, or Jews converted by St. Mark, who had embraced this kind of life: Scaliger, on the contrary, maintains that theſe *Therapeutæ* were no Chriſtians, but real *Eſſeni*, wh made profeſſion of Judaiſm: however, he allows of th two kinds of *Eſſeni* above-mentioned. But Valeſius, in hi notes on Euſebius, abſolutely rejects any ſuch diſtinction: h denies, that the *Therapeutæ* were any real *Eſſeni*; and tha chiefly, on the authority of Philo himſelf, who never ca them *Eſſeni*, and who places the *Eſſeni* in Judæa and Paleſtine whereſ whereas the *Therapeutæ* were ſpread throughout Greece, Egypt, and other countries.

ESSENTIAL, ſomething that is neceſſary to conſtitute a thing, or that has ſuch a connexion with the nature and reaſon of a thing, that it is found, or ſuppoſed, where-ever the thing itſelf is.

Thus, it is *eſſential* to God to be juſt. Mr. Locke has overturned that great principle of the Carteſians, that thinking is *eſſential* to the ſoul.

The heart, brain, and ſpinal marrow, are parts ordinarily ſuppoſed *eſſential* to life, or without which life cannot be; yet we have inſtances, in hiſtory, of children being found, and alive, without almoſt any of thoſe parts. See Brain, &c.

Essential *Oils* are ſuch as are really contained in a plant, and are drawn from it, by diſtillation, in an alembic, with water: they are thus called, in contra-diſtinction to empyreumatic oils, which are raiſed by a naked fire, without water.

Essential *Properties* are ſuch as neceſſarily depend on, and are connected with, the nature and *eſſence* of any thing, ſo as to be inſeparable from it; in diſtinction from *accidental*.

Essential *Salts* are thoſe prepared from decoctions, or thoſe which are found cryſtallized in the juices or infuſions of plants; in contra-diſtinction from thoſe made by incineration. See Salt.

Essential *Fever*.	See the articles	Fever.
Essential *Form*.		Form.
Essential *Mode*.		Mode.
Essential *Part*.		Part.
Essential *Perfection*.		Perfection.

ESSOIN*, or Essoign, in law, an excuſe for him who, being ſummoned to appear and anſwer to an action real, or to perform ſuit to a court baron, &c. cannot attend, by reaſon of ſome legitimate hinderance.

* The word is formed of the French *eſſoine*, or *exoine*; and that from the barbarous Latin *eſſonia*, or *exonia*, which ſignifies the ſame.

The cauſes that ſerve to *eſſoin*, are diverſe; yet they may be reduced to five heads. The firſt is, *eſſoin de ultra mare*; when the party is beyond ſea: the ſecond, *de terra ſancta*; when on an expedition in the holy land: the third, *de malo veniendi*; when he is infirm of body, and cannot come; which is alſo called, the *common eſſoin*: the fourth, *eſſoin de malo lecti*; when the defendant is ſick a-bed: the fifth, *de ſervitio regis*; when he is in the king's ſervice. Horn mentions ſeveral other *eſſoins* touching the ſervice of the king celeſtial, &c.

rk of the Essoins. See the article Clerk.

SSORANT, in heraldry, a term uſed to expreſs a bird ſtanding on the ground with the wings expanded, as if it had been wet, and were drying itſelf.

TANDARD. See the article Standard.

TATE, in law, the title, or intereſt, a man hath in lands, or tenements.

Eſtate is either *ſimple*, or *conditional*.

STATE *ſimple*, called alſo *fee ſimple*, is where a man, by deed indented, enfeoffs another in fee, reſerving to him and his heirs a yearly rent; with this proviſo, that if the rent be behind, &c. it ſhall be lawful for the feoffer, and his heirs, to enter.

TATE *conditional* is ſuch as hath a condition annexed to it, hough it be not ſpecified in writing. *E. gr.* if a man grant o another, by his deed, the office of park-keeper, for life; his *eſtate* is upon condition in law; *viz.* if the park-keeper hall ſo long well and truly keep the park.

itions of Estate.	See the articles	Addition.
e Estate.		Base.
ſonal Estate.		Personal.
Estate.		Quæ *Eſtate*.
l Estate.		Real.

ATE, or ſimply State, denotes alſo the empire, kingdom, rovinces, or extent, of lands under the government of any overeign.

The *eſtates* of the grand ſeignior, of the king of Spain, &c. e very extenſive; thoſe of the king of France are compact, d well peopled. Italy is cantoned out into a great number petty *eſtates*.—We ſay, miniſters of *eſtate*, ſecretaries of *ate*, &c.

ATE is more particularly applied to the ſeveral ranks, or aſſes, of a people aſſembled together, for concerting meaſures, reforming public abuſes, or compoſing the diſturbances a ſtate.

England, the three *eſtates*, viz. king, lords, and commons, et ordinarily in parliament.—In France, the *eſtates* conſiſt of e churchmen, the nobility, and the people, or third *eſtate*. me will have theſe aſſemblies of *eſtates* to be a very antient nſtitution: all we know is, that there were general aſſems held, in the Gauls, before Cæſar's conqueſt; but then e people, or third *eſtate*, had no ſhare in them: under the and 2d race of the French kings, there were alſo ſolemn vocations, called *parliaments*; but it was only the great ds of the realm that were called to them. See Parliaent.

ates *General*.	See	States *General*, &c.
ates *of Holland*.		

ESTERLING, or Easterling. See Sterling.

ESTETE', in heraldry, is uſed by the French to ſignify a beaſt whoſe head has been, as it were, torn off by force; and, conſequently, the neck left rough and rugged: in contra-diſtinction to *deffait*, or *decapité*, where the neck is left ſmooth; as if the head had been cut off.

ESTHER, a canonical book of the Old Teſtament; denominated from a celebrated Jewiſh captive of that name, in Perſia, whoſe beauty preferred her to the bed of Ahaſuerus, and the throne of Perſia; and who, in that quality, ſaved her countrymen, the Jews, from the death to which Ahaſuerus had doomed them, by the counſels of his favourite Haman: the hiſtory of which tranſaction makes the ſubject of the book of *Eſther*.

The critics are divided about the author of this book: S. Epiphanius, S. Auguſtine, and Iſidore, attribute it to Ezra; but Euſebius will have it to be of a later date. Some aſcribe it to Joachim, high-prieſt of the Jews, and grandſon of Joſedek; others will have it compoſed by an aſſembly, or ſynagogue, of the Jews, to whom Mordecai wrote letters, informing them of what happened, *Eſth.* ix. 29.

But the generality of interpreters, both Hebrew, Greek, Latin, &c. aſcribe the book to Mordecai himſelf: Elias Levita, in his *Maſſ. hamum.* pref. 3. mentions this opinion as unqueſtionable.

It is chiefly founded on that paſſage, ch. ix. ver. 20. where it is ſaid, that *Mordecai wrote theſe things, and ſent letters unto all the Jews, that were in all the provinces*, &c. It is alſo ſuppoſed, that queen Eſther herſelf might have ſome ſhare therein; it being expreſſed, in the ſame chapter, ver. 29. that Eſther and Mordecai wrote a ſecond letter, by the king's authority, to ordain the ſolemnizing a yearly feaſt, called *purim*, that is, day of lots, in commemoration of the Jews being delivered from the lots, or ſortes, whereby they had been condemned.

Some will have this book to be only deuterocanonical, or apocryphal; others contend for its being canonical, as far as chap. x. ver. 3. incluſive; and all the reſt deuterocanonical. Of this ſentiment are, St. Jerome, De Lyra, Dionyſius the Carthuſian, Cajetan, and others. The council of Trent turned the ſcale for its being canonical throughout; ſo that the matter is determined for the Catholic countries.

But as to the Proteſtants, they retain to the old opinion, and only admit it as far as the 3d verſe of the xth chapter: the reſt, to the end of the xvith chapter, is thrown among the apocryphal books. See Deuterocanonical, and Apocrypha.

ESTIVAL, or Æstival *Solſtice*. See Solstice.

ESTOILE'. A *Croſs* Estoilé, is a ſtar with only four long rays, in manner of a croſs; and, accordingly, broad in the centre, and terminating in ſharp points.

ESTOPPEL*, in law, an impediment, or bar, of action, growing from a man's own act, or deed; againſt which a man is forbidden, by law, to ſpeak, though it be to ſay the truth. See Bar.

* The word is formed of the French *eſtouper, oppilare, obſtipare*, to ſtop, or block up.

Goddard defines an *eſtoppel* to be, any bar, or hindrance, to one to plead the truth; and extends it not only to the impediment given by his own act, but by another's alſo.—There are three kinds of *eſtoppel*; viz. *matter of record*; by *matter in writing*; and by *matter in pais*.

ESTOVERS, in law, is uſed, by Bracton, for that ſuſtenance which a man, committed for felony, is to have out of his lands, or goods, for himſelf and his family, during impriſonment.

In ſtat. 6 Edw. I. it is uſed for an allowance in meat, or clothes.—In ſome manors, the tenants have *common of eſtovers*; that is, neceſſary botes, or allowances, out of the lord's wood.—In which laſt ſenſe, *eſtovers* comprehends *houſe-bote*, *hay-bote*, and *plow-bote*: ſo that if a man have in his grant theſe general words, *de rationabili eſtoverio in boſcis*, &c. he may thereby claim all three.

ESTRADE*, a French term, literally ſignifying a public road, or high-way. Hence, the military phraſe, *battre l'eſtrade*, to *beat the eſtrade*, that is, to ſend ſcouts, or horſemen, to get intelligence, to learn the diſpoſitions of the enemy, and inform the general of every thing like to fall in the way. An army never marches, without ſending *batteurs d'eſtrade* on every ſide.

* The word is formed of the Italian *ſtrada*, ſtreet, or road; which is derived from the Latin *ſtrata*, a paved ſtreet. Some derive it from *eſtradiots*, who were cavaliers antiently employed in *beating the eſtrade*.

Estrade is alſo uſed for a little elevation on the floor of a room, frequently encompaſſed with an alcove, or rail, for the placing a bed in; and ſometimes, as in Turky, only covered with fine carpets, to receive viſitors of diſtinction in.

ESTRANGEL, Estrangelus, in the Syriac grammar. Estrangel *character*, is a particular ſpecies, or form, of Syriac letters; ſerving as the majuſcule letters in that language.

Abraham Ecchellenſis takes the *eſtrangel* character for the true, antient Chaldee character: and it is certain, the Abyſſinians, who call themſelves Chaldeans, ſtill occaſionally uſe the *eſtrangel* character, if we may credit Hottinger, in his *Theſaur. Philol.* p. 286. Biſhop Walton, in his *Prolegomena*, gives us an *eſtrangel alphabet*.

ESTRAY, or STRAY, ſignifies any tame beaſt found within a lordſhip, and not owned by any man; in which caſe, being cried, according to law, in the market adjoining, if it be not claimed by the owner, within a year and a day, it becomes the lord's of the ſoil where found.

ESTREAT, in law, is uſed for the true copy, or duplicate, of ſome original writing; eſpecially of amercements, or penalties, ſet down in the rolls of a court, to be levied by the bailiff, or other officer, on every offender.

Clerk of the ESTREATS. See the article CLERK.

ESTREPEMENT*, in law, an impoveriſhing, or making of land barren, by continual plowing and ſowing, without due manuring, reſt, and other huſbandry.

* The word is derived from the French *eſtropier*, to maim; or the Latin *extirpare*, to extirpate, root up.

ESTREPEMENT is alſo uſed for any waſte, or ſpoil, made, by the tenant for life, upon lands, or woods, to the prejudice of him in reverſion; as the cutting down of trees, or lopping them further than the law allows, &c.

ESTREPEMENT is alſo a writ which lies in two caſes: the one, when a man, having an action depending, as a formedon, writ of right, or the like, ſues, to inhibit the tenant from making waſte during the ſuit.

The other is for the demandant, who is adjudged to recover ſeiſin of the land in queſtion; and before execution, for fear of waſte to be made ere he can get poſſeſſion, ſues out this writ.

ESULA, or *cortex eſulæ*, in medicine, the bark of a little rediſh root, which produces green, narrow, ſucculent leaves.—It is a kind of tithymal, or ſpurge; and is found, chiefly, in France. Ere they uſe it, it is infuſed in vinegar; after which, they draw extracts from it, of uſe in the dropſy.

ESURINE *Salts*, in ſome authors, denote thoſe of a fretting, eating, or corroding, nature; which chiefly abound in places near the ſea-ſide, and where a great quantity of ſea-coal is burnt; as appears, from the ſpeedy ruſting of iron in ſuch places.

ETAPPE, in war, an allowance of proviſions, and forage, made to the ſoldiers, upon march through a kingdom, or province, to or from winter-quarters.

Hence, he that contracts with the country, or territory, for furniſhing the troops in their march, is called *etappier*.

ETCHING, a method of engraving on copper; wherein the lines, or ſtrokes, inſtead of being cut with a tool, or graver, are eat with aqua fortis.

Etching was invented much about the ſame time with *engraving* on copper, properly ſo called, by Alb. Durer, and Lucas. It has ſeveral advantages over that art: as, that it is done with more eaſe, and expedition; that it requires fewer inſtruments; and even that it repreſents divers kinds of ſubjects better, and more agreeably to nature; as landſcapes, ruins, grounds, and all ſmall faint, looſe, remote objects, buildings, &c.

The method of *etching* is thus: the plate, being well poliſhed, is heated over the fire, and, when hot, covered over with a peculiar ground, or varniſh; when cold again, the ground is blackened with the ſmoak of a candle; and on this ground, thus blackened, the back of the deſign, or draught, is laid.

This done, the deſign remains to be calked, or transferred upon the plate; which is more eaſily effected, than in the common graving: for the back of the deſign having been before rubbed over with red chalk, nothing remains but to trace over all the lines and ſtrokes of the draught with a needle, or point; which, preſſing the paper cloſe down to the ground, occaſions the wax therein to lay hold of the chalk, and ſo bring off the marks of the ſeveral lines; ſo as, at length, to ſhew a copy of the whole deſign in all its correctneſs.

The draught thus calqued, the artiſt proceeds to draw the ſeveral lines, and contours, with a point, through the ground, upon the copper.

To finiſh his work, he makes uſe of points of divers ſizes, or bigneſſes, and preſſes on them, ſometimes more ſtrongly, and ſometimes more lightly, accordingly as the ſeveral parts of the figures, &c. require a greater or leſs ſtrength, or boldneſs; ſome of the points being as fine as needles, for the tender hair ſtrokes, and the remoter fainter objects; and others, again, as big as bodkins, made oval wiſe, for the deeper ſhadows, and the figures in the front of the work.

Things thus prepared, a rim, or border, of wax, is raiſed round the circumference of the plate, and aqua fortis poured on; which, by the ſaid border, is kept from running off at the edges.

The ground being impenetrable to that corroſive water, the plate is defended from it every-where but in the lines, or hatches, cut through it with the points; which lying open, the water paſſes through them to the copper, and eats into the ſame, to the depth required: which done, it is poured off again.

Of *etching* grounds, it muſt be obſerved, there are two kinds; the one ſoft, and the other hard. There are alſo two kinds of aqua fortis: the one white, which is only uſed with the ſoft ground, and is applied as above directed; the other green, made of vinegar, common ſalt, ſal ammoniac, and verdegriſe: this is uſed indifferently with either kind of ground. its application is ſomewhat different from that of the white.

Without making any border, they pour it on the plate, which is placed, for that purpoſe, a little inclined; and, as the water runs off, it is received in a veſſel placed underneath: this they repeat, pouring it, again and again, till it has eaten deep enough.

Add, that the aqua fortis, of which kind ſoever it be, muſt not continue equally long, or be poured equally often, on all the parts of the deſign: the remote parts muſt be bitten mor ſlightly than thoſe which are nearer to the view.

To manage this, they have a compoſition of oil and greaſe wherewith they cover the parts that are to be bitten no farther; or elſe they lay the compoſition on, as a defenſative, a firſt, and take it off again when they find proper: in effect they are every now-and-then covering and uncovering this o that part of the deſign, as occaſion requires; the conduct o the aqua fortis being one of the principal concerns in the whol art, and that on which the effect of the whole very much depends. The operator is alſo to be very attentive to the ground that it do not fail, or give way, in any part, to the water and, where it does, to ſtop up the place with the compoſitio aforeſaid.

Laſtly, It is to be remembered, that a freſh dip of aqua fort be never given, without firſt waſhing out the plate in fair water, and drying it at the fire.

The aqua fortis having done its part, the ground is taken o and the plate waſhed, and dried; after which, nothing remain but for the artiſt to examine the work, with his graver in h hand, to touch it up, and heighten it, where the aqua forti &c. has miſſed.

ETERNITY, an attribute of God, whereby the duration o his exiſtence is conceived incommenſurable with time, and e cluſive of beginning, progreſs, ending, &c.

Authors are terribly ſtreightened for a proper and juſt defi tion of *eternity:* that of Boethius, *De Conſol. Philoſ.* L. Pr. 6. viz. *Interminabilis vitæ tota ſimul & perfecta poſ ſio*; i. e. a perfect poſſeſſion of a whole endleſs exiſtence together, though retained by S. Thomas, and others, is faul in diver's reſpects.

Cenſorinus, *De Die Natal.* defines *eternity* by infinite durati that is, duration which has always been, and always will —Others, more fully, deſcribe it by, a duration that exiſts together, without any flux or ſucceſſion of parts, prior, poſterior, to each other: where the word *duration*, taken ſtractedly, imports no more than the perſeverance of a th in its exiſtence; the το *durare* being here oppoſed to the *ceſſare, in exiſtendo.*

But ſoften the word duration how you will, it is ſcarce c ceivable, but by conceiving a quantity thereof; nor a qu tity, without conceiving a ſucceſſion.—Others, therefore, fine *eternity* by a *perpetuum nunc*, a *perpetual now*; or a *ſemper ſtans*, an *ever-ſtanding now:* but neither are theſe exceptionable; the words *perpetuum*, and *ſemper ſtans*, porting an obſcure ſort of duration. See DURATION.

ETESIÆ, or ETESIAN *Winds*. See WIND, and MONSOO

ETHELING, or ÆTHELING. See the article ATHELIN

ETHER. See the article ÆTHER.

ETHERIAL *Oil*. See ÆTHERIAL *Oil*.

ETHICAL *Good*. } See the articles { GOOD.
ETHICAL *Poſſible*. } See the articles { POSSIBLE.

ETHICS*, ΗΘΙΚΗ, the doctrine of manners; or the ence of moral philoſophy. See PHILOSOPHY, and Mo LITY.

* The word is formed from ηθος, ηθη, *mores*, manners; by ſon the ſcope, or object, thereof, is to form the manners.

Gale makes *ethics* only the firſt part, or branch, of m philoſophy; *viz.* that which regards private perſons, or private capacity.

By manners, or morals, is here meant, a way, or manne living, confirmed by cuſtom, or habit; or certain habit of doing; or actions which are often repeated; which if be according to right reaſon, the morals, or manners, are to be good; otherwiſe, evil and vicious.

Hence, the object of *ethics* is, the exerciſe of right reaſo all our affairs, actions, and relations; or it is man hi conſidered as dirigible, and to be conducted accordin reaſon: and the end of *ethics* is, to make him good and ha For that if a man conduct himſelf, according to right re in all the circumſtances of his actions, affairs, and relati he will arrive at the higheſt pitch of moral perfection and titude.

Whence, *ethics* may be defined, a right manner of thin in order to attain to human felicity; or a ſcience, wh man is directed to conduct his will, and the actions there as to live well, and happily. See WILL.

The principal, nay, the only, topics thereof, are, happ and manners: whence ariſe two parts, or branches, of et the firſt, on moral happineſs, conſidered as the end; an ſecond on moral virtues, or good manners, as the means to arrive thereat.

ETHICOPROSCOPTÆ*, in antiquity, the name of a ſect.—Damaſcenus, in his treatiſe of hereſies, tells us, that the denomination *ethicoproſcoptæ* was given to ſuch as erred in matters of morality, and things relating to practice, that were to be done, or be avoided, *&c.* who blamed things laudable, and good in themſelves, or recommended or practiſed things evil.—On this footing the *ethicoproſcoptæ*, though a numerous body, were no particular ſect.

* The word is formed of the Greek, ηθος, *manners*, and ϖϱοσκοπτω, *offendo*, I offend.

ETHIOPIC *Year.* See the article Year.

ETHMOIDAL, Ethmoidalis, in anatomy, a denomination given to one of the ſutures of the human cranium.

The common ſutures are thoſe which ſeparate the bone of the cranium from thoſe of the cheeks; and are four: the tranſverſal, *ethmoidal*, ſphenoidal, and zygomatical. See Suture.

The *ethmoidal* takes its denomination from its turning round the os ethmoides.

ETHMOIDES*, ΕΘΜΟΕΙΔΗΣ, in anatomy, a bone ſituate in the middle of the baſis of the forehead, or os frontis, and at the top of the root of the noſe; filling almoſt the whole cavity of the noſtrils.

* It has its name from ηθμος, *cribrum*, ſieve, and ειδος, *form*, becauſe all ſpongious, and porous.

By its cribrous part it is joined to the head; by the ſpongious part to the cavity of the noſtrils; and by the plain and broad part, to the orbits of the eyes.

In the cribrous part is an apophyſis, which jets out in a point, into the cavity of the ſkull; called from its figure, *criſta galli*, or the cock's comb. From its under-ſide, there goes a thin bone, which divides the cavity of the noſtrils into two, called the *vomer*. It is perforated by a number of ſmall holes, through which the fibres of the olfactory nerves paſs.

J. Philip Ingraſſias, a Sicilian, who flouriſhed about the year 1546. was the firſt who gave a juſt account of the ſtructure of the *os ethmoides* or *cribroſum*.

ETHNARCHA*, Ethnarch, a governor, or ruler of a nation.

* The word is Greek, formed of εθνος, *nation*; and αϱχη, *command*.

There are ſome medals of Herod I. ſurnamed the *Great*, on one ſide whereof is found ʿΗΡΩΔΟΥ, and on the other ΕΘΝΑΡΧΟΥ, *q. d. Herod the ethnarch.* Now, after the battle of Philippi, we read that Antony, paſſing over into Syria, conſtituted Herod and Phaſael his brother tetrarchs, and in that quality committed to them the adminiſtration of the affairs of Judea, Joſ. Ant. L. XIV. C. 23. Herod therefore had the government of the province before ever the Parthians entered Syria, or before Antigonus's invaſion, which did not happen till ſix or ſeven years after Herod was commander in Galilee. Joſ. L. XIV. C. 24, 25.—Conſequently, Herod was then truly *ethnarch*; for he can be no otherwiſe denominated: ſo that it muſt have been in that ſpace of time that the medals were ſtruck, which only give him this title. Which medals are a confirmation of what we read in hiſtory of the government that prince was intruſted withal before he was raiſed to the royalty.

Joſephus gives Herod the appellation of *tetrarch*, in lieu of that of *ethnarch*; but the two terms came ſo near to each other, that it was very eaſy to confound them together.

Though Herod the Great left by will, to Archelaus, all Judea, Samaria, and Idumea; yet, Joſephus tells us, he was then only called *ethnarch*.

THNOPHRONES*, in antiquity, a ſect of heretics in the VIIth century, who made a profeſſion of Chriſtianity, but joined thereto all the ceremonies and follies of paganiſm, as judicial aſtrology, ſortileges, auguries, and other divinations.

* And hence their denomination; from εθνος, *nation*, and φϱην, *thought*, *ſentiment*; q. d. *paganizers*, or perſons, whoſe thoughts or ſentiments were ſtill heathen or gentile.

They practiſed all the expiations of the gentiles, celebrated all their feaſts, and obſerved all their days, months, times, and ſeaſons. See Damaſcenus, *Hæreſ.* N. 94.

THOPOEIA*, or Ethopea, in rhetoric, called alſo Ethology, a draught, or deſcription, expreſſing the manners, paſſions, genius, tempers, aims, *&c.* of another perſon.

* The word is of Greek original, being formed of ηθος, *mos*, *conſuetudo*; and ϖοιεω, *facio*, *fingo*, *deſcribo*. Quintilian, L. IX. C. 2. calls this figure *imitatio morum alienorum*; and in Greek, μιμησις, *imitation*.—In Engliſh we denominate it a *picture*, or *character*.

Such is that beautiful paſſage in Salluſt, in his *Bellum Catilinarium*, wherein he gives us a picture of Catiline: *fuit magna vi & animi & corporis; ſed ingenio malo pravoque huic*, &c. 'He had an uncommon ſtrength both of body and mind; 'but an ill-turned, and wicked diſpoſition. When a very 'boy, his great pleaſure was in inteſtine broils, rapine, 'ſlaughter, and civil diſcord. His body was formed to undergo faſting, cold, and watching beyond all belief. His 'mind was daring, deceitful, and various; and could imitate, 'or accommodate itſelf to, every body: he was extremely covetous of other peoples goods, and profuſe of his own. 'His luſts and deſires were very high; his ſtock of eloquence 'conſiderable; but his diſcretion ſcarce any.'

The *ethopœia* is divided into *proſopographia*, and *ethopœia* properly ſo called; the former of which is a picture of the body, countenance, make, dreſs, gait, *&c.* and the latter of the mind.

ETYMOLOGY*, ΕΤΥΜΟΛΟΓΙΑ, that part of grammar which conſiders, deduces, and explains, the origin, reaſon, and derivation, of words; in order to arrive at their firſt and primary ſignification.

* The word is formed of the Greek, ετυμος, *verus*, true; and λεγω, *dico*, I ſpeak; whence λογια, *diſcourſe*, &c. and thence Cicero calls the etymology, *notatio*, and *veriloquium*; though Quintilian chooſes rather to call it *originatio*.

In all ages there have been people curious in *etymologies*: Varro has written on the *etymology* of the Latin words; and we have a Greek *etymologicon* under the name of Nicas.

The *etymologies* of our Engliſh words have been deduced from the Saxon, Welſh, Walloon, Daniſh, Latin, Greek, *&c* by Somner, Camden, Verſtegan, Spelman, Caſaubon, Skinner, Henſhaw, Junius, *&c.*

Thoſe of the French and Italian words, by Menage, in what he calls his *origines*: Henry Stephens, Tripot, Borel, Caſeneuve, *&c.* have alſo laboured on the French *etymologies*. Guichard, and Fa. Thomaſſin, have carried the *etymologies* of abundance of French words as high as the Hebrew. Poſtel had the ſame deſign before them.

We have a Latin *etymologicon* of Gerard Voſſius, another of Martinius, *&c.* Octavio Ferrari has given a body of *etymologies* of the Italian tongue: and Bernard d'Aldretta, another of the Spaniſh.

Fa. Dom. Pezron, abbot of Charmoye, and prieſt of rhe Sorbonne, has traced up to the Celtic language the *etymologies* of abundance of Greek, Latin, German, French, and other words uſed by Plato, Servius, Donatus, and other Latin authors, without knowing their true origin, and *etymology*, for want of being acquainted with the roots of the Celtic tongue, from which abundance of Greek, Latin, *&c.* words are derived. It muſt be added, that his *etymologies* are frequently ſo far-fetched, that one can ſcarce ſee any reſemblance or correſpondence at all.

A ſtrict and ſolicitous inquiry into *etymologies*, is no frivolous and impertinent deſign; but has conſiderable uſes. Nations, who value themſelves on their antiquity, have always looked on the antiquity of their language as one of the beſt titles they could plead. The *etymologiſt*, by ſeeking the true and original reaſon of the notions and ideas annexed to each word, and expreſſion, may often furniſh an argument of antiquity from the veſtigia, or traces, remaining thereof; and from the indices ſtill ſubſiſting in the preſent uſe of the words, compared with the antient uſes.

Add, that *etymologies* are neceſſary to the thorough underſtanding of a language: for, to explain a term preciſely, there ſeems a neceſſity of recurring to its firſt impoſition, in order to ſpeak juſtly and ſatisfactorily thereof. The force and extent of a word is generally better conceived, and entered into, when a perſon knows its origin and *etymology*.

It is objected, however, that the art is arbitrary, and built altogether on conjectures and appearances; and the *etymologiſts* are charged with deriving their words from where-ever they liſt. But the ſcience is certainly real, and as regular as diverſe others; having its proper principles, and method.

It muſt be owned, indeed, that it is no eaſy matter to return into the antient Britiſh, and Gauliſh ages; to follow, as it were, by the track, the diverſe imperceptible alterations a language has undergone from age to age. A ſober *etymologiſt* has need of all the lights he can come at, to conduct and bring down words variouſly diſguiſed in their paſſage, and remark all the changes that have befallen them. And as thoſe alterations have ſometimes been owing to caprice, or hazard, it is eaſy to take a mere imagination, or conjecture, for a regular analogy; ſo that it is nothing ſtrange the public ſhould be prejudiced againſt a ſcience which ſeems to ſtand on ſo precarious a footing.

EVACUANTS, in medicine, remedies proper to expel, or carry off, any ill, peccant, or redundant humours, in the animal body, by the proper outlets, or emunctories.

Of *evacuants*, there are diverſe kinds, diſtinguiſhed according to their various humours, and emunctories. Some, *e. gr.* carry off their matters by ſtool, called *purgatives*, or *cathartics*. Others by urine, called *diuretics*. Others by perſpiration, called *diaphoretics* (See Diaphoretics). Others by ſweat, called *ſudorifics*. Others by the mouth, called *vomitories*, or *emetics*. Others by the ſalival glands, as *ſialogogues*: and others, laſtly, by the menſes and lochia, as *Emmenagogues* and *ariſtolochics*.

EVACUATION, in medicine, a diminution of the animal fluids, in order to a diſcharge of ſome morbid, or redundant matters therein; or only for the ſake of thinning, attenuating, and promoting the motion and circulation thereof.

The matter of a diſeaſe, or what is preſcribed by art to remove or eaſe it, is evacuated two ways.—1°, By the natural emunctories, or outlets of the ſkin; the noſtrils, mouth, fauces, oeſophagus, ſtomach, inteſtines, bladder, and urethra.

And, 2°, by artificial outlets, made either in the blood-veſſels; as by phlebotomy, arteriotomy, ſcarifications, and leaches.

Or, in the lymphatic veſſels; as by cauſtics and veſicatories.

Or, laſtly, in both, as by iſſues, ſetons, ulcers, fiſtula's, *&c.* Hence, the firſt diviſion of *evacuants* is derived from the different emunctories; and the ſecond, from the diverſity of matters evacuated through them.

Moſt of the chronical diſeaſes, the infirmities of old age, and the ſhort periods of the lives of Engliſhmen, Dr. Cheyne obſerves, are owing to repletion. This is evident from hence; that *evacuation*, of one kind or another, is nine parts in ten of their remedy: for not only cupping, bleeding, bliſtering, iſſues, purging, vomiting, and ſweating, are manifeſt *evacuations*, or drains, to draw out what has been ſuperfluouſly taken down; but even abſtinence, exerciſe, alteratives, cordials, bitters, *&c.* are but ſeveral means to diſpoſe the groſs humours to be more readily *evacuated* by inſenſible perſpiration. *Eſſay on health.*

For the periodical *evacuations* of women; ſee Menses.—

For the *evacuations* of women after delivery; ſee Lochia.

Evacuation is likewiſe uſed in the art of war: where, to *evacuate a place*, is to make the gariſon quit, or march out of it, in order for another power to take poſſeſſion of it; or to make room for another gariſon.

EVANGELICAL *Harmony*. } See { Harmony.
Evangelical *Oeconomy*. } See { Oeconomy.

EVANGELISTS*, the inſpired authors of the goſpels.

* The word is derived from the Greek, ευαγγελιον, formed of ευ, *bene*, well, and αγγελος, *angel*, *meſſenger*.—*O ſuaves epiſtolas tuas uno tempore mihi datas duas! quibus* evangelia *quæ reddam neſcio; deberi quidem plane fateor.* Cic. *ad* Attic.

The denomination *evangeliſts* was likewiſe given, in the antient church, to ſuch as preached the goſpel up and down; without being attached to any particular church.

In which ſenſe, ſome interpreters think it is, that St. Philip, who was one of the ſeven deacons, is called the *evangeliſt*, in the 21ſt chapter of the *Acts of the Apoſtles*, ver. 8. Again, St. Paul writing to Timothy, Ep. 2. C. IV. ver. 5. bids him do the work of an *evangeliſt*.—The ſame Apoſtle, Eph. IV. 11. ranks the *evangeliſts* after the apoſtles, and prophets.

Hence, M. Tillemont takes the liberty to uſe the word *evangeliſt* in the ſame ſenſe. 'Moſt of thoſe who then 'embraced the faith, being filled with the love of a holy 'philoſophy, began to diſtribute their goods to the poor, 'and after that went into divers countries to do the office of '*evangeliſts*, to preach Chriſt to ſuch as had not yet heard 'of him, and to furniſh them with the ſacred writings of the 'goſpel.'

EVANID, a name which ſome authors give to thoſe colours which are tranſient, or not of long duration—As thoſe in the rain-bow, in clouds before and after ſun-ſet, *&c.*

Evanid colours are the ſame with thoſe otherwiſe called *fantaſtical*, and *emphatical* colours. Some authors alſo uſe the ſame term to expreſs thoſe flowers of plants whoſe petals fall off as ſoon as they are opened.

EVANTES*, in antiquity, the prieſteſſes of Bacchus; thus called, by reaſon, in celebrating the orgia, they ran about as if diſtracted, crying, *evan, evan, ohé evan!*

* The word is formed from Ευαν, a title, or appellation of Bacchus.

EVAPORATION, in philoſophy, the act of exhaling the humidity of a body; or of diſſipating it in fumes, or vapour.

Common ſalt is formed by evaporating all the humidity in the ſalt-water, or brine; which *evaporation* is either performed by the heat of the ſun, as in the ſalt-works by the ſea-coaſt, *&c.* or by means of fire, as at the ſalt-ſprings, *&c.*

By the obſervations of M. Sedileau it appears, that what is raiſed in vapour, exceeds that which falls in rain.

Though the *evaporation* of fluids be generally looked on as an effect of the heat and motion of the air; yet M. Gauteron, in the *Memoires de l' Acad. des Scienc.* an. 1705. ſhews, that a quite oppoſite cauſe may have the ſame effect; and that fluids loſe a deal more of their parts in the ſevereſt froſt, than when the air is moderately warm. In the great froſt of the year 1708. he found, that the greater the cold, ſtill the more conſiderable the *evaporation*; and that ice itſelf loſt full as much as the warmer liquors that did not freeze.

Dr. Halley furniſhes us with ſome experiments of the quantity, or meaſure, of the *evaporation* of water.—The reſult is contained in the following articles:

1. That water ſalted to about the ſame degree as ſalt water, and expoſed to a heat equal to that of a ſummer's day, did, from a circular ſurface of about eight inches diameter, *evaporate* at the rate of 6 ounces in 24 hours. Whence, by a calculus, he finds, that the thickneſs of the pellicle, or ſkin of water, *evaporated* in two hours, was the 53d part of an inch: but, for a round number, he ſuppoſes it only a 60th part; and argues thence, that if water as warm as the air in ſummer, evaporates the thickneſs of one 60th part of an inch in two hours, from its whole ſurface; in twelve hours it will exhale the tenth of an inch. Which quantity, he obſerves, will be found abundantly ſufficient to furniſh all the rains, ſprings, dews, *&c.*

In effect, on this principle, every ten ſquare inches of the ſurface of the water, yield in vapour, *per diem*, a cubic inch of water; and each ſquare foot half a wine pint; every ſpace of four feet ſquare, a gallon; a mile ſquare 6914 tons; and a ſquare degree, ſuppoſe of 69 Engliſh miles, will *evapora* 33 millions of tons a day.

2°, A ſurface of eight ſquare inches *evaporated*, purely b the natural warmth of the weather without either wind or ſun, in the courſe of a whole year, 16292 grains of water, or 64 cubic inches; conſequently, the depth of wate thus evaporated in one year amounts to 8 inches. Bu this being much too little to anſwer the experiment of the French, who found that it rained 19 inches o water in one year at Paris; or thoſe of Mr. Townley, who found the annual quantity of rain in Lancaſhire, abov 40 inches; he concludes, that the ſun and wind contribut more to *evaporation*, than any internal heat, or agitatio of the water.

3°, The effect of the wind is very conſiderable, on a doubl account. For the ſame obſervations ſhew a very od quality in the vapours of water; *viz.* that of adhering an hanging to the ſurface that exhaled them, which they cloathe as it were, with a fleece of vaporous air; which onc inveſting the vapour, it thenceforward riſes in much le quantity. Whence, the quantity of water loſt in 24 hours when the air was very ſtill from winds, was very ſmall in proportion to what went away when there was a ſtron gale of wind abroad to diſſipate the fleece, and make roo for the emiſſion of vapour: and this, even though the e periment was made in a place as cloſe from the wind as coul be contrived.

Add, that this fleece of water hanging on the ſurface waters in ſtill weather, is the occaſion of very ſtrange appea ances, by the refraction of the vapour's differing from, an exceeding, that of common air. Whence every thing appea raiſed, as houſes like ſteeples, ſhips as on land above t water, the land raiſed, and, as it were, lifted from the ſe *&c.*

4°, The ſame experiments ſhew, that the *evaporation* in Ma June, July, and Auguſt, which are nearly equal, are abo three times as great as thoſe in the months of Novembe December, January, and February.

Evaporation, in pharmacy, denotes an operation by whi the more aqueous and volatile parts of fluids are ſpent, or driv away in ſteam; ſo as to leave the remaining part ſtronger, of a higher conſiſtence, than before.

Evaporation differs from *exhalation*, in that the former practiſed on moiſt things, and the latter on dry.

Evaporation is effected by ſetting a liquor over a gentle he to carry off the moſt fluid and volatile parts, without leſſe ing the quantity of the other matters the liquor is impregnat withal.

EVATES, a branch, or diviſion, of the antient Celtic phi ſophers the druids.

Strabo diſtributes the philoſophers among the Britons a Gauls, into three ſects: Βαρδοι, *bards*, Ουατεις, *evates*, a Δρυιδαι, *druids*. He adds, that the *bardi* were poets a muſicians; the *evates*, prieſts and naturaliſts; and the *drui* moraliſts as well as naturaliſts.—But Marcellinus, Voſſi and Hornius, reduce them all to two ſects; *viz.* bardi a druids.—Laſtly, Cæſar lib. 6. comprehends them all un the name of *Druids*.

The *evates*, or *vates*, of Strabo, might probably be w other authors, and particularly Ammian. Marcellin. c *eubages*: but Mr. Bouche, in his *Hiſt. de Provence*, II. c. 2. diſtinguiſhes between them. The *vates*, he ſa were ſuch as took care of the ſacrifices, and other ce monies of religion; and the *eubages*, thoſe who ſpent th time in the ſearch and contemplation of the great myſterie nature.

EUBAGES, an order of prieſts, or philoſophers, among antient Celtæ, or Gauls.—Chorier takes the *eubages* to the ſame with the druids and ſaronidæ of Diodorus: ot will have the *eubages* to be thoſe whom Strabo, L. p. 197. calls Ουατεις, *evates*, or *vates*: on which princ
th

there is room to conjecture, that the word ſhould be written Ουατεις; it being eaſy to miſtake a Γ for a T.

Be this as it will, the *eubages* appear to have been a different order from the druids. See DRUID.

EUCHARIST *, *euchariſtia*, the ſacrament of the ſupper; or a participation of the body and blood of Chriſt, under the ſpecies, or figures, of bread and wine. See COMMUNION, SACRAMENT, SPECIES, TRANSUBSTANTIATION, and CONSUBSTANTIATION.

* The word, in its original Greek, Ευχαριϛια, literally imports *thankſgiving*; being formed of ευ, *bene*, well; and χαρις, *gratia*, thanks.

EUCHITES, or EUCHITÆ, a ſect of antient heretics, thus called, by reaſon they prayed without ceaſing; imagining that prayer alone was ſufficient to ſave them.

Their great foundation, were thoſe words of St. Paul, Epiſt. I. to the Theſſalon. c. 5. ver. 17. *pray without ceaſing*.

The word is formed of the Greek, ευχη, *prayer*; whence ευχιται, the ſame with the Latin *precatores*, prayers. They were alſo called *Enthuſiaſts* and *Meſſalians*.

St. Cyril of Alexandria, in one of his letters, takes occaſion to cenſure certain monks in Egypt, who, under pretence of reſigning themſelves wholly to prayer, led a lazy, ſcandalous life. The orientals, however, lay a further charge on the *Euchitæ*, or Meſſalians.

EUCHOLOGIUM, ΕΥΧΟΛΟΓΙΟΝ, a Greek term, ſignifying, literally, a *diſcourſe on prayer*.

The word is formed of ευχη, *prayer*; and λογος, *diſcourſe*.

The *euchologium* is properly the Greek ritual, wherein are preſcribed the order and manner of every thing relating to the order and adminiſtration of their ceremonies, ſacraments, ordinations, &c.

Fa. Goar has given us an edition of the Greek *euchologium* in Greek and Latin, with notes, at Paris.

EUCRASY, an agreeable, well proportioned mixture of qualities; whereby a body is ſaid to be in good order, and diſpoſed for a good ſtate of health.

EUDOXIANS, a party or ſect of heretics, in the IVth century, ſo denominated from their leader *Eudoxius*, patriarch of Antioch and Conſtantinople, a great defender of the Arian doctrine.

The *Eudoxians* adhered to the errors of the Arians and Eunomians; maintaining, that the Son was created out of nothing; that he had a will diſtinct and different from that of the Father, &c.

EVE. See the article VIGIL.

EVECTION, is uſed by ſome aſtronomers for the libration of the moon. See LIBRATION.

EVEN *foot* in poetry. See FOOT.

EVEN *number*, is that which may be divided into two equal parts, or moieties. See NUMBER.

EVENLY *even* number, is that which is exactly diviſible by an even number taken an even number of times; ſuch is 32; ſince diviſible by eight, taken four times.

EVENLY *odd* number, is that which an even number meaſures by an odd one; as 30, which is meaſured by 6, taken five times.

EVERARDS *ſliding rule*. See the article SLIDING.

EVERGETES, ΕΥΕΡΓΕΤΗΣ, a Greek term, ſignifying *benefactor*; being formed of ευ, *bene*, well; and εργον, *opus*, work.—It is ſtill retained in our language, by way of addition, or epithet, given to two princes, or kings, of Syria, and Egypt, who ſucceeded Alexander. Thus we ſay, Ptolemy *Evergetes* king of Egypt; Antiochus *Evergetes* king of Syria aſcended the throne 139 years before Chriſt.

EVER-GREENS, a claſs of perennials, which continue their verdure, leaves, &c. all the year.

Of theſe, our gardeners reckon twelve, which are peculiarly fit for Engliſh air; *viz.* the alaternus, arbutus, bay-tree, box-tree, holly, juniper, lauruſtinus, phyllirea, pyracantha, or ever-green thorn, Italian green privet, and the yew-tree.

EVIDENCE, a quality in things whereby they become viſible, and apparent to the eyes, either of the body, or the mind.

The ſchoolmen diſtinguiſh *evidence* into *formal* and *objective*.

Formal EVIDENCE, is the act of the intellect, conſidered as clear and diſtinct.

Objective EVIDENCE, conſiſts in the clearneſs and perſpicuity of the object; or it is the object itſelf, ſo conſtituted, as that it may be clearly and diſtinctly known.

Others divide *evidence* into *moral*, *phyſical*, and *metaphyſical*.—A thing is ſaid to be *morally evident*, ſo far as I have a diſtinct notion or knowlege thereof, by unexceptionable witneſſes: *phyſically*, ſo far as natural ſenſe and reaſon, pointing out any thing, convinces me thereof: *metaphyſically*, when I enter ſo fully and clearly into the eſſence of any thing, that nothing can be clearer.

Evidence is the eſſential and infallible character, or criterion, of truth; and is that, in effect, which with us conſtitutes truth. If *evidence* ſhould be found in propoſitions that are falſe, we ſhould be compelled into error; ſince the aſſent we give to *evidence* is neceſſary. Whence would follow this impious poſition, that God, who made us, is the author of our errors, as he has conſtituted us ſo, as to put us under a neceſſity of falling into them.

It may be added, that as we neceſſarily love truth, and hate error, it ſeems inconſiſtent with the nature of a beneficent being, to form us with a love of what we could not obtain, or not know whether we did obtain it or not: beſide, that if we ſhould err in things that are *evident*, as well as in thoſe that are not ſo, we ſhould ſometimes find contradictions in *evident* propoſitions, as we commonly do in things that are obſcure.

Evidence therefore muſt be allowed the mark of truth; and thoſe things muſt be allowed true, which carry with them ſuch a degree of *evidence*, as obliges us to aſſent to them. Whatever we ſee *evidently* agreeable to things whereof we ſpeak, that we muſt acknowlege to be true.

The Epicureans allow of no other *evidence* but that of ſenſe, or that ariſing from ſenſe; it being a fundamental with them, that ſenſe is the firſt and primary criterion of all truth.

By *evidence* of ſenſe, they mean that ſpecies, or image, exhibited by the ſenſe, or phantaſy; which, when all impediments to a juſt judging, as diſtance, motion, medium, &c. are removed, cannot be contradicted, or gainſaid. Wherefore, the queſtion being put, whether or no a thing be ſuch as it appears; the anſwer is not to be given, till it have been tried and examined all the ways, and by all the ſenſes, that it can be an object of.

EVIDENCE, in law, is any proof, whether by teſtimony of men on oath, or by writings and records.

It is thus called, becauſe the point in iſſue is hereby made *evident* to the jury.

Sir Tho. Smith reſtrains *evidence* to authentic writings of contracts, written, ſealed, and delivered. *De Rep. Angl.* lib. II.

EVIL, *Malum*, in ethics, a privation, or abſence, of ſome proper, or neceſſary good; or of ſome due meaſure, or degree thereof.

The ſchoolmen deny, that any thing is every way *evil*; and reſtrain all *evil* to be only ſo, *quoad hoc*; i. e. as the thing wants this or that degree of a certain quality, neceſſary to conſtitute it, in that reſpect, good. There is nothing *evil*, ſay they, without ſome good in it, wherein the *evil* reſides as in its ſubject; for, as every being depends on the ſupreme being, it cannot but be good, as flowing from the ſupreme good.

Evil is either *natural* or *moral*; between which there is this relation, that moral *evil* produces natural.

Moral EVIL is defined, a deviation from right reaſon, and conſequently from the will and intendment of the great legiſlator, who gave us that as a rule.—This the philoſophers call *inhoneſtum* and *turpe*, as ſtaining the image of God, and ſullying our original beauty; likewiſe *malum culpæ*.

Natural EVIL is a want of ſomething neceſſary to the *bene eſſe*, or perfection of a thing, or to its anſwering all its purpoſes.—Such are defects of the body, blindneſs, lameneſs, hunger, diſeaſes, death.—This ſpecies is denominated, *triſte*, *injucundum*, *noxium*; and *malum pœnæ*.

Again, *evil* is either *abſolute*, as envy, impiety, &c. or *relative*, as meat, which, in itſelf being good, may be *evil* to a man on account of ſome diſeaſe; as wine to a feveriſh perſon, &c.

Thus far the ſchools have gone in the nature and reaſon of moral and natural *evil*: a late ingenious author ſets the thing in another light, and furniſhes a much finer, and more adequate, theory of moral good and *evil*, *in his inquiry into the origin of our ideas of beauty and virtue*.

Moral evil, according to this philoſopher, denotes our idea of a quality apprehended in actions which excites averſion and diſlike towards the actor, even from perſons who receive no diſadvantage thereby: as moral goodneſs denotes our idea of a contrary quality which procures approbation and love towards the actor, even in perſons unconcerned in its natural tendency. This notion ſuppoſes an univerſally acknowleged difference of good and *evil*, from natural. Moral good, we all know, procures love towards thoſe we apprehend poſſeſſed of it; whereas natural good does not. How differently, for inſtance, are we affected towards thoſe we ſuppoſe poſſeſſed of honeſty, faith, generoſity, &c. when we expect no benefit from thoſe qualities; and thoſe poſſeſſed of the natural goods, as houſes, lands, gardens, health, ſtrength, &c. So, whatever quality we apprehend morally *evil*, raiſes our hatred towards the perſon in whom we obſerve it; as treachery, cruelty, ingratitude, &c. Whereas we love and pity many expoſed to natural *evils*, as pain, hunger, ſickneſs, &c.

The origin of theſe different ideas of actions has greatly puzzled the moraliſts: the generality make ſelf-intereſt, or ſelf-love, the ſource of them all; we approve the virtue of others, as it has ſome ſmall tendency to our happineſs, either from its own nature, or from this general conſideration, that a conformity to nature and reaſon is in the general advantageous to the whole, and to us in particular: and, on the contrary, diſapprove the vice of others, as tending at the long run to our particular detriment.

Others ſuppoſe an immediate *natural evil*, in the actions called *vicious*; that is, that we are determined to perceive ſome deformity or diſpleaſure in ſuch actions, without reflecting on any diſadvantage that may any way redound to us from the action; and that we have a ſecret ſenſe of pleaſure accompanying ſuch of our own actions as are called *virtuous*, when we expect no further advantage from them: but then they add, that we are excited to perform thoſe actions, even as we purſue or purchaſe pictures, ſtatues, landſchapes, *&c.* from ſelf-intereſt, to obtain the pleaſure which accompanies the action.

But the author juſt mentioned has ſhewn the miſtake: ſome actions, he proves, have to men an immediate goodneſs, and others an *immediate evil*, i. e. we perceive pleaſure in ſome, and pain in others; and are determined to love, or hate, the doers, without any view of natural advantage, without any view to future rewards or puniſhments, or even without any intention to obtain the ſenſible pleaſure of the good; but from a very different principle, *viz.* an internal moral ſenſe, or a natural determination of the mind to receive amiable, or diſagreeable, ideas of actions, when they ſhall occur to our obſervation, antecedently to any opinion of advantage, or loſs, to redound to ourſelves from them; even as we are pleaſed with a regular form, or an harmonious compoſition, without any knowlege of the mathematics, or ſeeing any advantage in that form or compoſition, different from the immediate pleaſure. See farther under the articles SENSE, GOOD, VIRTUE, and VICE.

EVIL, or *King's*-**EVIL**, in medicine, a diſeaſe by the phyſicians called *ſtrumæ*, and *ſcrophulæ*, conſiſting in ſcirrhous tumours, ariſing moſt commonly about the neck, but ſome alſo on the other glandulous parts, as the breaſt, arm-pits, groin, *&c.*

The kings of England and France have, of a long time, pretended to the privilege of curing the *king's-evil* by *touching*. The right, or faculty, it is ſaid by ſome, was originally inherent in the French kings; and thoſe of England only claimed it, as an appendage, or appurtenant to that crown, to which they laid a claim. But ſome of our own monkiſh writers ſet the thing on a different footing; and will have it to have been practiſed by our kings, as early as Edward the Confeſſor; which opinion the ingenious Mr. Becket has abundantly overthrown.

Raoul de Pruelles, addreſſing his tranſlation of St. Auguſtine *de civitate Dei*, to Charles V. of France, ſays expreſly, *Vos devanciers, & vouz avez telle vertue & puiſſance que vous eſt donnée & attribuée de Dieu, que vous faites miracles en votre vie, telles, ſi grandes & ſi apertes que vous gueriſſes d'une tres horrible maladie que s'appelle les eſcrouelles* [i. e. the *king's-evil*] *de laquelle nul autre prince terrein ne peut guerir hors vous.*

Stephen de Conti, a religious of Corbie, who lived in the year 1400. and wrote a hiſtory of France ſtill preſerved in MS. in the library of St. Germains des Prez, deſcribes the practice of touching for the *evil*. After the king had heard maſs, a veſſel of water was brought him, and his majeſty, having put up his prayers before the altar, touched the diſeaſed part with his hand, and waſhed it with water.

Matthew Paris will have S. Louis the firſt who practiſed it: others contend, that king Robert was the firſt who was gifted this way. It is certain, we find no mention of any ſuch prerogative, before the kings of the 11th century, when that prince reigned. Fa. Daniel, hiſt. *de France*, T. I. p. 1032. Polydore Virgil ſtrains hard to prove the ſame virtue in the kings of England. Favyn hiſt. *de Navarre*, 1062.

The continuer of Monſtrelet, obſerves, that Charles VIII. touched ſeveral ſick perſons at Rome, and cured them, *dont ceux des Italies*, ſays he, *voyant ce myſtere ne furent onques ſi emerveillez.*

The ſame virtue, we know not on what grounds, is commonly attributed to a ſeventh ſon, born without any daughter between; as alſo to the chiefs of certain particular families; particularly, to the eldeſt perſon of the houſe of Aumont in Burgundy.

Hungry **EVIL**. See the article HUNGRY.

EULOGY *, **EULOGIA**, in church-hiſtory. — When the Greeks have cut a loaf, or piece of bread, to conſecrate it, they break the reſt into little bits, and diſtribute it among the perſons who have not yet communicated, or ſend it to perſons that are abſent; and theſe pieces of bread are what they call *eulogies*.

* The word is Greek, ευλογια, formed of ευ, *bene*, well; and λεγω, *dico*, I ſay, ſpeak; q. d. *benedictum*, bleſſed.

The Latin church has had ſomething like *eulogies* for a great many ages; and it was thence aroſe the uſe of their holy bread. The name *eulogy* was likewiſe given to loaves, or cakes, brought to church by the faithful, to have them bleſſed.

Laſtly, the uſe of the term paſſed hence to mere preſent made a perſon, without any benediction. See the Jeſuit Gretſer, in his treatiſe *de Benedictionibus & Maledictionibus*, l. II. c. 22, 24, *&c.* where he treats of *eulogies* thoroughly.

From a paſſage in Bollandus, on the life of S. Melaine, c. 4. it appears, that *eulogies* were not only of bread, but any kind of meat bleſſed and hallowed for that purpoſe. Add, that almoſt every body bleſſed and diſtributed *eulogies*; not only biſhops and prieſts, but even hermits, though laymen, made a practice of it. Women alſo would ſometimes ſend *eulogies*, as appears from the life of S. Waulry, c. 3. N° 14. in the Bollandiſts. *Acta Sanct. Jan.* T. 1. p. 20.

The wine ſent as a preſent, was alſo held an *eulogy*. Bollandus remarks further, that the euchariſt itſelf was called *eulogy*. *Act. Sanct. Jan.* T. 2. p. 199.

EUNOMIANS, a ſect of heretics, denominated from *Eunomius*, biſhop of Cyzicus, who, in the fourth century, maintained moſt of the errors of Arius, and added others to them; as, particularly, that he knew God, as well as God knew himſelf.

He rebaptized ſuch as had already been baptized in the name of the Trinity: he had diſſembled his errors for ſome time; but, having at length made a diſcovery, he was expelled his ſee.

The Arians endeavoured to have put him into that of Samoſata; but could not effect it: in lieu thereof, the emperor Valens reſtored him to Cyzicus.

EUNOMIOEUPSYCHIANS, a ſect of heretics of the IVth century, mentioned by Nicephorus, l. XII. c. 30. being the ſame with thoſe called *Eutychians* by Sozomen, l. VII. c. 17.

The author hereof, according to Sozomen, was an Eunomian, named Eutychus, and not Eupſychius, as Nicephorus has it: and yet this latter writer only copies Sozomen in this paſſage; ſo that it is paſt doubt, they both ſpeak of the ſame ſect. But on whoſe ſide the error lies, is not eaſy to decide: Valeſius durſt not undertake to ſhew it; but contented himſelf to mark the difference in his notes on Sozomen, as Fa. Fronto has done on Nicephorus.

EUNUCH *, ΕΥΝΟΥΧΟΣ, a term applied, in the general, to all who have not the faculty of generating, either through imbecillity, or frigidity; but more particularly to ſuch as have been caſtrated, or have loſt the parts neceſſary thereto.

* The word is formed of ευνην εχει, q. d. *lecti curam habet*, *guardian*, or *keeper of the bed.*

In England, France, *&c.* *eunuchs* are never made but on occaſion of ſome diſeaſe, which renders ſuch an operation neceſſary; but, in Italy, they make *eunuchs*, for the ſake of preſerving the voice; and, in the eaſt, they make *eunuchs* to be guards or attendants on their women.

Great numbers of children, from one to three years of age, are yearly caſtrated in Italy, to ſupply the operas and theatres, not only of Italy, but other parts of Europe, with ſingers; though it is not one in three, that after having loſt their virility, have a good voice for a recompence.

Tavernier aſſures us, that in the kingdom of Boutan in the Eaſt-Indies, there are every year made twenty thouſan *eunuchs*, and ſold thence into other countries.

The ſeraglio's of the eaſtern emperors are chiefly ſerved an guarded by *eunuchs*. And yet we have very good teſtimonies, that the rich *eunuchs* in Perſia, and other countries, keep ſeraglio's for their own uſe.

By an arret of the grand chamber of Paris in 1665. it is ad judged, that an *eunuch* could not marry, not even with th conſent of the woman and all the parties on both ſides.

Claudian has a very ſevere ſatire againſt the *eunuch* Eutropius who had been elected conſul of Rome. He repreſents him a an old woman, dreſſed up in the honours of the conſulate.

The ſtory of Origen is notorious: that learned and piou father, upon a too literal interpretation of that paſſage in S Matthew, c. xix. ver. 12. where mention is made of, *eunuch ſo born from their mothers womb,—eunuchs who were made f of men;—and eunuchs who made themſelves eunuchs for th kingdom of heaven*; caſtrated himſelf.

In the council of Nice, thoſe were condemned, who, out o an indiſcreet zeal, and to guard themſelves from ſenſual pleaſures, ſhould make themſelves *eunuchs*: ſuch as thus mutilate their bodies, were excluded from holy orders: witneſs Leontius biſhop of Antioch, who was depoſed for having practiſed this cruelty on himſelf. And the biſhop of Alexandri excommunicated two monks, who had followed his examp on pretence of ſecuring themſelves from the impetuous motion of concupiſcence. Several of the emperors made very ſever prohibitions againſt the making of *eunuchs*, or peoples caſtratin themſelves.

EUNUCHS, **EUNUCHI**, is alſo the denomination of a ſect of heretics in the 3d century, who had the folly, or madneſs, t caſtrate not only thoſe of their own perſuaſion, but even a they could lay hands on.

They took their riſe from the example of Origen, wh upon a miſunderſtanding of our Saviour's words in St. Ma the view, made himſelf an *eunuch*, by cutting off the offending part, as ſome ſay; or, as others (particularly S. Epiphanius), by the uſe of certain medicines.—Theſe heretics were alſo called Valeſians.

EVOLVENT, in geometry, a term which ſome writers uſe for the curve reſulting from the evolution of a curve; in contradiſtinction to the *evolute*, which is the curve ſuppoſed to be opened, or evolved.

The evolute always both touches and cuts the *evolvent* at the ſame time: the reaſon is, that it has two of its infinitely ſmall ſides in common with the *evolvent*; or, rather, exactly placed on two equal ſides thereof: one of them within-ſide that of the *evolvent*, i. e. on the concave ſide thereof; and the other, on the convex ſide of its correſpondent ſide. So that the evolute touches the *evolvent* in two points; whence, inſtead of being a tangent, it is ſaid to oſculate the *evolvent*: and, hence, it is alſo called *oſculator*, and *circulus oſculator*.

There is one, and but one oſculator, to each point of the *evolvent*; but, to the ſame point, there are an infinity of other circles which only touch, and do not oſculate. The oſculator, and the evolute, make no angle in the place where they touch and cut; nor can any curve line be drawn between, as there may between a tangent and a curve.

EVOLUTE, Evoluta, in the higher geometry, a curve firſt propoſed by Mr. Huygens, and ſince much ſtudied by the later mathematicians.

The *evolute* is a curve, ſuppoſed to be evolved, or opened; and which, in opening, deſcribes other curves.

To conceive its origin and formation, ſuppoſe a flexible thread, wound exactly over the convexity of any curve, as ABCG (*Tab. Geometry*, *fig.* 20.); and ſuppoſe the thread fixed in G, and every-where elſe at liberty, to A. Now, beginning to unwind the thread from the point, and continuing it to D, and, throughout, keeping it tight on the curve ſurface ABCG, when the thread is become quite ſtrait, and is only a tangent, FG, to the curve in the point G, it is evident the extremity A, in its progreſs to G, has deſcribed another curve line, ADEF.

Here, the firſt curve, ABCG, is called the *evolute*; each of its tangents BD, CE, &c. comprehended between it, and the curve ADEF, is called a *radius of the evolute*, or *radius oſculi*, or *radius oſculator* of the curve ADEF, in the reſpective points D, E, &c. And the circles whereof the oſculators BD, CE, &c. are radii, are called *circuli oſculatores* of the curve ADEF, in D, E, &c. And, laſtly, the new curve, reſulting from the evolution of the firſt curve begun in A, is called the *curve of evolution*, or *curve deſcribed by evolution*.

The radius of the Evolute, then, is the part of the thread compriſed between any point where it is a tangent to the *evolute*, and the correſpondent point where it terminates in the new curve. Which appellation, *radius*, is the more proper, as one may actually conſider this part of the thread, in every ſtep it takes, as if it deſcribed an arch of an infinitely ſmall circle, making a part of the new curve, which thus conſiſts of an infinite number of ſuch arches, all deſcribed from different centres, and with different radii.

Every curve, therefore, may be conceived as formed by the evolution of another. And we are to find that, whoſe evolution formed it; which amounts to the finding the radius of the *evolute* in any point: for, as it is always a tangent to the generating curve, it is, properly, no more than one of its infinitely ſmall parts, or ſides, prolonged; and all its ſides, whoſe poſitions are determined of courſe, are no other than the generating curve itſelf.

The ſame thread is alſo called *radius curvedinis*, or *radius oſculi*, by reaſon a circle deſcribed hereby, from the centre G, is ſaid to oſculate, or kiſs it, as both touching and cutting at the ſame time, *i. e.* touching both the inſide and the out.

Hence, 1°, The *evolute* BCF (*fig.* 21.), is the place of all the centres of the circle that oſculate the curve AM, deſcribed by evolution. 2°, When the point B falls on A, the radius of the *evolute* MC is equal to the arch BC; or to the aggregate of AB, and the arch BC. 3°, Since the element of the arch Mm, in the curve deſcribed by evolution, is an arch of a circle deſcribed by the radius CM; the radius of the *evolute* CM is perpendicular to the curve AM. 4°, Since the radius, by the *evolute* MC, is always a tangent to the *evolute* BCF, curves by evolution may be deſcribed through innumerable points, if only tangents be produced in the ſeveral points of the *evolute*, till they become equal to their correſpondent arches.

The finding of the *radii of evolutes*, is a thing of great importance in the higher ſpeculations of geometry; and even, ſometimes, is of uſe in practice; as the inventor of the whole theory, Huygens, has ſhewn in applying it to the pendulum. Horol. *Oſcill.* part 3.—The doctrine of the *oſcula of evolutes* is owing to M. Leibnitz; who firſt ſhewed the uſe of *evolutes* in the meaſuring of curves.

To find the radius of the *evolute* in the diverſe kinds of curves, with equations to the *evolutes*, ſee Wolf. *Elem. Math.* Tom. I. p. 524. *ſeqq.* Or the *Infinim. Petites of M. le Marquis de l'Hôpital.*

Since the radius of an *evolute* is either equal to an arch of the *evolute*, or exceeds it by ſome given quantity, all the arches of *evolutes* may be rectified geometrically, whoſe radii may be exhibited by geometrical conſtructions; whence we ſee why an arch of a cycloid is double its chord: the radius of the *evolute* being double the ſame; and the *evolute* of a cycloid being itſelf a cycloid.

M. Varignon has applied the doctrine of the radius of the *evolute* to that of central forces; ſo that having the radius of the *evolute* of any curve, one may find the value of the central force of a body; which, moving in that curve, is found in the ſame point where that radius terminates: or reciprocally, having the central force given, the radius of the *evolute* may be determined. *Hiſt. de l'Acad. Roy. des Sciences*, An. 1706.

Imperfect Evolute. M. Reaumur has given a new kind of *evolute*, under this denomination. Hitherto, the mathematicians had only conſidered the perpendiculars let fall on the points of the convex ſide of the curve: if other lines, not perpendicular, were drawn upon the ſame points, provided they were all drawn under the ſame angle, the effect would be the ſame; that is, the oblique lines would all interſect within the curve; and, by their interſections, form the infinitely ſmall ſide of a new curve; whereof they would be ſo many tangents.

This curve would be a ſort of *evolute*, and would have its radii; but an imperfect *evolute*, ſince the radii are not perpendicular to the firſt curve. *Hiſt. de l'Acad.* &c. An. 1709.

EVOLUTION *, in geometry, the unfolding, or opening, of a curve, and making it deſcribe an evolvent. See Evolvent.

* The word is Latin, *evolutio*, formed of the prepoſition *e*, out; and *volvo*, I roll, or wind; *q. d.* an *unwinding*, or *unrolling*.

The equable *evolution* of the periphery of a circle, or other curve, is ſuch a gradual approach of the circumference to rectitude, as that its parts do all concur, and equally evolve, or unbend; ſo that the ſame line becomes ſucceſſively a leſs arch, of a reciprocally greater circle; till, at laſt, they change into a ſtrait line. In *Philoſ. Tranſact.* N° 260. a new quadratrix to the circle is found by this means, being the curve deſcribed by the equable *evolution* of its periphery.

Evolution is alſo uſed for the extraction of roots out of powers.

In which ſenſe it ſtands contrary to *involution*.

Evolution, in the art of war, is a term applied to the diverſe figures, turns, and motions, made by a body of ſoldiers, either in ranging themſelves in form of battle, or in changing their form; and this, whether in the way of exerciſe, or in the time of an actual engagement.

It is by the *evolutions*, that the form and poſture of a battalion, ſquadron, &c. are changed, either to make good the ground they are upon, or to poſſeſs themſelves of another, that they may attack the enemy, or receive an onſet, more advantageouſly.

The *military evolutions* are converſions, countermarches, or wheelings, doublings of rank or file, &c.

Fa. Hoſte, a Jeſuit, in 1697. printed a treatiſe of *naval evolutions*, in folio.—By *naval evolutions* he means, the motions made by a fleet, ſquadron, or naval armament, in order to put themſelves into a proper diſpoſition for attacking the enemy, or defending themſelves with the moſt advantage.

EUPHONY *, ΕΥΦΩΝΙΑ, in grammar, an eaſineſs, ſmoothneſs, and elegancy of pronuntiation.

* The word is Greek, formed of ευ, *bene*, well; and φωνη, *vox*, voice. Quintilian calls *euphonia*, *vocalitas*; Scaliger, *facilis pronuntiatio*.

Euphonia is properly a kind of figure whereby we ſuppreſs a too harſh letter, or convert it into a ſmoother, contrary to the ordinary rules. There are examples enough in all languages.

EUPHORBIUM, ΕΥΦΟΡΒΙΟΝ, in pharmacy, a kind of gum, brought from Africa, in little roundiſh pieces; whitiſh when new, and yellowiſh when old; very pungent to the taſte, but void of ſmell.

The principal uſe of *euphorbium* is external; it is a great ingredient in divers reſolutive plaiſters, as well as in tincture, and powder for ſtopping of gangrenes, cleanſing of foul ulcers, and exfoliating carious bones.

Internally taken, it is a purgative, but ſo violent a one, that it is almoſt out of uſe; as tearing off the neceſſary mucus, or covering of the ſtomach and bowels, and occaſioning dyſenteries. Yet, we are told the Africans uſe it very commonly; but they firſt quench its fire in purſlain-water.

Its powder is a violent ſternutatory, and to be uſed very cautiouſly, and never alone, but mixed with a ſmall quantity of ſome other powder, to guard againſt its intolerable acrimony.

The gum we call *euphorbium* is formed of the juice of a plant, of the ſame name, pretty frequent in Mauritania; though the ſpecies of the plant has been greatly controverted. The generality of our lateſt botaniſts make it a thorny, ſucculent plant; and Mr. profeſſor Hermannus calls it, the *tithymalus Mauritanus aphyllos anguloſus & ſpinoſus. Hort. Acad. Lug. Batav.* 598.

It has no leaves; but, in lieu thereof, puts forth, along its ſtem, a kind of long, prickly eyes, or buds: which buds they are, that yield that gummy juice, called, *euphorbium officinarum.* See Bradl. *Hiſt. of Succul. plants*, dec. 2. p. 4. and dec. 5. p. 12.

Some authors will have it, that the gum is drawn from the plant by inciſion; others, on the contrary, ſay it ouſes ſpontaneouſly: the juice, we are told, is ſo very ſubtile, and penetrating, that the perſon who taps the plant, is forced to ſtand at a good diſtance, and make the inciſion with a long pike; otherwiſe it gets to the brain, and occaſions dangerous inflammations. It ouſes out in great abundance; and is gathered in a ſheep's-ſkin, wrapped round the plant.

Pliny tells us, that the firſt diſcovery of *euphorbium* is attributed to Juba king of Libya; who denominated it from Euphorbius, his phyſician, brother of Muſa, phyſician to Auguſtus. Etmuller aſſures us, that the plant which yielded the *euphorbium* of the antients, is now unknown to us; but, it we go by Pliny's deſcription, the plant called ſchadida calli, in the *Hortus Malabaricus*, muſt be the antient *euphorbium.* This diſcovery is owing to Commelinus, a burghermaſter of Amſterdam, and profeſſor of botany.

EUPHORY, ſignifies the ſame as *eucraſy.* See Eucrasy.

EUPSYCHIANS. See Eunomioeupsychians.

EURIPUS, ΕΥΡΙΠΟΣ, in hydrography, properly ſignifies a certain ſtreight of the ſea, between Bœotia, and Euboea; where the currents are ſo ſtrong, that the ſea is ſaid to ebb and flow ſeven times a day: in which place, as the ſtory commonly goes, Ariſtotle drowned himſelf, out of chagrin, for not being able to account for ſo unuſual a motion.

Euripus has ſince become a general name for all ſtreights, where the water is in great motion and agitation.

The antient circus's had their *Euripi*; which were no other than pits, or ditches, on each ſide of the courſe, into which it was very dangerous falling, with their horſes and chariots, as they ran races. The term *Euripus* was more particularly applied, by the Romans, to three canals, or ditches, which encompaſſed the circus on three ſides; and which were filled occaſionally, to repreſent naumachiæ, or ſea-battles.

The ſame people called their ſmaller fountains, or canals, in their gardens, *Euripus's*; and their largeſt, as caſcades, *&c. Niles.*

EURUS.
EURO-*Auſter.* } See the article Winds.
EURO-*Notus.*

EUROPEAN *Hours.* See the article Hour.

European *Ocean.* See the article Ocean.

EURYTHMY *, ΕΥΡΥΘΜΙΑ, in architecture, painting, and ſculpture, a certain majeſty, elegance, and eaſineſs, appearing in the compoſition of divers members, or parts of a body, building, or painting; and reſulting from the fine proportions thereof.

* The word is Greek; and ſignifies, literally, a conſonance, or fine agreement, or, as we may call it, a harmony of all the parts; being compounded of ευ, well; and ῥυθμος, *rhythmus*, cadence, or agreement of numbers, ſounds, or the like things.

Vitruvius ranks *eurythmia* among the eſſential parts of architecture: he deſcribes it as conſiſting in the beauty of the conſtruction, or aſſemblage, of the ſeveral parts of the work; which renders its aſpect, or whole appearance, graceful: *e. gr.* when the height correſponds to the breadth, and the breadth to the length, *&c.*

‘ From theſe three ideas, or deſigns, *viz.* orthography, ſce-
‘ nography, and profile, it is, that ſame *eurythmy*, *majeſtica*,
‘ and *venuſta ſpecies ædificii*, do reſult; which creates that
‘ agreeable harmony between the ſeveral dimenſions; ſo as
‘ nothing ſeems diſproportionate, too long for this, or too
‘ broad for that, but correſponds in a juſt and regular ſymme-
‘ try, and conſent of all the parts with the whole.’ Evelyn's *Account of Archit.* &c.

EUSEBIANS, a denomination given to the ſect of Arians, on account of the favour and countenance which Euſebius, biſhop of Cæſarea, ſhewed and procured for them, at their firſt riſe. See Arians.

EUSTATHIANS, a name given to the catholics of Antioch, in the IVth century; on occaſion of their refuſal to acknowlege any other biſhop beſide St. Euſtathius, depoſed by the Arians.

The denomination was given them during the epiſcopate of Paulinus, whom the Arians ſubſtituted to S. Euſtathius, about the year 330. when they began to hold their aſſemblies apart. About the year 350. Leontius of Phrygia, called the Eunuch, who was an Arian, and was put in the ſee of Antioch, deſired the *Euſtathians* to perform their ſervice in his church; which they accepting, the church of Antioch ſerved indifferently, both the Arians, and Catholics.

This, we are told, gave occaſion to two inſtitutions, which have ſubſiſted in the church ever ſince: the firſt was, pſalmody in two choirs; though, Mr. Baillet thinks that, if they inſtituted an alternate pſalmody between two choirs, it was between two catholic choirs; and not by way of reſponſe to an Arian choir. The ſecond was the doxology, *Glory be to the Father, and the Son, and the Holy Ghoſt.*

This conduct, which ſeemed to imply a kind of communion with the Arians, gave great offence to abundance of catholics, who began to hold ſeparate meetings; and thus formed the ſchiſm of Antioch. Upon this, the reſt, who continued to meet in the church, ceaſed to be called *Euſtathians*; and that appellation became reſtrained to the diſſenting party. S. Flavianus, biſhop of Antioch in 381. and one of his ſucceſſors, Alexander, in 482. brought to paſs a coalition, or reunion, between the *Euſtathians*, and the body of the church of Antioch, deſcribed, with much ſolemnity, by Theodoret. *Eccl. l.* III. *c.* 2.

Eustathians were alſo a ſect of heretics, in the 4th century, denominated from their author Euſtathius; a monk ſo fooliſhly fond of his own profeſſion, that he condemned all other conditions of life.

He excluded married people from ſalvation; prohibited his followers from praying in their houſes; and obliged them to quit all they had, as incompatible with the hopes of heaven. He drew them out of the other aſſemblies of Chriſtians, to hold ſecret ones with him; and made them wear a particular habit: he appointed them to faſt on Sundays; and taught them, that the ordinary faſts of the church were needleſs, after they had attained to a certain degree of purity, which he pretended to. He ſhewed a world of horror for chapels built in honour of martyrs, and the aſſemblies held therein.

Several women, ſeduced by his reaſons, forſook their huſbands; and abundance of ſlaves deſerted their maſters houſes. He was condemned in the year 342. at the council of Gangra, in Paphlagonia.

EUSTYLE *, in architecture, a kind of edifice, where the columns are placed at a moſt convenient diſtance one from another; the intercolumniations being all juſt two diameters and a quarter, of the column; except thoſe in the middle of the fronts, before and behind, which are three diameters diſtant.—See *Tab. Archit. fig.* 44.

* The word is Greek; being formed of ευ, *bene*, well; and στυλος, column.

The *euſtyle* is a medium, between the pycnoſtyle, and aræoſtyle.

Vitruvius, l. III. c. 2. obſerves, that the *euſtyle* is the moſt approved of all the manners of intercolumniation; and that it ſurpaſſes all the reſt, in conveniency, beauty, and ſtrength.

EUTYCHIANS, antient heretics, who denied the duplicity of natures in Chriſt; thus denominated from Eutyches the archimandrite, or abbot of a monaſtery at Conſtantinople.

The averſion Eutyches bore to the hereſy of Neſtorius, threw him into another extreme, not leſs dangerous than that he ſo warmly oppoſed; though ſome paſſages in St. Cyril, which raiſed the unity of the perſon of Jeſus Chriſt very high, contributed, likewiſe, to his deluſion.

At firſt he held, that the *Logos*, Word, brought his body down with him from heaven: which was a near approach to the hereſy of Apollinarius: and, though he afterwards teſtified the contrary, in a ſynod at Conſtantinople, wherein he was condemned, yet he could not be brought to acknowlege, that the body of Jeſus Chriſt was conſubſtantial with ours.

In effect, he did not ſeem quite ſteady and conſiſtent in his ſentiments; for he appeared to allow of two natures, even before the union; which was apparently a conſequence he drew from the principles of the Platonic philoſophy, which ſuppoſe a pre-exiſtence of ſouls: accordingly, he believed that the ſoul of Jeſus Chriſt had been united to the divinity before the incarnation; but then he allowed no diſtinction of nature in Jeſus Chriſt, ſince his incarnation.

See the diſſertation of Fa. Hardouin, *de ſacramento altaris* wherein that Jeſuit endeavours to unfold all the ſentiments o the *Eutychians.*

This hereſy was firſt condemned in a ſynod held at Conſtantinople, by Flavian, in 448. and re-examined, and ful minated, in the general council of Chalcedon, in 451. Th legates of pope Leo, who aſſiſted thereat, maintained, tha it was not enough to define, that there were two natures i Jeſus Chriſt; but inſiſted ſtrenuouſly, that, to remove a equivocations, they muſt add theſe terms, *without bein changed, or confounded, or divided.*

But this decree of the council of Chalcedon, at which aſſiſte upwards of 360 prelates, did not ſtop the progreſs *Eutychianiſm:* ſome biſhops of Egypt, who had attended the council, upon their return, proclaimed openly, th St. Cyril had been condemned, and Neſtorius acquitted, ther in; which occaſioned great diſorders; ſeveral perſons, und pretence of contending for the ſentiments of St. Cyril, makin no ſcruple of weakening the authority of the council of Cha cedon.

The hereſy of the *Eutychians*, which made a very great pr gr greſs throughout the eaſt, at length became divided into ſeveral branches. Nicephorus makes mention of no fewer than twelve: ſome called *ſchematici*, or *apparentes*, as only attributing to Jeſus Chriſt, a phantom, or appearance of fleſh, and no real fleſh: others *Theodoſians*, from Theodoſius, biſhop of Alexandria: others *Jacobites*, from one James, *Jacobus*, of Syria; which branch eſtabliſhed itſelf principally in Armenia, where it ſtill ſubſiſts.

Others were called *Acephali*, q. d. without head; and *Severians*, from a monk called Severus, who ſeized on the ſee of Antioch in 513.

Theſe laſt were ſubdivided into five factions, *viz.* *Agnoetæ*, who attributed ſome ignorance to Jeſus Chriſt: the followers of Paul: Μελαινοι, that is, the *black Angelites*; thus called from the place where they were aſſembled: laſtly, *Adrites*, and *Conovites*.

EUTYCHIANS was alſo the name of another ſect, half Arian, half Eunomian; which aroſe at Conſtantinople, in the 4th century.

It being then a matter of mighty controverſy among the Eunomians at Conſtantinople, whether or no the Son of God knew the laſt day and hour of the world, particularly with regard to that paſſage in the goſpel of St. Matthew, c. xxiv. ver. 36. or, rather, that in St. Mark, xiii. 32. where it is expreſſed, that *the Son did not know it, but the Father only*; Eutychius made no ſcruple to maintain, even in writing, that the Son did know it: which ſentiment diſpleaſing the leaders of the Eunomian party, he ſeparated from them, and made a journey to Eunomius, who was then in exile.

That heretic acquieſced fully in Eutychius's doctrine, that the Son was not ignorant of any thing the Father knew; and admitted him to his communion; Eunomius dying ſoon after, the chief of the Eunomians at Conſtantinople refuſed to admit Eutychius; who, upon this, formed a particular ſect of ſuch as adhered to him, called *Eutychians*.

This ſame Eutychius, with one Theophronius, as was ſaid in Sozomen's time, were the occaſions of all the changes made by the Eunomians in the adminiſtration of baptiſm; which conſiſted, according to Nicephorus, in only uſing one immerſion, and not doing it in the name of the Trinity, but in memory of the death of Jeſus Chriſt.

Nicephorus calls the chief of that ſect, not Eutychius, but Eupſychius, and his followers Eunomioeupſychians.

EWRY, an office in the king's houſhold, where they take care of the linen for the king's table; lay the cloth, and ſerve up water in ſilver *ewers* after dinner: whence the office takes its name.

EXACERBATION, the ſame as paroxyſm. See PAROXYSM.

EXACHORD. See the article HEXACHORD.

EXACTION, in law, a wrong done by an officer, or one pretending to have authority; in taking a reward, or fee, for that which the law allows not.

The difference between *exaction*, and extorſion, conſiſts in this; that extorſion is, where the officer takes more than his due; and *exaction*, where he wreſts a fee, or reward, where none is due.

EXAGON. See the article HEXACON.

EXÆRESIS *, in chirurgery, an operation whereby ſomething foreign, uſeleſs, and even pernicious, is taken from the human body.

* The word is Greek, εξαιρεσις; which ſignifies the ſame.

The *exæreſis* is performed two ways;—by extraction, when ſomething formed in the body is drawn out of the ſame.—And by detraction, when ſomething is taken away, that had been introduced into the body, from without. See LITHOTOMY, &c.

EXAGGERATION *, in rhetoric, a figure, whereby we enlarge, or heighten things; making them appear more than they really are, whether as to goodneſs, badneſs, or other qualities.

* The word is formed of the Latin *exaggero*, I exaggerate; which is a compound of *ex*, and *agger*, a mound, or elevation of earth.

EXAGGERATION, in painting, is a method of repreſenting things, wherein they are loaded too much, or marked too ſtrongly; whether in reſpect of the deſign, or the colouring.

Exaggerating differs from caricatouring; in that the latter perverts, or gives a turn to the features, &c. of a face, which they had not; whereas the former only improves, or heightens, upon what they had.

The latter is a kind of burleſque on the object, and is generally meant to ridicule: the former is uſually an exalting or enlivening of the beauties of the object, beyond what nature allows. The painter is obliged to have recourſe to an *exaggeration* of colours, both on account of the ſurface of his ground, the diſtance of his work, and of time, and the air, which diminiſh and weaken the force of the colours: but this *exaggeration* muſt be conducted in ſuch manner, as not to put the objects out of their natural characters. De Piles.

EXALTATION, *Elevation*, is chiefly uſed in a figurative ſenſe, for the raiſing or advancing a perſon to ſome eccleſiaſtical dignity; and, particularly, to the papacy.

The term *exaltation* is, in ſome meaſure, appropriated to the pope; and expreſſes his inauguration, coronation, taking poſſeſſion, and the beginning of his pontificate.

EXALTATION *of the Croſs*, EXALTATIO CRUCIS, is a feaſt of the Romiſh church, held on the 14th of September; in memory, as is generally ſuppoſed, of this, That the emperor Heraclius brought back the true croſs of Jeſus Chriſt on his ſhoulders, to the place on mount Calvary from which it had been carried away fourteen years before, by Coſroes, king of Perſia, at his taking of Jeruſalem, under the reign of the emperor Phocas.

The croſs was delivered up by a treaty of peace made with Siroe, Coſroes's ſon.—The inſtitution of this peace is commonly ſaid to have been ſignalized by a miracle; in that Heraclius could not ſtir out of Jeruſalem with the croſs, while he had the imperial veſtments on, enriched with gold, and precious ſtones; but bore it, with eaſe, in a common dreſs.

But, long before the empire of Heraclius, there had been a feaſt, of the ſame denomination, obſerved both in the Greek and Latin churches, on occaſion of what our Saviour ſaid in St. John xii. 32. *And I, if I be* exalted, *or lifted up, will draw all men unto me.* And again, in ch. viii. ver. 28. *When ye have* exalted, or *lifted up, the Son of man, then ſhall know that I am he.* Fa. Du Soulier aſſures us, that M. Chaſtelain was of opinion, this feaſt had been inſtituted, at leaſt at Jeruſalem, 240 years before Heraclius.

The feaſt of the dedication of the temple built by Conſtantine was held, ſays Nicephorus, on the 14th of September, the day the temple had been conſecrated on, in the year 335. and this feaſt was alſo called, the *exaltation of the croſs*, by reaſon it was a ceremony therein, for the biſhop of Jeruſalem to aſcend a high place, built by Conſtantine for that purpoſe, in manner of a pulpit, called by the Greeks, the *ſacred myſteries of God*, or *the holineſs of God*, and there hoiſt up the croſs, for all the people to ſee it.

EXALTATION, in phyſics, denotes the act, or operation, of elevating, purifying, ſubtilizing, or perfecting, any natural body, its principles and parts; alſo the quality, or diſpoſition, which bodies acquire by ſuch operation.

The term *exaltation* is peculiarly affected by the chymiſts and alchemiſts; who, imagining it to have ſome extraordinary emphaſis, are employing it at every turn.—Moſt ſulphurous matters, much *exalted*, are obſerved to be of a red colour.

It is this *exaltation* of the ſulphurous part in ſtrawberries, that gives them their agreeable, vinous taſte. Lemery.—A gentle and temperate heat of the body *exalts* and diſengages the more volatile parts of our food, and diſpoſes them for nutrition.

EXALTATION, in aſtrology, is a dignity which a planet acquires in certain ſigns, or parts, of the zodiac; which dignity is ſuppoſed to give it an extraordinary virtue, efficacy, and influence.—The oppoſite ſign, or part of the zodiac, is called the dejection of the planet.

Thus, the 15th degree of Cancer, is the *exaltation* of Jupiter, according to Albumazar, by reaſon it was the aſcendant of that planet at the time of the creation: that of the ſun is in the 19th degree of Aries; and its dejection in Libra: that of the moon is in Taurus, &c.—Ptolemy gives the reaſon hereof in his firſt book *de quadrup*.

EXAMEN, or EXAMINATION, an exact and careful ſearch, or inquiry, in order to diſcover the truth, or falſhood, of a thing.

The way of authority is, without compariſon, more eaſy, and better proportioned to the reach and capacity of ſimple man, than the way of diſcuſſion and *examen*. Nicole.

Such a perſon had his houſe robbed; and has made a ſevere *examination* of all his domeſtics, to find out the criminal. A ſtudent ſtands a rigorous *examination* to be admitted to a degree of maſter, bachelor, doctor, &c.

Self-EXAMINATION is a point much inſiſted on by divines, and, particularly, the antient fathers, by way of preparation to repentance. S. Ignatius reduces it to five points; *viz.* 1°, A returning of thanks to God for his benefits. 2°, A begging of grace and light, to know and diſtinguiſh our ſins. 3°, A running over all our actions, occupations, thoughts, and words, in order to learn what has been offenſive to God. 4°, A begging of pardon, and conceiving a ſincere ſorrow for having diſpleaſed him. And, 5°, Making a firm reſolution not to offend him any more; and taking the neceſſary precautions to preſerve ourſelves from it.

EXAMILION, &c. See the article HEXAMILION, &c.

EXAMINERS, in chancery, are two officers, whoſe buſineſs is to *examine*, on oath, the witneſſes produced on both ſides, upon ſuch interrogatories as the parties to the ſuit do exhibit for the purpoſe.

EXAMPLE, in rhetoric, denotes an imperfect kind of induction, or augmentation; whereby it is proved, that a thing which has happened on ſome other occaſion, will happen again, on the preſent one, from the ſimilitude of the caſes: As, "The war of the Thebans, againſt their neighbours the "Phocians, was ruinous; conſequently, that of the Athe"nians, againſt their neighbours, will likewiſe be fatal."

EXANTHEMA *, ΕΞΑΝΘΗΜΑ, in medicine, a preternatural eruption, or effloreſcence on the ſkin.

> * The word is formed of the Greek εξανθεω, *efferveſco, effloreſco*, I flower, or work out.

Exanthemata are of two kinds; the one only a diſcolouring of the ſkin; ſuch are the meaſles, the purple ſpots in malignant fevers, &c.—The other are little eminences, or papillæ, ſtanding out from the ſkin: ſuch are puſtules, ſmall-pox, &c.

EXARCH, Exarchus, in antiquity, an appellation given, by the emperors of the eaſt, to certain officers ſent into Italy, in quality of vicars, or rather prefects, to defend that part of Italy which was yet under their obedience; particularly the city of Ravenna, againſt the Lombards, who had made themſelves maſters of the greateſt part of the reſt.

The reſidence of the *exarch* was at Ravenna; which city, with that of Rome, were all that was left the emperors.

The firſt *exarch* was the patrician Boetius, famous for his treatiſe, *de Conſolatione Philoſophiæ*; appointed in 568. by the younger Juſtin. The *exarchs* ſubſiſted about 185 years; and ended in Eutychius; under whoſe *exarchate* the city of Ravenna was taken by the Lombard king Aſtulphus, or Aſtolphus.

Fa. Papebroch, in his *Propylæum ad Acta Sanct. Maii*, has a diſſertation on the power and office of the *exarch* of Italy, in the election and ordination of the pope.

The emperor Frederic created Heraclius, archbiſhop of Lyons, a deſcendant of the illuſtrious houſe of Montboiſſier; created him, we ſay, *exarch* of the whole kingdom of Burgundy; a dignity, till that time unknown any-where, but in Italy, particularly in the city of Ravenna. Meneſtrier. *Hiſt. de Lyons.*

Homer, Philo, and other antient authors, give, likewiſe, the name *exarchus* to the choragus, or maſter of the ſingers, in the antient chorus's, or him who ſung firſt: the word αρχε, or αρχομαι, ſignifying equally to *begin*, and to *command*.

Exarch *of a dioceſe* was, antiently, the ſame with *Primate*.—This dignity was inferior to the patriarchal, yet greater than the metropolitan.

Exarch alſo denotes an officer, ſtill ſubſiſting in the Greek church; being, a kind of deputy, or legate *a latere* of the patriarch, whoſe office it is to viſit the provinces allotted him, in order to inform himſelf of the lives and manners of the clergy; take cognizance of eccleſiaſtical cauſes; the manner of celebrating divine ſervice; the adminiſtration of the ſacraments, particularly confeſſion; the obſervance of the canons; monaſtical diſcipline; affairs of marriages, divorces, &c. but, above all, to take account of the ſeveral revenues which the patriarch receives from ſeveral churches; and, particularly, as to what regards the collecting the ſame.

The *exarch*, after having greatly enriched himſelf in his poſt, frequently riſes to the patriarchate itſelf.

Exarch is alſo uſed, in the eaſtern church antiquity, for a general, or ſuperior over ſeveral monaſteries; the ſame that we otherwiſe call archimandrite, being exempted, by the patriarch of Conſtantinople, from the juriſdiction of the biſhops; as are now the generals of the Romiſh monaſtic orders.

In 493. Sebas was eſtabliſhed *exarch*, or chief, of all the anchorets within the territory of Jeruſalem. Du Bois.

EXARTICULATION, a diſlocation of ſome of the jointed bones; or a breach of articulation. See Luxation, and Dislocation.

EXCALCEATION, *Diſcalceation*, or the act of putting off the ſhoes.

Among the Hebrews there was a particular law, whereby a widow, whom her huſband's brother refuſed to marry, had a right to ſummon him into a court of juſtice; and, upon his refuſal, might *excalceate* him, *i. e.* pull off one of his ſhoes, and ſpit in his face: which were both actions of great ignominy among that people.

The houſe of the perſon who had undergone them, was, thenceforward, called, the houſe of the *excalceated*.

EXCAMBIATOR. See Escambiator, and Exchange.

EXCAVATION *, the act of hollowing, or digging a cavity, particularly in the ground.

> * The word is originally Latin, *Excavatio*; formed of *ex*, and *cavus*, hollow; or *cavea*, a pit, &c.

The *excavation* of the foundations of a building, by the Italians called *cavatione*, is ſettled, by Palladio, at a ſixth part of the height of the whole building; unleſs there be cellars under-ground, in which caſe he would have it ſomewhat more. See Foundation.

EXCELLENCY, a quality, or title of honour, given to embaſſadors, and other perſons, who are not qualified for that of highneſs, as not being princes; and yet are to be elevated above the other inferior dignities.

In England, and France, the title is now peculiar to embaſſadors; but it is very common in Germany and Italy. Thoſe it was firſt appropriated to, were the princes of the blood, of the ſeveral royal houſes; but they quitted it for that of highneſs, upon ſeveral great lords aſſuming *excellency*.

The embaſſadors have only borne it ſince the year 1593. when Henry IV. of France, ſent the duke de Nevers embaſſador to the pope; where he was firſt complimented with *excellency*. After that, the ſame appellation was given to all the other embaſſadors reſiding at that court: from whence the practice ſpread through the other courts.

The embaſſadors of Venice have only had it ſince the year 1636. when the emperor, and king of Spain, conſented to allow it them.

The embaſſadors of the crowned heads diſpute the giving that title to the embaſſadors from the princes of Italy; where the practice is not eſtabliſhed.

The court of Rome never allows the quality of *excellency* to any embaſſador who is a churchman, as judging it a ſecular title. The common rules and meaſures of *excellency* are a little varied, with reſpect to the court of Rome.—The embaſſadors of France, at Rome, antiently give the title of *excellency* to all the relations of the pope then reigning; to the conſtable Colonna; to the duke de Bracciano, and the eldeſt ſons of all thoſe lords; as alſo the dukes Savelli, Ceſarini, &c. But they are now more reſerved in this reſpect; though they ſtill treat all the Roman princeſſes with *excellency*.

The court of Rome, in their turn, and the Roman princes, beſtow the ſame title on the chancellor, miniſters, and ſecretaries of ſtate, and preſidents of the ſovereign courts of France; the preſidents of the councils in Spain; the chancellor of Poland; and thoſe on the firſt dignities of other ſtates, if they be not eccleſiaſtics.

The word *excellency* was, antiently, a title of kings and emperors; accordingly, Anaſtaſius the library-keeper calls Charlemaign his *excellency*. The ſame title is ſtill given to the ſenate of Venice; where, after ſaluting the doge under the title of *ſereniſſimo*, the ſenators are addreſſed to under your *excellencies*. The *Liber Diurnus Pontif. Rom.* gives the title *excellency* to the exarchs and patricians.

The Italians and French have improved on ſimple *excellency*; and made *excellentiſſimo*, and *excellentiſſime*; which have been beſtowed on certain popes, kings, &c.

EXCELSIS. See Gloria *in excelſis*.

EXCENTRIC, in geometry, is applied where two circles, o ſpheres, though contained, in ſome meaſure, within eac other, yet have not the ſame centre; and, conſequently, ar nor parallel; in oppoſition to *concentric*, where they are parallel, having one and the ſame common centre.

The ſun's orbit is *excentric*, with regard to the globe of ou earth: Mars is very *excentric*, with regard to the ſun; that is his motion is about a very different centre.

Excentric, in the new aſtronomy, or *excentric circle*, is circle; as PDAE (*Tab. Aſtronom. fig.* I.) deſcribed from the centre of the orbit of the planet C, with half the axi CE, as a radius.

Excentric, or *excentric circle*, in the antient Ptolemaic aſtronomy, was the very orbit of the planet itſelf, which it wa ſuppoſed to deſcribe about the earth; and which was conceived *excentric* thereto; called alſo the *deferent*. See Deferent.

In lieu of *excentric circles* round the earth, the modern make the planets deſcribe elliptic orbits round the ſun; whic accounts for all the irregularities of their motions, and thei different diſtances from the earth, &c. more juſtly and naturally.

Anomaly of the Excentric, is an arch of the *excentric circle* as AK, intercepted between the aphelion A, and the righ line KL, which, paſſing through the centre of the planet K is drawn perpendicularly to the line of the apſides AP.

Excentric *Equation*, in the old aſtronomy, is an angle mad by a line drawn from the centre of the earth, with anothe drawn from the centre of the *excentric*, to the body, or plac of any planet; the ſame with the proſthaphæreſis; and equa to the difference (accounted in an arch of the ecliptic) between the ſun's, or a planet's, real, and apparent place.

Excentric *Place* of a planet, in its orbit, is the place wherei the planet is ſeen from the ſun. See Place.

Excentric *Place*, in the ecliptic, is the point of the eclipti to which the planet, viewed from the ſun, is referred. Th coincides with the heliocentric place.

EXCENTRICITY, the diſtance between the centres of tw circles, or ſpheres, which have not the ſame centre.

Excentricity, in the old aſtronomy, is the diſtance of th centre of the orbit of a planet from the centre of the earth.

Th

That the five planets have ſuch an *excentricity*, is allowed on all ſides, and may be evinced from ſeveral conſiderations; chiefly this, that Saturn, Jupiter, Mars, Venus, and Mercury, at ſometimes appear larger, and at others leſs; which can only proceed from hence, that their orbits being *excentric* to the earth, in ſome parts thereof they are nearer us, and in others more remote—But as to the *excentricities* of the ſun and moon, ſome diſpute has been made.

The moderns many of them hold, that the ſun and moon appear ſometimes larger, and ſometimes leſs; not that they are nearer us at one time than another, but becauſe they are viewed through different columns of air, which, producing a difference in the refraction of their light, may occaſion thoſe different appearances. Accordingly, we find very ſudden alterations of the apparent magnitude of the moon; where nothing but a change in the air can take place.

Thus Kepler, on the 2d of March, in the year 1588. found the moon's apparent diameter 31 minutes, preſently after $32' 2''$, than $30' 3''$; and the preceding day it had been $33'$. And again, on the 22d of February, 1591. he obſerved the moon's diameter twice $31'$, ſix times $32'$, ſeven times $33'$, and ſix times $34'$.

They add, that when the ſun and moon are in the ſouthern ſigns, and conſequently lower, being then ſeen through a longer column of denſe air, they muſt appear bigger: conſequently, in the winter-time, when the ſun is in capricorn, being ſeen through a greater quantity of air, he muſt appear larger than in ſummer, when, being nearer our zenith, the quantity of air he is ſeen through is leſſer. And the like may be ſaid of the moon.

But others take the *excentricities* of the ſun and moon to be ſufficiently proved, both from eclipſes; from the moon's greater and leſs parallax, at the ſame diſtance from the zenith; and from the ſun's being obſerved to continue longer in the northern hemiſphere, than in the ſouthern; *viz.* 186 or 187 days in the firſt, and only 178 or 179 days in the latter.

Excentricity, in the new aſtronomy, is the diſtance of the centre of the orbit of a planet, as C, from the centre of the ſun S, *i. e.* the diſtance between the centre of the ellipſis and the focus thereof: called alſo *ſimple* or *ſingle excentricity*.

Double **Excentricity**, is the diſtance between the two foci in the ellipſis; which is equal to twice the *ſingle excentricity*.

To find the *excentricity* of the ſun: ſince the ſun's greateſt apparent ſemidiameter is to his leaſt, as $32' 43''$ to $31' 38''$, or as $1963''$ to $1898''$; the ſun's greateſt diſtance from the earth will be to his leaſt, as 1963 to 1898. Since then $PS+SA=PA=3861$ (*Tab. Aſtron. fig.* 1.); the radius of the *excentric* CP will be found 1930: and conſequently $SC=PC-PS=32$. Wherefore, CP being 100000, CS will be found $=1658$.

Hence, as the earth's *excentricity* SC is ſcarce the ſixteenth part of the radius of the *excentric* CP; the earth's elliptic orbit does not deviate much from a circular one. So that it is no wonder a calculus, made on the foot of an *excentric* circle, ſhould anſwer near enough to obſervation. And ſince the *excentricity*, determined from the difference of the apparent diameters (in obſerving; which, an error of ſome minutes cannot eaſily be avoided), does not ſeem exact enough; nothing hinders but that the *excentricity*, and the place of the apogee, may be determined on the hypotheſis of the *excentric* circle.

EXCEPTION, ſomething reſerved, or ſet aſide, and not included in a rule.

It is become proverbial, that there is no rule without an *exception*; intimating, that it is impoſſible to comprehend all the particular caſes under one and the ſame maxim. But it is dangerous following the *exception* preferably to the rule.

Exception, in law, is a ſtop or ſtay to an action.

The term is uſed indifferently both in the civil, and common law; and in each, *exceptions* are divided into *dilatory* and *peremptory*.

Exception, in a general ſenſe, includes all the kinds of defence, or vindication, which a perſon, againſt whom a proceſs is brought, makes uſe of to prevent or retard its effect.

The civilians reckon three kinds of *exceptions*; viz. *declinatory*, whereby the authority of the judge, or court, is diſallowed; *dilatory*, intended to defer, or prevent the thing from coming to an iſſue; and *peremptory*, which are proper and pertinent allegations, founded on ſome preſcription that ſtands for the defendant; as want of age, or other quality, in the party; or other matter, that may be decided without entering into a full diſcuſſion of the merits of the cauſe.

Exceptive *Conjunctions*. See the article **Conjunction**.

Exceptive *Propoſitions*, are thoſe wherein ſomething is affirmed of a whole ſubject, abating ſome one of the parts thereof, which is *excepted* by a particle, thence called an *exceptive* particle, or particle of *exception*.

Thus, 'all the ſects of the antient philoſophers, except the 'Platoniſts, held God to be corporeal. Covetouſneſs is inexcuſable in reſpect of every thing, but time.'

EXCESS is diſtinguiſhed into *natural* and *moral*: the *firſt*, is a part whereby one qnantity is greater than another.—Thus, we ſay, this line is longer than that; but the *exceſs* is inconſiderable.

The *latter*, is an intemperance, or going beyond the juſt bounds and meaſures preſcribed for any thing.—Thus, we ſay, *exceſs* in wine, women, *&c.* is prejudicial to the health.

EXCHANGE, *Permutation*; an agreement, whereby one thing is trucked, or given for another.

The firſt commerce carried on among men, was by *exchange*; people furniſhing each other mutually with what things they wanted: but ſuch *exchanges* were clogged with two conſiderable difficulties. 1°, On account of the unequal values of commodities: and 2°, In that every body had not juſt what might accommodate him he would *exchange* withal.

To remove theſe inconveniencies, money was invented for a common medium; and inſtead of *exchanging*, buying and ſelling was introduced.

Yet there are nations among whom the primitive way of *exchange* ſtill obtains: and even among the moſt civilized people, there are frequent occaſions, whereon they have recourſe to this method.—Such, for inſtance, is the trade of ſeveral cities of the north, and Baltic ſea, where the French *exchange* their wines and brandies, for woods, metals, hemps, and furs.

The commerce of bills of *exchange* is, itſelf, a mere trading by *exchange*; a truck of money for money; of money, for inſtance, which I have here at London, for what a merchant, or banker, has at Venice, Rome, Amſterdam, or Conſtantinople. In this ſenſe,

Exchange properly denotes the buſineſs, or trade of money, as carried on between one place and another, by means of bills of *exchange*, *i. e.* by giving money in one city, and receiving a bill to intitle the giver to receive the value in another city. See **Bill** *of Exchange*.

There is alſo another ſpecies called *dry exchange*, *cambium ſiccum*, or *uſurer's exchange*, which conſiſts in giving money at one place, to be repaid it, after a certain time, in the ſame place, with a certain ſum over, which is uſually more than common intereſt.

The ceremony of a real *exchange* is obſerved in this fictitious kind, which is only a method of borrowing money.—The borrower draws a bill of *exchange* on any imaginary perſon, perhaps at Amſterdam, at the price the *exchange* then goes at, and delivers it to the lender. After the time affixed comes a proteſt from Amſterdam for non-payment, with the *re-exchange* of the money from thence to London; all which, with coſts, beſides a deduction perhaps at the making of the bargain, muſt the borrower pay.

Exchange is alſo uſed for the profit, which a merchant, negotiant, or broker, makes of a ſum of money received, and for which a bill of *exchange* is drawn payable in ſome other place, and by ſome other perſon; for the intereſt of his money, or the ſalary and reward of his negotiation.

This profit is exceedingly various; being ſometimes 2, ſometimes 3, 4, or even 10 and 15 per cent. according as the alloy of the ſpecies differs, or as money is more or leſs plentiful, or bills of *exchange* more or leſs ſcarce, in the places.— This kind is ordinarily called *real exchange*, and ſometimes *mercantile* and *mix'd exchange*.

The price of *exchange* is regulated according to the courſe of the place where the bill is drawn, or that of the place where the remittance is to be made: ſome pretend that it is the city of Lyons gives the law, or rule, for the price of *exchange*, to moſt of the other cities of Europe.

The word *exchange*, according to ſome, is derived from that perpetual alteration obſerved in the price of this *exchange*, which is ſometimes higher, and ſometimes lower; there being ſometimes ſomewhat to get, and ſometimes to loſe, thereby; and ſometimes nothing to be either got or loſt: as is the caſe when the *exchange* is at par.

From this diverſity in the price of *exchange*, ariſes that common proverb, *The* exchange, *and the wind, are often varying.*—But the more natural way of deriving the word *exchange* is from this, that a man here *exchanges* his money for a bill: or that he changes preſent money for abſent money; or changes his debtor.

Exchange is not to be looked on as a loan; from which it differs, in that in the one, the riſque, or danger, lies on the perſon who borrows; and in the other, on him who lends. It likewiſe differs from intereſt, in that *exchange* is not paid in proportion to the time, which intereſt is. See **Interest**.

Exchange is alſo uſed in diverſe places for the profit allowed for exchanging one ſort, or ſpecies, of money for another.

This is particularly called *ſmall exchange*, *natural exchange*, *pure exchange*, &c.

Exchange is ſometimes alſo uſed for the agio, or profit allowed for the moneys advanced in any one's behalf. See **Agio**.

EXCHANGE alſo denotes a public place, in moſt conſiderable cities, wherein the merchants, negotiants, agents, bankers, brokers, interpreters, and other perſons concerned in commerce, meet, on certain days, and at certain times thereof; to confer, and treat together of matters relating to *exchanges*, remittances, payments, adventures, aſſurances, freightments, and other mercantile negotiations both by land and ſea.

In Flanders, Holland, and ſeveral cities of France, theſe places are called *burſes*; at Paris and Lyons, *places de change*; and in the hanſe towns, *colleges of merchants*.

Theſe aſſemblies are held with ſo much exactneſs, and merchants and negotiants are ſo indiſpenſably required to attend at them; that a perſon's abſence alone, makes him be ſuſpected of a failure or bankruptcy.

The moſt conſiderable *exchanges* in Europe, are that of Amſterdam; and that of London, called the *Royal Exchange*. See ROYAL *Exchange*.

That of Antwerp was little inferior to either of them; till the port of that city was rendered impracticable by the Hollanders, to bring the commerce thereof to themſelves.

Even in the time of the antient Romans *, there were places for the merchants to meet, in moſt of the conſiderable cities of the empire. That ſaid by ſome to have been built at Rome, in the year of the city 259. 493 years before our Saviour, under the conſulate of Appius Claudius, and Publius Servilius, was called *collegium mercatorum*; whereof it is pretended there are ſtill ſome remains, called by the modern Romans *loggia*, the lodge; and now, uſually, the *place of St. George*.

* This notion of a Roman *exchange* is ſuppoſed to be founded on the authority of Livy; whoſe words are as follow; *viz. Certamen conſulibus inciderat, uter dedicaret Mercurii ædem. Senatus a ſe rem ad populum rejecit: utri eorum dedicatio juſſu populi data eſſet, eum præeſſe annonæ, mercatorum collegium inſtituere juſſit*. Liv. lib. 2.—But it muſt be here remarked, that *collegium* never ſignified a building for a ſociety in the purer ages of the Latin tongue: ſo that *collegium mercatorum inſtituere* muſt not be rendered to build an *exchange* for the merchants, but to incorporate the merchants into a company. As Mercury was the god of traffick, this *ædes Mercurii* ſeems to have been chiefly deſigned for the devotions of this company or corporation.

EXCHANGE, in law, denotes the compenſation which the warrantor muſt make the warrantee, value for value, if the land warranted be recovered from the warrantee. *Bracton*. l. II. See WARRANTRY.

The king's **EXCHANGE**, is the place appointed by the king for *exchange* of plate, or bullion for the king's coin. See BULLION.

Theſe places have formerly been diverſe; but now there is only one, *viz.* that of the tower of London, joined with the mint.

Bill of **EXCHANGE**, is a writing given by a merchant, or other negotiant, to procure a ſum of money to be paid the bearer thereof, in ſome diſtant place; in conſideration of a like ſum paid the writer, by the perſon in whoſe behalf the bill is drawn. See BILL *of exchange*.

What we call *re-exchange*, is the due, or præmium of a ſecond *exchange*, when a bill is proteſted. See RE-EXCHANGE.

EXCHANGE-*Brokers*, are perſons who make it their buſineſs to know the alteration of the courſe of *exchange*, to inform merchants how it goes, and to notify to thoſe who have money to receive or pay beyond ſea, who are proper perſons for the *exchanging* and doing thereof.

When the matter is accompliſhed, that is, the money paid, they are to have for brokage 2 ſhillings *per* 100 pound ſterling. Though of late, the humour of gaining, and dealing in ſtocks, hath ſo prodigiouſly increaſed the number of perſons who act as brokers, that their buſineſs, and their pay, is very uncertain.

EXCHANGERS are thoſe who return money beyond ſea, by bills of *exchange*, &c. called antiently alſo *excambiators*, and ſince *remitters*.

EXCHEQUER *, or ſimply CHEQUER, originally denotes a cheſs-board; or a frame divided into 64 ſquares, of two colours, whereon to play at draughts, cheſs, &c. See CHESS, &c.

* The word is formed from the French *eſchequier*, which ſignifies the ſame. Hence, trees are ſaid to be planted *chequer*-wiſe, *in quincuncem*, when diſpoſed ſo as to form diverſe ſquares repreſenting a *chequer*.

EXCHEQUER is more particularly uſed for a chamber, or apartment, in Weſtminſter-hall, conſiſting of two parts; the *court of exchequer*, and the *lower exchequer*.

Court of **EXCHEQUER**, is a court wherein are tried all cauſes relating to the king's treaſury, or revenue; as, touching accounts, diſburſements, cuſtoms, fines, &c.

It conſiſts of ſeven judges, *viz.* the lord treaſurer, the chancellor of the *exchequer*, the lord chief baron, and three other barons of the *exchequer*, with one curſitor baron.

The lord chief baron is the principal judge of the court. See BARONS *of the exchequer*.

The court of *exchequer* is divided into two: the one *of law*, the other *of equity*.

All judicial proceedings, according to law, are ſtiled, *coram baronibus* only: but the court of equity held in the *exchequer-chamber*, is *coram theſaurario, cancellario, & baronibus*; before the treaſurer, chancellor, and barons.

For a long time after the conqueſt, there ſat in the *exchequer*, both ſpiritual and temporal barons of the realm; but of later times, there have ſat in their places other judges, who, though no peers of the realm, yet retain the original denomination.

The common opinion of our hiſtorians is, that this court was erected by William the Conqueror, ſoon after his having obtained the kingdom; and that it took its form from the *eſchequier*, or *ſcaccarium*, eſtabliſhed in Normandy long before that time. In effect, the two *exchequers* have this in common, that the *Norman* was the ſupreme court of that duchy, or a general aſſize, whereat all the great lords attended, to judge finally of all concerns of the greateſt importance; and was ambulatory: and that the *Engliſh exchequer* was a court of the higheſt juriſdiction; that the acts thereof were not to be examined by any of the ordinary courts; that it was the repoſitory of the records of all the other courts; and that it was to be held in the king's court, and before him; and that it was concerned in the prerogative, as well as the revenue of the crown.

The immediate profits of the crown, as of franchiſes, lands, tenements, hereditaments, debts, duties, accounts, goods, chattels, all diſburſements, ſeizures, and fines impoſed on the ſubjects, &c. are all within the juriſdiction of the *exchequer*.

And the king's attorney may exhibit bills, for any matter concerning the king in inheritance, or profits; ſo alſo may any perſon who finds himſelf aggrieved in any cauſe proſecuted againſt him on behalf of the king, or any patent by grant of the king, exhibit his bill againſt the king's attorney, &c. to be relieved by equity in this court.

To this court belong two officers, the king's remembrancer's office, and that of the lord treaſurer's remembrancer. See REMEMBRANCER.

Authors are divided about the origin of the denomination of this court, *exchequer*. Du Cange is of opinion, it came from a *chequer*-wrought carpet, covering the great table in that court; or from the pavement of the court, which was *chequer*-wiſe: others, from the accomptants in this office uſing *chequers*, or cheſs-boards, in their computations: Nicod, from the court's being compoſed of perſons of different qualities, as the pieces or partitions in a cheſs-board: others, by reaſon people pleaded here, ranged, as it were, in battle-array, as they do at cheſs. Menage, after Pithou, &c. derives the word from the German, *ſchicken*, to ſend; by reaſon this court ſucceeded thoſe commiſſioners called in antient titles, *miſſi dominici*. Skinner, &c. derives it from *ſchatz*, which ſignifies, treaſure: whence Polydore Virgil alſo writes it, *ſcattarium*, inſtead of *ſcaccarium*. Laſtly, Somner derives it from *ſchakeen*, to raviſh; which, according to him, is the character of the treaſury.

The lower **EXCHEQUER**, called alſo the *receipt of the exchequer*, is the place wherein the king's revenue is received and diſburſed.

The principal officers hereof are, the lord treaſurer, a ſecretary of the treaſury, a chancellor of the *exchequer*, two chamberlains of the *exchequer*, an auditor of the receipts of the *exchequer*, four tellers, a clerk of the pells, an uſher of the receipt, a tally-cutter, &c. See farther under the articles TREASURER, CHANCELLOR *of the exchequer*, SECRETARY, CHAMBERLAIN, UNDERCHAMBERLAIN, TELLER, PELLS, TALLY, &c.

Meſſengers of the **EXCHEQUER**. See MESSENGER.

Black book of the **EXCHEQUER**, is a book under the keeping of the two chamberlains of the *exchequer*; ſaid to have been compoſed in 1175. by Gervais of Tilbury, nephew of king Henry II. and divided into ſeveral chapters.

Herein is contained a deſcription of the court of England, as it then ſtood, its officers, their ranks, privileges, wages, perquiſites, power, and juriſdiction; and the revenues of the crown, both in money, grain, and cattle.

Here we find, that for one ſhilling, as much bread might be bought, as would ſerve a hundred men a whole day; that the price of a fat bullock was only twelve ſhillings; and a ſheep, four, &c. Larrey, P. I. p. 394. See alſo DOMESDAY.

EXCISE, a duty, or impoſition, charged on beer, ale, cyder, and other liquors made for ſale, within the kingdom of England, Wales, and town of Berwick upon Tweed.

The duty of *exciſe* was firſt granted to king Charles II. by act of parliament, in the year 1660. during the life of that prince: it has been ſince continued and augmented by diverſe parliaments, under the ſeveral ſucceeding princes, and extended to Scotland.—This duty, as it now ſtands, on ſtrong beer and ale, is at the rate of 4 *s.* and 9 *d.* *per* barrel; and upon ſmall beer 1 *s.* 6 *d.*

Now, brewers being allowed for leekage of beer, 3 barrels in 23; and of ale, 2 in 22: the net *exciſe* of a barrel of ſtrong beer amounts to 4 *s.* 1 *d.* and $\frac{1}{2}$; of a barrel of ale, 4 *s.* 3 *d.* 3 *q*; and of a barrel of ſmall beer, 1 *s.* 1 *d.* 1 *q.* $\frac{11}{45}$.

The *exciſe* is one of the moſt conſiderable branches of the king's revenue.—It was formerly farmed out: but is now managed for the king by ſeven commiſſioners, who ſit in the *general exciſe-office*, receive the whole product of the *exciſe* of beer, ale, and other liquors, and malt, collected all over England, and pay it into the exchequer. See EXCHEQUER. Their ſalary is 800 *l.* *per* annum each, and they are obliged by oath, to take no fee, or reward, but from the king only. From the commiſſioners of *exciſe* there lies an appeal to five others, called *commiſſioners of appeals.*

The number of officers employed in this branch of the revenue, is very great. Beſide the commiſſioners abovementioned, and their ſubordinate officers, as regiſters, meſſengers, *&c.* there is an auditor of the *exciſe*, with his clerks, *&c.* A comptroller with his clerks; a regiſter; ſecretary; ſollicitor; caſhier; teller; clerk of ſecurities; houſekeeper; doorkeeper; an accomptant for the impreſt-money; general gauger; general accomptants, with their aſſiſtants; meſſengers; a clerk for ſtationary wares; examiners; clerks for ſuperviſors diaries; accomptants, examiners, *&c.* for the London diſtillery, vinegar, cyder, *&c.* alſo examiners for malt; general and other ſurveyors of the London brewery: with aſſiſtants, and other officers, to the number of an hundred: general and other ſurveyors of the London diſtillery, with other officers, to the number of forty; a collector, and ſurveyor, of imported liquors; with a land-ſurveyor at the cuſtom-houſe, *&.c*

The yearly ſalaries of all the officers in the *exciſe* office, as computed by Mr. Chamberlayne, amount to 23650 *l.*

Beſide which, there are in the country fifty collectors; and one hundred and fifty ſuperviſors; with a great number of inferior officers, called *gaugers*, or *exciſemen*; which may make the number of perſons employed in this revenue about 2000.

The *exciſe* on beer, ale, and other exciſeable liquors, even during a time of war, is computed to amount to 1100000 *l.* per annum, and is collected from above 300000 people.

The duty on malt, with the additional duty on cyder, *&c.* amount to betwixt ſix and ſeven hundred thouſand pound *per* annum, and are collected from more hands than the former.

And yet the whole charge of the managing all theſe duties, does not amount to twenty-pence *per* pound; which, conſidering every thing, is eſteemed an exactneſs and frugality, not to be paralleled in any revenue levied in this or any other country.

The rates, with the net produce of the ſeveral impoſitions of *exciſe*, are as follow:

	L.
1°, A duty of 2 *s.* 6 *d.* *per* barrel, whereof 15 *d.* *per* barrel during his majeſty's life; and the other 15 *d.* hereditary; appropriated to the civil government, after a deduction of 3700 *l.* *per* week for annuities. Net produce, — — — —	269837
2°, A duty of 9 *d.* *per* barrel, granted 4 Will. and M. for 99 years, commencing Jan. 1692. charged with 124866 *l.* *per* an. for annuities, and 7567 *l.* *per* ann. on ſurvivorſhip. Net produce, —	150106
3°, Another 9 *d.* *per* barrel perpetual, 5 W and M. for payment of 100000 *l.* *per* ann. to the bank, as alſo ſeveral annuities on lives. Net produce, —	150094
4°, Another 9 *d.* *per* barrel, for 16 years, continued 4 Ann. from May 1713. for 95 years, for paying 140000 *l.* *per* ann. on million-lottery tickets; with annuities of 99 years, *&c.* Net produce 159898; —which, with ſome additional duties granted in a later act, may amount to — — —	184898
5°, A duty on low wines, and ſpirits of the firſt extraction, continued to the 24th of June 1710. Net produce, — — — —	25267
6°, The exciſe on ale and beer in Scotland, is farmed at — — — — —	33500
Total *L.*	1006102

EXCLAMATION, in rhetoric, a figure, wherein, by raiſing the voice, and uſing an interjection either expreſly or underſtood, we teſtify an uncommon warmth, and paſſion of mind; and expreſs the magnitude of the thing, or the importance of the occaſion.

Such is, O heavnes! O earth! *&c.* ſuch alſo is that of Cicero againſt Catiline, O times! O manners! this the ſenate knows, the conſul ſees: and yet he lives. Lives, ſaid I? nay, and comes into the ſenate! Or that for Cælius, *Proh dii immortales! cur interdum in hominum ſceleribus maximis aut connivetis, aut præſentis fraudis pœnas in diem reſervatis! — O præclarum cuſtodem ovium, ut aiunt, lupum!*

In Engliſh, the interjections O! or oh! alas! or good God! are generally adjoined in an *exclamation.* In Latin they uſe *O! heu! eheu! ah! vah! pro ſuperi! pro ſuperûm atque hominum fidem!* ſometimes, however, the interjection is underſtood, as, Woe is me! *Miſerum me! hoccine ſæculum!*

EXCLUSION, that whereby a thing is *excluded*, i. e. ſhut out, or ſet aſide.—A crown imports an *excluſion* from the papacy: he appointed a ſtranger his heir, in *excluſion* of his own relations.

Great efforts were made towards the cloſe of the reign of K. Charles II. to procure a *bill of excluſion*, for ſetting aſide the duke of York, the king's brother, on account of his being a papiſt.

EXCLUSIONS, in mathematics. The *method of* EXCLUSIONS, is a way of coming at the ſolution of problems (in numerical caſes) by previouſly ejecting, or *excluding* out of conſideration; ſuch numbers, as are of no uſe in ſolving the queſtion; whereby, of conſequence, the proceſs may be regularly, and judiciouſly abbreviated.

EXCLUSIVE, is ſometimes uſed adjectively, for the force, or power of *excluding:* as, a patent carries with it an *excluſive* privilege; ſovereign princes have *excluſive* voices in the election of popes.

Sometimes it is alſo uſed adverbially: as, Marriage is allowed at all times, the firſt day of Lent *excluſive*; i. e. Aſh-Wedneſday is not compriſed in the permiſſion.—He ſent him all the Gazettes, from N° 195. to N° 300. *excluſive*; *i. e.* all between thoſe two numbers, which themſelves were excepted.

EXCLUSIVE *Propoſitions*, are thoſe wherein the predicate ſo agrees with its ſubject, as to agree with no other. See PROPOSITION.—*E. gr.* Virtue alone makes nobility: nothing elſe renders a man truly noble.

EXCOMMUNICATION, an anathema, or eccleſiaſtical cenſure, and puniſhment; whereby a heretic is cut off from the ſociety of the faithful, or an obſtinate ſinner from the communion of the church, and the participation of the ſacraments.

The power of *excommunication* properly belongs to the biſhop; but he may delegate it to any grave prieſt, with the chancellor.

Every *excommunication* ſhould be preceded by three public admonitions, two days, at leaſt, diſtant from each other: but this is to be underſtood of *excommunications* impoſed by the eccleſiaſtical judge; for thoſe imported by the law are incurred to all intents and purpoſes the moment the action is committed.

Theſe latter are called *excommunications by the canon*, or *latæ ſententiæ*; and are ſo very numerous, that it would be difficult, even for the beſt canoniſts, to give an exact liſt of them: there are 50 in the Clementines; 20 in the bull *Cœna Domini*, &c.

Rebuffe, on the concordat, reckons up 60 penalties accruing upon *excommunication.*

Excommunication is founded on a natural right which all ſocieties have, of excluding out of their body ſuch as violate the laws thereof.

Excommunication is either *major* or *minor*, i. e. *greater* or *leſs:* the firſt, which is that underſtood when we ſay, ſimply, *excommunication*, ſeparates, or cuts off, the delinquent from all communion and fellowſhip with other Chriſtians; diſables him from defending his rights, bringing an action at law, *&c.*—The ſecond, or leſſer, only excludes from the communion of the Lord's ſupper.

The greater *excommunication*, called alſo *ab homine*, is when a prelate, or his deputy, *excommunicates* any man perſonally, and interdicts him all ſociety with the faithful, all uſe of ſacraments, *&c.*

The leſſer *excommunication* is incurred *pleno jure*, by having any communication with a perſon *excommunicated* in the greater *excommunication.*—And this too imports a privation of communion, but not an interdiction from entering the church, nor having commerce with the faithful.

Antiently, the *excommunicated* were obliged to procure abſolution from their biſhop, and make ſatisfaction to the church, in forty days time; otherwiſe they were compelled to it by the ſecular judge, by a ſeizure of their effects, impriſonment of their perſons, *&c.* In France they were allowed a whole year.

By an edict of S. Louis, in the year 1228. vaſſals, tenants, *&c.* were diſpenſed, or freed from the oath of fidelity, homage, *&c.* they had taken to their lords, or ſuperiors, when excommunicate, till they had made their ſubmiſſion.

In Spain, to this day, a perſon who is not abſolved from his *excommunication* in a year's time, is deemed a heretic.

There was a time, when the people were fully convinced, that the bodies of *excommunicated* perſons, unleſs they were firſt abſolved, could not rot, but remained intire for ſeveral ages, a horrible ſpectacle to poſterity! as is atteſted by Matthew Paris, and other writers. And the Greeks are ſtill of the opinion; and affirm, they have infinite proofs thereof; as is ſhewn by Du Cange, from the teſtimony of a vaſt number of authors.

By the laws, an *excommunicated* perſon was not to be buried, but the body flung into a pit, or covered with a heap of ſtones; which was called *imblocare corpus.* See FUNERAL, *&c.*

In the antient church, there were diverſe degrees of *excommunication:* in effect, *excommunication* did not always import an interdiction of the ſacraments; but frequently, a ſeparation, or kind of ſchiſm, between the ſeveral churches, or a ſuſpenſion of ſpiritual communication between the biſhops.

But, afterwards, the occaſions of *excommunications* growing more frequent, they began to uſe it with leſs circumſpection and reſervedneſs.

In the IXth century, the eccleſiaſtics were continually making uſe of this ſpiritual weapon, to repel any violences, or affronts, offered them; and time and familiarity rendering offenders more and more obdurate, they proceeded, by degrees, to rigours unknown to antiquity; as the *excommunicating* of whole families, or provinces; prohibiting the exerciſe of all religion therein; and even accompanying the *excommunications* with horrible ceremonies, and direful imprecations.

In the Xth and XIth centuries, the ſeverity againſt the *excommunicated* was carried to its higheſt pitch: nobody might come near them, not even their own wives, children, or ſervants: they forfeited all their natural and legal rights and privileges; and were excluded from all kind of offices. Thus was an *excommunicated* king reduced to the condition of a private man. By thus ſtretching the power of the church to extravagance, they rendered it contemptible. Gregory VII. tempered it a little; exempting the wives and children of *excommunicated* perſons from incurring *excommunication*, by holding converſation with their huſbands and parents.

To render the *excommunicated* ſtill more odious, the prieſt was obliged to ſtop, and break off divine ſervice, if an *excommunicated* perſon entered the church. Nothing of which averſion is any-where diſcovered in the practice of the primitive church. At preſent we have but little of the terror or reſpect of our forefathers for *excommunication*; and it is even judged, and proclaimed, an abuſe, whenever impertinently employed.

Thus, the official of Tholouſe having *excommunicated* the officers of the Senechauſſe of Tholouſe, on occaſion of their refuſing to deliver up a priſoner; the official was condemned to take off, and revoke, the *excommunication*. It is judged an abuſe to fulminate an *excommunication* againſt a king, or kingdom, or the officers thereof, for any thing relating to the diſcharge of their offices.

The form of *excommunication* in the Romiſh church, as related by Fevret, is to take lighted torches, throw them on the ground with curſes and anathema's, and trample them out under-foot to the ringing of the bells.

—*Auctoritate Dei Patris omnipotentis, & Filii, & Spiritus Sancti, & beatæ Dei genetricis Mariæ, omniumque ſanctorum*, excommunicamus, *anathematizamus, & a limitibus ſanctæ matris eccleſiæ ſequeſtramus illos malefactores, N. conſentaneos quoque & participes; & niſi reſipuerint, & ad ſatisfactionem venerint, ſic extinguetur lucerna eorum ante Viventem in ſæcula ſæculorum. Fiat: Amen: Amen: Amen.* Ex Emendat. Leg. Will. Conquæſt.

We have now none of this folly; the ſentence is gravely read, and the perſon remains *excommunicated* without farther ceremony.

Petrus Bleſenſis aſſures us, that in England it was antiently the practice, only to *excommunicate* ſuch as had killed an eccleſiaſtic; whereas they were put to death who had killed a layman.—But the reaſon was, they held *excommunication* a greater puniſhment than death.

We have inſtances of biſhops, who have pronounced formal *excommunications* againſt caterpillers, and other inſects, after a formal, juridical proceſs againſt them, wherein thoſe animals were allowed an advocate, and proctor, to defend their cauſe. See EXORCISM.

Fevret relates divers inſtances of ſuch *excommunications*, againſt rats, mice, and other animals, for infeſting a country. See the form of theſe *excommunications* in that author, *Traité de l'Albus*.

In the antient church there were two different kinds of *excommunications* in uſe: the one called *medicinal*, whereby perſons convicted of a crime by their own confeſſion, were removed from communion: the other, called *mortal*, was fulminated againſt rebels, who perſiſted obſtinately in their errors and impieties.

The power of *excommunicating* was lodged in the whole church in general: that is, the biſhops and prieſts had the adminiſtration thereof, by and with the conſent of the people; which was practiſed even in St. Cyprian's time. But afterwards they ceaſed to conſult the people about the matter: the biſhop and clergy arrogated the whole power to themſelves. Recourſe, however, might ſtill be had to a ſynod of the province, to judge of the validity of an *excommunication*.

It frequently happened, that churches *excommunicated* each other, that is, broke off all communion with each other. In which caſe, Du Pin obſerves, it might be dubious, which of the two parties was *excommunicated*, and cut off, from the body of the church.

EXCOMMUNICATION was alſo practiſed among the Jews, who uſed to expel from their ſynagogue, ſuch as had committed any grievous crime. See the goſpel according to St. John, ix. 22. xii. 42. xvi. 2. And Joſeph. *Antiq. Jud.* l. IX. c. 22. and l. XVI. c. 2.

The Eſſeni, when *excommunicated*, durſt not ſo much as receive food at any perſon's hand, for fear of violating their oath, but contented themſelves to live on herbs; inſomuch that they frequently periſhed, and died for want. See Joſeph. *de Bell.* l. II. c. 12.

Godwyn, in his Moſes and Aaron, diſtinguiſhes three degrees, or kinds of *excommunication* among the Jews. The firſt, he finds intimated in St. John ix. 22. The ſecond in St. Paul, epiſt. 1 Cor. v. 5. And the third, in the 1ſt ep. to Corinth. xvi. 22.

The rule of the Benedictines gives the name EXCOMMUNICATION, to the being excluded from the oratory, and the common table of the houſe, in our inns of court called *diſcommoning*. This was the puniſhment of ſuch monks as came too late.

EXCOMMUNICATION, or a being ſecluded, or cut off from a participation in the myſteries of religion, was alſo in uſe under paganiſm.

Such as were thus *excommunicated*, were forbidden to aſſiſt or attend at the ſacrifices, or to enter within the temples; and were afterwards delivered over to the demons and furies of hell, with certain imprecations; which was called among the Romans, *diris devovere*.

The Druids among the antient Britons and Gauls, likewiſe, made uſe of *excommunication* againſt rebels; and interdicted the communion of their myſteries, to ſuch as refuſed to acquieſce in their deciſions. See DRUIDS.

EXCOMMUNICATO *Capiendo*, a writ directed to the ſheriff, for the apprehenſion of one who ſtands obſtinately *excommunicated* the ſpace of forty days.

Such an one, not ſeeking abſolution, hath, or may have, his contempt certified into the chancery; whence this writ iſſues for laying him up, without bail or mainprize, until he conform himſelf.

EXCOMMUNICATO *Deliberando*, is a writ directed to the under-ſheriff, for the delivery of an *excommunicated* perſon out of priſon; upon certificate of the ordinary, of his conformity to the eccleſiaſtical juriſdiction.

EXCOMMUNICATO *Recipiendo*, is a writ whereby perſons *excommunicated*, being for their obſtinacy committed to priſon, and unlawfully delivered thence before they have given ſecurity to obey the authority of the church, are commanded to be ſought for, and laid up again.

EXCORIATION *, the act of raſing, or tearing off the ſkin from any part of the body. See SKIN.

* The word is Latin, *excoriatio*, formed of *ex*, of, and *corium*, ſkin, leather, *&c.*

He had a grievous *excoriation* behind, with riding poſt.—We alſo ſay, an *excoriation* in the throat, *&c.* when the membrane that covers, or lines it, is torn by the acrimony of a humour, a medicine, or the like; which is ordinarily the caſe in what we call a *ſore throat*.

EXCORTICATION, the act of ſtripping off the cortex, or bark, from any thing; called alſo *decortication*. See BARK, and DECORTICATION.

EXCREMENT, that which is evacuated, or *excreted*, out of th body of an animal, after digeſtion; being what in other reſpect is ſuperfluous and prejudicial thereto. See EXCRETION.

Excrement, is all that matter taken in by way of food, which cannot be aſſimilated; and which, of conſequence, not growing or adhering to the body, wanders about through the laxer and more patent parts thereof, till it be ejected.

The urine and fæces, or fæcal matter, are the *great excrements*, expelled from the bladder, and the inteſtines, by ſtool *&c.*

The matter of inſenſible perſpiration is alſo an *excrement*, an a more conſiderable one than either of the others.

Among *excrements* are likewiſe ordinarily ranked diverſe hu mours and matters, ſeparated from the blood by the ſevera ſtrainers, or emunctories of the body, though far from bein uſeleſs, but ſerving diverſe valuable purpoſes of the œconom Such are the cerumen, or ear-wax; the mucus of the noſe lacrymæ, or tears; ſaliva, bile, lympha, menſes, lochi *&c.* See each of theſe under its ſeveral head, CERUME MUCUS, TEARS, SALIVA, BILE, MENSES, *&c.*

Some hold ambergriſe an *excrement* of the whale; others *excrement* of the ſea.

All foods conſiſt of two ſorts of parts, the one nutritious, other *excrementitious*.

EXCREMENT is alſo attributed, by way of analogy, to plan —Thus gums, diverſe juices, balms, *&c.* iſſuing ſpon neouſly from their reſpective trees, are ſometimes called *crements*.

EXCRESCENCE *, in chirurgery, denotes ſuperfluous, luxuriant fleſh, or other matter, growing on certain parts the bodies of animals, contrary to, or beyond the ordin ſtructure, and diſpoſition of nature.

* The word is formed of the Latin, *ex*, and *creſco*, I gro *q. d.* ſomething that grows from, or out of another.

Such are wens, warts, ficus's, polypus's, *&c.*—Such alſo the woman's horn lately ſhewn in London; a parallel caſe which, ſee in the *Philoſoph. Tranſact.* N° 297.

Natural, or cuſtomary *excreſcences*, as thoſe of bones, *&c.* called by phyſicians *apophyſes*.

EXCRETION *, in medicine, the act of expelling or eject out of the body ſome humour that is uſeleſs, or even hur thereto.

* The word is formed of the Latin, *excernere*, to excern, parate.

Moſt criſes are effected by *excretion*; as fluxes of blood and urine, ſweat, vomitings, looſeneſſes, &c.

EXCRETORY, in anatomy, is applied to certain little ducts, or veſſels, in the fabric of the glands.

Excretory ducts are the tubes through which the humours ſeparated in the ſeveral glands, are emitted, or diſcharged out of the gland, into ſome convenient receptacle, or emunctory.

A capillary artery, to which a capillary vein is joined, with an *excretory* duct, convolved, or wound together, make up the body of the glands, the organs of ſecretion. The *excretory* ducts ſpring from the extremities of the arteries and veins, and carry off a liquor ſeparated from the blood. Drake.—The lymphatic glands have either lympheducts for their *excretory ducts*, or lacteal veſſels, as in the meſentery. Id.—The muſcles of theſe two bones being contracted, they compreſs the bag, and ſqueeze out the liquor through two *excretory* ducts, terminating in the two gums of the great teeth of the viper. Lemery.

EXCURSION, in aſtronomy. See the article ELONGATION.

Circles of EXCURSION, are circles parallel to the ecliptic, at ſuch diſtance from it, as is capable of bounding, or comprehending the greateſt digreſſions, or *excurſions*, of the planets from the ſame; which is commonly fixed at 10 degrees.

EXEAT, in church-diſcipline, a Latin term, uſed for a permiſſion, which a biſhop grants a prieſt to go out of his dioceſe; or an abbot, to a religious, to go out of his monaſtery.

The word is alſo uſed in ſeveral great ſchools, for leave given a ſcholar, or ſtudent, to go out. His maſter has given him an *exeat*.

EXECUTED *Fine*. See the article FINE.

EXECUTION, the act of *executing*, i. e. of accompliſhing, finiſhing, or atchieving any thing, to be done.

We ſay, the *execution* of a teſtament; of a law; of a treaty; of a building, or the like.

EXECUTION is particularly uſed in the French muſic, for the manner of ſinging, or of the performance of a ſong.

As to the manner of ſinging, called in France, *execution*; no nation may, with any probability, diſpute it with the French. If the French, by their commerce with the Italians, have gained a bolder compoſition; the Italians have made their advantage of the French, in learning of them a more polite, moving, and exquiſite *execution*. St. Evremont.

EXECUTION, in common law, ſignifies the laſt performance of an act; as of a writ, a judgment, or the like.

EXECUTION *of a judgment*, is the obtaining the poſſeſſion of any thing recovered by judgment of law.

There are two ſorts of *executions*: one *final*; another *with a quouſque*, as only tending to an end.

EXECUTION *final*, is that which maketh money of the defendant's goods, or extendeth his lands, and delivers them to the plaintiff; for this the party accepts in ſatiſfaction: and this is the end of the ſuit, and all that the king's writ commands to be done.

EXECUTION *with a quouſque*, is that which only tends to an end; as in the caſe of a *capias ad ſatiſfaciendum*, &c.

This is not final, but the body of the party is to be taken, to the intent and purpoſe to ſatisfy the plaintiff; and his impriſonment is not abſolute, but till he doth ſatisfy: ſo that the body is but a pledge for the debt.

Tenant by EXECUTION. See TENANT.

Military EXECUTION is the pillage or plundering of a country by the enemies army.

The towns and villages of the province were required to pay contribution, on penalty of military *execution*.

EXECUTIONE *facienda*, a writ commanding *execution* of a judgment.

EXECUTIONE *facienda in withernamium*, lies for taking his cattle, who had formerly conveyed out of the county the cattle of another.

EXECUTOR *, a perſon nominated by a teſtator, to take care to ſee his will, and teſtament, *executed* or performed; and his effects diſpoſed of according to the tenor of the will.

* The teſtaments made in Latin in the XIVth century, call *executors*, *proviſores teſtamentarii*.

An *executor* is either *univerſal*, as having the charge and diſpoſal of the whole; or, only *particular*, entruſted with ſome particular branch thereof.

By the French law, an *executor* ſhould be ſeiſed of all the moveables of the deceaſed during one year; at the end whereof he is to account for them. To the validity of a teſtament, it is not neceſſary there be an *executor* nominated therein.

EXECUTOR *de ſon tort*, or of his own wrong, is he who takes on him the office of an *executor* by intruſion, not being conſtituted thereto by the teſtator, or deceaſed, nor authorized by the ordinary to adminiſter.

EXECUTORY, that which has, or carries with it a ſufficient authority for being *executed*.

A contract is only *executory*, when it is in form, and ſealed: the great ſeal of England is *executory* throughout the whole iſland.

EXECUTORY *Fine*. See the article FINE.

EXEDENS *Herpes*. See the article HERPES.

EXEDRÆ *, among the antients, were places wherein the philoſophers, ſophiſts, rhetors, &c. uſed to hold their conferences, and diſputes.

* The word is pure Greek ἐξέδρα, which ſignifies the ſame.

M. Perrault is of opinion, the *exedræ* were a ſort of little academies, where the men of learning met together. See ACADEMY.

Budæus rather thinks, that what the ancients called *exedræ*, might anſwer to what we call *chapters* in the cloiſters of monks, or collegiate churches.

EXEGESIS, ΕΞΗΓΗΣΙΣ, a term ſometimes uſed by the learned, to ſignify *explication*.

Several interpreters of the Bible are of opinion, that in the paſſages of ſcripture, where we meet with Abba Pater, two words, the firſt Syriac, and the ſecond Greek or Latin, but both ſignifying the ſame thing; the ſecond is only an *exegeſis*, or explanation of the firſt.

EXEGESIS is alſo uſed for an intire diſcourſe by way of explication, or comment, on any thing.

EXEGESIS *Numeroſa*, or *Linealis*, ſignifies the numeral, or lineal ſolution, or extraction of roots, out of adfected equations; firſt invented by Vieta.—Ozanam calls it *la rhetique*. See EXTRACTION *of Roots*.

EXEGETES *, among the Athenians, perſons learned in the laws, whom the judges uſed to conſult in capital cauſes.

* The word is Greek Ἐξηγήτης, formed of ἐξηγέομαι, I explain.

EXEGETICA, in algebra, the art of finding, either in numbers or lines, the roots of the equation of a problem, according as the problem is either numerical, or geometrical. See ROOT, and EQUATION.

EXEMPLAR, a model, or original, to be imitated, or copied. See MODEL.

EXEMPLAR alſo denotes the idea, or image, conceived, or formed in the mind of the artiſt, whereby he conducts his work.

Such is the idea of Cæſar, which a painter has in his mind when he goes to make a picture of Cæſar.

The *exemplar* is ordinarily numbered among the cauſes. See CAUSE.

EXEMPLIFICATION *of letters patent*, denotes an *exemplar*, or copy of letters patent, made from the inrolment thereof; and ſealed with the great ſeal of England.

Such *exemplifications* are as effectual to be ſhewed, or pleaded, as the letters patent themſelves.

EXEMPTION, a privilege, or diſpenſation, whereby a perſon is excepted out of ſome general rule.

Exemption is particularly applied to churches, chapels, and monaſteries, which have a privilege given them by the popes, or princes, whereby they are exempted from the juriſdiction of the biſhop, or ordinary.

The council of Conſtance revoked all *exemptions* to reſtore to the general law, weakened and diminiſhed by a relaxation of ſeveral ages, its antient force and vigour; and make it every-where obtain in all its latitude.

The firſt *exemptions* granted to monks were only for the liberty of electing their abbot, independently on the biſhop; and not to ſcreen them from the regular juriſdiction of the biſhops. The pretence for theſe *exemptions* was, that the biſhops abuſed their authority, and exacted extravagant dues on the monaſteries in their dependence. But the real cauſe was, rather, that the monaſteries, being fallen from the ſeverity of their rules, did not care for inſpectors ſo near at hand, and therefore ſolicited *exemptions* at Rome.

As this was to derogate from the common laws, the popes were a great while very reſerved in the point; and ſeldom granted them, but with the conſent of the biſhops themſelves. But, by degrees, the popes began to aſſume a power of granting ſuch *exemptions* at pleaſure; and made their account of the indulgence of the biſhops, who were not ſufficiently apprehenſive of all the conſequences. Accordingly, they favoured whole orders with the privilege of *exemption*, as the Ciſtercians, Dominicans, Carthuſians, Jeſuits, &c.

Things, at length, were brought to ſuch a paſs, that there was a neceſſity for putting a check to *exemptions*; accordingly, the council of Trent prohibited, and declared them null for the future; confirming only ſuch as were well founded on legal conceſſions from the holy ſee.

EXERCISE, a repetition of any operation, for the ſtrengthening, or retaining of a habit.

Thus, we uſe *exerciſe* of the body, for the acquiring, or maintaining of health; as it contributes both to the expulſion of the excrements, and preſerving the tone, and ſpring of the ſolids.

People who live a ſedentary life, and do not uſe *exerciſe*, are liable to defluxions, which bring on other diſorders.—Games of hazard are to be diſcountenanced, and thoſe of *exerciſe* to be promoted.

Exerciſe and quiet make one of the phyſicians non-naturals. See Non-Naturals, and Gymnastics.

Labour, or *exerciſe*, Dr. Cheyne obſerves, is indiſpenſibly neceſſary to preſerve the body any time in due plight. Let what diet will be purſued, however adjuſted, both in quantity and quality; let whatever evacuations be uſed to leſſen the malady, or any ſuccedaneum be propoſed to prevent the ill effects; ſtill, our bodies are ſo made, and the animal œconomy now ſo contrived, that, without due labour, and *exerciſe*, the juices will thicken, the joints will ſtiffen, the nerves will relax; and, on theſe diſorders, chronical diſeaſes, and a crazy old age, muſt enſue. *Eſſay on Health*, p. 90.—Of all the *exerciſes* that are, or may be, uſed for health, as walking, riding on horſeback, or in a coach, fencing, danceing, bowling, digging, pumping, ringing, &c. walking is the moſt natural, and would be the moſt uſeful, if it did not ſpend too much of the ſpirits of the weakly. But riding is certainly the moſt manly, the moſt healthy, and is leſs laborious, and expenſive of ſpirits, than any. *Id.* p. 94, &c.—Thoſe organs of the body that are moſt uſed, always become ſtrongeſt; ſo that we may ſtrengthen any weak organ, by *exerciſe*. Thus, the legs, thighs, and feet, of chairmen; the arms and hands of watermen; the backs and ſhoulders of porters; grow thick, ſtrong, and brawny, by time, and uſe. It is certain, alſo, that ſpeaking ſtrong, and loud, will ſtrengthen the voice, and give force to the lungs. *Id.* p. 96.—To the aſthmatic, therefore, and thoſe of weak lungs, I would recommend talking much, and loud; walking up eaſy aſcents, &c. to thoſe of weak nerves, and digeſtion, riding on horſeback; to thoſe troubled with the ſtone, riding over rough cauſeways in a coach; to thoſe troubled with rheumatic pains, playing at billiards, cricket, or tennis; to thoſe of weak arms, or hams, playing at tennis, or football; to thoſe of weak backs, or breaſts, ringing a bell, or working at the pump. Walking through rough roads, even to laſſitude, will beſt recover the uſe of the limbs to the gouty; though riding will beſt prevent the diſeaſe: but the ſtudious, the contemplative, the valetudinary, and thoſe of weak nerves, muſt make *exerciſe* a part of their religion.—A condition neceſſary to render *exerciſe* as beneficial as may be, is, that it be uſed on an empty ſtomach.—Under the head of *exerciſe*, cold bathing, and the fleſh-bruſh, come alſo to be recommended.—*Id. Ibid.* p. 103, 104, &c.

Exercises, in the plural, are particularly underſtood of what is taught young gentlemen in the academies, or riding-ſchools, &c.—As, riding the great horſe, dancing, fencing, vaulting, drawing fortifications, &c.—This young nobleman went through all his *exerciſes* with great applauſe.

Exercise, in the art of war, denotes the ranging a body of ſoldiers in form of battle, and making them practiſe the ſeveral motions, and military evolutions, with the diverſe management of their arms, &c. to make, or keep, them expert thereat, againſt occaſion.

This is what Vegetius, and other Latin writers, call *meditatio*.

EXERGUM *, **Exergue**, or **Exerge**, among medaliſts, a word, motto, date, or the like, ſometimes found under the ground, whereon the figures are repreſented.

* The word is derived from the Greek ἐξ, and ἔργον, *opus*, work. Evelyn often writes it *exurge*.

Exergues are moſt commonly placed on the reverſes, though ſometimes, alſo, on the fronts, or face-ſides, of medals.

EXFOLIATION *, in chirurgery, the ſcaling of a bone; or its riſing, and ſeparating in leaves, or laminæ.

* The word is compounded of the Latin *ex*, and *folium*, leaf.

Any part of the ſurface of the cranium that has been bared, is liable to *exfoliation*. The uſe of a cephalic powder avails nothing for promoting the *exfoliation*. Dionis. The wound muſt not be ſtopped too much, but the bone left at liberty to recover itſelf, which it ſometimes does, without *exfoliating*, particularly in children.

EXFOLIATIVE.—An Exfoliative *trepan* is a trepan proper to ſcrape, and at the ſame time pierce, a bone, and ſo to *exfoliate*, or raiſe, ſeveral leaves, or ſcales, one after another.

The uſe of the *exfoliative* trepan is very dangerous; as being apt to ſhake and diſorder the brain.

EXHÆREDATIO. See Disherison, Abdication.

EXHALATION, a fume, or ſteam, *exhaling*, or iſſuing, from a body, and diffuſing itſelf in the atmoſphere.

The terms *exhalation* and *vapour*, are ordinarily uſed indifferently; but the more accurate writers diſtinguiſh them: appropriating the term *vapour* to the moiſt fumes raiſed from water, and other liquid bodies; and *exhalation* to the dry ones emitted from ſolid bodies; as earth, fire, minerals, ſulphurs, ſalts, &c.

In this ſenſe, *exhalations* are dry, ſubtil corpuſcles, or effluvia, looſened from hard terreſtrial bodies, either by the heat of the ſun, or the agitation of the air, or ſome other cauſe; and emitted upwards to a certain height of the atmoſphere, where, mixing with the vapours, they help to conſtitute clouds, and return back again in dews, miſts, rains, &c.

Nitrous and ſulphurous *exhalations* are the chief matter of thunder, lightning, and divers other meteors generated in the air.

Sir Iſaac Newton takes true and permanent air to be formed from the *exhalations* raiſed from the hardeſt and moſt compact bodies. See Air.

EXHAUSTED *Receiver*, a glaſs, or other, veſſel, applied on the plate of an air-pump, and the air extracted out of the ſame, by the working of the engine. See Air-Pump.

Things placed in an *exhauſted receiver*, are ſaid to be *in vacuo*. See Vacuum.

EXHAUSTIONS, in mathematics.—*Method of* Exhaustions, is a way of proving the equality of two magnitudes, by a *reductio ad abſurdum*; ſhewing, that if one be ſuppoſed either greater or leſs than the other, there will ariſe a contradiction.

The *method of exhauſtions* was of frequent uſe among the antient mathematicians; as Euclid, Archimedes, &c.

It is founded on what Euclid ſays in his tenth book; *viz.* that thoſe quantities whoſe difference is leſs than any aſſignable quantity, are equal: for if they were unequal, be the difference never ſo ſmall, yet it may be ſo multiplied, as to become greater than either of them; if not ſo, then it is really nothing.

This he aſſumes in the proof of prop. 1. of book X. which imports, that if, from the greater of two quantities, you take more than its half, and from the remainder more than its half, and ſo continually; there will, at length, remain a quantity leſs than either of thoſe propoſed.

On this foundation it is demonſtrated, that if a regular polygon, of infinite ſides, be inſcribed in, or circumſcribed about, a circle; the ſpace, which is the difference between the circle and the polygon, will, by degrees, be quite exhauſted, and the circle become equal to the polygon.

EXHEREDATION, Exhæredatio, in the civil law, with us ordinarily called *diſinheriting*, is the father's excluding his ſon from inheriting his eſtate.

There are fourteen cauſes of *exheredation* expreſſed in Juſtinian's novel; without ſome one of which cauſes, he decrees the *exheredation* null, and the teſtament inofficious, as the civilians call it.

Indeed, by the antient Roman law, the father might pronounce *exheredation* without any cauſe; but the rigour of this law was reſtrained, and moderated, by Juſtinian.

EXHIBIT, in law.—When a deed, acquittance, or other writing, is, in a chancery ſuit, *exhibited* to be proved by witneſs; and the examiner writes on the back, that it was ſhewed to the witneſs at the time of his examination: this is called an *exhibit*.

EXHIBITION, a producing, or ſhewing, of titles, authorities, and other proofs, of a matter in conteſt.

The parties have *exhibited* their titles, and pretenſions, before the arbitrators.

Antiently, they uſed the phraſe, *exhibition* of a tragedy, comedy, or the like; but now we ſay, *repreſentation*, in lieu thereof.

EXHUMATION *, the act of digging up a body interred in holy ground, by the authority of the judge.

* The word is compounded of the Latin *ex*, out of; and *humus*, ground.

In France, the *exhumation* of a dead body is ordered, upon proof that he was killed in a duel.—By the French laws, a parſon has a right to demand the *exhumation* of the body of one of his pariſhioners, when interred out of the pariſh, without his conſent.

EXIGENCE, or **Exigency**, that which a thing requires, or which is expedient and ſuitable thereto.—The criminals were remitted back to the judges, to be puniſhed according to the *exigency* of the caſe.

EXIGENT, in law, a writ which lies where the defendant, in a perſonal action, cannot be found, nor any thing of his within the county, whereby to be attached, or diſtrained.

It is directed to the ſheriff, ordering him to proclaim and call the party five county days ſucceſſively, and charge him to appear, under pain of outlawry.

The ſame writ alſo lies in an indictment of felony, where the party indicted cannot be found.

It is called an *exigent*, by reaſon it *exigit*, i. e. *exacts*, or requires the party to appear, or, by forthcoming, to anſwer the law.—If he appear not at the laſt day's proclamation, he is ſaid to be *quinquies exactus*, and then is outlawed. See OUTLAWRY.

EXIGENTERS, four officers of the court of common pleas, who make all *exigents* and proclamations, in all actions where the proceſs of outlawry lies.

Antiently, the making writs of *ſuperſedeas* upon ſuch *exigents* as paſſed in their offices, did likewiſe belong to them; but this branch of buſineſs was taken from them under king James I. and committed to a particular officer in the court of common-pleas, created by patent. See SUPERSEDEAS.

EXILE, *baniſhment*. See the article BANISHMENT.

Among the Romans, the word *exile*, *exilium*, properly ſignified an interdiction, or excluſion from water and fire; the neceſſary conſequence of which was, that the interdicted perſon muſt betake himſelf into ſome other country, ſince there was no living without fire and water.—Thus, Cicero, *Ad Herenn.* obſerves, that the form of the ſentence did not expreſs *exile*, but only *aquæ & ignis interdictio*. See INTERDICTION.

The ſame author remarks, that *exile* was not properly a puniſhment, but a voluntary flying, or avoiding, the puniſhment decreed: Exilium *non eſſe ſupplicium, ſed perfugium, portuſq; ſupplicii*. *Pro Cæcina*.

He adds, that there was no crime among the Romans, as among other nations, puniſhed with *exile*; but *exile* was a recourſe people flew voluntarily to, in order to avoid chains, ignominy, ſtarving, *&c.*

The Athenians frequently ſent their generals, and great men, into *exile*, out of envy of their merits, or diſtruſt of their too great authority.

EXILE is ſometimes alſo uſed for the relegating a perſon into a place, whence he is obliged not to ſtir without leave.

The word is derived from the Latin *exilium*, or from *exul*, a baniſhed perſon; and that, probably, from *extra ſolum*, out of his native ſoil.

Figuratively, we uſe the phraſe, *honourable exile*, for an office, or employment, which obliges a man to reſide in ſome remote or diſagreeable place.

Under the reign of Tiberius, remote employments were a kind of myſterious *exiles*.—A biſhopric, or even a lord-lieutenancy, in Ireland, has been ſometimes deemed a kind of *exile*. A reſidence, or embaſſy, in ſome barbarous country, is alſo a ſort of *exile*.

EXINANITION, the ſame as *evacuation*. See EVACUATION.

EXISTENCE, that whereby a thing has an actual eſſence; or is ſaid *to be*, *eſſe*.

This notion of *exiſtence* is applicable not only to a created, but an uncreated ſubſtance.—But it muſt be added, that the *exiſtence* of created ſubſtances, and eſpecially corporeal ones, implies a reſpect to place, time, and even an efficient cauſe; whence the ſchoolmen generally define it, that whereby a thing is formally and extrinſically without [*extra*] its cauſes, and that here, and now.

Exiſtence, and eſſence, come very near the nature of each other: in effect, they only differ in that we have different manners of conceiving the ſame thing.

For, 1°. Eſſence is uſually explained either by the firſt, nobleſt, and radical attribute of the thing, *e. gr.* that of body, by extenſion; that of mind, by thinking, *&c.* or by ſpecifying all the intrinſic attributes: and *exiſtence*, either by ſpecifying all place, and all time, as in that of God; or by ſpecifying ſome definite place, and time, together with the cauſe, as in the creatures.

2°. The foundation and occaſion of this diſtinction, is this; that eſſence belongs to the queſtion, what is it? *quid eſt?* but *exiſtence* to the queſtion, is it? *an eſt?*

3°. *Exiſtence* neceſſarily preſuppoſes eſſence, and cannot be conceived without it; but eſſence may be conceived without *exiſtence*; in that eſſence belongs equally to things that are in *potentia*, and in *actu*; but *exiſtence*, only to thoſe in *actu*. Note, however, that this does not obtain in God; about whoſe nature and eſſence the mind cannot think, without conceiving his *exiſtence*.

We have divers ways of arriving at the knowlege of the *exiſtence* of things.—Our own *exiſtence* we know by intuition; the *exiſtence* of a God, by demonſtration; and that of other things, by ſenſation.

As for our own *exiſtence*, we perceive it ſo plainly, that it neither needs, nor is capable of, any proof. I think, I reaſon, I feel pleaſure and pain: can any of theſe be more evident to me than my own *exiſtence?* If I doubt of all other things, that very doubt makes me perceive my own *exiſtence*, and will not ſuffer me to doubt of that. If I know I doubt, I have as certain a perception of the thing doubting, as of that thought which I call doubt: experience, then, convinces us, that we have an intuitive knowledge of our own *exiſtence*, and an internal, infallible perception, that we *are*. In every act of ſenſation, reaſoning, or thinking, we are conſcious to ourſelves of our own being, and in this matter come not ſhort of the higheſt degree of certainty.

As to our knowlege of the *exiſtence* of a God; though he has given us no innate ideas of himſelf, yet, having furniſhed us with faculties of ſenſe, perception, and reaſon, we can never want a clear proof thereof.

The knowlege of the *exiſtence* of other things, *i. e.* of external objects, bodies, a world, *&c.* we only have by ſenſation: for there being no neceſſary connexion of real *exiſtence* with any idea a man hath in his memory, nor of any other *exiſtence* but that of God, with the *exiſtence* of any particular man; no particular man can know the *exiſtence* of any other being, but only when, by actually operating upon him, it makes itſelf be perceived by him. The having the idea of any thing in our mind, no more proves the *exiſtence* of that thing, than the picture of a man evidences his being in the world, or the viſions of a dream make a true hiſtory. It is, therefore, the actual receiving of ideas from without, that gives us notice of the *exiſtence* of other things, and makes us know that ſomething doth *exiſt* at that time without us, which cauſes that idea in us, though we neither know, nor conſider, how it doth it.

This notice which we have by our ſenſes, of the *exiſting* of things without us, though it be not altogether ſo certain as intuition and demonſtration, yet deſerves the name of knowlege, if we perſuade ourſelves, that our faculties act and inform us right, concerning the *exiſtence* of thoſe objects that affect them.

Now, beſides the aſſurance of our ſenſes themſelves, that they do not err in the information they give us of the *exiſtence* of things without us, we have other concurrent reaſons: as, 1°, It is plain thoſe perceptions are produced in us, by exterior cauſes affecting our ſenſes, becauſe thoſe that want the organs of any ſenſe, never have the ideas belonging to that ſenſe produced in their minds. 2°, Becauſe we find we cannot avoid the having thoſe ideas produced in our minds. When our eyes are ſhut, we can, at pleaſure, recal to our mind the ideas of light, or the ſun, which former ſenſations had lodged in our memories; but if we turn our eyes towards the ſun, we cannot avoid the idea which the light, or the ſun, then produces in us; which ſhews a manifeſt difference between thoſe ideas laid up in the memory, and ſuch as force themſelves upon us, and we cannot avoid having: beſides, there is no-body who doth not perceive the difference in himſelf between actually looking upon the ſun, and contemplating the idea he has of it in his memory; and therefore he hath certain knowlege, that they are not both memory, or fancy. 3°, Add, to this, that many ideas are produced in us with pain, which we afterwards remember without the leaſt offence: thus, the pain of heat, or cold, when the idea of it is received in our minds, gives us no diſturbance; which, when felt, was very troubleſome; and we remember the pain of hunger, thirſt, head-ach, *&c.* without any pain at all, which would either never diſturb us, or elſe conſtantly do it, as often as we thought of it, were there nothing more but ideas floating in our minds, and appearances entertaining our fancies, without the real *exiſtence* of things affecting us from abroad. 4°, Our ſenſes, in many caſes, bear witneſs to the truth of each other's report, concerning the *exiſtence* of ſenſible things without us: he that doubts, when he ſees a fire, whether it be real, may feel it, too, if he pleaſes; and, by the exquiſite pain, may be convinced, that it is not a bare idea, or phantom.—Such is Mr. Lock's demonſtration of the *exiſtence* of external bodies.

The moſt ingenious Dr. Berkeley has a quite different ſyſtem: external bodies, he contends, have no *exiſtence* but in a mind perceiving them; that is, they only *exiſt*, *quatenus* they are perceived: and of this he has given us what he and many others account a demonſtration.

In reality, "that neither our thoughts, paſſions, nor ideas "formed by the imagination, exiſt without the mind, he ob"ſerves, is allowed; and that the various ſenſations impreſſed "on the mind, whatever objects they compoſe, cannot exiſt "otherwiſe than in a mind perceiving them, is not leſs evi"dent. This appears, from the meaning of the term *exiſt*, "when applied to ſenſible things. Thus, the table, I write "on, *exiſts*; *i. e.* I ſee and feel it: and, were I out of my "ſtudy, I ſhould ſay it exiſted; *i. e.* that, were I in my ſtu"dy, I ſhould ſee and feel it, as before. There was an odour; "*i. e.* I ſmelt it, *&c.* But the *exiſtence* of unthinking beings, "without any relation to their being perceived, is unin"telligible; their *eſſe* is *percipi*." The notion of bodies, he endeavours to ſhew, is founded on the doctrine of abſtract ideas: "What are light and colours, heat and cold, exten"ſion and figure, in a word, the things we ſee and feel, "but ſo many ſenſations, notions, ideas, or impreſſions on "the ſenſe? And is it poſſible to ſeparate, even in thought, any of theſe from perception? The ſeveral bodies then, that compoſe the frame of the world, have not any ſubſiſtence without a mind; their *eſſe* is to be perceived, or known: and as long as they are not perceived by me, nor any other thinking being, they have no ſhadow of *exiſtence* at all.—The things we perceive, are colour, figure, motion, &c. that is, the ideas of thoſe things: but has an idea any *exiſtence* out of the mind? To have an idea, is the ſame thing as to perceive: that, therefore, wherein colour, figure, &c. exiſt, muſt perceive them. It is evident, therefore, there can be no unthinking ſubſtance, or ſubſtratum, of thoſe ideas.—But, you may argue, if the ideas themſelves do not exiſt without the mind, there may be things like them, whereof they are copies or reſemblances, which exiſt without the mind: it is anſwered, an idea can be like nothing but an idea; a colour or figure can be like nothing elſe but another figure or colour.—It may be farther aſked, whether thoſe ſuppoſed originals, or external things, whereof our ideas are the pictures, be themſelves perceivable or not? If they be, they are ideas: if they be not, I appeal to any one, whether it be ſenſe to ſay, a colour is like ſomewhat which is inviſible; hard or ſoft, like ſomewhat intangible, &c.—Some diſtinguiſh between primary and ſecondary qualities; the former, *viz.* extenſion, ſolidity, figure, motion, reſt, and number, they maintain have a real *exiſtence* out of the mind: for the latter, under which come all other ſenſible qualities, as colours, ſounds, taſtes, &c. they allow the ideas we have of them, are not reſemblances of any things exiſting without the mind, or unperceived; but depend on the ſize, texture, motion, &c. of the minute particles of matter: now it is certain, that thoſe primary qualities are inſeparably united with the other ſecondary ones, and cannot even in thought be abſtracted from them; and, therefore, muſt only exiſt in the mind. Can any man conceive the extenſion and motion of a body, without its other ſenſible qualities? For my part, I find it impoſſible to frame an idea of a body extended and moving, without giving it ſome colour, &c. In effect, extenſion, figure, and motion, abſtracted from all other qualities, are inconceivable: where the others, therefore, are, there theſe two muſt be; *i. e.* in the mind, and no-where elſe. Again, great and ſmall, ſwift and ſlow, are allowed to exiſt no-where without the mind; being merely relative and changing, as the frame or poſition of the organ changes: the extenſion, therefore, that exiſts without the mind, is neither great nor ſmall, the motion neither ſwift nor ſlow; *i. e.* they are nothing.—That number is a creature of the mind, is plain (even though the other qualities were allowed to exiſt) from this; that the ſame thing bears a different denomination of number, as the mind views it with different reſpects: thus the ſame extenſion is 1, or 3, or 36, as the mind conſiders it, with reference to a yard, a foot, or an inch. Nay, many of the modern geometricians hold, that a finite line may be divided into an infinite number of parts, and each of thoſe infiniteſimals into an infinity of others; and ſo on, *in infinitum*: ſo that the ſame thing is either unity or infinity; either no number or all number. In effect, after the ſame manner as the modern philoſophers prove colours, taſtes, &c. to have no *exiſtence* in matter, or without the mind; the ſame thing may be proved of all ſenſible qualities whatſoever. Thus, they ſay, heat and cold are only the affections of the mind, not at all patterns of real beings exiſting in corporeal ſubſtances; for that the ſame body which ſeems cold to one hand, ſeems warm to another. Now, why may we not as well argue, that figure and extenſion are not patterns or reſemblances of qualities exiſting in matter; becauſe to the ſame eye, at different ſtations, or to eyes of different ſtructure, at the ſame ſtation, they appear various? Again, ſweetneſs, it is proved, does not exiſt in the thing ſapid; becauſe the thing remaining unaltered, the ſweetneſs is changed to bitterneſs, as in a fever, or by an otherwiſe vitiated palate. Is it not as reaſonable to ſay, that motion does not exiſt out of the mind? ſince, if the ſucceſſion of ideas in the mind become ſwifter, the motion, it is acknowleged, will appear ſlower, without any external alteration.—Again, were it poſſible for ſolid figured bodies to exiſt out of the mind, yet it were impoſſible for us ever to know it: our ſenſes, indeed, give us ſenſation of ideas, but do not tell us that any things exiſt without the mind, or unperceived, like thoſe which are perceived: this the materialiſts allow. No other way therefore remains, but that we know them by reaſons inferring their *exiſtence* from what is immediately perceived by ſenſe. But how ſhould reaſon do this, when it is confeſſed, there is not any neceſſary connexion between our ſenſations and theſe bodies? It is evident from the phænomena of dreams, phrenſies, &c. that we may be affected with the ideas we have now, though there were no bodies exiſting without them: nor does the ſuppoſition of external bodies at all forward us, in conceiving how our ideas ſhould come to be produced. The materialiſts own themſelves unable to conceive in what manner body can act on ſpirit, or how it ſhould imprint any idea on the mind. To ſuppoſe, therefore, bodies exiſting without the mind, is little elſe than to ſuppoſe, God has created innumerable beings intirely uſeleſs, and ſerving to no purpoſe at all. On the whole, it appears that the *exiſtence* of bodies out of a mind perceiving them, is not only impoſſible, and a contradiction in terms; but were it poſſible, nay real, it were impoſſible we ſhould ever know it. And, again, that ſuppoſing that there are no ſuch things, yet we ſhould have the very ſame reaſon to ſuppoſe there were, that we now have: ſuppoſe, *e. gr.* an intelligence affected with the ſame train of ſenſations, impreſſed in the ſame order, and with the ſame vividneſs; would it not have all the reaſon to believe the *exiſtence* of bodies repreſented by hi ideas that we have?—All our ideas and ſenſations are viſibly inactive; nay, the very being of an idea implies paſſiveneſs and inertneſs: ſo that it is impoſſible for an idea to do any thing; or, in ſtrictneſs, be the cauſe of any thing: it cannot therefore be the reſemblance or pattern o any active being; unleſs oppoſites can be ſaid to reſemble one another. Now we find a continual ſucceſſion of ideas in the mind; but theſe, it has been proved, do not depend on any external body as their cauſe: it remains, therefore, that their cauſe is an incorporeal active ſubſtance o ſpirit. For that I am not the cauſe of my own ideas, i plain from this, that when I open my eyes in broad daylight, I cannot help ſeeing various objects. Now the fixed rules or methods wherein the mind we depend on excites i us the ideas of ſenſe, are called *laws of nature*: theſe w learn by experience; which teaches us, that ſuch and ſuch ideas are attended with ſuch and ſuch other ideas in the ordinary courſe of things. Ideas are not any how, and a random, produced; there is a certain order and connexio eſtabliſhed among them, like that of cauſe and effect: an there are ſeveral combinations of them made in a ver regular artful manner, which we call *bodies*; and the ſyſtem of thoſe, *the world*. In ſtrictneſs, however, the connexion of ideas does not imply the relation of cauſe an effect, but only of a mark or ſign of the thing ſignified the fire I ſee is not the cauſe of the pain I feel, but th mark that forewarns me of it. The noiſe I hear, is no the effect of this or that motion or colliſion of natur bodies, but the ſign thereof. The Carteſians own ſomewhat like this: the action of bodies on our organs, ſa they, is not the efficient cauſe of our ideas and perceptions, but only the occaſional cauſe, which determin God to act on the mind, according to the laws of th union of the ſoul and body. See CAUSE. Dr. Berkeley indeed, taking away bodies, takes away what theſe philoſophers account the occaſions of their ideas: by an occaſion, he ſays, muſt either be meant the agent that produces an effect, or ſomething obſerved to accompany go before it, in the ordinary courſe of things: but matt is allowed to be paſſive and inert, and cannot therefo be an agent, or efficient cauſe; and this matter primitivel and in itſelf, is allowed imperceiveable, and devoid of particular ſenſible qualities; *i. e.* it has not this or th particular colour, this or that particular figure, &c. b has colour in the general, figure in the abſtract, &c. b an abſtract is no object of ſenſe: matter therefore ca not be the occaſion of our ideas in the latter ſenſe.” S Berkel. *Princip. of Human Knowl.*

How far the great argument of the maintainers of a mater world, from the impoſſibility of God's deceiving us, a from the evidence that he does ſo, if there be no ſu thing, will go againſt this reaſoning, we leave to the reade See Stanl. *Hiſt. Philoſoph.* P. XII. p. 816. where the o jections of the antient Pyrrhoniſt to the exiſtence of bodi are recited.

As to the *exiſtence* of ſpirits, Mr. Locke allows, that our ha ing ideas of them, does not make us know, that any ſu things do exiſt without us: or that there are any finite ſpiri or any other ſpiritual beings, but God. We have ground fro revelation, and ſeveral other reaſons, to believe with aſſuranc that there are ſuch creatures; but our ſenſes being not able diſcover them, we want the means of knowing their particu *exiſtence*: for we can no more know that there are finite ſpir really exiſting by the idea we have of ſuch beings, than by ideas any one has of fairies, or centaurs, he can come to kno that things anſwering to thoſe ideas do really exiſt.

EXIT, properly expreſſes the departure of a player from off ſtage, when he has acted his part.

The word is alſo uſed in a figurative ſenſe to expreſs any k of departure, even death.

EXITUS, in law, *iſſues*; the yearly rents, or profits of la or tenements. See ISSUE, &c.

EX MERO MOTU, formal words uſed in the king's charte and letters patent; ſignifying that he does what is contai therein, of his own will and motion.

The effect of theſe words is to bar all exceptions that migh taken to the inſtrument, by alleging that the prince, in ing ſuch charter, was abuſed by falſe ſuggeſtion.

EXOCATACOELUS *, in antiquity, a general denomination, under which were included ſeveral grand officers of the church at Conſtantinople. As, the—grand oeconomus, grand ſacellarius, grand maſter of the chapel, grand ſcevophylax, or keeper of the veſſels, grand chartophylax, the maſter of the little chapel, and the protecdicus, or firſt advocate of the church.

* The critics are not at all agreed about the origin of the word *exocatacœli:* Junius, in his edition of *Codin*, breaks the word into two, and reads εξ κατακοιλοι, q. d. *ſix catacœli*; but this reading, though authorized by ſeveral MSS. is faulty, the generality of copies only making one word: beſide that they are called *exocatacœli*, even when there were only five of them. The ſame Junius derives *catacœlus* hence, that theſe officers dwelt in the valleys, κατα τας κοιλαδας. Pet. Gregor. Toloſan. takes the word to have been formed from κατακηλεω, *permulceo, ſuavitate animum delinio:* but Gretſer rejects this etymology, as without any foundation. In lieu thereof, he propoſes another conjecture, though with a great deal of timidity: he reads εξωκατακουτους, inſtead of εξωκατακοιλους, as if they were thus called by reaſon they lodged, or lived, out of the patriarchal palace.—Fa. Goar rejects this opinion, and had rather we ſhould read εξωκατακελλους, as intimating they were thus called in oppoſition to the ſyncellus, who lay in the patriarch's apartment, which the reſt did not; but he is far from being of the opinion, that officers of ſo much eminence, ſhould take their denomination from a thing which teſtifies a want of privilege. He chooſes, therefore, to imagine that all the inferior prieſts were called Κατακοιλοι, *catacœli*, q. d. people of a low condition; and that their ſuperiors were called *exocatacœli*, q. d. people out of the number of *catacœli*, or above them.—Upon the whole, however, he adheres to the ſentiment of G. Coreſius, who ſays, that the patriarchal palace, and the apartments of the ſyncellus, and of the monks in the patriarch's ſervice, were in a very low part of the city, which with regard to the reſt ſeemed a valley or pit; and that the officers above-mentioned had their ſeveral houſes or palaces εξω, out of the valley: whence the name *exocatacœli*. The opinion of M. du Cange is the laſt we ſhall name: he derives the appellation from their being above the level, or rank of the other clerks; and ſeated at church, &c. in more honourable places erected for that purpoſe, on either ſide the patriarch's throne: theſe two laſt ſentiments ſeem the moſt probable.

The *exocatacœli* were of great authority: in public aſſemblies they had the precedence of biſhops; and in the patriarchate of Conſtantinople did the office of deacons; as the cardinals originally did in the church of Rome. Accordingly, in the letter of John IX. to the emperor Baſilius Leo, they are called *cardinales*.

At firſt they were prieſts; but ſome patriarch of Conſtantinople, whom Codin does not mention, would have them for the future to be no more than deacons. The reaſon was, that being prieſts, each of them had their ſeveral churches, wherein they were to officiate on all the grand feſtival days; ſo that it unhappily fell out, the patriarch on the moſt ſolemn days was deſerted by all his chief Miniſters.

EXOCIONITÆ, Exocionites, in church antiquity.—Meurſius tells us, that there was a monaſtery at Conſtantinople, called *exocionium*; and that the firſt who were called *exocionites*, were the monks thereof.—But this is a miſtake. It was the Arians who were firſt called *exocionites*; by reaſon, when expelled the city by Theodoſius the Great, they retired into a place called *exocionium**, and there held their aſſemblies. Juſtinian gave the orthodox all the churches of the heretics, excepting that of the *exocionites*. Cedrenus.

* The word is derived from εξακιονιον, or εξωκιονιον, the name of the place above-mentioned.—Codin, in his *Origines*, ſays, that the *exocionium* was a place encompaſſed with a wall, built and adorned by Conſtantine; and that without the circumference of this wall, there was a column, with a ſtatue of that emperor, whence the place took its name; *viz.* from εξω, without, and κιων, column.

Gothofred holds, that Theodoret was miſtaken, in ſaying that the Arians were called *exocionites*, or *exacionites*, from the name of the place where they aſſembled; and takes the denomination to be the ſame with that of *exoucontians*, which was attributed to the Arians, by reaſon they held that the Son was made out of nothing, εξ ουκ οντων. But a mere conjecture of Gothofred is not ſufficient to make us ſet aſide the authority of ſo able a perſon as Theodoret.

XODIARY, Exodiarius, in the antient Roman tragedy, was a droll, or mime, who appeared on the ſtage, when the tragedy was ended, and performed what they called the *exodium*, or concluſion of the ſhew; to divert the company.

XODIUM *, Εξοδιον, in the antient Greek, drama, was one of the four parts or diviſions of a tragedy.

* The word is formed from the Greek εξοδος, going out, digreſſion, going aſide out of the way; of εξ, and οδος, way, road. Feſtus, Lib. V. calls it *exitus*.

The *exodium*, according to Ariſtotle, was ſo much as was rehearſed after the chorus had ceaſed to ſing for the laſt time; ſo that *exodium* with them, was far from being what the epilogue is with us, as ſeveral people have imagined it was.

The *exodium* was ſo much of the piece as included the cataſtrophe and unravelling of the plot; which cataſtrophe, &c. in pieces regularly compoſed, always began after the laſt ſinging of the chorus; anſwering nearly to our 4th and 5th acts. See M. Dacier's *Comment.* on Ariſtotle's *Poetics*, c. 12. See alſo the articles CATASTROPHE, and CHORUS.

Among the Romans, the *exodium* was a different thing; it was pretty nearly what farces are with us. After the tragedy was over, came a pantomime on the ſtage, called the *exodiarius*, who by his grimace, jeſting, and buffoonry, diverted the people, compoſed their minds, and wiped away the tears which the tragic ſpectacle had occaſioned to be ſhed.—This was his office, as related by the antient ſcholiaſt on Juvenal: Exodiarius *apud veteres in fine ludorum intrabat, quod ridiculus foret, ut quidquid lacrymarum atque triſtitiæ cepiſſent ex tragicis affectibus, hujus ſpectaculi riſus detergeret.*—At leaſt this was the original intention of the *exodium:* but it afterwards degenerated into a bitter, malicious kind of raillery.

Viginere on T. Livy, ſays the *exodium* conſiſted of certain humorous, drolling verſes, rehearſed by the youth at the end of the *fabulæ atellanæ*, and anſwering to our farces. In another place, the ſame author ſays, that the *exodia* were a kind of interludes, in the intervals between the acts, partly fable and pleaſantry, partly muſic, &c. to give time both for the ſpectators and actors to recover breath.—The paſſage in Livy, whence he takes the notion, is lib. VII. Dec. I. *Ridicula intexta verſibus, quæ juventus inter ſe more antiquo jactare cœpit, eaque conſerta ſunt fabulis potiſſimum atellanis.* So alſo Juvenal,

> *Urbicus* exodio *riſum movet atellanæ*
> *Geſtibus Antonoes.*

Exodium *, in the ſeptuagint, ſignifies the end or concluſion of a feaſt.

* The Hebrew text calls the day עצרת, which the ſeventy render εξοδιον.

In particular, *exodion* is uſed for the eighth day of the feaſt of tabernacles, which, it is ſaid, had a ſpecial view to the commemoration of the Exodus, or departure out of Egypt: though there is nothing of it expreſſed in ſcripture.

Exodium was alſo the name of a ſong, ſung at the concluſion of a meal, or feaſt.

EXODUS, the ſecond of the five books of Moſes.

The word, in its original Greek Εξοδος, literally imports a *going out*, or *journey*; and was applied to this book, by reaſon the hiſtory of the Iſraelites paſſage out of Egypt is related therein.—Beſide this, it contains the ſtory of what was tranſacted in Egypt, from the death of Joſeph, to the delivery of the Jews; as well as what paſſed in the wilderneſs, and particularly at mount Sinai, to the building of the tabernacle.

The Hebrews call it *veelle ſemoth*, q. d. *hæc nomina*, theſe are the initial words of the book: for the ſame reaſon they call Geneſis, *bereſith*, q. d. *in principio*, in the beginning.

EX OFFICIO, denotes the power a perſon has, in virtue of his office, to do certain things without being applied to.

By a branch of a ſtatute, 1 Eliz. the queen, by her letters patents, might authorize any perſons exerciſing eccleſiaſtical juriſdiction, to adminiſter an oath *ex officio*; whereby ſuppoſed offenders were forced to confeſs, accuſe, or clear themſelves of any criminal matter, &c.—But this branch relating to this oath, is repealed by 17 Car. I. cap. 11.

EXOMOLOGESIS *, Εξομολογησις, a term little uſed but in ſpeaking of the antient ceremonies of repentance; whereof the *exomologeſis*, by us called *confeſſion*, was a part.

* The word is Greek, formed of εξομολογεω, I confeſs.

Some of the antients, and particularly Tertullian, *de pœnit.* c. 9. uſe the word in a greater latitude, as comprehending the whole of repentance.

A public *exomologeſis* was never commanded by the church for ſecret ſins; as may be ſeen in the capitulars of Charlemaign, and the canons of divers councils.

EXOMPHALUS, Εξομφαλος, in medicine, a general name, comprehending all kinds of navel-ruptures.—The firſt are tumours or ſwellings of the ſolid parts; whereof there are three varieties, denominated from the ſeveral parts affected, as the *enteromphalus*, *epiplomphalus*, and *entero-epiplomphalus*.—The ſecond are, tumours formed by collections or gatherings of humours; of which there are four varieties, diſtinguiſhed by the particular humours they are formed of, as the *hydromphalus*, *pneumatomphalus*, *ſarcomphalus*, and *varicomphalus:* the third are thoſe compounded of both the other, *viz.* the *enterohydromphalus*, and *epiploſarcomphalus*. See each ſpecies under its ſeveral head, ENTEROMPHALUS, &c.

EXORCISM *, Εξορκισμος, prayers, or conjurations, wherewith to *exorciſe*, i. e. drive out devils from perſons poſſeſſed, or to preſerve from danger.

* The word is derived from the Greek εξορκιζειν, *adjurare, conjurare*, to adjure, or conjure.—In moſt dictionaries, *exorciſm* and conjuration are uſed as ſynonymous; but, in reality, conjuration is only a part of the *exorciſm*; and the *exorciſm* the ceremony intire.—The conjuration is properly the formula, where the devil is commanded to come forth, *&c.*

Exorciſms are of great uſe in the Romiſh church: their prelates, *&c.* are frequently exorciſing dæmoniacal perſons. The prieſts make holy water, by exorciſing common water a certain number of times.—In reality, the *exorciſm* is a part in moſt of their conſecrations.

It muſt be allowed, the uſe of *exorciſms* is almoſt as antient as the church: recourſe was had to ſuch means, to drive away diſeaſes both of men and beaſts, to expel and deſtroy vermin, and other animals noxious to the earth, and the fruits thereof.

M. Thiers, in his *Traité de Superſtitions*, gives divers formula's of ſuch *exorciſms*; and quotes, particularly, that of St. Grat, who, by means of *exorciſms*, obtained for inſtance the favour, that there ſhould be no rat found in the country of Aoſt, nor three miles round the ſame.

The ſame author pretends, that ſuch *exorciſms* may be ſtill uſed, to good purpoſe, againſt rats, mice, locuſts, caterpillars, ſtorms, *&c.* but, in order to perform any thing of this kind, he obſerves, a man muſt have the proper quality and character, and be approved of by the church; and muſt likewiſe uſe words and prayers authorized thereby: otherwiſe, his *exorciſms* will be damnable ſuperſtitions.

Exorciſms had antiently another and farther purpoſe; being applied, by way of trial, or purgation, to extort the truth from the accuſed.

The *exorciſm*, in this ſenſe, was a ſort of bread conjured and exorciſed for the purpoſe: and the opinion was, that if the perſon was criminal, he could not ſwallow the bread.

This, it ſeems, was a frequent practice in the time of our Edward III. and the bread, thus exorciſed, was ſaid to be *corſned*.

Linderbroeck gives inſtances of *exorciſms* with barley-bread, and others with cheeſe; and hence, probably, might ariſe that popular imprecation, "May this bread choak me, if I tell a "lye." See ORDEAL, and JUDICIUM *Dei*.

EXORCIST, in the Romiſh church, a prieſt, or tonſured clerk, who has received the four leſſer orders, one of which is that of *exorciſt*.

The term is likewiſe applied to a prelate, who actually exorciſes a perſon poſſeſſed.

It is a diſpute, among divines, whether ever the Greeks had properly any ſuch order, as that of *exorciſt*. Fa. Goar, in his notes on the Greek *Euchologion*, has made it probable they had, from ſeveral concurring paſſages in St. Dionyſius, and St. Ignatius Martyr.

The ordination of *exorciſts* is performed in the time of maſs; their principal office being to expel devils. The IVth council of Carthage, can. 7. appoints, that, in the ordination of *exorciſts*, the biſhop, putting the book of exorciſms in their hands, ſhall ſay theſe words; "Receive it, and keep it in "remembrance; and have power to lay hands on *energumeni*, "whether baptized, or catechumens:" which form ſtill obtains.

M. Fleury mentions certain people, among the Jews, who travelled round the country, making profeſſion of driving out devils by invocations, which, they pretended, had been taught them by Solomon: theſe were alſo called *exorciſts*. See Joſeph. *Antiq. Jud.* l. VIII. c. 2. Origen. *Tract.* XXXV. in Matt. XXVII. 63.

EXORDIUM *, in oratory, the preamble, or beginning, of a diſcourſe, or ſpeech; ſerving to prepare the audience, and introduce the matter in hand.

* The word is formed of the Latin *ordiri*, to begin; by a metaphor taken from the weavers, who are ſaid, *ordiri telam*, to begin, or warp, a web, by diſpoſing and ordering the threads, in a certain manner, for the future work. See WARP.

The *exordium*, on other occaſions, is called the *prologue*, *prælude*, and *proem*.

Cicero defines *exordium*, a part of an oration, whereby the minds of the audience are duly prepared for what remains to be ſaid.—The *exordium* is a part of principal importance, and is to be laboured with extraordinary care: whence Tully calls it, *difficillima pars orationis*.

Exordiums are of two kinds: either juſt, and formal; or vehement, and abrupt. In the firſt, the audience is prepared and conducted, by due and eaſy ſteps; in the ſecond, the orator, as if ſeized with ſome ſudden paſſion, breaks out upon his audience at once. Such is that *exordium* of Iſaiah; *Hear, Oh heavens; and give ear, Oh earth:* or that of Cicero againſt Catiline; *Quouſque tandem abutere patientia noſtra, Catilina?* Abrupt *exordiums* are the moſt ſuitable on occaſions of extraordinary joy, indignation, or the like; though we have inſtances of panegyricks, of the greateſt orators, begun abruptly, without any ſuch occaſions. Such is that of Gorgias, who began his eloge of the city and people of Elis, with Ηλις, πολις ευδαιμων, *Elis, beata civitas:* or that of Greg. Nazianzen, in praiſe of Athanaſius, Αθανασιον επαινων αρετην επαινεσομαι, *Athanaſium laudans virtutem laudabo.* Abrupt, haſty *exordiums*, were more to the taſte and manner of the Greeks, than the Latins.

The requiſites in an *exordium* are, 1°, *Propriety*, whereby the *exordium* becomes of a-piece with the whole diſcourſe, and matches it, as a part does a whole; ſo that it could not be accommodated to any other, or, perhaps, a contrary occaſion. The antient orators were very defective in this point: their *exordiums* had frequently nothing in common with the ſubject. 2°, *Care*, accuracy, and magnificence, as being the part moſt minded, and moſt expoſed to view. Thus Tully; *Veſtibula, aditusque ad cauſam facias illuſtres.*

3°, *Modeſty*, or an ingenuous baſhfulneſs, which recommends the orator exceedingly to the favour of his audience. This is what Cicero extols ſo much in L. Craſſus; *Fuit enim in L. Craſſo pudor quidam, qui non modo non obeſſet ejus orationi, ſed etiam probitatis commendatione prodeſſet.* The ſame Tully owns of himſelf, that, at the beginning of his orations, he trembled every limb, and his whole mind was in a flutter.

And, 4°, *Brevity*, not amplified, or ſwelled, with a detail of circumſtances, or a long circuit of words: ſuch as that muſt be of the lawyer, who, being to ſpeak of a difference between two neighbours, deduced his *exordium* from Adam.

The *exordium* appears an eſſential part of an oration: though, antiently, in the Areopagus, Julius Pollux tells us, they ſpoke without any *exordium*, any paſſions, and any peroration, or epilogue. The like is ſaid to have been done by Xenophon; who began thus, *Darius & Pariſatis duos habuere filios.*

EXOSTOSIS, Εξοστωσις, an unnatural protuberance of a bone, frequent in venereal caſes. See BONE.

EXOTIC *, Εξωτικος, a term properly ſignifying *foreign*, or extraneous; *i. e.* brought from a remote, or ſtrange, country. In which ſenſe we ſometimes ſay, *exotic*, or barbarous, *terms*, or *words*, &c.

* The word is derived from the Greek εξω, εξωθεν, *extra*, without, on the outſide.

EXOTIC is chiefly applied to plants which are natives of foreign countries; particularly thoſe brought from the Eaſt and Weſt-Indies, and which do not naturally grow in Europe.

The generality of *exotics*, or *exotic* plants, do not thrive in England, without ſome peculiar care, and culture; they require the warmth of their own climates: whence the uſe of hot-beds, glaſs-frames, green-houſes, *&c.* See Supplement, article STOVE.

The green-houſe is properly a conſervatory of *exotics*.

Dr. Liſter has a diſcourſe, in the *Philoſoph. Tranſ.* on *exotic diſeaſes*, i. e. ſuch diſeaſes as are never bred among us, but brought, from time to time, by infection, from other countries. Such, according to this author, are, 1°, The *plague*, which is properly a diſeaſe of Aſia, where it is epidemic. 2°, The *ſmall-pox*, which is an oriental diſeaſe, and not known to Europe, or even Aſia minor, or Africa, till a ſpice-trade was opened to the remoteſt part of the Indies; whence it originally came, and where it ſtill rages more cruelly than among us. 3°, The *griping of the guts*, which he takes for a diſeaſe peculiar to the Weſt-Indies, and yearly received from thence: for this, he adds, is a quite different diſeaſe from the *tormina ventris* of the antients; and is ſcarce ever known in the mid-land countries, or far in the North of England.

EXPANSION, in metaphyſics, expreſſes the idea we have of laſting, or perſevering, diſtance; *i. e.* of diſtance, all the parts whereof exiſt together.

EXPANSION, in phyſics, is the dilating, ſtretching, or ſpreading out, of a body: whether from any external cauſe, as the cauſe of rarefaction; or from an internal cauſe, as elaſticity. Bodies naturally *expand*, by heat, beyond their dimenſions when cold; whence their ſpecific gravities are different, at the different ſeaſons of the year.

Air compreſſed, or condenſed, as ſoon as the compreſſing, or condenſing, force is removed, *expands* itſelf, by its elaſtic power, to its former dimenſions.

Dr. Halley found, by experiment, that water *expands* itſelf by one twenty-ſixth part of its bulk, when made to boil; but a moderate heat does not induce any ſenſible *expanſion* at all.—Mercury, with a very gentle heat, *expands* itſelf one ſeventy-fourth part of its ordinary dimenſions.

Spirit of wine, with a heat leſs than that of boiling water, *expanded* itſelf by one twelfth part of its bulk; and then fell a boiling. The moſt ſenſible *expanſion* of water is in freezeing: Mr. Boyle, in his *Hiſt. of Cold*, aſſures us, that ice takes up one twelfth part more ſpace than water.

Dr. Gregory, in his *Aſtrom.* p. 407. proves, that a globe of our air, of an inch diameter, if it were removed to the diſtance of a ſemidiameter of the earth, would *expand* itſelf ſo, as to fill all the planetary region, as far as, nay, far beyond, the ſphere of Saturn.

EXPANSUM *Foliaceum.* See FOLIACEUM.

EX PARTE, *i. e. partly*, or of *one part.*–A *commiſſion ex parte*, is that taken out, and executed by one party only: where both parties join, it is called a *joint-commiſſion.* See COMMISSION.

EXPECTANT *Fee*, in law, where lands are given to a man and his wife, and the heirs of their bodies: in which ſenſe it differs from *fee-ſimple*, where lands are given to a man and his wife, in frank marriage, to hold to them and their heirs.

EXPECTATIVE, in the canon law, a hope, founded on a promiſe, of obtaining the next benefice that ſhall become vacant; or a right to the reverſion of the next. See BENEFICE.

EXPECTATIVE *Canons.* See the article CANON.

EXPECTATIVE *Graces*, *Gratiæ* EXPECTATIVÆ, called alſo *preventions*, were bulls frequently given by the popes, or kings, for future benefices.–The biſhops were exceedingly mortified with them; by reaſon they encroached on their privileges: beſides that ſuch *expectatives* are odious, as they induce people to wiſh for the death of others.

The uſe of *expectatives* is very antient, though it was not near ſo frequent in the firſt ages, as afterwards. Originally they were no more than ſimple requeſts made on the part of kings, or popes, which the biſhops conſented to with the more willingneſs, as they only preſented to them perſons fit to ſerve the church. But the frequent exerciſe of this privilege, made it at length be deemed a matter of obligation and neceſſity.

The council of Trent annulled all *expectatives*; but the canons relating thereto were never admitted in France; where the right of conferring *expectative* graces, is looked on as one of the regalia. See GRACE.

EXPECTORATION, the act of evacuating, or bringing up, phlegm, or other matters, out of the trachea, lungs, *&c.* by coughing, hawking, ſpitting, *&c.* See COUGH.

Expectoration eaſes the lungs of the viſcid, or putrid matters, which obſtruct their veſſels, and ſtreighten the breaſt.

EXPEDITATION, in the foreſt-laws, ſignifies a cutting out the balls of a dog's fore-feet, for the preſervation of the king's game.

Every one that keeps any great dog, not *expeditated*, forfeits three ſhillings and four-pence to the king. In maſtiffs, not the ball of the feet, but the three claws, are to be cut to the ſkin. *Inſtit.* P. IV. p. 308. *Nullos dominicos canes abbatis & monachorum* expeditari *cogat. Chart.* Hen. III. *Et ſint quieti de eſpeditamentis canum. Ex. Mag. Rot. Pip. de Ann.* 9. Ed. II.

This *expeditation* was to be performed once in every three years; and was done to every man's dog who lived near the foreſt, and even the dogs of the foreſters themſelves.

EXPEDITION, the march of an army to ſome diſtant place, with a view of hoſtilities.

Such were the *expeditions* of Cyrus againſt Xerxes, and of Bacchus and Alexander from the Indies.—The *expedition* of Xerxes againſt Greece was unhappy: Cæſar himſelf, in the middle of his *expeditions* in the Gauls, compoſed two books of the analogy of words.

Expeditions for the recovery of the Holy Land were called *croiſades.*

EXPENCES, in book-keeping. See BOOK *of expences.*

EXPENSIS *militum levandis*, is a writ directed to the ſheriff, for levying allowance for the knights of parliament. See PARLIAMENT, and REPRESENTATIVE.

EXPERIENCE, a kind of knowlege acquired by long uſe, without any teacher.

Experience conſiſts in the ideas of things we have ſeen, or read, which the judgment has reflected on, to form itſelf a rule, or method.

Authors make three kinds of *experience:* the 1ſt is the ſimple uſe of the external ſenſes, whereby we perceive the phænomena of natural things, without any direct attention thereto, or making any application thereof.

The 2d is, when we premeditatedly, and deſignedly, make trials of various things, or obſerve thoſe done by others; attending cloſely to all effects and circumſtances.

The 3d is that preceded by a foreknowlege, or at leaſt, an apprehenſion of the event; and determines whether the apprehenſion were true or falſe.–Which two latter kinds, eſpecially the third, are of great ſervice in philoſophy.

XPERIMENT, in philoſophy, a trial of the effect or reſult of certain applications, and motions of natural bodies; in order to diſcover ſomething of the laws and relations thereof, or to aſcertain ſome phænomenon, or its cauſe.

The ſchoolmen define *experiment*, a compariſon of ſeveral things before obſerved by the ſenſes, and retained in the memory; in ſome one ſimilar convenient inſtance.

The nature of *experiment*, therefore, according to them, conſiſts in comparing ſeveral things by one act; whence they diſtinguiſh two things in every *experiment*; the one *material*, viz. the ſeveral ideas remembred; the other *formal*, viz. the comparing of theſe ideas in the mind.

This will be illuſtrated by an example: a phyſician gives a quantity of rhubarb to ten ſeveral perſons, and remembers each of them: now, coming afterwards to compare the ſeveral remembrances together, and finding the effect of the exhibition of rhubarb to be the ſame in all, *viz.* a purging; this is an *experiment* of rhubarb.

The making of *experiments* is grown into a kind of formed art; and we now abound in ſyſtems of *experiments*, under the denomination of *courſes of experimental philoſophy.* Sturmius has made a curious collection of the principal diſcoveries and *experiments* of the laſt age, under the title of *collegium experimentale.* The chymiſts chooſe to call their *experiments*, by way of diſtinction, or eminence, *proceſſes*, or *operations.*

Torricellian EXPERIMENT. See TORRICELLIAN.

EXPERIMENTAL *Philoſophy*, by the Greeks called Εμπειρια, or Εμπειρικη, is that which proceeds on *experiments*, or which deduces the laws of nature, and the properties and powers of bodies, and their actions upon each other, from ſenſible *experiments* and obſervations.

Experiments are of the utmoſt importance in philoſophy: and the great advantages the modern phyſics have above the antient, is chiefly owing to this, that we have a great many more *experiments*, and that we make more uſe of the *experiments* we have.

Their way of philoſophizing was, to begin with the cauſe of things, and argue to the effects and phænomena; ours, on the contrary, proceeds from *experiments* and obſervations alone.

My lord Bacon firſt paved the way for the new philoſophy, by ſetting on foot the making of *experiments.* His method has been proſecuted with laudable emulation by the academy del Cimento, the Royal Society, Royal Academy at Paris; and by Mr. Boyle, Sir Iſaac Newton, and many others.

In effect, *experiments*, within theſe 50 or 60 years, are come into ſuch a vogue, that nothing will paſs in philoſophy, but what is founded on *experiment*, or confirmed by *experiment*, &c. So that the new philoſophy is almoſt altogether *experimental.*

Indeed, the antients, whatever we commonly ſay to the contrary, ſeem to have thought as well of the *experimental* way, as the moderns. Plato miſſes no occaſion of ſpeaking of the advantages of the εμπειρια; and as to Ariſtotle, his hiſtory of animals may bear witneſs for him. Democritus's great buſineſs was to make *experiments*; and even Epicurus himſelf owes part of his glory to the ſame cauſe. Plato calls it, in reſpect to its ſubject, ευαισθησαι, ſubtlety of ſenſe.

Yet there are ſome, even among the learned, who conceive of *experiments* in a different manner.—Dr. Keil allows, that philoſophy has received very conſiderable advantages from the makers of *experiments*; but he complains of their diſingenuity, in too often wreſting and diſtorting their *experiments*, and obſervations, to favour ſome darling theories they had eſpouſed.—But this is not all: M. Hartſoeker, in his *Recueil de pluſieurs pieces de phyſique*, undertakes to ſhew, that they who employ themſelves in the making of *experiments*, are not properly philoſophers, but, as it were, the labourers, or operators of philoſophers, who work under them, and for them, furniſhing them with materials to build their ſyſtems and hypotheſes upon.

The learned M. Dacier, in the beginning of his diſcourſe on Plato, at the head of his tranſlation of the works of that philoſopher, deals ſtill more ſeverely with the makers of *experiments.* He breaks out with a ſort of indignation, at a tribe of idly curious people, whoſe ſole employ conſiſts in making *experiments* on the gravity of the air, the equilibrium of fluids, the loadſtone, *&c.* and yet arrogate to themſelves the noble title of philoſophers. See PHILOSOPHY.

EXPERIMENTAL *Phyſics.* See the article PHYSICS.

EXPERIMENTUM *Crucis*, denotes a capital, leading, or deciſive experiment; thus called, either as, like a croſs, or direction-poſt, placed in the meeting of ſeveral roads, it guides and directs men to the true knowlege of the nature of the thing they are inquiring after; or, as it is a kind of torture, whereby the nature of the thing is, as it were, extorted by violence.

EXPIATION, the act of ſuffering the puniſhments adjudged to a man's crimes, and thus paying off, and diſcharging the debt, or guilt.

The Romaniſts hold, that ſouls, after death, are ſent to purgatory, to *expiate*, or atone, for their ſins.

EXPIATION is alſo applied to ſacrifices offered to the Deity, to implore his mercy, and forgiveneſs.

The feaſt of EXPIATION, among the Jews, called by our tranſlators the *day of atonement*, was held on the tenth day of the

7th month of the Jewiſh year, anſwering to our September.—It was inſtituted by God himſelf, Levit. xxiii. 27, *&c.* On that day, the high-prieſt, the figure, or type, of Jeſus Chriſt, confeſſed his ſins; and, after ſeveral ceremonies, made an atonement for all the people to waſh them from their ſins.

Expiation, among the Heathens, denoted a purification uſed for effacing, or aboliſhing, a crime.

It was practiſed with divers ceremonies: the moſt uſual was ablution.

Expiations were performed for whole cities, as well as particular perſons.—After the young Horatius had been abſolved, by the people, from the murder of his ſiſter, he was farther purified by ſeveral *expiations* preſcribed by the laws of the pontifices for involuntary murders. Halicarnaſſ.

EXPILATION, in the civil law, the act of withdrawing, or diverting, ſomething belonging to an inheritance, before any body had declared himſelf heir thereof.

This made a peculiar ſpecies of theft: for there could not properly be a theft in taking a thing not poſſeſſed by any body, or ere the inheritance was accepted.

For this reaſon, the Roman legiſlature introduced the action of *expilation* for the puniſhment of this crime.

EXPIRATION, in medicine, that motion, in an animal, whereby the air, inſpired into the lungs, is expelled, or thrown out of the ſame, and the cavity of the breaſt contracted.

Reſpiration conſiſts of two alternate motions, or actions, of the lungs, correſponding to thoſe of a pair of bellows: *inſpiration*, whereby the air is drawn in; and *expiration*, whereby it is driven out again.

By means of this alternation, the circulation of the blood, and the motion of the heart, are maintained.

Expiration is alſo uſed, figuratively, for the end of a term of time granted, agreed on, or adjudged.

It is not above eight days till the *expiration* of the term of his impriſonment: the time of ſuch a bill of exchange is *expired*, i. e. it is fallen due. See Bill.

EXPLICITE, in the ſchools, ſomething clear, diſtinct, formal, and unfolded.

The will, or intention, is ſaid to be *explicite*, when it is fully explained in proper terms; and *implicite*, when it is only to be learnt by deductions, and conſequences.

The Jews had not all an *explicite* knowlege of Jeſus Chriſt, but they had, at leaſt, an implicite one.

Such a teſtator has declared his will *explicitely*, i. e. in formal terms: there is no need to have recourſe to explications.

EXPLOSION, in phyſics, the act of a thing which drives another out of the place it before poſſeſſed.

The term is chiefly uſed for the going off of gunpowder, and the expulſion of the ball, ſhot, or the like, conſequent thereon.

Hence, **Explosion** comes likewiſe to be figuratively uſed to expreſs ſuch ſudden actions of bodies, as have ſome reſemblance hereto: *e. gr.* thoſe which ferment with violence, immediately upon their mixture, and occaſion a crackling ſound.

Some writers have likewiſe applied *exploſion* to the excurſions of the animal ſpirits, and inſtantaneous motions of the nervous fibres ariſing without the direction of the mind: but the term here ſeems too figurative to expreſs any determinate idea, ſo as really to inform the underſtanding.

EXPOLITION, in rhetoric, a figure, whereby we explain the ſame thing in different phraſes, and expreſſions, in order to ſhew it more fully.

Expolition was the favourite figure of Balzac.—A man, but moderately verſed in the ſtyle of Scripture, will perceive, that this is no more than an *expolition*; that is, a figure whereby the ſacred author explains the ſame thing in different terms. The Scriptures are full of ſuch figures; and I ſcarce think there is any one more ordinary. Souciet.

EXPONAS *Venditioni.* See Venditioni.

EXPONENT, in arithmetic. **Exponent** *of a power* denotes the number which expreſſes the degree of the power; or which ſhews how often a given power is to be divided by its root, ere it be brought down to unity.

Thus, the *exponent*, or index, of a ſquare number, is 2; of a cube, 3: the ſquare being a power of the ſecond degree; the cube of a third, *&c.*

Exponent is alſo uſed, in arithmetic, in the ſame ſenſe with index, or logarithm.

Thus a ſeries of numbers in arithmetical progreſſion, being placed under another ſeries in geometrical progreſſion, are called the *exponents*, *indices*, or *logarithms*, thereof.—*E. gr.* in the two progreſſions,

Geom.	1,	2,	4,	8,	16,	32,	64,	128,	256,	512
Arith.	0,	1,	2,	3,	4,	5,	6,	7,	8,	9

0 is the *exponent*, index, or logarithm, of the firſt term 1; 5 that of the ſixth 32, *&c.*

Hence, unity is the *exponent* of a power, as the logarithm of the root, to the logarithm of its power: conſequently, the logarithm of the power is had, by multiplying the logarithm of the root by its *exponent*; and the logarithm of the root is had, by dividing the logarithm of the power by its *exponent*.

Exponent *of a ratio* is the quotient ariſing upon dividing the antecedent by the conſequent.

Thus, in the ratio 3 to 2, the *exponent* is 1½; and the *exponent* of the ratio 2 to 3, is ⅔. See Ratio.

Hence, 1°, If the conſequent be unity, the antecedent is the *exponent* of the ratio. Thus, *e. gr.* the *exponent* of the ratio 4 to 1, is 4.—And, again, the *exponent* of a ratio is to unity, as the antecedent to the conſequent.

2°, Since, in a rational ratio, the *exponent* of a ratio is had by dividing a rational number by another rational; the *exponent* of a rational ratio, is a rational number.

EXPONENTIAL *Calculus*, *Calculus* **Exponentialis**, is a method of differencing *exponential* quantities, and of ſumming up the differences of *exponentials*. See Calculus.

Exponential *Curve* is that which is defined by an *exponential equation.*

Exponential curves partake both of the nature of algebraic and tranſcendental ones: of the former, becauſe they conſiſt of a finite number of terms, though thoſe terms themſelves are indeterminate; and of the latter, becauſe they cannot be algebraically conſtructed.

Exponential *Equation* is that wherein there is an *exponential* quantity. See Equation, *&c.*

Exponential *Quantity* is a power whoſe *exponent* is an indeterminate, or variable, quantity.

Exponential quantities are of ſeveral degrees, and orders: when the *exponent* is a ſimple indeterminate quantity, it is called an *exponential of the firſt*, or *loweſt*, *degree.*

When the *exponent* itſelf is an *exponential* of the firſt degree, then the quantity is an *exponential of the ſecond degree.*

Thus, z^y is an *exponential* of the firſt degree, becauſe the quantity y is a ſimple flowing quantity: but z^{y^x} is an *exponential* quantity of the ſecond degree; becauſe y^x is an *exponential* of the firſt degree. So, alſo, $z^{y^{x^y}}$ is an *exponential* of the third degree; the *exponent* y^{x^y} being one of the ſecond.

EXPORTATION, in commerce, the act of ſending commodities out of one country into another. See Commerce.

The merchandizes yearly *exported* from England are immenſe.—The principal articles are, corn, cattle, cloth, iron, lead, tin, leather, coal, hops, flax, hemp, hats, malt liquors, fiſh, watches, ribbands, *&c.*

The woolen manufactures alone, yearly *exported*, are computed to amount to 2000000 pounds ſterling; and lead, tin, and coals, to 500000 pounds.

Wool, fullers earth, *&c.* are contraband goods; *i. e.* they are prohibited to be *exported.*—For the duties of *exportation*, ſee Duty.

EXPOSING, the act of ſetting a thing to public view.

Perjury, forgery, libelling, falſe weights and meaſures, are puniſhed by *expoſing* the criminal in the pillory, to the deriſion of the people.

In the Romiſh church, the ſacrament is ſaid to be *expoſed*, when it is ſhewn in public, uncovered, on feſtival days, and during the time of plenary indulgences.

Exposing is alſo uſed with a farther latitude: thus, we ſay, it is prohibited to *expoſe* falſe and clipped money.

Children are ſometimes *expoſed* in the ſtreets; *i. e.* they are left in the ſtreets, with deſign to be loſt.

Such a houſe ſtands very high, and has a delicious proſpect; but it is *expoſed* to all the four winds. Such a city, being on the frontiers, and not fortified, is *expoſed* to the inſults of every party of forces.

EXPOSITION, the act of *expoſing.* See Exposing.

Exposition is likewiſe applied to the interpretation, or explication, of an author, or a paſſage therein. See Exegesis.

Thus, we ſay, an *expoſition* of the 39 articles; of the Lord' Prayer, *&c.* See Commentary, Annotation, *&c.*

In this ſenſe, we do not ſay, *expoſing*, but *expounding.*

Exposition, in gardening. See Exposure.

EXPOSITOR, or **Expository**, a title which ſome writers have given to a leſſer kind of dictionaries, or vocabularies, ſerving to expound, or explain, the meaning of the hard word of a language.

EXPOSURE, or **Exposition**, in gardening, the aſpect, o ſituation, of a garden, wall, building, or the like, with reſpe to the ſun, wind, *&c.*

There are four regular kinds of *expoſures*; viz. *eaſt*, *weſ* *north*, and *ſouth*: but it muſt be obſerved, that, among gardeners, theſe terms ſignify juſt the contrary to what they d among geographers.

The gardeners, in effect, do not give the names *eaſt*, *weſt*, &c. to the places where the ſun is, but to thoſe whereon he ſhines; and they conſider the manner wherein he ſhines, whether as to the whole garden, or ſome one of its ſides.

If they find, that the ſun at his riſing, and during the firſt half of the day, continues to ſhine on one ſide of a garden or wall, they call that an *eaſtern expoſure*, or *eaſt wall*, &c. And if the ſun begin to ſhine later, or end ſooner, it is not a proper *eaſtern expoſure*.

For the ſame reaſon, they call the *weſt*, the ſide the ſun ſhines on in the latter half of the day, *i. e.* from noon to night. And accordingly, the *ſouth*, or *ſouthern expoſure*, is the place whereon he ſhines, from about nine o'clock in the morning, till night; or which, in the general, he ſhines longeſt on in the whole day: and the part he ſhines leaſt on, is the *north*, or *northern expoſures*, at what hour ſoever it begin or end, being uſually from 11 o'clock to 1.

Such is the gardeners language with regard to the *expoſures*, and particularly thoſe of walls; by which we are let into the ſignification of this or the like expreſſion, uſual among them.—My eaſt wall proves, hits, or thrives better, than my weſt. My eaſtern fruit-trees have had fewer ſhowers than my weſtern, *&c.* The *eaſtern* and *ſouthern expoſures* are, by common conſent of all gardeners, the two principal; and have a conſiderable advantage above the reſt. A *weſt expoſure* is not much amiſs; at leaſt, it is better than a northern one, which is the worſt of all. Each has its inconveniencies.

The eaſtern, commencing differently at different ſeaſons of the year, and ending about noon, ſubjects the trees, *&c.* to the N. E. winds, which wither the leaves and new ſhoots, blow down the fruit, *&c.* beſide that it has little benefit of rains, which come moſtly from the weſt. Yet does the reverend Mr. Lawrence judge the eaſt better than the weſt wall, for all kinds of fruit: not that it has more hours of ſun, or that there are any peculiar virtues in the eaſtern rays; but becauſe the early rays of the ſun do ſooner take off the cold chilly dews of the night.

M. Gentil recommends the *eaſtern expoſure* as beſt for all kinds of peaches; adding, that they ripen ſooneſt, grow bigger, are better coloured, and of a finer taſte, than in any other: but Mr. Carpenter reſtrains the rule to the early and middle ſorts: for the backward, he rather chooſes a *ſouthern*, or *ſouth-eaſt expoſure*, which is beſt for all late fruits; becauſe the influence of the ſun is ſtrongeſt, and continues longeſt therein.

The *weſtern*, accounted from half an hour paſt 11, till ſunſet, is backwarder than an *eaſtern* one by 8 or 10 days; but it has this advantage, that it receives little damage from the froſts, which melt before the ſun comes to ſhine upon the fruit, and fall off like dew, without doing any prejudice: ſo that it may bear apricots, peaches, pears, and plums. But it is incommoded with north-weſt winds in the ſpring, as alſo with the autumnal winds, which blow down a deal of fruit.

The *northern expoſure* has leſs ſun than the weſt; yet is it not without its advantages. In the northerly parts of England, it bears little but pears, cherries, and plums. But in the warmer parts it ſerves for apricots, which have the advantage of continuing later, than in any other *expoſure*, beſides being free from inſects.

The *ſouthern expoſure*, accounted from about 9 till 4, is recommended for peaches, pears, grapes, and plums.

EXPRESS, ſomething that is preciſe, in formal terms, or for ſome particular deſign.—I told him as much in *expreſs* terms: he gave me a commiſſion *expreſs*: he had *expreſs* orders. A courier was diſpatched *expreſs*.

We alſo ſay, ſomewhat abuſively, to ſend an *expreſs*, meaning a courier.

EXPRESSED *oils* are ſuch as are procured from bodies only by preſſing; as the oils of olives, almonds, and the like. See OIL.

EXPRESSED *ſpecies*. See the article SPECIES.

EXPRESSION, in medicine, chymiſtry, *&c.* the act of *expreſſing* or extracting the juices of plants, fruits, or other matters, by ſqueezing, wringing, or preſſing them in a preſs. After having let the herbs infuſe a due time, their juice muſt be drawn by *expreſſion* in a linen cloth, or by a preſs.

EXPRESSION, in oratory, denotes the manner of delivering, or conveying a man's ideas to another.

EXPRESSION is more particularly uſed for the elocution, diction, and choice of words in a diſcourſe.

It is not enough a poet, or orator, have fine thoughts, he muſt likewiſe have a happy *expreſſion*: defects in the *expreſſion* ordinarily ariſe from defects in the imagination: abundance of the beauties of the antient writers are annexed either to *expreſſions* which are peculiar to their language; or to relations, which, not being ſo familiar to us as to them, do not give us the ſame pleaſure. De la Motte.

EXPRESSION denotes, in painting, a natural and lively repreſentation of the ſubject, or of the ſeveral objects intended to be ſhewn.

The *expreſſion* conſiſts principally in repreſenting the human body, and all its parts, in the action ſuitable to it; in exhibiting in the face, the ſeveral paſſions proper to the figures; and obſerving the motions they impreſs on the other external parts.

The term *expreſſion* is ordinarily confounded with that of *paſſion*: but they differ in this, that *expreſſion* is a general term, implying a repreſentation of an object, agreeably to its nature and character, and the uſe or office it is to have in the work; whereas paſſion, in painting, denotes a motion of the body, accompanied with certain diſpoſitions, or airs of the face, which mark an agitation in the ſoul. So that every paſſion is an *expreſſion*; but not every *expreſſion* a paſſion.

Laws, or rules, of EXPRESSION *in painting.*—*Expreſſion*, we have ſaid, is a repreſentation of things according to their character; and may be conſidered either with reſpect to the ſubject in general; or to the paſſions peculiar thereto.

I. With regard to the ſubject, it is to be obſerved, 1°, That all the parts of the compoſition are to be transformed, or reduced, to the character of the ſubject: ſo as they may conſpire to impreſs the ſame ſentiment, paſſion, or idea: thus, *e. gr.* in a repreſentation of joy and peace, every thing is to appear calm and agreeable; of war, turbulent, and full of terror, *&c.*

2°, In order to this, if any circumſtance occur in hiſtory, or deſcription, that would invert, or take from the idea; it muſt be ſuppreſſed; unleſs eſſential to the ſubject.

3°, To this end, the hiſtory, or fable, is to be well ſtudied in the authors who deſcribe it, in order to conceive its nature and character truly, and impreſs it ſtrongly on the imagination; that it may be diffuſed and carried through all the parts of the ſubject.

4°, A liberty is to be taken of chooſing favourable incidents, in order to diverſify the *expreſſion*; provided they be not contrary to the principal image of the ſubject, or the truth of hiſtory.

5°, The harmony of the *tout enſemble* to be particularly regarded, both with reſpect to the actions, and the light and colour.

6°, The modes and cuſtoms to be obſerved; and every thing made conformable to time, place, and quality.

7°, The three unities of time, place, and action, to be obſerved: that is, nothing to be repreſented in the ſame picture, but what paſſes at the ſame time, and may be ſeen at the ſame view.

II. With regard to the particular paſſions and affections of the ſubject; the rules are, 1°, That the paſſions of brutes are few and ſimple, and have almoſt all an immediate reſpect, either to ſelf-preſervation, or the propagation of the kind: but, in men, there is more variety; and accordingly, more marks and *expreſſions* thereof. Hence, man can move his eye-brows, which, in brutes, are immoveable: and can likewiſe move the pupil every way, which brutes cannot.

2°, Children, having not the uſe of reaſon, act much on the footing of brutes; and *expreſs* the motions of their paſſions directly, and without fear or diſguiſe.

3°, Though the paſſions of the ſoul may be *expreſſed* by the actions of the body; it is in the face they are principally ſhewn; and particularly in the turn of the eye, and the motion of the eye-brows.

4°, There are two ways of lifting up the eye-brows, the one at the middle, which likewiſe draws up the corners of the mouth, and argues pleaſant motions: the other at the point next the noſe, which draws up the middle of the mouth, and is the effect of grief and ſadneſs.

5°, The paſſions are all reducible to joy and ſadneſs; each of which is either ſimple, or mixed and paſſionate.

6°, Simple joy cauſes a dilatation of all the parts: the eye-brows riſe in the middle, the eyes half open, and ſmiling, the pupil ſparkling and moiſt, the noſtrils a little open, the cheeks full, the corners of the mouth drawn a little upwards, the lips red, the complexion lively, and the forehead ſerene.

7°, Paſſionate joy, proceeding from love, ſhews the forehead ſmooth and even, the eye-brows a little elevated on the ſide the pupil is turned to, the eyes ſparkling and open, the head inclined towards the object, the air of the face ſmiling, and the complexion ruddy.—That proceeding from deſire ſhews itſelf by the body, the arms being extended towards the object, in uncertain and unquiet motions.

8°, Simple ſadneſs is *expreſſed* by the body being caſt down, the head careleſly hanging aſide, the forehead wrinkled, the eye-brows raiſed to the midſt of the forehead, the eyes half ſhut, the mouth a little open, the corners downwards, the under lip pointing and drawn back, the noſtrils ſwelled, and drawn downwards.—Sadneſs mixed with fear cauſes the parts to contract and palpitate, the members to tremble and fold up, the viſage to be pale and livid, the point of the noſtrils elevated, the pupil in the middle of the eye, the mouth opened at the ſides, and the under-lip drawn back.—In that mixed with anger, the motions are more violent, the parts all agitated, the muſcles ſwelled, the pupil wild and ſparkling, the point of the eye-brows fixed towards the noſe, the noſtrils open, the lips big, and preſſed down, the corners of the mouth a little open and foaming, the veins ſwelled, and the hair erect.—That with deſpair, reſembles the laſt; only it is more exceſſive and diſordered.

9°, The hand has a great ſhare in the *expreſſion* of our ſentiments and paſſions: the raiſing of the hands conjoined towards heaven, *expreſſes* devotion; wringing the hands, grief: throwing them towards heaven, admiration: fainting and dejected hands, amazement and deſpair: holding the hands, idleneſs: holding the fingers indented, muſing: holding forth the hands together, yielding and ſubmiſſion; lifting up the hand and eye to heaven, calling God to witneſs: waving the hand from us, prohibition: extending the right hand to any one, pity, peace, and ſafety: ſcratching the head, thoughtfulneſs and care: laying the hand on the heart, ſolemn affirmation: holding up the thumb, approbation: laying the fore-finger on the mouth, bidding ſilence: giving with the finger and thumb, *parcè dare:* and the fore-finger put forth, the reſt contracted, *monſtrari, & dicier, Hic eſt.*

10°, The ſex of the figure is to be regarded; and man, as he is of a more vigorous and reſolute nature, is to appear in all his actions freer and bolder than women, who are to be more reſerved and tender.

11°, So alſo the age, the different ſtages whereof incline to different motions both of body and mind.

12°, The condition, or honours, a perſon is inveſted withal, render their actions more reſerved, and their motions more grave; contrary to the populace, who obſerve little conduct or reſtraint; giving themſelves, for the moſt part, up to their paſſions: whence their external motions become rude and diſorderly.

Laſtly, in ſpirits we muſt retrench all thoſe corruptible things, which ſerve only for the preſervation of life, as veins, arteries, &c. only retaining what may ſerve for the form and beauty of the body.—In angels, particularly, as being ſymbolical figures, we are to mark out their offices and virtues, without any draught of ſenſual paſſions; only appropriating their characters to their functions of power, activity, and contemplation.

EXPULSION, the act of driving a man by force out of a city, community, or the like.

We ſay, *expulſion* out of parliament.—Milton is upbraided by archbiſhop Bramhall, with his *expulſion* from the univerſity of Cambridge; but he ſhews it a groundleſs ſuggeſtion.—Mr..... was expelled from Cambridge, on ſuſpicion of hereſy, &c.

Expulsion is alſo uſed, in medicine, for the act of driving out a foreign body with violence, from the place it was in.

The uterus has the chief office in the *expulſion* of the fœtus: if the *expulſion* of the fœtus happen very ſoon after conception, it is called a *falſe birth.* See Foetus, and Delivery.

EXPURGATION *, in aſtronomy, is uſed by ſome authors for that ſtate or action of the ſun, wherein, after having been eclipſed and hid by the interpoſition of the moon, it begins to appear again.

Later aſtronomers call this *emerſion*, not *expurgation.*

EXSICCATION *, in chymiſtry, &c. the act of drying up, or evaporating, the moiſture of a thing.

* The word is Latin, formed of *ex*, and *ſiccus*, dry.

EXSORS *particula.* See the article Particula.

EXTANT, ſomething that ſtill ſubſiſts, or is in being.

It is but part of the hiſtory of Livy, of the writings of Cicero, Cæſar, &c. that are *extant*; the reſt are loſt. We have nothing *extant* of Socrates; though he wrote a great deal.

EXTASY, εκϛασις, a rapture, or removal of the mind out of its natural ſtate and ſituation: or a tranſport, whereby a perſon is hurried out of himſelf, and the office of his ſenſes is ſuſpended.

In eccleſiaſtical hiſtory, we read of diverſe monkiſh ſaints being in *extaſies* for ſeveral days ſucceſſively.—St. Paul's being taken up into the third heaven, was what we call an *extaſy.*

Extasy, in medicine, is conſidered as a diſeaſe, near akin to a catalepſy; only differing from it in this, that the cataleptic patient has no perception of what paſſes in his paroxyſm, nor any remembrance thereof when it is over; whereas the *extatic* is taken up with a very lively idea, or imagination, which he remembers afterwards.

In an *extaſy*, there muſt be an unuſual tenſion of the fibres of the ſenſory, as in moſt deliriums, &c.

EXTEMPORANEOUS *preſcription.* See Preſcription.

EXTENDENDA *terra.* See the article Terra.

EXTENDING, in a legal ſenſe, ſignifies the valuing of lands and tenements, of one bound by ſtatute, &c. and who hath forfeited his bond, at ſuch an indifferent rate, as that, by the yearly rent, the obligator may, in time, be fully paid his debt. See Extent.

EXTENSION, in phyſics, that whereby a thing is conſtituted long, broad, or thick, &c.

Extenſion is uſually deſcribed as conſiſting in the ſituation of parts, beyond parts; which ſome authors cavil withal, as holding, that we can conceive abſolute *extenſion*, without any relation to parts.

If a man conſider the diſtance between two bodies, abſtractedly, and without any regard to bodies which may fill that interval, it is called *ſpace:* and when he conſiders the diſtance between the extremes of a ſolid body, it is called *extenſion.*

Extenſion is frequently confounded with quantity and magnitude; and, for what we can perceive, without much harm; the thing ſignified by them all appearing to be the ſame. Unleſs we admit a diſtinction made by ſome authors, that the *extenſion* of a body is ſomething more abſolute; and its quantity and magnitude more reſpective, or implying a nearer relation to much and little. See Quantity, Magnitude, and Mass.

EXTENSOR, in anatomy, a name common to diverſe muſcles, ſerving to extend, or ſtretch out the parts; and particularly the hands and feet: ſuch are the

Extensor *carpi ulnaris*, called alſo *cubitæus internus*, a muſcle, which, coming from the internal protuberance of th humerus, and paſſing tendinous under the ligamentum annulare, is inſerted into the upper part of the bone of th metacarpium, which anſwers to the little finger. This and the ulnaris flexor, moving together, draw the hand ſidewiſe towards the ulna.—See *Tab. Anat.* (Myol.) *Fig.* 8 n. 16.

Extensor *carpi radialis*, called alſo *radiæus externus*, an *bicornis*, is really two diſtinct muſcles. The firſt ariſe from above the external protuberance of the humerus; an the ſecond from the lowermoſt part of the external protuberance. They both lie along the external part of the radius, and, paſſing under the annular ligament, one is inſerte into the bone of the metacarpus, that ſuſtains the fore finger; and the other to that which ſuſtains the middle-finger These two extend the wriſt.—See *Tab. Anat.* (Myol.) *Fig.* n. 19.

Extensor *communis digitorum manus* ariſes from the externa protuberance of the humerus, and at the wriſt divides int three flat tendons, which paſs under the annular ligament to be inſerted into all the bones of the fore, middle, an ring-finger.—See *Tab. Anat.* (Myol.) *Fig.* 1. n. 36. *Fig.* 6 n. 26.

Extensor *primi internodii pollicis* ariſes from the upper an external part of the ulna, and, paſſing obliquely over the tendon of the *radiæus externus*, is inſerted near the ſecond joi of the thumb.

Extensor *ſecundi internodii pollicis* ariſes from the upper an internal part of the radius, and is inſerted into the upper pa of the ſecond bone of the thumb.

Extensor *tertii internodii pollicis* ariſes from the ulna, a litt below the firſt *extenſor*, and is inſerted into the third bone o the thumb.

Extensor *indicis* comes from the middle and external part o the ulna, and, paſſing under the annular ligament, is inſerte into the third bone of the fore-finger, where it joins the *extenſor* communis.

Extensor *minimi digiti* ariſes from the external protuberan of the humerus, and from the upper part of the ulna; an paſſing under the annular ligament, is inſerted into the thi bone of the little finger.—See *Tab. Anat.* (Myol.) *Fig.* 1. n. 3 and *Fig.* 6. n. 17.

Extensor *digitorum pedis longus* is a muſcle derived from th fore-part of the upper epiphyſis of the tibia, and, growin tendinous about the middle thereof, it runs in four tendo under the annular ligament, to the third bone of every to except the pollex.—See *Tab. Anat.* (Myol.) *Fig.* 2. n. 4 *Fig.* 1. n. 64.

Extensor *digitorum pedis brevis* comes from the exterior an fore part of the calcaneum, and goes to the ſecond joint of th toes.—See *Tab. Anat.* (Myol.) *Fig.* 1. n. 73.

Extensor *pollicis pedis longus* riſes large and fleſhy from th fore-part of the fibula, a little below its upper proceſ whence, paſſing under the annular ligament, it is inſerte into the upper part of the ſecond bone of the great toe.- See *Tab. Anat.* (Myol.) *Fig.* 1. n. 71.

Extensor *pollicis pedis brevis* ſprings fleſhy from the fore-pa of the os calcis, and, after a ſhort belly, is contracted into ſlender tendon; which, running obliquely over the upp part of the foot, is inſerted into the ſecond bone of the gr toe.—See *Tab. Anat.* (Myol.) *Fig.* 1. n. 75. *Fig.* 2. n. 5

EXTENT, in law, ſometimes denotes a writ, or commiſſi to the ſheriff, for the valuing of lands and tenements; ſom times the act of the ſheriff upon this writ; and ſometim the eſtimate, or valuation of lands, *per proprios viros.* Fleta, l. 2.

EXTENUATION, the act of diminiſhing or leſſening the bulk or ſubſtance of a thing, eſpecially of the human body. Fevers, agues, long abſtinences, *&c.* occaſion great *extenuations*, or emaciations.

EXTENUATION is alſo a figure in rhetoric, oppoſite to the hyperbole.—The Greeks call it λιτότης.

EXTERIOR *polygon.*	See the articles	POLYGON.
EXTERIOR *talus.*		TALUS, *&c.*

EXTERMINATION *, the act of *extirpating*, or totally deſtroying, a people, race, family, *&c.*

* The word is Latin, formed of *ex*, and *terminus*, boundary.

The Jews have been *exterminated* out of Portugal; the Moors out of Spain; the Albigenſes out of France, *&c.* Philip the Fair of France, to be revenged on the Knights Templars, took a reſolution in 1307. to *extermindte* them.

EXTERNAL, or EXTERIOR, a term of relation, applied to the ſurface or outſide of a body; or that part which appears, or preſents itſelf to the eye, touch, *&c.*

In which ſenſe it is oppoſed to *internal*, or *interior.*

External medicines are alſo called *local medicines*, and *topics.* The ſenſes are divided into *external*, which are thoſe whereby we perceive ideas, or have the perception of *external* objects; as ſeeing, hearing, *&c.* and internal. See SENSE.

EXTERNAL is alſo uſed to expreſs any thing that is without-ſide a man, or that is not within him, and particularly in his mind. In which ſenſe, we ſay *external objects*, &c.

The exiſtence of an *external world*, i. e. of bodies and objects, out of the mind, is a thing which has been greatly called in queſtion of late. See EXISTENCE, and BODY.

In reality, ‘ were it poſſible for bodies, *i. e.* ſolid, figured, *&c.* ſubſtances, to exiſt without the mind, correſponding to thoſe ideas we have of *external* objects, yet how were it poſſible for us to know it? Either we muſt know it by ſenſe, or reaſon: as for our ſenſes, by them we have only the knowlege of our ſenſations or ideas: they do not inform us, that things exiſt without the mind, or unperceived, like thoſe which are perceived. It remains, therefore, that if we have any knowlege at all of *external* things, it muſt be by reaſon, inferring their exiſtence from what is immediately perceived by ſenſe. But how ſhall reaſon induce us to believe the exiſtence of bodies without the mind, when the patrons of matter themſelves deny, that there is any neceſſary connexion betwixt them and our ideas? In effect, it is granted on all hands, that what happens in dreams, phrenſies, deliriums, extaſies, *&c.* puts it beyond diſpute, that we might be affected with all the ideas we have now, though there were no bodies exiſting without, reſembling them. Hence, it is evident, the ſuppoſition of *external* bodies is not neceſſary for the production of our ideas.’ Berkel. *Princ. of Human Know.* p. 59.

‘ Granting the materialiſts their *external* bodies, they by their own confeſſion are never the nearer knowing how our ideas are produced; ſince they own themſelves unable to comprehend in what manner body can act upon ſpirit; or how it is poſſible it ſhould imprint any idea in the mind. Hence, the production of ideas, or ſenſations, in our minds, can be no reaſon why we ſhould ſuppoſe matter, or corporeal ſubſtances; ſince that is equally inexplicable with or without the ſuppoſition. In ſhort, though there were *external* bodies, it is impoſſible we ſhould ever come to know it; and if there were none, we ſhould have the ſame cauſe to think there were, that we now have.’ *Id. Ibid.* p. 60, 61.

‘ Try, whether you can conceive it poſſible for a ſound, or figure, or motion, or colour, to exiſt without the mind, or unperceived. This may perhaps convince you, that what you contend for, is a downright contradiction.—I am content to put the whole upon this iſſue: if you can but conceive it poſſible for one extended, moveable ſubſtance, or, in general, for any one idea, to exiſt otherwiſe than in a mind perceiving it; I ſhall readily give up the cauſe.’ *Id. Ibid.* p. 63.

‘ It is worth while to reflect a little on the motives which induced men to ſuppoſe the exiſtence of material ſubſtance; that ſo, having obſerved the gradual ceaſing and expiration of thoſe motives, we may withdraw the aſſent grounded on them. Firſt, therefore, it was thought, that colour, figure, motion, and the reſt of the ſenſible qualities, did really exiſt without the mind; and for this reaſon, it ſeemed neceſſary to ſuppoſe ſome unthinking ſubſtratum, or ſubſtance, wherein they did exiſt, ſince they could not be conceived to ſubſiſt by themſelves. Afterwards, in proceſs of time, men being convinced that colours, ſounds, and the reſt of the ſenſible ſecondary qualities, had no exiſtence without the mind; they ſtripped this ſubſtratum of theſe qualities, leaving only the primary ones, figure, motion, *&c.* which they ſtill conceived to exiſt without the mind, and conſequently to ſtand in need of a material ſupport. But having ſhewn above, that none, even of theſe, can poſſibly exiſt otherwiſe than in a ſpirit, or mind, which perceives them, it follows, that we have no longer any reaſon to ſuppoſe the being of matter.’ *Id. Ibid.* p. 118, 119. See QUALITY.

EXTERNAL *denomination.*	See	DENOMINATION.
EXTERNAL *modes.*		MODE.
EXTERNAL *place.*		PLACE.

EXTERNAL *angles* are the angles of any right-lined figure formed without it, when all the ſides are ſeverally produced. Theſe are all, taken together, equal to four right angles.—Particularly, in a triangle, the *external* angle DOA (*Tab. Geometry, Fig.* 76.) is equal to both the internal and oppoſite ones z and y. See TRIANGLE.

EXTERNAL *beauty.*	See	BEAUTY.
EXTERNAL *ear.*		EAR, and AURICLE.

EXTERNUS *auris*, in anatomy, a ſmall muſcle coming from the ſide of the meatus auditorius, to the ſhort proceſs of the malleus; ſerving to draw the handle thereof downwards, and ſo to relax the membrana tympani. See EAR.

EXTERNUS *brachiæus.*	See	BRACHIÆUS.
EXTERNUS *cubitæus.*		CUBITÆUS.
EXTERNUS *gaſtrocnemius.*		GASTROCNEMIUS.
EXTERNUS *iliacus.*		ILIACUS.
EXTERNUS *orbiter.*		ORBITER.
EXTERNUS *pterygoideus.*		PTERYGOIDEUS.
EXTERNUS *vaſtus.*		VASTUS.
EXTERNUS *rectus capitis.*		RECTUS.

EXTINCTION, the act of *extinguiſhing*, that is, of putting out, or deſtroying, fire, flame, or light.

Boerhaave denies, that there is properly any ſuch thing as extinguiſhing of fire: it is a body *ſui generis*, of an immutable nature, and we can no more *extinguiſh* or deſtroy it, than we can create it.

The Ariſtotelians account for the *extinction* of fire from the principle of contrariety: thus, ſay they, water puts out fire, by reaſon the qualities of water are contrary to thoſe of fire; the one being cold, and moiſt; and the other hot, and dry. But how far this will go, may appear hence, that fire is extinguiſhed by hot water as readily as cold; nay even by oil, earth, *&c.*

Some of the moderns offer two more plauſible cauſes of *extinction*; viz. *diſſipation*; as when the next, immediate fuel of the flame, is diſperſed and blown off by too forcible a wind: and *ſuffocation*, when it is ſo compreſſed, as that its free motion cannot be maintained; as happens upon throwing water, *&c.* thereon.

EXTINCTION, in chemiſtry, and pharmacy, is when a metal, mineral, or the like body, after having been heated red-hot in the fire, is plunged in ſome fluid; either to ſoften or temper its acrimony, as tutty in roſe-water; or to communicate its virtue to the liquor, as iron or ſteel to common water; or, laſtly, to give it a temper, as in the *extinction* of ſteel in water, or ſome other preparation.

EXTINGUISHMENT, in law, is uſed for a *conſolidation.* Thus, if a man, having a yearly rent due to him out of my lands, afterwards purchaſe the ſame lands; both the property and rent becoming conſolidated, or united in one poſſeſſor, the rent is ſaid to be *extinguiſhed.*

So, where a man has a leaſe for years, and afterwards buys the property, there is a *conſolidation* of the property, and an *extinguiſhment* of the leaſe.

So alſo, if there be lord meſne, and tenant, and the lord purchaſe the tenancy, the meſnalty is *extinct.*

EXTIRPATION *, the act of pulling up, or deſtroying, a thing to the very roots.

* The word is formed of the Latin, *ex*, and *ſtirps*, root.

Dogs-graſs is a weed very difficult to *extirpate.*—Among the prayers of the Romiſh jubilee, there is one for the *extirpation* of hereſy.

EXTIRPATION is alſo uſed, in chirurgery, for the cutting off any part intirely; as a wen, *&c.* or the eating it away, as a wart, *&c.* by corroſive medicines. See AMPUTATION, and CORROSION.

EXTISPEX *, in antiquity, an officer who viewed and examined the entrails of victims; in order to draw preſages therefrom as to futurity.

* The word is formed of the Latin *exta*, and *ſpicere*, of *ſpicio*, I view, conſider.

This kind of divination, called *extiſpicium*, was mightily in vogue throughout Greece, where there were two families, the Jamidæ and Clytidæ, conſecrated, or ſet apart, peculiarly for it.

In Italy, the firſt *extiſpices* were the Hetrurians; among whom, likewiſe, the art was in great repute. Lucan gives us a fine deſcription of one of theſe operations in his firſt book.

EXTORTION, in law, an illegal manner of wreſting any thing from a man, either by force, menace, or authority.

If an officer, by terrifying, or ſpunging upon another on pretence of his office, takes more than his ordinary fees, or dues, he commits, and is indictable for *extortion*.

So the exacting of unlawful uſury, winning by unlawful game, and, in fine, all taking of more than is juſtly due, by colour or pretence of right, as exceſſive tolls in millers, exceſſive prices of ale, bread, victuals, wares, *&c.* come under *extortion*.

Crompton ſays, that wrong done by any man, is properly a treſpaſs, but exceſſive wrong is *extortion*; which is moſt properly applicable to ſheriffs, mayors, bailiffs, and other officers, who, by colour of their office, greatly oppreſs and wrong the king's ſubjects, by taking exceſſive rewards, or fees, for executing their office.

EXTRA-JUDICIAL, ſomething done out of the proper court, or the ordinary courſe of law.—As when judgment is given in a cauſe, or caſe, not depending in that court where ſuch judgment is given, or wherein the judge has not juriſdiction.

EXTRA-PAROCHIAL, a place out of the bounds of any pariſh; or privileged, and freed from the duties of a pariſh.

EXTRACT, EXTRACTUM, in pharmacy, the pureſt and fineſt part of a vegetable, or other body, ſeparated from the coarſer, by diſſolution and digeſtion with a proper menſtruum; and afterwards reduced into a thick, moiſt conſiſtence by diſtillation, or evaporation of the humidity of the menſtruum.

EXTRACT, in matters of literature denotes a ſhort abridgment of a book, or paper, or of ſome of the matters thereof. The journals, nouvelles, biliotheques, memoires, and other monthly or quarterly accounts of the affairs of learning, conſiſt principally of *extracts* of the moſt material paſſages, doctrines, *&c.* found in the ſeveral books publiſhed in that time.

EXTRACTI *ab Eccleſia.* See RESTITUTIONE *Extracti.*

EXTRACTION, in pharmacy and chemiſtry, an operation, whereby eſſences, tinctures, *&c.* are drawn from natural bodies.

Some will have *extraction* to ſignify any ſolution made by menſtruums: but, in ſtrictneſs, there is this difference; that in *ſolution* the menſtruum abſorbs the whole ſubſtance of the body, but in *extraction* it carries off only a certain part of it; and in this ſenſe, camphire is diſſolved in ſpirit of wine, but jalap is more properly ſaid to be *extracted*; for the reſin is only taken out by the menſtruum, the other particles being left untouched.

EXTRACTION alſo frequently ſignifies ſuch an inſpiſſation, or thickening of a ſolution, ſo that a certain quantity of the menſtruum being drawn off, the remaining mixture is reduced to the conſiſtency of honey; as in the *extracts* of ſaffron, gentian, and the like.

Extracts are chiefly made from vegetables, and require different menſtruums, according to the different nature of the plants; eſpecially the gummous kind: for ſuch as are mucilaginous, as gum Arabic, and tragacanth, *&c.* are not eaſily diſſolved but in aqueous liquors; whereas reſinous gums, as galbanum, ſcammony, *&c.* muſt have burning ſpirits to diſſolve them.

There are others again of a middle nature, which may be diſſolved in either ſort of menſtruums, though not ſo eaſily in one as the other: thus aloes, and rhubarb, which are ſomething reſinous, are better made into *extracts* of ſpirit of wine, than water: but plants, which abound leſs with reſin, ſuch as hellebore, *&c.* are more commodiouſly *extracted* with water.

To perform *extraction* therefore aright, a proper menſtruum is neceſſary, and one which is as near a-kin as poſſible to the body to be *extracted*.

EXTRACTION, in chirurgery, denotes an operation whereby ſome foreign matter lodged in the body, contrary to the order of nature, is drawn out of the ſame by manual application, or the help of inſtruments.

Such is the *extraction* of a ſtone, formed in the bladder, or in the kidneys, *&c.*

Extraction belongs to the *exæreſis*, as a ſpecies to its genus. See EXÆRESIS.

EXTRACTION, or *Deſcent*, in genealogy, denotes the ſtock, or family, which a perſon is deſcended from.

In ſome military orders, chapters, *&c.* a candidate muſt make proof of the nobility of his *extraction* before he is admitted.

EXTRACTION *of Roots*, the method of finding the roots of given numbers, or quantities. See ROOT.

The ſquare, cube, and other powers of a number, or root, are formed by multiplying the given number into itſelf a greater or leſs number of times, as the power required is higher or lower. See POWER.

This multiplication compounds the powers; and the *extraction* of the root decompounds them again, or reduces them to their firſt principles or roots. So that the *extraction* of the root is to the multiplication of the power, what the analyſis is to the ſyntheſis.

Thus, 4, multiplied by 4, produces 16; which is the ſquare of 4, or the factum of 4 by itſelf: and 16, multiplied by 4, makes 64, which is the cube of 4, or the factum of 4 by its ſquare:—Such is the compoſition of powers.

Again, the ſquare root of 16 is 4, by reaſon 4 is the quotient of 16 divided by 4; and the cube root of 64 is likewiſe 4, by reaſon 4 is the quotient of 64 divided by the ſquare of 4:—Such is the *extraction* of roots.

Hence, to *extract* the root out of a given power, is the ſame thing as to find a number, *e. gr.* 4, which, being multiplied a certain number of times into itſelf, produces the given power, *e. gr.* 16 or 64.

For the *extraction* of ſquare and cube roots, it is neceſſary to have the ſquares and cubes of all the digits in readineſs; as exhibited in the following table.

Roots	1	2	3	4	5	6	7	8	9
Square	1	4	9	16	25	36	49	64	81
Cubic	1	8	27	64	125	216	343	512	729

To extract *the ſquare root out of a given number.*—1°, Divide the given number into claſſes, of two figures apiece; and include each claſs between two dots, commencing with the place of units, or the right-hand figure: the root will conſiſt of ſo many parts, or figures, as you have claſſes.—By the way obſerve, it may happen, that for the laſt claſs on the left-hand there ſhall only be one figure left.

2°, Then the left-hand claſs being the ſquare of the firſt figure of the root ſought; look in the table of roots for the ſquare root anſwering to that number: or, if that ſquare number be not preciſely there, to the next leſſer number: this root write down for the firſt figure of the quotient: and ſubtract its ſquare from the left-hand claſs.—To the remainder, bring down the next claſs toward the right.

3°, Write down the double or the quotient-figure under the left-hand figure of the ſecond claſs; and ſeek how oft this decuple is contained in the figure over it: the quotient gives the ſecond figure of the root.

4°, Write the ſame quotient under the right-hand figure of the ſame claſs; and ſubtract the product of the whole number underwritten, multiplied by the firſt figure of the root, from the number over it, as in diviſion.

5°, The operation being repeated according to the third and fourth ſteps, *i. e.* the remainder being ſtill divided by the double of the root as far as *extracted*; and from the remainder, the ſquare of the figure that laſt came out, with the decuple of that foreſaid diviſor augmented thereby, being ſubtracted; you will have the root required.

E. gr. To *extract* the root of 99856, point it after the following manner, $\dot{9}9\dot{8}5\dot{6}$: then ſeek a number, whoſe ſquare ſhall equal the firſt figure 9, *viz.* 3, and write it in the quotient; then having ſubtracted from 9, 3 × 3, or 9, there will remain 0; to which ſet down the figures as far as the next point, *viz.* 98 for the following operation.

Then, taking no notice of the laſt figure 8, ſay, How many times is the double of 3, or 6, contained in the firſt figure 9? Anſwer, 1. Wherefore having written 1 in the quotient, ſubtract the product, of 1 × 61, or 61 from 98, and there will remain 37, to which connect the laſt figures 56, and you will have the number 3756, in which the work is next to be carried on. Wherefore alſo neglecting the laſt figure of this, *viz.* 6, ſay, How many times is the double of 31, or 62, contained in 375 (which may be gueſſed at from the initial figures 6 and 37, by taking notice how many times 6 is contained in 37)? Anſwer 6; and writing 6 in the quotient, ſubtract 6 × 626, or 3756, and there will remain 0; whence it appears, that the buſineſs is done, the root coming out 316.

$$\begin{array}{l} \dot{9}9\dot{8}5\dot{6}\ (\ 316 \\ 9 \\ \hline 098 \\ \ \ 61 \\ \hline 3756 \\ 3756 \\ \hline \ \ \ 0 \end{array}$$

Otherwiſe, with the diviſors ſet down, it will ſtand thus:

$$\begin{array}{rl} & \dot{9}9\dot{8}5\dot{6}\ (\ 316 \\ & 9 \\ \hline 6) & 98 \\ & 61 \\ \hline 62) & 3756 \\ & 3756 \\ \hline & \ \ \ 0. \end{array}$$

And ſo in others.

Again, if you were to *extract* the root out of 22178791: firſt, having pointed it, ſeek a number, whoſe ſquare (if it cannot be exactly equalled) ſhall be the next leſs ſquare (or neareſt) to 22, the figures to the firſt point, and you will find it to be 4. For 5 × 5, or 25, is greater than 22; and 4 × 4, or 16, is leſs; wherefore 4 will be the firſt figure of the root. This, therefore, being writ in the quotient, from 22, take the ſquare 4 × 4, or 16; and to the remainder 6, adjoin the next figures 17, and you will have 617; from whoſe diviſion, by the double of 4, you are to obtain the ſecond figure of the root, *viz.* neglecting the laſt figure 7, ſay, how many times 8 is contained in 61? Anſwer, 7; wherefore write 7 in the quotient, and from 617 take the product of 7 into 87, or 609, and there will remain 8, to which join the two next figures 87, and you will have 887; by the diviſion whereof by the double of 47, or 94, you are to obtain the third figure; in order to which ſay, how many times is 94 contained in 88? Anſwer, 0; wherefore write 0 in the quotient, and adjoin the two laſt figures 91, and you will have 88791, by whoſe diviſion by the double of 470, or 940, you are to obtain the laſt figure; *viz.* ſay, how many times 940 in 8879? Anſwer, 9: wherefore write 9 in the quotient, and you will have the root 4709. But ſince the product 9 × 9409, or 84681, ſubtracted from 88791, leaves 4110, the number 4709 is not the root of the number 22178791 preciſely, but a little leſs.

22178791 (4709, 43637, &c.
16
617
609
88791
84681
411000
376736
3426400
2825649
60075100
56513196
356190400
282566169
73624231

If then it be required to have the root approach nearer, carry on the operation in decimals, by adding to the remainder two cyphers in each operation. Thus the remainder 4110, having two cyphers added to it, becomes 411000; the diviſion whereof, by the double of 4709, or 9418, you will have the firſt decimal figure 4. Then having writ 4 in the quotient, ſubtract 4 × 94184, or 376736, from 411000, and there will remain 34264. And ſo having added two more cyphers, the work may be carried on at pleaſure, the root at length coming out 4709, 43637, &c.

But when the root is carried on half-way or above, the reſt of the figures may be obtained by diviſion alone: as in this example, if you had a mind to *extract* the root to nine figures, after the five former 4709,4 are *extracted*, the four latter may be had, by dividing the remainder by the double of 4709,4.

Thus, if the root of 32976, were to be *extracted* to five places, in numbers; after the figures are pointed, write 1 in the quotient, as being the figure whoſe ſquare 1 × 1, or 1, is the greateſt that is contained in 3, the figure to the firſt point; and having taken the ſquare of 1 from 3, there will remain 2: then having ſet the two next figures, *viz.* 29, to it (*viz.* to 2), ſeek how many times the double of 1, *viz.* 2, is contained in 22, and you will find indeed that it is contained more than 10 times; but you are never to take your diviſor 10 times, no, nor 9 times in this caſe; becauſe the product of 9 × 29, or 261, is greater than 229, from which it would be to be taken, or ſubtracted; wherefore write only 8. And then having written 8 in the quotient, and ſubtracted 8 × 28, or 224, there will remain 5; and having ſet down to this the figures 76, ſeek how many times the double of 18, or 36, is contained in 57, and you will find 1, and ſo write 1 in the quotient; and having ſubtracted 1 × 361, or 361, from 576, there will remain 215. Laſtly, to obtain the remaining figures, divide this number 215, by the double of 181, *viz.* 362, and you will have the figures 59, which, being writ in the quotient, give the root 181, 59.

32976 (181, 59
1
2)229
224
36) 576
361
362)215(59, &c.

After the ſame manner are roots *extracted* out of decimal numbers.—Thus, the root of 329,76 is 18,159; and the root of 3,2976 is 1,8159; and the root of 0,032976, is 0,18159, and ſo on. But the root of 3297,6 is 57, 4247; and the root of 32,976 is 5,74247. And thus the root of 9,9856 is 3,16.

To extract *the other, or higher root, out of a given number.*—The *extraction* of the cubic root, and of all other roots, may be comprehended under one general rule; *viz.* every third figure, beginning from unity, is firſt to be pointed, if the root to be *extracted* be a cubic one; or every fifth, if it be a quadrato-cubic (or of the fifth power); and then ſuch a figure is to be writ in the quotient, whoſe greateſt power (that is, whoſe cube, if it be a cubic power, or whoſe quadrato-cube, if it be the fifth power, &c.) ſhall either be equal to the figure, or figures, before the firſt point, or next leſs under them; and then having ſubtracted that power, the next figure will be found by dividing the remainder augmented by the next figure of the reſolvend, by the next leaſt power of the quotient multiplied by the index of the power to be *extracted*, that is, by the triple ſquare, if the root be a cubic one; or by the quintuple biquadrate (that is, five times the biquadrate), if the root be of the fifth power, &c. And having again ſubtracted the power of the whole quotient from the firſt reſolvend, the third figure will be found by dividing that remainder, augmented by the next figure of the reſolvend, by the next leſſer power of the whole quotient, multiplied by the index of the power to be *extracted.*

Thus, to *extract* the cube root of 13312053, the number is firſt to be pointed after this manner, *viz.* 13312053; then you are to write the figure 2, whoſe cube is 8, in the firſt place of the quotient, as, that which is the next leſſer cube to the figures 13 (which is not a perfect cube number), or as far as the firſt point; and having ſubtracted that cube, there will remain 5; which being augmented by the next figure of the reſolvend 3, and divided by the triple ſquare of the quotient 2, by ſeeking how many times 3 × 4, or 12, is contained in 53, it gives 4 for the ſecond figure of the quotient. But ſince the cube of the quotient 24, *viz.* 13824, would come out too great to be ſubtracted from the figures 13312 that precede the ſecond point, there muſt only 3 be writ in the quotient: then the quotient 23 being in a ſeparate place multiplied by 23, gives the ſquare 529, which again multiplied by 23, gives the cube 12167; and this taken from 13312, will leave 1145; which augmented by the next figure of the reſolvend 0, and divided by the triple ſquare of the quotient 23, *viz.* by ſeeking how many times 3 × 529, or 1587, is contained in 11450, it gives 7, for the third figure of the quotient. Then the quotient 237, multiplied by 237, gives the ſquare 56169, which again multiplied by 237, gives the cube 13312053; and this taken from the reſolvend, leaves 0. Whence it is evident, that the root ſought is 237.

13312053(237
Subtract the cube 8
12) rem: 53 (4 or 3
Subtract cube 12167
1587)rem: 11450(7
13312053
Remains 0

So alſo, to *extract* the quadrato-cubical root of 36430820, it muſt be pointed over every fifth figure; and the figure 3, whoſe quadrato-cube, or fifth power 243, is the next leſſer to 364, *viz.* to the firſt point, muſt be writ in the quotient. Then the quadrato-cube 243 being ſubtracted from 364, there remains 121, which augmented by the next figure of the reſolvend, *viz.* 3, and divided by five times the biquadrate of the quotient, *viz.* by ſeeking how many times 5 × 81, or 405, is contained in 1213, it gives 2 for the ſecond figure. That quotient 32, being thrice multiplied by itſelf, makes the biquadrate 1048576; and this again, multiplied by 32, makes the quadrato-cube 33554432, which, being ſubtracted from the reſolvend, leaves 2876388. Therefore 32 is the integer part of the root, but not the true root; wherefore, if you have a mind to proſecute the work in decimals, the remainder, augmented by a cypher, muſt be divided by five times the aforeſaid biquadrate of the quotient, by ſeeking how many times 5 × 1048576, or 5242880, is contained in 2876388, 0, and there will come out the third figure, or the firſt decimal 5. And ſo by ſubtracting the quadrato-cube of the quotient 32,5 from the reſolvend, and dividing the remainder by five times its biquadrate, the fourth figure may be obtained. And ſo on *in infinitum.*

36430820 (32, 5
243
405) 1213 (2
33554432
5242880) 2876388, 0 (5

In ſome caſes, it is convenient only to indicate the *extraction* of a root; eſpecially where it cannot be had exactly. Now, the ſign, or character, whereby roots are denoted, is $\surd$: to which is added, the exponent of the power, if it be above a ſquare, and even ſometimes if it be not. *E. gr.* $\surd^{2}$ denotes the ſquare root. $\surd^{3}$ the cube root, &c. See ROOT.

When a biquadratic root is to be *extracted*, you may *extract* twice the ſquare root, becauſe $\surd^{4}$ is as much as $\surd^{2} \times^{2}$. And when the cubo-cubic root is to be *extracted*, you may firſt *extract* the cube root, and then the ſquare root of that cube root, becauſe the $\surd^{6}$ is the ſame as $\surd^{2} \times^{3}$; whence ſome have called theſe roots, not cubo cubic ones, but quadratodrato-cubes. And the ſame is to be obſerved in other roots, whoſe indexes are not prime numbers.

To prove the extraction *of roots.*–1°, For a *ſquare root:* multiply the root found by itſelf, and to the product add the remainder, if there were any: if the ſum be equal to the number given, the operation is juſt.

2°, For a *cube root:* multiply the root found by itſelf; and the product, again, by the ſame root. To the laſt product, add the remainder, if there were any. If the ſum come out the number firſt given, the work is juſt.

After the like manner may the *extraction* of the other roots, be proved.

To extract *the roots of equations, or algebraic quantities.*–The *extraction* of roots out of ſimple algebraic quantities, is evident, even from the nature, or marks of notation itſelf; as that $\sqrt{aa}$ is a, and that $\sqrt{aacc}$ is ac, and that $\sqrt{9aacc}$ is 3ac; and that $\sqrt{49a^4xx}$ is $7aax$. And alſo that $\sqrt{\frac{a^4}{cc}}$, or $\frac{\sqrt{a^4}}{\sqrt{cc}}$ is $\frac{aa}{c}$, and that $\sqrt{\frac{a^4bb}{cc}}$ is $\frac{aab}{c}$, and that $\sqrt{\frac{9aazz}{25bb}}$ is $\frac{3az}{5b}$, and that $\sqrt{\frac{4}{9}}$ is $\frac{2}{3}$, and that $\sqrt{3}\,\frac{8b^6}{27a^3}$ is $\frac{2bb}{3a}$, and that $\sqrt{^4}aabb$ is $\sqrt{ab}$. Moreover, that $b\sqrt{aacc}$, or b into $\sqrt{aacc}$, is equivalent to b into ac, or abc. And that $3c\sqrt{\frac{9aazz}{25bb}}$, is equivalent to $3c\times\frac{3az}{5b}$, or $\frac{9acz}{5b}$. And that $\frac{a+3x}{c}\sqrt{\frac{4bbx^4}{81aa}}$ is equivalent to $\frac{a+3x}{c}\times\frac{2bxx}{9a}$, or to $\frac{2abxx+6bx^3}{9ac}$. I ſay theſe are all evident, becauſe it will appear at firſt ſight, that the propoſed quantities are produced, by multiplying the roots into themſelves (as aa from a into a; aacc from ac into ac; 9aacc from 3ac into 3ac, *&c.*) But when quantities conſiſt of ſeveral terms, the buſineſs is performed as in numbers.

Thus to *extract* the ſquare root out of $aa+2ab+bb$: in the firſt place, write the root of the firſt term aa, *viz.* a, in the quotient, and having ſubtracted its ſquare $a\times a$, there will remain $2ab+bb$ to find the remainder of the root by. Say therefore, how many times is the double of the quotient, or 2a, contained in the firſt term of the remainder 2ab? I anſwer, b [times]: therefore write b in the quotient, and having ſubtracted the product of b into $2a+b$, or $2ab+bb$, there will remain nothing. Which ſhews that the work is finiſhed, the root coming out $a+b$.

$$\begin{array}{l}
aa+2ab+bb\,(a+b\\
aa\\
\overline{0.+2ab+bb}\\
\quad+2ab+bb\\
\hline
\quad\;0\qquad 0
\end{array}$$

And thus to *extract* the root out of $a^4+6a^3b+5aabb-12ab^3+4b^4$, firſt ſet in the quotient the root of the firſt term a^4, *viz.* aa; and having ſubtracted its ſquare $aa\times aa$, or a^4, there will remain $6a^3b+5aabb-12ab^3+b^4$ to find the remainder of the root. Say therefore, how many times is 2aa contained in $6a^3b$? Anſwer, 3ab; wherefore write 3ab in the quotient; and having ſubtracted the product of 3ab, into $2aa+3ab$, or $6a^3b+9aabb$, there will yet remain $-4aabb-12ab^3+4b^4$ to carry on the work. Therefore, ſay again, how many times is the double of the quotient, *viz.* $2aa+6ab$, contained in $-4aabb-12ab^3$? or, which is the ſame thing, ſay, how many times is the double of the firſt term of the quotient, or 2aa, contained in the firſt term of the remainder $-4aabb$? Anſwer, $-2bb$. Therefore having writ $-2bb$ in the quotient, and ſubtracted the product $-2bb$ into $2aa+6ab-2bb$, or $-4aabb-12ab^3+4b^4$, there will remain nothing.

Whence it follows, that the root is $aa+3ab-2bb$.

$$\begin{array}{l}
a^4+6a^3b+5aabb-12ab^3+4b^4\,(aa+3a-b2bb\\
a^4\\
\overline{}\;6a^3b+9aabb-12ab^3+4b^4\\
0+6a^3b+9aabb\\
\hline
\quad 0-4aabb-12ab^3+4b^4\\
\quad\;\;-4aabb-12ab^3+4b^4\\
\hline
\qquad 0\qquad 0\qquad 0
\end{array}$$

And thus the root of the quantity $xx-ax+\frac{1}{4}aa$ is $x-\frac{1}{2}a$; and the root of the quantity y^4+4y^3+8y+4 is $yy+2y-2$; and the root of the quantity $16a^4-24aaxx+9x^4+12bbxx-16aabb+4b^4$ is $3xx-4aa+2bb$, as may appear underneath.

$$\begin{array}{l}
xx-ax+\frac{1}{4}aa\,(x-\frac{1}{2}a\\
xx\\
\overline{}\\
0-ax+\frac{1}{4}aa\\
\hline
\quad 0\quad 0
\end{array}$$

$$\begin{array}{l}
9x^4\begin{smallmatrix}-24aa\\+12bb\end{smallmatrix}x^2\begin{smallmatrix}+16a^4\\-16aabb\\+4b^4\end{smallmatrix}\Big(3x^2\begin{smallmatrix}-4aa\\+2bb\end{smallmatrix}\\
9x^4\\
\hline
0\qquad\qquad\quad+16a^4\\
\begin{smallmatrix}-24aa\\+12bb\end{smallmatrix}x^2\begin{smallmatrix}-16a^2b^2\\+4b^4\end{smallmatrix}\\
\hline
\quad 0\qquad\qquad 0
\end{array}$$

$$\begin{array}{l}
y^4+4y^3-8y+4\,(yy+2y-2\\
y^4\\
\overline{}\\
0\\
\quad 4y^3+4yy\\
\hline
\quad\; 0-4yy\\
\quad\;\;-4yy-8y+4\\
\hline
\qquad 0\quad 0\quad 0
\end{array}$$

If you would *extract* the cube root out of $a^3+3aab+3abb+b^3$, the operation is performed thus:

$$\begin{array}{l}
a^3+3aab+3abb+b^3\,(a+b\\
\overline{}\\
a^3\\
\hline
3aa)\,0+3aab\,(b\\
\hline
a^3+3aab+3abb+b^3\\
\qquad 0\qquad 0\qquad 0
\end{array}$$

Extract firſt the cube root of the firſt term a^3, *viz.* a, and ſet it down in the quotient: then ſubtracting its cube a^3, ſay, how many times is its triple ſquare, or 3aa, contained in the next term of the remainder 3aab? and there comes out b; wherefore write b in the quotient, and ſubtracting the cube of the quotient $a+b$, there will remain 0; therefore $a+b$ is the root. After the ſame manner, if the cube root is to be *extracted* out of $z^6+6z^5-40z^3+96z-64$, it will come out $zz+2z-4$. And ſo likewiſe in higher root.

EXTRANEOUS *Motion.* See the article MOTION.

EXTRAORDINARY, ſomething out of the common courſe.

EXTRAORDINARY *Couriers*, are thoſe ſent expreſs on ſome urgent occaſion.

Embaſſador, or *Envoy* EXTRAORDINARY, is ſuch a one as is ſent to treat or negotiate ſome ſpecial and important affair, as a marriage, a treaty, confederacy, *&c.* or even on occaſion of ſome ceremony, as condolence, congratulation, *&c.* A *Gazette*, *Journal*, or other *News-paper extraordinary*, is that publiſhed after ſome great and notable event, containing the detail or particulars thereof, which were not found in the ordinary papers.—Our news-writers generally uſe poſtſcripts, or ſupplements, inſtead of *extraordinaries.*

EXTRAORDINARY *Culverin.* See the article CULVERIN.

EXTRAVAGANTES, a part of the canon-law, containing divers conſtitutions of the popes, not included in the body of the canon-law.—Whence the nomination *extravagantes*: *quaſi extra corpus juris vagantes.*

The *extravagantes* are divided into two parts: the firſt contains XX conſtitutions of John XXII. and the ſecond, other later conſtitutions of the ſaid John, and his ſucceſſors.

EXTRAVASATION*, in medicine, a motion of the blood, whereby it breaks out of its ordinary veſſels, the veins or arteries, and either gathers, and ſtagnates in ſome ſoft part, or is thrown quite out of the body.

The ordinary cauſes of *extravaſations*, are unnatural repletions, and diſtentions of the veſſels; or lacerations, and eroſions thereof. There is a neceſſity for bleeding, to prevent the blood's growing to ſuch a head as to *extravaſate.* —In wounds of the head, particularly, bleeding is neceſſary, to prevent the *extravaſation* of the blood in the brain.

EXTRAVASATION is ſometimes likewiſe uſed in ſpeaking of other humours beſide the blood; as the lympha, urine, *&c.* The gardeners uſe the term in ſpeaking of gums, juices, *&c.* which ouſe out of their trees either ſpontaneouſly, or at inciſions.

EXTREAM, or EXTREME, is applied to the laſt and outermoſt part of any thing; or that which finiſhes, and terminates it on that ſide.

The *extreams* of a line are points.—There is no paſſing out of one *extream*, into the other, without going through the middle.—*Extream* remedies muſt only be had recourſe to in *extream* neceſſity.

Some anatomiſts apply the denomination *extreams*, or *extremities*, to the arms and legs.

The arms, or *upper* EXTREMITIES, conſiſt of ſixty-two bones; thirty-one in each, *viz.* the omoplate, humerus, cubitus, radius, eight in the carpus, four in the metacarpus, and fifteen in the fingers.

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* The word is formed of the Latin *extra*, without; and *vas*, veſſel.

The *lower* Extremities, or legs, conſiſt of ſixty; thirty in each; *viz.* the femur, rotula, tibia, fibula, ſeven in the tarſus, five in the metatarſus, and fourteen in the toes.

Extreams, in logic, denote the two *extream* terms of the concluſion of a ſyllogiſm; *viz.* the predicate, and ſubject.

They are called *extreams*, from their relation to another term, which is a medium, or mean, between them.

The predicate, as being likewiſe had in the firſt propoſition, is called the *majus extremum*, greater *extream*; and the ſubject, as being put in the ſecond, or minor, propoſition, is called the *minus extremum*, leſſer *extream*.

Thus, in the ſyllogiſm, man is an animal; Peter is a man; therefore Peter is an animal: the word animal is the greater *extream*, Peter the leſs *extream*, and man the medium. See Syllogism.

Extream *and mean proportion*, in geometry, is when a line is ſo divided, that the whole line is to the greater ſegment, as that ſegment is to the other.

Or, as Euclid expreſſeth it, when the line is ſo divided, that the rectangle under the whole line, and the leſſer ſegment, is equal to the ſquare of the greater ſegment.

The invention of this diviſion is thus: Let the given line be $AB = a$ (Tab. *Geometry*, *fig.* 64. N° 1.); and for the greater ſegment put x, the leſſer will be $a - x$. Then, by the hypotheſis, $a : x : - x \div$. Therefore $aa - ax = xx$, conſequently $aa = ax + ax$. And, by adding $\frac{1}{4}aa$ on each ſide, to make $xx + ax + \frac{1}{4}aa$ a complete ſquare, the equation will ſtand thus, $\frac{5}{4}aa = xx + xa + \frac{1}{4}aa$.

Now ſince the latter is exactly a ſquare, its root $x + \frac{1}{2}a = \sqrt{\frac{5}{4}\overline{aa}}$, and by tranſpoſition it will be $\sqrt{\frac{5}{4}aa} - \frac{1}{2}a = x$; which laſt equation is a canon to find x.

For at the foot of $AB = a$, ſet at right angles $CB = \frac{1}{2}a$: then draw CA, the ſquare of which is equal, $ABq + CBq = \frac{5}{4}aa$. And therefore $AC = \sqrt{\frac{5}{4}\overline{aa}}$; make $CD = CA$. From whence $CB = \frac{1}{2}a$ being taken, as the caſe requires, there remains $BD = x$; which transferred into AB, ſhall give the point E, where AB is cut according to *extream and mean proportion.*

This cannot be exactly done in numbers; but if you would have it tolerably near, add together the ſquare of any number, and the ſquare of its half, and extract, as near as you can, the ſquare root of the ſum; from whence taking half, the remainder is the greater part.

EXTREAM-UNCTION, one of the ſacraments of the Romiſh church, the fifth in order, adminiſtered to people dangerouſly ſick, by anointing them with holy oils, and performing ſeveral prayers over them.

It is called *extream unction*, as being only given to perſons in *extremity*.—In the XIIIth century, it was called the *unction of the ſick*, and not *extream unction*: for, in the earlier ages, it was given before the *viaticum*; which practice, according to Fa. Mabillon, was not changed till the XIIIth century.

The reaſons he aſſigns for the change are, that in that age there aroſe diverſe miſtaken opinions, ſeveral of which we find mentioned and condemned in the Engliſh councils: among the reſt, it was held, that ſuch as had received this ſacrament, in caſe they recovered, might not make uſe of their wives, nor eat meat, nor go bare-footed: whence they choſe to forbear uſing it till the laſt extremity; which practice prevailed. See the councils of Worceſter and Exeter, in the year 1287. that of Wincheſter, in 1308. and Fa. Mabillon, *Acta Sanct. Benedict.* Sæc. III. p. 1.

The form of *extream unction* is now deprecative, as the divines call it; formerly it was abſolute, and indicative.

This ſacrament is not only in uſe in the Latin, but alſo in the Greek church, and throughout the eaſt, though under another name, and with ſome difference in the circumſtances; in that the orientals do not wait till their ſick are come to extremity, in order to anoint them: but the ſick generally go to church themſelves; and it is adminiſtered to them as often as they are indiſpoſed: the Greeks taking that direction of St. James, C. V. ver. 14. which is the foundation of the practice, in a general ſenſe: *Is any ſick among you? let him call for the elders of the church, and let them pray over him, anointing him with oil.* Fa. Dandini diſtinguiſhes two kinds of *unction* among the Maronites: the one called *unction with the oil of the lamp*; but this, he ſuggeſts, is not the ſacramental *unction* ordinarily adminiſtered to ſuch as are in extreme ſickneſs; for that the oil is only conſecrated by a prieſt, and that it is given to all who are preſent; not to the ſick only, but alſo to the healthy: even the prieſt who officiates, partakes of it. The other kind of *unction*, according to that father, is only for the ſick: this is performed, with oil conſecrated by the biſhop alone, on Holy Thurſday; and this, it ſeems, is their ſacramental *unction*.

The *unction* with lamp-oil is in uſe, not only among the Maronites, but throughout all the eaſtern church, who uſe it very religiouſly. The truth is, they do not ſeem to have any other ſacrament of *extream unction* beſide this.—Yet F. Goar obſerves, though it be only a ceremony, with regard to thoſe in health, it is a real ſacrament to thoſe that are ſick.

In their great churches they have a lamp, wherein this oil for the ſick is preſerved; this lamp they call Κανδηλα τȣ ευχελαιȣ; that is, *the lamp of oil joined with prayer*: for what the Latins call *extream unction*, the Greeks call ευχελαιον, or ἁγιον ελαιον; that is, *oil with prayer*, or *holy oil*.

EXTREMUM *Clauſit Diem.* See the article Diem.

EXTRINSIC is applied, in the ſchools, in various ſenſes.—Sometimes it ſignifies a thing's not belonging to the eſſence of another: in which ſenſe, the efficient cauſe, and the end, or ſcope, of a thing, are ſaid to be *extrinſic*, or *extrinſic cauſes.*

Sometimes it implies a thing's not being contained within the capacity of another.—In which ſenſe, thoſe cauſes are ſaid to be *extrinſic*, which introduce ſomething into a ſubject from without: as when fire introduces heat, &c.

Sometimes it denotes a thing added, or applied, to another.—Thus, accidents and adherences are ſaid to be *extrinſic* to the ſubject; and thus viſion is *extrinſic* to the object ſeen.

Extrinsic *Argument.* } See { Argument.
Extrinsic *Service.* } { Service.

EXUBERANCE*, in rhetoric, &c. a redundancy. See Redundance, and Pleonasm.

* The word is compounded of the Latin *ex*, and *uber*, plentiful; of *uber*, udder.

EXUDATION, the act of ſweating out.—In which manner, gums, balſams, &c. are uſually produced from trees.

EXULCERATION, in medicine, the act of cauſing, or producing, ulcers.

Thus, arſenic *exulcerates* the inteſtines; corroſive humours *exulcerate* the ſkin.

Exulceration is ſometimes alſo uſed for an ulcer itſelf; but, more generally, for thoſe beginning eroſions which wear away the ſubſtance, and form ulcers.

Exulcerations in the inteſtines are marks of poiſon. See Poison.

EXUSTION, the act of burning with fire; uſed, in ſome operations, by ſurgeons. See Burn.

EXUVIÆ*, in phyſiology, tranſient parts of certain animals, which they put off, or lay down, and aſſume new ones.

* The word is Latin; formed from *exuere*, to put off, to diveſt.

Such, eſpecially, are the ſkins, or ſloughs, of ſerpents; ſhells of lobſters, and the like; which are annually changed, and renewed in the ſpring.

Exuviæ is alſo uſed for ſome ſhells, and other marine bodies, frequently found in the bowels of the earth; ſuppoſed to have been depoſited there at the deluge, as being the real ſpoils of once living creatures. See Shell, Fossil, and Deluge.

EYE, the organ, or part, of the body, whereby viſion is effected; *i. e.* whereby viſible objects are repreſented to the mind.

The *eye*, or organ of ſight, is generally divided into *internal* and *external* parts; or into the *eye properly ſo called*, and the *appendages* thereof.

Under the latter claſs come the *orbit*, or cavity, wherein the *eye* is placed; the *ſupercilium*, or *eye-brow*, whereby ſweat, and other nuiſances, are prevented falling down into it; the *palpebræ*, or *eye-lids*, which cover and defend it in time of ſleep; with their *cilia*, or fringes of hair, to break the too fierce impreſſion of the light, and keep off flies and moats; and the *canthi*, or angles.

The *eye, properly ſo called*, is of a globular form, and conſiſts of tunics, humours, and veſſels.

In ſome parts it is lined with fat; and it is moved with muſcles; which two latter are by ſome anatomiſts, though ſomewhat inaccurately, reckoned among the conſtituent parts of the *eye*.

The *tunics*, *coats*, or *membranes*, *of the eye*, are ſix: *viz.* 1°, The *adnata*, or *conjunctiva*, covering the whole ball of the *eye*, except the fore-part, called the *ſight*, and making what we popularly call the *white of the eye*; though this is not reckoned as a proper tunic of the *eye*. 2°, Immediately under the *adnata* is the *ſclerotica*, which covers the whole globe of the *eye*; being opake every-where but in the fore-part, which covers the ſight, and is tranſparent like horn; which has occaſioned anatomiſts to account this a diſtinct membrane, the 3d in number, and to denominate it the *cornea*. The 4th is the *choroides*, ſituate immediately under the *ſclerotica*: its fore-part, like the former, is tranſparent, and therefore accounted a diſtinct, or 5th, coat, and called the *uvea*. Of the duplicature of this part of the tunic, is formed a ſtriped, variegated circle, called the *iris*, which, in different ſubjects, is of different colours, and gives the denomination of this or that colour to the *eye*. In its middle is an aperture, or perforation, called the *pupil*, or *apple*, *of the eye*, about which the iris forms a ring: from the inſide of this tunic ſpring certain fibres, which, ſpreading round the cryſtalline humour, form the *ligamentum ciliare*. The 6th tunic, which ſome only make the

3d is the *retina*, ſo called, as reſembling a net, and covering only the fund, or bottom, of the *eye*, oppoſite to the ſight.

Of the three proper tunics, the *ſclerotica*, *choroides*, and *retina*, the firſt is derived from the *dura mater*, being detached from the brain as an outer coat, or cover, of the optic nerve, till, arriving at the ball of the *eye*, it is there expanded into a tunic: the ſecond is derived from the *pia mater*, and tranſmitted likewiſe, from the brain, along with the optic nerve; the third may be ſaid to be derived from the brain, or *medulla* itſelf, as being an expanſion of the medullary ſubſtance of the optic nerve. See each tunic deſcribed under its proper article, CONJUNCTIVA, SCLEROTICA, CORNEA, CHOROIDES, UVEA, and RETINA; ſee, alſo, IRIS, and PUPILLA.

The *humours of the eye*, incloſed between theſe tunics, are three; *viz.* 1°, The *aqueous*, a limpid, tranſparent humour, ſituate in the fore-part of the *eye*, immediately under the *cornea*, and occaſioning its protuberance. 2°, The *cryſtalline*, ſituate immediately under the aqueous, behind the uvea, oppoſite to the pupil. 3°, The *vitreous*, or glaſſy, humour, which fills all the hind-part of the cavity of the globe; and is that which gives the ſpherical figure to the *eye:* on its back-part is the *retina* ſpread. See each humour under its proper article; AQUEOUS, CRYSTALLINE, and VITRIOUS.

Some authors, finding theſe humours covered with proper membranes, have given diſtinct names to them; as the *aqueous*, *cryſtalline*, and *vitrious tunics:* but theſe being only productions of the other coats above-mentioned, the diſtinction is not much regarded.

The *veſſels of the eye* are, nerves, glands, arteries, and veins. 1°, The nerves are, the optic pair, which, iſſuing through a perforation in the ſkull, behind the orbit, enter the ball of the *eye*, and diffuſe and loſe themſelves therein; the outer coat, as already obſerved, going to form the *ſclerotica*, the inner to the *choroides*, and the *medulla* to the *retina*.

Beſides which, the *motorii*, *pathetici*, the firſt branch of the fifth pair, called *ophthalmics*, and the 6th pair, are beſtowed on the muſcles of the *eye*.

2°, On the upper-part of the ball of the *eye*, near the leſſer, or outer, canthus, is the *glandula innominata*, or *lacrymalis*, which ſeparates the matter of the tears, to be diſcharged, by the continual motion of the *eye-lid*, upon the *cornea*, to moiſten it, and facilitate its motion: the tears, falling down the *cornea*, are ſtopped by the edge of the under *eye-lid*, along which they run, till they fall into two ſmall holes in the great angle, one in each *eye-lid*, called *puncta lacrymalia*, which lead to a ſmall bag, from the bottom of which a ſmall tube ariſing, opens into the noſe. Between the two *puncta* is a caruncle, or eminence, which ſerves to ſeparate and keep them open, and which was antiently taken for the *glandula lacrymalis*.

3°, The *eye* receives arteries, both from the internal and external carotids, and returns the blood by veins that go to the jugulars.

The *muſcles of the eye* are ſix; four of which are, from their ſituation, called *recti*, or ſtrait muſcles; and two, *obliqui*. The *recti* come from ſeveral points of the bottom of the orbit, and run immediately between the *ſclerotica* and *adnata:* they derive ſeveral denominations from their ſeveral offices; *viz.* *attollens*, or *ſuperbus*, which draws the *eye* upwards; *deprimens*, or *humilis*, which caſts it down; *adducens*, and *potator*, which draws the *eye* towards the noſe; and *abducens*, or *indignator*, which draws it the other way towards the leſſer angle. The two oblique muſcles are, the *ſuperior*, called alſo *rotator*, and *trochlearis*; and the *inferior*. See each muſcle in its proper place; ATTOLLENS, DEPRIMENS, ADDUCENS, ABDUCENS, OBLIQUUS, and TROCHLEARIS.

The whole ſtructure and apparatus of the *eye* tends to this; that there be produced a diſtinct and vivid collection in the bottom of the *eye*, directly under the pupil, of all the rays which, proceeding from any point of an object, and entering the *eye*, penetrate the cryſtalline humour; and that ſo many points be painted in the bottom of the *eye*, as are conſpicuous in an object, that ſo a ſmall image, like thereto, may be repreſented on the *retina*.

In order to this, the rays from any radiant, or reflecting point, ſtriking on the *cornea*, are refracted towards the perpendicular, and thus determined to proceed through the aperture of the pupil to the ſurface of the cryſtalline; while other rays, which entered ſo obliquely as to be thrown upon the iris, are reflected out again, that they may not diſturb the diſtinctneſs of the ſight; and others, whoſe leſs obliquity threw them between the *uvea* and vitrious humour, are diſtinguiſhed in the darkneſs thereof; that none can be propagated through the vitrious but ſuch as, paſſing through the pupil, ſtrike on the cryſtalline.

In the mean time the iris, contracting by its circular, or dilating by its right fibres, the *pupilla* of the *eye*, admits fewer or more rays, as the object is nearer, or more vivid; or remoter, and more languid. See PUPIL.

Now, the flatter the figure of the *cornea* is, the leſs does it collect the rays emitted from any lucid point; whence fewer arrive at the cryſtalline, and thoſe more diverging; unleſs when they come from a very remote object: on the contrary, the rounder it is, the more of the rays from any point does it collect, and throw on the cryſtalline, and thoſe the more converging: whence one great cauſe of the defects in the *eyes* both of old men and myopes. Again, the rays tranſmitted through the pupil to the cryſtalline, are there refracted a-new, further collected, and rendered converging; ſo as that thoſe which came from the ſame point of the object, are now thrown in one point, through the vitrious, upon the *retina*; where they paint, or exhibit, that preciſe point of the object whence they flowed. Accordingly, if the cryſtalline be very denſe, or ſpherical, the focus, or the point wherein they are united, will be too near; and if too flat, or rare, the point will be too remote: the effect of both which is confuſion. And hence another cauſe of the defects of myopes and preſbytæ.

It is not, however, myopes and old men alone that would labour under theſe defects, and have their viſion, in moſt caſes, confuſed, as in objects very near, or very remote; very ſmall, or very great: but thoſe would be the common condition of viſion. Diſtinct viſion, depending abſolutely on the union of all the rays coming from the ſame point of the object, on the ſame preciſe point of the *retina*; and rays from objects at different diſtances, being united at different diſtances behind the cryſtalline; it were impoſſible, *e. gr.* for the ſame *eye* to ſee diſtinctly any two objects differently diſtant from it. But nature has made a proviſion againſt theſe defects; and that, principally, by bringing the cryſtalline nearer to the *cornea*, or further from it, occaſionally: which is effected two ways; *viz.* either by compreſſing the bulb of the *eye* by the four muſcles all ſtrongly contracted at once, which changes the figure of the aqueous humour, and renders the *eye* oblong; or by the *ligamentum ciliare*, augmenting and diminiſhing the convexity of the cryſtalline, and ſetting it nearer, or further from, the *retina*.

As complex as the mechaniſm of the *eye* may ſeem, and as manifold as the parts are which have a relation hereto; the juſtneſs of viſion ſeems to require an exact habitude in them all.—Thus, though the pupil be no ſubſtantial part of the *eye*, but only an aperture of the *uvea* almoſt perpetually changing its bigneſs, according to the different degrees of light the *eye* chances to be expoſed to; and therefore ſhould ſeem, while this hole remains open, to perform its office, by giving entrance to the incident rays of light: yet Mr. Boyle ſaw a woman, who, after a fever, not being able to dilate the *pupillæ* of her *eyes*, as before, though they were little narrower than ordinary; yet had ſhe thereby almoſt loſt her ſight.—And, on the other ſide, though a competent wideneſs of the pupil be requiſite to a clear and diſtinct viſion; yet, if its dilatation exceeds the due limits, there is thereby produced a conſiderable diſtemper of ſight. It may ſeem, alſo, but a ſlight circumſtance, that the tranſparent coats of the *eye* ſhould be devoid of colour; and of as little moment, that the *cornea* ſhould be very ſmooth, provided it remain tranſparent: yet, when either of theſe circumſtances is wanting, the ſight is greatly vitiated.—Thus we ſee, that, in the yellow-jaundice, the adventitious colour, wherewith the *eye* is tinged, makes the patient think he ſees many objects yellow, which are of contrary colour.

It has of late been an opinion, that though both *eyes* be open, and turned towards an object, yet only one of them, at a time, is effectually employed in giving the repreſentation of it: ſ that the having of two *eyes* ſhould ſeem, in ſome ſort, a redundance.—But Mr. Boyle furniſhes ſeveral conſiderations which invalidate this opinion, and ſhew, that both the *eyes* are of uſ at the ſame time.—He aſſures us, he has found, by frequen experiment, that his two *eyes*, together, beheld an object i another ſituation, than either of them apart would do.—H adds, that he has met with a perſon who had a cataract i his *eye*, for two or three years, without finding any impedimen in his ſight; though others had, during that time, taken notic of a white film that had croſſed his *eye:* till at length, happen ing to rub his ſound *eye*, he was ſurpriſed to find himſelf in th dark: and that a very ingenious perſon, who, by an acciden had one of his *eyes* ſtruck out, told him, that, for ſome month after, he was apt to miſtake the ſituation and diſtances o things. For having frequent occaſion to pour liquors out o one phial into another, after this misfortune he often ſpilt them and let them run quite beſide the necks of the phials, which h thought he was pouring them directly into.

The like was related to him by another perſon, who had, b a wound, loſt the uſe of one of his *eyes*; viz. that, for ſom time after, he often, in pouring out his wine, miſſed t mouth of the bottle, or glaſs.

A yet more conſiderable inſtance, of this kind, the ſame autho gives us, of a noble perſon, who, in a fight, had one of h *eyes* ſtrangely mangled by a muſquet-ball, which came out his mouth; after which accident, he could not well pour drin out of one veſſel into another; but had broken many glaſ by letting them fall out of his hand, when he thought he h given them to another, or ſet them down on the table: added, that this aptneſs to miſjudge of diſtances, and ſituatio continued with him, though not in the ſame degree, for t years.

The comparative ſtructure and anatomy of the *eye* is very curious; the ſituation, number, conformation, *&c.* of this organ, in different animals, being finely and wonderfully adapted to their different circumſtances, occaſions, and manners of living.

In man, and ſome other creatures, an ingenious author obſerves, the *eye* is placed chiefly to look forward; but withal is ſo ordered, as to take in nearly the hemiſphere before it.—In birds, and ſome other creatures, the *eyes* are ſo ſeated, as to take in near a whole ſphere, that they may the better ſeek their food, and eſcape danger.—In others they are ſeated ſo as to ſee behind them, or on each ſide, whereby to ſee the enemy purſuing them: thus, in hares and conies, the *eyes* are very protuberant, and placed ſo much towards the ſide of the head, that their two *eyes* take in nearly a whole ſphere: whereas in dogs, that purſue them, the *eyes* are ſet more forward in the head, to look that way more than backward.

Generally, the head is contrived to turn this and that way, chiefly, for the occaſions of the *eyes*; and generally the *eyes* themſelves are moveable upwards, downwards, backwards, and ſidewiſe, for the more commodious reception of the viſual rays. Where nature deviates from theſe methods, ſhe always makes uſe of very artful expedients to anſwer the ſame end.

Thus, in ſome creatures, the *eyes* are ſet out at a diſtance from the head, to be moved here and there, the one this way, and the other that; as in ſnails particularly, whoſe *eyes* are contained in their four protuberances, like atramentous ſpots fitted to the end of their horns, or rather to the ends of thoſe black filaments, or optic nerves, ſheathed in the horn. Power, *Exper. Phil. Obſ.* 31.

And in other creatures, whoſe *eyes* or head are without motion, and in divers inſects, that defect is ſometimes made up by their having more *eyes* than two; as in ſpiders, which having no neck, and conſequently, the head being immoveable, the defect is ſupplied by the ſituation and multiplicity of their *eyes*; ſome having four, ſome ſix, and others eight, all placed in the fore-front of the head, which is round, like a locket of diamonds. The reaſon Dr. Power gives, is, that being to live by catching ſo nimble and ſhy a prey as flies, they ought to ſee every way, and ſo take them *per ſaltum*, without any motion of the head to diſcover them.

Again, men, and moſt quadrupeds, are found to have ſeveral muſcles belonging to their *eyes*, by help whereof they can turn them any way, and ſo obvert the organ of ſenſe to the object. —But nature not having given that mobility to the *eyes* of flies, ſhe in recompence furniſhes them with a multitude of little protuberant parts, finely ranged upon the convex of their large bulging *eyes*; ſo that by means of theſe numerous little ſtuds, numberleſs rays of light are deflected from objects placed on either hand, above or beneath the level of the *eye*, and conveniently thrown upon that organ, to render the objects they come from, viſible to the animal; and by the help of a good microſcope, and a clear light, ſome hundreds of theſe little round protuberances may be diſcovered, curiouſly ranged on the convexity of a ſingle *eye* of an ordinary fleſh-fly.

So ſcorpions are found to have above an hundred *eyes*; and Swammerdam has obſerved no leſs than two thouſand in the little inſect called *ephemeron*.

In other creatures, the like deficiency is ſupplied by having their *eyes* nearly two protuberant hemiſpheres, each conſiſting of a prodigious number of other little ſegments of a ſphere.

The *eyes* of a cameleon, Dr. Goddard obſerves, reſemble a lens, or convex glaſs, ſet in a verſatile globular ſocket, which ſhe turns backward and forward without ſtirring the head; and ordinarily the one a contrary way to the other.

Laſtly, the mole, which the antients, Ariſtotle, Pliny, Alb. Magnus, *&c.* ſuppoſed to have no *eyes* at all, is now found to furniſh a notable inſtance of the diverſity of the apparatus of viſion. For that animal living altogether under-ground, ſight would generally be uſeleſs to it, and ſo tender a part as the *eye* troubleſome. It has therefore *eyes*, but thoſe ſo exceedingly ſmall, and withal ſituate ſo far in the head, and covered ſo ſtrongly over with hair, that they cannot ordinarily be either of ſervice or diſſervice to it. Yet, to guide and ſecure it a little when it chances to be above-ground, Borrichius, Blaſius, Schneider, Mr. Derham, and others, obſerve, that it can protend, or put them forth beyond the ſkin, and again draw them back at pleaſure, ſomewhat after the manner of ſnails.

In the *eyes* of nocturnal animals is a part not yet mentioned, *viz.* a ſort of tapetum at the bottom of the *eye*, which gives a kind of radiation on the pupil, enabling them to ſee and catch their prey in the dark. Thus, Dr. Willis: *Hujus uſus eſt* oculi *pupillam quaſi jubare inſito illuminare—quare in fele plurimum illuſtris eſt; at homini, avibus, & piſcibus, deeſt.* De Anima Brutor.

He adds, that in ſome perſons the iris has a faculty alſo of darting out light: and inſtances in a man of a hot head, who after a plentiful drinking of generous wine, could ſee to read in the darkeſt night. *Ibid.*

The like Pliny tells us of Tib. Cæſar, that upon his firſt waking in the night, he could ſee every thing for a little while, as if in broad day-light. *Nat. Hiſt.* L. XI. C. 37. And, Dr. Briggs gives a parallel inſtance of a gentleman in Bedfordſhire. *Ophthal.* C. 5. §. 12.

Frogs, beſide the parts of the *eye*, which they have in common with men, and moſt quadrupeds, have a peculiar membrane, or cartilage, which is not commonly perceived, wherewith they can, at pleaſure, cover the *eye*, without too much hindering the ſight; becauſe the membrane is both tranſparent and ſtrong, ſo that it may paſs for a kind of moveable cornea, or occaſional ſafeguard to the *eye*.

In furniſhing frogs with this ſtrong membrane, the providence of nature ſeems very conſpicuous; for they being amphibious creatures, deſigned to paſs their lives in watry places, which for the moſt part abound in plants endowed with ſharp edges, or points; and the progreſſive motion of this animal being not by walking, but by leaping; if his *eyes* were not provided with ſuch a caſe, he muſt either ſhut them, and ſo leap blindfolded, or by leaving them open, muſt run the riſk of having the cornea cut, pricked, or otherwiſe offended: but this membrane, like a kind of a ſpectacle, covers the *eye*, without taking away the ſight; and as ſoon as the occaſion for it is over, the animal withdraws it into a little cell, where it reſts, till its uſe be again required. This membrane becomes viſible, by applying the point of a pin, or any ſuch ſharp thing, to the *eye* of a frog, whilſt his head is held ſteady; for to ſcreen his *eye*, he will preſently cover it therewith, and afterwards withdraw it, upon a removal of the ſuſpected danger.—And becauſe many birds are deſtined to fly among the branches of trees and buſhes, leſt by this means the prickles, twigs, leaves, *&c.* ſhould wound or offend the *eye*, nature has alſo given them ſuch another kind of horny membrane as we ſee in frogs.

Naturaliſts relate wonders of the ſharpneſs and accuracy of the *eye* of ſome animals, as the eagle, *&c.* beyond thoſe of men.

Yet do thoſe of men ſeem improveable to a ſurpriſing degree:—Mr. Boyle inſtances in a major of a regiment of king Charles I. who, being afterwards forced abroad, ventured at Madrid to do his king a piece of ſervice of an extraordinary nature and conſequence; which being there judged very irregular, he was committed to an uncommon priſon, or rather dungeon; having no window belonging to it, only a hole in the wall, at which the keeper put in proviſions, and preſently cloſed it again on the outſide, but not perhaps very exactly.—For ſome weeks this gentleman continued utterly in the dark, very diſconſolate; but afterwards he began to think he ſaw ſome little glimmering of light; and this, from time to time, increaſed, ſo that he could not only diſcover the parts of his bed, and other ſuch large objects, but at length, amidſt this deep obſcurity, could perceive the mice that frequented his chamber, to eat the crumbs of bread which fell upon the ground, and diſcern their motions very well.

The author juſt mentioned, in his *Obſervations on vitiated ſight*, gives us ſome uncommon phænomena, that regard the *eyes*.—He furniſhes ſeveral inſtances of nyctalopias, or people whoſe *eyes* in the day-time were quite dark, or at leaſt ſo dim, that they could hardly diſcern their way; who yet, ſoon after ſunſet, and during twilight, ſaw very clearly.

This brings to mind an odd caſe of an old learned divine, who complained, that during the day-time, his right-hand ſhook ſo much, that he could not manage his pen; and therefore was forced to make uſe of it only by candle-light.

But, which is yet more ſtrange, one of theſe patients, who could only ſee by night, could diſtinguiſh ſome colours, *viz.* black and white, but not others, eſpecially red and green. The meadows to this perſon did not appear green, but of an odd, darkiſh colour; and when ſhe had a mind to gather violets, though ſhe kneeled in the place where they grew, ſhe could not diſtinguiſh them by the colour from the graſs about them, but only by their ſhape or touch.

Artificial EYE, is an optical machine, wherein objects are repreſented after the ſame manner as in the natural *eye*; of conſiderable uſe in illuſtrating the nature and manner of viſion.

Its conſtruction is thus: provide two hollow hemiſpheres of hard, dry wood, well cemented together, to repreſent the ball of the *eye*: let the interior, or fore-hemiſphere, be perforated with a round hole in C (*Tab. Optics, fig.* 9.), to ſupply the place of a pupil; and therein fit a thin, plain glaſs, or, which amounts to the ſame, a concavo-convex glaſs, to ſerve for the cornea. In the inſide, have a ſhort draw-tube G, with a lens convex on both ſides, to do the office of the cryſtalline therein. In the hind, or poſterior hemiſphere, fit another draw-tube E F, with a plain glaſs therein, having its inner ſurface ſmooth, though not poliſhed, repreſenting the retina, and optic nerve.

If now the aperture C be turned towards any object; and the draw-tube F E be gradually pulled out; you will have the object beautifully and ſtrongly repreſented, in all its colours, on the retina, only in an inverted order. See VISION.

It being of no conſequence what the figure of the inner cavity is; any room, or chamber, ſo darkened as only to receive light from a ſingle hole, with a glaſs convex on both ſides fitted therein, will do the office of an *artificial eye*, and exhibit all the objects oppoſed to the aperture, on a wall, or a white cloth ſtretched at a proper diſtance from the aperture: with this circumſtance, that the leſs ſphere the glaſs is a ſegment of, the larger will the figures appear. And this is the celebrated *camera obſcura*. See CAMERA *Obſcura*.

EYE *in Perſpective*. See the article PERSPECTIVE.

Altitude of the **EYE**. See the article ALTITUDE.

EYE, in architecture, is uſed for any round window made in a pediment, an Attic, the reins of a vault, or the like.

Bullock's **EYE**, *Oeil de bœuf*, denotes a little ſky-light in the covering, or roof, intended to illumine a granary, or the like.

The ſame term is applied to the little lutherns in a dome, as in that of St. Peter's at Rome, which has 48 in three rows. See LUTHERN.

EYE *of a Dome*, denotes an aperture at the top of the dome; as that of the Pantheon at Rome, or of St. Paul's at London. —It is uſually covered with a lantern.

EYE *of the Volute*, in architecture, is the centre of the volute, or that point wherein the helix, or ſpiral, whereof it is formed, commences.—Or, it is the little circle in the middle of the volute, wherein are found the thirteen centres for deſcribing the circumvolutions thereof. See *Tab. Archit. fig.* 41. lit. b. and *fig.* 42.

EYE, in agriculture and gardening, denotes a little bud, or ſhoot, inſerted into a tree by way of graft. See ENGRAFTORY.

The term *eye*, *oculus*, is alſo uſed for a gem, or bud, as it ſtands on the parent tree.—A tree with fine, ſtrong, healthy *eyes*. La Quintin. P. 1. C. 3. Art. 6. The good branches are thoſe which come in the order of nature, and that have large *eyes* pretty near each other. *Id*. This branch muſt be cut off at the third *eye*. Liger. See BUD, and PRUNEING.

EYE, among naturaliſts, is ſometimes alſo uſed for a hole, or aperture.—Whence, it is that the firſt of the larger inteſtines is called *cæcum*, or the blind gut, as having no *eye*, or perforation.—For a like reaſon the chemiſts call a cloſe veſſel, uſed in diſtillation, a *blind head*.

EYE, in printing, is ſometimes uſed for the thickneſs of the types, or characters, uſed in printing: or, more ſtrictly, it is the graving in relievo, on the top of the letter; otherwiſe, called its *face*.

It is the *eye* or *face* that makes the impreſſion; the reſt, which they call the *body*, ſerving only to ſuſtain it.

The *eye* of the e, is the little aperture at the head of that character, which diſtinguiſhes it from the c. See E.

EYE is alſo uſed among jewellers, for the luſtre and brilliance of pearls, and precious ſtones; more uſually called the *water*.

EYE-*brow*.	See	SUPERCILIUM.
EYE-*lids*.		PALPEBRÆ.
EYE-*Water*.	See	WATER.
White of the EYE.		WHITE.

Bull's-**EYE**, in aſtronomy, a ſtar of the firſt magnitude, in the conſtellation Taurus; by the Arabs called *Aldebaran*. Its longitude, latitude, &c. ſee among thoſe of the other ſtars in the conſtellation TAURUS.

Cat's-**EYE**, *Oculus Cati*, in nat. hiſt. a precious ſtone; called alſo *ſun's eye*, *oculus ſolis*; and taken by Dr. Woodward, for the aſterias of the antients.

It is tranſparent, of a glittering grey, interchanged with a ſtraw-colour: uſually oblong as to figure, and not unlike the opal, only much harder—It is found in divers parts of the Eaſt-Indies; but thoſe of the iſland of Ceylon are the moſt prized. See Supplement, article ASTERIAS.

Crab's-**EYE**, *Oculus Cancrorum*. See CRABS-*Eyes*.

Goat's-**EYE**, *Oculus Caprinus*, is when there is a white ſpeck on the pupil of the *eye*, as is ſeen in the *eyes* of goats. Phyſicians call it *Ægias*.

Hare's **EYE**, *Oculus Leporinus**, in medicine, a diſeaſe ariſing from a contraction of the upper *eye-lid*, which prevents its being able to cover its part of the *eye*: ſo that the patient is obliged to ſleep with the *eye* half-open, after the manner of *hares*.

* Phyſicians call it *lagophthalmia*, a Greek word ſignifying the ſame thing; being compounded of λαγωος, *hare*, and οφθαλμος, *eye*.

EYRE*, or EIRE, in law, ſignifies the court of juſtices itinerant.

* The word ſeems formed of the old French, *irre*, *iter*, way, track.

Hence juſtices in *eyre*, are thoſe whom Bracton calls, *juſticiarii itinerantes*.

EYRE *of the foreſt*, is otherwiſe called *juſtice-ſeat*; which by the antient cuſtoms was to be held every three years, by the juſtices of the foreſt journeying up and down for that purpoſe.

EYRIE, or AYRIE, among falconers, the neſt where hawks ſit, and hatch, and feed their young.

Hence, a young hawk newly taken from the neſt, is called an *eyeſs*.

EZEKIEL's *Reed*, or *Rod*, a ſcripture-meaſure, computed by late writers to amount to 1 Engliſh foot, 11 inches, [illegible] of an inch.

EZRA, or ESDRAS, in divinity.—*The Books of* EZRA, are two books of holy ſcripture, compoſed by *Ezra*, or *Eſdras*, the high-prieſt of the Jews during the captivity; and particularly about the time when they returned to Paleſtine, under the reign of Cyrus.

The original of the books of *Ezra* is in Hebrew; and the ſecond is particularly called by the Hebrews, and from them by the Engliſh tranſlators, *Nehemiah*.

The two contain the hiſtory of the return of that people from the Babyloniſh captivity, and their re-eſtabliſhment in the Holy Land. They are canonical, and are allowed as ſuch both by the church and the ſynagogue.

The third and fourth books of *Ezra*, called in the Engliſh verſion, the firſt and ſecond books of *Eſdras*; though held by ſome, particularly the Greeks, for canonical; are thrown by the Engliſh church into the number of apocryphal books: being only extant in Greek.

The *Canon of Ezra*, is the collection of the books of ſcripture made by that pontiff.—It appears, however, that the ſynagogue added other books to *Ezra*'s canon; witneſs the book of *Ezra* itſelf, and that of Nehemiah.

F.

F, The ſixth letter of the alphabet, and the fourth conſonant.

The letter *F* may be either conſidered abſolutely, and in itſelf, or with regard to the particular languages where it is found. In the firſt view, *F* is generally placed by grammarians among the mutes, like the Φ among the Greek grammarians: though others give it the quality of a ſemi-vowel. Joh. Conrad. Amman (in his diſſertation *de Loquela*) divides the conſonants into ſingle, and double; and the ſingle into hiſſing and exploſive. Among thoſe called hiſſing, there are ſome pronounced by the application of the upper teeth to the lower lip; and theſe are the *F* and the *ph*. — The reaſon why ſome account the *F* a ſemi-vowel, and Amman places it among the hiſſers, is, that one may pronounce a little ſound without any other motion of the organs, than what is neceſſary to the pronunciation of the *F*.

This letter is derived to us from the Romans, who borrowed it from the Æolians; among whom it is called digamma, or double gamma, as reſembling two Γ's, one over the other. Add, that the digamma ſeems in its origin to have been no other than the Greek Φ, which being made at three ſtrokes, degenerated at length into the figure F. For the letter Φ being compounded of an omicron, with a perpendicular drawn through it, if that perpendicular be made firſt, and the O at two ſtrokes afterwards, *viz.* firſt the upper, then the under part, it may happen, eſpecially in writing faſt, that the two parts ſhall not join; and even, inſtead of two arches of circles, haſte and conveniency may naturally enough make two ſtrait lines.

Thus it is that the tranſverſe ſtroke of the letter Ψ is frequently ſeen ſtrait; and the letter in the form of a croſs †. And what confirms this tranſmutation of the Φ into F ſtill further, is, that on the medals of Philip, and the kings of Syria, in the words ΕΠΙΦΑΝΟΥΣ and ΦΙΛΑΔΕΛΦΟΥ, the phi is frequently ſeen in the form juſt mentioned, *i. e.* it has no circle or omicron; but acroſs the middle of the perpendicular is a kind of right line, formed only of two dots, the one on the right ſide, and the other on the left, repreſenting a croſs, †.

Such appears to be the origin of the letter *F*; which, of conſequence, is no other than a corruption of the Greek Φ: and accordingly, on the medals of the Faliſci, the *F* is ordinarily put in lieu of the Greek Φ. But it muſt be added, that though the Greek and Latin letter were thus the ſame thing, yet the ſound was much ſofter among the Latins, than among the Greeks; as was long ago obſerved by Terentianus.

The Romans, for ſome time, uſed an inverted F, Ⅎ, in lieu of a V conſonant, which had no peculiar figure in their alphabet: thus in inſcriptions we meet with TERMINAℲIT, DIℲI, *&c.* Lipſius (in his comment on the annals of Tacitus, l. xi.), Covarruvias, and Dauſquius (in his treatiſe of orthography), hold that it was the emperor Claudius who firſt introduced this uſe of the inverted digamma, or Ⅎ; which they call the invention of a letter, as being equivalent to the invention of the letter V. — In effect, Tacitus (in the 4th chapter of the ſaid book) and Suetonius (in his life of Claudius, c. 41.) aſſure us, that the emperor invented three letters; one of which, Lipſius ſhews, muſt be the inverted Æolic digamma: but, before Claudius, Varro made an attempt to introduce the ſame thing, but could not ſucceed. All the authority of an emperor was neceſſary to make it take; nor did it ſubſiſt long; for after Claudius's death it was thrown by again; as we are told by the ſame Tacitus: and Quintilian obſerves, it did not ſubſiſt in his time. So far is the cuſtom of a language from being ſubject even to the maſters of the world.

It may be added, that the pronunciation of the *F* is almoſt the ſame with that of the V; as will be evident by attending to the manner of pronouncing the following words, *F*avour, *V*anity, *F*elicity, *V*ice, *F*oment, *V*ogue, *&c.* The French particularly, in borrowing words from other languages, uſually turn the final *v* into an *f*, as chetif of cattivo, neuf of novus, nef of navis, *&c.*

In the later Roman writers we find the Latin *F* and Greek Φ *ph* frequently confounded; as in *F*alanx, for *Ph*alanx; *F*iloſophia, for *Ph*iloſophia, *&c.* Which abuſe is ſtill retained by many French writers, who write Filoſophie, Filippe, Epiſane, *&c.* and even ſometimes by the Engliſh, as in Fantaſy, Filtre, *&c.*

F, in the civil law. Two ff's, joined together, ſignify the Pandects: ſee the reaſon thereof under the article PANDECT.

F, or FA, in muſic, denotes the baſs-clef; being placed on the fourth line upwards.

Indeed the character or ſign by which the *f* and *c* clefs are marked, bear no reſemblance to thoſe letters. Mr. Malcolm thinks it were as well, if we uſed the letters themſelves; but cuſtom has carried it otherwiſe. The ordinary character of the *F* or baſe-clef is): which Kepler takes a deal of pains to deduce, by corruption, from the letter F itſelf.

F, in our antient cuſtoms, was a ſtigma or brand.

He that ſhall maliciouſly ſtrike any perſon with a weapon in church or church-yard, or draw any weapon there with intent to ſtrike, ſhall have one of his ears cut off; and if he have no ears, he ſhall be marked on the cheek with an hot iron, having the letter *F*, whereby he may be known for a fray-maker, or fighter.

F, in phyſical preſcriptions, ſtands for *fiat*, let it be done: as *F. S. A.* denotes as much as *fiat ſecundum artem.*

F, among ſuch as give us the numeral value of letters, ſignifies 40, according to the verſe,

Sexta quaterdenos gerit quæ diſtat ab alpha.

And when a daſh was added a-top, F̄, it ſignified 40,000.

FA is one of the notes of muſic; being the fourth, riſing in the order of the gammut, ut, re, mi, *fa*. See NOTE.

FABIANS, FABII, in antiquity, a part of the Luperci. See LUPERCI.

Thoſe prieſts conſiſted of two colleges, the firſt of which was called the *Fabii*, and the ſecond the Quintilii, from their reſpective chiefs. — The *Fabii* were for Romulus, and the Quintilii for Remus.

FABLE, a tale, or feigned narration, deſigned either to inſtruct or divert: or, as Monſ. de la Motte defines it, an inſtruction diſguiſed under the allegory of an action.

Fable ſeems to be the moſt antient way of teaching: the principal difference between the eloquence of the antients, and that of the moderns, conſiſts, according to Pere Boſſu, in this, that our manner of ſpeaking is ſimple and proper; and theirs full of myſteries and allegories. With them, the truth was uſually diſguiſed under thoſe ingenious inventions, called, by way of excellence, *μυθοι*, *fabulæ*, *fables*, that is, words; as intimating that there was the ſame difference between theſe *fabulous* diſcourſes of the learned, and the common language of the people, as between the words of men, and the voices of beaſts.

At firſt, *fables* were only employed in ſpeaking of the divine nature, as then conceived: whence the antient theology was all *fable*. The divine attributes were ſeparated as into ſo many perſons; and all the œconomy of the godhead laid down in the feigned relations and actions thereof; either by reaſon the human mind could not conceive ſo much power and action in a ſingle and indiviſible being; or, perhaps, becauſe they thought ſuch things too great and high for the knowlege of the vulgar.

And as they could not well ſpeak of the operations of this almighty cauſe, without ſpeaking likewiſe of its effects; natural philoſophy, and at length human nature, and morality itſelf, came thus to be veiled under the ſame *fabulous* allegoric expreſſion; and hence was the origin of poetry, and particularly of epic poetry.

The critics, after Aphthonius and Theon, reckon three kinds of *fables*, rational, moral, and mixed.

Rational FABLES are called alſo parables: theſe are relations of things ſuppoſed to have been ſaid and done by men; and which might poſſibly have been ſaid and done, though in reality they were not. — Such, in the ſacred writings, as thoſe of the ten virgins; of Dives and Lazarus; the prodigal ſon, *&c.* Of theſe rational *fables*, we have likewiſe about a dozen in Phædrus.

Moral FABLES, called alſo apologues, are thoſe wherein beaſts are introduced as the actors, ſpeakers, *&c.* Theſe are alſo called Æſopic *fables*: not that Æſop was their inventor, for they were in uſe long before him, *viz.* in the times of Homer and Heſiod; but becauſe he excelled therein. In this kind, not only beaſts, but even ſometimes trees, inſtruments, *&c.* are ſuppoſed to ſpeak.

The *rational* differs from the *moral fable* in this; that the former, though it be feigned, might be true: but the latter is impoſſible; as it is impoſſible for brutes or ſtocks to ſpeak.

Mixed FABLES are thoſe compoſed of both ſorts, rational and moral; or wherein men and brutes are introduced converſing together. — Of theſe we have a fine inſtance, in Juſtin,

l. xxxiii. c. 4. made by a petty king, to alarm the antient Gauls againſt the Maſſilians, who, arriving out of Aſia, in Spain, charmed with the place, begged leave of the inhabitants to build a city. To this effect:

A bitch, big with young, begged of a ſhepherd a place to lay her whelps in; which when ſhe had obtained, ſhe further begged for leave to rear them in the ſame. At length, the whelps being now grown up; depending on the ſtrength of her own family, ſhe claimed the property of the place.—So the Maſſilians, who are now only ſtrangers, will hereafter pretend to be maſters of this country.

As to the laws of *fable*; the principal are; 1ſt, That to every *fable* there be ſome interpretation annexed, to ſhew the moral ſenſe, or deſign thereof. This interpretation, if it be placed after the *fable*, is called ἐπιμύθιον, or *affabulatio*; if before it, προμύθιον, *præfabulatio*.—2dly, That the narration be clear, probable, ſhort, and pleaſant. To preſerve this probability, the manners muſt be expreſſed, and cloſely kept to, as in poetry. See PROBABILITY, and MANNERS.

M. de la Motte has ſome fine remarks on the ſubject of *fables*, at the beginning of his *fables nouvelles, dediées au roi*, 1719. A *fable*, according to this polite writer, is a little epic poem; differing in nothing from the great one, but in extent, and in that being leſs confined as to the choice of its perſons, it may take in all ſorts at pleaſure, as gods, men, beaſts, or genii; or even, if occaſion be, create perſons, *i. e.* perſonify virtues, vices, rivers, trees, *&c.* Thus M. de la Motte very happily introduces virtue, talent, and reputation, as perſons making a voyage together. See EPOPEA, and PERSONIFYING.

That author ſuggeſts two reaſons why *fables* have pleaſed in all ages and places. The firſt is, that ſelf-love is ſpared in the inſtruction. The ſecond, that the mind is exerciſed by the allegory. Men do not love direct precepts; too proud too condeſcend to thoſe philoſophers who ſeem to command what they teach, they will needs be inſtructed, in a more humble manner: they would never amend, if they thought that to amend were to obey. Add, that there is a ſort of activity in the mind, which muſt be humoured. It pleaſes itſelf in a penetration, which diſcovers more than is ſhewn; and in apprehending what was hid under a veil, fanſies itſelf in ſome meaſure the author of it. The *fable* muſt always imply or convey ſome truth: in other works, delight alone may ſuffice; but the *fable* muſt inſtruct. Its eſſence is to be a ſymbol, and of conſequence to ſignify ſomewhat more than is expreſſed by the letter. This truth ſhould for the generality be a moral one; and a ſeries of fictions conceived and compoſed in this view, would form a treatiſe of morality preferable to any more direct and methodical treatiſe: accordingly, Socrates, we are told, had a deſign to compoſe a courſe of morality in this way. This truth ſhould be concealed under the allegory; and in ſtrictneſs, it ought not to be explained either at the beginning or end.

The truth, or idea intended, ſhould ariſe up in the reader's mind from the *fable* itſelf. However, for the conveniency of the leſs diſcerning readers, it may be a good way to point out the truth or moral in preciſer terms. To have the moral at the end of the *fable*, ſeems much better than at the beginning: the mind is apt to be foreſtalled in the latter caſe; I carry the key all along with me, ſo that there is no room to exerciſe my mind, in finding any thing myſelf.

The image, M. de la Motte obſerves, muſt be juſt, and expreſs the thing intended, directly, and without any equivoque: it muſt be one, that is, all the parts muſt be viſibly acceſſory to one principal end; and it muſt be natural, that is, founded on nature, or at leaſt on opinion.

The writers of *fables* are not many. If there were any before Æſop, his ſucceſs has quite effaced their memory; and even occaſioned all the good things of that kind to be aſcribed to him. His life, as written by Planudes, is itſelf a thorough *fable*. It muſt be owned to be very happily imagined, to make the inventor of *fables* a ſlave, and his maſter a philoſopher. The ſlave has his maſter's pride and ill humour, to deal withal, throughout. His leſſons were all contained in the *fables* themſelves; and the readers were left the pleaſure of picking them out themſelves.

It is generally allowed among the learned, that though the matter and invention of the *fables* be Æſop's, the turn and expreſſion is not. The Greek is of Planudes, and bad Greek it is in the judgment of F. Vavaſſor, *de ludicra dict.* Some authors will have Socrates the author of the *fables* of Æſop; others attribute them to Solomon; and others to Homer.

Phædrus was a ſlave too, and a freed-man; but he had the advantage over Æſop in education. He is only a fabuliſt, as he tranſlates and copies. Though his *fables* be generally ſhort, yet is he prolix, compared to his author. His ſtyle however is always florid, his deſcriptions conciſe, and his epithets ſuitable: he frequently adds graces never dreamt of by the inventor; and every-where enriches the ſimplicity of Æſop, in the moſt delicate manner.

Pilpay, another fabuliſt, governed Indoſtan a long time under a powerful emperor: but he was not the leſs a ſlave; for the prime miniſters of ſuch princes are always more ſo than the meaneſt ſubjects. Pilpay compriſed all his politics in his *fables*; and accordingly his work long continued the book of ſtate, or the diſcipline of Indoſtan. It was tranſlated into Perſian and Arabic, and ſince into the modern languages. His *fables*, M. de la Motte obſerves, are rather famous than good; but he is the inventor, and the merit of invention will always compenſate for a deal of faults. His *fables* are often wild, and artleſs; and the collection is a ſort of romantic aſſemblage of men and genii, compoſed, in its kind, like Cyrus or Orlando; where the adventures are continually thwarting and claſhing with each other.

We ſay nothing of the *fables* of Gabrias, or Babrias, Avienus, Abſtemius, *&c.*

Among the moderns, we have none that deſerve to be ſeen in the company above-mentioned, except perhaps Meſſ. de la Fontaine, and de la Motte. The firſt of whom has picked out all the beſt things in Æſop, Phædrus, and Pilpay, and given them anew in French, with a delicacy and ſimplicity peculiar to himſelf; and which, in the judgment of his countrymen, ſets him even above Phædrus.

The latter, rather than take up with what de la Fontaine had left, choſe to be an inventor himſelf. He has ſucceeded. His *fables* are many of them very happy, though ſome think them too full of thought and reaſoning. His verſification is infinitely more correct than that of la Fontaine; and more ſuitable to the ſubject than that of le Noble.

FABLE is alſo uſed for the plot of an epic, or dramatic poem; or the action which makes the ſubject of ſuch poem, or romance. See POEM, DRAMA, EPIC, and ACTION.

The *fable*, according to Ariſtotle, is the principal part, and as it were the ſoul, of a poem. It muſt be conſidered as the firſt foundation of the compoſition; or the principle, which gives life and motion to all the parts.—In this ſenſe, the *fable* is defined, "A diſcourſe invented with art, to form "the manners by inſtructions diſguiſed under the allegory o "an action."

The epic *fable*, according to Boſſu, is confined to the rational kind; *i. e.* the actors and perſons are to be gods an men. And yet it admits of a deal of latitude: it may b either grave, illuſtrious, and important; or low, and popular; either whole, or defective; in verſe, or in proſe; much epiſodified, or brief; rehearſed by an author, or repreſented b actors on the ſcene: all which are only ſo many circumſtances, which do not make any alteration in the nature an eſſence of the *fable*.

The characters that ſpecify the epic *fable* are theſe: it is ra tional and probable; it imitates a whole, and an importan action; and it is long, and related in verſe. None of whic properties affect the nature of the *fable*; or make it leſs *fable* than thoſe of Æſop.

The *fable*, according to Ariſtotle, conſiſts of two eſſentia parts; *viz.* truth, as its foundation; and fiction, which di guiſes the truth, and gives it the form of *fable*. Th truth is the point of morality intended to be inculcated the fiction is the action, or words the inſtruction is covere under.

To make a plot or *fable*; the firſt thing, according to th great critic juſt mentioned, is to pitch on ſome moral i ſtruction to be exemplified.

E. gr. I would exhort two brothers, or other perſons, wh have ſome common intereſt, to live in amity, in order to pr ſerve it. This is the end of the *fable*, and the firſt thing I hav in view. In order to this, I endeavour to impreſs this maxi on their minds, that "ill underſtanding ruins families, an "all kinds of ſociety." This maxim is the moral, or truth which is to be the ground of the *fable*: which moral truth now to be reduced into action; and a general action to b framed from ſeveral ſingle and real actions of ſuch as we ruined by ill underſtanding.

Thus, *e. gr.* I ſay, that certain perſons united together f the preſervation of ſomething that belonged to them in co mon, coming to diſagree; their diviſion left them open to a enemy, who ruined them.—Such is the firſt plan of a *fabl* The action preſented by this narration has four condition it is univerſal, imitated, feigned, and contains a moral tru under an allegory.

The names given to the ſeveral perſons, begin to ſpecify t *fable*. Æſop uſes thoſe of brutes. Two dogs, ſays he, a pointed to watch a flock, fall out, fight, and leave all open the wolf, who carries off what he pleaſes.

If you would have the action more ſingular, and rend the *fable* rational, take the names of men. Pridama and Orontes, brothers by a ſecond venter, were left ve rich by their father's will: but diſagreeing about the p tition of their effects, they engaged themſelves ſo far again each other, that they took no care of their common intere againſt Clitander, their eldeſt brother by the firſt vente which laſt, artfully inflaming their quarrel, and feigning had no view but to ſome moderate augmentation, whi might be made him without preſſing them; he, in the me time, gets the judges on his ſide, and the other perſons i truſted with the affair, procures the will to be annulled, a becom becomes intitled to the whole eſtate the brothers were at variance about.

Now, this *fable* is rational; but the names being feigned, as well as the things, and, beſides, the perſons being only of a private rank, it is neither epic, not tragic. However, it may be employed in comedy; it being a rule laid down by Ariſtotle, that epic and tragic poets only invent things; but comic poets invent both names and things. See COMEDY; &c.

To accommodate this comic *fable* more to the mode, and taſte of the town, ſome Dorinda muſt be imagined to have been promiſed to Clitander; but her father, finding him diſinherited by the will, changes his reſolution, and will have her marry one of the rich, ſenſeleſs, younger brothers, whom ſhe deſpiſed, &c.

But to return. The fiction may be ſo diſguiſed with the truth of hiſtory, that there ſhall not appear any fiction at all. To effect this, the poet looks back into hiſtory, for the names of ſome perſons to whom the feigned action either really or probably did happen; and relates it under thoſe known names, with circumſtances which do not change any thing of the ground of the *fable*.

Thus, in the war of 1302. between king Philip the Fair, and the Flemiſh: the French army was under the command of Robert earl of Artois, as general, and Ralph de Neſle, his conſtable. Being in the plain of Courtray, in ſight of the enemy, the conſtable was of opinion it were eaſy to ſtarve them; and that it was not worth while to hazard ſo many of the nobles, againſt a baſe, deſperate populace. This advice the earl rejected with ſcorn, taxing the conſtable with cowardice and infidelity. It ſhall be ſeen, anſwers the conſtable, which of us two is the braveſt, and the moſt faithful; and clapping ſpurs to his horſe, led the whole French cavalry precipitately to the charge. This precipitation, with the duſt they raiſed, prevented their ſeeing a large deep ditch, behind which the Flemiſh were poſted. The cavalry therefore, plunging into it, periſhed miſerably; and the infantry, aſtoniſhed with the loſs, let themſelves be cut in pieces by the enemy. Thus may fiction be made to conſiſt with truth.

As for the *fable*, it matters but little, whether the perſons be called dogs; or Orontes and Pridamant; or Robert of Artois, and Ralph de Neſle; or Achilles and Agamemnon.

The epic *fable* we ſhall now propoſe in its juſt extent, under theſe two names laſt-mentioned. It is too ſhort for the epopea in the two preceding ones. We chooſe the *Fable* of the Iliad, as being the fineſt plan of an epic poem in the world, and at the ſame time the moſt uſeful ſyſtem of the precepts of the art; it being hence that Ariſtotle was furniſhed with all his reflections.

In every diſcreet undertaking, the end is the firſt thing propoſed; and by this the whole work, and all its parts, are regulated: conſequently, the deſign of the epopea being to form the manners, it is with this firſt view the poet muſt begin.

Now, the philoſopher dwelling on virtues and vices in general, he inſtructions he gives, ſerve equally for all ſtates, and all ges; but the poet has a more immediate regard to his countrymen, and the preſſing occaſions of his fellow-citizens. On his view it is that he chooſes his moral, which he is to inſinuate nto the people, by accommodating himſelf to their peculiar uſtoms, genius, and inclinations. See how Homer has acquitted himſelf of all this.

He ſaw the Greeks, for whom he wrote, divided into as many ates as cities; each whereof was a body apart, and had its overnment independent of the reſt. Yet were theſe different ates frequently obliged to unite into one body againſt their ommon enemies. Here then were two ſorts of government, oo different to be commodiouſly treated in one poem: the oet accordingly had recourſe to two *fables*; the one for all Greece, conſidered as confederated together, only conſiſting independent parts; the other, for each particular eſtate, ch as they are in time of peace, and without the firſt relation. The firſt is the ſubject of the Iliad, the ſecond of the dyſſee. See ILIAD, and ODYSSEE.

or the firſt kind of government, all experience agrees, that only thing which can render it happy, and its deſign ſucceſsful, is a good underſtanding, and due ſubordination among ſeveral chiefs that compoſe it; and that miſunderſtandings, a deſire of ſway, &c. are the inevitable bane of ſuch nfederacies. The beſt inſtruction therefore that could be en them, was to ſet before their eyes the deſtruction of the ople, and even of the princes themſelves, through the ambition and diſcord of theſe latter. Homer therefore, for the und or moral of his *fable*, choſe this great truth, that the underſtandings of princes ruin their ſtates. "I ſing, ſays he, the wrath of Achilles, ſo fatal to the Greeks, and which deſtroyed ſo many heroes, occaſioned by a diſagreement between king Agamemnon and that prince."

enforce this truth, he repreſents divers confederate ſtates at variance, and unproſperous; then reconciled and orious. All which he thus includes in one univerſal on.

eral independent princes league againſt a common enemy: whom they chooſe as their leader, affronts the braveſt of all the confederacy; upon which the offended prince withdraws, and refuſes any longer to fight for the common cauſe. This miſunderſtanding gives the enemy ſo much advantage, that the confederates are ready to relinquiſh the enterprize. The diſaffected perſon himſelf becomes a ſharer in the calamities of his allies; one of his chief friends and favourites being killed by the chief of the enemies. Thus, both parties, grown wiſe at their own coſts, are reconciled. Upon which the valiant prince, again joining in the war, turns the ſcale to his own party, and kills the enemy's chief.

Such is the firſt general plan of the poem. To render this probable, and more intereſting, circumſtances of time, place, perſons, &c. are to be added; that is, the poet looks into hiſtory, or tradition, for perſons, to whom ſuch actions may with truth or probability be attributed.

He pitches on the ſiege of Troy, and ſuppoſes the action to have paſſed there. The brave, choleric character he calls Achilles; the general, Agamemnon; the chief of the enemies, Hector, &c. To inſinuate himſelf unto his readers, he accommodates himſelf to their manners, genius, views, &c. and, to render his *fable* more intereſting, makes his chief perſons, and thoſe who remained at length victorious, to be Greeks, the fathers of thoſe very people. The courſe of the work is filled up, and extended, with other uſeful leſſons and inſtructions.

That the epopea in all its glory is ſtill juſtly and ſtrictly a mere *fable*, in the ſame ſenſe as the fictions of Æſop are, is ſhewn by F. Boſſu, in a parallel between the *fable* of the Iliad, and that of Æſop already mentioned. The moral inſtruction is viſibly the ſame in both: ſo is the fiction. All the difference lies in the names and qualities of the perſons.

Homer's are kings; he calls them Achilles, Patroclus, &c. and the general good to be preſerved, he calls the Greeks. Æſop, after this manner, gives his perſons the names of beaſts. The dogs are confederated, the wolf is their enemy; and what Homer calls the Greeks, Æſop calls ſheep. One ſays, that while the confederate princes are at variance, Hector ruſhes on the Greeks, and makes them pay dear for the folly of their ſovereigns (*delirant reges, plectuntur Achivi*): but that the allies, brought by misfortunes to themſelves again, reunite, repulſe Hector, and kill him. The other, that while the dogs are together by the ears, the wolf falls on the ſheep; and that the dogs, ſeeing the havock he makes, join together, drive him away, and kill him.

The two *fables* were capable of a ſtill nearer reſemblance. Homer has extended his by long ſpeeches, deſcriptions, compariſons, and particular actions; and that of Æſop might be amplified after the like manner, without corrupting or altering it.

There needs only to relate what cauſe ſet the dogs at variance, and ſhew the riſe of the fatal wrath in all its circumſtances; to make fine deſcriptions of the plain wherein the ſheep fed, and of ſome neighbouring wood, where the wolf was ſheltered; to give this enemy whelps to rear; make them follow their ſire in ſearch of prey; and deſcribe the carnage they made at divers expeditions. Nor ſhould the genealogy of the heroes be forgotten: the wolf ſhould boaſt himſelf a deſcendant of Lycaon; and one of the dogs be ſprung in a direct line from Canicula. Which laſt would be the proper hero of the poem, as being hot, and apt to be enraged. He would repreſent the perſon of Achilles to admiration; and the folly of ſome Ajax, his couſin, would afford a good proof of ſo divine an extraction. Nothing more were required to engage heaven in the cauſe, and divide the gods; which, no doubt, have as much right in Æſop's republic, as in the ſtates of Homer. Witneſs Jupiter taking care to give a king to the nation of the frogs.

The reader has here field enough for an epopea; if he have any thing of fancy and expreſſion, and do but take care to repeat, as often as Homer does,

Τον δ' απαμειβομενος προσεφη ποδας ωκυς——

FABRIC *, the ſtructure, or conſtruction, of any thing, particularly of a building.

> * The word is formed of the Latin *fabrica*, which originally ſignifies a ſmith's ſhop, or forge.

In Italy, the word *Fabric* is applied to any conſiderable building: in France it rather ſignifies the manner of building.

FABRIC *Lands*, are lands given towards the maintenance, rebuilding, or repair of cathedrals, or other churches; mentioned in the act of oblivion, 12 *Car*. II. cap. 8.

In antient time almoſt every one gave by his will more or leſs to the *fabric* of the cathedral, or pariſh-church, where he lived.

FABULOUS, denotes ſomething that has a relation to fable.

Varro divides the duration of the world into two earlier ſtates, or periods. The firſt, αδηλον, the obſcure or dark, including all the time before the deluge: for the heathens had ſome faint idea of a deluge, and a ſort of tradition founded thereon; but knew nothing of what had paſſed before.

The ſecond period he calls the μυθικον, *fabulous* age, including the time from the deluge to the firſt olympiad; and making, according to Petavius, 1552 years; or to the deſtruction of Troy, which was 1164 years after the deluge, or 308 after the delivery from Egypt.

This period is called ſometimes *fabulous*, and ſometimes heroic: the firſt on account of the fables wherein the hiſtory and learning of thoſe ages are veiled: the ſecond, from the heroes, or ſons of the gods, whom the poets feign to have lived in thoſe days.

FACE, the ſurface, or firſt ſide which a body preſents to the eye. See SURFACE.

We ſay, the *face* of the earth, of the waters, &c. Polyhedrons have ſeveral *faces*.

A die, or cube, has ſix *faces*.

FACE is particularly uſed for the viſage of an animal, and eſpecially of a man; as being in him the only part of the body that ordinarily appears to the eye.

The Latins call it *facies*, *vultus*, *os*, &c.

The great variety obſervable in mens *faces*, voices, and handwritings, furniſhes a noble argument of a Providence.

The human *face* is called the image of the ſoul, as being the ſeat of the principal organs of ſenſe; and the place where the ideas, emotions, &c. of the ſoul are chiefly ſet to view. Pride and diſdain are ſhewn in the eyebrows, modeſty on the cheeks, majeſty in the forehead, &c. It is the *face* which ſhews the ſex, age, temperament, health, or diſeaſe, &c.

The *face*, conſidered as the index of the paſſions, habits, &c. of the perſon, makes the ſubject of phyſiognomy.

Anatomiſts uſually divide the *face* into two parts, the upper, and lower: the upper is the front, or forehead; the lower includes the eyes, noſe, ears, mouth, and chin. See each part deſcribed under its reſpective article.

FACE, or FAÇADE, is ſometimes uſed for the front of a building; or the ſide on which the chief entrance is: as alſo for the ſide it preſents to a ſtreet, garden, court, &c. And ſometimes for any ſide oppoſite to the eye.

FACE, FACIA, or FASCIA, in architecture, denotes a flat member, having a conſiderable breadth, and but a ſmall projecture.

Such are the bands of an archdrave, larmier, &c.

FACE *of a ſtone*, is the ſurface, or plain part, which is to lie in the front of the work.—The *face* is eaſily known when the ſtone is ſcapled, as being always oppoſite to the back; and the back going rough as it comes from the quarry.

The workmen generally chooſe to make one of thoſe ſides the *face*, which, when in the quarry, lay perpendicular to the horizon; and conſequently the breaking, and not the cleaving way of the ſtone.

FACES *of a baſtion* are the two foremoſt ſides, reaching from the flanks to the point of the baſtion, where they meet.

Theſe are commonly the firſt undermined, by reaſon they reach fartheſt out, and are the leaſt flanked, and therefore weakeſt. They are repreſented by the lines BC, and SC, *Tab. Fortif. fig.* 1.

FACE *of a place* denotes the interval between the points of two neighbouring baſtions, containing the curtin, the two flanks, and the two *faces* of the baſtions that look towards one another.

This is otherwiſe called the *tenaille* of the place.

FACE *prolonged*, in fortification, is that part of a line of defence raſant, which is between the angle of the epaule, or ſhoulder of a baſtion, and the curtin: or the line of a defence raſant diminiſhed by the *face* of the baſtion.

FACE, in aſtrology, is uſed for the third part of a ſign. Each ſign is ſuppoſed to be divided into three *faces*: the ten firſt degrees compoſe the firſt *face*; the ten following ones the ſecond; and the laſt ten the third. Venus is in the third *face* of Taurus, that is, in the laſt ten degrees thereof. See SIGN.

FACET, or FACETTE, a little face, or ſide of a body cut into a great number of angles.

Multiplying-glaſſes are cut in *facets*, or *facet-wiſe*. Diamonds are alſo cut in *facets*, or tables.

FACIA, in architecture. See the article FASCIA.

FACIES *Hippocratica*, in medicine, is when the noſtrils are ſharp, the eyes hollow, the temples low, the tips of the ears contracted, the forehead dry and wrinkled, and the complexion pale or livid.

The *facies Hippocratica* is chiefly obſerved toward the period of phthiſes, and other conſumptions; and is held a ſure prognoſtic of death.

FACTION, a cabal, or party, formed in a ſtate to diſturb the public repoſe.

The moſt celebrated *factions* are that of the Guelphs and Gibelins, who kept Italy in alarm for many ages; and with us that of the Whigs and Tories.

FACTION was originally an appellation given the divers troops, or companies of combatants in the games of the Circus. See CIRCUS.

Of theſe there were four, *viz.* the green *faction*, the blue *faction*, the red *faction*, and the white *faction*.

Theſe *factions*, with their liveries and badges, were at length aboliſhed: the emulation which was at firſt between them, growing to ſuch a height, that in Juſtinian's time they came to blows about it.

FACTITIOUS ſignifies any thing made by art; in oppoſition to what is the produce of nature.

Diſtilled waters are *factitious* liquors. See WATER.

Cinnabar is divided into natural and *factitious*. See CINNABAR.

De-**FACTO**, ſee the article DE-FACTO.

FACTOR, in commerce, an agent, or perſon who acts, and negotiates for a merchant, by commiſſion; called alſo commiſſioner, and on ſome occaſions broker, and throughout the Levant, coagis.

Factors are either charged with the buying, or the ſelling, of goods; or with both.

Thoſe of the firſt kind are uſually eſtabliſhed in places of conſiderable manufactories, or cities of great trade. Their office is to buy up commodities for merchants reſiding elſewhere; to ſee them packed, and ſend them to the perſons for whom they were bought.

FACTORS *of ſale*, are uſually fixed in places where there is a great vent. To theſe, merchants and manufacturers ſend their goods to be ſold for them according to the price, and other conditions expreſſed in the orders delivered them.

The wages, or allowances for ſelling, are uſually clear of all expences of carriage, exchange, remittances, &c. excepting poſtage of letters, which are never put to account.

FACTORS, in arithmetic, is a name given to the two numbers which are multiplied into one another; that is, the multiplicand and multiplier: ſo called by reaſon they are to *facere productum*, make or conſtitute the product.

FACTORAGE.

The *factorage*, or wages, called alſo commiſſion, is different, at different places, and for different voyages: at a medium it may be fixed at about three *per cent.* of the value of the goods bought; beſide the charge of package, which is paid over and above.

At Virginia, Barbados, and Jamaica, the *factorage* is from three to five *per cent.* and the like throughout the greateſt part of the Weſt-Indies. In Italy it is two and a half. In Holland one and a half. In Spain, Portugal, France, &c. it is two *per cent.*

FACTORY, a place where a conſiderable number of factors reſide, to negotiate and officiate for their maſters or principals.

The term is chiefly uſed in ſpeaking of the Eaſt-Indies, and other parts of Aſia, whither the European nations ſend their ſhips every year, and where they keep factors to buy the commodities of the country, and ſell thoſe brought from Europe.

The greateſt and nobleſt *factory* in the world, is that of the Engliſh at Smyrna. It uſually conſiſts of 80 or 100 perſons, moſt of them young gentlemen of the beſt families, and frequently younger ſons of peers. It is a ſort of ſeminary of merchants. As there is a neceſſity for ſerving an apprenticeſhip of ſeven years, to be intitled to trade to the Levant; the cuſtom is for perſons of fortune to bind their younger ſons to ſome merchant, who, in conſideration of 3 or 400 pounds ſterling, agrees, after the three firſt years of their apprenticeſhip are expired, to ſend them to Smyrna: where they have not only the management of their maſters affairs with very plentiful allowances, but are likewiſe permitted to trade for themſelves; whereby they are enabled to live ſplendidly the reſt of their apprenticeſhip, and at length come out the beſt qualified for buſineſs of any young perſons in the world.

FACTUM, in arithmetic, the product of two quantities multiplied by each other.

FACULÆ * in aſtronomy, a name given by Scheiner, and others after him, to certain ſpots on the ſun's diſk, that appear brighter, and more lucid, than the reſt of the body.

* The word is pure Latin; being a diminutive of *fax*, torch; and ſuppoſed to be here applied from their appearing and diſſipating by turns.

The *faculæ* or bright ſpots differ very conſiderably from the maculæ or dark ſpots, both in light, colour, figure, magnitude, and duration.

Hevelius aſſures us, that July the 20th, 1634. he obſerved a *facula* that took up a third part of the ſun's diameter. And from the obſervations of the ſame Hevelius we learn, that the maculæ frequently change into *faculæ*; but the *faculæ* into maculæ rarely, if ever. Some authors even contend, that all the maculæ degenerate into *Faculæ*, before they quite diſappear.

Huygens, however, declares he was never able to diſcover any *faculæ*; though the maculæ occurred to him very frequently. All the foundation he could ſee for the notion of *faculæ*, he ſays, was, that in the darkiſh clouds which frequently ſurround the maculæ, one ſometimes diſcerns little points or ſparks brighter than the reſt.

Many authors, after Kircher and Scheiner, have generally repreſented the ſun's body full of bright, fiery ſpots, which they conceive to be a ſort of volcano's in the body of the ſun: but Huygens, and others of the lateſt and beſt obſervers, finding, that the beſt teleſcopes diſcover nothing of the matter, agree to explode the phænomena of *faculæ*. Their cauſe theſe authors attribute to the tremulous agitation of the vapours near our earth; the ſame as ſometimes ſhews a little unevenneſs in the circumference of the ſun's diſk, when viewed through a teleſcope. Strictly, then, the *faculæ* are not eructations of fire and flame, but refractions of the ſun's rays in the rarer exhalations, which, being condenſed in the neighbourhood of that ſhade, ſeem to exhibit a light greater than that of the ſun. See SUN.

FACULTY, a power, or ability, of performing an action.

The term is much uſed by the antient philoſophers, and ſtill retained in the ſchools, to explain the actions of natural bodies by.

Thus, to account for the act of digeſtion, they ſuppoſe a digeſtive *faculty* in the ſtomach; to account for motion, they imagine a motive *faculty* in the nerves, &c. which is only a ſubſtituting of one name of an unknown phænomenon for another.

Yet this practice of attributing effects to their reſpective virtues, or *faculties*, ſtill obtains in divers things, which our philoſophy has not yet afforded us a better account of. Thus, ſay our medicinal writers, ſenna and rhubarb have a purgative *faculty*; barberries a cooling *faculty*, &c. which amounts juſt to this, that ſenna purges, and barberries cool.

The human *faculties* are divided into thoſe *of the ſoul*, and *of the body*.

The FACULTIES, or powers, *of the ſoul*, are commonly reputed two; *viz.* underſtanding, and willing.

The FACULTIES *of the body* are uſually diſtinguiſhed, with regard to their ſeveral functions, into *vegetative*, and *animal*.

Under the *vegetative faculty* are comprehended the divers ſubaltern ones, whereby nutrition and generation are effected.

Under the *animal faculties* are comprehended thoſe relating to ſenſe and motion.

The *vegetative faculty* is ſubdivided into *nutritive* and *generative*; and the nutritive is again ſubdivided into *natural* and *vital*.

To the firſt, belong the functions of the lower belly, relating to the preparation of the food; to the latter, the actions of the heart and lungs, wherein life is chiefly concerned.

Others ſubdivide the *vegetative faculty* into *attractive*, *retentive*, *concoctive*, and *expulſive*.

The animal *faculties* being thoſe whereby an animal perceives and moves, become divided into *ſenſitive* and *locomotive*.

FACULTY is alſo applied, in the ſchools, to the divers parts, or members, of an univerſity, divided according to the arts, or ſciences, taught or profeſſed therein.

There are four *faculties* in moſt univerſities: that of arts, which includes the humanities and philoſophy, and is much the moſt antient, and extenſive; the ſecond is that of theology; the third, medicine; and the fourth, juriſprudence, or laws. See each under its proper article.

The degrees in the ſeveral *faculties* in our univerſities are, thoſe of Bachelor, Maſter, and Doctor.

The FACULTY is frequently uſed abſolutely, and by way of eminence, for that chiefly ſtudied and taught in that place.

Thus, the *faculty* of London and Montpelier, is Medicine; that of Paris, Theology; that of Orleans, Law, &c.

FACULTY, in law, denotes a privilege, or ſpecial power, granted to a man by favour, indulgence, and diſpenſation, to do that which regularly, and by law, he cannot: as to eat fleſh upon days prohibited; or to marry without banes firſt aſked.

The court of FACULTIES in England belongs to the archbiſhop of Canterbury; and his officer is called *magiſter ad facultates*.

His power is, to grant diſpenſations, as to marry, for the ſon to ſucceed his father in his benefice, one to have two or more benefices incompatible, &c.

The office where ſuch diſpenſations are taken out, is alſo called the *faculty*-office.

FÆCAL, or FECAL *matter*, a term uſed by phyſicians, particularly the French, for the *fæces*, or great excrements, of a man, *i. e.* thoſe diſcharged by ſtool.

The *fæcal matter* is become famous for a chemical operation thereon, by M. Homberg, related at length in the *Mem. de l'Acad. R. An.* 1711. He had a notion ſuggeſted to him, that the *fæcal matter*, by diſtillation, yielded an oil clear as water, without any ſmell, and which had the property of fixing mercury into fine ſilver. Upon this, he went to work; and, becauſe he would have as laudable and promiſing a matter as he could, he hired four robuſt healthy young fellows, whom he ſhut up for three months, and agreed with them, that they ſhould eat nothing but the fineſt bread, which he ſupplied them withal freſh every day, and drink the beſt Champaign wine as long as they would. After a long proceſs, and numerous eſſays on the excrements they made, he at length got the clear, inodorous oil; but it had no effect at all on mercury, which was the great point aimed at.

However, miſſing of what he expected, he fell on ſomething he never dreamt of; *viz.* a phoſphorus. The *caput mortuum* of the oil, he found to have a ſurpriſing property of taking fire without any motion, or the application of any other fire; inſomuch, that it might deſerve a place in the firſt rank of the known phoſphori.

The quantity of a pea of this taken out of the matraſs, and laid on a paper, or other combuſtible matter, begins to ſmoke immediately, and ſets the paper on fire.

FÆCES, or FECES, the dregs, ſediment, or impurities, remaining of a mixt body, after the purer, more volatile, and fluid, have been ſeparated therefrom by evaporation, diſſolution, decantation, derivation, or the like.

Thus we ſay, the *fæces* of wine, of oil, &c. Thoſe of wines are properly called *lees*; thoſe of oil, *amurca*; thoſe of malt-liquors, *grounds*.

FÆCES, in chemiſtry, denotes the lees, refuſe, dirt, mud, impurities, and heterogeneous matters, remaining in the alembic after the diſtillation of any body: what remains in the retort, inſtead of *fæces*, is properly denominated *caput mortuum*, or *terra damnata*.

FÆCES is particularly uſed, in medicine, &c. for the groſs, impure matters found at the bottom of the compoſitions and preparations of either pharmacy.

FÆCES is alſo uſed for the excrements of an animal, voided by ſtool. See EXCREMENT.

FÆCULA, or FECULA. See the article FECULA.

FÆTOR, ſtench. See the article FOETOR.

FAGGOT *, or FAGOT, in fortification. See FASCINE.

> * Menage derives the word from the Latin *facottus*, which was formed of the Greek φακος. Nicod borrows it from *faſciculus*, a bundle; Du Cange from the baſe Latin *fagatum*, and *fagotum*.

FAGGOT *of ſteel* expreſſes the quantity of 120lb. weight.

FAGGOT, in the times of popery in theſe kingdoms, was a badge wore, on the ſleeve of the upper garment, by ſuch as had abjured hereſy; being put on after the perſon had carried a *faggot*, by way of penance, to ſome appointed place of ſolemnity.—The leaving off this badge was ſometimes conſtrued apoſtaſy.

FAGGOTS, among the military men, are ineffective perſons, who receive no regular pay, nor do any regular duty, but are hired occaſionally to appear at a muſter, to fill up the companies, hide the real deficiencies thereof, and cheat the king of ſo much pay, which goes into the officer's pocket.

FAGONA, in anatomy, a conglomerate gland, called alſo *thymus*. See THYMUS.

FAILLIS, in heraldry, a French term, denoting ſome failure, or flaw, in an ordinary, as if it were broke, and a ſplinter taken from it.

FAILURE, or FAILING, a ſpecies of bankruptcy; popularly called breaking, or ſtopping payment.

FAINT, or FAINT-ACTION, is as much as *feigned action*; that is, ſuch an action as, though the words of the writ be true, yet, for certain cauſes, the party has no title to recover thereby.

By which it differs from a falſe action, which is that where the words of the writ are falſe. Coke on Littl. fol. 361.

Yet ſometimes the two are confounded. See ACTION.

FAIR *, a public place, where merchants, traders, and other perſons, from divers parts, meet, on ſome fixed day of the year, to buy and ſell commodities, and to partake of the diverſions uſually accompanying ſuch aſſemblies.

> * The word *fair* is formed of the Franch *foire*, which ſignifies the ſame thing; and *foire* ſome derive from the Latin *forum*, market; others from the Latin *feriæ*, by reaſon *fairs* were antiently always held in the places where the wakes, or feaſts, of the dedications of churches, called *feriæ*, were alſo held. The Romans called them *nundinæ*. Eric Puteanus has a pretty little treatiſe on the *fairs* of the Romans, *De nundinis Romanorum*, which he calls *Nova faſtorum ſæcula*.

Fairs are either free, or charged with tolls and impoſitions.

The privileges of free *fairs* conſiſt chiefly, 1°, In that all traders, &c. whether natives, or foreigners, are allowed to enter the place, and are under the royal ſafeguard and protection in coming and returning, they and their agents, with their goods, &c. 2°, In that the ſaid perſons, and their effects, are exempt from all duties, impoſitions, tolls, and ſervitudes. 3°, That merchants in going to, or returning from, the *fair*, &c. cannot be arreſted, or their goods ſtopped, &c.—It is the ſovereign alone that has a right, by his letters patent, to eſtabliſh *fairs*, whether free, or ſubject to duties, and the other ordinary laws and penalties.

Several *fairs* are held in the open fields, or on heaths and commons, under tents, booths, and barracks, erected for the purpoſe: as Sturbridge-*fair*, *&c.* others in places walled in for the purpoſe, and formed into regular ſtreets, lanes, *&c.* for the occaſion: as the *fair* of St. Laurence at Paris. Laſtly, others are held in the open places and ſtreets of cities: as Bartholomew *fair*, Briſtol *fair*, the *fair* of St. Germains, *&c.*

Fairs, particularly free *fairs*, make a very conſiderable article in the commerce of Europe, eſpecially that of the Mediterranean or inland parts; as Germany, *&c.* where the continual paſſage and repaſſage of veſſels is impracticable.

The moſt celebrated *fairs* in Europe are thoſe, 1°, *of Francfort*, held twice a year, in ſpring and autumn; the firſt commencing the ſunday before Palm-ſunday, and the other on the ſunday before the eighth of September. Each laſts fourteen days, or two weeks; the firſt of which is called the week of acceptance, and the ſecond the week of payment. They are famous for the ſale of all kinds of commodities, but particularly the immenſe quantity of curious books, no-where elſe to be found; and whence the bookſellers, throughout all Europe, uſed to furniſh themſelves. Before each *fair* there is a catalogue, of all the books to be ſold thereat, printed, and diſperſed, to call together purchaſers; though the learned have generally complained of divers unfair practices therein: as fictitious titles, names of books purely imaginary, *&c.* beſide great faults in the names of the authors, and the titles of the real books.—2°, The *fairs of Leipſic*, which are held thrice a year; one beginning on the firſt of January, another three weeks after Eaſter, and a third after Michaelmas: they hold twelve days apiece, and are, at leaſt, as conſiderable as thoſe of Francfort. 3°, The *fairs of Novi*, a little city in the Milaneſe, under the dominion of the republic of Genoa. There are four of theſe in the year; commencing on the ſecond of February, the ſecond of May, the firſt of Auguſt, and ſecond of September. Though the commodities, bought and ſold here, be very conſiderable; yet, what chiefly contributes to render them ſo famous is, the vaſt concourſe of the moſt conſiderable merchants and negotiants of the neighbouring kingdoms, for the tranſacting of affairs, and ſettling accounts. 4°, The *fairs of Riga*, whereof there are two in the year; one in May, and the other in September. They are much frequented by the Engliſh, Dutch, and French ſhips; as alſo by others, from all parts of the Baltic. The beſt time for the ſale of goods at Riga is, during the *fairs*. Since the building of the famous city of Peterſburg, theſe *fairs* have ſuffered ſome diminution. 5°, The *fair of Archangel*; during which, all the trade, foreigners have with that city, is managed. It holds a month, or ſix weeks, at moſt; commencing from the middle of Auguſt. The Muſcovite merchants attend here, from all parts of that vaſt empire; and the Engliſh, Dutch, French, Swediſh, Daniſh, and other ſhips in the port of that city, on this occaſion, ordinarily amount to three hundred. But this is no free *fair*, as the reſt are: the duties of exportation and importation are very ſtrictly paid, and on a very high footing. 6°, The *fair of St. Germain*, one of the ſuburbs of Paris, commencing on the third of February, and holding till Eaſter; though it is only free for the firſt fifteen days. 7°, The *fairs of Lyons*, which Monſ. Du Cheſne, in his *Antiquity of Cities*, would inſinuate, from a paſſage in Strabo, were eſtabliſhed by the Romans: though, it is certain, the *fairs*, as they now ſtand, are of a much later date. There are three in the year, each laſting twenty days, and free for ever. They begin on Eaſter-monday, the 26th of July, and the firſt of December. 8°, *Fair of Guibray*, a ſuburb of the city of Falaiſe, in the Lower Normandy. It is ſaid to have been eſtabliſhed by our William the Conqueror, in conſideration of his being born at Falaiſe. It commences on the 16th of Auguſt, and holds fifteen days; free by charter, and longer by cuſtom. 9°, *Fair of Beaucaire*, held partly in a city of that name, in Languedoc, and partly in the open country, under tents, *&c.* It commences on the 22d of July, and only holds for three days; yet it is the greateſt, and moſt celebrated, of all the *fairs* in that part of Europe, both for the concourſe of ſtrangers from all parts of the world, and for the traffic of all kind of goods: the money returned, in theſe three days, amounting ſometimes to above ſix millions of livres.

The *fairs* of Porto-bello, Vera-Crux, and the Havana, are the moſt conſiderable of all thoſe in America. The two firſt laſt as long as the flota and gallions continue in thoſe parts; and the laſt is opened as ſoon as the flota, or gallions, arrive there, upon their return for Spain; this being the place where the two fleets join.

FAIR *Pleading*. See the article BEAU-PLEADER.

FAIRY, a term frequently occurring in antient traditions and romances, denoting a kind of genii, or imaginary deities, converſant on earth, and diſtinguiſhed by abundance of fantaſtical actions and offices, either good, or evil.

The *fairies*, according to theſe traditions, are a peculiar ſpecies of divinities, that have but little relation to any of thoſe of the antient Greeks and Romans; unleſs, perhaps, to the larvæ: though others will not have them ranked among deities, but ſuppoſe them an intermediate kind of beings, neither gods, nor angels, nor men, nor devils.

They are of oriental extraction, and ſeem to have been invented by the Perſians and Arabs, whoſe hiſtory and religion abound with tales of *fairies*, and dragons. The Perſians call them Peri, and the Arabs Ginn; having a peculiar country, which they ſuppoſe them to inhabit, called Ginniſtian; and, by us, *Fairy*-land.—Our famous countryman Spencer's maſter-work, the *Fairy-queen*, is an epic poem under the perſons and characters of *fairies*.

Naude, in his *Maſcurat*, derives the origin of the fables of *fairies* from thoſe of the Parcæ of the antients; and ſuppoſes both the one and the other to have been a kind of envoys, or interpreters of the will of heaven to men. But, then, by *fairies* this author means a ſort of witches, famed for foretelling future events, by means of ſome communication with the genii above-mentioned. The ſilly, ſuperſtitious notions of the antients, he obſerves, were not near ſo formidable as ours; nor their hell and furies any thing comparable to our devils. Accordingly, in lieu of our hags and witches, who do nothing but ill, and are employed in the loweſt and baſeſt offices; they had a finer ſort of goddeſſes, called, by Latin authors, *albas dominas*, who ſcarce did any thing but good, and took pleaſure in noble and honourable deeds. Such were their Lamia, and nymph Egeria; from whom the later *fairy* queens, Morga, Alcina, Fata Manto of Arioſto, Gloriana of Spencer, and other machines, in Engliſh and French fable, were, no doubt, derived. Some of them are uſually made to attend the births of young princes and cavaliers, to inform them of their deſtiny, as was antiently done by the Parcæ: witneſs Hyginus, c. 171. and 174.

But, with Naude's leave, the antients were not without witches, as wicked as our own: witneſs the Canidia of Horace, Epod. 5. and 17. and Satir. l. II. Sat. 1. 48. and 8. 95. Nor did the *fairies* ſucceed the Parcæ, or even Veneficæ, of the antients; but rather the Nymphæ: for ſuch were Lamia, and Egeria.

FAIRY *circle*, or *ring*, is a phænomenon pretty frequent in the fields, *&c.* being a kind of round, ſuppoſed, by the vulgar, to be traced by the *fairies* in their dances.

There are two kinds: one of them ſeven or eight yards in diameter, containing a round bare path, a foot broad, with green graſs in the middle; the other of divers ſizes, being incompaſſed with a circumference of graſs, much freſher and greener than that in the middle.

Mr. Jeſſop, and Mr. Walker, in the *Philoſophical Tranſactions*, aſcribe them to the lightning; which is confirmed, by their being moſt frequently produced after ſtorms of that kind; as well as by the colour and brittleneſs of the graſs-roots, when firſt obſerved. It is no wonder that lightning, like all other fires, moves round, and burns more in the extremity, than the middle.

According to thoſe gentlemen, the ſecond kind of circle ariſes originally from the firſt; the graſs burnt up by the lightning uſing to grow the more plentifully afterwards.

Other authors have aſſerted, that theſe *fairy*-rings are formed by ants; by reaſon thoſe inſects are ſometimes found travelling in troops therein. See Supplement, article FAIRY CIRCLE.

FAITH, in philoſophy, *belief*; or that aſſent which we give to a propoſition advanced by another, the truth of which we do not immediately perceive from our own reaſon, or experience; but believe it diſcovered and known by the other.

Faith is a judgment, or aſſent, of the mind, the motive whereof is not any intrinſic evidence, but the authority, or teſtimony, of ſome other, who reveals or relates it.

Hence, as there are two kinds of authorities and teſtimonies; the one of God, and the other of man; *faith* becomes diſtinguiſhed into *human* and *divine*.

Divine FAITH is that founded on the authority of God; or it is that aſſent we give to what is affirmed by God.

The objects of this *faith* are matters of revelation. See REVELATION.

Human FAITH is that whereby we believe what is told us by men.

The object hereof is matter of human teſtimony and evidence.

Faith, again, may be diſtinguiſhed into *implicit*, and *ſcientific*.

Implicit or *blind* FAITH is that whereby we give our aſſent to propoſition advanced by another, of whoſe knowlege and veracity we have no certain and evident reaſon, or proof. Thi is only opinion, under another name.

Scientifical or *ſeeing* FAITH is that by which we give our aſſen to a propoſition advanced by one who can neither deceive, no be deceived; which may be properly referred to ſcience an knowlege.

Divine faith, *cæteris paribus*, is ſtronger than human When we are fully convinced, that any propoſition com from God, *faith* becomes aſſurance, or ſcience; it being a ingredien ingredient in our idea of God, that he can neither deceive, nor be deceived: but when there is any doubt, whether the propoſition is declared by God, or whether he has commanded that we ſhould believe ſuch a thing; the *faith* can be no ſtronger, or weaker, than the reaſons on which it is founded: divine *faith*, therefore, may either be ſtrong, weak, or none at all.—Again, the reaſons or motives of believing men, may be of ſuch weight and force, that being perfectly underſtood, they may equal a mathematical evidence: and then the human *faith* is ſcarce inferior to the divine; there being, as it were, an equal neceſſity of giving our aſſent on each ſide.

Hence it is eaſily obſerved, that all our *faith* or belief has its foundation on reaſon, which cannot deceive us, if we make a due uſe of our liberty, and do not acquieſce, till that neceſſarily compels us.

Strictly, and philoſophically ſpeaking, no man can have what we call a divine *faith*, except a prophet, to whom God has immediately ſpoken.

All our preſent religious *faith* is really human, as depending on the ſecondary teſtimony of men; of whoſe veracity, however, we have the ſtrongeſt proofs. The prophets, or thoſe to whom God immediately revealed his will, believed him, for that they knew he could not deceive. We, at this day, believe them, or rather their writings, for other reaſons; *viz.* the ſame which oblige us to believe all well-atteſted hiſtories.

FAITH, in theology, makes the firſt of the theological virtues, or graces.

Faith, in this ſenſe, is a gift of God, whereby we are led to give a firm aſſent to the truths he has revealed to his church: or *faith* is a gift, or impreſſion, which leads us to give our aſſent to certain things relating to God, his nature, attributes, worſhip, *&c.* the evidence of which things we do not ſee and underſtand clearly enough, to have given our aſſent on the common footing of reaſon, and conviction.

St. Paul defines *faith* the ſubſtance or ſupport of things hoped for, and the evidence of things not ſeen.—The life of *faith* conſiſts in ſerving God without knowing him in any ſenſible manner. Nicole.

Beſide the two ſpecies of *faith*, human and divine, the Romaniſts make a third, or intermediate kind, called

Eccleſiaſtical FAITH, which is the aſſent orthodox perſons give to certain events decided by the church, and injoined to be believed by all.

As, when the church declares, that ſuch a book contains heretical doctrine, that ſuch a perſon is in heaven, *&c.*

This term, eccleſiaſtical *faith*, was firſt introduced by Mr. Pereſixe, to diſtinguiſh the *faith* whereby we believe matters of divine revelation, from that whereby we believe matters of eccleſiaſtical determination.

Confeſſion of FAITH is a creed, or formula, containing all thoſe articles, the belief whereof is eſteemed neceſſary to ſalvation.

FAITH and *Homage*, in the feudal law. See FEALTY.

FAKIR, or FAQUIR, a kind of derviſe, or Mahometan religious, who travels the country, and lives on alms.

* The word *fakar* is Arabic, and ſignifies a poor or needy perſon. It is formed of the word פקר, *fakara*, to be in need.

D'Herbelot makes *fakir* and dervise the ſame thing. The Turks and Perſians uſe the name dervise for any poor perſon, whether he be ſo out of neceſſity or choice: and the Arabs apply *Fakir* in the ſame ſenſe. Whence, in ſome Mahometan countries, the religious are called *derviſes*; and in others, particularly throughout the ſtates of the great Mogul, *Fakir*.

The *fakirs* ſometimes travel ſingly, and ſometimes in companies. When they go in companies, they have a ſuperior, who is diſtinguiſhed by his habit. Each *fakir* bears a horn, which he blows at his arrival in any place, as alſo at his departure; and a kind of ſcraper or trowel, to ſcrape the earth in the place where he ſits, or lies down. When they go together, they divide their alms equally amongſt them; give what is left every night to the poor; and never reſerve any thing for the morrow.

There are alſo a kind of idolatrous *fakirs*, who follow much the ſame trade. D'Herbelot reckons in the Indies eight hundred thouſand Mahometan *fakirs*; and twelve hundred thouſand idolatrous ones: to ſay nothing of divers extraordinary ſpecies of *faquirs*, particularly penitents, whoſe mortification and penance conſiſt in very odd obſervances. Some, *v. gr.* remain night and day, for many years, in certain uneaſy poſtures. Others never ſit or lay down to ſleep, but ſuſtain themſelves by a rope, hung down for that purpoſe. Others bury themſelves in a ditch, or pit, for nine or ten days, without eating or drinking. Others keep their arms lifted up to heaven, ſo long, till they cannot let them down again, if they would. Others lie fire on their heads, and burn the ſcalp to the very bone. Others roll themſelves naked on thorns. Tavernier, *&c.*

Another claſs of *fakirs* retire unto moſques, live on alms, and devote themſelves to the ſtudy of the law, the reading of the Alcoran, *&c.* to fit themſelves for moulas, or doctors. People of quality ſometimes aſſume the character of *fakirs*. The famous Aurangzeb himſelf, before he aſcended the throne, gave out, that he intended to commence *fakir*.

FALCATED, one of the phaſes of the planets, popularly called horned.

The aſtronomers ſay the moon, or any planet, is *falcated*, when the enlightened part appears in form of a ſickle, or reaping-hook, by the Latins called *falx*.

The moon is *falcated* whilſt ſhe moves from the conjunction to the oppoſition, or from new moon to full; from full to a new again, the enlightened part appears gibbous, and the dark *falcated*. See MOON.

FALCON *, or FAUCON, a bird of prey, of the hawk-kind, ſuperior to all others for courage, docility, gentleneſs, and nobleneſs of nature.

* Jo. de Janu, and ſeveral others, take the name *falcon* to have been occaſioned by its crooked talons, or pounces, which reſemble a *falx*, or ſickle. Giraldus derives it *a falcando*, becauſe it flies in a curve.

The *falcon*, or *falcon gentle*, is both for the fiſt, and the lure: its feet are yellow, its head black, and its back ſpotted. In the choice, obſerve that the head be round, the beak thick and ſhort, the neck long, the ſhoulders broad, thighs long, legs ſhort, feet large, the feathers of the wings ſlender, and the pounces black.

The *falcon* is excellent at the river, brook, and even field; and flies chiefly at the larger game, as wild-gooſe, kite, crow, heron, crane, pye, ſhoveler, *&c.*

It muſt be added, that the name *falcon* is reſtrained to the female; for as to the male, it is much ſmaller, weaker, and leſs courageous, than the female; and is denominated a *taſſel*, or *tiercelet*.

As in the courſe of this work, the ſeveral terms of falconry are explained, it may be here neceſſary to ſay ſomething, in the general, of the management and diſcipline of the *falcon*, as being the foundation of the art of falconry. For the reſt, the reader may have recourſe to the heads HAWK, and HAWKING.

When a young *falcon* is taken, ſhe muſt be ſeeled, and the ſeeling at length gradually ſlackened, that ſhe may be able to ſee what proviſions are brought her. Her furniture is to be jeſſes of leather, mailed leaſhes, with buttons at the end, and bewets: beſide a ſmall round ſtick hanging in a ſtring to ſtroke her frequently withal; which the oftener it is done, the ſooner and better will ſhe be manned: ſhe muſt have two bells on her legs, that ſhe may be the more readily found, or heard when ſhe ſtirs, ſcratches, *&c.* and a hood raiſed, and boſſed over her eyes. Her food is to be pigeons, larks, and other live birds, of which ſhe is to eat twice or thrice a day, and till ſhe be full gorged. When the falconer is about to feed her, he muſt hoop and lure, that ſhe may know when to expect it. Then, unhooding her gently, he gives her two or three bits, and putting her hood on again, gives her as much more; but takes care ſhe be cloſe ſeeled; and after three or four days leſſens her diet. At going to bed, he ſets her on a perch by him, that he may awake her often in the night; continuing to do ſo till ſhe grow tame and gentle. When ſhe begins to feed eagerly, he gives her ſheep's heart; and now he begins to unhood her by day, but it muſt be done far from company: feeds her and hoods her again, as before, but takes care not to fright her with any thing when he unhoods her; and, if he can, reclaims her without over-watching. The *falcon* muſt be borne continually on the fiſt, till ſhe be thoroughly manned, and induced to feed in company: for two or three days give her waſhed meat, and then plumage, according as you eſteem her foul within; if ſhe caſt, hood her again, and give her nothing till ſhe gleam after her caſting: but when ſhe has gleamed and caſt, give her a little hot meat in company; and towards evening let her plume a hen's wing, likewiſe in company: cleanſe the feathers of her caſting, if foul and ſlimy: if ſhe be clean within, give her gentle caſting; and when ſhe is well reclaimed, manned, and made eager and ſharp-ſet, venture to feed her on the lure.

But three things are to be conſidered before your lure be ſhewed her. 1°, That ſhe be bold and familiar in company, and not afraid of dogs and horſes. 2°, Sharp-ſet and hungry, having regard to the hour of morning and evening when you would lure her. 3°, Clean within, and the lure well garniſh'd with meat on both ſides. When you intend to give her the length of a leaſh, you muſt abſcond yourſelf: ſhe muſt alſo be unhooded, and have a bit or two given her on the lure, as ſhe ſits on your fiſt. That done, take the lure from her, and ſo hide it that ſhe may not ſee it: when ſhe is unſeeled, caſt the lure ſo near her, that ſhe may catch it within the length of her leaſh; and as ſoon as ſhe has ſeized it, uſe your voice as falconers do, feeding her upon the lure on the ground.

After having lured your *falcon*, in the evening give her but little meat, and let this luring be ſo timely, that you may give her plumage, &c. next morning on your fiſt: when ſhe has caſt and gleamed, give her a little beaching of warm meat: about noon, tie a creance to her leaſh, go into the field, there give her a bit or two upon the lure, and unſeel her. If you find ſhe is ſharp ſet, and has eagerly ſeized on the lure, let a man hold her, to let her off to the lure; then unwind the creance, and draw it after you a good way, and let him who has the bird, hold his right hand on the taſſel of her hood readily to unhood her as ſoon as you begin to lure; to which if ſhe come well, ſtoop roundly upon it, and haſtily ſeize it: let her caſt two or three bits thereon: that done, take her off the lure, and deliver her again to the perſon that held her; and, going farther off the lure, feed her as before; and ſo daily farther and farther off the lure. Afterwards, you may lure her in company, but do not fright her: and having uſed her to the lure on foot, do it alſo on horſeback; which may be ſooner accompliſhed, by cauſing horſemen to be about you, when you lure her on foot; 'tis alſo ſooner done, by rewarding her upon the lure on horſeback among horſemen. And when ſhe is grown familiar this way, let ſomebody a-foot hold her, and he that is on horſeback muſt call, and caſt the lure about his head, while the holder takes off the hood by the taſſel; and if ſhe ſeize eagerly on the lure, without fear of a man or horſe, then take off the creance, and lure at a greater diſtance. Laſtly, if you would have her love dogs as well as the lure, call dogs when you give her plumage.

FALCON, in gunnery. See FAUCON.

FALCONER, a perſon who brings up, tames, and makes, that is, tutors and manages, birds of prey; as falcons, hawks, &c. The grand ſeignor uſually keeps ſix thouſand *falconers* in his ſervice.—The French king has a grand *falconer*, which is an office diſmembred from that of great hunt, grand veneur. Hiſtorians take notice of this poſt as early as the year 1250.

One great buſineſs of the *falconer* is, to conſider the quality and mettle of the birds, to know which to fly early, and which late. He muſt alſo be buſy and cleanly in freeing them of lice, nits, and vermin. Every night after flying, he ſhould give his bird caſting; nor muſt he forget to water her, unleſs ſhe have been bathed. After this, ſhe muſt be put in a warm room, having a perch, with a candle burning by her; where ſhe is to ſit unhooded, that ſhe may prune and pick herſelf. Next morning ſhe ſhould be weathered, &c.

FALCONET, in gunnery. See FAUCONET.

FALCONRY*, or FAUCONRY, the art of taming, managing, and tutoring, birds of prey, particularly falcons and hawks; and employing them with advantage in the purſuit of game; called alſo hawking.

* The word is formed of *falco*, falcon, or faucon, the bird of moſt uſe and eſteem in this kind of ſport. See FALCON.

Falconry, as now practiſed, was unknown among the Greeks and Romans. All their writings do not furniſh ſo much as a proper name to call it by; ſo far are they from teaching us the terms. It is the French language alone, that has particular words for all the parts of *falconry* and hunting; and from them moſt of our terms, as well as what we know of the art itſelf, are borrowed.

The writers of reputation on *falconry*, are Deſparon, Franchiere, Tardiffe, Artelouche, Dalagona, Latham, &c. M. de S. Martha has put the principles of the art into fine Latin verſes, in his *Hieracoſophion, ſive De re accipitraria, libri tres.*

FALDAGE*, an antient privilege, which ſeveral lords reſerved to themſelves of ſetting up ſheep-folds, or pens, in any fields within their manors, the better to manure them; and this not only with their own, but with their tenants ſheep.

* This was alſo termed *ſecta faldæ*; and in ſome old charters *fold-ſoca*; in ſome place a fold-courſe, or freefold.

FALL, *Deſcent*, in phyſics, the tendency of any heavy body towards the centre of the earth.

Galileo firſt diſcovered the ratio of the acceleration of *falling* bodies; *viz.* That dividing the whole time of *falling* into equal parts, the body will *fall* thrice as far in the ſecond moment, as in the firſt; five times as far in the third; ſeven times in the fourth, &c. and ſo on in the order of the uneven numbers. See ACCELERATION.

For the cauſe of the FALL of bodies, ſee GRAVITY.

For the laws of FALLING bodies, ſee DESCENT.

Water-FALL. See the article CATARACT.

FALL is alſo uſed in a moral ſenſe: as, the *fall* of *Adam*; ſee ORIGINAL SIN: the *fall* of the Roman empire, &c.

Authors contend, that Plato had a notion of Adam's *fall*, which he had learnt from Moſes. Euſeb. *De præparat. evangel.* l. xii. c. 11. quotes a fable from Plato's *Sympoſ.* wherein he thinks he finds the whole hiſtory allegorically related.

FALL, in muſic and poetry. See CADENCE.

FALLACY, FALLACIA, a deception, or falſe appearance, or report.

The Epicureans deny, that there is any ſuch thing as a *fallacy* of the ſenſes. According to them, all our ſenſations, and all our perceptions both of ſenſe and phantaſy, are true; they add, that ſenſe itſelf is the firſt grand criterion of truth. That the ſenſes are never deceived, they argue from their being incapable of all ratiocination and remembrance: hence they can neither add, take away, couple, nor disjoin; they cannot, therefore, infer, conclude, or invent; and conſequently they cannot deceive by any inference or invention. This the mind may do, but not the ſenſe, whoſe buſineſs is only to apprehend what is preſent, *e. gr.* colours; not to diſcern or diſtinguiſh between this body and that. But a thing that barely apprehends, without pronouncing any thing, cannot deceive. Add, that there is nothing to convict our ſenſes of falſhood. The right eye, *e. gr.* cannot convict the left; nor Plato's eyes, thoſe of Socrates; ſince the reaſons or pretenſions of each are equal; and the purblind perſon ſees what he ſees as much as the Lynceus. Nor can a ſenſe of one kind convict another; as the ſight, the ſmell; by reaſon their objects are different; and conſequently their reports or judgments are not of the ſame things. Thus, again, if I ſee a ſtick ſtrait when out of the water, but when in it crooked, my perception is altogether as true in the latter, as in the former caſe, *i. e.* it is as true that I have the perception or idea of the crooked ſtick, as of the ſtrait one. And this idea is all that the ſenſe ſuggeſts, ſo that it does not deceive. Laſtly, reaſon cannot ſhew our ſenſes miſtaken, ſince all reaſoning depends on previous ſenſations, and the ſenſes muſt firſt be true, before any reaſoning, founded thereon, can be ſo.—Thus the Epicureans, whoſe ſyſtem is ſtrongly confirmed by what we have already laid down from Dr. Berkeley, concerning the EXTERNAL *world.*

The Carteſians, on the other hand, are continually crying out againſt the ſenſes, as the great ſources of all deception. Every thing which our external ſenſes preſent us, they ſay, ſhould be ſuſpected as falſe, or, at beſt, dubious, till our reaſon has confirmed the report. They add, that our ſenſes, as being fallacious, were never given us by nature, for the diſcovery of truth, but only to point out what things are convenient or hurtful to our bodies.

The Peripatetics keep a middle courſe: they hold, that if a ſenſible object be taken in its common or generical view, the ſenſe cannot be deceived about it; for the ſight can ſee nothing but what is viſible, nor can it err in perceiving what is viſible, *quatenus* ſuch. But they add, that if the object be taken under its ſpecific view, the ſenſe may be miſtaken about it; *viz.* from a want of the diſpoſitions neceſſary to a juſt ſenſation; as a diſorder in the eye, or ſomething uncommon in the medium, &c.

FALLACY, in logic, or *ſyllogiſtic* FALLACY, is a captious argument, called alſo a ſophiſm. See SOPHISM.

Fallacies either ariſe from words, or things: the foundation of all illuſion and *fallacy* in words, is ambiguity, which is of two kinds; *viz.* ſimple homonymia, and amphibology.

The kinds of *fallacy* in things are very numerous; but they may be reduced to ſeven general heads; *viz. ignoratio elenchi, petitio principii, falſa cauſa, interrogatio multiplex, limitatio vitioſa, accidens, & conſequens.*

FALLING-*ſickneſs* *. See the article EPILEPSY.

* Dr. Tuberville, in the philoſophical tranſactions, gives the hiſtory of a patient much troubled with the *falling*-ſickneſs, in whoſe unrine he obſerved a great number of ſhort worms, full of legs, and like millepedes. While theſe continued lively, and full of motion, the fits returned daily; but upon preſcribeing her half an ounce of oxymel helleboratum in tanſy-water, the worms and the diſtemper were both effectually deſtroyed.

FALLOPIAN *tubes*, in anatomy, two ducts ariſing from the womb, one on each ſide of the fundus thereof, and thence extended to the ovaries; having a conſiderable ſhare in the affair of conception.

They are called *tubæ*, *i. i.* trumpets, in reſpect of their form; for that in their riſe, or opening into the womb, they are exceeding ſmall, ſo as ſcarce to admit a knitting-needle; but in their progreſs towards the ovaries they grow much bigger, and at length are capable to receive the finger; from whence they contract again, and at the extremity next the ovaries, are expanded into a ſort of foliage, which is fringed round with innumerable little fibres, bearing ſome reſemblance to the mouth of a trumpet.

The *fallopian* tubes are four or five inches long; they conſiſt of a double membrane, derived from the outer and inner membranes of the uterus. The extremity next the ovary, at the time of impregnation, at which time the whole tube is expanded, reaches to, and embraces the ovary; though at other times it ſeems to fall a little ſhort of it, and is only ſlightly tied by the fringe to the under-ſide of the ovary.

The uſe of the tubes is, to convey the ſeed, or rather ova of women, and other animals, from the teſticles or ovaries into the uterus or womb. See OVARY, and UTERUS.

Their inner ſubſtance is compoſed, in good meaſure, of ramifications of veins and afteries, which form a kind of reticular or cavernous body, not unlike that of the clitoris. This ſtructure makes them capable of dilatation, and contraction according to the quantity and ſtop of the blood; and, conſequently, of being, as it were, erected, *in coitu*, and embrecing the ovary at that time, which in their ſtate of flaccidity they did not. See GENERATION.

They take their denomination, *Fallopian*, from Gabriel Fallopius, a Modeneſe, who died in 1562. and who is commonly reputed the firſt obſerver of them; though we find them deſcribed long before him in Rufus of Epheſus.

The ova, or embryoes, are ſometimes detained in the *tubæ Fallopianæ*, and cannot make their way into the womb. Inſtances of this kind have been frequently met withal in diſſections. One of the moſt remarkable, is that related by Abraham Cyprianus, a celebrated phyſician of Amſterdam, in a letter, addreſſed to Sir Tho. Millington, wherein he deſcribes the manner in which he drew a fœtus, twenty-one months old, out of the tuba of a woman, who lived and had ſeveral children after the operation. See *Tab. Anat.* (Myol.) *fig.* 9. *cc*, and *fig.* 11. *ee*.

FALLOW, a colour of a paliſh red, like that of a brick half burnt: as a *Fallow* deer, *&c.*

FALLOW *field*, or *Fallow* ground, is land laid up, or that has lain untilled for a conſiderable time.

To FALLOW, is to prepare land by plowing, long before it be plowed for ſeed. To do this twice, is to *twifallow*, and thrice, to *trifallow*.

FALSE *arms*, in heraldry, are thoſe wherein the fundamental rules of the art are not obſerved: as if metal be put on metal, or colour on colour. See ARMS.

FALSE *attack*, in war, a feigned attack, intended to draw all the enemy's force on one ſide, in order to favour a real attack, intended in another part. See ATTACK.

FALSE *birth*. See the article ABORTION.

FALSE *braye*, in fortification. See FAUSSEBRAYE.

FALSE *claim*, in the foreſt-laws, is where a man claims more than his due, and is amerced or puniſhed for the ſame.

FALSE *conception*. See CONCEPTION.

FALSE *diamond*, a diamond counterfeited with glaſs.

FALSE *flower*, a flower which does not ſeem to produce any fruit, as thoſe of the hazel, mulberry-tree, *&c.*

A flower of this kind does not ariſe from any embryo, and does not knit; ſuch are the male flowers of the melon, cucumber, *&c.* See FLOWER.

FALSE *impriſonment*, is a treſpaſs committed againſt a man, by impriſoning him without lawful cauſes.

It is alſo uſed for the writ brought upon this treſpaſs.

FALSE *keel*, in a ſhip, is a ſecond keel, which is ſometimes put under the firſt, to make the veſſel deeper. See *Tab. Ship. fig.* 2. n. 54. and n. 118. See alſo the article KEEL.

FALSE *money*. See the article MONEY.

FALSE *muſter*, is when ſuch men paſs in review, as are not actually liſted as ſoldiers. See FAGGOT, *&c.*

FALSE, or *falſe poſition*, in arithmetic. See POSITION.

FALSE *prophecies*. See PROPHECIES.

FALSE *ribs*. See *ſpurious* RIBS.

FALSE *roof* of a houſe, is that part between the upper rooms and the covering.

FALSE *weights*, &c. See WEIGHT, *&c.*

FALSHOOD, FALSITY, in philoſophy, an act of the underſtanding, repreſenting a thing otherwiſe than it is, as to its accidents—Or a falſe enuntiation, or judgment of any thing: as if a perſon ſhould judge, that the king of Spain is in America.

The circumſtance, as to its accidents, is of abſolute neceſſity in the definition, inaſmuch as a thing cannot be repreſented otherwiſe than it is to eſſentials; for in ſuch caſe the eſſence of the thing would not be repreſented: and ſince the eſſence is the thing itſelf, it would not be that thing which is repreſented, but another.

There is no *Falſhood* in apprehenſion or ſenſation; our ideas of ſenſe are all juſt and true, ſo far as they go; and all our deluſions ariſe from our reaſonings and concluſions from them.

Crimen FALSI, in the civil law, is a fraudulent ſubornation or concealment, with deſign to darken or hide the truth, and make things appear otherwiſe than they are.

The *crimen Falſi* is committed three ways. By words, as when a witneſs ſwears falſly. By writing, as when a man frames or alters ſomething, antedates a contract, or the like. And by deed, as when he ſells by falſe weights and meaſures, debaſes the coin, *&c.*

FALSO *judicio*, a writ, which lies for falſe judgment, given in the county-court, court-baron, or other court, not of record.

FALSO *retorno brevium*, a writ which lies againſt the ſheriff, who has execution of proceſs, for making falſe returns of writs.

FALX, in anatomy, a part of the dura mater, deſcending between the two hemiſpheres of the brain, and ſeparating the forepart from the hinder.

It is called *Falx*, *i. e. ſickle*, by reaſon of its curvature, occaſioned by the convexity of the brain. It divides the brain as low as the corpus calloſum.

FAMES *canina*, by the Greeks called Cynodes Orexis, *q. d.* dog-appetite, is ſuch an inſatiable hunger, as is not to be ſatisfied with eating, but continues even when the ſtomach is full.

This is a caſe much talked of by the antients, and ſometimes met with amongſt us. It may be ſuppoſed to ariſe from ſharp fretting juices in the ſtomach, which by their continued vellications excite a ſenſe like that of hunger.

FAMILIA, FAMILY, commonly implies all the ſervants belonging to a particular maſter.

In another ſenſe, *Family* is taken for a portion of land, *viz.* ſo much as is ſufficient to maintain one *Family*.

The term hide is by our writers ſometimes rendered a manſe, ſometimes a *Family*, and ſometimes carucata, or ploughland; containing as much as one plough and oxen could cultivate in a year. See HIDE.

FAMILY *of curves*, is a claſs of curves of different orders or kinds; all which are defined by the ſame indeterminate equation, but in a different manner, according to their different orders.

Suppoſe, *e. gr.* the indeterminate equation, $a^{m-1}x=y^{m}$. If $m=2$, $ax=y^{2}$. If $m=3$, $a^{2}x=y^{3}$. If $m=4$, $a^{3}x=y^{4}$, &c. *in infinitum*. All which curves are ſaid to be of the ſame *Family*. See CURVE.

FAN, a machine uſed to raiſe wind, and cool the air by agitating it.

The cuſtom which now prevails among the ladies, of wearing *Fans*, was borrowed from the Eaſt, where the hot climate renders the uſe of *Fans* and umbrellas almoſt indiſpenſable.

It is not long ſince the European women firſt began to uſe a kind of *Fans* made of leather, in the ſummer-time; but they are now found of neceſſity even in winter.

In the Eaſt they chiefly uſe large *Fans*, made of feathers, to keep off the ſun, and the flies. In Italy and Spain they have a huge ſort of ſquare *Fans*, ſuſpended in the middle of their apartments, and particularly over the tables: theſe, by a motion at firſt given them, and which they retain a long time, by reaſon of their perpendicular ſuſpenſion, help to cool the air, and drive off flies.

In the Greek church, a *Fan* is put into the hands of the deacons in the ceremony of their ordination, in alluſion to a part of the deacon's office in that church, which is to keep the flies off the prieſts during the celebration of the ſacrament.—

Wicquefort, in his tranſlation of the embaſſy of Garcias de Figueroa, gives the name *Fans* to a kind of chimneys or ventiducts in uſe among the Perſians, to furniſh air, and wind, into their houſes; without which the heats would be inſupportable. See the deſcription thereof in that author, p. 38.

At preſent what is called a *Fan* amongſt us, and throughout the chief part of Europe, is a thin ſkin, or piece of paper, taffaty, or other light ſtuff, cut ſemicircularly, and mounted on ſeveral little ſticks of wood, ivory, tortoiſe-ſhell, or the like. *Fans* are either made with a double or ſingle paper.

If the paper be ſingle, the ſticks of the mounting are paſted on the leaſt ornamental ſide; if double, the ſticks are placed betwixt them. Before they procceed to place the ſticks, which they call *mounting the Fan*, the paper is to be plaited in ſuch manner, as that the plaits may be alternately inward and outward.

It is in the middle of each plait, which is uſually about half an inch broad, that the ſticks are to be paſted; and theſe again are to be all joined and rivetted together at the other end: they are very thin, and ſcarce exceed one third of an inch in breadth; and where they are paſted to the paper, are ſtill narrower, continuing thus to the extremity of the paper. The two outer ones are bigger and ſtronger than the others. The number of ſticks rarely exceeds twenty-two. The ſticks are uſually provided by the cabinet-makers or toy-men; the *Fan*-painters plait the papers, paint, and mount them.—

The common painting is either in colours or gold leaf, applied on a ſilvered ground, both prepared by the gold-beaters. Sometimes they paint on a gold ground, but it is rarely; true gold being too dear, and falſe too paltry. To apply the ſilver leaves on the paper, they uſe a compoſition, which they pretend is a great ſecret, but which appears to be no other than gum Arabic, ſugar-candy, and a little honey melted in common water, and mixed with a little brandy. This compoſition is laid on with a ſponge; then laying the ſilver leaves thereon, and preſſing them gently down with a linen ball ſtuffed with cotton, they catch hold, and grow together. When, inſtead of ſilver, gold ground is laid, the ſame method is obſerved.

The ground being well dried, a number of the papers are well beaten together on a block, and by this means the ſilver or gold get a luſtre, as if they had been burniſhed.

FANATIC, a wild, extravagant, viſionary, enthuſiaſtical perſon; who pretends to revelation and inſpiration, and believes himſelf poſſeſſed with a divine ſpirit.

Such were the Anabaptiſts, Quakers, *&c.* at their firſt riſe; and ſuch are ſtill the modern prophets, Muggletonians, *&c.*

Weigelius and Behmen were the leaders of the *Fanatics* of Germany, and both came out of the ſchool of Paracelſus. Weigelius is held the father of the Roſycrucians.

The word is formed of the Latin *fanum*, a heathen temple; for which reaſon the Chriſtians called all the Gentiles *Fanatics*. And accordingly, the antient chronicles of France call Clovis, *Fanatic* and pagan. But the word is yet of higher original.

Among the heathens themſelves, there were a ſort of prophetic prieſts, called *Fanatici*; from whom the denomination ſince paſſed to all the reſt. They had their name from the Latin *fanum*, temple, by reaſon they lived altogether in temples. Struv. *Antiq. Rom. Synt*. c. 6. p. 312.

Of this kind, particularly, were the prieſts of Iſis, of the mother of the gods, of Bellona, and ſome others, who were called *Fanatici*. In Gruter, p. 312. n. vii. we have an inſcription, wherein one L. Cornelius Januarius is called *Fanaticus*, AB ISIS. SERAPIS. ABAEDEM BELLONE. And p. 645. n. vii. *Fanaticus de æde Bellonæ*.

What might give occaſion to the appellation of *Fanatics*, was, that they performed their ſacrifices in a wild, enthuſiaſtical manner.—

FANATIO, in our antient cuſtoms, the fawning time, or fence-month in foreſts. See FENCE.

FANCY, ſee PHANTASY, and IMAGINATION.

FANTASTICAL *colours*, are the ſame with thoſe called *emphatical colours*. See EMPHATICAL *colours*.

FAPESMO, in logic, one of the moods of ſyllogiſms.

A ſyllogiſm in *Fapeſmo* has its firſt propoſition an univerſal affirmative, the ſecond an univerſal negative, and the third a particular negative.

FAQUIR. See the article FAKIR.

FARCE * was originally a droll, petty ſhew, or entertainment, exhibited by charletans, and their buffoons, in the open ſtreet, to gather the croud together.

* The word is French, and ſignifies literally, force-meat or ſtuffing. It was applied on this occaſion, no doubt, on account of the variety of jeſts, gibes, tricks, *&c.* wherewith the entertainment was interlarded. Some authors derive *Farce* from the Latin *facetia*; others from the Celtic *farce*, mockery; others from the Latin *farcire*, to ſtuff.

At preſent, *Farce* is of a little more dignity. It is removed from the ſtreet to the theatre; and inſtead of being performed by jack-puddings, to amuſe the rabble, is now acted by our comedians, and become the entertainment of the politeſt audiences.

The poets have reformed the wildneſs of the primitive *Farces*, and brought them to the taſte and manner of comedy. The difference between the two on our ſtage, is, that the latter keeps to nature and probability; and, in order to that, is confined to certain laws, unities, *&c.* preſcribed by the antient critics.

The former diſallows of all laws, or rather ſets them all aſide on occaſion. Its end is purely to pleaſe, or to make merry: and it ſticks at nothing, which may contribute thereto, however wild and extravagant. Hence the dialogue is uſually low, the perſons of inferior rank, and the fable, or action, trivial or ridiculous; and nature and truth are every-where heightened and exaggerated, to afford the more palpable ridicule.

FARCIN *, FARCY, or FASHIONS, a diſeaſe in horſes, and ſometimes in oxen, *&c.* ſomewhat of the nature of a ſcabies, or mange.

* Geſner derives the word from *varices*, by changing the *v* into a digamma or *f*.

The *Farcin* is infectious, and ſpreads like a true plague. Vegetius calls it *morbus farcinimoſus*. It conſiſts in a corruption of the blood, which ſhews itſelf in eruptions of hard puſtules, knots, or ſtrings along the veins, and in ulcers, which are not cured without great difficulty, by running hot irons into them.—There is a *ſpreading Farcin*, which diffuſes itſelf over the whole body; an *inner Farcy*, a *ſtringed Farcy*, &c.

The *Farcy* is ordinarily occaſioned by over-heats and colds, ſometimes by ſpur-galling with ruſty ſpurs, ſnaffle-bit, or the like; or by the bite of another horſe, infected with it; or if in the leg, by cutting, or interfering.

The *Water-Farcin* proceeds from a horſe's feeding on low watry grounds, and in pits or holes, where the graſs grows above the water; for the horſe, in picking out the graſs, licks up the water, which occaſions him to ſwell under the belly or chaps. The beſt cure is by a red-hot iron.

FARDEL *of land*, is, according to ſome authors, the fourth, according to Noy, only the eighth part of a yard-land. See YARD-LAND.

FARDING-*Deal*, or FARDING-LAND, in our antient cuſtoms, ſignifies the fourth part of an acre, now called a rood. In the regiſter of writs, we have alſo *denariata*, *obolata*, *ſolidata*, and *librata terra* *, which muſt probably riſe in proportion of quantity from the *Farding-deal*, as an halfpeny, peny, ſhilling, and pound, riſe in value; on which footing *obolata* muſt be half an acre; *denariata*, an acre; *ſolidata*, twelve acres; and *librata*, twelveſcore acres.

* Yet we find, *viginti libratas terræ*, *vel reditus*. *Reg. fol.* 94. *a*, and 284. *b*. where *librata terra* ſhould ſeem to be as much as yields xx *s. per annum*; and *centum ſolidatas terrarum, tenementorum, & redituum, fol* 249. *a*. Others hold *obolata* to be but half a perch; and *denariata*, a perch.

FARE, a voyage or paſſage, or the money paid for paſſing by water, *&c*

For the *Fares* of hackney-coachmen, watermen, *&c.* ſee COACHMAN, *&c.*

FARINA *, the flour or powder of ſome ſort of grain, or pulſe, ground, and ſifted from the bran.

* The word is pure Latin, *farina*, formed of *far*, corn, wheat; and *far*, according to Guichard, comes from the Hebrew בר *bar*, ſignifying the ſame thing.

FARINA *fœcundans*, among naturaliſts, is a fine duſt prepared in the male flowers, or the male parts of flowers of plants; which, being afterwards ſhed on the female, does the office of a ſperm or ſemen, by impregnating the ſame.

The *Farina fœcundans* called alſo the *male duſt*, and *male ſeed*, is formed and ſecreted in the apices or tops of the ſtamina; where, when it becomes mature, and copious enough, burſting its capſula, it is ſpilt on the head of the piſtil, and thence conveyed to the matrix, or utricle thereof, to fecundify the ova, or female ſeed, contained therein.

This duſt, in any one plant, being viewed with a microſcope, every particle thereof appears of the ſame ſize and figure; but in different plants, the figure, ſize, colour, *&c.* of the duſt are very different. Some *Farinæ* are clear and tranſparent as cryſtal; as thoſe of the maple, borrage, and hemlock; others are white and opake, as thoſe of henbane, and balſamins; others blue, as thoſe of flax; others purple, as of ſome tulips; others fleſh-coloured, as in ſome ſpecies of lychnis; and others red, as thoſe of the geum.

It may be obſerved, however, that the colour of the *Farina* varies in the ſame ſpecies, according to the colour of the flower; and even ſometimes the *Farina* of the ſame flower is of different colours, as is eaſily obſerved in the caryophyllus arvenſis.

The figures of the divers kinds of *Farinæ* are much harder to deſcribe. The moſt general figure is the oval, more or leſs ſharp at the ends, with one or more chanels or furrows running lengthwiſe; ſo that through the microſcope they look not unlike the ſtone of a date, a grain of wheat, a coffee-berry, or an olive: ſuch are thoſe of the polygonatum, bugles, briony, tithymal, *&c.* Thoſe of the melilot are cylinders; thoſe of the panſy, are priſms with four irregular ſides; thoſe of the great conſolida repreſent two cryſtal globules cloſely faſtened to each other; thoſe of the ſycomore repreſent two cylinders placed acroſs; thoſe of the jonquil are in form of a kidney; thoſe of the campanulæ, paſſion-flower, *&c.* are nearly round, but unequal in their ſurfaces; thoſ of caryophyllus ſylveſtris are round, and cut in facets; thoſ of the geranium, and ſome other ſpecies, are round, with kind of umbilicus, or indenture, as in an apple; Bradley ſay they are perforated quite through, like the bead of a necklace, which we doubt; thoſe of the caltha, corona ſolis, & are little globes, ſet with prickles, *&c.*

Of theſe *Farinæ*, ſome are very hard, others ſoft, and eaſil broken. They all contain a great deal of ſulphureous matte more than the other parts; whence they are very odorou Thoſe of the lily are ſo full of oil, that they greaſe the pape they are put in, as if it had been oiled. The *Farinæ* of mo aromatic plants ſwim in an eſſential oil, or ſort of liqu turpentine; others are involved in a dry reſin, as thoſe of th lycopodium, or muſcus terreſtris clavatus. Others, as tho of fumitory, are incloſed in a little, viſcid, mucilaginous ma ter; and all, in effect, have ſomething ſo glutinous, that the ſtick to any thing that touches them, ſo that it is difficult t ſeparate the grains from each other.

Some have imagined, that theſe *Farinæ* were only particles wax or reſin; but the contrary is eaſily proved; for th neither diſſolve in water, nor ſpirit, nor oils, even wh aſſiſted with fire.

Mr. Bradley ſuppoſes a magnetic virtue lodged in the *Fari fœcundans*, or male duſt; by means whereof, when depoſit in the utricle of the female, it draws the nouriſhment from t other parts of the plant into the ova, or rudiments of the fru and makes them ſwell. The reality of this virtue he argu from the ſame being found in wax, which is chiefly or whol gathered hence by the bees.

Some, againſt the great uſe of the *Farina fœcundans* in ge ration, may object, that in flowers which hang downwar as the cyclamen, *&c.* the *Farina fœcundans* cannot be caſt the orifice of the piſtil.—To which it may be anſwered, t the piſtils of ſuch flowers hanging lower than the duſty api which ſurround them, the glutinous matter, and the vel covering the extremity of the piſtil, may be capable of ceiving and retaining ſome of the *Farina* as it falls; and wi out any intromiſſion of the *Farina*, its lodgment on the mou of the piſtil may, by virtue of its attractive power, fecund the ſeed in the uterus.

FARM, or FERM, FIRMA, in law, ſignifies a little coun meſſuage, or diſtrict; containing houſe, and land, with ot conveniencies; hired, or taken by leaſe, either in writing, by word, under a certain yearly rent.

This in divers parts is called diverſly: in the north, it *Tack*; in Lancaſhire, a *Fermeholt*; in Eſſex, a *Wike*, &c In the corrupted Latin, *firma* ſignified a place incloſed, ſhut in: whence, in ſome provinces, Menage obſerves, t call cloſerie, or cloſure, what in others they call *Fa*

Add, that we find *locare ad firmam*, to ſignify to lett to *farm*; probably on account of the ſure hold the tenant here has in compariſon of tenants at will.

Spelman, and Skinner, however, chooſe to derive the word *farm* from the Saxon *fearme*, or *feorme*, that is, *victus*, or proviſion; by reaſon the country-people and tenants antiently paid their rents in victuals, and other neceſſaries; tho' this was afterwards converted into the payment of a ſum of money. Whence a *ferm* was originally a place that furniſhed its owner or lord with proviſions. And among the Normans, they ſtill diſtinguiſh between *farms* that pay in kind, *i. e.* proviſions; and thoſe which pay in money; calling the former ſimply *fermes*, and the latter *blanche ferme*, white *ferm*.

Spelman ſhews, that the word *firma* antiently ſignified not only what we now call a *farm*, but alſo a feaſt, or entertainment, which the farmer gave the proprietor or landlord, for a certain number of days, and at a certain rate, in conſideration of the lands, &c. he held of him.

Thus *fearm*, in the laws of king Canutus, is rendered by Mr. Lambard, *victus*; and thus we read of *reddere firmam unius noctis*; and, *reddebat unam diem de firma*; which denote proviſion for a night and day; the rents about the time of the conqueſt being all reſerved in proviſions: the cuſtom whereof is ſaid to have been firſt altered under Henry I.

We alſo ſay, to *farm* duties, impoſts, &c. The duty of exciſe in Scotland was farmed, or lett to *farm*, for 33500 *l.* *per annum*.

ARREATION, FARREATIO, in antiquity, the ſame with *confarreation*. See CONFARREATION.

ARRIER, a perſon, whoſe office is to ſhoe horſes, and cure them when diſeaſed, or lame.

ARTHING, a ſmall Engliſh copper coin, amounting to one fourth of a peny.

It was antiently called *Fourthing*; as being the fourth of the integer, or peny.

ASCE, *faſcia*, in heraldry. See the article FESSE.

ASCES, in antiquity, axes tied up together with rods, or ſtaves, and borne before the Roman magiſtrates, as a badge of their office, and authority.

Florus, l. i. c. 5. aſſures us, that the uſe of *faſces* was introduced by the elder Tarquin, the fifth king of Rome; and that they were then the mark of the ſovereign dignity. In after times, they were borne before the conſuls, but by turns only, each his day; *ne, ſi ambo faſces haberent, duplicatus terror videretur*. Livy, l. ii. c. 1. They had each of them twelve, borne by ſo many uſhers, called lictors. See LICTOR. Dionyſ. Halicarn. l. iii. c. 84.

Others will have Romulus the author of the inſtitution, and aſcribe the number twelve to the number of birds which foretold him his kingdom. Others hold, that he borrowed it from the Hetrurians; and that the number twelve anſwered to the twelve nations of Hetruria, who, in creating him king, gave him each an officer, to ſerve him as lictor. Silius Italicus aſcribes their firſt invention to a city of Hetruria called Vetulonia.

Theſe *faſces* conſiſted of branches of elm; in the middle whereof was a ſecuris, or ax, the head whereof ſtood out beyond the reſt. Plutarch relates the reaſons of this diſpoſition. Publicola took the ax out of the *faſces*, as Plutarch aſſures us, to remove from the people all occaſion of terror. After the conſuls, the prætors aſſumed the *faſces*. Cenſorin. *De die natal.* obſerves, that the prætors had only two; though Polybius and Plutarch give them ſix.

In the government of the decemviri, it was the practice, at firſt, for only one of them to have the *faſces*. Afterwards, each of them had twelve, in the ſame manner as the kings.

ASCIA, in architecture, by the workmen called FACIA, ACIO, or FACE, a broad liſt, fillet, or band; particuarly uſed in architraves and pedeſtals.

The architrave conſiſts of three *faſciæ*, or bands; thus called by Vitruvius, as reſembling ſwathes, called in Latin *faſciæ*.

That author admits no *faſciæ* in the Tuſcan and Doric architrave; *i. e.* he makes it all plain, without any diviſion, or cantoning into parts or *faſciæ*: but the modern architects take the liberty to differ from him herein. See *Tab. Archit. Fig.* 28. lit. *N.*

In brick-buildings, the jutting out of the bricks, beyond the windows, in the ſeveral ſtories, except the higheſt, are called *faſcia's*, or *faſciæ*.

Theſe are ſometimes plain, and ſometimes moulded; but the moulding is only a *cima reverſa*, or an OG, at the bottom, with two plain courſes of bricks over it; then an aſtragal; and laſtly a boultine.

SCIA *lata*, in anatomy, a muſcle of the leg; called alſo *membranoſus*. See MEMBRANOSUS.

SCIÆ, in aſtronomy, two rows of bright ſpots, obſerved on Jupiter's body; appearing like ſwathes, or belts.

The *faſciæ*, or belts of Jupiter, are more lucid than the reſt of his diſk, and are terminated by parallel lines. They are ſometimes broader, and ſometimes narrower; nor do they always poſſeſs the ſame part of the diſk.

M. Huygens, likewiſe, obſerved a very large kind of *faſcia* in Mars; but it was darker than the reſt of the diſk, and took up the middle part thereof.

FASCIALIS, in anatomy, a muſcle of the leg; called alſo *ſartorius*. See SARTORIUS.

FASCICULUS, in medicine, a term ſometimes uſed to expreſs a certain quantity or meaſure of herbs.

By *faſciculus* is meant ſo much as may be held in the arm when bent, and reſted on the top of the hip. Phyſicians note it in preſcription by *faſc.*

FASCINATION *, FASCINATIO, denotes a ſort of witchcraft, ſuppoſed to operate by the influence either of the eye, or the tongue. See WITCHCRAFT.

* The word is Latin, formed from the Greek βασκαινειν, which ſignifies the ſame.

Antient writers diſtinguiſh two ſorts of *faſcination*; one performed by looking, or the efficacy of the eye. Such is that ſpoken of by Virgil, in his third eclogue:

Neſcio quis teneros oculus mihi faſcinat *agnos.*

The ſecond by words, and eſpecially malignant praiſes. Such is that mentioned by the ſame poet, in his ſeventh eclogue:

Aut, ſi ultra placitum laudârit, baccare frontem
Cingite, ne vati noceat mala lingua futuro.

Horace touches on both kinds in his firſt book of epiſtles:

Non iſtic obliquo oculo mea commoda quiſquam
Limat, non odio obſcuro, morſuque venenat.

FASCINES, in fortification, *fagots*; ſmall branches of trees, or bavins, bound up in bundles, which, being mixed with earth, ſerve to fill up ditches, to ſcreen the men, make the parapets of trenches, &c. See *Tab. Fortif. Fig.* 24.

Some of them are dipped in melted pitch or tar; and, being ſet on fire, ſerve to burn the enemy's lodgments, or other works.

A pitched *faſcine* is a foot and a half about: a *faſcine* for defence, two or three feet.

In the corrupt Latin, they uſe *faſcenina*, *faſcennia*, and *faſcinata*, to ſignify the pales, *faſcines*, &c. uſed to incloſe the antient caſtles, &c.

FASHION *.

* The word is French, *façon*; which ſignifies making.

FASHION is particularly uſed among artificers, for the trouble, time, and labour, employed in a piece of work; particularly any ſilver or gold utenſil, inſtrument, toy, or the like.

It is by the *faſhion*, that the workmens wages, or ſalary, is regulated. We paid ſo much apiece for the *faſhion* of theſe ſpoons, excluſive of the matter, or ſilver. That weaver has ſo much a piece for the *faſhion* of the ſtuffs we give him to weave.

FASHION-*pieces*, in the ſea-language, two pieces of timber, which form the breadth of a ſhip, at the ſtern; and are the outmoſt timbers of the ſtern, on each ſide, except aloft, where the counters are. See STERN.

FAST, a ſpace of time, wherein a perſon takes little or no food.

The advantages of *faſting*, with regard to health, with extraordinary inſtances of long *faſting*, ſee under the article ABSTINENCE.

The Bramins never bleed their ſick, but make them *faſt* in lieu thereof.

FAST is peculiarly uſed for an abſtinence on account of religion; or a ſpace of time, wherein the church prohibits the uſe of food; or at leaſt reſtrains it to certain kinds, and to certain hours.

The ſtrict, canonical *faſt* only allows of one meal in twenty-four hours. F. Thomaſſin obſerves, that the antient *faſt* was, to ſup, without dining, *i. e.* only to take one meal, and that not till after noon: adding, that to dine, though without ſupping, was a breach of the *faſt*. The practice of the Latin church was to *faſt* thirty-ſix days in the year; which is, as it were, the tithe of the year.

Tertullian wrote an expreſs treatiſe *de jejuniis*, of *faſts*; to ſupport the new laws of *faſting*, which the Montaniſts were for impoſing.

The antient catholics allowed of no obligatory or commanded *faſts*, beſide that preceding Eaſter, ſince called *Lent*; the terms of which were, to forbear eating till the evening.

The other *faſts* obſerved were only of devotion: ſuch were the fourth and ſixth feriæ, *i. e.* Wedneſdays and Fridays.

This Lent *faſt* was called *ſtation*. Beſides theſe, there were occaſional *faſts* injoined by the biſhops, &c.

In the book of Hermas, called the *Paſtor*, the angel tells him, The day thou *faſteſt*, thou ſhalt take nothing but bread and water; and, having computed the uſual expences of each day, thou ſhalt lay aſide ſo much for the widow, the orphan, or the poor.

In the ſame paſſage, the *faſt* is called ſtation, and the perſon who *faſted* is injoined to begin early in the morning to retire to prayer.

St. Fructuoſus, Fleury tells us, going to ſuffer, ſome people, out of a principle of charity, offered him drink, to ſupport him; but he refuſed it, ſaying. It is not yet time to break *faſt*; for it was but ten in the morning, and it was Friday, ſtation-day. Which ſhews the exactneſs of the primitive Chriſtians in this point; and that drinking was held breaking of *faſt*.

Some introduced the xerophagy into *faſts*; that is, the uſe of dried fruits for their meals; and made a practice of abſtaining not only from all meats, and wines, but alſo from ſucculent fruits, for the whole twenty-four hours: and ſome reduced themſelves to bread and water. But this was more than was commanded.

The practice of *faſting* is more antient than Chriſtianity. The Iſraelites *faſted* often, and had their ſtated *faſt*-days. The day of atonement, which they call Kipparim, was a day of *faſting*, injoined in *Levit.* xxiii. 27, &c. Some will have this the day St. Paul refers to in *Acts* xxvii. 9. The Jews had likewiſe *faſts*, inſtituted by precept of the ſynagogue: ſuch were thoſe of the fourth, fifth, and tenth of the month, mentioned by *Zechariah*, vii. 3. and viii. 19.

The heathens adopted the ſame cuſtom, in all probability, from the people of God; though their religion inclined them more to feaſting, than to *faſting*; as appears from the long liſt of *feaſts* enumerated under the article Feast.

Yet they *faſted* in the Eleuſinia; as appears from Arnobius, and Clemens Alexand. See Salmaſius, p. 150. and Scaliger, *Poetic.* l. i. c. 32.

The *faſts* of the Calogeri are ſo ſevere, that they remain ſeven days without eating at all. For the *faſts* of the Greeks, ſee Spon. Voyag. p. ii.

The Turks are ſo ſcrupulous on the point of *faſting*, that they will not at thoſe times ſo much as take the ſmell of any perfume by the noſe. They hold that odours themſelves break *faſt*. If they bathe, it is forbid to put the head under water, for fear of ſwallowing any of it: and as for women, they are forbid to bathe at all on *faſt*-days, for a reaſon peculiar to the ſex.

FASTERMANS, or Fasting-men, *q. d. homines habentes*, was uſed, in our antient cuſtoms, for men of repute, and ſubſtance; or rather for pledges, ſureties, or bondſmen, who, according to the Saxon polity, were *faſt* bound to anſwer for one another's peaceable behaviour.

FASTI, in antiquity, the Roman calendar; wherein the ſeveral days of the year, with their feaſts, games, and other ceremonies, were expreſſed. See Calendar.

The Romans had their *greater* and *leſſer faſti.*—The great *faſti* were called the *faſti* of the magiſtrates; and the leſſer, the *faſti calendares*.

The Fasti *calendares*, which were what was properly and primarily called *faſti*, are defined by Feſtus Pompeius to be books containing a deſcription of the whole year; *i. e.* ephemerides, or diaries, diſtinguiſhing the ſeveral kinds of days, feſti, profeſti; faſti, nefaſti, &c. See Festi, &c. The author hereof was Numa, who committed the care and direction of the *faſti* to the pontifex maximus; whom the people uſed to go and conſult on every occaſion. This cuſtom held till the year of Rome 550. when C. Flavius, ſecretary of the pontifices, expoſed in the forum a liſt of all the days, whereon it was lawful to work; which was ſo acceptable to the people, that they made him curule ædile. Liv. l. ix. c. 46.

Theſe *leſſer faſti*, or *faſti calendares*, were of two kinds: *urbani*, and *ruſtici.*—The *faſti urbani*, or *faſti* of the city, thoſe which obtained, or were obſerved, in the city. Some will have them thus called, by reaſon they were expoſed publicly in divers parts of the city; though by the divers inſcriptions, or gravings thereof, on antique ſtones, one would imagine, that private perſons had them likewiſe in their houſes. It was theſe *faſti urbani* Ovid undertook to illuſtrate, and comment on, in his *libri faſtorum*; whereof we have the ſix firſt books ſtill remaining; the ſix laſt, if ever they were written, being loſt. Beſide Ovid, ſeveral other authors had undertaken the ſame ſubject, particularly L. Cincius Alimentatus, Fulvius Nobilior, Maſurius Sabinus, Cornelius Labeo, C. Licinianus, and Niſus: of all whom Macrobius makes mention, in his *Saturn.* and preſerves fragments of each; beſide a work of one Bæbius Marcus, intituled, *De faſtis diebus*, quoted by Fulgentius, *De priſco ſermone*.

In the *greater* Fasti, or *faſti* of the magiſtrates, were expreſſed the ſeveral feaſts, with every thing relating to the gods, religion, and the magiſtrates; the emperors, their birth-days, offices, days conſecrated to them; and feaſts and ceremonies eſtabliſhed in their honour, or for their proſperity, &c.

With a number of ſuch circumſtances did flattery, at length, ſwell the *faſti!* whence they became denominated *magni*, to diſtinguiſh them from the bare calendar, or *faſti calendares*.

In the Fasti *ruſtici*, or country *faſti*, were expreſſed the ſeveral days, feaſts, &c. to be obſerved by the country-people; for, as theſe were taken up in tilling the ground, fewer feaſts, ſacrifices, ceremonies, and holidays, were injoined them, than the inhabitants of cities: and they had alſo ſome peculiar ones, not obſerved at Rome.

Thoſe ruſtic *faſti* contained little more than the ceremonies of the calends, nones, and ides; the fairs, ſigns of the zodiac, increaſe and decreaſe of the days; the tutelary gods of each month, and certain directions for rural works, to be performed each month.

Fasti was alſo a chronicle, or regiſter of time, wherein th ſeveral years were denoted by the reſpective conſuls, with th principal events that happened during their conſulates: theſ were called alſo *faſti conſulares*, or *conſular faſti*.

Onuphrius Panvinius, Pighius, and Janſſen d'Almelooven have given us the *faſti conſulares*; the two firſt, with lon and learned comments, wherein are expreſſed, not only th conſuls, but alſo the dictators, magiſtri equitum, triumphs and ovations. Pighius even adds as many of the other officer as he could find; *viz.* prætors, tribunes, &c. D'Almaloo ven confines himſelf to the conſuls alone.

Fasti is ſtill applied to the archives, and public record wherein are kept hiſtorical memoirs of public and remarkab things befallen a people.

In the like ſenſe the martyrology is called the ſacred *faſti* the church.

The Jeſuit Du Londel has compiled the *faſti* of Louis Grand, &c.

Fasti, or *dies faſti*, alſo denoted court-days. See Day.

The word *faſti*, *faſtorum*, is formed of the verb *fari*, ſpeak; by reaſon, during thoſe days the courts were ope cauſes might be heard, and the prætor was allowed *fari*, pronounce the three words *do*, *dico*, *addico*: the oth days, wherein this was prohibited, were called *nefaſ* Thus Ovid:

> *Ille* nefaſtus *erit, per quem tria verba ſilentur:*
> Faſtus *erit, per quem lege licebit agi.*

Theſe *dies faſti* were noted, in the calendar, by the letter But obſerve, that there were ſome days, *ex parte faſti*, par *faſti*, partly *nefaſti*; i. e. juſtice might be diſtributed at c tain ſeaſons of the day; and at others not. Theſe days w called *interciſi*. They were marked in the calendar th *F. P. faſtus primo*, where juſtice might be demanded duri the firſt part of that day.

FASTIDIUM *cibi*. See the article Nausea.

FASTIGIUM, in architecture, the ſame with pediment. S Pediment.

FAT, in an animal body, a white, oily, ſulphureous ſubſtan collected in little membranous loculi, or cells, in divers p of the body; ſerving to keep the parts warm, and to ſof and temper the ſharp ſalts in the maſs of blood.

Phyſicians diſtinguiſh two kinds of *fat*; the firſt, called Latin *pinguedo*, and in Engliſh, abſolutely, and by way eminence, *fat*, is a ſoft, lax, whitiſh, or rather yellow oily matter, which is eaſily melted; found immediately der the cutis, incloſed in little bags, called cellulæ adipo adhering to the outer ſurface of a membrane called *adip* all over the body, except on the forehead, eyelids, pe and ſcrotum.

This *fat* is nothing but the oily part of the aliment, or ch ſeparated from the arterial blood, by the adipoſe gla and carried by peculiar ducts to the membraneous ce whence it is tranſmitted again to the blood by the ve Dr. Grew takes it to be a coagulum of the oily parts of blood, made either by ſome of its own ſaline parts, or the nitrous particles of the air mingled therewith in the lun which ſentiment is confirmed by an experiment of learned perſon, who made an artificial *fat*, by only mi oil of olives with ſpirit of nitre for ſome days.—And he it is, that divers animals, as rabbets, hares, &c. grow *fa* winter, and particularly in ſevere froſty weather; the air abounding moſt in nitre. Hence alſo it is, that the *fa* land-animals is much firmer than that of fiſhes; the w element containing leſs nitrous matter than the air.

In ſome ſubjects the cellulæ are ſo full and diſtended, that *fat* is above an inch thick; in others they are almoſt and in emaciated ſubjects, inſtead of *fat*, we find a ſof flaccid tranſparent ſubſtance; which is nothing but the membrane; the cells being all exhauſted.

A ſecond kind of Fat, called *adeps*, *ſebum*, *ſevum*, and ſo times *axungia*, is whiter, harder, more brittle, and eaſy to liquify, than the former; being found in the ca of the abdomen, omentum, &c.

The *fat* of both kinds ſerves as a natural balſam, to pre the body; and by mixing with, and enveloping the whereby the blood and ſerum are highly ſaturated, it them from fretting and corroding the parts of the body which they paſs.

It is thought likewiſe, and not without probability, to a conſiderable part of the nouriſhment of our bodies; wh the *fatteſt* perſons, falling into an atrophy, gradually lo their *fat*, which is always quite expended in ſuch caſes, b the diſeaſe becomes fatal.

Too much *fat* is uſually attended with heavineſs, and dr neſs, not only from the unwieldineſs of an overgrown nor from the ſtuffing of the cavities and thorax alone, ſometime obſtructs the expanſion of the diaphragm lungs, and produces a dyſpnœa, or an orthopnœa; bu likewiſe probable, that the abundance of *fatty* or oily ticles, returned into the blood, and implicating the more ſubtle and active parts, may hinder the neceſſary ſecretions in the brain.

The *fat* of animals, for the generality, is not reckoned good food; as being hard of digeſtion, and producing a thick, viſcid chyle. But it is of good uſe in medicine.

Calves fat is uſed in pomatums, and unguents; being reſolutive, and emollient.—That of *hogs* and *boars* has the ſame qualities, and is ſtrengthening beſides.—*Deers-greaſe* is accounted good to fortify the nerves againſt the rheumatiſm, ſciatica, gout, and fractures.—*Hares-greaſe*, applied externally, promotes digeſtion, and a ſuppuration of abſceſſes.—That of *rabbets* is nervous and reſolutive.—That of *cocks*, and *hens*, reſolves and ſoftens indurations.—That of *geeſe* has the ſame qualities; and likewiſe abateth hæmorrhoids; aſſwages pains in the ear, being applied within the ſame; and opens the belly, being taken inwardly.—*Eels fat*, is eſteemed good againſt the hæmorrhoids and deafneſs; to take away pits of the ſmall-pox; and to make the hair grow.—That of the *trout*, beſide its being emollient, is ſaid to be good in diſeaſes of the anus, and in ulcers of the breaſt.

FAT, in the ſea-language, denotes the ſame with *broad*.

Thus, if the truſſing in, or tuck of a ſhip's quarter under water, be deep, they ſay, ſhe hath a *fat* quarter.

FAT, ſee the article VAT.

FAT, or *vat*, alſo expreſſes a large wooden veſſel, which among brewers and maltſters is uſed to meaſure malt for expedition; containing a quarter, or eight buſhels. See MALT.

FAT is likewiſe a veſſel or pan of lead, uſed in the making ſalt, *&c.* See SALT.

FATE, FATUM, in a general ſenſe, denotes an inevitable neceſſity, depending on ſome ſuperior cauſe.

Fate is a term much uſed among the antient philoſophers. It is formed *a fando*, from ſpeaking; and primarily implies the ſame with *effatum*, *viz.* a word, or decree, pronounced by God; or a fixed ſentence, whereby the Deity has preſcribed the order of things, and allotted every perſon, what ſhall befal him.

The Greeks call it, *ειμαρμενη*, *quaſi ειρμος*, *nexus*, a chain, or neceſſary ſeries of things, indiſſolubly linked together; and the moderns, *Providence*.

But, beſide this ſenſe of the word, wherein it is uſed, ſometimes to denote the connexion of cauſes in nature, and ſometimes in the divine appointment; the word *fate* has a further intention, being uſed to expreſs I know not what neceſſity, or eternal deſignation of things, whereby all agents, both neceſſary and voluntary, are ſwayed, and directed to their ends. See NECESSITY.

Some authors divide *fate* into *Aſtrological* and *Stoical*.

Aſtrological FATE, denotes a neceſſity of things and events, ariſeing, as is ſuppoſed, from the influence and poſitions of the heavenly bodies, which give law, both to the elements, and mixed bodies, and to the wills of men.

In which ſenſe the word is often uſed by Manilius: *Certum eſt & inevitabile* fatum: *materiæque datum eſt cogi, ſed cogere ſtellis.*

Stoical FATE, or *Fatality*, is defined by Cicero, an order or ſeries of cauſes, wherein cauſe being linked to cauſe, each produces other; and thus all things flow from the one prime cauſe. Chryſippus defines it a natural invariable ſucceſſion of all things *ab æterno*, each involving other.

To this *fate* they ſubject the very gods. Thus the poet: The parent of all things made laws at the beginning, by which he not only binds other things, but himſelf. So Seneca: *Eadem* neceſſitas *& deos alligat. Irrevocabilis divina pariter & humana curſus vehit.—Ipſe ille omnium conditor & rector ſcripſit quidem* fata, *ſed ſequitur: ſemel ſcripſit, ſemper paret.*

This eternal ſeries of cauſes, the poets call *μοιραι*, and *parcæ*, or deſtinies.

Fate is divided, by ſome later authors, into *phyſical* and *divine*.

Phyſical FATE is an order and ſeries of natural cauſes, appropriated to their effects.

This ſeries is neceſſary; and the neceſſity is natural. The principle, or foundation of this *fate*, is nature, or the power and manner of acting, which God originally gave to the ſeveral bodies, elements, mixts, *&c.* By this *fate* it is, that fire warms; bodies communicate motion to each other; the ſun and moon occaſion the tides, *&c.* And the effects of this *fate* are all the events and phænomena in the univerſe; except ſuch as ariſe from the human will. See NATURE.

ivine FATE is what we more uſually call *Providence*. See PROVIDENCE.

Plato, in his Phædo, includes both theſe in one definition; as intimating, that they were one and the ſame thing, actively and paſſively conſidered. Thus, Fatum *eſt ratio quædam divina, lexque naturæ comes, quæ tranſiri nequeat, quippe a auſa pendens, quæ ſuperior ſit quibuſvis impedimentis.* Tho' hat of *Boethius* ſeems the clearer, and more juſt: *Fatum*, ays he, *eſt inhærens rebus mobilibus diſpoſitio, per quam Providentia ſuis quæque nectit ordinibus.*—

THER, *Pater*, a term of relation, denoting a perſon who begot a child, either male or female.

Among the antient Romans, the *fathers* of three children had very conſiderable privileges allowed them, as ſuch. By the law of Romulus, a *father* had an abſolute and unlimited power over his children.

Adoptive FATHER is he who takes the children of ſome other, and owns them as his own.

Putative FATHER is he who is only the reputed, or ſuppoſed *father*. Joſeph was *putative father* of our Saviour.

Natural FATHER is he who has illegitimate children.

FATHER-*in-law* is a perſon married to a woman, who has children by a former huſband, *&c.*

FATHER is alſo uſed, in theology, for the firſt Perſon in the Trinity.

God *the Father* is the proper *Father* of Jeſus Chriſt; with regard to men, he is called *heavenly Father*.

FATHER is alſo uſed in a figurative ſenſe, on divers moral and ſpiritual occaſions. Thus, it is applied to the patriarchs; as we ſay, Adam was the *father* of all mankind; Abraham the *father* of the faithful, *&c.*

In an eccleſiaſtical ſenſe, FATHERS denote the antient prelates and doctors of the church.

The *fathers* aſſembled at the council of Nice: Chryſoſtom, St. Baſil, *&c.* were Greek *fathers*; and St. Auguſtine, St. Ambroſe, *&c.* were Latin *fathers*.

The *fathers*, ſay Meſſieurs de Port Royal, are the proper interpreters of the goſpel; and are only honoured with that ſacred appellation, as their works are, in ſome meaſure, a patrimony or inheritance, left to the faithful, as their proper children.

Scaliger obſerves, that the *fathers* were good people, but not learned ones. To which St. Evremond ſubjoins, that when a man comes to look nearly at the *fathers*, he loſes a great part of that veneration, which time and opinion had procured them: the great diſtance between them and us, makes them appear much greater than they really are.

The *fathers*, ſays the ſame author, had more imagination and vivacity of mind, than judgment and good ſenſe. They gave altogether into allegories, and affected the brilliant to an exceſs. Juſtneſs of mind was a thing they valued themſelves the leaſt on.

FATHER is alſo a title of honour, given to prelates and dignitaries of the church. The right reverend *father* in God, Iſaac, lord biſhop of, *&c.*

FATHER is alſo applied to the ſuperiors of convents, *&c.* See ABBOT. The *father* general; *father* provincial, exprovincial; *father* prior, ſubprior; *father* definitor, in the order of Benedictines; *father* guardian, in that of the Franciſcans; *father* corrector among the Minims, *&c.*

FATHERS is alſo applied plurally to all congregations of eccleſiaſtics, whether regular, or ſecular.—As, the *fathers* Cordeliers, Capuchins, Auguſtins, Jacobins, *&c.* The *fathers* Jeſuits, *fathers* of the oratory, Barnabites, Theatins, of the miſſion, *&c.* See each under the proper article.

FATHERS is alſo uſed for perſons venerable for their age or quality, or the ſervices they have done the public.

Thus, at Rome, the ſenators were called *conſcript fathers*, *patres conſcripti*, *&c.*

FATHIMITES, or FATHEMITES, the deſcendants of Mahomet by *Fathima*, or *Fathema*, his daughter.

The dynaſty of *Fathimites*, that is, of princes deſcending in a direct line from Ali, and *Fathima* his wife, Mahomet's daughter, commenced in Africa, in the year of the Hegira 296. of Jeſus Chriſt 908.

The *Fathimites* afterwards conquered Egypt, and eſtabliſhed themſelves therein, in quality of caliphs.

The *Fathimites* of Egypt ended in Abed, in the year of the Hegira 567. 268 years after their firſt eſtabliſhment in Africa, and 208 after the conqueſt of Egypt.

FATHOM, a long meaſure, containing ſix feet; taken from the utmoſt extent of both arms, when ſtretched into a right line.

The *fathom* is uſed at ſea, in eſtimating the lengths of cables, and other ſhip-ropes, with the depths and ſoundings of the ſea: as alſo in mines, quarries, wells, and works of fortification.

There are three kinds of *fathoms*, accommodated to the different ranks of veſſels. The firſt, which is that of men of war, contains ſix feet; the *middling*, or that of merchant-ſhips, five feet and a half; and the *ſmall fathom*, uſed in fluyets, fly-boats, and other fiſhing-veſſels, only five feet.

FATHOM is alſo uſed in ſeveral countries, particularly Italy, for the common yard, or ell, whereby things are ordinarily meaſured, in commerce.

In this ſenſe it is more commonly called *brace*, or *braccio*, *q. d.* arm.

FATNESS, in medicine, *corpulency*; or the ſtate of a perſon too much loaded with fleſh and fat.

FATUARII, in antiquity, were perſons, who appearing inſpired, foretold things to come.

The word is formed of *Fatua*, wife of the god Faunus, who was ſuppoſed to inſpire women with the knowlege of futurity;

as Faunus himſelf did the men.—*Fatua* had her name from *fari*, *q. d. vaticinari*, to propheſy.

FATUUS *Ignis*. See IGNIS *Fatuus*.

FAUCON, or FALCON, a ſmall piece of cannon, whoſe diameter is 2¾ inches; weight, 750 pound; length, 7 feet; load, 2¼ pound; ſhot, 2½ inches diameter; and 2½ pound weight. See CANNON.

FAUCONET, or FALCONET, a very ſmall piece of ordnance, whoſe diameter at the bore is 2¼ inches; weight, 400 pounds; length, 6 feet; load, 1¼ pound; ſhot, ſomething more than 2 inches diameter; and 1⅛ pound weight. See ORDNANCE.

FAVISSA *, among antiquaries, a hole, pit, or vault, underground, wherein is kept ſomething of great value.

> * The word ſeems formed of *foviſſa*, a diminutive of *fovea*, a pit or ditch.

The *faviſſa*, according to A. Gellius, and Varro, was much the ſame with what the antient Greeks and Romans called, θησαυρὸς, *theſaurus*; and what in ſome of the modern churches is called *archives* and *treaſury*.

In the capitol there were divers *faviſſæ*. They were ſubterraneous places, walled and vaulted; having no entrance, or light, but by a hole a-top, which was uſually ſtopped up with a huge ſtone.

They were chiefly deſtined for keeping the old, worn ſtatues, and other antient moveables, formerly uſed in the temple; ſo religiouſly did that people reſpect and preſerve whatever was conſecrated. Catullus would have lowered the floor of the capitol, but that the *faviſſæ* prevented him.

Feſtus, however, gives us a different account of the *faviſſæ*. According to that author, they were wells or pits of water, near the temples, and for the uſe thereof: the ſame with what the Greeks called ὀμφαλὸς, *navel*, as being round, &c. Gellius likewiſe gives them the name of ciſterns, as well as Feſtus; but it is apparently for no other reaſon, than that they bore a reſemblance thereto in figure.

In effect, the two notions are pretty eaſily reconciled; it being certain, that the treaſuries of ſome of the antient Greek temples were the ciſterns or reſervoirs of water, wherein people uſed alſo to waſh themſelves, before they entered the temple.

FAUNALIA *, in antiquity, feaſts celebrated by the Romans, in honour of the god Faunus.

> * The deity *Faunus*, to whom the ſolemnity was devoted, and from whom it was denominated, was the ſame among the Romans, with the Pan of the Greeks.

The *faunalia* were held on the day of the nones of December, *i. e.* on the fifth day of that month. The principal ſacrifice was a roe-buck; or rather, according to Horace, a kid, attended with libations of wine, and burning of incenſe.

It was properly a country feſtival; being performed in the fields and villages with peculiar joy and devotion.

Horace gives us a very gay deſcription thereof, in the xviiith ode of his iiid book.

——Tener pleno cadit hædus anno:
Larga nec deſunt Veneris ſodali
Vina crateræ: vetus ara multo
Fumat odore.

Struvius, in his Roman calendar, marks the feaſt of Faunus on the day of the ides of February, which is the 13th day of that month; and the *faunalia* he places on the 5th of the ides of December, or the 9th of that month. And in c. ix. he ſhews, that there really were two *faunalia*; the one in February, mentioned by Ovid, *Faſt.* l. vi. ver. 246. the other, on the 9th of December, mentioned by Horace, in the place juſt cited.

FAUNS, FAUNI, among the antients, were a ſpecies of demigods, inhabiting the foreſts; called alſo *Sylvans*, *Sylvani*.

They were repreſented as half men, half goats; having the horns, ears, feet, and tail of a goat, a very flat noſe, and the reſt human.

The Roman *Faunus*, we have obſerved, was the ſame with the Greek *Pan*. Now, in the poets we find frequent mention of *Fauns* and *Panes* in the plural number; in all probability, therefore, the *Fauns* were the ſame with the *Panes*. See PANES.

The reaſon was, that there were ſeveral *Faunus's* and *Pans*; though all deſcended from one principal one. Thus Ovid:

Aut quas ſemideæ Dryades, Faunique bicornes,
Numine contactas attonuere ſuo.

The Romans called them *Fauni*, *Ficarii*, and *Fauni Ficarii*. The denomination *ficarii* was derived, not from the Latin *ficus*, *ficûs*, a fig, as ſome have imagined; but from *ficus*, *fici*, a ſort of fleſhy tumour or excreſcence, growing on the eyelids, and other parts of the body; with which the *Fauns* were repreſented.

Though the *Fauns* were held for demigods; yet were they ſuppoſed to die, after a long life. Arnobius ſhews, that their father, or chief, *Faunus* himſelf, only lived 120 years.

FAVOUR, in commerce, ſee the article GRACE.

FAUSSE-BRAYE, in fortification, an elevation of earth, two or three fathoms broad, round the foot of the rampart on the outſide, defended by a parapet which parts it from the berme, and the edge of the ditch: its uſe is for defence of the ditch. The *fauſſe-braye* is the ſame with what is otherwiſe called *Chemin des rondes*, and *Baſſe enceinte*.

It is of little uſe where ramparts are faced with wall, becauſe of the rubbiſh which the cannon beats down into it. For this reaſon, engineers will have none before the faces of the baſtions, where the breach is commonly made; becauſe the ruins falling, the *fauſſe-braye* makes the aſcent to the breach the eaſier: beſides, that what flies from the faces often kills the ſoldiers placed to defend it.

FAWN, among hunters, is a buck, or doe, of the firſt year; or the young one of the buck's breed, in its firſt year.

FEALTY, an oath taken at the admittance of every tenant, to be true to his lord, while he holds his land.

Fealty is uſually mentioned as ſynonymous with homage; but it differs from it, as homage conſiſts in taking an oath, when the tenant comes to his land; and is done but once; being an obligation, which is permanent, and binds for ever: which *fealty* does not.

They differ alſo in the manner of the ſolemnity; for the oath of homage is taken by the tenant kneeling; but that of *fealty* is taken ſtanding, and includes ſix things, which are compriſed in the words, *incolume*, *tutum*, *utile*, *honeſtum*, *facile*, *poſſibile*.

Incolume, that he do no bodily injury to the lord: *tutum*, that he do him no ſecret injury in any thing, which is for his defence; as in his houſe, or caſtle: *honeſtum*, that he do him no injury in his reputation: *utile*, that he do not damage him in his poſſeſſions: *facile*, and *poſſibile*, that he make it eaſy, and not difficult for the lord to do any good, which otherwiſe he might do.—All which is likewiſe compriſed in *Leg. Hen.* I. *cap.* 5.

He that holds land by this only oath of *fealty*, holds in the freeſt manner; for all, even thoſe that have fee, hold *pe* *fidem & fiduciam*, that is, by *fealty* at the leaſt.

This *fealty* is alſo uſed in other nations; as in Lombardy, and Burgundy.

Indeed, as the very firſt creation of this tenure grew from the love of the lord towards his followers; ſo did it bind the tenant to fidelity; as appears by the whole courſe of the feuds; and the breach thereof is loſs of the fee.

Hottoman, in his commentaries *de verbis feudalibus*, ſhews double *fealty*: the one *general*, to be performed by every ſubject to his prince; and the other *ſpecial*, required only of ſuch as in reſpect of their fee are tied by this oath towards thei lords. We read of both alſo in the *Grand cuſtomary* of Normandy, &c.

Fealty ſpecial was with us performed, either by freemen, o villains. The form of both in Ed. II.'s time, was in the words: When a freeman ſhall do *fealty* to his lord, he ſha
hold his right hand upon a book, and ſhall ſay thus: ‘ Hea
‘ you, my lord *R.* that I, *P.* ſhall be to you both faithfu
‘ and true, and ſhall owe my *fealty* to you, for the land tha
‘ I hold of you, on the terms aſſigned. So help me Go
‘ and all his ſaints.’—When a villain ſhall do *fealty* to h
lord, he ſhall hold his right hand over the book, and ſay thus
‘ Hear you, my lord *A.* that I, *B.* from this day forth, un
‘ you ſhall be true and faithful, and ſhall owe you *fealty*, f
‘ the land that I hold of you in villainage, and ſhall be juſt
‘ fied by you in body and goods. So help me GOD, and a
‘ the ſaints.’

FEAST, or FESTIVAL, a church-ſolemnity, or rejoicing, honour of God, or a ſaint.

> * The word is formed of the Latin *feſtum*, which ſome derive *feriari*, to keep holiday; others from the Greek ἑστιάω, feaſt, or entertain, of ἑστία, hearth, fire.

Feaſts, and the ceremonies thereof, have made great par the religion of almoſt all nations, and ſects: witneſs thoſe the Greeks, Romans, Hebrews, Chriſtians, and Mahometa

Feaſts, among us, are either *immoveable*, or *movea le.*

Immoveable FEASTS, are thoſe conſtantly celebrated on the ſa day of the year: the principal of theſe are, Chriſtmas-day, the Nativity; the Circumciſion, Epiphany, Candlemas, the Purification; Lady-Day, or the Annunciation, cal alſo the Incarnation, and Conception; All Saints, and Souls: beſides the days of the ſeveral Apoſtles, St. Thom St. Paul, &c. which with us are *feaſts*, though not *fer* See each *feaſt* under its proper article.

Moveable FEASTS, are thoſe which are not confined to ſame day of the year. Of theſe the principal is Ea which gives law to all the reſt; all of them following, keeping their proper diſtance therefrom: ſuch are, Pa Sunday, Good-Friday, Aſh-Wedneſday, Sexageſima, A ſion-day, Pentecoſt, and Trinity-ſunday. See EASTER, SEXAGESSIMA, PENTECOST, TRINITY, &c.

Beſide theſe *feaſts*, which are *general*, and enjoined by the church; there are others, *local* and *occaſional*, enjoined by the magiſtrate, or voluntarily ſet on foot by the people: ſuch are the days of thankſgiving for delivery from wars, plagues, &c.

Such, alſo, are the vigils, or wakes, in commemoration of the dedications of particular churches. See VIGIL, &c.

The Romans had abundance of ſtated *feaſts*, in honour of their deities and heroes. Such were the Saturnalia, Cerealia, Lupercalia, Liberalia, Neptunalia, Conſualia, Portumnalia, Vulcania, Palilia, Divalia, &c. See SATURNALIA, &c.

They had alſo *feaſts* inſtituted occaſionally; as Carmentalia, Quirinalia, Terminalia, Floralia, Compitalia, Lemuria, Vernalia; beſide other moveable and occaſional ones: as to give thanks to the gods for benefits received; to implore their aſſiſtance, or to appeaſe their wrath, &c. as the Paganalia, Feralia, Bacchanalia, Ambarvalia, Amburbalia, Suovetaurilia, and divers others, particularly denominated *feriæ*: as Sementinæ, Latinæ, &c. See each of theſe *feaſts* and *feriæ* in its proper place.

The *feaſts* were divided into days of ſacrifice, and days of feaſting, or banqueting; days of games, and days of reſt, or *feriæ*.

There being but little hiſtory wrote, or at leaſt publiſhed, in thoſe days; one end of *feaſts* was, to keep up the remembrance of things, in lieu of reading, and books.

The principal *feaſts* of the Jews were, the *feaſt* of trumpets, that of the expiation, of tabernacles, of the dedication, of the paſſover, and that of pentecoſt.

FEAST is alſo uſed for a banquet, or a ſumptuous meal, without any immediate view to religion.

The uſe of the word, in this ſenſe, ariſes hence; that a part of the ceremony of many of the antient feſtivals, both thoſe of the Heathens, and the *agapea* of the Chriſtians, was good eating: though M. Huet chuſes to derive the word from *feſtinare*, which, in an antient Latin verſion of Origen's comment on Matthew, ſignifies *to feaſt*. *Ut veniens illuc Jeſus feſtinet cum diſcipulis ſuis.*

In all antiquity, both ſacred and prophane, ſacrifices were little more than religious *feaſts*.

It has been often obſerved, by authors, that there is no nation in the world comes near the Engliſh in the magnificence of their *feaſts*. Thoſe made at our coronations, inſtallments, conſecrations, &c. tranſcend the belief of all foreigners; and yet it is allowed; that thoſe now in uſe are no way comparable to thoſe of our forefathers.

The Perſians never diſcourſe and deliberate of their moſt important affairs, but in the middle of their *feaſts*.

FEATHER, *pluma*, that part in birds which covers them, and by which they are enabled to fly.

Feathers make a conſiderable article in commerce, particularly thoſe of the oſtrich, heron, ſwan, peacock, gooſe, &c. for plumes, ornaments of the head, filling of beds, writing-pens, &c.

Some of our lateſt naturaliſts contend for *feathers* being a ſpecies of plants, as having the two great characters of vegetables, &c. that they grow, and are not ſenſible. They add, that the growth of *feathers* is not performed with leſs art, or apparatus, than that of plants; and that they have all the eſſential, or characteriſtic, parts thereof; as a root, ſtem, branches, and leaves. But theſe authors forget, that they have not the flowers, and parts of fructification of plants, which are the moſt eſſential parts of all.

Others take *feathers* to be that on birds, which leaves are on trees.

Others ſeem to be nearer to nature, in making *feathers* to be what hairs are on other animals.

Others will have *feathers* a kind of zoophytes, or plant-animals; ſuch as the fœtus is in the womb. Accordingly, in *feathers*, eſpecially thoſe of unfledged birds, the ſtem, or quill, is found full of blood; which argues, that there is ſome umbilical nodus, whereby the firſt rudiment of the *feather* was connected to the extreme fibres, *i. e.* to the veins and arteries of the bird.

In effect, *feathers* ſeem only productions and expanſions of the laſt extreme fibrillæ of the cutis; and hence, upon ſtripping off the cutis, the *feathers* are likewiſe always taken away; juſt as the leaves and fruit follow, upon peeling the bark off a tree. Add, that *feathers*, as well as hairs, ariſe out of pores in the cutis; which pores are not mere apertures, or foramina, but a kind of vaginulæ, wove of the fibres of the ſkin; which terminate in the oſcula, or anaſtomaſes, of the internal fibres of the *feather*.

Feathers, Mr. Derham obſerves, are a very commodious dreſs for the inhabitants of the air; being not only a guard againſt wet and cold, and a means for the hatching and brooding their young, but moſt commodious for flight: to which purpoſe, they are nicely placed over the body, to give an eaſy paſſage, and every-where neatly poſited from the head towards the tail in cloſe uniform order: ſo that, being pruned and dreſſed by an unctuous matter, ſecreted in a proper gland, and depoſited in an oil-bag, placed therein for that purpoſe; they afford as eaſy a paſſage through the air, as a boat, new-cleaned and dreſſed, has through the waters. Without all this nicety, they would have been apt to be ruffled and diſcompoſed; and would have gathered air, and proved an obſtruction to the paſſage of the body.

Moſt of the *feathers* tend backwards, and are laid over each other in an exact method, armed with a warm and ſoft down next the body, and more ſtrongly made, as well as more curiouſly cloſed, next the air and weather: to which purpoſe the apparatus nature has made, and the inſtinct ſhe has given them to prune, or dreſs, their *feathers*, are admirable.

The mechaniſm of the *feather* is wonderful: the ſhaft, or rib, is exceeding ſtrong, but hollow below, for ſtrength and lightneſs ſake; and above, not much leſs ſtrong; and filled with a parenchyma, or pith, both ſtrong and light.

But the vanes, or webs, in the flag-part of the wing, are incomparable: theſe are nicely gauged, broad on one ſide, and narrower on the other; the edges of the exterior vanes bending downwards, and thoſe of the interior, or wider, upwards; by which means they catch hold, and lie cloſe to each other, when the wing is ſpread; ſo that not one *feather* may miſs its full force and impulſe upon the air: the tips are all made ſloping; thoſe of the interior vanes ſloping to a point towards the outer-part of the wing, and the exterior vanes towards the body; ſo that the wing, whether extended, or ſhut, is as neatly ſloped, and formed, as if conſtantly trimmed with a pair of ſciſſars.

Mr. Derham has ſeveral new obſervations on the mechaniſm of the vanes, or webs, of the *feathers*, as they preſent themſelves to the microſcope, by which the wonderful care and accuracy of the Creator, in ſo ſmall a part, are excellently illuſtrated.

The vane conſiſts not of one continued membrane (becauſe, if once broken, it would then be ſcarce reparable), but of many laminæ, admirably contrived to hook and hang together. On the under-ſide they are thin, and ſmooth; but on their upper, outer edge (repreſented Tab. *Nat. Hiſt. fig.* 3.), they are parted into two hairy edges; each ſide having a different ſort of hairs, laminated, or broader at bottom, and ſlenderer, and bearded, towards the top. Thoſe bearded hairs on one ſide the laminæ, have ſtrait beards, as repreſented in *fig.* 4. thoſe on the other have hooked beards on one ſide the ſlender part of the briſtle, and ſtrait ones on the other; as in *fig.* 5. Both kinds are repreſented, as they grow on the upper-edge of the lamina, in *fig.* 3. in the vane: the hooked beards of one lamina always lie next the ſtrait beards of the next lamina; by which means they lock, and lay hold of each other; and, by a pretty mechaniſm, brace the laminæ cloſe to one another.

FEATHER-*bed*.
Dry-pulled FEATHERS.
Scalded FEATHERS.
} See the article BED.

FEATHER-*edged boards and planks* are thoſe which are thicker on one ſide, than on the other.

FEATHER, in a horſe's forehead, &c. is a turning, or parting, of the hair; which in ſome reſembles an ear of barley, and in others a kind of œilet-hole.

FEBRIFUGE *, in medicine, a remedy efficacious for the cure of fevers. See FEVER.

The *quinquina*, or *jeſuits bark*, is the greateſt, and ſureſt, of all the claſs of *febrifuges*.

The little centaury is ſometimes alſo called *febrifugum*, on account of its virtues.

The Chineſe ginſeng is alſo particularly famed as a *febrifuge*.

For ſuch as cannot take the Peruvian bark in ſubſtance, Dr. Fuller preſcribes a *febrifuge* clyſter, made of a decoction thereof. The inner bark of the aſh-tree, with a little ſalt of wormwood, taken like the Peruvian bark, is ſaid to equal, or even exceed it, as a *febrifuge*.

The like is aſſerted of the bark of the elm, near the root.

The flowers of *ſal armoniac* are held an excellent *febrifuge*, eſpecially in intermitting fevers. Cold water has been lately much extolled as a *febrifuge*. Dr. Handcock gives it the emphatical denomination of *febrifugum magnum*.

Mr. Reneaume, in the *Hiſt. de l'Academ. R. de Sciences*, *an.* 1711. propoſes a new *febrifuge* of his own diſcovery; *viz.* galls: from a great number of experiments he has learnt, that galls, alone, will frequently cure an intermitting fever, as well as the *quinquina*, over which this medicine has ſome advantages in other things; in that it is not ſo bitter, does not heat ſo much, is taken in a leſſer doſe, and ſeldomer, and is cheaper. At his motion, ſeveral other phyſicians tried it with ſucceſs; particularly M. Homberg; though it did not ſucceed ſo well with M. Boulduc, Lemery, and Geoffroy.

FEBRIS, in medicine. See the article FEVER.

FEBRUA, in antiquity, a feaſt, held by the Romans, in the month of February; in behalf of the manes of the deceaſed. See MANES.

Macrobius tells us, that ſacrifices were here performed; and the laſt offices paid the ſhades of the defunct. *Saturn.* l. i. c. 13.

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* The word is a compound of *febris*, and *fugo*, I drive away.

c. 13. And from this feaſt it was, that the month of February took its name.

The deſign of theſe ſacrifices is ſomewhat controverted: Pliny ſays, they were performed to render the infernal gods propitious to the deceaſed; though ſome of the moderns have imagined, that they were intended to appeaſe the deceaſed themſelves, and were offered immediately to them, as a ſort of deities. What confirms the former ſentiment is, that Pluto himſelf is ſurnamed *Februus*. They laſted twelve days.

The word is of an antient ſtanding in the Latin tongue: from the very foundation of the city, we meet with *Februa*, for *purifications*; and *Februare*, to purge, or purify. Varro, *De Ling.* l. v. derives it from the Sabins; Voſſius, and others, from *ferveo*, I am hot; by reaſon purifications were chiefly performed with fire, and hot water. Some go higher, and even deduce the words from פור *phur*, or *phavar*; which, in Syriac and Arabic, has the ſame ſignification with *ferbuit*, or *efferbuit*; and might, probably, likewiſe ſignify, *to purify*: for *phavar*, in Arabic, denotes a preparation given to women in child-bed, to bring away the after-birth, and other impurities remaining after delivery; much as among the Romans, who gave the name *Februa* to the goddeſs ſuppoſed to preſide over the delivery of women. Ovid. *Faſt.*

FECAL *matter*, and **FECES.** } See { Fæcal *Matter*. Fæces.

FECIALES *, or Foeciales, an order of prieſts, or officers, among the antient Romans, appointed to proclaim war, negotiate peace, &c.

* Feſtus derives the word from *ferio*, I ſtrike; as *ferire fœdus*, ſignifies to conclude a treaty: and, accordingly, inſtead of *feciales*, he would have it wrote *feriales*. Others derive it from *fœdus*, which was antiently written *fedus*; or from *fides*, faith: others from *facio, feci*, I make, &c. becauſe they made war and peace. Voſſius chooſes to derive it from *fatu*, of the verb *fari*, to ſpeak; in which ſenſe, the *feciales* ſhould be the ſame with *oratores*: which ſentiment is alſo confirmed, by the authority of Varro, who ſays, they were called, indifferently, *feciales*, and *oratores*. *De Vita Popul. Roman.* l. ii.

The *feciales* were a ſort of heralds, or kings at arms, who, when the Romans had any diſpute with their neighbours, were ſent, firſt, to demand the thing pretended to be uſurped, or require ſatisfaction for the injury alledged to be done. If an anſwer was not returned by them, that was ſatisfactory to the people, and the ſenate; they were diſpatched again to declare war, and the like in treating of peace; the *feciales* being the only perſons appointed to negotiate between the ſenate, &c. and the enemy.

Plutarch, in the life of Numa, and Halicarnaſſeus, l. ii. obſerves, that they were firſt inſtituted by that prince. The latter adds, that they were choſen out of the beſt families in Rome; that their office, which was reputed a ſort of ſacerdotium, or prieſthood, only ended with their life; that their perſons were ſacred, and inviolable, as thoſe of other prieſts; that they were even charged to ſee the republic did not declare war unjuſtly; that they were to receive the complaints and remonſtrances of nations who pretended to have been any way injured by the Romans; that if thoſe complaints were found juſt, they were to ſeize the criminals, and deliver them up to thoſe they had offended; that they were inveſted with the rights and privileges of embaſſadors; that they concluded treaties of peace, and alliance, and took care they were executed; and, laſtly, aboliſhed them, if they were found not to be equitable.

But Varro aſſures us, that, in his time, moſt of theſe functions of the *feciales* were ſet aſide; as thoſe of the antient heralds at arms are among us at preſent: though Plutarch obſerves, that they had ſtill ſome authority in his time.

The *feciales* were crowned with *verbena*, vervain, when they went to declare war; their head was covered with a veil, over which the crown was applied: in this equipage they proceeded to the frontiers of the new enemy's country, and threw a bloody dart, or javelin, into the ground, within the ſame. In Livy, and other antient authors, we have the formula uſed in ſuch declarations.

FECULA *, or Fæcula, in pharmacy, a white, mealy ſubſtance, or powder, which ſubſides, and gathers at the bottom of the expreſſed juices of divers roots; as thoſe of briony, arum, iris, &c.

* The word *fæcula* is a diminutive of *fæces*. See Fæces.

This ſubſtance, or ſediment, they dry in the ſun, after having poured off the liquors; and it ſerves for divers remedies, &c.

FECULENT, or Fæculent, is applied to the blood, and other humours, when they abound in fæces, or dregs, or have not the proper and uſual degree of purity.

FECUNDITY, or Foecundity, *fertility*; or that quality of a thing which denominates it fruitful.

The *fecundity* of divers plants is very extraordinary. M. Dodart has an expreſs diſcourſe thereof, in the *Memoirs of the Academy of Sciences*; wherein he ſhews, that, at a moderate computation, an elm, one year with another, yields 329000 grains, or ſeeds; each of which, if properly lodged, would grow up into a tree. Now, an elm ordinarily lives 100 years; conſequently, in the courſe of its life, it produces near 33000000 ſeeds; all which ariſe from one ſingle ſeed.

He ſhews, farther, that the ſame elm, by frequently cutting off its head, &c. might be brought to produce 15840000000 ſeeds; and, conſequently, that there are ſo many actually contained in it.

FEE *, Feud, Feudum, Feodum, or Fief, an eſtate, land, tenement, lordſhip, or the like, held of a ſuperior lord, on condition of fealty, homage, or other acknowlegement.

* The word is derived, by ſome authors, from *fœdus*, as ariſing from a treaty, or alliance, made with the lord: others, as Cujas, &c. fetch it from *fides*, on account of the faith the perſon is obliged to bear his lord: others derive it from the Saxon *feoh*, hire, or wages; *q. d. ſtatus beneficiarius*. Bodin takes the Latin *fœdus* to be formed, by abbreviation, of the initial letters of *fidelis ero domino vero meo*, which is an antient formula of fealty and homage. Hottoman derives it from *feed*, a German word, ſignifying war; Pontanus from the Daniſh *feide*, militia; others from the Hungarian *foeld*, land; others from *foden*, to feed: but the opinion of Selden ſeems the beſt authorized, who brings it from the Saxon *feoh, ſtipendium*; the *fee* being a kind of prebend to live upon: and, accordingly, we find, that in antient times it was uſed for the wages and appointments of officers.

The term *fee* is properly applied to lands and tenements, which we hold in perpetual right, on condition of an acknowlegement of ſuperiority in a higher lord. See Tenure.

The writers on this ſubject divide all lands and tenements, wherein a man has a perpetual eſtate to him and his heirs, into *allodium*, and *feudum*.

Allodium is defined to be, a man's own land, which he poſſeſſes merely in his own right, without acknowlegement o any ſervice, or payment of any rent, to another; and this i property in the higheſt degree.

Feudum is that which we hold by the benefit of another, and for which we do ſervice, or pay rent, or both, to the chie lord.

Originally, a *feud* was only an eſtate for life; and thoſe t whom it was granted were called *vaſſalli*; who, by ſuc means, were brought to a ſtricter diſcipline, and obedience t the princes, and were bound to ſerve them in wars.

The origin of *fees*, or *feuds*, is one of the darkeſt, and mo intricate points, in modern hiſtory. Some attribute the invention to the Lombards; others find ſome appearance of th duties of a vaſſal to his lord, in the antient relations betwee the patron and his client; and others look for its riſe in th Roman *Beneficia*.

The emperors, it ſeems, diſtributed lands among the antien legions, on condition of their holding themſelves ready, at a times, to take up arms, in defence of the frontiers of the empire; which affords us a good image enough of *feuds*; and in all probability, their firſt origin was no otherwiſe: but, i proceſs of time, their nature was changed, and duties were annexed to them, which originally were not.

Du Moulin makes no doubt, but that theſe diſtributions lands, called *benefices*, were the firſt matter of *fees*; for whic reaſon, he uſes the terms *benefice* and *feud* promiſcuouſly, as they were the ſame thing: and yet there was a good deal difference between them; as there was neither fealty, nor h mage, nor the other *feudal* rights, annexed to the beneſic and that the benefice was not hereditary.

Probably, benefices began then to be called *feuds*, when th became hereditary; and when thoſe, of whom the beneſic were held, began to demand faith, or fealty, from them. Th fealty ſeems to conſtitute the *fee*; the word *fee* itſelf ſigni ing, in the antient Norman language, *faith*.

There is no fixing the preciſe æra, when theſe changes co menced: for *fees*, ſuch as they now are, were not eſtabliſh all at once; but, in different countries, they took place at d ferent times, and in different manners. The great lords, af the deſtruction of the Roman empire, having, in ſeveral par uſurped the property of their benefices, laid likewiſe h of the juriſdiction, and made their vaſſals their ſubjects; that each became a ſort of petty ſovereign in his own te tory.

Mezeray obſerves, that the donation of *fees* to the nobleſſe France commenced under the reign of Charles Martel.

Hugh Capet, when he came to the crown, was himſelf little eſtabliſhed, that he durſt not oppoſe thoſe uſurpatio and was forced to ſuffer, what he could not redreſs. See Fevre, *De l'Origine des Fiefs*, and Altaſerra's *Origines Feu rum primoribus Galliæ*.

The origin of *fees* in England, Camden carries as far b as the time of Alexander Severus. That prince having b a wall, in the N rth of England, to prevent the incurſions the Picts; he, ſome time after, began to neglect the defe thereof; and gave, as Lampridius aſſures us, the lands c

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quered from the enemy, to thoſe of his captains and ſoldiers, whom that author calls *limitarios duces, & milites, i. e.* captains and ſoldiers of the frontiers; but it was on this condition, that their heirs ſhould continue in the ſervice; and that the lands ſhould never deſcend to private perſons, *i. e.* to ſuch as did not bear arms. That prince's reaſon was, that people, who in ſerving defended their own, would ſerve with a great deal more zeal than any others. Such, according to Camden, was the riſe of *Fees* in our nation, *Britan.* p. 651.

All our lands in England (the crown-land, which is in the king's own hand in right of his crown, excepted) are of the nature of *Feud*, or *Fee*. For though many have land by deſcent from their anceſtors, and others have bought lands; yet cannot land come to any, either by deſcent or purchaſe, but with the burden that was laid on him who had the novel *Fee*, or who firſt received it as a benefice from his lord to him, and ſuch as ſhould deſcend from him, or to whom it ſhould be otherwiſe conveyed and transferred: ſo that no man has *directum dominium, i. e.* the very property or demain in any land, but the prince, in right of his crown. Camd. *Britan.* p. 93.

Though he who has *Fee*, has jus perpetuum, and utile dominium, yet he owes a duty for it; ſo that it is not ſtrictly his own. Indeed, as much is imported by the terms in which we expreſs our higheſt right in lands, &c. the moſt a man can ſay, is, "I am ſeiſed of this land, in my demain, "as of *Fee*."

In the ſtat. 37 Hen. VIII. c. 16. *Fee* is alſo uſed for lands veſted in the crown: but it is from ignorance of the import of the word; for *Fee* cannot be without fealty ſworn to a ſuperior: but the king owns fealty to no ſuperior, but God alone.

Fee is divided, in our laws, into *Fee abſolute*, called alſo *Fee-ſimple*; and *Fee conditional*, alſo called *Fee-tail*.

EE-*Simple, feudum ſimplex*, is that, whereof we are ſeiſed to us, and our heirs for ever.

EE-*Tail, feudum taliatum*, is that, whereof we are ſeiſed with limitation to us, and the heirs of our body. See TAIL.

Fee-Tail is of two kinds, *general*, and *ſpecial*.

EE-*Tail general* is, where land is given to a man, and the heirs of his body.—So that if a man ſeiſed of ſuch land by ſuch gift, marry one or more wives, and have no iſſue by them, and at length marry another, by whom he hath iſſue, this iſſue ſhall inherit the land.

EE-*Tail ſpecial* is, where a man and his wife are ſeiſed of lands to them, and the heirs of their two bodies.—Where, in caſe the wife die without iſſue, and he marry another by whom he have iſſue, this iſſue cannot inherit the land.

This *Fee-tail ſpecial* has its origin from the ſtat. of *Weſtm.* 2. c. 1. Before that ſtatute, all land given to a man, and his heirs, either general or ſpecial, was reputed in the nature of a *Fee*; and therefore ſo firmly held to him, that, any limitation notwithſtanding, he might alienate it at pleaſure. For redreſs of which inconvenience, the ſtatute provides, that if a man gives lands in *Fee*, limiting the heirs to whom it ſhall deſcend, with a reverſion to himſelf, and his heirs, for default of ſuch former heirs; the form and meaning of the gift ſhall be obſerved. See ENTAIL.

E-*Expectant, feudum expectativum.* See EXPECTANT.

E-*Farm*, or FEE-*Ferm, feudi-firma*, or *feo-firma*, ſignifies lands holden to a man, and his heirs for ever, under a certain yearly rent.

Fee-Farm ariſes, when the lord upon creation of a tenancy reſerves to himſelf, and his heirs, either the rent for which it was before lett to farm, or at leaſt a fourth part of the rent; and that without homage, fealty, or other ſervices more than are eſpecially compriſed in the feoffment.

Though, by Fitzherbert, it appears, that the third part of the value may be appointed for the rent, or the finding of a chaplain to ſay divine ſervice, &c. And the nature of it is his, that if the rent be behind, and unpaid for the ſpace of two years, then the feoffer, or his heirs, have action, to recover the lands as their demeſnes.

E is alſo uſed for the compaſs or circuit of a manor, or ordſhip. Thus Bracton, *in eadem villa, & de eodem eodo.*—

E is alſo uſed for a perpetual right incorporeal: as to have the eeping of perſons in *Fee*; rent granted in *Fee*; and office eld in *Fee*, &c.

alſo ſignifies a reward, or ordinary due, given a perſon for e execution of his office, or the performance of his part, in s reſpective art or ſcience.

Thus, the lawyer, and phyſician, are ſaid to have their *Fees*, *e.* conſiderations for the pains taken with the client, or pa-nt. A barriſter, and phyſician, are ſuppoſed to receive eir *Fees* from time to time, as their ſervice is performed; ey cannot make a bill.

s alſo denote ſettled perquiſites or allowances, paid to public icers, by perſons who have buſineſs with them.

he ſmalneſs of the ſalaries of divers of the king's ſervants, compenſated by the perquiſites, or *Fees* of honour.

he *Fees* paid to the ſeveral officers by every perſon, upon his being knighted, amount to 78*l.* 13*s.* 4*d.* And if it be done within the verge of the court, there is 3*l.* more to the ſix pages of the bedchamber: which brings it to 81*l.*

FEELING, *Touching*, one of the external ſenſes, whereby we get the ideas of ſolid, hard, ſoft, rough, hot, cold, wet, dry, or other tangible qualities; as alſo of diſtance, itching, pain, &c.

Feeling is the groſſeſt, but at the ſame time the moſt extenſive of our ſenſes, having more objects than all the reſt taken together; and ſome even reduce all the other ſenſes to this one of *Feeling*.

Ariſtotle is expreſs, that all ſenſation is only *Feeling*; and that the other ſenſes, as ſeeing, hearing, taſting, and ſmelling, are only the more exquiſite ſpecies, or degrees thereof. *De Anim.* l. iv. c. 3. and l. iii. c. 12.

Naturaliſts are divided as to the organ, or inſtrument of *Feeling*. Ariſtotle takes this ſenſe to reſide in the fleſh, quatenus fleſh, inaſmuch as all fleſh is, in ſome meaſure, capable of *Feeling*; *Hiſt. Anim.* l. i. c. 4. Others will have it in all the parts that have nervous fibres, which extends it to the ſkin, fleſh, muſcles, membranes, and parenchyma's; others reſtrain it to the ſkin or cutis; it being obſerved, that only thoſe parts covered with a cutis, have properly the faculty of touching, or perceiving tangible qualities.

But what part of the cutis to aſſign immediately for this office, is again diſputed. Some will have it the membranous parts; others the carnous; and others the medullary part, derived from the nerves.

Malpighi, and, after him, all our lateſt and beſt authors, hold the immediate organ of the ſenſe of *Feeling*, to be the pyramidal papillæ under the ſkin.

Theſe papillæ are little, ſoft, medullary, nervous prominences, lodged every-where immediately under the cuticula. They are formed of the ſubcutaneous nerves, which, in order hereto, firſt lay aſide their outer membrane, and are left exceedingly ſoft and ſenſible; are continually moiſtened by a thin ſubtle humour; and only covered over, and defended by the cuticle or ſcarf-ſkin. They are largeſt and moſt conſpicuous in thoſe parts chiefly deſigned for the office of *Feeling, viz.* the tongue, the tips of the fingers, and toes; and are contractile, and again expanſive at pleaſure.

Feeling, then, is thus effected: the tip of the finger, for inſtance, being applied to an object to be examined; by that intention of the mind, the papillæ are emitted or elevated, and being lightly rubbed over the ſurface of the object, a motion is impreſſed on them; which being thence propagated by the nerves communicating with them, to the common ſenſory, excites the perception of heat, cold, hardneſs, or the like.

Hence we ſee, why *Feeling* becomes painful, when the cuticle is worn off, burnt, macerated, &c. and why, when the cuticle becomes thick, hard, callous, or cicatrized, &c. the ſenſe of *Feeling* is loſt: elſe whence the numbneſs impreſſed by the torpedo; why that exquiſite painfulneſs under and at the roots of the nails? &c.

Feeling is, on many accounts, the moſt univerſal of our ſenſes; there being no animal without it. Pliny obſerves, that all animals have the ſenſe of *Feeling*, even thoſe that are generally thought to have no other ſenſe, as oyſters and earth-worms.—That naturaliſt declares it his own opinion, that all have the ſenſe of taſting likewiſe: *Exiſtimaverim omnibus ſenſum & guſtatus eſſe. Nat. Hiſt.* l. x. c. 71.

The other ſenſes are confined to narrow bounds; *Feeling* only is co-extended with the body, as being neceſſary to the well-being of every part. Hence Cicero, *Feeling* is equally diffuſed throughout the whole frame, that we might be ſenſible of all impulſes in every part, and feel all the degrees of heat, cold, &c. *De Nat. Deor.* l. ii. c. 56.

Naturaliſts obſerve, that ſpiders, flies, and ants, have the ſenſe of *Feeling* in a much greater perfection than men, though we have inſtances of perſons, who could diſtinguiſh colours by their *Feeling*; and of others, who could perceive what people ſaid, by the ſame ſenſe.

FEINT, in muſic, a ſemi-tone; the ſame with what we alſo call *Dieſis*. See DIESIS.

FEINT, in rhetoric, a figure whereby the ſpeaker touches on ſomething, in making a ſhew of paſſing it over in ſilence. The Latins call this *prætermiſſio*.

FEINT, in fencing, a falſe attack, or a ſhew of making a ſtroke, or puſh in one part, with deſign to bring the enemy to guard that part, and leave ſome other part unguarded, where the ſtroke is really intended.

Feints are either ſingle or double, high or low, without or within, &c. in prime, in tierce, in quart, in demi, and in the whole circle; of one, two, or three meaſures.

The *ſimple Feint* is a mere motion of the wriſt, without ſtirring the foot, &c.

FELAPTON, in logic, one of the moods of ſyllogiſms.

In a ſyllogiſm in *Felapton*, the firſt propoſition is an univerſal negative; the ſecond, an univerſal affirmative; and the third, a particular negative.

FELLING *of timber*, ſee the article TIMBER.

FELLOWS, in fortification, are ſix pieces of wood, each of which forms an arch of a circle, and theſe, joined all together by duledges, make an intire circle; which, with a nave, and twelve ſpokes, form the wheel of a gun-carriage.

Their thickneſs is uſually the diameter of the ball of the gun they ſerve for, and their breadth ſomething more.

FELLOWSHIP, *Company*, or *Partnerſhip*, in arithmetic, is a rule of great uſe in balancing accounts amongſt merchants, and owners of ſhips; where a number of perſons putting together a general ſtock, it is required to give every one his proportional ſhare of loſs, or gain.

The *golden rule* ſeveral times repeated, is the baſis of *fellowſhip*, and fully anſwers all queſtions of that kind: for, as the whole ſtock is to the total thereby gained, or loſt; ſo each man's particular ſhare is to his proper ſhare of loſs, or gain. Wherefore, the ſeveral ſums of money of every partner are to be gathered into one ſum, for the firſt term; the common gain, or loſs, for the ſecond; and every man's particular ſhare for the third; and the golden rule is then to be wrought ſo many times as there are partners.

There are two caſes of this rule, the one *without*, the other *with time*.

Fellowship *without time*, is where the quantity of ſtock, contributed by each perſon, is alone conſidered; without any particular regard to the length of time that any of their moneys were employed.—An example will make this proceſs eaſy.

A. B. and *C.* freight a ſhip with 212 tun of wine; *A.* laying out 1342 *l.* *B.* 1178 *l.* and *C.* 630 *l.* towards the ſame; the whole cargo is ſold at 32 *l.* *per* tun. Query, what ſhall each perſon receive?

Find the whole produce of the wine by multiplying 212 by 32, which yields 6784. Then, adding together the ſeveral ſtocks, 1342, 1178, and 630, which make 3150, the work will ſtand thus:

$$3150:6784\left\{\begin{array}{r l} 1342 & \text{—Anſw.—}2890\\ 1178 & \text{————}2537\\ 630 & \text{————}1356 \end{array}\right.$$
$$\text{Proof}\quad 3150\qquad\qquad 6783$$

Fellowship *with time*, is where the time wherein the money, *&c.* were employed, enters into the account.—An example will make it clear.

A. B. C. commence a partnerſhip the firſt of January, for a whole year. *A.* the ſame day diſburſed 100 *l.* whereof he received back again, on the firſt of April, 20 *l.* *B.* pays, on the firſt of March, 60 *l.* and more, the firſt of Auguſt, 100 *l.* *C.* pays, the firſt of July, 140 *l.* and, the firſt of October, withdraws 40 *l.* At the year's end their clear gain is 142 *l.* Query, what is each perſon's due?

A.'s 100 *l.* multiplied by three months, the time it was in, makes 300 *l.* and the remaining 80, by nine months=720, in all 1020 *l.* of *A.*'s contribution. For *B.* 60 into 10, gives 600; and 100 into 5, 500; in all 1100 *l.* for *B.* For *C.* 140 into 3, gives 420; and 100 into 3, is 300; in all 720 *l.* for *C.* Now, 1020, 1100, 720=2840 for the common antecedent, and the gain 142, is for the general conſequent; then the rule will ſtand thus:

$$2840:142\left\{\begin{array}{r l} 1020 & \text{—Anſw.}\,51\\ 1100 & \text{———}\,55\\ 720 & \text{———}\,36 \end{array}\right.$$
$$\text{Proof}\ 2840\qquad\qquad 142$$

FFLO-*de-ſe*, is he that commits felony, by willingly and deliberately killing himſelf. The Saxons call him *Selfbane*.

A *Felo-de-ſe* is to be interred without Chriſtian burial, with a ſtake driven through his corps; and is to forfeit his goods.

FELONY, **Felonia** *, was antiently uſed for a violent and injurious action of a vaſſal, or tenant, againſt his lord.

> * Menage derives the word from *felonia*, formed of *felo*, or *fello*, which occurs in the capitulars of Charles the Bald, and is ſuppoſed to come from the German *fehlen*, or Saxon *faelen*, to fail, or be delinquent. Others derive it from the barbarous Latin *vilania*. My lord Coke, Nicod, *&c.* derive it *a felle*, gall, as being ſuppoſed to be done maliciouſly. Laſtly, others derive it from the Greek φηλειν, to deceive.

In this ſenſe *felony* was equivalent to petty-treaſon, or it was a crime next below high-treaſon. The crime of *felony* imported confiſcation of the fee, to the profit of the lord.

Felony was alſo applied to an injury of the lord to his vaſſal, which imported a forfeiture of the homage and ſervice thereof, and made it revert to the ſovereign.

Fidelity and *felony* are reciprocal between the lord and the vaſſal. See Lord.

Felony, is alſo uſed in common law, for any capital offence, perpetrated with an evil intention.

In a ſtricter ſenſe, *felony* denotes an offence next below that of petty-treaſon.

Felony includes ſeveral ſpecies of crimes, whoſe puniſhment is the ſame, *viz.* death: ſuch as murder, theft, ſuicide, ſodomy, rape, wilful burning of houſes, receiving of ſtolen goods; and divers others found in the ſtatutes, which are daily making crimes *felony*, that were not ſo before.

Felony is eaſily diſtinguiſhed from treaſon.

From leſſer crimes, it is diſtinguiſhed by this, that its puniſhment is death, though not univerſally; for petty-larceny, *i. e.* ſtealing of a thing under the value of twelve-pence, is *felony*, according to Brook; though the crime be not capital, but only a loſs of goods. The reaſon Brook gives for its being *felony*, is that the indictment runs, *felonice cepit*.

Till the reign of Henry I. *felonies* were puniſhed by pecuniary fines: that prince firſt ordered *felons* to be hanged, about the year 1108.

Felony is of two kinds; the one *lighter*, which for the firſt time is intitled to the benefit of the clergy; as manſlaughter. The other more *crying*, is not allowed the privilege.

Felony is alſo puniſhed by loſs of all lands, not intailed; and all goods and chattels, both real and perſonal; though the ſtatutes make a difference in ſome caſes concerning lands, as appears by ſtat. 37 Hen. VIII.

Felony ordinarily works corruption of blood, unleſs the ſtatute, ordaining the offence to be *felony*, provide otherwiſe; as the ſtat. 39 Eliz. c. 17.

FELT, a kind of ſtuff, either of wool alone, or of wool an hair; neither ſpun, croſſed, nor woven, but deriving all its conſiſtence from its being wrought, and fulled with lees and ſize, and afterwards faſhioned on a block or mould, by help of fire and water.

Caſtors, camels, and coneys hair, lambs and ſheeps wool, *&c.* are the moſt uſual ingredients of *felts*; and hats of all kinds, are the works they are chiefly employed in.

The *felt* intended for a hat, being ſufficiently fulled, an prepared, is reduced into one piece, ſomewhat in the figure o a large funnel; in which ſtate it remains ready to be put int form, and become a hat. See Hat.

FELUCCA *, or **Felucco**, a little veſſel with ſix oars, no covered over, much uſed in the Mediterranean.

> * The word is formed from the Arabic *Felkon*, a ſhip.

It has this peculiarity, that the rudder may be applied eithe in the head or ſtern; there being diſpoſitions in both to receiv it. For ſize, it may be compared to a ſloop or ſhaloop.

FEMALE, the ſex that conceives, and bears fruit.

An animal that generates within itſelf, is called *female*; an that which generates in another, male. See Male.

The *female*, in quadrupedes, and even in birds, is uſuall ſmaller and weaker than the male; though in birds of prey as the falcon, hawk, *&c.* it is otherwiſe; the *female* bein bigger, ſtronger, bolder, hardier, and more courageous.

The like is obſerved in moſt inſects, particularly ſpiders; t that degree, that M. Homberg aſſures us, he has weighe five or ſix male garden-ſpiders againſt one *female* of the ſam ſpecies, which has been equal to them all.

For the numeral proportion of males to *females*, ſee Marriage.

Naturaliſts alſo diſtingiuſh male and *female* plants; male an *female* flowers, *&c.*

Female *ſcrew*. See the article Screw.

FEMME *covert*, in law, denotes a married woman; who i alſo ſaid to be under covert-baron.

FEMININE, or **Foeminine**, in grammar, one of the genders of nouns.

The *feminine* gender is that which denotes the noun or nam to belong to a female. In the Latin, the *feminine* gender i formed of the maſculine, by altering its termination; particularly by changing *us* into *a*. Thus, of the maſculine *bonu equus*, a good horſe, is formed the *feminine*, *bona equa*, a goo mare; ſo, of *parvus homo*, a little man, is formed, *parv fœmina*, a little woman, *&c.*

In French, the *feminine* gender is expreſſed, not by a different termination; but a different article: thus, *le* is joined t a male, and *la* to a female.

In Engliſh, we are generally more ſtrict, and expreſs the difference of ſex, not by different terminations, nor by differen particles, but different words; as boar and ſow, boy and girl brother and ſiſter, *&c.*—Though ſometimes the *feminine* i formed by varying the termination of the male into *eſs*; as i abbot, abbeſs, *&c.*

Feminine *Rimes*, ſee the article Rime.

FEMUR *, or **Os Femoris**, in anatomy, the thigh-bon See *Tab. Anat.* (Myol.) *fig.* 3. n. 20. and *fig.* 7. n. 22.

> * Dionis derives the word *femur* from *fero*, by reaſon it bea the whole weight of the body.

The *femur* is the largeſt and ſtrongeſt bone in the body, an its articulations are proportioned to its bulk and ſtrength. I upper part is jointed with the iſchium, by enarthroſis, the hea of the *femur* being received into a cavity of the iſchium; an the two kept together by a ſtrong cartilage or bandage. Th lower end is articulated with the tibia by ginglymus, two head of the *femur* being received into two cavities of the tibia; beſide a cavity between the two heads, which receives a proce of the tibia.

The *femur* is pretty much incurvated, or bent, the conve part being before, and the concave behind. It is divided int three parts; the *upper*, the *middle*, and the *lower*.

The *upper* conſiſts of a head and a neck, in which are contained three epiphyſes; *viz.* the extremity or head, which is round and big, and received into the acetabulum of the coxendix, wherein it is tied by two ligaments; the one from the top, the other from the bottom of the acetabulum, but both inſerted into the middle of the head. Immediately under the head, is the neck of the *femur*, which is ſmall, long, and a little oval, and makes an angle with the body of the bone; by means whereof the thighs and feet are kept at a due diſtance from each other, to make our ſtanding the firmer; beſide that the obliquity of the neck conduces to the ſtrength of the muſcles, which muſt otherwiſe have paſſed too near the centre of motion. The other two epiphyſes are called the greater and leſs *trochanters.*

The *middle* part or ſhank of the *femur* is round, ſmooth, and poliſhed, on its fore-ſide, and rough on the hind-ſide; along which there runs a ſmall ridge, the whole length of the bone, called *linea aſpera*, ſerving for the inſertion of muſcles.

The *lower* part of the *femur* is divided by a ſinus in the middle, into two heads or apophyſes, called *condyli*, which make the ginglymus above-mentioned; being both received into the ſinus of the tibia.

Between the hind-parts of the head is a ſpace for the paſſage of the great veſſels and nerves, which go to the leg.

The *femur* has a very large cavity, running its whole length, filled, like the reſt, with marrow. The curvity of the *femur* makes it ſerve as a buttreſs to the body, to prevent its falling, or bearing too much forward.

Surgeons and bone-ſetters ſhould take care, that in fractures of the *femur* they do not endeavour to ſet it ſtrait, which is againſt nature.

FEN, in geography, a kind of wet land, or rather moraſs.

Fens are of two ſorts: the firſt of a boggy conſiſtence, compoſed of water and earth intermixed; ſcarce firm enough to ſuſtain the tread of a man.

The ſecond are pools, or collections of waters, with pieces of dry land raiſed here and there, above the ſurface thereof.

The former kind neither receive nor emit any river; but the latter are frequently the heads or ſprings of rivers; ſuch is the head of the Tanais, *&c.*

FENCE-*Month (menſis prohibitionis*, or *menſi vetitus)* is a month wherein the female deer fawn; for which reaſon it is unlawful to hunt in the foreſt during that time.

It begins fifteen days before midſummer, and ends fifteen days after; being in all thirty days.

There are alſo certain *fence*, or *defence* months, or ſeaſons for fiſh, as well as wild beaſts; as appears by *ſtat. Weſtm.* 2. cap. 13. in theſe words:

"All waters, where ſalmons are taken, ſhall be in *defence* "for taking of ſalmon, from the nativity of our lady, unto "St. Martin's day. And likewiſe, young ſalmons ſhall not "be taken or deſtroyed by nets, *&c.* from the midſt of "April, to the nativity of St. John Baptiſt, *&c.*"

FENCE-*Walls* are walls of brick, or ſtone, made around gardens, *&c.*

FENCING, the art of defence; or of uſing the ſword, to wound an enemy, and preſerve one's ſelf from his attacks.

Fencing is one of the exerciſes learnt in the academies, *&c.*

The art of *fencing* is acquired by practiſing with foils, called in Latin *rudes*; whence *fencing* is alſo denominated *gladiatura rudiaria.*

Pyrard aſſures us, that the art of *fencing* is ſo highly eſteemed in the Eaſt Indies, that none but princes and noblemen are allowed to teach it. Theſe maſters wear a badge or cogniſance on their right arms, called in their language *Eſaru*, which is put on with great ceremony, like the badges of our orders of knighthood, by the kings themſelves.

Montaigne informs us, that when he was a youth, the nobility all ſhunned the reputation of being good *fencers*; as ſomething too ſubtle, and deſigning, and apt to corrupt virtuous manners.

Fencing is divided into two parts, *ſimple*, and *compound.*—*Simple* is that performed directly and nimbly, on the ſame line; and is either *offenſive*, or *defenſive.*—The principal object of the firſt is whatever may be attempted, in puſhing, or making paſſes, from this or that point, to the moſt uncovered part of the enemy. The ſecond conſiſts in parrying, and repelling the thruſts aimed by the enemy.

The *compound*, on the offenſive ſide, includes all the poſſible arts and inventions to deceive the enemy, and make him leave that part we have a deſign on, bare, and unguarded, upon finding we cannot come at it by force, nor by the agility of the ſimple play.

The principal means hereof are feints, appeals, claſhings, and entanglings of ſwords, half-thruſts, *&c.* and in the defenſive, to puſh in parrying.

FEND, in the ſea-language, imports the ſame as *defend.*

Hence the phraſe *fending the boat*, &c. that is, ſaving it from being daſhed againſt the rocks, ſhore, or ſhip's ſide. Hence alſo

FENDERS, any pieces of old cable-ropes, or billets of wood, hung over the ſhip's ſide, to *fend* or keep other ſhips from rubbing againſt her.

FENDUE *en pal*, in heraldry, a French phraſe, applied to a croſs, to denote it cloven down from top to bottom, and the parts ſet at ſome diſtance from one another.

FENESTRA, in anatomy, a name applied to two holes, or apertures, in the inner ear. See EAR.

The *feneſtræ* are two openings in the labyrinth: the firſt of them is incloſed by the baſis of the ſtapes, and from its oval figure denominated *feneſtra ovalis.*

The latter, called *rotunda*, is cloſed with a tranſverſe tranſparent membrane, placed a little within the ſurface of its aperture.

Theſe *feneſtræ*, with the whole labyrinth, are comprehended in that part of the os temporum, properly called from its hardneſs *petroſum.*

FENNEL-*ſeed*, in commerce, *&c.* a longiſh, ſtriated ſeed, flat on one ſide, and roundiſh on the other; of a ſweetiſh taſte, not unlike that of anis-ſeed: being the produce of an umbelliferous plant of the ſame name, well known as a kitchen-herb; by botaniſts called *fœniculum vulgare*, or *common fennel*, or *finckle.*

Fennel-ſeed makes part of the commerce of the druggiſts and apothecaries. It is eſteemed a carminative, and uſed like anis-ſeed, to diſpel wind in the body; and correct ſenna, and the reſt of the vegetable purgatives.

There is alſo a ſtrong water, or brandy, made of the ſeeds of *fennel*, called *fennel-water*. The ingredients are *fennel*-ſeed, liquorice, brandy, and white-wine, which are diſtilled together; and to the eſſence thereof are added ſpirit of wine, ſugar, and ſweet almonds; the whole is then ſtrained, *&c.*

The ſeed of the ſweet *fennel* is uſed in this and many other compoſitions, not that of the common *fennel.*

FENUGREEK, FOENUM *Græcum*, or FENNIGREEK, a medicinal plant, thus called, becauſe antiently brought from Greece, though now cultivated in ſeveral parts of Europe.

Its ſtem is about a foot high; its leaves are ſmall, and diſpoſed ſomewhat like thoſe of trefoil. It has a little white flower, from whence ariſes a long, pointed pod, ſhaped not unlike a bullock's horn.

The grain or ſeed is incloſed in this pod, which bears the name of the plant itſelf; it is leſs than muſtard-ſeed, very hard and ſolid, of a triangular form, and a ſtrong diſagreeable ſmell; when new, it is of a yellow gold colour, but when long kept, ruddy, or brown.

The farina or flour of theſe ſeeds is eſteemed good to ripen and digeſt; and, as ſuch, is uſed in cataplaſms of thoſe intentions; as alſo in emollient clyſters, decoctions, *&c.* It yields a mucilage uſed in inflammations of the eyes, and on other occaſions.

FEODARY, FEUDARY, or FEUDATARY, an officer antiently made and authorized by the maſter of the court of wards.

His office was to be preſent with the eſcheator, at the finding any office; and to give evidence for the king, concerning the tenure, and the value thereof; to ſurvey the land of the ward after the office found, and rate it. He alſo aſſigned the kings widows their dowers, and received the rents of wards lands. This office is taken away by ſtat. 12 Car. II.

FEODER, a meaſure for liquids, uſed throughout Germany. See MEASURE.

FEODUM, or FEUDUM, the ſame with *fief* or *fee.* See FEE.

FEOFFMENT, in common law, ſignifies a gift or grant of honours, caſtles, manors, meſſuages, lands, or the like corporeal or immoveable things, to another in fee-ſimple; that is, to him, and to his heirs for ever, by the delivery of ſeiſin, and the poſſeſſion of the thing given. See FEE.

When this is done by writing, it is called the *deed of feoffment.*

In every *feoffment*, the giver is called the *feoffer*, or *feoffator*; and he that receives the *feoffee.*

The proper difference in our law, between a *feoffer*, and a donor, is, that the *feoffer* gives in fee-ſimple; and the donor in fee-tail.

FERALIA *, in antiquity, a feaſt held by the Romans, on the twenty-firſt of *February*, in honour of the dead.

Macrobius, *Saturn.* l. i. c. 13. refers the origin of the ceremony to Numa Pompilius. Ovid, in his *faſti*, goes back as far as Æneas, for its inſtitution. He adds, that on the ſame day, a ſacrifice was performed to the goddeſs Muta, or dumb; and that the perſons who officiated, were an old woman, attended with a number of young girls.

FER *de fourchette*, *croix à fer de fourchette*, in heraldry, is a croſs, having a forked iron at each end, like that formerly uſed by ſoldiers to reſt their muſquets on; by which it is diſtinguiſhed from the croſs *fourché* ; the ends whereof turn forked : whereas in this, the fork is fixed on the ſquare end ; as repreſented in *Tab. Herald. Fig.* 20.

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* Varro derives the word from *inferi*, or from *fero*: on account of a repaſt, carried to the ſepulchres of ſuch as the laſt offices were that day rendered to. Feſtus derives it from *ferio*, on account of the victims ſacrificed. Voſſius obſerves, that the Romans called death *fera*, *cruel*, and that the word *feralia* might ariſe thence.

FER *de Moulin, q. d.* iron of the mill, is a bearing in heraldry ; ſuppoſed to repreſent the iron-ink, or ink of a mill, which ſuſtains the moving mill-ſtone. See a repreſentation of it in *Tab. Herald. Fig.* 21.

FERD-*wit* *, or **FIRD**-*wite*, in our antient cuſtoms, a formulary, by which the king pardoned manſlaughter, committed in the army.

* The word is formed of the Saxon *fird*, army, and *wite*, puniſhment.

FERENTARII *, or FERENDARII, among the Romans, were auxiliary troops, lightly armed ; their weapons being a ſword, bow and arrows, and a ſling ; which were much leſs cumberſome than a buckler, battle-ax, pike, &c.

* The name ſeems to have been derived *a ferendo auxilio* ; theſe being auxiliary forces : though Varro thinks they might be ſo called, by reaſon the ſling and ſtones *feruntur, non tenentur*.

We have alſo mention of another ſort of *ferentarii*, whoſe buſineſs was, to carry arms after the armies, and to be ready to ſupply the ſoldiers therewith in battle.

Lydius uſes the name *ferentarii* for the *cataphracti equites*, *i. e.* cavaliers, armed cap-à-pé.

FERIÆ, among the Romans, were holidays, or days wherein they abſtained from work.

The word *feriæ* is uſually derived *a ferendis victimis*, on account of the victims killed on theſe days. Martinius ſays, that *feriæ* were ſo called *velut* ἱεραι ἡμεραι, *dies ſacri*, holy days. Others obſerve, that all days in general, though they were not feaſt-days, were antiently called *feſtæ*, or, as Voſſius reads it, *feſiæ* ; whence, according to that author, was formed the word *feriæ*.

The *feriæ*, or *dies feriati*, were obſerved and diſtinguiſhed chiefly by reſt ; whereas the *feaſts*, or *dies feſti*, beſide a ceſſation from labour, were celebrated with ſacrifices and games ; ſo that there were *feriæ*, which were not feaſt-days. Though authors frequently confound the *feriæ*, and *feſti*.

Others confound the *feriæ* with the *dies nefaſti*, or non-court-days.

The Latin *feria* amounts to the Sabbath of the Hebrews.

The Romans had divers kinds of *feriæ* : their names, at leaſt the principal thereof, are, *æſtivales*, or ſummer *feriæ* ; *anniverſariæ*, yearly *feriæ* ; *compitalitiæ*, *feriæ* of the ſtreets, and croſs-ways ; *conceptivæ*, votive *feriæ*, which the magiſtrates promiſed every year ; *denicales*, for the expiation of a family polluted by the death of any one ; *imperativæ*, or *indictivæ*, thoſe decreed by the magiſtrate ; *Latinæ*, the Latin *feriæ*, inſtituted by Tarquin the Proud, for all the Latin people, amounting to above fifty nations, being celebrated on M. Alba, in memory of the peace, concluded by Tarquin, with the people of Latium ; *meſſis feriæ*, thoſe of harveſt ; *paganales feriæ*, or *paganalia*, an account of which is given under PAGANALIA ; *præcidaneæ*, which were what we properly call the vigils, or eves of the feaſts ; *privatæ*, or *propriæ*, thoſe peculiar to the ſeveral families ; as the *familiæ Claudiæ*, *Æmiliæ*, *Juliæ*, &c. *publicæ*, thoſe obſerved by all in general, or for the public weal ; *ſementinæ*, thoſe held in ſeed-time ; *ſtativæ*, thoſe kept conſtantly to the ſame day of the year ; *Saturnales*, whereof we ſhall ſpeak in their place ; *ſtultorum feriæ*, or *quirinaliæ*, the *feriæ* of fools, held on the ſeventeenth of February ; *victoriæ feriæ*, thoſe of victory, in the month of Auguſt ; *vindemiales*, thoſe of the vintage, from the twentieth of Auguſt, to the fifteenth of October ; *Vulcani feriæ*, thoſe of Vulcan, which fell on the twenty-ſecond of May.

FERIÆ was alſo uſed among the Romans for fair-days ; by reaſon it was their cuſtom to hold their fairs on the *dies feriati*, or holidays. Struv. *Synt. Antiq. Rom.* c. ix. p. 425. 443, &c.

FERIA * is ſtill retained in the Romiſh breviary, though in a ſenſe ſomewhat different from the *feriæ* of the antients ; being applied to the ſeveral days of the week, beginning with Sunday ; provided none of thoſe days be a feaſt or faſt day. Thus, Monday is the ſecond *feria* ; Tueſday the third, &c.

* The word *feria*, in this ſenſe, is doubtleſs borrowed from the antient *feria*, a day of reſt. Accordingly, Sunday is the firſt *feria* : for antiently all the days of Eaſter-week were accounted feſtival days, by a decree of Conſtantine ; whence thoſe ſeven days were called *feriæ* : Sunday being the firſt, Monday the ſecond, &c. And this week being then accounted the firſt of the eccleſiaſtical year, they afterwards accuſtomed themſelves to call the days of the other weeks after the ſame manner, *firſt, ſecond, third*, &c. *feriæ*. Though others will have it, that the days of the week were not called *feriæ*, from the people's reſting, that is, on account of being obliged to abſtain from ſervile works ; but to advertiſe the faithful, that they ought to abſtain from ſin. See Durand, *de Off. Div.* l. viii. c. 1.

Theſe are the *ordinary feriæ* :— but beſides theſe, they have *extraordinary*, or *greater feriæ* ; viz. the three laſt days of paſſion-week ; the two days following Eaſter-day, and Whitſu day ; and the ſecond *feriæ* of rogation.

FERIAL *days*, *dies* FERIALES, or FERIÆ, among t antients, ſignify holidays, or days vacant from labour, an pleading.

But in the Stat. 27 Hen. VI. c. 5. and in Forteſcue, *D laudibus LL. Angliæ*, *ferial* days, they are taken for work ing days. S. Sylveſter ordained—*Sabbati & dominici di nomine retento, reliquos hebdomadæ dies* feriarum *nomine d ſtinctos, ut jam ante in eccleſia vocari cœperant, appellari.* So that *ferial* days are properly all the days of the week, ex cept Saturday, and Sunday.

FERM, FIRMA, in law. See the article FARM.

FERMENT, in phyſics, any body, which, being applied t another, produces a *fermentation* therein : or, any thing capa ble of exciting an inteſtine motion in the parts of another and of ſwelling or dilating the ſame.

Thus, the acid in leaven is a *ferment*, which makes bread ri or ſwell. And the moiſture in hay is a *ferment*, which heats and makes it ſmoke. Thus alſo, rennet is a *ferment*, whic curdles and breaks milk : and barm, or yeaſt, is the *fermen* that ſets wort a working, &c. See Supplement, article FER MENT.

The force or effect of a *ferment* ariſes hence, that, by i more penetrative and moveable parts, it diſſolves and break the texture or combination of the component parts or prin ciples of the body, gives them a new motion, and diſpoſe them to take a new arrangement, or to combine again in new manner ; and ſo to conſtitute a new ſpecies of body.

Thus, the bite of a mad dog excites a ſlow fermentation i the blood, whereby the divers liquors, or matters it conſiſt of, loſe that nexus, or union, neceſſary to a ſtate of health and occaſion an irregularity in the ſpirits, from which ariſ the horrors, and other ſymptoms of the diſeaſe.

One way of accounting for digeſtion, is by ſuppoſing a certai *ferment* in the ſtomach. But what this *ferment* is, or whenc it ſhould be derived, is greatly diſputed. Some will have i an acid, others alcalious, others ſulphureous, others alcalino ſulphureous, others muriatic, &c. as their own fancies ſugge to them.

FERMENTARII, or FERMENTACEI, a denominatio which thoſe of the Latin church have given to the Greeks on account of their conſecrating and uſing leavened or *fermented* bread in the euchariſt.

As the Greeks call the Latins *azymites*, the Latins, in return call them *fermentarii*.

FERMENTATION, an inteſtine motion, or commotion, o the ſmall, inſenſible particles of a mixed body, ariſing without any apparent mechanical cauſe, and producing a conſider able alteration therein.

Or, it is an eaſy, ſlow, gentle motion of the inteſtine particle of a body, ariſing uſually from the operation of ſome active acid matter ; which rarefies and ſubtilizes the ſofter yieldin particles thereof.

Fermentation differs from diſſolution, as the latter is only a re ſult, or effect of the former : *fermentation* is frequently with out diſſolution, *i. e.* the fermentative motion ſeldom goes ſ far as to diſſolve the body ; but diſſolution always ſuppoſe an antecedent *fermentation*.

Fermentation differs from ebullition and efferveſcence in this that the motion, which in the firſt is ſlow, in the two latte is violent ; and that, in the firſt, the motion is reſtrained t the minute particles of the body ; but, in the latter, it extend to large maſſes thereof.

Indeed it muſt be obſerved, that authors uſually allow of diver kinds of *fermentation* ; viz. an inſenſible one, which is onl known from its effects ; and a ſenſible one ; a violent and moderate one ; a hot and a cold one ; a natural, and an artificial one.

Plants bruiſed, and left a certain time in a cloſe veſſel, *ferment* of themſelves ; and, if let alone, the *fermentation* wil proceed to putrefaction.

In order to *fermentation*, it is neceſſary the ferment hav ſomething acid and ſpirituous in it ; that its motion be tumultuous ; that it be an open, ſpacious place, and aſſiſte by the air ; and that it tend to exalt and purify the body and produce vinous, or inflammable ſpirits.—Theſe are th particular properties and conditions of *fermentation* ; though in the general, all required to effect a *fermentation*, in body, or liquor, which is not homogeneous, that is, which conſiſts of different principles, is, that there be a ſtrong attraction between the particles of the *ferment*, and th body ; that the parts of this latter be moved and agitated irregularly ; and that this motion produce ſome alteration i the mixed.

Fermentation is one of the moſt obſcure proceſſes in all nature. The generality of our later philoſophers allow it i great meaſure a myſtery, to which their principles will no fully reach. Dr. Morgan attempts to account for it, on the Newtonian ſyſtem. His principle is, that the expanſiv force of air, rarefied by the action of fire, or the mutua action of fire and air, is the univerſal natural cauſe of *fermentation* and diſſolution.

To ſhew this, he conſiders two great powers, or principles in bodies; *viz.* an attractive, coheſive power, in the ſmall particles of matter, as the principle of all reſt, concretion, &c. and the expanſive force of heated air, as the principle of *fermentation.* On the different proportion and adjuſtment of theſe two oppoſite forces, with reſpect to each other, the conſtitution, texture, and coheſion of bodies are ſaid to depend.

By the attractive force, acting alone, the conſtituent parts of compound bodies muſt be brought to their neareſt and greateſt contacts, and remain there in a degree of firmneſs, and coheſion, proportional to the quantities of contact.

On the other hand, by the repulſive, expanſive force, acting alone, all bodies, even the moſt compact and ſolid, muſt be diſſolved and diffuſed into one perfectly fluid, incoherent maſs.

If both be found in the ſame body, and equal in degree, ſuch a body muſt continue in its preſent ſtate of fluidity, or coheſion: if the attractive power prevail, the quantity of contact, or degree of coheſion, will be continually increaſed to a certain pitch, where it will reſt: on the contrary, if the expanſive force of the fire and air, included in any body, or maſs of matter, prevail againſt the attractive power of the contiguous parts, the parts muſt neceſſarily recede from their points of contact.

And this happening through all the ſubdiviſions of which the body or maſs is capable, every ſmall part muſt be divided and ſeparated into other ſmaller parts; and theſe again into others, and ſo on, till we come to the firſt conſtituent particles or atoms, which are ſuppoſed to be perfectly ſolid, and indiviſible.

This receſs of the parts of bodies from their points of contact, and the ſeparation and diviſion conſequent thereon, is what we call *Rarefaction*; as, on the contrary, the approach of the parts nearer to the points of contact, is called *Condenſation.* Now from the contrary effects of theſe two forces, there neceſſarily ariſes an inteſtine commotion, colliſion, and natural ſtruggle of the parts among themſelves; *i. e.* the parts acted on by two ſuch oppoſite forces, will fly off, and recoil, recede and accede, in proportion to the ſtrength and energy of the oppoſite powers, till one or the other prevail, either to fix and condenſe, or to diſſolve and diffuſe it; which alternate motion is what we call *Fermentation.*

If the attractive force prevail, the moſt fluid body will be conſolidated, as water into ice.

On the contrary, if the expanſive force prevail, the firmeſt body will be broken and diſſolved.

Fermentation is a point of the utmoſt conſequence in medicine; it is one of the principal means or inſtruments we have for altering, exalting, or calling forth the properties and powers of bodies. To get an idea of theſe changes, we cannot conſider it better, than in the procuring of a ſpirituous liquor from malt, by means thereof.

It is to be obſerved then, that the malt being made, as ſhewn under the article MALT, and then laid to infuſe or maſh in hot water, the reſt of the proceſs of brewing is nothing but a raiſing and directing of a *fermentation,* or inteſtine motion.

How ſuch motion is mechanically affected, and how it brings forth ſuch a ſpirit, may be conceived from what follows; ſuppoſing the reader acquainted with theſe common propoſitions in hydroſtatics; *viz.*

1°, That a body immerſed in any fluid, ſpecifically lighter than itſelf, will ſink; otherwiſe, it will emerge, and get to the top.

2°, That if two equal bodies of different ſpecific gravities be immerſed in a fluid, lighter than either of them, the celerities of their deſcents will be as their gravities.

3°, That if two unequal bodies of unequal ſpecific gravities be immerſed in a fluid, lighter than either, the celerities of their deſcents will be compounded of their gravities and dimenſions together.

The ſame laws, by which bodies deſcend, hold good in the aſcent of thoſe ſpecifically lighter than the fluid.

Hence, in all heterogeneous fluids, the conſtituent parts of which are not fitted to aſſociate and cohere, ſo as to form what is called an uniform homogeneous fluid, the heavier may be accounted as ſolid bodies immerſed in a fluid ſpecifically lighter; and the lighter parts, as ſuch bodies in a fluid ſpecifically heavier; ſince it may be demonſtrated, that the component parts of all fluids, ſeparately conſidered, are ſolid.

The liquor, therefore, called *wort,* which is a decoction of malt, may be conſidered as ſuch an heterogeneous fluid, whoſe parts cannot be interchanged in their poſitions, till each has obtained ſuch an elevation as correſponds to its proper gravity: but leſt this alone ſhould fail of the intention, by not being ſufficient to break thoſe moleculæ and viſcidities, which entangle the ſpirituous parts, and likewiſe to prevent their flying off at the ſurface, ſome portion of an already fermented ſubſtance is mixed with it. This ſubſtance, termed *barm,* or *yeaſt,* conſiſts of a great quantity of ſubtle ſpirituous particles, wrapped up in ſuch as are viſcid. Now, when this is mixed with ſuch a liquor, it cannot but much contribute to that inteſtine motion which is occaſioned by the intercourſe, and occurſions of particles of different gravities; as the ſpirituous particles will be continually ſtriving to get up to the ſurface, and the viſcid ones continually retarding ſuch an aſcent, and preventing their eſcape.

So that by theſe two concurring cauſes the particles extracted from the grain will by ſuch frequent occurſions be ſo comminuted, as continually to increaſe the more ſubtile and ſpirituous parts, until all that can be made ſo by attrition, be ſet looſe from their former viſcid confinements; and this appears by the warmth of the liquor, and the froth driven to the top; juſt at which time, if it be thrown into the ſtill, it affords ſome quantity of an highly inflammable ſpirit.

Moderate warmth much haſtens this proceſs, as it aſſiſts in opening the viſcidities, in which ſome of the ſpirituous parts may be entangled, and unbends the ſpring of the included air, which cannot but contribute to the rarefaction and comminution of the whole.

The viſcid parts, which are raiſed to the top, not only on account of their own lightneſs, but by the continual efforts and occurſions of the ſpirit to get uppermoſt, both ſhew when the ferment is at the higheſt, and prevent the finer ſpirits making their eſcape; for if this inteſtine luctus be permitted to continue too long, a great deal will get away, and the remaining liquor will grow flat and vapid, and raiſe little beſides phlegm in the ſtill.

The greateſt uſe of this theory in medicine, will be in teaching what parts of the materia medica are moſt properly brought under this procedure; and how ſuch inteſtine motion does, in ſome things, deſtroy their virtues: for by ſome medicines an intention is aimed at, which is not to be procured, but by their being ſpirituous, whereas, in others, the very contrary property is required: in ſuch caſes therefore, when by any adventitious cauſe thoſe medicines get into a *ferment,* they are deſtroyed, and ſhould not be adminiſtred.

FERNAMBUC, ſee the article BRASIL *wood.*

FERRUGINOUS, denotes a thing to partake of the nature of iron, or to contain particles of that metal.

It is particularly applied to certain mineral ſprings, whoſe water in their paſſage along the ſtrata of the earth meets with the ore of this metal, or with pyritæ containing it, part of which they waſh off, and carry with them; and thus become impregnated with the principles thereof. Such are what we call *chalybeat* waters.

The waters of Tunbridge, thoſe of Forges, and of the iron ſpring at Bourges, and many others, are *ferruginous.*

FERRUGO, the ruſt of iron; or a kind of calx found on the ſurface thereof.

FERRUM, *Iron.* See the article IRON.

FERTILITY, FRUITFULNESS, that quality which denominates a thing fertile, or prolific.

The Egyptian nitre, or natron, renders the ground exceedingly *fertile.* M. de la Chambre obſerves, that the plants grow in ſuch abundance in Egypt, that they would choak one another, if they were not hindered, by throwing ſand upon the fields; inſomuch that the Egyptians muſt take as much pains to leſſen the richneſs of their ſoil, as other nations do to increaſe that of theirs. *Philoſoph. Tranſact.* N° 160.

Nothing is more fertile than wheat, which faculty was given it by the Creator; in regard, that it was to be the principal food of men: thus a ſingle meaſure of that grain, ſown in a proper ſoil, will yield a hundred and fifty meaſures. — One of Auguſtus's procurators ſent him four hundred ears, all produced from one ſeed. And Nero had three hundred and forty ears ſent him, ariſing alſo from a ſingle ſeed. Plin. *Nat. Hiſt.* l. xviii. c. 10.

FERULA *, a little wooden pallet, or ſlice; reputed the ſchoolmaſter's ſceptre, wherewith he chaſtiſes the boys, by ſtriking them on the palm of the hand.

* The word is pure Latin, and has alſo been uſed to denote the prelates crozier and ſtaff. It is ſuppoſed to be formed of the Latin *ferire,* to ſtrike; or, perhaps, *ferula,* in this ſenſe, may be derived from the name of a plant, called in Latin *ferula,* in Engliſh *fennel-giant*; the ſtem whereof was antiently uſed to correct children with; though others think, the plant took its name from the inſtrument, or rather from its uſe, *ferire.*

Under the eaſtern empire, the *ferula* was the emperor's ſceptre, as is ſeen on divers medals; it conſiſts of a long ſtem or ſhank, and a flat ſquare head. The uſe of the *ferula* is very antient among the Greeks, who uſed to call their princes ναρθηκοφοροι, q. d. *Ferula-bearers.*

In the antient eaſtern church, *Ferula* or *Narthex,* ſignified a place ſeparated from the church; wherein the penitents, or the catechumens of the ſecond order, called *Auſcultantes,* ακροαματικοι, were kept; as not being allowed to enter the church. Whence the name of the place; the perſons therein being under penance, or diſcipline: *ſub ferula erant eccleſiæ.*

FERULÆ, among chirurgeons, called alſo SPLINTERS, are little chips of different matter; as woods, barks, leather, paper, *&c.* applied to bones that have been disjointed, when they are ſet again.

The bark of the herb fennel-giant, called by ſome, in Latin, *ferula*, was antiently much uſed on this occaſion; whence the name *ferula* became common to all.

FESCENNINE *, in antiquity. *Feſcennine verſes* were a kind of ſatirical verſes, full of wanton and obſcene expreſſions, ſung, or rehearſed, by the company, at the ſolemnizing of a marriage among the Romans.

* The word is borrowed, according to Macrobius, from *faſcinum*, a charm; the people taking ſuch ſongs to be proper to drive away witches, or prevent their effect: but its more probable origin is from *Feſcennium*, a city of Campania, where ſuch verſes were firſt uſed.

FESSE, one of the nine honourable ordinaries of the eſcutcheon, which it divides horizontally in the middle, and ſeparates the chief from the point. It is ſuppoſed to repreſent a broad girdle, or belt of honour, ſuch as knights at arms were antiently girded withal.

It poſſeſſes the centre of the eſcutcheon, and contains in breadth one third part thereof.—Thus, he beareth azure, a *feſſe* or, by the name of Eliott. See Tab. *Herald. fig.* 22.

When the *feſſe* takes up leſs than its proper breadth, it is called a *bar*.

FESSE-*point* is the exact centre of the eſcutcheon.

It is thus called, as being the point through which the *feſſe* line is drawn from the two ſides; and, accordingly, it divides the eſcutcheon into two equal parts, when the eſcutcheon is parted *per feſſe*.

FESSE-*ways*, or *in* FESSE, denotes things borne after the manner of a *feſſe*, *i. e.* in a line, or range, acroſs the middle of the ſhield; which the French call *en feſſe*.

Party per FESSE implies parted acroſs the middle of the ſhield, from ſide to ſide, through the *feſſe* point.

This the French expreſs by one word, *coupé*.

FESTI *dies*, among the antients, were *feaſt*-days, or holidays.

Numa diſtinguiſhed the days of the year into *feſti*, *profeſti*, and *interciſi*.—The firſt were thoſe dedicated to the gods; the ſecond were thoſe allowed to men, for the management of their own affairs; the third were ſhared between the gods and men.

The *feſti dies*, again, were divided, according to Macrobius, *Saturn.* c. 16. into ſacrifices; epulæ, or banquets; ludi, or games; and feriæ: ſee FERIÆ, *&c.* and the *profeſti* into *faſti*, *comitiales*, *comperendini*, *ſtati*, and *præliares*. See FASTI, *&c.*

FESTINO, in logic, one of the moods of ſyllogiſms.

In a ſyllogiſm *in feſtino*, the firſt propoſition is an univerſal negative; the ſecond, a particular affirmative; and the third, a particular negative.

FESTIVAL. See the articles FEAST, and FESTUM.

FESTOON, in a general ſenſe. See GARLAND.

FESTOON *, in architecture, and ſculpture, is a decoration in form of a garland, or cluſter of flowers.

* The word is French, *feſton*, which ſignifies a garland; formed of the Latin *feſtum*, feaſt.

It conſiſts of a ſtring, or collar, of flowers, fruits, and leaves, tied together; ſomewhat biggeſt in the middle, and ſuſpended by the two extremes; from which, beſide the main part, which falls down in an arch, two leſſer parts hang perpendicularly.

This ornament is made in imitation of the *feſtoons*, or long cluſters of flowers, hung by the antients on the doors of their temples, *&c.* on feſtival occaſions.

Feſtoons are now chiefly uſed in freezes, and other vacant places, required to be filled up, and adorned.

FESTUM, in a general ſenſe. See the article FEAST.

FESTUM, in our law-books, is frequently uſed for a general court, or aſſembly; in regard ſuch were antiently always kept on the great feſtivals of the year.

Thus, in our chronicles, we read, that in ſuch a year the king kept his *feſtum* at Wincheſter, *&c.* that is, he kept a court there at that time: *Rex apud Winton. maximum* feſtum *& convivium celebravit, tempore natalis Domini, convocatis ibidem principibus & baronibus totius regni.*

FET-*lock*, in the menage, a tuft of hair growing behind the paſtern-joint of horſes.

Hence, the joint where it grows, is called the *fet-lock-joint*.

FETUS. See the article FOETUS.

FEUD, FEODUM, the ſame with fief, or fee. See FEE.

FEUD is alſo uſed, in our antient cuſtoms, for a capital quarrel, or enmity, not to be ſatisfied but with the death of the enemy.

Feud, called alſo *feida*, and *faida*, in the original German ſignifies *guerram*, i. e. *bellum*, war. Lambert writes it *feeth*; and ſaith, it ſignifies *capitales inimicitias*, or implacable hatred.

In Scotland, and the North of England, *feud* is particularly uſed for a combination of kindred, to revenge the death of any of their blood, againſt the killer and all his race, or any other great enemy.

FEUDAL, or FEODAL, of, or belonging to, a *feud*, or *fee*.

We ſay, a *feudal* matter, *feudal* juriſprudence, *feudal* ſeizure, *&c.* A *feudal* lord, in default of fealty and homage from his vaſſal, may ſeize the fruits of the fee. A Neapolitan lawyer, called Caravita, has a Latin treatiſe of the *feudal* law, intituled, *Prælectiones feodales*.

When once the uſe of fees was thoroughly eſtabliſhed in France, they would needs extend it much farther; and almoſt all the great offices of the crown thus became *feudal*; even the courts of juſtice were drawn in: in order to which, they were annexed to certain lands, or revenues.

The deſign of theſe infeodations was, to render the offices hereditary, after the manner of fees, which were now become ſo: and thus the offices of the grand chamberlain, grand butler, *&c.* came to be held by hereditary right.

FEUDATARY, or FEODATARY, a vaſſal, or perſon who holds of a ſuperior in fee, *i. e.* on condition of yielding him fealty, and homage, or other ſervice.

The electors, princes, and free cities, of Germany, are all *feudataries* of the emperor.

F. Daniel obſerves, that Charles VII. forbad the count D'Armagnac to call himſelf, in his titles, by the grace of God count D'Armagnac; ſuch terms, which ſeem to exclude all dependence, except on God, being an innovation prejudicial to the right of the ſovereign, and which had never been allowed to any duke, or count, who was a *feudatary* of any crown. *Hiſtoire de France*, t. ii. p. 1162.

FEUDBOTE, a recompence for engaging in a feud, or faction, and for the damages conſequent thereon; it having been the cuſtom of antient times, for all the kindred to engage in their kinſmens quarrels; according to that of Tacitus *De Morib. Germanor. Suſcipere tam inimicitias ſeu patris, ſeu propinqui, quam amicitias; neceſſe eſt.*

FEUDIST, a lawyer, or doctor learned, or much converſant, in *feuds*, or *fees*.—Du Moulin is reckoned a great *feudiſt*.

FEVER, FEBRIS, in medicine, a diſeaſe, or rather claſs o diſeaſes, whoſe characteriſtic is, a preternatural heat fel through the whole body, or, at leaſt, the principal parts thereof, attended with other ſymptoms.

Sydenham defines a *fever*, a ſtrenuous endeavour, or effort, o nature, to throw off ſome morbific matter, that greatly incommodes the body.—Quincy defines it, an augmented velocity of the blood; others, a fermentation of the blood accompanied with a quick pulſe, and exceſſive heat.

The cauſes of *fevers* are innumerable; and the diſeaſe eve often ariſes in the ſoundeſt bodies, where there was no previous morbific apparatus; as cacochymia, plethora, *&c.* bu merely from a change of air, food, or other alteration in th non-naturals.—A *fever*, Boerhaave obſerves, is an inſeparabl companion of an inflammation.

The ſymptoms are many: every *fever*, ariſing from any internal cauſe, is attended with a quick pulſe, and an unuſua heat, at different times, and in different degrees. Whe theſe are intenſe, the *fever* is acute; where remiſs, it is calle ſlow.

The diſeaſe begins, almoſt always, with a ſenſe of chilneſs and, in its progreſs, is chiefly diſtinguiſhed by the velocity the pulſe: ſo that a too quick contraction of the heart, wi an increaſed reſiſtance, or impulſe, againſt the capillaries, furniſhes the proper idea of a *fever*; and the health of the patient is the ſcope nature chiefly aims at in the diſeaſe.—Oth attendant ſymptoms are, uſually, a laborious and diſturbed reſpiration; an uniform, high-coloured urine; a parchedne and drineſs of the tongue, mouth, *&c.* a clammineſs of th ſaliva; thirſt; and wakefulneſs; and a nauſea againſt eve thing but thin diluting liquors.

From theſe ſymptoms, Dr. Morgan lays it down as a pri ciple, that, in every *fever*, there is a general obſtruction a diminution of the glandular ſecretions; that is, a great pa of the lymph, or ſerum, of the blood, which ought to be co tinually drained off by the glands, is, during the *fever*, retained in, and cloſely united to, the maſs, that it circula together with it in the veins and arteries. This he endeavo to prove to be the ſtate and condition of the blood in the pr duction of a *fever*, by accounting for all the above-mentio phænomena from it, as the juſt and adequate effects of ſuch cauſe. How he does this, ſee in his *Philoſ. Princ. of M* p. 207, *&c.*

The general indication, in the cure of *fevers*, is, to reſtra the commotion of the blood within the bounds agreeable the end nature had in raiſing it, *i. e.* neither to let it riſe t high, for fear of the conſequence; nor yet keep it too lo for fear of fruſtrating the endeavour of nature: and hen to be deduced the rule and meaſure of letting more or blood, or none at all.

The cure of *fevers*, Boerhaave ſummarily comprehends correcting the ſharp, irritating, *febrile* matter, diſſolvin lentor, and mitigating the ſymptoms. If nature ſeem t ca the *fever* too high, it muſt be moderated by abſtinen thin diet, drinking of water, bleeding, and cooling clyſte

If ſhe bring it on too ſlowly, it muſt be excited by cardiacs, aromatics, volatiles, &c. The cauſe removed, the ſymptoms ceaſe of courſe; and if they can be borne without much danger of life, it were beſt not to enter into any particular cure thereof; if they be unſeaſonable, or too ſevere, they are each to be abated with the proper remedies.

Sydenham recommends an emetic in the beginning of a *fever*; or, if it have been then omitted, in any other ſtage thereof; eſpecially where there is a propenſity to vomiting: for want of this, a diarrhœa frequently ſucceeds, which is often exceedingly dangerous. After this, he uſes a paregoric; and the following days, if there be no indication to repeat the veneſection, nor any diarrhœa, he preſcribes every other day an enema, till the twelfth day; when, matters uſually coming to a criſis, he has recourſe to hotter medicines, in order to promote and accelerate it. He adds, that if the diſeaſe proceed well, and the fermentation be laudable, there is no occaſion for any phyſic at all. About the fifteenth day, if the urine be found to ſeparate, and give a ſediment, and the ſymptoms be abated; a cathartic is uſually ordered; leſt the ſediment, returning into the blood again, occaſion a relapſe. Nothing cools the patient, and abates the *fever*, ſo much as a cathartic, after veneſection.

The more acute the *fever*, the thinner, according to Etmuller, muſt be the diet. It is no matter, if the patient ſhould faſt for ſeveral days running; for never did *feveriſh* perſons die of hunger: eating always exaſperates the diſeaſe. Emetics, he allows the principal place in the cure of all *fevers*; but, as a patron of the hot regimen, he aſſigns ſudorifics the ſecond. Spirit of ſal ammoniac, or its ſal volatile, he obſerves, is an univerſal febrifuge, and rarely fails: all ſugared things are hurtful.

Hippocrates, in all *fevers*, preſcribes wines; Dr. Hancock, water.

So long as the urine remains crude, that is, does not give a ſediment, the patient's caſe is dubious; but when once the coction commences, and the urine ſeparates, the great danger is generally over.

Among the ſigns of death, the ſame author adds, there is none more certain, than a frequent blowing of the noſe, without any diſcharge of matter. A ſtrong, equable pulſe, with deliria, tremors, twitches of the tendons, and other ſymptoms, fatal in diſeaſes of the nervous kind, always preſage well in *fevers*: on the contrary, a quick, weak, faltering pulſe, howſoever favourable the other ſymptoms may ſeem, infallibly proclaim death at hand. Morton.

It appears, by obſervation, that a frequent letting of blood renders perſons more inclinable to *fevers*.

Fevers are of various kinds, denominated and diſtinguiſhed from the particular cauſes that produce them; the time they continue; their acceſſes, and returns; and their different ſymptoms.—The moſt general and genuine diviſion of *fevers*, is into *eſſential*, and *ſymptomatic*.

Eſſential FEVER is that whoſe primary cauſe is in the blood itſelf; and which does not ariſe as an effect, or ſymptom, from any other diſeaſe in the ſolids, or other parts.

This is what we abſolutely and properly call a *fever*.

Symptomatic FEVER is that which ariſes as an accident, or ſymptom, of ſome other antecedent diſorder; as an inflammation, phlegmon, eryſipelas, impoſthume, ſmall-pox, pleuriſy, &c. Whence it is peculiarly denominated inflammatory, eryſipelatous, purulent, variolous, or pleuritic *fever*.

Eſſential fevers are generally diſtinguiſhed into *continued*, and *intermitting*: others chooſe to divide them into *diary*, *intermitting*, *continent*, and *continued*.

Continual FEVER is that which gives the patient no reſpite, or intermiſſion; but ſticks to him from its firſt ſeizure, to its final period.

This is ſubdivided into *putrid*, and *not putrid*.

Continual FEVER *not putrid* is that wherein the parts of the blood are not ſo diſſolved, and broken, as to give occaſion for the principal parts thereof to be ſecreted; or that, wherein there is not any diſcharge of putrid, purulent matter into the blood.

Of this there are two kinds; the *diary*, and *ſynochus*: to which ſome add, the *hectic*.

Diary FEVER is that which does not ordinarily hold beyond twenty-four hours. It is the gentleſt of all *fevers*; is frequently got by too much exerciſe, or other external accidents. It is cured by reſt alone, and keeping in bed: if it remain for ſeveral days, it is either called a continual *ephemera*, or ſimple *ſynochus*.

Hectic FEVER is a ſlow, durable *fever*, which extenuates and emaciates the body by inſenſible degrees.

It has three ſtages: the firſt, while it conſumes the juices of the body; the ſecond, when it exhauſts the fleſhy ſubſtance of its humidity; and the third, when it lays hold of, and deſtroys, the ſolids themſelves; in which laſt ſtage it is reputed incurable. Its effect is ſomewhat like that of a flame; firſt conſuming the oil of the lamp; then the moiſture of the wick; and, laſtly, the wick itſelf. But this *fever* is frequently conſidered as of the *ſymptomatic*, or *ſecondary* kind, ariſing in phthiſes, &c.

Continual putrid FEVER is that wherein the texture of the blood is rendered ſo lax, or even diſſolved, that its parts, or principles, ſeparating, ſome of the principal of them are ſecreted, and loſt.

Putrid fevers are frequently conſidered as *ſecondary* ones, ariſing from the diſcharge of putrid, purulent matter, from ſome morbid part; as an ulcer in the lungs, &c. They are divided into *ſimple*, and *compound*, or *remitting*.

Simple continual putrid FEVER, or a *continent* FEVER, properly ſo called, by the Greeks, Συνοχος, is that which continues uniformly from firſt to laſt, without any fits, or periods, of exaſperation and remiſſion of heat, and the other ſymptoms.

Willis divides the *putrid fever* into four ſtadia, or ſtages: the beginning, which is attended with a chilneſs, ſhivering, wearineſs, thirſt, wakefulneſs, pain in the head and loins, nauſea, and vomiting: the increaſe, wherein the former ſymptoms are heightened, with the addition of deliria, convulſive motions, foulneſs of the mouth, and high, turbid urine, without any laudable ſediment, or hypoſtaſis: the ſtate, which contains the criſis, which in this diſeaſe is much what the paroxyſm is in *intermittents*: for as that returns at certain hours, ſo do the critical motions, in continued *fevers*, happen on the fourth, fifth, ſixth, or ſeventh day.

The laſt ſtage is the declenſion; which ends either in recovery, or death.

Theſe *fevers* are ſubdivided into *burning*, and *ſlow*.

Ardent, or *burning* FEVER, called, by the Greeks, καυσος, is a very acute *fever*, attended with a vehement heat, intolerable thirſt, a dry cough, delirium, and other violent ſymptoms.

It frequently kills on the third or fourth day, and rarely exceeds the ſeventh. It often goes off, in an hæmorrhage, on the third or fourth day; which, if it prove too ſparing, is uſually fatal. Sometimes it goes off by ſtool, vomiting, &c. and ſometimes it ends in a peripneumony.

To the claſs of *burning fevers* are reducible, the *lipyria*, *aſſodes*, *elodes*, &c.

The *lipyria* is a burning *fever*, wherein the heat is very intenſe within-ſide, and, at the ſame time, the external parts are cold.

The *aſſodes* is a burning *fever*, attended with great inquietudes, nauſeas, vomiting, &c.

The *helodes* is a *fever* wherein the patient ſweats continually.

The *ſyncopal fever* is that attended with frequent ſwoonings.

The *epialos* is that wherein both heat and cold are felt in the ſame part at the ſame time.

Slow FEVERS are gentle, but durable ones: they conſume the patients by degrees. They uſually ariſe from diſorders in the lympha, or pituita; whence Sylvius calls them *lymphatic fevers*.

The principal of theſe are, the catarrhal, attended with a catarrh, cough, hoarſeneſs, &c. and the ſcorbutic *fever*, into which acute *fevers*, and ſometimes intermittent kinds, degenerate. To this claſs are alſo reducible,

Colliquative FEVERS, wherein the whole body is conſumed and emaciated in no long time; the ſolid parts, with the fat, &c. melted down, and carried off by a diarrhœa, ſweat, urine, &c.

Remitting FEVER, called, alſo, a *continual fever*, συνεχης, and a *compound continual fever*, is that which continues ſome time, without any gradual increaſe of heat; yet is liable to alternate fits of remiſſion and aggravation; either ſtated and periodical, or irregular.

Of this there are divers kinds, denominated from the periods of returning; as the *remitting*, *continual quotidian*, *continual tertian*, *continual quartan*, &c. which are only a continued *fever*, whoſe acceſſes, or ſeverer fits, return every day, or every other day; or every third day; or every fourth day.

Some enumerate divers other more complicated continual *fevers*: as the *double* or *triple quotidian*, which has two or three paroxyſms every day; the *double* or *triple tertain*, or *quartan*, which have two or three every third or fourth day; the *ſemi-tertian*, by the Greeks called ἡμιτριταιος, which conſiſts of a *continual*, and two *intermitting fevers*, of different kinds; *viz.* a *quotidian*, and *tertian*: the patient, beſide a *continual fever*, having an extraordinary fit every day; and every other day two.

Others divide the *remitting*, συνεχης, or *compound continual fever*, into *ſimple*, and *ſpurious*.

The *ſimple remitter* returns regularly, and is only diſtinguiſhed from an intermitter, in that the feveriſh heat, in the intervals of this latter, is never quite extinguiſhed; and that the paroxyſms do not begin with ſo much chilneſs and horror, and go off in profuſe ſweats.

The *ſpurious remitter* is attended with grievous ſymptoms in the nervous kind, reſembling thoſe of the rheumatiſm, cholic, pleuriſy, and other inflammatory and ſpaſmodic diſeaſes; beſide immoderate excretions, vomitings, diarrhœa's, &c. whence its returns are uncertain, and variable.

The *ſimple* rarely, if ever, kills; the *ſpurious*, frequently: ſometimes it degenerates into a malignant συνοχος.

The firſt is cured with the cortex peruv. almoſt as infallibly as an intermitter; the *febrile* ferment being much the ſame in both: and the ſame medicine is found almoſt a ſure, though not ſo ſpeedy a remedy of the ſpurious, if properly applied.

Intermitting FEVER is that which ceaſes, and returns again, alternately, at ſtated periods; and is called, alſo, an *ague*.

In this kind, cold and heat, ſhivering and ſweating, ſucceed each other; the paroxyſms are attended with ſickneſs, nauſea's, vomitings, head-ach, pain in the back and loins, *&c.* the paroxyſms are acute, but the diſeaſe uſually more or leſs chronical.

No-body was ever killed by an *intermitting fever*, except in the firſt ſtage of the paroxyſm, during the ſhivering cauſed by the oppreſſion of the ſpirits; but when the diſeaſe becomes of a very old ſtanding, it ſometimes degenerates into other fatal ones.

As to the cure, it is found, by abundant obſervations, that neither bleeding, nor emetics, nor cathartics, nor any other remedy adminiſtered during the fit, avail any thing. A juſt doſe of vinum benedictum, three hours before the paroxyſm, Morton aſſures us, has often cured it: antimonium diaphoreticum, a little before the paroxyſm, has ſometimes had the like effect; and ſalt of wormwood is commended, on the ſame occaſion. Dolæus mentions lapis lazuli, taken in ſpirit of wine before the fit, as admirable.

Several bitters, as carduus benedictus, gentian root, camomile-flowers, the pulvis febrifugus, *&c.* were much valued before the invention of the cortex peruv. but that bark has almoſt thrown them all out of uſe; being, by the general conſent of phyſicians, allowed a ſpecific for intermitting *fevers*, in all ſeaſons, ages, and conſtitutions.

Intermitting *fevers* are of diverſe kinds: as the

Quotidian FEVER, where the paroxyſm returns every day.

Double quotidian, which returns twice in twenty-four hours.

Tertian FEVER, which only returns every other day; which, again, is either *legitimate*, or *ſpurious*.

The *legitimate tertian* only holds twelve hours, and is followed by an abſolute intermiſſion.

The *ſpurious tertian* exceeds twelve hours, and ſometimes holds eighteen, or twenty.

Double tertian is that which returns twice every other day. The name *double tertian* is alſo uſed where the *fever* returns every day, like a quotidian, only at different times of the day; the third fit anſwering to the time of the firſt, the fourth to that of the ſecond, *&c.*

Quartan FEVER is that which only returns every third day, leaving two days intermiſſion between every two fits.

Double quartan is that which has two fits every fourth day. The ſame name is alſo given to a *fever* which returns two days ſucceſſively, only leaving one day's intermiſſion.

Triple quartan fever is that which has three fits every fourth day, or that which returns every day, like a quotidian, only at different ſeaſons of the day; the fourth fit anſwering to the time of the firſt, the fifth to the ſecond, *&c.*

There are alſo intermitting *fevers*, which only return every fifth day, or every ſixth, or every ſeventh, and at other intervals.

Laſtly, There are ſome extraordinary ſpecies of *fevers*, not reducible to any of the fore-mentioned claſſes; as *malignant*, *eruptive*, and *peſtilential fevers*.

Malignant FEVERS are thoſe wherein the uſual regular ſymptoms do not appear (nature being oppreſſed with the malignity of the *febrile* matter), but other foreign ſymptoms ariſe: as a pain about the ſtomach, and præcordia; a livid complexion, with the face much disfigured, *&c.* and ſometimes effloreſcences on the ſkin, *&c.*

Some authors, from microſcopical obſervations, affirm, that, in all malignant *fevers*, the blood is ſo corrupted, that ſwarms of little worms are generated therein, which occaſion moſt of the ſymptoms.

In all malignant *fevers* the blood is too fluid. Blood-letting has here no place; emetics do well at firſt, afterwards ſudorifics and alexipharmics: bliſters are commended, in the progreſs of the diſeaſe.

Eruptive FEVERS are thoſe which, beſide the ſymptoms common to other *fevers*, have their criſes attended with cutaneous eruptions. Such are thoſe of the ſmall-pox, meaſles, the petechial, the purple or ſcarlet *fever*, and the miliary *fever*: the other ſymptoms are, a grievous oppreſſion of the breaſt, laborious ſhort breath, obſtinate waking, ſpaſms, ſore throat, cough, *&c.*

Peſtilential FEVERS are acute, contagious, and mortal, diſeaſes. Some will have the *fever* to be the diſeaſe, or plague, itſelf; others only account it a ſymptom of the plague. See PLAGUE.

Petechial FEVER is a malignant *fever*, wherein, beſide the other ſymptoms, on the fourth, or, more frequently, on the ſeventh day, petechiæ, or red ſpots, like flea-bites, appear, chiefly, on the breaſt, ſhoulders, and abdomen: the ſpots afterwards turn paler, then yellow, and ſo diſappear. When they grow livid, or black, they uſually prove fatal.

This *fever* is contagious, and often epidemical. It is treated much as thoſe juſt mentioned.

FEUILLANS, an order of religious, cloathed in white, and going bare-foot; who live under the ſtrict obſervance of the rule of St. Bernard.

The name was occaſioned by a reform of the order of Bernardins, firſt made in the abby of *Feuillans*, a village in France, five leagues diſtant from Thoulouſe, by the ſieur Barriere, who was abbot thereof in 1589.

It was approved of by pope Sixtus V. and the popes Clement VIII. and Paul V. granted it its particular ſuperiors. King Henry II. founded a convent of *Feuillans* in the Fauxbourg St. Honore, at Paris.

There are alſo monaſteries of nuns, who follow the ſame reform, called *Feuillantines*.

FEUILLE *de ſcie*, in heraldry, expreſſes that an ordinary, as a feſſe, pale, or the like, is indented only on one ſide; in regard it then looks like the leaf of a ſaw, as the French phraſe imports.

FEWEL, or FUEL, in philoſophy, the pabulum of fire, or whatever receives and retains fire, and is conſumed, or rendered inſenſible, thereby.

Pure fire, if left to itſelf, would diſperſe, and diſappear: to preſerve it, it is neceſſary there be ſome *fuel*, to ſuſtain and keep it together.

The only proper *fuel*, known in all nature, is oil, commonly called ſulphur: and all bodies, whether vegetable, foſſil, or animal, are only inflammable, as they contain oil in them.

Oil feeds and ſuſtains fire by virtue of its ramoſe, tenacious particles, which are diſpoſed to be put into a moſt vehement, rotatory motion, before they will let each other go. But, by this rotatory motion, the fire, at length, breaks and comminutes the ramoſe particles of the *fuel*; till, ceaſing to cohere, they are no longer able to ſuſtain the fire.

In the popular ſenſe of the word, *fuel* is any body, which contains this pabulum, or oil, in ſuch quantity, as to fit it for culinary uſes.

Such, 1°, Are dry, or green, vegetables, eſpecially thoſe abounding in oil; as the reſinous and balſamic woods.

2°, Coals, whether vegetable, or animal; as being little elſe, but the oily part of the vegetable, or animal, purged of the ſalt, water, *&c.* ſo that the blacker they are, the better.

3°, Foſſil and bituminous earths, as turf and peat, which are a fatty earth, dug out of the ground.

4°, All mineral ſulphur, whether pure, or mixed with earth, ſtone, *&c.*

5°, The fat and dung of animals, dried.

And, 6°, The productions of chemiſtry, which are either coals, or oil, or oily bodies; as inflammable ſpirits, produced by fermentation, putrefaction, *&c.*

FIBRA *auris*. See the article EAR.

FIBRE, in anatomy, a ſimilar part of the animal body, called, alſo, *filament*; and, when very ſmall, *fibrilla*, or *capillament*.

A *fibre* is a long, ſlender, white thread; which, being variouſly interwove, or wound up, forms the various ſolid parts of an animal body: ſo that the *fibres* are the ſtamen, or matter, of the animal.

Anatomiſts uſually diſtinguiſh four kinds of *fibres*; viz. *carnous*, or *fleſhy*, *nervous*, *tendinous*, and *oſſeous*, or *boney*: of one or other of which all the other parts conſiſt. See FLESH, NERVE, TENDON, BONE, MUSCLE, and SENSATION.

Fibres, again, are divided, with reſpect to their ſituation, into *direct*, or *longitudinal*, which proceed in right lines; *tranſverſe*, which cut, or go acroſs, the former, at right angles; and *oblique*, which interſect, or croſs, them at unequal angles.

Some anatomiſts reduce the animal *fibres* to two ſpecies; *viz.* *muſcular*, or *motive*; and *nervous*, or *ſenſitive*.

Nervous FIBRES are the minute threads, whereof the nerves are compoſed. They ariſe from the medulla of the brain, as that does from the cortex, and that, again, from the laſt fineſt ramifications of the carotid and vertebral arteries: ſo that, it is probable, theſe nerves are, in reality, only continuations of thoſe arteries.

From every point of the cortex there ariſes a fine, medullary *fibrilla*: theſe, uniting in their progreſs, form the medulla of the cerebrum, cerebellum, and oblongata; and *fibrillæ* ariſing from each point of theſe again, form the ſpinal marrow.

From the medullary ſubſtance of all theſe parts, ariſe nerves, which are combinations, or aſſemblages, of a number of theſe minute medullary *fibres* incloſed, after they are got out of the cranium, in a common membrane, or coat, from the pia mater: and it is probable, that, to each nerve, there concur *fibres* from all three; as, alſo, that theſe *fibres* are ſo many fine hollow tubuli, or canals, for the conveyance of a fine juice, or ſpirit, from the brain, throughout the body. See NERVE.

Muſcular FIBRES are thoſe whereof the muſcles, or fleſhy parts of the body are compoſed. Every muſcle is diviſible into other leſs ones; and theſe into others, ſtill leſs, beyond all imagination. The laſt and ſmalleſt are the muſcular *fibres*; which whether or no they be veſicular, is ſome queſtion.

Now, there are nerves propagated to every muſcle, and diſtributed through the body thereof; ſo that there is no aſſignable point wherein there is not ſomewhat of a nerve. Add, that all the nerves here diſappear; and that in other parts of the body, the extremities of the nerves are expanded into membranes. It is therefore probable, that the muſcular *fibres* are only continuations of the nervous ones.

The animal *fibres* have different properties; ſome are ſoſt, flexible, and a little elaſtic: and theſe are either hollow, like ſmall pipes; or ſpongious, and full of little cells, as the nervous and fleſhy *fibres* above-mentioned.

Others are more ſolid, flexible, and endowed with a ſtrong elaſticity, or ſpring; as the membranous and cartilaginous *fibres*.

A third ſort are hard and inflexible; as the *fibres* of the bones.

Of all theſe, ſome again are very ſenſible, and others wholly deſtitute of ſenſe: ſome ſo very ſmall, as not to be eaſily perceived; and others, on the contrary, ſo big, as to be plainly ſeen: and moſt of them, when examined with a microſcope, appear to be compoſed of ſtill ſmaller *fibrillæ*.

Theſe *fibres* firſt conſtitute the ſubſtance of the bones, cartilages, ligaments, membranes, nerves, veins, arteries, and muſcles. And again, by the various texture, and different combination, of ſome or all of theſe parts, the more compound organs are framed; ſuch as the lungs, ſtomach, liver, legs, and arms, the ſum of all which make up the body.

The great property of *fibres*, is elaſticity, or a power of contraction, after the diſtractile force is removed; upon the knowlege of which that of the animal mechaniſm greatly depends.

To underſtand this, it may be obſerved, that any membrane or veſſel may be divided into very ſmall *fibres*, or threads; and that theſe threads may be drawn out into a very conſiderable length, without breaking; and that when ſuch external force is removed, they will again reſtore themſelves to their proper dimenſions. It is farther alſo manifeſt, that this property is preſerved to them by a convenient moiſture; becauſe if one of thoſe threads be dried, it immediately loſes it; ſo that upon the application of any force to ſtretch it, it will break; its lying ſoaked in liquor too much will, on the other hand, render it flaccid, and deſtroy all its power of reſtitution, when diſtended.

Now ſome hints of that configuration of parts, upon which this property depends, Dr. *Quincy* maintains, may be had from the contrivance and properties of a ſyringe; with the reaſon why it is ſo difficult to draw back the embolus, when the pipe is ſtopped; and the neceſſity of any liquor's following it, wherein the pipe is immerſed.

All that is neceſſary hereto, is, that the embolus be ſo exactly adapted to the inner ſurface of the barrel, as to prevent any air paſſing between them, when it is drawn up: it matters not what figure the barrel is of, ſo that the embolus be well fitted to it. A caſe of ſyringes therefore might be contrived, wherein every barrel may alſo ſerve as an embolus to the exterior one, which immediately includes it.

In this manner it is not difficult to imagine a continued ſeries of particles, ſo put together, that they may be moved, and drawn upon one another, without ſuffering the air immediately to enter into the interſtices made by their diſtraction; whereupon as ſoon as that force, which drew them, is removed, they will, for the very ſame reaſon as the embolus of a ſyringe, ruſh up again into their former contacts.

As ſuppoſe A B (*Tab. Nat. Hiſt. fig.* 23.) two particles touching one another in *e f*, and C D two others, covering the oppoſite ſides of their contacts. It is alſo to be ſuppoſed, that on the other ſides they are covered with other particles in the ſame manner, as by C D, ſo that the places of their contacts are on all ſides covered from the air, or the inſinuation of any fluid body.

If now A B by an external force, greater than that of their coheſion, be drawn from each other, as far as G I and H K (*fig.* 24.); as ſoon as that force is removed, they will again run into their former contacts in *e f* (*fig.* 23.); that is, if they be not ſo far ſeparated as to bring their tranſverſe ſurfaces to coincide with C and D; for then the air, or circumambient fluid, will interpoſe, and prevent their reunion: ſo that by this contrivance, ſo much of A and B as is incloſed by other ſurrounding particles, is as the embolus of a ſyringe, and the particle ſurrounding them as its barrel. And therefore when A and B are diſtracted from their contacts in *e f*, it will be with ſome difficulty; and when the diſtracting force is taken away, they will again run into their former contacts; juſt as the embolus of a ſyringe, and for the ſame reaſon.

It is not rigidly contended, that this muſt exactly be the contexture of a *fibre*, but only ſomething like this; whereby the interſtices of the interior orders are covered by the exterior in ſuch a manner, that when the thread is diſtended, that is, when its conſtituent parts are drawn from their tranſverſe contacts, neither the air, nor any other external fluid, can get between them, ſo as to hinder their reunion as ſoon as ſuch force is withdrawn; that is, if their diſtraction, as was before ſaid, be not ſo far as to bring their tranſverſe ſurfaces to a coincidence with one another; for then the circumambient fluid will interpoſe, that is, the thread will be broke.

But beſides this peculiar arrangement of a determinate ſet of particles to compoſe the main ſubſtance of an animal *fibre*, endowed with the properties above-mentioned; it ſeems not at all unreaſonable to conjecture, that into their compoſition there alſo enters a common capſula, or covering, which aſſiſts in the wrapping up, and holding together, thoſe faſciculi, or aſſemblages of particles already deſcribed; not much unlike the perioſtium of the bones; the contexture of which covering, reſembling that of a net, cannot any ways hinder either the tranſverſe, or longitudinal diſtractions of the other parts.

Suppoſing this, then, the contexture of a *fibre*, it will be neceſſary to conſider, what farther requiſites are needful to put them into that ſtate, which they are in, in a living body; to ſhew how they are maintained in continual motion; and what are the conſequences of it.

And, 1°, It is neceſſary to take notice, that all the *fibres* in a living body are in a ſtate of diſtention; that is, they are drawn out into a greater length than they would be in, if ſeparated from the part, and taken out of the body; which is demonſtrable upon any ſolutio continui, as in the tranſverſe diviſion of a nerve, or artery; for immediately the divided parts run up, and leave a great diſtance between them; and the fluids contained between them, upon ſuch contraction, are ſqueezed out. This alſo ſhews, that their natural diſtractions are owing to ſome fluids being propelled into the veſſels which they compoſe, with a force greater than their endeavours of reſtitution, ſo far as to obtain a cloſe contact of all their tranſverſe ſurfaces; but yet leſs than that which is neceſſary to diſtract them, ſo as to bring them into a coincidence; for then the veſſels would break.

2°, This ſtate of diſtraction muſt neceſſarily leave vacuola between all the tranſverſe ſurfaces; as between G I and H K (in *fig.* 24.) which may be repreſented by the ſeveral ſeries's of particles (*fig.* 25.); which vacuola will continue as long as the longitudinal ſurfaces of the component parts continue ſo cloſe to one another, as to prevent the inſinuation of any foreign matter, how ſubtle ſoever, between them.

For the ſame reaſon therefore, as when the embolus of a ſyringe is drawn, and the pipe is ſtopped; there muſt be continually a niſus reſtituendi, or an endeavour of contraction.

There is alſo this farther neceſſity of their being continued in a ſtate of diſtraction; becauſe if they were cloſely to touch one another in all parts, they could not be put into, and continue in, thoſe undulatory motions, which they are always in, in a living body, without being altered in their figures and contextures.

3°, It being manifeſt, that all animal *fibres* are continued by the perpetual ſucceſſive impulſe of the fluids, in ſuch undulatory motions; beſides this neceſſity of their diſtraction, they muſt alſo neceſſarily be continually moiſtened with ſome convenient fluid; becauſe otherwiſe their continual attritions againſt one another would wear them out, as well as render it difficult to move them: the fluid alſo, for this purpoſe, muſt be very ſoft and ſubtile, becauſe otherwiſe it could not inſinuate itſelf into all the interſtices of the *fibres*, without ſo far ſeparating their parts, as is inconſiſtent with that contexture and mechaniſm here laid down.

Upon this view there ariſes a very natural explication of ſeveral terms, much uſed by mechanical writers; ſuch as *diſtraction*, *contraction*, *vibration*, *undulation*, *tonic motion*, *concuſſion*, *relaxation*, *corrugation*, and *elaſticity* of the ſolids; all which are but different ways of expreſſing the various modifications and diſpoſitions of thoſe machinulæ, whereof all the *fibres* are compoſed.

Thus much being granted of the contexture of a *fibre*, and the requiſites for its office, it is to be conſidered, how it comes firſt to be ſet in motion, and by what mechaniſm that motion is afterwards carried on. Suppoſe then the *fibre* (*fig.* 25.) in ſuch a ſtate of diſtraction, as before-mentioned; it is certain by *req.* 2. that in all its parts there is a niſus reſtituendi: where, then, any external impulſe is made againſt it from R to S, ſucceſſively, thruſting it from P towards Q, it is certain, that againſt 1, for inſtance, the thread will be more diſtracted than in any other part; and thereby will there be a greater endeavour of reſtitution. And therefore the impulſe paſſing on towards S, all the conſtituent machinulæ, 1, 2, 3, 4, will ſucceſſively move one after another.

To make this matter ſtill more plain, let a portion of an artery be repreſented by *fig.* 26. through which the blood is continually propelled in a direction parallel to its axis: nothing is more certain, than that if it were not for the reſiſtance of the ſides of the artery at E, F, the blood ſetting out at A, B, would go on by the pricked lines C, D; and therefore it cannot but ſtrike againſt the ſides of the artery at E, F, and diſtract them there more, than any-where elſe; whereby their endeavours of reſtitution will be there the greateſt: and therefore, when the impulſe of the blood has raiſed them to a certain meaſure, wherein their endeavours of reſtitution will exceed the impulſe which raiſed or diſtracted them, their contractile powers will draw them again into the ſame dimenſions; and conſequently the blood will be thruſt forward into the next ſection of the artery, and ſo on ſucceſſively from one to another, through the whole courſe of its circulation; the contraction of one ſection of an artery being the true cauſe of the blood's impulſe againſt, and raiſing the next.

Fibre is alſo applied, in phyſics, to thoſe long, fine parts, or threads, whereof other natural bodies are compoſed, and which prevent their being friable or brittle.

Trees, plants, and fruits, have their *fibres*, or capillaments; which are modifications of their woody ſubſtance, penetrating and terminating in the parenchyma, or pith.

In the common ſenſe, *fibre* is chiefly applied to the ſlender capillary roots of plants.

Kepler even gives *fibres* to the ſtars; and explains ſeveral of their motions from the ſituation of their *fibres*.

FIBRILLA *, a little *fibre*, or capillament. See Fibre.

* The word is a diminutive of *fibra*. Each *fibre* is diviſible into a number of leſſer threads, called *fibrillæ*.

FIBULA, in anatomy, one of the bones of the leg, called alſo *Perone*, *Sura*, and *Focile minus*.—See *Tab. Anat.* (Oſteol.) *fig*. 3. n. 24. 24. *fig*. 7. n. 27. 27.

The *fibula* is the outer and ſlenderer of the two bones of the leg; and yet, notwithſtanding its being more expoſed, and its being much weaker, than the inner bone, or tibia, it is not ſo often broken, as being more pliant and flexible; whence the tibia often breaks, leaving the *fibula* intire.

The *fibula* is joined or articulated with the tibia, at both ends, by a kind of cloſe arthrodia. It is divided into three parts: the upper, which is a round head, terminating a little below the knee, and receiving a lateral protuberance of the tibia into a ſmall ſinus, by which the articulation of this part is effected. The middle is very ſlender, long, and triangular, like the tibia, but ſomewhat more irregular. The lower part is received into a ſinus of the tibia, and then ſhoots out into a large proceſs, called the *Malleolus internus*, or inner ankle: it is a little hollow on the inſide, to give liberty for the aſtragalus to move; and a little convex on the outſide, that it may have the more ſtrength, to retain the aſtragalus.

The tibia and *fibula* only touch at the two extremes, like the radius and ulna: the ſpace between them is filled up with a ſtrong membranous ligament, which ties them together, and ſtrengthens the articulation.

Fibula, in ſurgery, an inſtrument in uſe among the antients, for the cloſing of gaping wounds.

Celſus ſpeaks of the *fibula*, as to be uſed when the wound was ſo patent as not eaſily to admit of being ſewed.

Authors are ſomewhat at a loſs as to the form of the antient *fibulæ*. Guido ſays, they were iron circles, or ſemicircles, bent backwards both ways; the hooks whereof, being faſtened on both ſides to the wound, anſwered exactly to each other: but, as this muſt have been an inſupportable pain to the patient, this deſcription is generally ſet aſide.

Fallopius, Sanctorius, and others, take the word *fibula* to have ſignified, in reality, no more than the ſewing up of the wound with a needle and thread, as uſed at this day.

FIBULÆUS, in anatomy, a muſcle of the leg, called alſo *Peronæus primus*. See Peronæus.

FICUS, a kind of fleſhy excreſcence, growing ſometimes on the eye, or eyebrows, or chin; but more uſually on the anus, or at the fingers ends.

It is alſo called *Sycoſis*, *Sycoma*, *Ficatio*, *Ficoſus tumor*, and *Mariſca*. See Supplement, article Ficus.

FICHANT *, *Figens*, a French term, uſed in fortification: thus, a flank *fichant*, or a line of defence *fichant*, is a place, whence the ſhots made do not only raſe the oppoſite face to be defended, but alſo enter within it.

* The word is formed of *ficher*, to ſtick a thing in.

FICHE', in heraldry. See Fitchee.

FICTION. See Fable.

FIDDLE. See the article Violin.

Fide-Jussor, in the civil law, is a ſurety; or one that obliges himſelf in the ſame contract with a principal, for the greater ſecurity of the creditor, or ſtipulator.

Fidei-Commissum, in the Roman law, the appointing of an heir, or bequeathing a legacy to a perſon, on this condition, that he ſurrender the inheritance or legacy to another perſon, for whom the ſame is originally meant: or, it is an inheritance left in truſt with any one, for the uſe of another.

Fidei-Commiſſa were much uſed among the Romans. In the French law the thing is become odious; as being, ordinarily, no other than an expedient in favour of perſons to whom the laws forbid any thing to be given. In order to this, ſome truſty friend is choſen to be made legal heir, under a tacit agreement, to deliver the inheritance to the perſon incapacitated by law. But of later times the ſame expedient has come in uſe with regard to perſons capable of inheriting; to whom the teſtator, for particular reaſons, does not care to leave the inheritance directly.

As it happened, that the *fidei-commiſſioners* did not always faithfully reſtore what was truſted to them, Auguſtus took proper meaſures to oblige them thereto: to this end a prætor was erected, whoſe buſineſs was reſtrained to the ſingle matter of *fidei-commiſſions*. *Inſt*. lib. ii. tit. 23.

As a teſtament was null without the inſtitution of an heir; and it frequently happening, that the *fidei-commiſſioner* refuſed to accept the truſt, upon which the teſtament fell to the ground; to engage ſomebody to accept it out of the conſideration of advantage, the Pegaſian ſenatus-conſultum decreed, that the *fidei-commiſſioner* ſhould be at liberty to retain a fourth of the *fidei-commiſſum*.

FIDICINALES, in anatomy, a name given to ſeveral muſcles of the fingers, called alſo *Lumbricales*. See Lumbricales *manus*.

FIEF, the ſame with *feud*, or *fee*. See Fee.

FIELD, in agriculture, a piece of land incloſed, and fit for tillage, to bear corn, hay, &c.

Field, *Campus*, in antiquity, is frequently uſed for a public place, or ſquare in a city, &c.

Such were the *field* of Mars, Campus Martius; and *field* of Flora, Campus Floræ, in Rome; and the *field* of May, Campus Maii, among our anceſtors, &c. See Campus.

Field *of Mars* was denominated from a temple of that deity, built therein: it was the ſcene, or place, of the aſſemblies called *Comitia*. Tarquin the Proud at length appropriated it to his own uſes:—but after the expulſion of the kings, the conſuls Brutus and Collatinus reſtored it to the public uſe again, for aſſemblies and elections.

Originally it was no more than a meadow on the banks of the Tiber, where horſes grazed, and the Roman youth were exerciſed to war. But it was afterwards erected into a magnificent ſquare, adorned with ſtatues, &c.

Field *of Flora* was the place, where the laws, edicts, and conſtitutions, were publiſhed.—

For Field *of May*, ſee Campus *Maii*.

Field, in heraldry, is the ſurface, or face of the ſhield, or eſcutcheon; thus called, as containing the atchievements antiently acquired in the *field* of battle.

The *field* is the ground whereon the colours, bearings, metals, furs, charges, &c. are repreſented. In blazoning a coat, we always begin with the *field*: he bears ſable, &c.

Among the more modern heralds, *field* is leſs frequently uſed than ſhield, or eſcutcheon.

Field *of a painting*, &c. is more uſually called the *ground* thereof. See Ground.

Field, in war, the place where a battle was fought.—The general remained maſter of the *field* of battle.—

Cloſe **Field**, was antiently a place incloſed, or railed in with a barrier, for juſts and tournaments to be performed in.

Field *Colours* are ſmall flags about a foot and a half ſquare, which are carried along with the quarter-maſter-general fo marking out the ground for the ſeveral ſquadrons and battalions of an army. See Flag.

Field *Pieces* are ſmall cannon, uſually carried along with a army in the *field*: ſuch as three pounders, minions, ſakers, ſix pounders, demi-culverins, and twelve pounders; which being light and ſmall, are eaſily carried.

Field *Staff*, is a ſtaff carried by the gunners: it is abou the length of a halbert, having a ſpear at the end, which on each ſide has ears ſcrewed on, like the cock of a match lock.

In theſe the gunners ſcrew lighted matches, when they are o command; which is called, arming the *field Staffs*. See Lin stock.

Field *Works*, in fortification, are thoſe thrown up by an army in the beſieging of a fortreſs; or elſe by the beſieged, in de fence of the place. Such are the fortifications of camps, thoſ of highways, &c.

Elyſian **Field.** See Elysian *fields*.

FIERI *facies*, a judicial writ, which lies at all times within th year and day, for him that hath recovered in an action o debt and damages: it is directed to the ſheriff, commandin him to levy the debt and damages on him, againſt whom th recovery was had.

FIFTEENTH, *Decima quinta*, or *Quinzieme*, an antien tribute, or impoſition of money, laid upon any city, bo rough, or other town, through the realm; not by the po or upon this or that man, but in general upon the whole cit or town.

It is ſo called, becauſe amounting to a *fifteenth* part of th which the city hath been valued at of old; or to a *fifteen* part of every man's perſonal eſtate, according to a reaſonab valuation.

This was impoſed by parliament, and every town through th realm knew what a *fifteenth* for themſelves amounted t becauſe it is always the ſame: whereas the ſubſidy, which raiſed of every particular man's lands, or goods, muſt nee be uncertain.

The *fifteenth* ſeems to have been a rate, antiently laid upon every town, according to the land or circuit belonging to it. Camden mentions many of theſe *fifteenths* in his *Britan.* viz. pag. 171. *Bath geldabat pro viginti hidis, quando ſchira geldabat*, &c. And p. 181. *Old Sarum pro quinquaginta hidis geldabat*, &c. Which rates are according to *Domeſday*. But in after-times the *fifteenth* came to be underſtood as impoſed only on goods and chattels, not on lands.—It was firſt granted by parliament, 18 Edw. I. *viz. Computus* quintæ decimæ *Regi, an.* 18. *per archiepiſcopos, epiſcopos, abbates, priores, comites, barones, & omnes alios de regno, de omnibus bonis mobilibus conceſſæ.*—The city of London paid that year for the *fiſtteenth*, 2860 *l.* 13 *s.* 8 *d.* and the abbot of St. Edmund's 666 *l.* 13 *s.* 4 *d.* which was by compoſition; and thereupon had all the temporal goods of their diſtrict diſcharged of the *fifteenth*.

The way of collecting it was by two aſſeſſors appointed in every county by the king, who appointed twelve more in every hundred to make a true valuation of every man's perſonal eſtate upon which the fifteenth part was levied.

FIFTH, in muſic, one of the harmonical intervals, or concords.

The *fifth* is the third, in order, of the concords. The ratio of the chords that produce it, is 3 : 2.

It is called *fifth*, becauſe containing *five* terms, or ſounds, between its extremes, and four degrees: ſo that in the natural ſcale of muſic it comes in the *fifth* place, or order, from the fundamental.

The antients called this interval, *diapente*.

The *imperfect*, or *defective fifth*, by the antients called *ſemidiapente*, is leſs than the *fifth* by a mean ſemitone.

FIG *, Ficus, a ſoft, ſweet, delicious fruit; the produce of a tree of the ſame name.

* The word is formed of the Latin *Ficus*; and that of the Greek φυω, I produce, by reaſon the *Fig*-tree is a great bearer.

There are *figs* of divers kinds; chiefly denominated from their colours; pale, violet, black, purple, green, and ruddy. The pale are eſteemed the beſt: the black and violet-coloured are the worſt.

They are gathered in autumn, and laid on a rack, or hurdle, to dry in the ſun.

Figs contain a deal of phlegm, a little volatile, alcali ſalt, and a moderate quantity of oil.

They are very nouriſhing, and ſoften the aſperities of the breaſt, &c. and accordingly are uſed in medicine, to make gargariſms againſt diſorders of the throat and mouth. They are alſo applied externally, to ſoften, digeſt, and promote maturation.

Figs are dried, either by a furnace, or in the ſun. The Latins call them *Caricæ*, or *Ficus paſſæ*, when thus dried. In this condition they are uſed both as medicine and food; being both the wholſomer, and eaſier of digeſtion, being thus cleared of a deal of their aqueous and viſcid parts.

The beſt *figs* are the produce of Italy, Spain, Provence, &c. The iſlands of the Archipelago yield *figs* in great abundance; but they are much inferior in goodneſs to thoſe of Europe. Yet the Greeks in thoſe iſlands cultivate them with wonderful care and attention; as making the principal food, and a conſiderable part of the riches of the country.

They have two kinds of *fig*-trees; the firſt called *Ornos*, or the *wild fig*-tree: the ſecond, the *domeſtic fig*-tree.

The *wild*, called by the Latins *Caprificus*, yields ſucceſſively three ſorts of fruits, called *Fornites*, *Cratitires*, and *Orni*; none of which are of any uſe as foods; but all abſolutely neceſſary in their manner of ripening the fruits of the *domeſtic fig*-tree. The method of cultivating and ripening theſe *figs*, makes a peculiar art, by the antients called *Caprification*; often ſpoken of among them in terms of admiration. Some of the modern naturaliſts have looked on it as a chimera; but Monſ. Tournefort has aſſured us of the contrary, and given us that proceſs, as he learned it upon the ſpot; which ſee under the article Caprification.

The generation of the *fig* is ſomewhat anomalous; the parts ſubſervient to the office in other plants, *i. e.* the flower, not being here apparent. But the anatomy of the fruit helps us out of the difficulty.

Monſ. de la Hire the younger, in the *Memoirs* of the French Academy, ſhews that the *fig* is a flower, as well as a fruit. By diſſection; it diſcovers all the eſſentials of a flower, *viz.* ſtamina, apices, and farina fœcundans.

To ſhew this, that ingenious author divides the length of the into three parts or ſpaces, A, U, X (*Tab. Nat. Hiſt. fig.* 6.); the firſt of which, A, being the next the pedicle, and uch the greateſt, contains the grains, or ſeeds, of the *fig*. Theſe ſeeds are little ſtones, repreſented by A (*fig.* 17.), within which are kernels. Each ſtone is half encompaſſed with a renchyma, B, ſupported by a calyx laid on the parenchyma. This calyx is fixed to a pretty long pedicle, which grows to inner rind of the *fig*, as repreſented in the figure.—The iſion X of the *fig* (*fig.* 16.) is full of little leaves, like ſe repreſented in *fig.* 18. which are faſtened by their baſes the rind or ſkin of the *fig*. In this diviſion there is a hole, B (*fig.* 16.), called the *umbilicus*, or navel, whoſe outer or upper edge is furniſhed with little leaves, which cloſe the aperture.—Laſtly, the ſpace V is full of little whitiſh bodies (repreſented *fig.* 19.), which ariſe from the internal parietes of the *fig*, by a large pedicle A, at whoſe extremity is a calyx, BC; from the diviſions whereof ariſe three other bodies, D, E, F. Theſe bodies terminate in little eminences in E, F, &c. which are capſulæ, that include an infinite number of little grains, eaſily perceivable by the microſcope, and all alike, and of a ſize perfectly ſimilar to the farinæ in the apices or capſulæ of other flowers. Whence it follows, that the bodies contained in the ſpace V (*fig.* 16.) of the *fig*, are real *fig* flowers; though ſeveral naturaliſts have taken theſe in the diviſions A and X, for the flowers, which have no eſſential marks of flowers at all.

FIGURATE, or **Figurative**, that which has a relation to figure, or that teaches under ſome obſcure reſemblance.

Thus a *figurative ſtyle* is that which abounds in figures.

The *figurative* ſtyle, F. Bouhours obſerves, is neither the moſt juſt, nor the beſt. For this reaſon Cicero directs us to the antients, who, not having yet bethought themſelves to uſe *figurative* expreſſions, but keeping to the moſt proper and natural way, have almoſt all wrote well. *Sunt enim illi veteres, quia nondum ornare poterant ea, quæ dicebant, omnes prope præclare locuti.*

Long uſe, ſay the grammarians, renders that proper in all languages, which at firſt was *figurative*.—The ſame thoughts appear more lively when expreſſed by a figure, than when in ſimple terms. The reaſon is, that *figurative* expreſſions denote not only the principal matter, but alſo the emotion and paſſion of the perſon who ſpeaks.

Figurative is alſo much uſed in ſpeaking of the myſteries and figures of the old law. In this ſenſe manna is ſaid to be *figurative* of the euchariſt.

Figurative is alſo uſed in the Greek grammar for what we otherwiſe call characteriſtic, *viz.* a letter that characterizes certain tenſes of the Greek verbs; or that diſtinguiſhes and ſpecifies them.

In the firſt conjugation of the barytonous verbs, the φ is characteriſtic, or *figurative* of the præter tenſe; and the ψ of the future.

Figurative, or **Figurative** *Counter-point*, in muſic, is that wherein there is a mixture of diſcords along with the concords. See Counter-Point.

Figurative Counter-point is of two kinds: that wherein the diſcords are introduced occaſionally, to ſerve only as tranſitions from concord to concord; and that, wherein the diſcords bear a chief part in the harmony.

It is a rule in compoſition, that the harmony muſt always be full on the accented parts of the bar, or meaſure; *i. e.* nothing but concords are allowed in the beginning and middle; or the beginning of the firſt half of the bar, and the beginning of the latter half thereof in common time; and the beginning, and firſt three notes, in triple time. But upon the unaccented parts, this is not ſo neceſſary: but diſcords may tranſiently paſs there without any offence to the ear.

This the French call *Suppoſition*, becauſe the tranſient diſcord ſuppoſes a concord immediately to follow it. See Suppoſition.

Where the diſcords are uſed as a ſolid and ſubſtantial part of the harmony, the *Counter-point* is properly called the harmony of diſcords.

FIGURE, **Figura**, in phyſics, denotes the ſurface or terminating extremes of a body.

All bodies have ſome *figure*; whence, figurability is generally ranked among the eſſential properties of body, or matter. A body without *figure*, would be an infinite body.

The corpuſcular philoſophers account for every thing from the *figure*, bulks, and motions of the atoms, or primary corpuſcles of bodies.

The earth is of a ſpherical, or rather a ſpheroidal *figure*. Saturn ſometimes appears of an elliptical, or oblong *figure*.

For the *figures* of bodies, conſidered as objects of ſight, ſee Viſion.

The author of a collection of diſſertations, printed at Paris, in 1715. ſhews, in the firſt diſſertation on the Hebrew medals, p. 66. that the Jews were allowed to make any kind of *figures*, or images of trees, plants, flowers, buildings, &c. but not thoſe of animals, or of the ſun, moon, and ſtars.

The ſchoolmen diſpute, whether or no the quality of *figure* be the ſame with that of form; and if they differ, what it is that conſtitutes the difference? Boethius will have *figure* only predicated of inanimate bodies, and form of animate. Others extend *figure* to all natural things, and form to all artificial ones: whence the verſe,

Formam viventis, picti dic eſſe figuram.

Others apply *figure* indifferently to all kinds of bodies, but not in all relations. If only the bare circumference, or circumſcription, be conſidered, they call it *figure*; but if the circumference be conſidered as endowed with colour, then they call it form. See Form.

FIGURE is alſo applied to repreſentations, or images of things, in prints, *&c.*

Such a book is printed with *figures.* The *figures*, or ſchemes, in mathematical and phyſical writings, ſhould be made to fold out of the book.

Some readers chooſe to have the *figures*, eſpecially the mathematical ones, in wood, for the convenience of having them immediately annexed to the matter they refer to: others rather chooſe to be at the pains of turning over, and having recourſe to another part of the book, that they may have the *figures* more neat and accurate on copper.

FIGURE, in geometry, denotes a ſurface incloſed, or circumſcribed with one or more lines.

Such are triangles, ſquares, polygons, circles, ellipſes, *&c.*

Wolfius defines *figure* a continuum terminated by a perimeter. In which ſenſe *figure* is applicable both to ſuperficies and ſolids.—In the former caſe, the perimeter is lines; in the ſecond, ſurfaces.

Figures are either rectilinear, curvilinear, or mixt, according as the perimeter conſiſts of right lines, curve lines, or both.

The ſuperficial parts of a *figure* are called its *ſides*; the loweſt ſide, its *baſe*; and the angle oppoſite to the baſe, the *vertex.*

The height of a *figure* is the diſtance of the vertex from the baſe.

Equilateral FIGURE is that whoſe ſides are equal.

FIGURE *circumſcribed*, and *inſcribed.* See CIRCUMSCRIBED, and INSCRIBED.

Similar FIGURES. See SIMILAR *figure.*

All ſimilar *figures*, both *regular* and *irregular*, are in a duplicate ratio of the homologous ſides.

Regular FIGURE is that which is *equilateral*, and *equiangular.*

Irregular FIGURE is that which is not both. See REGULAR, and IRREGULAR.

FIGURE, in conics, denotes the rectangle, made under the latus rectum, and tranſverſum, in the hyperbola and ellipſis.

FIGURE *of the diameter.*—The rectangle under any diameter, and its proper parameter, is in the ellipſis and hyperbola called the *figure of that diameter.* See DIAMETER.

FIGURE, in painting and deſigning, denotes the lines and colours, which form the repreſentation of a man, or other animal.

There are above an hundred *figures* in ſuch a piece; ſuch a *figure* is lame, *&c.*

But the term *figure* is in a more immediate and peculiar manner underſtood of human perſonages: thus, a painting is ſaid to be full of *figures*, when there are abundance of repreſentations of men; and a landſchape is ſaid to be without *figures*, when there is nothing but trees, plants, mountains, *&c.*

FIGURES, in architecture and ſculpture, denote repreſentations of things made in ſolid matters; ſuch as ſtatues, *&c.*

We ſay, *figures* of braſs, of marble, of ſtuck, of plaſter, *&c.*

But, in this ſenſe too, the term is more uſually applied to human repreſentations, than to other things. Thus we ſay, an equeſtrian *figure*, for a man on horſeback.

Daviler obſerves, that thoſe, either repreſented ſitting, as popes, *&c.* or kneeling, as on monuments, *&c.* or laid all along, as rivers, *&c.* are more properly called *figures* than ſtatues.

FIGURE, in heraldry, a bearing in a ſhield, repreſenting or reſembling a human face; as a ſun, a wind, an angel, *&c.*

FIGURES among the maſters of defence, are the divers guards, poſtures, or diſpoſitions, of the body, arm, or ſword.—

FIGURE *of an eclipſe*, in aſtronomy, denotes a repreſentation of the path or orbit of the ſun, and the moon, during the time of the eclipſe, upon paper; with the number of digits eclipſed, and the beginning, middle, and end, of darkneſs.

FIGURE, or *Delineation*, of the full moon, ſuch as, viewed through a teleſcope with two convex glaſſes, is of conſiderable uſe in obſervations of eclipſes, and conjunctions of the moon with other luminaries. In this *figure* of the moon, are repreſented the maculæ, or ſpots, of the moon, marked by numbers; beginning with the ſpots, which uſually enter firſt within the ſhade at the time of the great eclipſes, and alſo emerge the firſt.

FIGURE, in aſtrology, a deſcription, or draught, of the ſtate and diſpoſition of the heavens, at a certain hour; containing the places of the planets and ſtars, marked down in a *figure* of twelve triangles, called *Houſes.*

This is alſo called a *Horoſcope* and *Theme.* See HOROSCOPE, *&c.*

FIGURE, in geomancy, is applied to the extremes of points, lines, or numbers, thrown, or caſt at random: on the combinations or variations whereof the ſages of this art found their fantaſtical divinations.

FIGURE, in fortification, is the plan of the fortified place; or the interior polygon. See POLYGON, *&c.*

When the ſide and angles are equal, it is called a *regular*; when unequal, an *irregular figure.*

FIGURE, in dancing, denotes the ſeveral ſteps which the dancers make in order, and cadence; conſidered as they mark certain *figures* on the floor.

FIGURE, in the manufactures, is applied to the various deſigns repreſented or wrought on velvets, damaſks, taffaties, ſattins, and other ſtuffs and cloths.

The moſt uſual *figures* for ſuch deſigns are flowers, imitated from the life, or groteſques, and compartiments of pure fancy. Repreſentations of men, beaſts, birds, and landſchapes, have only been introduced ſince the taſte for the *Chineſe* ſtuffs, particularly thoſe called *Furees*, began to prevail among us.

It is the woof of the ſtuff that forms the *figures*; the warp only ſerves for the ground. In working *figured* ſtuffs, there is required a perſon to ſhew the workman how far he muſt raiſe the threads of the warp, to repreſent the *figure* of the deſign with the woof, which is to be paſſed acroſs between the threads thus raiſed. This ſome call *reading the deſign.*

For the *figures on tapeſtry, brocade, &c.* ſee TAPESTRY, *&c.*

For thoſe given by the *calenders, printers,* &c. ſee CALENDER, *&c.*

FIGURES, in arithmetic, are the numeral characters; or the characters whereby numbers are expreſſed, or written.

Thus the number four hundred and fifty is written, or expreſſed, by three *figures*, 450.

For the antiquity, uſe, *&c.* of the numeral *figures*, ſee *Numeral* CHARACTER.

The *figures* in arithmetic are the nine digits; 1, 2, 3, 4, 5, 6, 7, 8, 9, and 0.

FIGURE, in logic, denotes a certain diſpoſition of the terms of a ſyllogiſm; particularly of the medium, with regard to the extremes.

Chauvin defines it, a proper placing or connecting of the middle term with the extremes, ſo as to have the force and effect of a proof, or concluſion. See MODE, and EXTREME.

Hence it follows, that there are as many *figures* of ſyllogiſms, as there are different connexions of the extremes with the medium: ſo that, though the ſchoolmen ordinarily only reckon three, yet a fourth might be admitted.

For the medium may be either prefixed to both extremes, o ſubjoined to both; or it may be before the major, and afte the minor, or before the minor, and behind the major.

If it be after the major, and before the minor, it is uſually called the *firſt figure*; this ſeeming the neareſt way of arguing to the natural way.

If it be before the major, and after the minor, it is called th *fourth* and *laſt*; and by the Peripatetics, the *indirect*, and by others, the *Galenical figure*; as varying too far from the natural form.

If it precede both, it is called the *ſecond figure.*

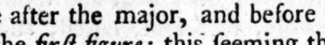
And if it follow both, the *third figure*; as in the following technical diſtich:

Prima *infra, & ſupra: ſupraque bis* altera: *biſque*
Tertia *vult infra medium: ſupra*, ultima, *& infra.*

A ſyllogiſm, therefore, *of the firſt figure*, is that wherein th medium is ſeverally joined with both extremes of the concluſion, ſo as to be predicated of the leſſer; the concluſion bein ſometimes affirmative, and ſometimes negative. In that c the *ſecond figure*, the medium is predicated of both; and th concluſion is always negative. In the *third figure*, the concluſion, which in the former caſes is ſometimes general, ſometimes ſpecial, is always ſpecial.

The *fourth*, called the indirect *figure*, ſome prefer before a the others; by reaſon it is in this alone, that the mediu or mean term has its natural ſituation, *viz.* in the middle between the extremities; it being in the reſt no more than medium by office; but in the *fourth figure*, the medium is i the middle place. See MEDIUM.

E. gr. Take the two terms, *man*, and *living*, for extreme and *animal* for the medium. The *mind* argues thus: the is a connexion between *man* and *animal*; and betwe *animal* and *living*; therefore the order is, *man, anima living:* and by animal, as a *medium*, the two extremes a conjoined, as the extremes of a line connected by th middle.



FIGURE, in rhetoric, is a phraſe, or turn of ſpeech or diſcour finer and nobler than what is uſed in common or ordina ſpeaking.

Figures, by the *Greeks* called *ſchemata*, are the enrichments diſcourſe, and we only uſe them when raiſed and moved wi the conſideration of ſomething extraordinary.

There are two kinds of *figures*; the one of *ſentences*, a contained in the ſenſe itſelf, without any immediate depen ence on any particular words: the other are only in the *wor* themſelves.

Of the FIGURES *of ſentences*, ſome are deſigned to mov others to teach; and others only to delight.

Of the firſt kind, the moſt conſiderable are, exclamation, imprecation, obſecration, interrogation, doubting, preterition, expolition, and epiphonema.

Thoſe of the ſecond are, the antitheſis, correction, communication, and ſuſpenſion.

Thoſe of the third, the apoſtrophe, hypotypoſis, proſopopœia, ethopœia, and proſopographia. See each under its proper head, EXCLAMATION, &c.

Of **FIGURES** *of words*, ſome are *tropes*, *i. e.* tranſlations of words from their proper ſignification, to ſome more remote and extraordinary one.

The principal of theſe are, the metaphor, allegory, metonymy, ſynecdoche, irony, and ſarcaſm, metalepſis, antonomaſia, and ſyllepſis.

Others are *figures* of *words*, more properly ſo called, and not tropes; being ſo inherent in the words, that upon changing of thoſe, the *figure* is deſtroyed: as in *amantes ſunt amentes*, where the *figure* would be loſt, if inſtead of *amentes* you ſhould put *ſtulti*.

Of theſe the principal are, repetition, converſion, complexion, gradation, ſynonymy, polyſyndeton, and polyptoton, reticency, disjunction, ſimilitude, paranomaſy, and tranſition. See each *figure* under its proper article, as METAPHOR, &c.

To **FIGURES** *of Proſody* belong the ſynalœpha, ecthlipſis, craſis, diæreſis, ſyſtole, and diaſtole.

FIGURE, in grammar, is an expreſſion that deviates from the common and natural rules of grammar; either for the ſake of elegancy or brevity.

The beſt grammarians only reckon four *figures*; the ellipſis, pleonaſm, ſyllepſis, and hyperbaton. Others add two more; *viz.* antiptoſis and enallage. See each in its place, ELLIPSIS, PLEONASM, &c.

FIGURE is alſo uſed among divines, for the myſteries repreſented or delivered obſcurely to us under certain types or actions in the Old Teſtament.

Thus manna is held a *figure* or type of the euchariſt: and the death of Abel a *figure* of the ſuffering of Chriſt.

Many divines and critics contend, that all the actions, hiſtories, ceremonies, &c. of the Old Teſtament, are only *figures*, types, and prophecies, of what was to befal under the New. The Jews are ſuppoſed to have had the *figures* or ſhadows, and we the ſubſtance.

FIGURE is alſo applied in a like ſenſe to profane matters; as the emblems, enigma's, fables, ſymbols, and hieroglyphics, of the antients.

FIGURED, in the manufactures. A *figured* camlet, ſtuff, tabby, &c. is that whereon there are divers deſigns of flowers, figures, branches, &c. impreſſed by means of hot irons. See CAMLET.

FIGURED *Ribbands*, firſt came into faſhion about the year 1680. The method of performance was by ſucceſſively applying ſteel plates engraven with divers ornaments, as flowers, birds, groteſques, &c.

But one Chandelier, a ribband-maker of Paris, invented a much better and readier way of doing it; by a machine not unlike the flatter uſed in coining to flatten the pieces of metal: only much ſimpler.

The principal parts thereof were two ſteel cylinders, engraven with the figures intended to be repreſented. Theſe cylinders were placed over each other like the rolls of a rolling-preſs; having each of them, at one of its extremes, a little dented wheel, one of which catching into the other, the whole was put in motion, by means of a winch, or handle, faſtened to the firſt.

The machine thus prepared; the workman heats the cylinders, and places the ribband in the little place remaining between the two, which he contracts yet further by a ſcrew, that preſſes the upper down upon the lower; then turning the rolls by the handle, a whole piece of ribband was *figured* in leſs time than a ſingle yard could be done in the ordinary way. See RIBBAND.

FIGURED *Velvet*, ſee the article VELVET.

FILAMENT, in medicine, anatomy, natural hiſtory, &c. a term uſed in the ſame ſenſe with *fibre*, for thoſe fine threads, whereof fleſh, nerves, ſkins, plants, roots, &c. are compoſed. See FIBRE.

FILANDERS *, in falconry, a diſeaſe in hawks, &c. conſiſting of filaments, or ſtrings of blood, coagulated and dried; occaſioned by a violent rupture of ſome vein, by which the blood extravaſating, hardens into the figures above-mentioned; to the great annoyance of the reins, hips, &c.

* The word is French, *Filandres*, formed from *fil*, thread.

FILANDERS are alſo a ſort of fine ſmall worms, which greatly incommode the hawk in the gorge, and about the heart, liver, and lungs; but which, on ſome occaſions, are ſuppoſed to be of ſervice, and to feed on the ſuperfluities of certain parts.

There are four kinds of theſe *filanders*, or vermiculi. The firſt, in the gorge, or throat; the ſecond, in the belly; the third, in the reins; the fourth are called needles, on account of their exceeding fineneſs. The ſymptoms that diſcover the diſeaſe are, the bird's gaping frequently; ſtraining the fiſt or perch with her pounces; croaking in the night; ruffling her train; rubbing her eyes, wings, noſtrils, &c. As the worms are very reſtleſs, the bird is frequently endeavouring to caſt them up; and in opening its mouth you will readily diſcover them. From the throat, &c. they will aſcend to the larynx, brain, &c. and finally over the whole body.

The ordinary cauſe is bad food. The proper remedy they ſay is, not by killing them, for fear of impoſthumes from their corruption; but chiefly by ſtupefying them, that they may be offenſive but ſeldom.

This is beſt effected by making the bird ſwallow a clove of garlick; after which ſhe will feel nothing of the *filanders* for forty days. Others uſe rue, worm-ſeed, aloes, vervain, ſaffron, &c.

FILAZER, or **FILACER**, an officer in the court of common pleas; ſo called, becauſe he *files* the writs, whereon he makes out proceſs.

Of theſe there are fourteen, in the ſeveral diviſions and counties of England. They make out all writs, and proceſs upon original writs, iſſuing out of the chancery, as well real, as perſonal and mixed, returnable in that court.

In actions merely perſonal, where the defendants are returned ſummoned, they make out pone's or attachments; which being returned and executed, if the defendant appears not, they make out a diſtringas, and ſo *ad infinitum*, or till he does appear.

If he be returned *nihil*, then proceſs of capias infinite, if the plaintiff will; or after the third capias, the plaintiff may proceed to outlawry, in the county where his original is grounded, and may have an exigent with proclamation.

The *filazers* likewiſe make out all writs of view in real actions, where the view is prayed; and upon replevins or recordari's, writs of retorno habendo, ſecond deliverance, and writ of withernam. In real actions, they make out writs of grand and petit cape before appearance.

They enter all appearances, and ſpecial bails, upon any proceſs made by them. They make the firſt ſcire facias upon ſpecial bails, writs of habeas corpus, diſtringas nuper vicecomitem vel balivum, and duces tecum; and all ſuperſedeas's upon ſpecial bail or appearance, &c. writs of habeas corpus cum cauſa upon the ſheriff's return that the defendant is detained with other actions, and writs of adjournment of a term, in caſe of peſtilence, war, or public diſturbance.

Till an order of court made 14 Jac. I. which limited the *filazers* to all matters and proceedings before appearance, and the prothonotaries to all after, they alſo entered declarations, imparlances, judgments, and pleas, whereto a ſerjeant's hand was not requiſite, and made out writs of execution, and divers other judicial writs after appearance.

FILBERDS, or **FILBUDS**, the beſt ſort of ſmall nuts, proper for planting in orchards, or gardens.

They are raiſed from nuts ſet in the earth, or ſuckers from the roots of an old tree; or they may be grafted on the common hazel-nut.

They delight in a fine, mellow, light ground; but will grow almoſt any-where, eſpecially if defended from violent and cold winds.

The tree is eaſily propagated, bears well, and is of two ſorts, the *white*, and the *red*; but the former is the beſt. See Supplement, article FILBERT.

FILE *, an inſtrument of ſteel, cut in little hatches, or furrows, uſed by the workmen in metals, to ſmooth, poliſh, and otherwiſe faſhion the ſame.

* The word is French, *file*, literally ſignifying a long ſeries or ſucceſſion of any kind of things; of *fil*, thread.

Files bear a near reſemblance to raſps: the only difference between them is, that the former are cut with edged tools; and the latter are punched with pointed ones. See RASP.

The *file* is a principal inſtrument in all the kinds and parts of ſmithery. It ſhould be forged of the beſt ſteel; after which, rubbing it with greaſe, to make it more ſoft under the chiſſel, they cut it with chiſſels, and a mallet, this and that way, and of this or that depth, according to the grain or tooth required.

After cutting the *file*, it remains to be tempered; which, being the principal myſtery in the making of *files*, will deſerve to be particularly deſcribed.

Files, then, are tempered with a compoſition of chimney-ſoot, very dry and hard, diluted and worked up with urine and vinegar; to which is added, common ſalt: the whole is to be reduced to the conſiſtence of muſtard.

The *files* being cut, and rubbed over with vinegar and ſalt, to ſcour off the greaſe laid on for the cutting, they cover them over with this compoſition; and having laid ſeveral of them together in a packet, and covered them in loam, they put them in a charcoal-fire: from which they are taken out again, by that time they have acquired a cherry-colour, which is known by a little rod of the ſame ſteel, put in along with them. Upon taking them out, they caſt them into the coldeſt ſpring water they can get.

Iron *files* require a more intenſe heat, than ſteel ones. When the *files* are cold, they clean them with charcoal, a rag, &c.

to take away any of the ſoot, or fæces, left in the cuttings: then, drying them before the fire, they put them up carefully in a box of wheat-bran, to keep them from ruſting.

Files are of different forms, according to the different uſes and occaſions they are made for. Thoſe in common uſe are, the ſquare, flat, triangular, half-round, round, thin *file*, &c. all which are made of different ſizes, as well as different cuts, and degrees of fineneſs; to take place, according as the work is more or leſs advanced: ſome cutting faſter, as the *rough-toothed file*, &c. others more ſlowly; as the *fine-toothed file*, &c.

File is alſo a thread, or wire, whereon writs, or other exhibits, in courts, or offices, are faſtened, or filed, for the more ſafe keeping, and ready turning to, the ſame.

File, or *label*, in heraldry, a bearing repreſented in Tab. *Herald. fig.* 23. though ſometimes of more, and ſometimes of fewer, points; being the difference, or diſtinction, of a ſecond ſon.

It is ſometimes alſo borne as a charge in a coat-armour, of which Guillim gives many inſtances; but it is oftener the difference, or mark, of diſtinction, which the elder brother bears in his coat, during his father's life.

Some diſtinguiſh *file*, and label; calling the *file* the upper horizontal line, and the label the points which iſſue from it.

File *of three, or more, labels*. See Label.

File, in a military ſenſe, is a row of men ſtanding one behind, or below, another, from front to rear.

Or, *file* is a line, or ſeries, of ſoldiers, placed one before another; and thus compoſing the depth of a battalion, or ſquadron, which, in the infantry, ordinarily conſiſts of ſix ſoldiers in a *file*; and, in the cavalry, of three.

They ſay, *cloſe the files*; that is, bring the men nearer each other: *double the files*, i. e. double the depth of the battalion; and diminiſh its breadth, or front, by one half.—The laſt, or hindermoſt, perſon, is ſaid *to bring up the file*.

FILIAL, ſomething belonging to the relation of ſon.

The divines uſually diſtinguiſh between a ſervile, and a *filial* fear. The moſt abandoned may have a ſervile fear of God, ſuch as that of a ſlave to his maſter; but not a *filial* fear, *i. e.* a fear reſulting from love and reſpect.

FILIGRANE *, or **Filligree**, *work*, a kind of enrichment on gold, or ſilver, wrought delicately, in manner of little threads, or grains, or both, intermixed.

* The word is compounded of *fil*, or *filum*, thread; and *granum*, grain.

In Latin it is called *filatim elaboratum opus, argentum, aurum*.

This cabinet is ornamented with divers fine pieces of *filligree* work.

We have vaſes, torches, &c. of *filligree* work.

FILING, one of the principal operations in ſmithery, &c. ſucceeding to forging.

The coarſer cut files are always to be ſucceeded by finer; and in all the kinds the rule is, to lean heavy on the file in thruſting it forward; becauſe the teeth of the file are made to cut forwards: but, in drawing the file back again for a ſecond ſtroke, it is to be lightly lifted juſt above the work, by reaſon it cuts not coming back.

The rough, or coarſe-toothed file (which, when large, is called a *rubber*), ſerves to take off the unevenneſſes of the work, left by the hammer in forging.

The baſtard-toothed file is to take out the too deep cuts and file-ſtrokes, made by the rough file; the fine-toothed file takes out the cuts, or file-ſtrokes, the baſtard file made; and, laſtly, the ſmooth file thoſe left by the fine file.

In this order the files of ſeveral cuts are to ſucceed each other, till the work is as ſmooth as it can be filed; after which, it may be made yet ſmoother, with emery, tripoli, &c. See Polishing.

FILIUS *ante patrem*, *q. d.* the ſon before the father, a denomination applied, by botaniſts and floriſts, to plants whoſe flowers come out before their leaves. Such are the ſeveral ſpecies of colchicum, or meadow ſaffron, the coltsfoot, butterbur, &c.

FILLET *, in anatomy. See the article Frænum.

* The word is French, *filet*; formed of *fil*, thread.

Fillet, in botany. See the article Thread.

Fillet, *teniola*, in heraldry, a kind of orle, or bordure, containing only a third or fourth part of the breadth of the common bordure. See Bordure.

It is ſuppoſed to be withdrawn inwards, and is of a different colour from the field. It runs quite round, near the edge, as a lace over a cloak.

Fillet is alſo uſed for an ordinary, drawn, like the bar, from the ſiniſter point of the chief acroſs the ſhield; in manner of a ſcarf: though it is ſometimes alſo ſeen in the ſituation of a bend, feſſe, croſs, &c.

According to Guillim, the *fillet* is a fourth part of the chief; and is placed in the chief point of the eſcutcheon.

Fillet, or **Filet**, in architecture, denotes a little ſquare member, or ornament, uſed in divers places, and on divers occaſions; but generally as a ſort of corona, over a greater moulding.—See Tab. *Archit. fig.* 1. and *fig.* 26. *lit. l, o, t. fig.* 28. *lit. h, P. fig.* 32. *lit. e. fig.* 24. *lit. c, e.*

The *fillet* is the ſame with what the French call *reglet, bande*, and *bandelette*; the Italians, *liſta*, or *liſtella*.

Fillet is alſo uſed, among painters, gilders, &c. for a little rule, or reglet, of leaf-gold, drawn over certain mouldings; or on the edges of frames, pannels, &c. eſpecially when painted white; by way of inrichment.

Fillets, in the manage, are the loins of an horſe; which begin at the place where the hinder-part of the ſaddle reſts.

FILM, a thin ſkin, or pellicle.

In plants, it is often uſed for that thin woody ſkin which ſeparates the ſeeds in the pods, and keeps them apart.

FILTER, or **Filtre**, in chemiſtry, &c. a piece of cloth, linen, paper, or other matter, uſed to filtrate, or ſtrain, liquors through.

The *filtre* has the ſame uſe and effect, with regard to liquids, that the ſieve, or ſearce, has in dry matters.

Filtres are of two ſorts.—The firſt are ſimple pieces of paper, or cloth, through which the liquor is paſſed without farther ceremony.

The ſecond are twiſted up like a ſkain, or wick, and firſt wetted, then ſqueezed, and one end put in the veſſel that contains the liquor to be filtrated: the other end is to be out, and hang down below the ſurface of the liquor. By means hereof, the pureſt part of the liquor diſtils, drop by drop, out of the veſſel; leaving the coarſer part behind.

This *filter*, or *philter*, acts as a ſiphon.

Filter * is alſo a charm, ſuppoſed to have a virtue of inſpiring love.

* The word is derived from the Greek φιλ]ρον, which ſignifies the ſame thing; of φιλεω, *amo*, I love.

FILTRATION, the act of paſſing a thing through a filtre; called alſo *colature*, *percolation*, and *tranſcolation*. See Filter.

Filtration is a kind of ſeparation, performed by ſtraining a liqnor through a cloth, bag, linen, or brown paper, in order to clarify, or purify it.

The moſt commodious way of *filtrating* is by whitey-brown paper faſtened over the mouth, or aperture, of a funnel: the ſmalneſs of the pores of this paper admits only the finer parts through, and keeps the reſt behind.

There are alſo *filtrations* through ſand, pulverized glaſs, &c. Spirits of vitriol, ſalt, and nitre, are *filtrated* through a quantity of beaten glaſs, in the bottom of a funnel.

The ſecretion of the divers juices in the body, from the maſ of blood, ſeem to be little elſe but *filtration*. Pitcairn, and other late authors, hold, that the diverſity of *filtrations* does not depend on the different configurations of pores, but on their different ſizes, or diameters.

Springs, alſo, ſeem to be raiſed from the ocean by the ſame principle of *filtration*.

Filtration, in pharmacy, is chiefly concerned in tinctures: a when ſome portion is drawn from the ingredients, or ſuſpende in the tincture, which is not neceſſary thereunto; but diſturb and renders the reſt unpleaſant, both to the palate, and ſight.

Beſides this, there is a *filtration*, which has much tortured th philoſophy of ſome ages to account for: this is that per formed by the aſcent of the finer parts of a liquor, up a cord or ſkain of cotton, or ſuch-like matter, which is contrived t drop over another veſſel, and leave the groſſer behind.

Some ſay, that the cauſe of this aſcent is, becauſe the liquo ſwells thoſe parts of the filter, that touch it, by entering int the pores of the threads, which compoſe it, whereby they riſ up, touch, and wet, thoſe next above them; and theſe, again the next threads; and ſo on, to the brim of the veſſel; whe the liquor runs over, and deſcends in the other part of the fil ter, which hangs down, by its own natural gravity.

But this account is liable to many objections; eſpecially as li quors riſe, after the like manner, in glaſs tubes, much abov the ſurface of the liquor they are immerſed in; where the gla cannot be imagined thus to ſwell.

Others account for it, by conſidering every filter, as compoſe of a great number of long, ſmall, ſolid bodies, which lie ver cloſe together; ſo that the air, getting in between them, loſe much of its preſſure, and cannot gravitate ſo ſtrongly as it dot on the fluid without them: the conſequence is, that the par of the water between the threads of the filter muſt be preſſ upwards, and aſcend till they come ſo high, as, by their weigh to counter-balance the general preſſure on the other parts the ſurface of the water.

Laſtly, The retainers to Sir Iſaac Newton's philoſophy dedu the phænomenon from the principle of attraction. Accordi to them, the cauſe of this *filtration* is, doubtleſs, the ſa with that whereby fluids aſcend up heaps of aſhes, ſand, & the ſame with that, whereby water is raiſed in form of vapou the ſap riſes in vegetables, and the blood circulates through t capillary arteries, and the extremely minute glandular ſtrai ers. See Ascent *of liquors*.

FIMBRIÆ, fringes. The extremities, or borders, of the tu fallopianæ, were formerly thus called; the word ſignifyin fringed border, which that part reſembles. See Tab. *An* (Splanch.) *fig.* 9. *lit. d d.*

FIMBRIATED, a term in heraldry, ſignifying, that an or nary is edged round with another of a different colour.

Thus, he beareth or, a croſs-pattee gules, *fimbriated* ſable.

FIN, a part of a fiſh, made in faſhion of a feather.

The office of the *fins* has commonly been ſuppoſed to be analogous to that of feathers in fowls; and to aſſiſt the fiſh in its progreſſive motion, or ſwimming: but the latter naturaliſts find this a miſtake.

It is the tail that is the great inſtrument of ſwimming: the *fins* only ſerve to keep the fiſh upright, and prevent vacillation, or wavering. See Supplement, article PINNÆ.

Whale FINS are commonly taken for that part of the whale, which the populace call *whale-bone*; but whence the miſtake ſhould ariſe, is not eaſy to determine.

It is certain, that fibrous, flexible matter is not the *fins* of that fiſh, but rather its teeth; that ſpecies of whales wherein theſe *fins* are found, having no other teeth. They are taken out of the mouth, and are uſually about a ſpan broad, and fourteen or fifteen long. See WHALE-*bone*.

Theſe whale *fins* are the moſt valuable part of the animal. See *Whale* FISHERY.

FINAL, that which terminates, or comes laſt in any thing: as, a *final* judgment; *final* ſentence, &c.

Divines call the impenitence of the reprobate *final*, as ſuppoſing it to continue to the end of their lives.

FINAL *Cauſe*, is the end for which any thing is done. The *final cauſe* is the firſt thing in the intention of a perſon who does a thing; and the laſt, in the execution.

Final Cauſes are of good uſe in ethics; but miſchievous in phyſics, and by no means to be allowed: yet Mr. Boyle propoſes ſome views and regulations, under which they may be admitted, in an *expreſs inquiry into the* Final Cauſes *of natural things*.

FINAL *Letters*, are thoſe which cloſe words. The figure called *Apocope*, conſiſts in retrenching *final* letters.

The Hebrews have five *final* letters; which, when at the end of a word, have a different figure from what they have at the beginning, or in the middle thereof. Theſe are the ך, ם, ן, ף, ץ, caph, mem, nun, pe, tſade; which every where but at the end of words are wrote כ, מ, נ, פ, צ.

FINANCES *, in the French polity, denote the revenues of the king and ſtate: much the ſame with the treaſury, or exchequer of the Engliſh, and the fiſcus of the Romans.

* The word is derived from the German *Finantz*, ſcraping, uſury. Though *Du Cange* chooſes rather to deduce it from the barbarous Latin *financia*, *præſtatio pecuniaria*.

Council of the Finances, correſponds to our lords commiſſioners of the treaſury: the comptroller general of the *finances*, to our lord high treaſurer, &c.

The French have a peculiar kind of figures, or numeral characters, which they call *Chiffre de Finance*. See CHARACTER.

FINE, that which is pure, and without mixture. The term is particularly uſed in ſpeaking of gold and ſilver.

Fine gold ſhould be of twenty-four caracts; but there is little, if any, that riſes to ſuch a degree of fineneſs.

Gold, thus *fine*, is ſoft, and improper to work; for which reaſon they always mix a certain quantity of alloy of copper with it.

Fine ſilver is that of twelve peny-weights. See SILVER.

FINE, in law, denotes a covenant made before juſtices, and entered on record, for conveyance of lands, tenements, or any thing inheritable, being *in eſſe tempore finis*; in order to cut off all future controverſies.

A *fine*, then, appears to be a concord, acknowleged and recorded before a competent judge, touching ſome hereditament, or thing immoveable, that was in controverſy between the parties to the ſame concord; and for the better credit of the tranſaction, it is ſuppoſed to be made in the preſence of the king, becauſe levied in his court.

Hence it binds women covert, being parties, and others whom ordinarily the law diſables to tranſact, only for this reaſon, That all preſumption of deceit or evil-meaning is excluded, where the king and his court of juſtice are ſuppoſed to be privy to the act.

Originally this *final* concord was inſtituted and allowed, in regard that by the law, and antient courſe of proceedings, no plaintiff could agree or end the cauſe without licence of the court. So as *fines* have been antiently levied in perſonal actions; and for no greater a ſum of money than 11*l*.

But time has produced other uſes of *fines*; *viz.* To cut off entails, and with more certainty to paſs the intereſt or title of any land or tenement, though not controverted, to whom we think good, either for years, or in fee: inſomuch that the paſſing a *fine*, in moſt caſes now, is but a fictio juris, ſuppoſing an action or controverſy, where, in truth, none is; and ſo not only operating a preſent bar and concluſion againſt the cognizor or perſon who paſſes the *fine*, and his heirs; but at five years end, againſt all others, not expreſly excepted, and not claiming (if it be levied upon good conſideration, and without covin); as women covert, perſons under twenty-one years, priſoners, or ſuch as are out of the realm at the time of its acknowleging.

This *fine* hath in it five eſſential parts. 1°, The original was taken out againſt the cognizor. 2°, The king's licence giving the parties liberty to accord; for which he hath a *fine*, called the *king's ſilver*; being accounted part of the crown revenue. 3°, The concord itſelf, which begins thus, *Et eſt concordia talis*, &c. 4°, The note, or abſtract of the *fine*, beginning thus, K. *inter* R. *querentem*, & S. & T. *uxorem ejus deforcientes*, &c. (where inſtead of *deforcientes*, antiently *impedientes* was uſed). 5°, The foot of the *fine* (*Hæc eſt finalis concordia facta in curia domini regis apud Weſt. a die paſchæ in quindecim dies, anno*, &c.) concludes all, containing the day, year, and place, and before what juſtice the concord was made.

Fines are either *ſingle*, or *double*.

Single FINE is that, by which nothing is granted or rendered back again by the cognizees to the cognizors, or any of them.

Double FINE contains a grant and render-back, either of ſome rent, common, or other thing out of the land, or of the land itſelf, to all or ſome of the cognizors for ſome eſtate; limiting thereby, remainders to ſtrangers not named in the writ of covenant.

Sometimes alſo a *double fine* is, when the lands lie in ſeveral counties.

Fines, with regard to their effect, are divided into *executed* and *executory*.

FINE *executed* is ſuch, as, of its own force, gives a preſent poſſeſſion (at leaſt in law) to a cognizee; ſo that he needs no writ of *habere facias ſeiſinam*, for execution of the ſame: of which ſort is a *fine ſur cognizance de droit come ceo*, &c. that is, upon acknowlegement, that the thing mentioned in the concord is *jus ipſius cognizati, ut illa quæ idem habet de dono cognitoris*. Weſt. ſect. 51. K.

The reaſon is, becauſe this *fine* paſſeth by way of releaſe of a thing which the cognizee hath already (at leaſt by ſuppoſition) by virtue of a former gift of the cognizor; which is, in truth, the ſureſt *fine* of all.

FINES *executory* are ſuch, as, of their own force, do not execute or give the poſſeſſion to the cognizee without entry or action, but require a writ of *habere facias ſeiſinam*: as a *fine ſur cognizance de droit tantum*.

Fines are now only levied in the court of common-pleas at Weſtminſter, in regard of the ſolemnity thereof, ordained by the ſtatute of 18 Edw. I. before which time they were ſometimes levied in the county-courts, court-barons, and in the exchequer; as may be ſeen in *Origines juridiciales*, &c. Plowden ſays, that there were *fines* levied before the conqueſt: Fulbeck aſſures us alſo, that he has ſeen the exemplification of one of Henry the Iſt's time: though Dugdale affirms, there were none till Henry the IId.

FINE alſo, according to Cowel, ſignifies a ſum of money, paid as an income for lands or tenements lett by leaſe; antiently called *gerſuma*.

FINE is alſo uſed to denote an amends, pecuniary puniſhment, or recompence, for an offence committed againſt the king, and his laws; or againſt a lord of a manor.

In which caſe a man is ſaid, *facere* Finem *de tranſgreſſione cum rege*, &c.

In all the diverſities of the uſe of the word *fine*, it hath but one ſignification; and that is, a *final* concluſion, or end of differences between parties.—In the laſt ſenſe, where it denotes the ending and remiſſion of an offence, it is uſed by Bracton, who ſpeaks of a *common fine* that the country pays to the king for falſe judgments, or other treſpaſſes, which is to be aſſeſſed by the juſtices in eyre before their departure, by the oaths of knights, and other good men, upon ſuch as ought to pay it.

There is alſo a *common fine* in courts leet.

FINES *for Alienation*, are reaſonable *fines* formerly paid to the king by his tenants in chief, for licence to alienate their lands; according to the ſtatute 1 Edw. III. cap. 12. but taken away by ſtatute 12 Car. II. cap. 24.

FINE-*drawing*, or *rentering*, a very nice way of ſewing up, or rejoining the parts of any cloth, ſtuff, or the like; torn or rent in the dreſſing, wearing, &c.

It is prohibited to *fine-draw* pieces of foreign manufacture, upon thoſe of our own; as has formerly been practiſed.

FINERS of *gold* and *ſilver*, are thoſe who purify, and part thoſe metals from other coarſer ones, by fire and acids.

They are alſo called *Parters* in our old law-books, and ſometimes *Departers*.

FINESSE, a French term, of late current in Engliſh. Literally, it is of no further import than our Engliſh *fineneſs*: but among us, it is chiefly uſed to denote that peculiar delicacy, or ſubtlety, perceived in works of the mind; and the niceſt, and moſt ſecret and ſublime parts of any ſcience, or art.

A perſon of taſte can never be fond of a pun, where all the *fineſſe* lies in an equivoque, or in an ambiguity. This man underſtands all the *fineſſes* of his art. The ſubſtance and neceſſary part of a language is learnt at a little expence: it is the *fineſſes* and delicacies that coſt the moſt.

FINGERS, *Digiti*, the extreme part of the hand, divided into five members. See HAND.

The *fingers* conſiſt of fifteen bones, diſpoſed in three rows, or ranks; each *finger* having three bones.

The joints or jointures are called *Condyli*, and *Internodia*: and their arrangement or rows, *Phalanges*: the uppermoſt of which is the longeſt and largeſt; the ſecond leſs, but yet longer and larger than the third.

The firſt *finger* is called the *pollux*, or the thumb: the ſecond, *index*, ſometimes *ſalutarius* digitus, and ſometimes *numerans*: the third, the middle *finger*, *infamis*, *obſcænus*, *impudicus*, and *famoſus*, becauſe uſed in mocking and deriſion: the fourth, *annularis*, the ring *finger*, *medio proximus*, and *medicus*, by reaſon the antients uſed to ſtir and mix their medicines therewith: the fifth, the little *finger*, *auricularis*, by reaſon the ear is picked therewith.

FINGER's *Breadth*, a meaſure, of two barley-corns in length, or four laid ſide to ſide.

FINING, ſee REFINING.

FINISHING, in architecture, &c. is frequently applied to the crowning, or acroter over a piece of building; placed there to terminate, and finiſh it. See CROWNING.

FINITE, ſomething bounded, or limited; in contradiſtinction to infinite.

The ſchoolmen make two kinds of *finite*:

The one as to *extenſion*, which is applied to things that have not all poſſible or conceivable extenſion.

The other as to *perfection*, applied to things which have not the laſt perfection.—

To get an idea of a thing *finite* in point of perfection, we firſt conceive the thing as having certain perfections; and then conceive ſome other perfection, which it has not, or ſome perfection in a farther degree.

Thus, when I ſay, that three is a *finite* number, I firſt conceive a number, conſiſting of three units; then conceive other units beyond theſe three. Thus it is I conceive my mind *finite*, by obſerving certain perfections beyond what I find in my mind.

After the ſame manner I conceive a room to be finite, by having an idea of extenſion beyond what is contained therein.

FINITOR, in aſtronomy, the horizon; thus called, by reaſon it finiſhes or bounds the ſight, or proſpect. See HORIZON.

FIOL, or FIAL, ſee the article PHIAL.

FIRE, in phyſiology.—The moſt univerſal and ſenſible character of *fire*, and that which beſt defines and diſtinguiſhes it from every other thing, is, its giving heat.

Fire, therefore, may be generally defined to be whatever warms, or heats bodies.

Again, as heat is ſomething, whoſe preſence we beſt perceive by the dilatation of the air or ſpirit in the thermometer; *fire* may be defined to be that whoſe preſence we perceive by the expanſion of the air, or ſpirit, in the thermometer.

Whence it follows, that *fire* is a body, and a body in motion.—Its motion is argued from its expanding the air; which is not effected without communicating motion thereto: and its corporeity is proved by experiment. For pure mercury being incloſed in a phial with a long neck, and kept in a gentle heat for the ſpace of a year, is reduced into a ſolid; and its weight is conſiderably increaſed; which increaſe can ariſe from nothing but the acceſſion of *fire*.

Fire makes one of the vulgar, or peripatetic elements, defined to be hot, and dry; or, it is that part, or ingredient in all bodies, which is hot in the higheſt degree, and dry in an inferior one.

What the ſchool-philoſophers add further, as to the nature of *fire*, is, that it is a ſimple body; as not including any contrariety of qualities; and a body abſolutely light, as tending naturally upward.: for which reaſon they hold its natural place to be above all the other elements, between the extremity of our atmoſphere, and the moon; and the fund of *fire* is ſuppoſed to reſide in that ſphere, which they call *elementary fire*.

Fire, according to the Carteſians, is an aſſemblage of the more ſolid, earthy particles, which, ſwimming in the rapidly fluid matter of the firſt element, become vehemently agitated thereby; and by this intenſe agitation or motion are diſpoſed to give the ſenſation of heat, light, &c.

Fire, according to Sir I. Newton, is a body heated ſo hot, as to emit light copiouſly; for what elſe, ſays that philoſopher, is red-hot iron, but *Fire?* And what elſe is a *fiery* coal, than red-hot wood? By which he ſuggeſts, that bodies, which are not *fire*, may be changed and converted into *fire*.

It is a diſpute of ſome ſtanding among philoſophers, whether *fire* be any ſpecific ſubſtance, originally diſtinct from all other; or whether it be of the common matter of other bodies, only under certain peculiar modifications: *i. e.* whether *fire* be ſuch by its own nature, or by motion?

According to ſome of the lateſt philoſophers, *fire* is a certain ſubſtance, or body, ſui generis, originally ſuch; and not producible by any motion, or alteration of other bodies.

Theſe authors deſcribe *fire* as a very ſubtle, moveable, penetrating body, the cauſe or inſtrument of heat and light. Some of them add, that when *fire* enters the eye in right lines, it produces or excites the idea of light; which rectilinear motion they account abſolutely neceſſary to the idea of light.

Whereas, to produce heat, and the other effects of *fire*, ſuch rectilinear motion is not required; but on the contrary, an irregular, various motion is fitter to produce the ſame.

The nature of *fire* is ſo wonderful and abſtruſe, that the antients generally revered it as a god: among the moderns, we can ſcarce name one point in all philoſophy of more importance, or one that is leſs underſtood.

Fire, in effect, is the univerſal inſtrument of all the motion and action in the univerſe: without *fire*, all bodies would become immoveable; as in a ſevere winter we actually ſee our fluids become ſolid, for want thereof. Without *fire*, a man would harden into a ſtatue; and the very air would cohere into a firm, rigid maſs.

Fire, then, is the univerſal cauſe of all mutation, or change; for all mutation is by motion; and all motion by *fire*.

Several authors have laboured to ſet this grand agent in its juſt light; and particularly the excellent Boerhaave, in a new courſe of experiments and lectures expreſly on the ſubject, *De Igne*. The ſum of his doctrine we ſhall here ſubjoin.

Fire, then, is diſtinguiſhed into two kinds: as it is in itſelf, called *Elementary Firs*; and as it is joined with other bodies, called *Culinary Fire*.

Pure, or *Elementary* FIRE, is ſuch as exiſts in itſelf; which alone we properly call *Fire*.

Common, or *Culinary* FIRE, is that exiſting in ignited bodies, or excited by the former in combuſtible matters, the minute particles whereof, joining with thoſe of the pure *fire*, conſtitute pure flame.

This latter is improperly called *Fire*; in regard only a ſmall part of it is real, or pure *fire*.

Pure *fire*, is ſuch as collected in a burning glaſs, yields no flame, ſmoke, aſhes, or the like; conſequently, in ignited bodies, that which flames, ſmokes, &c. is not ſimply *fire*.

The effects, nature, properties, &c. of each ſhall be conſider'd.

1. *Pure*, or *Elementary Fire*, of itſelf, is imperceptible; and only diſcovers itſelf by certain effects, which it produces in bodies; which effects are only learnt, by obſerving the changes that ariſe in thoſe bodies.

The firſt effect of *elementary fire* on bodies, is *heat*; which ariſes wholly from *fire*; and in ſuch manner as that the meaſure of heat is always the meaſure of *fire*; and that of *fire*, of heat. So the heat is inſeparable from *fire*.

The ſecond is, *dilatation* in all ſolid bodies; and *rarefactio* in all fluids.

That both theſe are inſeparable from heat, is evident from numerous experiments. An iron-rod, or bar, being heated, increaſes in all its dimenſions; and the more ſo, as it is furthe and further heated: upon expoſing it to the cold again, i contracts, and returns ſucceſſively through all the degree o its dilatation, till it arrive at its firſt bulk; being never tw minutes ſucceſſively of the ſame magnitude.

The like is obſerved in the heavieſt of all bodies, gold which, when fuſed, takes up more ſpace than before: fo mercury, the heavieſt of all fluids, we have known to aſcend in a narrow tube over the *fire*, to above thirty times it height.

The laws of this expanſion are, 1°, That the ſame degree o *fire* rarefies fluids ſooner, and in a greater degree, than it doe ſolids. Without this, the thermometer would be of no uſe ſince the cavity of the tube would then be dilated in th ſame proportion, as the fluid is rarefied. 2°, The lighte the fluid, the more it is dilated by *fire*. Thus air, th lighteſt of all fluids, expands the moſt; and next after ai ſpirit of wine.

The third effect of *fire* on bodies, is *motion*: for *fire*, i warming and dilating bodies, muſt of neceſſity move thei parts.

In effect, all the motion in nature ariſes from *fire* alone and, taking this away, all things become immoveable. Upo the abſence of only a certain degree of *fire*, all oils, fat waters, wines, ales, ſpirits of wine, vegetables, animals &c. become hard, rigid, and inert: and the leſs the degre of *fire*, the ſooner, and more violently, is this induratio made.

Hence, if there were the greateſt degree of cold, and all *fi* were abſolutely taken away, all nature would grow into on concrete body, ſolid as gold, and hard as diamond. But upo the application of *fire*, it would recover its former mobility. Conſequently, every diminution of *fire* is attended with proportionable diminution of motion; and vice verſa.

This *fire*, whoſe effects we have been relating, needs no air, or pabulum, to ſuſtain or preſerve it.

For putting ſome calx of tin, or lead, in the exhauſted receiver of an air-pump, and applying a burning-glaſs ſo as the focus ſhall fall on the calx; the conſequence will be, a vehement dilatation of the calx, from the centre towards the circumference; whereby the receiver will be broken into a thouſand pieces: and if a quantity of any eſſential aromatic oil be poured, *in vacuo*, upon ſpirit of nitre, there will immediately ariſe a violent *fire*, to the great danger of the by-ſtanders.

All the above-mentioned effects of *elementary fire* may be increaſed divers ways; *viz.*

1°, By *attrition*, or a ſwift agitation, or rubbing, of one body againſt another. This is apparent in ſolids: a vehement attrition of a flint, and ſteel, every-body knows, will produce ſparks. So, alſo, in fluids, cream, by long churning, to ſeparate the butter, will grow ſenſibly warm: the barometer renders this effect ſtill more diſcernable.

In effect, all the heat of an animal is owing to the agitation and attrition of the parts of its juices againſt each other, and againſt the ſides of the veſſels.

The more ſolid, hard, and elaſtic, the bodies, thus agitated, are, the more points of contact they have; the more intenſe the force, whereby they are ſtruck againſt each other, is, the greater is their motion: and the quicker the returns of the ſtrokes, and the longer they are continued, the greater is the heat produced.

Thus, a piece of ſpunge rubbed lightly, and, for a little while, againſt another, acquires no ſenſible heat; but a large, heavy piece of iron, briſkly rubbed againſt another in a cold ſeaſon (when bodies are the denſeſt), will preſently acquire an intenſe heat, ſufficient to fire ſulphur, gunpowder, or the like.

So a knife, whetted briſkly on a dry, rough ſtone, ſhall yield ſparks of *fire*; but if oil, or any other fatty matter, be interpoſed, no ſenſible heat ſhall ariſe: and the points of two needles, rubbed againſt each other ever ſo ſtrongly, or ſo long, will never grow warm; as only touching in a few parts.

Hence, 1°, The globules of the cruor, or red blood, driven by the force of the heart againſt each other, or againſt the ſides of the arteries, excite more heat than the globules of the ſerum, or any other humour in the animal. Hence, 2°, Thoſe parts abounding moſt with theſe globules, thus agitated, as the heart, liver, and head, will be the hotteſt of all others: and the denſer the blood, *cæteris paribus*, the greater the heat, *&c.* 3°, The quicker the contractions of the heart are repeated, the greater will the heat be.

The ſecond manner of increaſing the effect of *elemental fire* is, by throwing a quantity of moiſt, or green, vegetables, cut down while full of ſap, into a large heap, and preſſing them cloſe down; the reſult of which is, that they grow warm, hot, ſmoke, and, finally, will break out into flame.

The third way is, by the mixture of certain cold bodies. Thus, water and ſpirit of wine, firſt warmed, grow much hotter by the mixture: ſo any of the heavy aromatic oils, as of cloves, cinnamon, ſaſſafras, guaiacum, *&c.* mixed with ſpirit of nitre, grow exceedingly hot, and burſt forth like volcano's: and the ſame may be ſaid of ſpirit of nitre, and ſteel-filings.

The like effect may be had from dry bodies. Thus, pure ſulphur, and ſteel-filings, well ground, and mixed in equal quantities, with water enough to make them into a dry paſte, and laid an hour or two any-where, even under-ground; will ſmoke, and emit flame; and that with the greater vehemence, as it is more ſtrongly preſſed down.

The fourth is by phoſphorus, which is a kind of fire-magnet prepared from the parts of animals, that imbibes and retains *fire* for many years.

But in all theſe manners, it does not appear, that any *fire* is excited, or generated, of what was not *fire* before: for if, in a ſevere winter's day, you rub a plate of gold briſkly againſt another, they will both grow hotter and hotter, by degrees, till, at length, they become red-hot, and at the point of melting: and yet, all this time, the plates loſe nothing of their weight; but ſwell, and grow bigger, in all their dimenſions.

Hence it follows, that the particles of the gold are not converted, by the friction, into *fire*; but that the *fire* exiſted before: and all the effect of the friction, *&c.* is, to collect, or bring together, a quantity thereof before diſperſed throughout the atmoſphere.

In effect, there is no making, or producing, of *fire* de novo: all we can do is, of inſenſible, to render it ſenſible; *i. e.* to collect it out of a greater ſpace into a leſſer, and to direct and determine it to certain places. This is effected, as above-mentioned, by motion, attrition, *&c.*

The ſun, alſo, contributes very much to the bringing of *fire* to light, by means of his rapid motion round his axis; whereby the fiery particles, every-where diffuſed, are directed and determined, in parallel lines, towards certain places, where their effect becomes apparent.

Whence is it that we perceive the *fire*, or heat, when the ſun is above the horizon; but that, when he diſappears, his impulſe, or preſſion, being then taken away, the *fire* continues diſperſed at large through the ethereal ſpace?

In effect, there is not leſs *fire* in our hemiſphere in the night-time, than by day; only it wants the proper determination to make it perceived.

Another way of rendering it ſenſible is, by collecting the parallel rays into a leſs compaſs, by means of convex glaſſes, or concave ſpecula.

This *elementary fire* is preſent every-where, in all bodies, in all ſpace, and at all times; and that in equal quantities: for, go where you will, to the top of the higheſt mountain, or deſcend into the loweſt cavern; whether the ſun ſhine, or not; in the coldeſt winter, or the moſt ſcorching ſummer; by one, or other, or all, of the means above-mentioned, may *fire* be collected. In a word, there is no aſſignable phyſical point without *fire*; no place, in nature, where the attrition of two ſticks will not render it ſenſible.

So long as *fire* remains equably, and undetermined, in any place, it does not diſcover itſelf by any effect. In the ſevereſt weather we perceive no influence, or effect, of *fire*; when, at the ſame time, being collected and determined, by attrition, it becomes manifeſt.

By changing *fire* out of its indeterminate ſtate, and impelling it in converging lines, its momentum is increaſed: witneſs the phænomena of burning-glaſſes.

But how attrition, crude vegetables, *&c.* contribute towards altering the direction, *&c.* of *fire*, does not eaſily appear.

On this *fire*, and the effects thereof above-mentioned, depends all fluidity of humours, juices, *&c.* alſo all vegetation, putrefaction, fermentation, animal heat, and a thouſand other things.

II. But in what manner ſoever *fire* is collected in bodies; upon a ceſſation of the collecting cauſe, it ſoon diſappears again, unleſs it be ſupplied with a pabulum, or fuel: and, in this caſe, it becomes *culinary fire*.

By pabulum, or fuel, of *fire*, we mean, whatever receives and retains *fire*; and is conſumed, or, at leaſt, rendered inſenſible, thereby.

The only pabulum of *fire*, in all nature, is, the oil, ſulphur, or fat, of bodies; and bodies are only fuel, on account of the oil they contain.

Hence, 1°, All vegetables, not too moiſt, nor too dry, afford ſuch a pabulum; particularly thoſe which contain the greateſt quantity of oil; as balſamic and reſinous woods, *&c.* 2°, All vegetable and animal coals are a proper pabulum for maintaining of *fire*; as being only the parts of vegetables and animals, which have exhaled their water and ſalt, and retained the oil alone inhering, in a black form, in their earth. 3°, All foſſil and bituminous earths, turfs, *&c.* 4°, All mineral ſulphur, whether pure, or joined with earth, ſtone, or metals; as pit-coal, *&c.* 5°, The fat and dung of animals. And, 6°, Several productions of chemiſtry; as oils, inflammable ſpirits, *&c.* afford, alſo, a pabulum for *fire*.

This *fire*, which burns combuſtible bodies, requires air, to ſuſtain it; which taken away, the *fire* is immediately diſſipated: as appears from the experiments in vacuo.

And yet *fire* does not immediately bear, or endure, the air; but always repels it; and, by that means, forms a kind of vault, or aerial furnace, all round; which by its weight, and the preſſure of the incumbent air, acts on all the particles, or corpuſcles, that would make their way through it; and thus retains the *fire*, and applies it to the combuſtible matter.

Hence, the heavier the air, the more vehement the *fire*: and, accordingly, in ſtill cold weather we obſerve the *fire* to act with more violence than in warm weather.

But whether the air retains *fire* by its weight alone (which water itſelf would do), may be queſtioned; and whether its elaſticity does not contribute ſomething thereto: as, alſo, whether there be not ſome farther unknown property in the air, that has a ſhare in this effect, may be doubted. Something of this kind one would ſuſpect from hence, that all air is not proper to maintain flame.

This *fire*, in burning a combuſtible matter, affords a *ſhining fire*, or a flame, or both, according to the diverſity of fuel; and frequently, alſo, ſmoke, ſoot, and aſhes.

Shining, or *luminous fire*, ſeems to be elementary *fire*, attracted towards the parts of the ſulphur, or oil, with ſuch force, and velocity, as to move and ſhake them very violently, whirl them about, divide, and attenuate them, and thus render them volatile, and ready to be expelled: while, in the mean time, the air, making its vault all round, reſtrains and keeps them in, directs them to the ſulphur, and keeps them ſtill collected in their place, or pabulum, while the combuſtible matter is diffuſed all round.

Flame ſeems to be nothing but a thick ſulphur, agitated, as before, by elementary *fire*; ſo as the *fire* is driven, with a great motion, around the revolving particles of the ſulphur.

Soot ſeems to be produced, when *fire* and ſulphur cannot break into a flame; being a ſort of coal, conſiſting of a thick ſulphur, and an attenuated oil with earth and ſalt.

Smoke ſeems to be the combuſtible matter, when it begins to be relinquiſhed by the elementary *fire:* for, if this ſmoke be afterwards paſſed through a flame, it will itſelf become flame, as before.

Laſtly, Aſhes are the earth, and ſalt, which the *fire* leaves untouched.

Fire may be diſtinguiſhed into *ſhining*, and *not ſhining:* for, that there is *fire* which does not emit light, is evident hence, that a piece of iron taken out of the *fire*, before it be red-hot, ſhall yet give *fire* to ſulphur.

Shining fire, again, may be ſubdivided into two kinds: that which *warms*, as red-hot iron; and that which does *not warm*, as that obſerved in putrid fiſhes, rotten wood, &c. the oil whereof, beginning to be agitated and attenuated, produces light, without any heat, ſo far as the thermometer may be a rule of judging.

Of *ſhining*, and, at the ſame time, *warming fires*, the principal is that of the ſun, as it is called; though, whether the *fire* be really emitted from the body of the ſun, or whether it be only the common, vague, univerſal *fire*, determined by the ſun, is not eaſy to ſay: this *fire* we more uſually conſider under the denomination of light.

This ſolar *fire*, in calcining certain bodies, makes ſome addition to the weight thereof.

Thus antimony, expoſed in the focus of a burning-glaſs, will ſmoke a conſiderable time; and the greateſt part of it will ſeem to evaporate in fumes: but, if afterwards tried by the balance, it will be found to have gained in weight: and if it be again applied in the focus of a larger glaſs, it will again emit fumes, and yet ſtill be increaſed in weight.

Beſide the ſolar, there is likewiſe a ſubterraneous *fire*.

This appears, in digging under-ground: for the firſt glebe, next to the ſurface, is warmed by the heat of the ſun; and, as you go deeper, you will find it colder; whence, even in hot countries, they have conſervatories of ice at ſome depth under-ground; till, arriving at a certain depth, *viz.* forty or fifty feet, it begins to grow warmer, ſo that no ice can there ſubſiſt; and, at a yet greater depth, it is ſo hot, as to take away reſpiration, extinguiſh candles, &c. and if the miner will venture farther, and carry a candle along with him, he frequently ſets the whole place in a flame; the ſulphureous fumes, rendered volatile by the ſubterraneous *fire*, catching flame from the candle.

Whence it appears, that there is another ſource of *fire*, or, as it were, another ſun, in the boſom of the earth, which gives motion and life to every thing growing in, or upon, the globe; and even that the centre of the earth is mere *fire:* which *fire* is likewiſe argued to be perpetual, from volcano's, or burning-mountains, which have been known to caſt up *fire* from the earlieſt account of time. See VOLCANO.

There are two great *fires*, therefore; the higher, or ſolar; and the lower, or ſubterraneous: and theſe are, in every other reſpect, perfectly alike.

FIRE, in chemiſtry, is the great inſtrument by which moſt of the operations of that art are performed.

The kind, degree, direction, &c. of *fire*, are things the chemiſt is principally to attend to. The diverſity of *fire* makes a great difference in the reſult of the experiment; ſo as the ſame effect, *e. gr.* ſhall not ariſe, if an experiment be made with the *fire* of ſpirit of wine, and that of pit-coal.

And to this cauſe, Mr. Boyle, in his treatiſe *Of the unexpected failure of Experiments*, attributes it, that a great many experiments, ſucceſsfully tried by ſome, have not ſucceeded to others.

The *fires* chiefly required by the chemiſts are, ſuch as yield no fæces, or remains; no ſalt, nor ſmoke: and ſuch, alone, are thoſe of the ſun, and of ſpirit of wine. Thoſe which come next in purity are, oils diſtilled *per veſicam*; which loſe their earth and ſalt, by their boiling and agitation in the water; ſo that the oftener the diſtillation is repeated, the purer they are rendered. After theſe, the beſt is turf.

Indeed, the very manner wherein the *fire* is blown, is found to have ſome effect. Thus Acoſta, lib. iv. c. 5. relates, that in Peru, when they would melt and ſeparate their ſilver from the earth, &c. if the *fire* be blown up with bellows, the fuſion will not ſucceed; nor will any other *fire* do, but that blown by the wind raiſed from the fall of ſome water: ſo that they are forced to have recourſe to large tubes laid to the feet of large mountains, where there are cataracts to convey the wind, generated by the fall of water, to their works.

The degree of *fire*, or the collection and direction of *fire*, to the degree proper for each operation, is almoſt the whole art of chemiſtry: the *fire*, *e. gr.* requiſite to melt metals, is by no means proper for the diſtilling of ſpirit of wine.

Now the greater or leſs force of *fire* depends altogether on a greater or leſs quantity thereof collected into a focus: for, as to its motion, it does not ſeem in our power to alter it; or to make any increaſe, or diminution, of the force of the *fire*, on that account.

The chemiſts uſe four principal degrees of *fire* in their operations.

The firſt is equal to the natural heat of the human body; or, rather, to that of a hen, brooding on her eggs; which is the ſtandard: and, accordingly, this firſt degree is beſt meaſured by applying a thermometer to a hen; and ſome chemiſts, by keeping a *fire* continually to this degree, by means of a thermometer, have hatched chickens.

By this degree all their digeſtions, eaſy ſeparations, and ſolutions, and gentle diſtillations, with all fermentations and putrefactions, are performed.

The ſecond degree of *fire* is that which gives a man pain, but does not deſtroy, or conſume, the parts: like the heat of a ſcorching ſummer's ſun, which chaſes and inflames the ſkin, and even ſometimes raiſes bliſters.

A fire of this degree is uſed in making ſeparations of the more ponderous bodies, which the firſt degree is not equal to; as, alſo, in ſome fixations; particularly that of mercury, which is rendered fixed by a gradual introduction of ſuch *fire* among the parts of the mercury.

This degree makes the ſerum of the blood, and white of an egg, coaleſce; and ſo occaſions deadly inflammations, and is too intenſe for any digeſtion, putrefaction, or fermentation, to be effected by it.

The third degree of *fire* is that of boiling water, which ſeparates and deſtroys the parts of bodies. This degree is perfectly ſtable: for water, when once it boils, is at its utmoſt degree of heat, and cannot be raiſed a whit farther, by any augmentation of *fire*, or fuel; as was firſt obſerved by M. Amontons.

This degree ſerves to attenuate, ſeparate, fix, and perform, other operations, where the two former would not be effectual.

The fourth degree is that which melts metals, and deſtroys every thing elſe.

This degree is too vehement to be eſtimated by the thermometer; that inſtrument not being able to endure it: ſo that it is only determinable by its effect in the fuſion of metals. As the heat of boiling water cannot be increaſed, ſo neither can that of melted metals.

This degree is uſed in abundance of operations, and, particularly, about minerals, where the three preceding degrees are inſufficient. This is the laſt degree known to the antient chemiſts.

The lateſt chemiſts reckon a fifth degree of *fire*; *viz.* that whereby gold is made to emit fumes, and evaporate.

This was firſt diſcovered, in the year 1690. by Mr. Tſchirnhauſen; whoſe burning-glaſs rendered every thing, even gold itſelf, volatile.

Beſides theſe five degrees, the chemiſts have ſeveral intermediate ones; all which, however, may be eaſily reduced to the former.

As, the *digeſting fire*, or *venter equi*; which is the heat of a dunghil.

The *balneum mariæ*, *arenoſum*, &c. explained under the article BALNEUM.

The *naked*, or *immediate*, *fire*; which is the common *fire* applied under a veſſel.

The *fire of a lamp*, which is moderate and equal, and may be increaſed by the addition of more wick; uſed by enamellers, &c.

The *wheel-fire*; which is lighted all round a crucible, or other veſſel, to heat it all alike.

That called *by ſuppreſſion*; which is, when the veſſel is not only encompaſſed round, but covered over with *fire*.

The *reverberatory fire*; when it is in a furnace cloſe atop, by which the *fire* is reflected back, and all round, upon the veſſel.

The *melting*, or *fuſing*, *fire*; for the ſolution and calcination of metals and minerals.

The *glaſs-houſe fire*; for the vitrifying of the aſhes of vegetables.

And the *olympic fire*; which is that of the ſun collected in the focus of a burning mirror, &c.

To the ſeveral degrees of *fire* required, ſeveral forms of furnaces are accommodated; which ſee, under the article FURNACE.

There are five principal ways of altering the degree of *fire*.

For *fire* differs, 1°, According to the weight of the pabulum, or fuel; it being a rule, that the heavier the fuel, or combuſtible matter, is; the more vehement, *cæteris paribus*, is the *fire*.

Thus, ſpirit of wine affords a weaker and leſs deſtructive *fire* than oil; and this, than pitch, and ſo on; the heavier and groſſer, ſtill the fiercer.

2°, According to the quantity of the pabulum, or fuel.

3°, According to the diſtance of the *fire* from the object; it being a rule, that the heat of the *fire*, at different diſtances, is, reciprocally, as the ſquares of thoſe diſtances.

4°, By the introducing or blowing of air into the *fire*; It being a rule, that the ſtronger the current of air, or wind, is, provided it be not ſo ſtrong as to break the aereal fornix or vault incumbent on the *fire*, the more is the *fire* increaſed. For a briſk blowing puts the minute parts of the pabulum into a greater motion: whence the greater attrition ariſes, and of conſequence, more *fire* is collected.

5°, According to the ſolidity or reſiſtance of the medium between the *fire* and the object; for the more ſolid the medium, the greater quantity of heat, cæteris paribus, does it receive from the *fire*, and communicate to the object.

Thus, a vapour-bath communicates much leſs heat to the bodies diſtilled by it, than a water-bath; and this, leſs than a ſand-bath; and this again, leſs than a bath of ſteel-filings: for all bodies, expoſed to the *fire*, grow hot in proportion to their ſpecific gravities.

Thus, if a piece of metal be put in water, and both ſet over the *fire*; while the water only grows lukewarm, the metal ſhall be ſo hot, as to be paſt touching: and thus, a key in a perſon's pocket ſitting near the *fire* ſhall frequently be very hot, while his clothes themſelves have not any ſenſible warmth.—Indeed, this rule admits of ſome exceptions; for we have oils, lighter than water, which yet admit of triple its degree of heat, before they boil.

It is a great controverſy in chemiſtry, whether *fire*, when applied to bodies, only ſeparates and diſſolves them; or whether it does not alſo really and abſolutely change them.

Mr. Boyle, in his *Sceptical Chemiſt*, we think, has abundantly proved, that *fire* really alters bodies; and that the parts or elements procured from bodies by *fire* did not exiſt ſuch in the bodies themſelves.

Add, that *fire* does not only ſeparate and decompound, but it alſo compounds and mixes bodies. This no body can doubt of, who knows that *fire*, in acting on many bodies, inſinuates and fixes itſelf among them, and ſo conſtitutes one body together with them.

This is the caſe in diſſolving of lead by *fire*; as is evident from the increaſe of the weight of the lead: the like is obſervable in ſalt of tartar, which, when firſt melted, loſes ſomewhat of its weight; but as it is calcined further and further, it grows ſtill heavier and heavier. In like manner, antimony calcined by a burning-glaſs, as before obſerved, receives a notable acceſſion of weight.

To ſay no more, the phoſphorus muſt derive its ſhining matter from the fiery particles it imbibes in the diſtillation: for no body, will imagine that any of that ſhining matter before exiſted in the human body.

FIRE, in medicine and chirurgery, is uſed in the ſame ſenſe with cautery; and is diſtinguiſhed into *actual*, and *potential*.

Actual FIRE is a hot iron.—There are ſeveral diſeaſes, only to be cured by the application of *actual fire*; which method of cure is practiſed with great ſucceſs in the Eaſt-Indies. See BURNING.

Potential FIRE is that contained in cauſtic medicines. See CAUSTIC.

Fire alſo gives the denomination to divers diſeaſes, as

St. Anthony's FIRE, by phyſicians more uſually called *eryſipelas*. See ERYSIPELAS.

St. Anthony's Fire is alſo called *holy fire*, or *ſacer ignis*; and in an antient inſtrument, belonging to the hoſpital in the church of St. Anthony at Marſeilles, it is called *fire of hell*, or *ignis infernalis*.

This diſtemper made great ravages in France, in the XIth and XIIth century; and it was for the relief of perſons labouring under it, that the religious order of St. Anthony was founded, in the year 1093. under the pontificate of Urban II.

Walking FIRE, called alſo *Will-with-a-wiſp*, *Jack-in-a-lantern*, *Ignis fatuus*, &c. See *Ignis* FATUUS.

FIRE, in theology, is frequently underſtood of the puniſhment of the wicked after death.

It is ſuppoſed the world will periſh at laſt by *fire*.

God has made ſeveral revelations of himſelf, under the appearance of *fire*: he appeared to Moſes under the form of a *fire* burning in a buſh: the Holy Ghoſt deſcended on the apoſtles in tongues of *fire*; and the camp of the Iſraelites was guided and conducted in the night-time by a pillar of *fire*.

The Perſians adored God under the image or repreſentation of *fire*; by reaſon it is *fire*, that gives motion to every thing in nature. They are ſaid to have in that empire *fires* ſtill ſubſiſting, which have burnt above a thouſand years.

The Hebrews kept up the *holy fire* in the temple; and the Veſtals were appointed expreſs, to keep up the ſacred *fire* of the Romans.

Vulcan was worſhiped among the antients, and particularly the Egyptians, as the inventor of *fire*: and Boerhaave has made it highly probable, that the Vulcan of the heathens was the Tubal-Cain of the Hebrews, the firſt who appears to have known the uſe of *fire*, and to have applied it in the fuſion of metals, and other preparations of chemiſtry.

FIRE, in the military language, is ſometimes applied to the *fires* lighted in an army in the night-time.

Thus, the enemy's *fires* were ſeen on the top of the mountains.

But, the term *fire*, or *firing*, is more frequently uſed for the diſcharge of the *fire*-arms; or the ſhot made on the enemy from the artillery, &c.

The horſe ſuffered extremely from the *fire* of the foot, which took them in flank: the trench was expoſed to the *fire* of the place: in this aſſault the curtin was all on *fire*.

In fortification, the *fire of the place* denotes the flank; or that part of the curtin where the line of defence terminates; from whence they *fire*, to defend the oppoſite face of the baſtion.

The beſt way of fortifying is that which gives the moſt *fire*.

FIRE-ARMS are thoſe charged with powder and ball: ſuch are cannons, mortars, and other ordnance; muſquets, carabines, piſtols, and even bombs, granado's, carcaſſes, &c.

For the rebound or reſilition of *fire-arms*, ſee REBOUND.

In the hiſtory of the *Royal Academy* for the year 1707. we have an account of ſome experiments made with *fire-arms* differently loaded, by M. Caſſini. Among other things he obſerves, that by loading the piece with a ball, which is ſomewhat leſs than the calibre, and only laying a little gunpowder below the ball, and a good deal above it, it will yield a vehement noiſe; but have no ſenſible effect or impulſe on the ball.

This he takes to have been all the ſecret of thoſe people who pretended to ſell the art of rendering one's ſelf invulnerable, or ſhot-proof.

FIRE-BOTE, fuel for neceſſary firing, which, by the common law, tenants may take out of the lands granted to them.

FIRE-EATER.—We have a great number of charletans, who have procured the attention and wonder of the public, by eating of *fire*, walking on *fire*, waſhing their hands in melted lead, and the like tricks.

The moſt celebrated of theſe was our countryman Richardſon, much talked of abroad. His ſecret, as related in the *Journal des Sçavans*, of the year 1680. conſiſted in a pure ſpirit of ſulphur, wherewith he rubbed his hands, and the parts that were to touch the *fire*; which, burning and cauterizing the epidermis, hardened and enabled the ſkin to reſiſt the *fire*.

Indeed, this is no new thing: Amb. Paré aſſures us he had tried on himſelf, that after waſhing the hands in one's own urine, and with unguentum aureum, one may ſafely waſh them in melted lead.

He adds alſo, that by waſhing his hands in the juice of onions, he could bear a hot ſhovel on them, while it melted lard.

FIRE-MASTER, in our train of artillery, is an officer who gives the directions, and the proportions of the ingredients, for all the compoſitions of *fire*-works, whether for ſervice in war, or for rejoicings and recreations.

His orders are given to the *fire*-workers, and bombardeers, who are obliged to execute them.

FIRE-OFFICE, an office of inſurance from *fire*. See ASSURANCE.

FIRE-STONE, a kind of ſtone, called alſo *Rygate-ſtone*, from the place whence it is chiefly brought: it is very good, and much uſed for chimneys, hearths, ovens, ſtoves, &c.

Wild FIRE, is a kind of artificial or factitious *fire*, which burns even under water; and that with greater violence than out of it.

It is compoſed of ſulphur, naphtha, pitch, gum, and bitumen; and is only extinguiſhable by vinegar, mixed with ſand and urine; or by covering it with raw hides.

Its motion or tendency is ſaid to be contrary to that of natural *fire*, and that always follows the direction in which it is thrown; whether it be downwards, ſidewiſe, or otherwiſe.

The French call it *Greek fire*, or *feu Gregeois*, becauſe firſt uſed by the Greeks, about the year 660. as is obſerved by the Jeſuit Petavius, on the authority of Nicetas, Theophanes, Cedrenus, &c.

The inventor, according to the ſame Jeſuit, was an engineer of Heliopolis, in Syria, named Callinicus, who firſt applied it in the ſea-fight commanded by Conſtantine Pogonates againſt the Saracens, near Cyzicus, in the Helleſpont; and with ſuch effect, that he burnt the whole fleet therewith, wherein there were thirty thouſand men.

But others will have it of a much older date; and hold Marcus Gracchus the inventor; which opinion is ſupported by ſeveral paſſages, both in the Greek and Roman writers, which ſhew it to have been antiently uſed by both thoſe nations in the wars. See Scaliger againſt Cardan.

Conſtantine's ſucceſſors uſed it on divers occaſions, with equal advantage, as himſelf; and what is remarkable enough is, that they were ſo happy as to keep the ſecret of the compoſition to themſelves; ſo that no other nation knew it in the year 960.

Hugh, king of Burgundy, demanding ſhips of the emperor Leo, for the ſiege of Freſne, deſired likewiſe the *Greek fire.* Chorier, *Hiſt. de dauph.*

F. Daniel gives us a good deſcription of the *Greek fire*, in his account of the ſiege of Damietta, under St. Louis. Every body, ſays that author, was aſtoniſhed with the *Greek fire* which the Turks then prepared; and the ſecret whereof is now loſt. They threw it out of a kind of mortar; and ſometimes ſhot it with an odd ſort of croſs-bow, which was ſtrongly bent by means of a handle, or winch, of much greater force than the bare arm. That thrown with the mortar, ſometimes appeared in the air of the ſize of a tun, with a long tail, and a noiſe like that of thunder. The French, by degrees, got the ſecret of extinguiſhing it; in which they ſucceeded ſeveral times.

FIRE-WORKS, or *artificial* FIRES, are preparations made of gunpowder, ſulphur, and other inflammable and combuſtible ingredients, uſed on occaſion of public rejoicings, and other ſolemnities.

The principal of theſe are rockets, ſerpents, ſtars, hail, mines, bombs, garlands, letters, and other devices. See ROCKET, STAR, BOMB, &c.

The art of preparing and managing *fire*-works, is called *pyrotechnia.*

FIRE-WORKERS, are ſubordinate officers to the *fire*-maſters, who command the bombardeers.

Theſe receive the orders from the *fire*-maſters, and ſee that the bombardeers execute them.

FIRKIN, an Engliſh meaſure of capacity, for things liquid; containing the fourth part of the barrel.

The *firkin of ale* contains eight gallons; and that of *beer*, nine: two *firkins* of beer make the kilderkin; two kilderkins the barrel; and two barrels the hogſhead.

The *firkins* of *ſoap* and *butter* are on the footing of the *firkin* of ale; *viz.* a gallon per *firkin*, leſs than that of beer.

FIRMAMENT, in the antient aſtronomy, the eighth heaven, or ſphere; being that wherein the fixed ſtars were ſuppoſed to be placed.

It is called the *eighth*, with reſpect to the ſeven heavens or ſpheres of the planets, which it ſurrounds.

It is ſuppoſed to have two motions: a diurnal motion, given it by the primum mobile, from eaſt to weſt, about the poles of the ecliptic: and another oppoſite motion from weſt to eaſt; which laſt it finiſhes, according to Tycho, in 25412 yeaes; according to Ptolemy, in 36000; and according to Copernicus, in 258000: in which time the fixed ſtars return to the ſame preciſe points wherein they were at the beginning. This period is commonly called Plato's year, or the great year. See PRÆCESSION *of the equinox.*

In divers places of Scripture the word *firmament* is uſed for the middle region of the air. Many of the antients allowed, with the moderns, that the *firmament* is a fluid matter; tho' they, who gave it the denomination of *firmament*, muſt have taken it for a ſolid one.

FIRMAN, in the Eaſt-Indies, and particularly in the territories of the Great Mogul, is the paſſport, or permit, granted to foreign veſſels, to trade within their juriſdiction.

FIRMNESS, FIRMITAS, in philoſophy, denotes the conſiſtence of a body; or that ſtate, wherein its ſenſible parts cohere, or are united together, ſo that the motion of one part induces a motion of the reſt.–In which ſenſe, *firmneſs* ſtands oppoſed to fluidity.

Some authors confound *firmneſs* with denſity; as thinking the ſame ſtate or property of body implied by both; or at leaſt, that *firmneſs* follows denſity: but this is a miſtake. For mercury, the denſeſt body in nature excepting gold, is yet one of the moſt fluid: and even gold itſelf, with all its denſity, when fuſed, wants *firmneſs*, or coheſion.

Many of the Carteſians, and others, hold *firmneſs* to conſiſt in the mere quiet of the particles of the body, and their mutual immediate contact; urging, that a ſeparation of parts can only ariſe from ſome matter interpoſed between them, which is excluded by the notion of contiguity.

But the inſufficiency of this hypotheſis is evident: for mere ſimple reſt has no force, either to act or reſiſt; and conſequently two particles only joined by reſt and contiguity, would never cohere ſo as that a motion of the one ſhould induce a motion of the other. This is obvious in the caſe of two grains of ſand, which, however contiguous, and at reſt, will never conſtitute a *firm* coherent body.

The *firmneſs* of bodies, then, depends on the connexion or coheſion of their particles. Now, the cauſe of coheſion, Sir I. Newton, and his followers, hold to be an attractive force, inherent in bodies, which binds the ſmall particles thereof together; exerting itſelf only at, or extremely near, the points of contact, and vaniſhing at greater diſtances.

The *firmneſs* of bodies, therefore, follows the laws of the coheſion of bodies; which ſee under COHESION.

Hence, *firmneſs* in all bodies muſt be as the ſurfaces, and contacts of the component parts: thus a body, whoſe parts are by their peculiar ſhapes capable of the greateſt contacts, is moſt *firm*; and that, whoſe parts are capable of the leaſt contact, will be moſt ſoft.

In the former, the greateſt requiſite is to be as near to cubes as poſſible, and in the latter to ſpheres. And in the ſame manner are to be accounted for, not only all the intermediate degrees between the moſt *firm*, and the moſt ſoft bodies, but thoſe different conſiſtences, which are diſtinguiſhed by other names, as friable, tenacious, glutinous, and the like: for the greater are the ſolidities of the component parts of any body, in proportion to their ſurfaces, though that body, by the aptitude of the contacts, may be what we call *very hard*; yet it will be moſt friable or brittle. And where the ſurfaces of the component particles are much extended upon a ſmall quantity of matter, the bodies they compoſe, though they may be light and ſoft, yet they will be tenacious or glutinous: for although the flexibility of their compounding parts admits of their eaſy changing of figure by any external force, yet by their touching one another in ſo many points, they are very difficultly ſeparated.

The former is the caſe in cryſtallized ſalts, reſins, and the like; the latter in turpentines, gums, and all of that ſort.

FIRST-FRUITS, *Annates* or *Primitiæ*, the profits of a benefice for the firſt year after avoidance.

The *firſt-fruits* were originally reſerved for the pope's benefit, and were accordingly, before the reformation, paid to him; but the parliament under king Henry VIII. tranſlated them to the crown, 25 Hen. VIII. c. 20.

Queen Anne, in the third year of her reign, made a grant of the whole revenue of *firſt-fruits* and tenths, to ſettle a fund for the augmentation of the maintenance of the poor clergy.

By the act 25 Henry VIII. he, who enters on any ſpiritual living, before he pays, or compounds for the *firſt-fruits*; on conviction, forfeits double the value thereof.

Every clergyman, therefore, before his induction, or ſoon after, ſhould go himſelf with one friend, or ſend two friends for him, to the *firſt-fruits* office, and there enter into bond to pay the *firſt-fruits* of his benefice, within two years next enſuing, at four equal half-yearly payments. Only, one-tenth of the whole yearly ſum, entered in the king's books, is to be deducted; becauſe that muſt be paid by itſelf the firſt year.

Formerly, four bonds were given for the four ſeveral payments; but by ſtatute 2 and 3 of queen Anne, one bond only is appointed to be given; and the rates of all benefices, according to the king's books, are declared unalterable.

The ſucceſſor is chargeable with arrears of tenths due from his predeceſſor; and conſequently, by 27 Henry VIII. c. 8 is impowered to diſtrain his predeceſſor's goods, being upon the benefice; and hath likewiſe a good action at law againſt him or his executors.

FISC *, FISCUS, in the civil law, the treaſury of a prince, o ſtate; or that to which all things due to the public do fall.

* The word is derived from the Greek φισκος, a great baſket, uſed when they went to market.

By the civil law, none but a ſovereign prince has a right t have a *fiſc*, or public treaſury.

At Rome, under the emperors, the term *ærarium* was uſed fo the revenues deſtined for the ſupport of the charges of th empire; and *fiſcus* for thoſe of the emperor's own family.– Thus, the treaſury, in effect, belonged to the people, an the *fiſcus* to the prince.

FISCAL, ſomething relating to the pecuniary intereſt of th king, the public, or a private perſon.

The emperor Adrian erected the office of *fiſcal* advocate i the Roman empire.

FISH, in natural hiſtory, an animal that has ſcales, and fins and that lives in the waters, as its proper place of abode. Se Supplement, article PISCIS.

Naturaliſts obſerve a world of wiſdom and deſign in the ſtructure of *fiſhes*, and their conformation to the element they ar to reſide in.

Their bodies are cloathed and guarded in the beſt manner, with ſcales, &c. ſuitable to their reſpective circumſtances, the dangers they are expoſed to, and the motion and buſineſ they are to perform.

The centre of gravity is placed in the fitteſt part of the bod for ſwimming; and their ſhape is the moſt commodious fo making way through the water, and moſt agreeable to ge metrical rules.

They have ſeveral parts peculiar to themſelves; as fins, t balance and keep them upright. See FIN.

And an air-bladder, or ſwim, to enable them to riſe and fin to any height and depth of water, at pleaſure.

They have alſo gills or bronchiæ, whereby they reſpire; land-animals do by the lungs.

The tail is the inſtrument of progreſſive motion, and ſerv to row them forward.

The

Their eyes are peculiarly formed to enable them to correſpond to all the convergencies and divergencies of rays, which the variations of the watry medium, and the refractions thereof, may occaſion; in which reſpect they bear a near reſemblance to thoſe of birds.

Fiſhes are diſtinguiſhed into *ſea*, or *ſalt-water fiſh*, *piſces marini*: as the whale, herring, mackrel, *&c.*—*river*, or *freſh-water fiſh*, *piſces fluviales*; as the pike, trout, *&c.*—and *pond*, or *lake fiſh*; as the carp, tench, *&c.* to which may be added, others which abide indifferently in freſh water or ſalt; as ſalmons, ſhad-fiſh, *&c.*

Ariſtotle, and after him Mr. Willoughby, more accurately diſtinguiſh *fiſhes* into *cetaceous*, *cartilaginous*, and *ſpinous*.

The *cetaceous* kind, called alſo *belluæ marinæ*, have lungs, and breathe like quadrupeds; they copulate alſo like them, and conceive and bring forth their young alive, which they afterwards ſuckle with their milk.

The *cartilaginous* ſort are produced from large eggs, like thoſe of birds; which are alſo excluded the womb, like thoſe of birds.

The *ſpinous* kind are alſo oviparous; but their eggs are ſmaller, and they have ſpinæ up and down in their fleſh, to ſtrengthen it.

Willoughby thinks it would be yet more proper to divide *fiſhes* into ſuch as *breathe with lungs*, and ſuch as *breathe with gills*; and then to ſubdivide thoſe that breathe with gills, not into cartilaginous and ſpinous, but into *viviparous* and *oviparous*.

The *viviparous* kind that breathe *with gills*, he ſubdivides into *long*; ſuch as the *galei* and *canes*, or ſharks and dog-*fiſh*: and broad; ſuch as the paſtinaca, raja, *&c.* the ſubdiviſions of each whereof, he gives in his chapter of cartilaginous *fiſhes* in general.

The *oviparous* kind that breathe *with gills* are the moſt numerous; and theſe he ſubdivides into ſuch as are what we uſually call *flat-fiſh*; and ſuch as ſwim with their back upright, or at right angles to the horizon.

The *plain* or *flat-fiſh* kind, called uſually *plani ſpinoſi*, are either *quadrati*, as the rhombi and paſſeres; or *longiuſculi*, as the ſoleæ.

Such as ſwim *with their backs erect*, are either long and ſmooth, and without viſible ſcales, as the eel-kind; or ſhorter and leſs ſmooth; and theſe have either but one pair of fins at their gills, or elſe another pair of fins alſo on their bellies; which latter kind he ſubdivides into two kinds.—1°, Such as have *no prickly fins on their backs*, but ſoft and flexible ones. 2°, Such as have *prickly fins* upon their backs.

Thoſe *fiſhes* which have only ſoft and flexible fins on their backs, may be divided into ſuch as have *three*, *two*, or but *one* ſingle *fin* there.

No *fiſh* but the aſelli have *three fins* on their backs. See Supplement, article Fins.

Fiſhes with *two fins* on their backs are either the truttaceous, trout kind; or the gobionites, loch, or gudgeon kind.

Fiſhes with but *one ſoft back fin* are of three ſorts.—The firſt kind have one long continued fin, from head to tail, as the hipparus of Rondeletius, *&c.*

The ſecond have their fins but ſhort, and placed juſt in the middle of their back: and theſe are either *marine*, as the herring kind; or *fluviatile*, as thoſe which we call *leather-mouthed fiſhes*; ſuch as carp, tench, *&c.*

Fiſhes which have *prickly fins on their backs* are of two kinds.—1°, Such as have *two prickly fins on their backs*; and in theſe the anterior radii of their fins are always prickly.—2°, Such as have but *one prickly fin* there.

he Engliſh Fishes, according to Willoughby's catalogue, are as follow—

I. Of the *long cartilaginous* kind we have, 1. The *canis carcharias*, or *lamia*, the white ſhark. 2. *Galeus glaucus Rondeletii*, the blue ſhark. 3. *Canis galeus Rondeletii*, called a *tope* in Cornwall. 4. *Galeus acanthias ſive ſpinax*, the prickled dog, or hound-fiſh. 5. *Galeus ſeu muſtela lævis*, the ſmooth, or unprickled hound-fiſh. 6. *Catulus major*, *vulgo canicula Ariſtotelis*, the rough hound, called in Cornwall the *bounce*. 7. *Catulus minor*, the leſſer hound-fiſh, or morgay.

II. Of the *plain cartilaginous* kind we have, 1. The *Raja lævis undulata*, the ſkate or flare. 2. *Raja clavata*, the thornback. 3. *Raja aſpera noſtras*, the white-horſe. 4. *Squatina*, the angel, or monk fiſh. 5. *Rana piſcatrix*, the toad-fiſh, or ſea-devil.

III. Of the *plain ſpinous* kind, 1. *Rhombus maximus aſper ſquammoſus*, called the turbot, or brett. 2. *Rhombus non aculeatus ſquammoſus*, in Cornwall called the *lug-aleſe*. 3. *Paſſer Bellonii*, the plaiſe. 4. *Paſſer aſper ſive ſquammoſus*, the dab. 5. *Paſſer fluviatilis ſive amphibius*, the flounder, fluke, or butt. 6. *Hippogloſſus Rondeletii*, the holy butt, called in the north the *turbot*. 7. *Bugloſſus*, or *ſolea*, the ſole.

IV. Of the *eel* kind we have, 1. *Lampetra major*, the lamprey, or lamprey-eel. 2. *Lampreta parva*, and *fluviatilis*, the lampern. 3. *Anguilla*, the common eel. 4. *Conger*, the conger, or ſea-eel. 5. *Ammodytes Geſneri*, the ſand-eel, or lance. 6. *Gunnellus Cornubienſis*, the butter-fiſh. 7. *Muſtela vulgaris Rondeletii*, the ſea-loach, or whiſtle-fiſh. 8. *Muſtela fluviatilis*, the eel-pout, or turbot. 9. *Lupus marinus*, the wolf-fiſh, or ſea-wolf. 10. *Alauda non criſtata*, the ſea-lark, called in Cornwall *mulgranock*, and *bulcard*. 11. *Alauda criſtata*, the creſted ſea-lark. 12. *Liparis Rondeletii*, Rondeletius's butter-fiſh. 13. *Gobio fluviatilis*, the bull-head, or miller's-thumb. 14. *Scorpænæ Bellonii ſimilis*, the Dutch pots-hog; the Corniſh boys call it *father-laſher*.

V. Of the kind of *fiſhes wanting the belly pair of fins*, we have, 1. *Mola Salviani*, the ſun-fiſh. 2. *Acus Ariſtotelis ſpecies major*, the tobacco-pipe-fiſh. 3. *Acus Ariſtotelis congener*, the ſea-adder. 4. *Xiphias ſeu gladius piſcis*, the ſword-fiſh.

VI. Of the *non-ſpinous* kind of fiſhes, *with three unprickly ſoft fins on their backs*, we have, 1. *Aſcellus vulgaris major*, the cod-fiſh, or kaling. 2. *Huitingo-pollacus*, the *whiting*-pollack. 3. *Aſcellus niger*, the coal-fiſh, or rawling pollack. 4. *Aſcellus luſcus*, the bib, or blinds. 5. *Aſinus antiquorum*, the haddock. 6. *Aſcellus mollis major*, the whiting.

VII. Of the *non-ſpinous* kind, *with only two ſoft fins on their backs*, are found with us, 1. *Merlucius*, the hake. 2. *Aſcellus longus*, the ling. 3. *Thynnus*, or *thunnus*, the tunny, or Spaniſh mackrel. 4. *Scomber*, the mackrel. 5. *Thymallus*, the gragling, or umber. 6. *Albula ſalmoni ſimilis*, the guinniad. 7. *Albula harengi formis*, the ſchelly. 8. *Salmo*, the ſalmon. 9. *Salmulus*, the ſamlet, or bramlin. 10. *Salmo griſeus*, the gray. 11. *Trutta ſalmonata*, the ſalmon-trout. 12. *Trutta lacuſtris*, the ſcurf, or bull-trout. 13. *Trutta fluviatilis duum generum*, the trout. 14. *Umbla minor Geſn.* the red charr, or Welſh torgoch. 15. *Carpio lacus Benaci*, the gilt, or gilt charr. 16. *Eperlanus ſeu viola*, the ſmelt. 17. *Gobius niger*, the rock-fiſh, or ſea-gudgeon. 18. *Lumpus Anglorum*, the lump, or ſea-owl. 19. *Cataphractus Schonfeldii*, in the weſt of England, a pogge.

VIII. Of the *non-ſpinous* kind, *with only one fin on the back*, there are, 1. *Harengus*, the herring. 2. *Harengus minor*, the pilchard, called alſo *calchis*. 3. *Encraſicholus*, the anchovy. 4. *Aloſa ſeu clupea*, the ſhad, or mother of herrings. 5. *Sardina*, the ſprat or ſparling, which is nothing elſe but the young herring. 6. *Acus vulgaris*, the gar-fiſh, or horn-fiſh. 7. *Sturio*, the ſturgeon. 8. *Lucius*, the pike, or pickrel. 9. *Cyprinus*, the carp. 10. *Cyprinus latus*, the bream. 11. *Tinca*, the tench. 12. *Orfus Germanorum*, the rudd, oerve, or nerfling. 13. *Capito ſeu cephalus*, the chubb, or chevin. 14. *Barbus*, the barbel. 15. *Leuciſcus*, the dace, or dare. 16. *Rutilus*, *ſeu rubellio*, the roach. 17. *Alburnus*, the bleak or bley. 18. *Gobius fluviatilis*, the gudgeon. 19. *Cobites fluviatilis barbatula*, the loche. 20. *Varius*, *ſeu phoxinus lævis*, the pink, or minnow.

The laſt twelve of theſe are called *malacoſtomi*, or *leather-mouthed fiſhes*; becauſe they have no teeth in their jaws, but only deep down in their mouths.

IX. Of the *ſpinous* kind, with *two fins on their backs*, of which *the foremoſt is aculeate*, we have, 1. *Lupus*, the baſſe. 2. *Mugil*, the mullet. 3. *Gurnarnus griſeus*, the grey gurnard. 4. *Hirundo Aldrovandi*, the tub-fiſh. 5. *Cuculus Aldrovandi*, the red gurnard, or rochet. 6. *Lyra prior Rondeletii*, the piper. 7. *Mullus major*, the ſur-mullet. 8. *Draco ſive araneus Plinii*, the ſpider. 9. *Trachurus*, the ſcad. 10. *Perca fluviatilis*, the perch. 11. *Faber piſcis*, the dory, or doree.

X. Of the *aculeate* kind, with only *one fin on the back*, *whoſe radii are ſome prickly, and ſome ſoft*, there are, 1. *Aurata*, the gilt-head, or gilt-poll. 2. *Pagrus*, the ſea-bream. 3. *Turdus*, *vulg.* the old-wife, or wraſs. 4. *Perca fluviatilis minor*, *ſeu aurata*, the ruff. 5. *Piſcis aculeatus vulgaris*, *ſeu pungitius Alberti*, the common prickle-back, or ſharpling, or banſtickle. 6. *Piſcis aculeatus minor*, the leſſer prickleback.

XI. Of the *cetaceous* kind, we reckon only, 1. *Balæna Britannica antiquorum*, which ſeems now to be gone from our ſeas, and we ſcarce know what kind of fiſh it was. 2. *Balæna vulg. Rondeletii*, the common whale, which is ſometimes found ſtranded on our coaſts, or rambles up our rivers. 3. *Delphinus antiquorum*, the dolphin, very rarely, but ſometimes ſeen here. 4. *Phocæna*, the porpuſs, called by Schonfeld the *northern dolphin*. See Supplement, under each of theſe ſeveral heads, Canis, Galeus, *&c.*

Fish, with regard to commerce, is diſtinguiſhed into *dry*, *pickled*, *green*, and *red*.

Dry or *ſalt* Fish is that which is ſalted and dried either by the heat of the ſun, or by fire. Such principally are the cod, ſtock-fiſh, herring, and pilchard.

Green Fish is that lately ſalted, and which yet remains moiſt; as green cod, *&c.*

Pickled Fish is that boiled and ſteeped in a pickle made of ſalt, vinegar, *&c.* as ſalmon, cod, herring, mackrel, pilchard, anchovy, and oyſters.

Red Fish is ſome freſh *fiſh* broiled on the gridiron, then fried in oil of olives, and barrelled up with a proper liquor, as new olive-oil, vinegar, ſalt, pepper, cloves, and laurel-leaves, or other herbs. The beſt *fiſh* thus prepared are ſturgeon and tunny.

FISH, conſidered as a food, makes a conſiderable article in the furniture of the table; and the breeding, feeding, catching, &c. thereof, make a peculiar art of no ſmall moment in the œconomy of a gentleman's houſe and garden.

To this relate the ponds, ſtews, &c. deſcribed in their proper places. See FISH-*pond*, STEW, &c.

Some general rules and obſervations on the ſame ſubject may not here be unacceptable.

For the breeding of FISH, the quality of the pond, water, &c. proper for this end, is ſcarce determinable by any certain ſymptom, or rule: for ſome very promiſing ponds do not prove ſerviceable that way. One of the beſt indications of a breeding pond is, when there is good ſtore of ruſh and grazeing about it, with gravelly ſhoals; ſuch as horſeponds uſually have: and when a water takes thus to breeding, with a few milters and ſpawners, that is, males and females, two or three of each, a whole county may be ſtocked in a ſhort time.

Eels and perch are of very good uſe to keep down the ſtock of *fiſh*; for they prey much upon the ſpawn and fry of bred *fiſh*, and will probably deſtroy the ſuperfluity of them.

As for pike, perch, tench, roach, &c. they are obſerved to breed almoſt in any waters, and very numerouſly; only eels never breed in ſtanding waters that are without ſprings; and in ſuch are neither found, nor increaſe, but by putting in: yet where ſprings are, they are never wanting, though not put in. And, which is moſt ſtrange of all, many ſay there is not in an eel the leaſt token of propagation, either by milt, or ſpawn; ſo that how they are produced, is a queſtion very myſterious. See Supplement, article EEL.

For the feeding of FISH, take the following remarks:

1. In a ſtew, thirty or forty carps may be kept from October to March, without feeding; and, by fiſhing with tramels or flews, in March or April, you may take from your great waters, to recruit the ſtews: but you muſt not fail to feed all ſummer, from March to October again, as conſtantly as cooped chickens are fed; and it will turn to as good an account.

2. The conſtancy and regularity of ſerving the *fiſh* conduces very much to their well eating, and thriving.

3. Any ſort of grain boiled is good to feed with, eſpecially peas and malt, coarſe ground: the grains after brewing, while freſh and ſweet, are alſo very proper; but one buſhel of malt, not brewed, will go as far as two of grains: chippings of bread, and orts of a table, ſteeped in tap-droppings of ſtrong beer, or ale, are excellent food for carps. Of theſe the quantity of two quarts to thirty carps, every day, is ſufficient: and to be ſo fed morning and evening, is better than once a day only.

There is a ſort of food for *fiſh*, that may be called accidental, and is no leſs improving than the beſt that can be provided; and this is, when the pools happen to receive the waſh of commons, where many ſheep have paſture, the water is thus enriched by the ſoil, and will feed a much greater number of carps than otherwiſe it would do: and farther, the dung that falls from cattle ſtanding in water in hot weather, is alſo a very great nouriſhment to *fiſh*.

The beſt food to raiſe pikes to an extraordinary fatneſs is eels; and without them it is not to be done, but in a long time. Setting theſe aſide, ſmall perches are the beſt meat. Breams put into a pike pond breed exceedingly, and are fit to maintain pikes; which will take care they do not increaſe overmuch: the numerous fry of roaches and rudds, which come from the greater pools into the pike-quarters, will likewiſe be good diet for them.

Pikes in all ſtreams, and carps in hungry-ſpringing waters, being fed at certain times, will come up, and take their meat almoſt from your hand.

The beſt feeding-place is toward the mouth of the pond, at the depth of about half a yard; for by that means the deep will be kept clean and neat; the meat thrown into the water, without other trouble, will be picked up by the *fiſh*, and nothing will be loſt: yet there are ſeveral devices for giving them food, eſpecially peas; as a ſquare board let down with meat upon it.

When *fiſh* are fed in the larger pools or ponds, where their numbers are great, malt boiled, or freſh grains, is the beſt food. Thus carps may be fed and raiſed like capons, and tench will feed as well; but perch are not for a ſtew in feeding-time.

As to the benefits that redound from the keeping of *fiſh*, beſides furniſhing the table, and raiſing money, your land will be vaſtly improved, ſo as to be really worth, and yield more this way, than by any other employment whatſoever: for ſuppoſe a meadow of 2*l.* *per* acre; four acres in pond will return every year a thouſand fed carps, from the leaſt ſize to fourteen or fifteen inches long; beſides pikes, perch, tench, and other fry: the carps are ſaleable, and will bring ſixpence, nine-pence, and perhaps twelve-pence apiece, amounting in all to twenty-five pounds, which is ſix pounds five ſhillings *per* acre.

Royal FISHES. See the article ROYAL *fiſhes*.

FISHES, in aſtronomy. See the article PISCES.

FISH-*days*. See the article ABSTINENCE.

FISHES, in heraldry, are of themſelves of leſs eſteem in a coat-armour than beaſts and fowls, as being poſterior thereto in the order of creation: but they ſometimes become ſo dignified by the perſons or families who bear them, as to be preferable to many birds and beaſts.

Fiſhes are borne divers ways; upright, embowed, extended, indorſed, ſurmounted of each other, fretted, triangled; &c.

All *fiſhes* borne feeding ſhould be termed *devouring*.

Thoſe borne directly upright ſhould be termed *hauriant*.

And thoſe borne traverſe the eſcutcheon, *naiant*.

FISHERY, a commodious place for *fiſhing*; or a place wherein great quantities of *fiſh* are caught.

The principal *fiſheries* of Europe for ſalmon, herring, cod, and mackrel, are along the coaſts of England, Scotland, and Ireland: for whales, about Greenland: for pearls, in the Eaſt and Weſt-Indies, &c.

FISHERY alſo denotes the commerce of *fiſh*; more eſpecially the catching them for ſale. The *fiſhery* makes a principal branch of the Britiſh commerce. A great quantity of veſſels and ſeamen are employed therein; and beſides what is ſpent at home, above 200,000*l.* ſterling is yearly returned, merely for herring and cod, exported to Spain, Italy, and ſeveral parts of the Mediterranean, and the iſlands of the Archipelago.

Yet are our countrymen reproached, and with a good deal of juſtice, for their remiſſneſs in this branch of trade. The advantageous ſituation of our coaſts might be of immenſe benefit to us, did not we let our neighbours over-reach us therein. The Dutch, French, Hamburghers, &c. come yearly in large ſhoals, and not only take the fiſh from our own doors, but ſell them to us for our money, when they have done.

Scotland ſuffers incredibly on this ſcore: no country in Europe can pretend to rival it in the abundance of the fineſt fiſh, wherewith its numerous harbours, loughs, rivers, &c. are ſtored. In the river Dee, it is ſaid, an hundred and ſeventy head of ſalmon is not very extraordinary for a ſingle draught of a net: and the pickled ſalmon ſent hence is allowed the beſt in Europe. The Scotiſh iſlands, eſpecially thoſe on the weſtern ſide, do certainly lie moſt commodiouſly for carrying on the fiſhing-trade to perfection.

King Charles the firſt began the experiment, in conjunction with a company of merchants; but the civil wars ſoon ſet it aſide. King Charles the ſecond made a like attempt; but, having preſſing occaſion for money, he was perſuaded to withdraw what he had employed in the *fiſhery*; at which the merchants, joined with him, being diſpleaſed, did the like themſelves.

Since the Union, ſeveral efforts have been made to retrieve it: and there has been long a corporation ſettled on that footing; and the Scotch *fiſhery* is now likely to be put on a very advantageous baſis.

Cod FISHERY.—The *cod* is a fiſh of paſſage, pretty large, with a great head; and teeth in the bottom of the throat; its fleſh white; its ſkin browniſh on the back, white unde the belly, and covered with a few thin tranſparent ſcales.

It eats excellently, when freſh; and, if well prepared an ſalted, will keep a long time. This fiſh, thus prepared, i commonly eaten among us in Lent, &c. under the denomination of *ſalt-fiſh*, or *ſtock-fiſh*.

There are two kinds of ſalt *cod*; the one called *green*, o *white*; and the other *dried*, or *cured*: though it is all th ſame fiſh, only differently prepared.—

Green cod.—The chief *fiſheries* for *green cod* are in the bay o Canada, on the great and little Bank, near the coaſt of New foundland, the iſland of St. Peter, and the iſle of Sable: an hither veſſels are yearly ſent from divers parts both of Americ and Europe.

The veſſels uſed herein are from an hundred to an hundre and fifty tons burden; and theſe will bring thirty or thirty five thouſand fiſh apiece.

The moſt eſſential articles in this *fiſhery* are the perſons wh know how to open the fiſh, to cut off the heads, and to ſa them; upon the ability of which laſt the ſucceſs of the voyag chiefly depends.

Several authors will have it, that the Biſcayans, in purſuin their whales, made the firſt diſcovery of the great and litt Banks of *cods* at Newfoundland, Canada, &c. a hundre years before Columbus's time; and that it was a Biſcaya Newfoundlander than gave the firſt intimation thereof t Columbus.

Others ſay, that the great Bank was diſcovered by a native St. Malo's, named Cartier. But, be the inventor of wh name or nation he will, the invention is certainly highly v luable: there is not a trading nation in Europe, but allo the commerce of *cod-fiſh* one of the moſt ſecure and gai ful that is known.

The beſt, largeſt, and fatteſt *cod*, are thoſe taken on t ſouth ſide of the great Bank, which is a kind of ſubmari mountain, one hundred and fifty miles long, and fifty broa and at the diſtance of twenty-five from Newfoundland: tho on the north ſide are generally much ſmaller.

The beſt ſeaſon is from the beginning of February to the e of April; at which time *cod*, which during the winter h retired to the deepeſt parts of the ſea, return to the Ba and grow very fat.

Th

Thoſe caught from March to June keep well enough; but thoſe in July, Auguſt, and September, ſoon ſpoil.

The fiſhing is ſometimes done in a month, or ſix weeks; and ſometimes it holds ſix months. As Lent draws on, if the fiſhermen have but half their cargo, they ſtrive who ſhall make homeward the firſt; the market being then the beſt. Some will thus make a ſecond voyage, before others have got loading for the firſt. Each fiſher only takes one cod at a time; and yet the more experienced will take from three hundred and fifty to four hundred *per* day: but this is the moſt; for it is very fatiguing work, both on account of the weightineſs of the fiſh, and of the extreme cold which reigns on the Bank.

The ſalary uſually allowed the captain and ſailors, is one third of the *cod* they bring home ſound.

They ſalt the *cod* on board. The head being cut off, the belly opened, and the guts taken out; the ſalter ranges them in the bottom of the veſſel, head to tail; and having thus made a layer thereof, a fathom or two ſquare, he covers it with ſalt: over this he lays another layer of fiſh, which he covers as before; and thus he diſpoſes all the fiſh of that day, taking care never to mix the fiſh of different days together.

By that time the *cod* has lain thus to drain three or four days, they are moved into another part of the veſſel, and ſalted afreſh. After this, they are no more to be touched, till the veſſel have its burden.

Sometimes they put them up in barrels, for the conveniency of carriage.

Dry cod—In the fiſhing of *dry cod*, veſſels of all ſizes are uſed; though ſuch are generally choſen, as have large holds, by reaſon this ſort of fiſh incumbers more than it burdens.

As *cod* is only to be dried by the ſun, the European veſſels are obliged to put out in March, or April, to have the benefit of the ſummer for drying. Indeed, we ſend veſſels for *cod* in June and July; but thoſe only buy what had been fiſhed and prepared by the inhabitants of the Engliſh colonies of Newfoundland, and the neighbouring parts; in exchange for which, we carry them meal, brandies, biſcuits, pulſe, melaſſes, linen, *&c.*

The principal *fiſhery* for *dry cod* is along the coaſt of Placentia, from Cape-Roſe, to the Bay des Experts; in which compaſs there are divers commodious ports for the fiſh to be dried in.

The fiſh intended for this uſe, though of the ſame kind with the green cod, is yet much ſmaller; whence it is the fitter to keep, as the ſalt takes more hold.

The method of fiſhing is much the ſame in both; only this latter is the more expenſive, as it takes up more time, and employs more hands; and yet ſcarce half ſo much ſalt is ſpent in this, as in the other.

When ſeveral fiſhing veſſels meet, and intend to fiſh in the ſame port; he whoſe ſhaloop firſt touches ground, becomes intitled to the quality and privileges of admiral; he has the choice of his ſtation, and the refuſal of all the wood on the coaſt at his arrival.

As faſt as the captains arrive, they unrig all their veſſels, leaving nothing but the ſhrouds, to ſuſtain the maſts; and in the mean time the mates provide a tent on ſhore, covered with branches of fir, and ſails over them; with a ſcaffold, fifty or ſixty feet long; and one third as much broad. While the ſcaffold is making ready, the crew are a fiſhing; and as faſt as they catch, they bring their fiſh, open them, and ſalt them on moveable benches: but the main ſalting is performed on the ſcaffold.

When the fiſh have taken ſalt, they waſh them; and to drain them again, lay them in piles on the galleries of the ſcaffold: when drained, they range them on hurdles, a fiſh thick, head againſt tail, with the back uppermoſt; obſerving, while they lie thus, to turn and ſhift them four times every twenty-four hours.

When they begin to dry, they lay them in heaps, of ten or twelve apiece, to retain their warmth; and continue to inlarge the heap every day, till it becomes double its firſt bulk: at length they join two of theſe heaps into one, which they turn every day, as before. Laſtly, they ſalt them over again; beginning with thoſe that had been ſalted firſt; and thus lay them in huge piles, as big as hayſtacks.

In this manner they reſt: till they are carried a-ſhipboard, where they are laid on branches of trees, diſpoſed for that purpoſe in the bottom of the veſſel, with mats all around, to prevent their contracting any moiſture.—

There are four kinds of commodities drawn from *cod*; *viz.* the tripes, and tongues, which are ſalted at the ſame time with the fiſh, and barrelled up: the roes, or eggs, which, being ſalted and barrelled up, ſerve to caſt into the ſea, to draw fiſh together, and particularly pilchards: and laſtly, the oil, which is uſed in dreſſing of leather, *&c.*

The Scots catch a ſmall kind of *cod* on the coaſts of Buchan, which is highly prized, though very much like ling. They ſalt it, and dry it in the ſun, upon rocks; and ſometimes in the chimney: but the greateſt part of it is ſpent at home.—

rring FISHERY. — The *herring* is a ſmall ſalt-water fiſh, with a bluiſh back, and a white ſilvered belly, not unlike a little ſhad-fiſh; whence it is called in Latin *aloſa minor.* Rondeletius calls it *harengus.*

It is a popular error to believe the *herring* to be the *halec* of the Romans. The halec was no particular fiſh, but a kind of ſawce, made of any kind of ſalt fiſh. The modern *herring* ſeems to have been unknown to the antients: it is neither the *halec*, nor *halex*, nor *mœnis*, nor *leucomenis*, nor the *gerres* of Pliny. See Rondelet. *De Piſcib. marin.* l. v. c. 13. and Voſſius *De Idolol.*

Herrings are chiefly found in the north ſea. It is true, there are *fiſheries* elſewhere, but none ſo copious.

They uſually make two fiſhing ſeaſons for *herrings*; the firſt in June, July, and Auguſt; the ſecond in autumn: the latter of theſe is the more conſiderable, on account of the fogs, which are very favourable to this kind of fiſhing.

It is commonly ſaid, that nobody ever ſaw a *herring* alive; and that they die the minute they are taken out of the water: but there are inſtances to the contrary.

The *herring* is a fiſh of paſſage; ſo that it is allowed to catch them on holidays and ſundays: in the *Decretal* there is an expreſs chapter to this effect. They go chiefly in ſhoals, and are fond of following any fire, or light; and in their paſſage they reſemble a kind of lightning themſelves.

The Hollanders were the firſt who began the *herring-fiſhery*, and obſerved the ſeveral ſeaſons of their paſſage. Their firſt regular fiſhing is fixed to the year 1163.

The method of ſalting and barrelling them was not diſcovered till the year 1416. tho' others date it from the year 1397. Willoughby, in his hiſtory of *Fiſhes*, obſerves, that Will. Buckelſz, or Bachalen, a native of Bier Uliet, rendered his name immortal, by the diſcovery of the ſecret of curing and pickling *herring:* he adds, that the emperor Charles V. coming into the Low-Countries, made a journey to the iſle of Bier Uliet, with the queen of Hungary, on purpoſe to view the tomb of this firſt barreller of *herring.*

The Dutch begin their *herring-fiſhing* on the 24th of June, and employ no leſs than two thouſand veſſels therein. Theſe veſſels are a kind of barks, called *buſſes*, carrying from forty-five to ſixty ton, and two or three ſmall cannon.

None of them are allowed to ſtir out of port without a convoy; unleſs there be enough of them together, to make eighteen or twenty pieces of cannon: in which caſe they are allowed to go in company. Before they ſet out, they make a verbal convention; which has the ſame force, as if it were in writing.

Theſe regulations of the admiralty of Holland are partly followed by the French, and other nations; and partly improved, and augmented with new ones: as, that no fiſher ſhall caſt his net within a hundred fathoms of another boat: that while the nets are caſt, a light ſhall be kept on the hind part of the veſſel: that when a boat is by any accident obliged to leave off fiſhing, the light ſhall be caſt into the ſea: that when the greater part of a fleet leaves off fiſhing, and caſts anchor, the reſt ſhall do the ſame, *&c.*

The manner of fiſhing has nothing particular in it. The nets wherein the fiſh is drawn, ſhould, regularly, have their maſhes an inch ſquare, that none of the leſſer fry may be taken.

The commerce of *herring*, both white, *i.e.* pickled, and red, is very conſiderable; but there are ſo many different ſorts prepared, in ſuch different ways, and different places, that it is hard to ſay any thing preciſe thereupon.

The white *herrings* cured by the Dutch are in the greateſt repute: they are diſtinguiſhed into four kinds, according to their ſizes. The goodneſs of this commodity conſiſts in its being fat, fleſhy, firm, white; ſalted the ſame day it is taken, and with good ſalt, and well barrelled.

The Iriſh *herring* are the next in value after thoſe of Holland; and principally thoſe of Dublin, which are ſcarce inferior to the beſt *herring* of Rotterdam or Enkuyſen. The Scotch *herring* is not ſo well prepared, gutted, ſalted, nor barrelled, as the Dutch; and yet its taſte is excellent: nor is it doubted, but that if the Scots were as careful in theſe circumſtances as their neighbours, their *herring* would be the beſt in the world. The *herring* fiſhed in England is inconſiderable; the fiſh being too dry for the market.

Curing and preparing herring. — 1°, For *white* or *pickled herring:* as ſoon as the *herring* are taken out of the ſea, one of the crew, appointed for this office, cuts them open, and takes out the guts, and every thing but the milts and roes, which are always to be left in the body of the fiſh. Then, waſhing them in freſh water, they are left the ſpace of twelve or fifteen hours in a tub full of ſtrong brine made of freſh water, and ſea ſalt.

When they are taken out, they drain them; and when well drained, put them up in barrels; taking care to diſpoſe and range them evenly, in rows, or layers; preſſing them well down; and ſtrewing a layer of ſalt both at top and bottom.

When the barrel is full, they ſtop it up very cloſe; that no air may get in, nor any brine out; either of which is very prejudicial to the fiſh.

2°, For *red-herrings:* the fiſh being caught, they proceed to waſh, gut, and lay them in brine, as for pickled-herring; only they let them lie double the time in brine, *viz.* twenty-four hours; inaſmuch as they are to take all their ſalt here, whereas the other kind takes half its ſalt in the barrel.

When the *herrings* are taken out of the brine, they ſpit them, *i. e.* ſtring them by the head on little wooden ſpits, and thus hang them in a kind of chimney, made for the purpoſe; and when the chimney is as full as it will hold, which leſs than ten or twelve thouſand ſeldom effects, they make a little fire underneath of bruſh-wood, which yields a deal of ſmoke, but no flame.

Here the *herring* remain, till ſufficiently ſmoked and dried; which ordinarily is in twenty-four hours. Then they are taken down, and barrelled up for keeping.

Their goodneſs conſiſts in their being large, freſh, fat, oily, ſoft, and pliable; their outſide of a yellow, golden colour; their having roes, or milt, within them, and being well ſalted and barrelled.

Mackrel FISHERY.—The *mackrel* is a ſalt-water fiſh, without ſcales. Its body is round, and fleſhy; terminating almoſt in a point, at each extreme.

Some perſons, well ſkilled in the naval architecture, hold its figure the moſt commodious for ſwimming of all others, and propoſe it as a model for the building of ſhips.

It is ordinarily about a foot long: when in the water, it appears yellow: and when out of it, of a ſilver white, excepting for ſtreaks, or ſpeckles of a deep blue, on the back and ſides.

The *mackrel* is found in large ſhoals, in divers parts of the ocean; but eſpecially on the French and Engliſh coaſts.

The fiſhing is uſually in the months of April, May, and June, and even July, according to the place. They enter the Engliſh chanel in April, and proceed up to the ſtreights of Dover, as the ſummer advances: ſo that by June they are on the coaſts of Cornwall, Suſſex, Normandy, Picardy, &c. where the *fiſhery* is moſt conſiderable. They are an excellent food, freſh; and not to be deſpiſed, when well prepared, pickled, and put up in barrels.

Naturaliſts have obſerved, that the water wherein *mackrel* has been boiled, often yields a light, after ſtirring it a little.

The fiſh is taken two ways; either with a line, or nets: the latter is the more conſiderable; and is uſually performed in the night-time. The rules obſerved in the fiſhing for *mackrel* are much the ſame as thoſe already mentioned in the fiſhery of herrings.

There are two ways of pickling them: the firſt is, by opening and gutting them, and filling the belly with ſalt, crammed in as hard as poſſible with a ſtick: which done, they range them in ſtrata or rows, at the bottom of the veſſel, ſtrewing ſalt between the layers.

In the ſecond way, they put them immediately into tubs full of brine, made of freſh water and ſalt; and leave them to ſteep, till they have imbibed ſalt enough to make them keep: after which they are taken out, and barrelled up; taking care to preſs them cloſe down.

Pearl FISHERY.—See the article PEARL *fiſhery*.

Pilchard FISHERY.—The *pilchard* is a ſmall ſalt-water fiſh, bigger than the anchovy; but leſs than the herring, which in other reſpects it reſembles. Its head is yellow; its belly white; and its back a ſea-green. It eats admirably, freſh, or lightly ſalted.

There are certain ſeaſons for fiſhing the *pilchard*; which, like the herring and anchovy, is a fiſh of paſſage. They are prepared and ſalted much as the anchovy is; with this difference, that the head is cut off the latter: but the *pilchard* were diſtinguiſhable from the anchovy, even though its head were off likewiſe; the *pilchard* having a very flat back, and the anchovy a round one.

The chief *pilchard fiſheries* are along the coaſts of Dalmatia, to the ſouth of the iſland Iſſea; on the coaſts of Bretagne, from Belle-iſland as far as Breſt; and along the coaſts of Cornwall and Devonſhire.

That on the coaſts of Dalmatia is ſo plentiful, that it not only furniſhes all Greece, but a great part of Italy. That on the coaſts of Bretagne employs yearly above three hundred ſloops, and moſt of the ſeamen of the country.

The fiſh caught on our own coaſts, though bigger, are not ſo much valued, as thoſe on the coaſts of France; owing principally to their not being ſo thoroughly cured. The ſeaſon is from June to September.

The *pilchards* naturally follow the light; and will gather about a boat that bears a light in the night-time; which contributes much to the facility of the *fiſhery*.

On the coaſts of France they make uſe of the roes of cod-fiſh, as a bait; which, thrown into the ſea, makes them riſe from the bottom, and run into the nets, placed for that purpoſe.

On our coaſts, there are perſons poſted aſhore, who, ſpying by the colour of the water where the ſhoals are, make ſigns to the boats, to get among them, to caſt their nets.

When taken, the fiſh are brought to a warehouſe on ſhore, where they are laid up in broad piles, ſupported by backs and ſides. As they pile them, they ſalt them with bay-ſalt; in which lying ſoaking twenty or thirty days, they run out a deal of blood, with dirty pickle, and bittern; which laſt draws a deal of the oil from the fiſh, to the great loſs of the owners. When taken out of the pile, there remains a deal of ſalt blood, ſcales, &c. at bottom, which, with freſh ſalt, ſerves for another pile.

They now proeeed to waſh them in ſea-water to clear off the dirt and blood; and when dry, they put them up in barrels, and preſs them hard down, to ſqueeze out the oil, which iſſues away at an hole in the bottom of the caſk: and in this ſtate they are fit for ſale, or uſe.

Salmon FISHERY.—The *ſalmon*, according to ſome, breeds in the ſea; but the opinion of others ſeems better warranted, that it breeds in the clear ſandy parts of rivers, not far from the mouths thereof. They commonly ſpawn in October, and the young becomes a *ſamlet* the following year, and in a few months after a large *ſalmon*. The milter and ſpawner, having performed their office, betake themſelves to the ſea; and if their return be prevented by weirs, or the like, they become ſick, lean, and pine away, and die in two years time. If they ſpawn in the mean time, the produce is a diminutive *ſalmon*, called *ſkegger*, which will never arrive at the natural bulk; it being the ſea that makes them grow big, and the rivers fat. The female is diſtinguiſhed from the male, in that its noſe is longer, and more hooked, its ſcales not ſo bright, and its body ſpeckled over with dark brown ſpots; its belly flatter, and its fleſh not ſo red; more dry, and leſs delicious to the taſte. In ſpawning time, when they repair from the ſea up to the rivers, ſcarc any thing can ſtop their progreſs. Many have ſeen them lea up cataracts and precipices, many yards high.

The chief *ſalmon fiſheries* in Europe are along the coaſts o England, Scotland, and Ireland. The fiſhing uſually begin about the firſt of January, and ends by the laſt of September It is performed with nets, in the places where the rivers empty themſelves into the ſea; and along the ſea-coaſts thereabou The fiſh are ſeen to croud thither frequently in ſhoals from a parts, in ſearch of the freſh water: they alſo fiſh for them higher up in the rivers; ſometimes with nets; and ſometim with a kind of locks, or weirs, made for the purpoſe, wit iron grates therein, ſo diſpoſed, as that the fiſh, in going u the river, open them with their head; but are no ſoone entered, than the gate claps to. Thus the *ſalmon* are incloſe as in a reſervoir, where it is eaſy taking them. In ſome plac they fiſh for *ſalmon* in the night-time, by the light of torche or kindled ſtraw. The fiſhermen watch when the fiſh dra towards the light, whereof he is naturally a great lover, an ſtrikes him with a ſpear, or liſter. In ſome parts of Sco land, it is ſaid, they ride a fiſhing up the rivers, and whe they ſpy them in the ſhallow parts, ſhoot them with fir arms.

When the fiſh are taken, they open them; take out the gu and gills, and ſalt them, in large tubs for the purpoſe: out which they are not taken before October, to be packed up caſks from three to four hundred and fifty pound weight.

Salmon is alſo fiſhed for in rivers, after the manner of tro with a line and hook. He bites beſt in the afternoon, abo three, in May, June, July, and Auguſt; the water bei clear, and a little breeze of wind ſtirring; eſpecially if t wind and ſtream ſet contrary ways. The *ſalmon* is caug like a trout, with worm, fly, and minim; and eſpecially t garden-worm, if well ſcoured, and kept twenty days in mo

The *ſalmon* never ſtays long in a place, but is continua ſhifting to be as near the ſpring-head as poſſible, and ſwi ming generally in the deepeſt and broadeſt parts of the rive near the ground. Put two or three garden-worms well ſcou on your hook at once, as if you were baiting for trout; a be ſure to give him time to gorge his bait, before you ſtri Some uſe a wire-ring on the top of the rod, through which line may be let run to any length at pleaſure, by a reel n the hand.

Sturgeon FISHERY.—The *ſturgeon* is a large ſea-fiſh, which its ſeaſon runs up the rivers; having a ſharp-pointed ſnout flat belly, and bluiſh back. *Sturgeons* are reckoned among number of royal fiſhes; and when left on ſhore, they be to the king: but when taken out at ſea, they are the prope of the perſon who takes them.

There are *ſturgeons* of all ſizes; and we even read of ſo twenty feet long: but the middle ſize are reckoned the b tho' ſome prefer the ſmaller.

It is of the roe or eggs of this fiſh that the cavear, or ka ſo much prized by the Italians, &c. is prepared.

Sturgeon, when freſh, eats deliciouſly. To make it keep, ſalt or pickle it in large pieces, and put them up in cags, twenty-five to fifty pounds.

The greateſt *ſturgeon fiſhery* in the world is in the mout the Wolga, in the Caſpian ſea; where the Muſcovites employment for a great number of men.

They are not caught in nets, but in a kind of incloſ formed by huge ſtakes, diſpoſed in triangles, repreſenting letter Z ſeveral times repeated. Theſe ſort of *fiſheries* are on the ſide towards the ſea, and cloſe on the other; by w means the fiſh, aſcending in its ſeaſon up the river, em raſſes itſelf in theſe narrow, angular retreats; and, not ing able to turn itſelf, to go back again, by reaſon of its bulk, is eaſily ſtruck, and killed with a ſort of harping-iron.

The chief object of this *fiſhery* is the roe or ſpawn, which is a commodity as much uſed in Muſcovy, as butter in Holland; and there are ſome *ſturgeons* that furniſh each four hundred pounds thereof. It is only the leſſer and younger *ſturgeon* that they pickle for eating.

Whale-FISHERY, or *Greenland*-FISHERY.—This huge fiſh, we have elſewhere obſerved, is chiefly caught in the North ſea. The largeſt ſort are found about Spitzberg, ſome of them being there two hundred feet in length. Thoſe on the coaſts of America are about ninety, or an hundred; and thoſe on the coaſts of Guyenne, and the Mediterranean, are the ſmalleſt of all.

The Dutch have, upwards of theſe hundred years, had the *whale-fiſhery* almoſt to themſelves; and it is now eſteemed one of the principal branches of their flouriſhing trade. The chief merchants of the ſeveral provinces aſſociate themſelves into a body for the carrying it on, and ſend every year a great fleet of veſſels to the North ſeas for that purpoſe. They attempted to make their firſt eſtabliſhments in Greenland; but not ſucceeding, they have ſince fixed their *fiſhery* about the weſtern coaſt of Spitzberg, from the latitude of 76 deg. 40 min. to 80 deg.

In the year 1725. the Engliſh South-Sea company began to ſhare it with them; and, by the extraordinary ſucceſs they met withal in their firſt attempt, beyond any of their neighbours, have been induced to perſiſt in it.

To give ſome idea of the manner and importance of this trade, we ſhall here ſubjoin the diſcipline of a long time obſerved in the *whale-fiſhery*; the method of fiſhing; the cargo and equipage of a veſſel; and the produce thereof.

The diſcipline is adjuſted by a ſtanding regulation, conſiſting of twelve articles; the principal whereof are:

That, in caſe a fiſhing-veſſel be ſhipwrecked, and the captain and crew ſaved, the next veſſel they meet ſhall take them in; and the ſecond veſſel take half of them from the firſt: but that no veſſel ſhall be obliged to take any of the loading of a veſſel ſhipwrecked: that what effects of a ſhipwrecked veſſel, which are abſolutely relinquiſhed, another captain ſhall find, and take up, upon his arrival in Holland, he ſhall account for one half of them to the proprietors of the ſhipwrecked veſſel, clear of all expences: that, if the crew deſert a ſhipwrecked veſſel, they ſhall have no claim to any of the effects ſaved, but the whole ſhall go to the proprietor; but, if they be preſent when the effects are ſaved, and aſſiſt therein, they ſhall have one fourth thereof: that, if a perſon kill a fiſh on the ice, it ſhall be reputed his own, ſo long as he leaves any perſon with it; but, the minute he leaves it, it becomes the due of the firſt captain that comes that way; but that, if a fiſh be tied to an anchor, or a rope faſtened to the ſhore, it ſhall remain to its firſt proprietor, though he leave it alone: that, if any perſon be wounded or lamed in the ſervice, the commiſſioners of the *fiſhery* undertake to procure him a reaſonable ſatisfaction; to which the whole fleet ſhall contribute.

Beſides this general regulation, which all the captains, pilots, and maſters of veſſels, are obliged to ſwear to ſee obſerved, before they put to ſea, there is alſo a particular one for each ſhip's crew, which they are all ſworn to execute, in preſence of one of the commiſſioners, who goes aboard every ſhip, to receive the oath.

This regulation is a kind of charter-party, importing, that they will attend prayers morning and evening, on pain of an amercement, at the diſcretion of the captain: that they will not get drunk, nor draw their knives, on forfeiture of half of their wages; nor fight, on forfeiture of the whole: that nobody ſhall lay wagers on the good or ill ſucceſs of the fiſhing, nor buy or ſell, on theſe conditions, in caſe we take one or more *fiſh*, on penalty of twenty-five florins: that they will be contented with the proviſions allowed them: and that they will never light fire, candle, or match, by night or day, without the captain's leave, on the like penalty.

After the reading of this regulation, the crew are all called, to receive the cuſtomary gratuity before their ſetting out, with an aſſurance of another ſum at their return, in proportion to the ſucceſs of the fiſhing.

The captain, on this occaſion, receives from an hundred to an hundred and fifty florins; the pilot from forty to ſixty; each harpineer from forty to fifty florins; the other officers from twenty-ſix to thirty-ſix florins; the elder ſailors twenty; and the younger twelve.

The fleet, which conſiſts moſtly of fluyts, from two to three hundred tons, and from thirty-five men to forty-one, uſually ſets ſail about the beginning of April, and takes its courſe by the iſles of Iceland, from 60 to 61 degrees of latitude; after which, leaving them to the weſt, it ſteers northward, through 73, 74, and 75 deg. of latitude, where they begin to find the ice.

It is among theſe huge heaps of ice, wherewith the whole quarter is filled, that they firſt begin to ſpy the *whales*; and there moſt of the veſſels fix their abode for the fiſhing.—But, as the fiſh are larger and fatter the farther north they go, ſome captains will venture as far as 80 or 82 deg. of north lat.

Each veſſel of three hundred tons has ſix ſhalloops; and each ſhalloop has ſix harpineers, with five ſeamen to row it. To every ſhalloop there are ſeven lines, of three inches circumference; five of them in the hind-part of the veſſel, and two before. The hind lines together make ſix hundred fathoms, and, with the addition of the other two, eight hundred and eighty. If the *whale* dive deeper, or run farther underneath the ice than this ſtint, the line muſt be cut, leſt the ſhalloop be drawn after it.

The inſtrument, wherewith the whale is ſtruck, is a harping-iron, or javelin, five or ſix feet long, pointed with ſteel, in a triangular ſhape, like the barb of an arrow.

The harpineer, upon ſight of the fiſh, from one end of the ſhalloop where he is placed, flings the harping-iron with all his might againſt its back; and, if he be ſo happy as to make it penetrate the ſkin and fat into the fleſh, he lets go a ſtring faſtened to the harping-iron, at the end whereof is a dry gourd, which ſwimming on the water, diſcovers whereabout the *whale* is; which, the minute he is ſtruck, always plunges to the bottom.

If the *whale* return to breathe in the air, the harpineer takes occaſion to give him a freſh wound, till, fainting by the loſs of blood, the men have an opportunity of approaching him, and thruſting a long ſteeled lance under his gills into his breaſt, and through the inteſtines, which ſoon diſpatches him; and, when the carcaſe begins to float, they cut off the fins and tail; and, tying a rope to the place where the tail was, they ſwim to the veſſel, where he is taken in.

When they have got their quota of *whales*, they begin to take the blubber or fat, and the fins, as they are called, or *whale*-bone.

In order to this, the *whale* is hoiſted over-board, and kept ſuſpended above the water by two ropes, the one tied around his neck, the other about his tail; and under the carcaſe are two ſhalloops placed, to receive what may chance to drop.

This done, three or four men go down upon the *whale*, with a kind of calkers or irons on their feet, to prevent their ſlipping. They begin to open him on the ſide, and proceed downwards to the belly, cutting off all the lard or fat, in pieces of about three feet broad, and eight long: beſide the fat on the ſides, they likewiſe cut off that of the throat, and the under-lip, leaving all the lean behind.—They next proceed to the *whale*-bone, which they cut off with a hatchet made for the purpoſe, from the upper-jaw of the fiſh, and make it up in packets. The fat and bone thus procured, what remains of the *whale*, they leave for the bears, who are very fond of it.

In proportion as the large pieces of fat are cut off, the reſt of the crew are employed in ſlicing them ſmaller, and picking out all the lean. When this is prepared, they ſtow it under the deck, where it lies till the fat of all the *whales* is on board; then, cutting it ſtill ſmaller, they put it up in tubs in the hold, or bottom of the veſſel, cramming them very full and cloſe.

Nothing now remains, but to ſail homewards, where the fat is to be boiled, and melted down into train-oil.

Produce of one year's Whale-FISHERY.—To ſtate the produce, we make choice of the *fiſhery* of 1697. as being one of the greateſt, and moſt fortunate, that ever was known; to which we ſhall add that of the year 1725.

In the year 1697. there were an hundred and ninety-ſeven veſſels of divers nations; whereof an hundred twenty-nine were Dutch; forty-ſeven Hamburghers; two Swediſh; four Daniſh; twelve of Bremen; two of Embden; and one of Lubeck.

In the year 1725. there were two hundred and twenty-ſix veſſels: whereof one hundred and forty-four were Dutch; twelve Engliſh; forty-three Hamburghers; twenty-three of Bremen; two of Berghen; two of Flenſburg. Their captures each year were as follow:

In 1697.

	129	Dutch veſſels took	1255	whales.
	47	Hamburghers	449	
	2	Swedes	113	
	4	Danes	52	
	12	Bremen	96	
	2	Embden	2	
	1	Lubeck	1	
In all,	197	veſſels took	1968	

In 1725.

	144	Dutch veſſels took	248½	whales.
	12	Engliſh	25½	
	43	Hamburghers	46	
	23	Bremen	29	
	2	Berghen	0	
	2	Flenſburg	0	
In all,	226	veſſels took	349	

The Dutch captures in 1697. produced	41344	puncheons of
The Hamburghers — — —	16414	(blubber.
The Swedes — — — —	540	
The Danes — — — —	1710	
The Bremeners — — --	3790	
The Embdeners — — —	28	

The Engliſh captures in 1725. produced 1000 puncheons of blubber, and 20 tuns of whale-bone.

Now, eſtimating the puncheon of blubber at thirty florins Dutch, or 2 *l.* 15 *s.* Engliſh, the current price in the year 1697. the total produce of the year's *fiſhing* amounts to 175521 *l.* 10 *s.* ſterling.—As to fins, or *whale*-bones, ſetting them at two thouſand weight per *whale*; and an hundred weight at 4 *l.* 4 *s.* they will yield 171233 *l.* which, added to the former ſum, amounts to 346754 *l.* 10 *s.* whereof the ſhare belonging to the Dutch was 228737 *l.*

On the ſame footing might the produce of the *fiſhery* of the other year be eaſily ſtated. It will come far ſhort of that of 1697; which indeed vaſtly tranſcends what has ever been known: each veſſel, taking one with another, caught that year ten *whales* $\frac{8}{25}$, and the other year only one *whale* $\frac{5}{9}$; though the Engliſh, more happy than the reſt, caught above two apiece. But it may be added, that the *whales* of that year being larger and fatter than thoſe of 1697. produced one with another forty puncheons of blubber; and thoſe others only thirty-three puncheons.

FISH-GARTH, according to Skinner, ſignifies an engine to take *fiſh*; but it ſhould rather ſeem to denote the dam or weir in a river, where theſe engines are laid and uſed.

FISH-GLUE. See the article ICHTHYOCOLLA.

FISHING, the act, or art, of catching *fiſh*.

Fiſhing is diſtinguiſhed, with regard to its inſtrument, into that performed with the net, for fiſh that go in ſhoals; and that with the hook, for ſolitary fiſh: which latter is properly called *angling*.

Fiſhing, again, is diſtinguiſhed, with regard to its object, into that performed in ſalt-water, and that in freſh. The firſt practiſed for whales, herring, cod, ſalmon, pearls, mackrel, and other ſea-fiſh. The latter practiſed for pike, trout, carp, tench, perch, dace, eels, &c.

The inſtruments principally uſed in *angling*, or *fiſhing* with the hook, are the rod, line, hook, and fly.

The points on which the art of *fiſhing* chiefly turns, are, the proper ſeaſon, place, bait, and manner of application. What relates to each thereof, we ſhall here entertain the reader withal, in the ſeveral kinds of *fiſhing*, chiefly practiſed among us.

Carp-FISHING—The *carp* is generally held the queen of freſh-water fiſh. It is exceedingly ſubtle, and of all others, the eel only excepted, lives longeſt out of water. Mr. Ray aſſures us, that, in Holland, they have a ſpeedy way of fattening them, by hanging them up in a net in a cellar, and feeding them with white bread and milk. They breed ſeveral times in the year; for which reaſon we ſeldom meet with male or female, without either milt or ſpawn. Their natural place is ſome ſtill water; in running waters they rarely, if ever, breed. To make them fat and large, it is a good way, when the pond is low, in April, to rake all the ſides thereof with an iron rake, and ſow hay-ſeeds thereon. By autumn there will be a crop of graſs; which coming to be overflowed, as the pond riſes, will be a fine feeding-place for them.

A world of patience is required to angle for *carp*, on account of their incredible policy. They always chooſe to lie in the deepeſt places: they ſeldom bite in cold weather; and in hot a man cannot be too early, or too late for them. When they do bite, there is no fear of the hold. The baits are, the red-worm, in March; the cadew, in June; and the graſhopper, in July, Auguſt, and September. Proper paſtes may alſo be prepared for them; as honey and ſugar, wrought together with flour, and thrown in pieces into the water ſome hours before you begin to angle. Honey, and white crumbs of bread mixed together, do alſo make a good paſte.

Chub-FISHING.—The *chevin*, or *chub*, is a freſh-water fiſh, with a large head. It ſpawns in March, and is very ſtrong, though inactive, yielding in a very little time after it is ſtruck; and the larger it is, the quieter. His bait is any kind of worm, or fly, particularly the large yellow moth; alſo grains, cheeſe, the pith in the bone of an ox's back, &c. He affects a large bait, and variety of them at the ſame hook. Early in the morning angle for him with ſnails; but, in the heat of the day, chooſe ſome other bait; and, in the afternoon, fiſh for him at ground, or fly.

Dace, or *Dare*-FISHING.—Theſe fiſh bite at any fly; but eſpecially the ſtone cadew-fly, or May-fly, in the latter end of April, and moſt part of May; and the ant-fly, in June, July, Auguſt, &c. They rarely refuſe a fly atop of the water, in a warm day; but, when you fiſh under water for them, it is beſt to be within a hand's breadth of the ground. To catch *dace* in winter, the beſt bait is a white worm, with a large red head, gathered after the plough in heaths, or ſandy grounds.—The noſtrums for roaches are alſo commended for *dace*.

Eel-FISHING.—The *eel* is a freſh-water fiſh, much in ſhape of a ſerpent: naturaliſts have long been divided as to the manner how it is produced; whether, as they expreſs it, by generation, or by corruption, as ſome ſuppoſe worms are; or by certain glutinous dew-drops, which, falling in May and June on the banks of ſome ponds and rivers, are, by the heat of the ſun, ſuppoſed to be turned into eels. This is certain, that there is not any obvious appearance of ſex or difference therein. Abr. Mylius, in a treatiſe of *the origin of animals*, deſcribes a method of producing them by art. He ſays, that if you cut up two turfs covered with May-dew, and lay one on the other, the graſſy ſide inwards, and thus expoſe them to the heat of the ſun, on the banks of a water, in a few hours time there will ſpring from them an infinite quantity of *eels*: but this is abſurd and erroneous.—The kinds of *eels* are various: ſome reduce them to four; the *ſilver eel*; a *greeniſh*, called the *grey eel*; a *blackiſh eel*, with a broad flat head; and an *eel with reddiſh fins*. The firſt is allowed to generate: it is viviparous, and the young, when it comes from the female, is no bigger than a ſmall needle.

The *ſilver eel* may be caught with divers baits; particularly powdered beef, garden-worms, or lobs, minnows, hens guts, fiſh, garbage, &c. But, as they hide themſelves in winter in the mud, without ſtirring out for ſix months, and, in the ſummer, they take no delight to be abroad in the day, the moſt proper time to take them is in the night, by faſtening a line to the bank-ſide, with a hook in the water; or a line may be thrown at large, with a good ſtore of hooks baited, and plumbed with a float, to diſcover where the line lies in the morning. A ſmall roach does here well for a bait, the hook being laid in his mouth.—Another uſual way of catching *eels*, called *ſniggling*, is performed in the day-time, by taking a ſtrong line, with a hook baited with a lob, or garden-worm, and reſorting to ſuch holes and places as *eels* uſe to abſcond in, near mills, weirs, or flood-gates, where, the bait being gently put into the hole, by help of a cleft ſtick, the *eel* will certainly bite.—*Bobbing* for *eels* is another method: in order to this, ſcour ſome large lobs, and, with a needle, run a twiſted ſilk through them from end to end, taking ſo many as may be wrapped a dozen times round a board: tie them faſt with the two ends of the ſilk, that they may hang in ſo many links. This done, faſten all to a ſtrong cord, and, about an handfu and half above the worms, fix a plumbet three quarters of a pound weight, and make the cord faſt to a ſtrong pole: fiſhing with theſe in muddy water, the *eels* will bite haſtily a the bait. When you think they have ſwallowed it, gently draw up the line, and bring them aſhore as ſoon as may be.—Others uſe an *eel* ſpear, with three or four forks, or jagge teeth, which they ſtrike at random into the mud.

Flounder-FISHING.—The *flounder* is a flat ſea or river-fiſh caught in April, May, June, and July, in any time of the day in a ſwift ſtream, and ſometimes alſo in the ſtill deep. Th beſt bait is red worms, waſps, and gentles.

Gudgeon-FISHING.—The *gudgeon* is a ſmall fiſh, of a very deli cious taſte. It ſpawns three or four times in the ſummer-ſeaſon and feeds in ſtreams, and on gravel, ſlighting all kind of flies but is eaſily taken with a ſmall red worm, *fiſhing* near th ground; and, being a leather-mouthed fiſh, will not eaſily ge off the hook, when ſtruck. The *gudgeon* may either be fiſhe for with a float, the hook being on the ground; or by hand with a running line on the ground, without cork or float He will bite well at waſps, gentles, and cadworms; and on may even fiſh him with two or three hooks at the ſame time which makes good ſport. When you angle for *gudgeons*, ſt up the ſand or gravel with a long pole, which will make the gather to the place, and bite the faſter.

Pearch or *Perch* FISHING.—The *pearch* or *perch* is hook-back not unlike a hog, armed with ſtiff prickles, and his ſides wi dry, thick ſcales: he is voracious, and will venture on his ow kind, even with greater courage than the pike. He ſeldo grows much above a foot long. He ſpawns in February, March, and bites beſt when the ſpring is far ſpent. The pr per baits are, the brandling, minnow, and ſmall frog; as al the lob-worm, bob, oak-worm, gentle, waſp, and cad-bai The minnow yields the beſt ſport, which is to be alive, an ſtuck on the hook through the upper-lip, or back-fin, and ke ſwimming about mid-water. If the frog be uſed, he is to fastened to the hook by the ſkin of his leg. When the fi bites, as he is none of the leather-mouthed kind, he muſt hav time to pouch his bait. The beſt place to fiſh for him is the turning of the water-eddy, in a good gravel bottom.

Pike-FISHING.—The *pike* is reputed the tyrant of the fre waters. By the common conſent of naturaliſts, he is th longeſt-lived of all fiſhes. The larger he is found, the coarſ is his fleſh; and ſo vice verſa. This fiſh never ſwims ſhoals, but always ſingle, being very rapacious, and preyin even on his own kind. The *pike* ſpawns in February an Marc

March. The beſt ſort is in rivers; the worſt in meres and ponds.. His ordinary food is frogs, and what fiſh he can lay hold on.

There are two ways of fiſhing for the *pike*; by the *ledger-bait*, and the *walking-bait*. 1°, The *ledger-bait* is that fixed in one certain place, and which the angler may leave behind him. Of this kind, the beſt is ſome living bait, as a dace, roach, gudgeon, or a living frog. To apply it, if a fiſh, ſtick the hook through his upper-lip; then faſtening it to a ſtrong line ten or twelve yards long, tie the other end of the line to ſome ſtake in the ground, or bough of a tree, near the *pike*'s uſual haunt; letting the line paſs over the fork of a ſtick, placed for the purpoſe, ſuſpending the hook, and about a yard of line in the water; but ſo as that, when the *pike* bites, the fork may give way, and let him have line enough to go to his hold, and paunch. If the bait be a frog, the arming wire is to be put in at his mouth, and out at his vent, and one of his legs to be ſtitched or tied over the upper joint of the wire. —2°, The *walking-bait* is that which the fiſher caſts in, and conducts with a rod, *&c.* This is performed by a troll, with a winch to wind it up withal. At the top of the line is to be placed a ring for the line to be run through. The line, for two yards and a quarter next the hook, to be of ſilk double, and armed with wire the length of ſeven inches. On the ſhank of the hook is to be faſtened a ſmooth piece of lead, ſo as to ſink the fiſh-bait, which is to be a gudgeon, with its head downwards. Thus diſpoſed, the bait is to be caſt up and down; and, if you feel the fiſh at the hook, give him length enough to run away with the bait, and paunch it: then ſtrike him with a ſmart jerk.—To fiſh with a dead bait, uſe a yellow frog, dace, or roach, anointed in gum of ivy, diſſolved in oil of ſpike; and caſt it where the *pike* frequents. After it has lain a little while at the bottom, draw it to the top, and ſo up the ſtream, and you will quickly perceive a *pike* in earneſt purſuit thereof. This fiſh bites beſt about three in the afternoon, in clear water, with a gentle gale, from the middle of ſummer to the end of autumn; but, in winter, all day long; and, in the ſpring, he bites beſt early in the morning, and late at night.—Another method of fiſhing for *pike*, ſee under HUXING.

Roach-FISHING.—The *roach*, or *rochet*, is no delicate, but a very ſilly fiſh. Thoſe in rivers are more valued than thoſe in ponds, though the latter are much the larger. They ſpawn about the middle of May.

To angle for this fiſh in April, cads or worms are proper baits; ſo are ſmall white ſnails, or flies, in ſummer. The bait is always to be under water; for this fiſh will not bite atop. Others uſe a May-fly, in that ſeaſon, with good ſucceſs. In autumn, a paſte muſt be uſed, made of the crumb of white bread, moulded with a little water, laboured with the hands into a tough paſte, and coloured, not very deep, with red-lead. In winter, gentles are the beſt bait.—Sprouted malt, the young brood of waſps, and bees dipt in blood, and the thick blood of ſheep, half-dried, are noſtrums in this ſort of *fiſhing*.

Tench-FISHING.—The *tench* is a fine freſh-water fiſh, having very ſmall ſcales, but large, ſmooth fins, with a red circle about the eyes, and a little barb hanging at each corner of the mouth. It takes more delight among weeds in ponds than in clear rivers, and covets to feed in foul water. His ſlime is ſaid to have a healing quality for wounded fiſh; upon which he is commonly called the *fiſhes phyſician*. When the carp, pike, *&c.* are hurt, it is ſaid they find relief by rubbing themſelves againſt the *tench*.

The ſeaſon for catching this fiſh is in June, July, and Auguſt, very early and late, or even all night, in the ſtill part of rivers. His bait is a large red worm, at which he bites very eagerly, eſpecially if firſt dipped in tar. He alſo delights in all ſorts of paſtes, made up of ſtrong-ſcented oils, or with tar; or a paſte of brown bread and honey: nor does he refuſe the cad-worm, lob-worm, flag-worm, green gentles, codbait, or ſoft boiled bread grain.

Trout-FISHING.—The *trout* is a delicious freſh-water fiſh, ſpeckled with red and yellow; coming in, and going out of ſeaſon with the buck, and ſpawning in the cold months of October and November; whereas all the other ſpecies ſpawn in hot ſummer weather. There are divers kinds of this fiſh, all valuable; but the beſt are the red and yellow *trouts*; and of theſe the female, diſtinguiſhed by a leſs head, and deeper body, is preferred. They are known to be in ſeaſon by their large back; which may ſerve alſo as a rule for other fiſh. All winter long they are ſick, lean, and unwholſome, and frequently louſy. As the ſpring comes on, deſerting the ſtill, deep waters, they repair to the gravelly ground, againſt which they continue to rub till they get rid of their lice, which are a kind of worms, with large heads. From that time they delight to be in the ſharp ſtreams, and ſuch as are ſwift, where they lie in wait for minnows and May-flies. At the latter end of May, they are in their prime.

The uſual baits whereby the *trout* is caught, are, the worm, minnow, and fly, either natural or artificial. The proper worms are, the brandling, lob-worm, earth-worm, dung-worm, and maggot, or gentle, eſpecially the two firſt; but, whatever worms are uſed, they are the better for keeping, which is to be done in an earthen pot, with moſs frequently changed. For the minnow, ſlip the hook through his mouth, and the point and beard out at the tail, ſo as it may lie almoſt ſtraight on the hook. Then try againſt the ſtream, whether it will turn. In defect of a minnow, a ſmall loach may ſerve the turn; or, for want of either, an artificial one may be made of cloth, by the life, which is found every whit as good a bait as the natural one.

FISHING-FLY, a bait uſed in angling for divers kinds of fiſh. See FISH, and FISHING.

The *fly* is either *natural* or *artificial*.

Natural flies are innumerable: the more uſual on this occaſion are, the *dun-fly*, the *ſtone* or *May-fly*, the *red-fly*, the *moor-fly*, the *tawny-fly*, the *vine-fly*, the *ſhell-fly*, the *cloudy* and *blackiſh-fly*, the *flag-fly*; alſo *caterpillers*, *canker-flies*, *bear-flies*, &c. all which appear ſooner or later, according to the forwardneſs or backwardneſs of the ſpring.—To know the particular *fly* the fiſh moſt covets, when you come in the morning to the river-ſide, beat the buſhes with your rod, and take up what variety you can of all ſorts of *flies*; try them all, and you will quickly know which are in moſt eſteem: not but that fiſh will ſometimes change their *fly*; but it is only when they have glutted themſelves therewith.

There are two ways to *fiſh* with natural *flies*, either on the ſurface of the water, or a little underneath it.

In angling for chub, roach, or dace, move not your natural *fly* ſwiftly, when you ſee the fiſh make at it; but rather let it glide freely towards him with the ſtream: but, if it be in a ſtill and ſlow water, draw the *fly* ſlowly ſideways by him, which will make him eagerly purſue.

The *artificial fly* is moſt ſucceſsfully uſed in bluſtering weather, when the waters are ſo troubled by the winds, that the natural *fly* cannot be ſeen, nor reſt upon them.

Of this artificial *fly* there are reckoned ten principal ſorts. 1. The *dun-fly*, in March, made of dun wool, and the feathers of a partridge wing. 2. A *dun-fly*, made of black wool, and the feathers of a black drake; the body made of the firſt, and the wings of the latter. 3. The *ſtone-fly*, in April, the body made of black wool, dyed yellow under the wings and tail. 4. The *ruddy-fly*, in the beginning of May; the body made of red wool, and bound about with black ſilk, with the feathers of a black capon, which hang dangling on his ſides, next his tail. 5. The *yellow* or *greeniſh-fly*, in June; the body made of black wool, with a yellow liſt on either ſide, and the wings taken off the wings of a buzzard, bound with black, broken hemp. 6. The *mooriſh-fly*; the body made of duſkiſh wool, and the wings with the blackiſh mail of a drake. 7. *Tawny-fly*, till the middle of June; the body made of tawny wool, the wings made contrary one againſt the other, of the whitiſh mail of a white drake. 8. The *waſp-fly*, in July; the body made of black wool, caſt about with yellow ſilk, and the wings of drakes feathers. 9. The *ſteel-fly*, in the middle of July; the body made of greeniſh wool, caſt about with the feathers of a peacock's tail, and the wings made of buzzards wings. 10. The *drake-fly*, in Auguſt; the body made of black wool, caſt about with black ſilk; his wings of the mail of a black drake, with a black head.

The beſt rules for artificial *fly-fiſhing*, are,

1°, To fiſh in a river ſomewhat diſturbed with rain; or in a cloudy day, when the waters are moved by a gentle breeze: the ſouth wind is beſt; and if the wind blow high, yet not ſo but that you may conveniently guide your tackle, the fiſh will riſe in plain deeps; but, if the wind be ſmall, the beſt angling is in ſwift ſtreams.

2°, Keep as far from the water-ſide as may be; fiſh down the ſtream, with the ſun at your back; and touch not the water with your line.

3°, Ever angle in clear rivers with a ſmall *fly*, and ſlender wings; but, in muddy places, uſe larger.

4°, When, after rain, the water becomes browniſh, uſe an orange *fly*; in a clear day, a light-coloured *fly*; a dark *fly* for dark waters, *&c.*

5°, Let the line be twice as long as the rod, unleſs the river be incumbered with trees.

6°, For every ſort of *fly*, have ſeveral of the ſame, differing in colour, to ſuit with the different complexions of ſeveral waters and weathers.

7°, Have a nimble eye, and active hand, to ſtrike preſently with the riſing of the fiſh; or elſe he will be apt to ſpew out the hook.

8°, Let the *fly* fall firſt into the water, and not the line, which will ſcare the fiſh.

9°, In ſlow rivers, or ſtill places, caſt the *fly* croſs over the river, and let it ſink a little in the water, and draw it gently back with the current.

Salmon flies ſhould be made with their wings ſtanding one behind the other, whether two or four. That fiſh delights in the gawdieſt colours that can be; chiefly in the wings, which muſt be long, as well as the tail.

Fishing-floats are little appendages to the line, ſerving to keep the hook and bait ſuſpended at the proper depth, to diſcover when the fiſh has hold of them, &c.

Of theſe there are divers kinds; ſome made of Muſcovy duck quills, which are the beſt for ſlow waters; but, for ſtrong ſtreams, ſound cork, without flaws or holes, bored through with an hot iron, into which is put a quill of a fit proportion, is preferable: pare the cork to a pyramidal form, and grind it ſmooth.

Fishing-hook, a little engine of ſteel wire, of a proper form to catch and retain fiſh.

The *fiſhing-hook*, in general, ought to be long in the ſhank, ſomewhat thick in the circumference, the point even, and ſtrait: let the bending be in the ſhank.

For ſetting the *hook* on, uſe ſtrong, but ſmall ſilk, laying the hair on the inſide of your *hook*; for, if it be on the outſide, the ſilk will fret and cut it aſunder.

There are ſeveral ſizes of theſe *fiſhing-hooks*, ſome big, ſome little: and of theſe ſome have peculiar names; as,

1°, *Single-hooks*. 2°, *Double-hooks*, which have two bendings, one contrary to the other. 3°, *Snappers*, or *gorgers*, which are hooks to whip the artificial fly upon, or to bait with the natural fly. 4°, *Springers*, or *ſpring-hooks*, a kind of double *hooks*, with a ſpring which flies open, being ſtruck into any fiſh, and ſo keeps its mouth open.

Fishing-rod, a long, ſlender rod or waud, to which the line is faſtened for angling.

Of theſe there are ſeveral ſorts; as,

1°, A *troller*, or *trolling-rod*, which has a ring at the end of the rod, for the line to go through, when it runs off a reel. 2°, A *whipper*, or *whipping-rod*, a top-rod, that is weak in the middle, and top-heavy, but all ſlender and fine. 3°, A *dopper*, which is a ſtrong rod, and very light. 4°, A *ſnapper*, or *ſnap-rod*, that is a ſtrong pole, peculiarly uſed for the pike. 5°, A *bottom-rod*, being the ſame as the *dopper*, but ſomewhat more pliable. 6°, A *ſniggling*, or *poking-ſtick*, a forked ſtick, having a ſhort, ſtrong line, with a needle, baited with a lob-worm: this is only for eels in their holes.

Fishing-vessels, or thoſe uſed in the ſeveral fiſheries at ſea, or on the coaſts, are the *buſſe*, *coble*, *cock*, *dogger*, *driver*, *eel-boat*, *fly-boat*, *fluyt*, *hooker*, *Peter-boat*, *ſmack*, *ſtand-boat*, *trawler*, *trinker*, &c. which ſee.

FISH-PONDS, reſervoirs of water, for the breeding, feeding, and preſerving of *fiſh*.

For *fiſh-ponds*, it is agreed, thoſe grounds are beſt, which are full of ſprings, and apt to be mooriſh: the one breeds them well, and the other preſerves them from being ſtolen. The ſituation of the pond is alſo to be conſidered, and the nature of the currents that fall into it; likewiſe, that it be refreſhed with a little brook, or with the rain-water that falls from the adjacent hilly ground. Add, that thoſe ponds which receive the ſtale and dung of horſes, and other cattle, breed the largeſt and fatteſt *fiſh*.

In making the pond, obſerve that the head be at the loweſt part of the ground; and that the trench of the flood-gate, or ſluice, have a good ſwift fall, that it may not be long in emptying on occaſion.

If the pond carry ſix feet of water, it is enough; but it muſt be made eight feet deep, to receive the freſhes and rains that may fall into it.

It would alſo be advantageous to have ſhoals on the ſides, for the fiſh to ſun themſelves in, and lay their ſpawn on; beſide, in other places, certain holes, hollow banks, ſhelves, roots of trees, iſlands, &c. to ſerve as their retiring-places. Conſider further, whether your pond be a breeder; if ſo, never expect any large carp from thence; the greatneſs of the number of ſpawn overſtocking the pond.

For large carps, a ſtore-pond is ever accounted the beſt; and, to make a breeding-pond become a ſtore-pond, ſee what quantity of carps it will contain: then put in all milters, or all ſpawners, whereby, in a little time, you may have carps that are both large, and exceeding fat. Thus, by putting in but one ſex, there is an impoſſibility of the increaſe of them.

Reſerve ſome great waters for the head-quarters of the fiſh, whence you may take, or wherein you may put, any quantity thereof: and be ſure have ſtews, and other auxiliary waters, ſo as you may convey any part of the ſtock from one to the other; ſo to loſe no time in the growth of the fiſh, but employ the water, as you do your land, to the beſt advantage.

View the grounds, and find out ſome fall between the hills, as near flat as may be, ſo as to leave a proper current for the water: if there be any difficulty in judging of ſuch, take an opportunity, after ſome ſudden rain, or the breaking up of a great ſnow in winter, and you will plainly ſee which way the ground caſts; for the water will take the true fall, and run accordingly.

The condition of the place muſt determine the quantity of ground to be covered with water. For example, we may propoſe in all fifteen acres in three ponds; or eight acres in two, and not leſs; and theſe ponds ſhould be placed one above another, ſo as the point of the lower may almoſt reach the head or bank of the upper; which contrivance is no leſs beautiful than advantageous.

The head or bank, which, by ſtopping the current, is to raiſe the water, and ſo make a pond, muſt be built with the clay and earth taken out of the pan or hollow dug in the loweſt ground above the bank: the ſhape of the pan is to be an half-oval, whereof the flat is to come to the bank, and the longer diameter to run ſquare from it.

FISSURE, Fissura, in chirurgery, a longitudinal fracture of a bone; or a ſolution of the continuity of a bone, whereby it is only cloven or cracked.

Fiſſures are of two kinds: the one apparent, by the Greeks called ῥῆγμα, or ῥῆξις; and by the Latins, *ſciſſura*: the other ſo ſmall, as not to be viſible, called τριχισμὸς, or capillary, as reſembling a thread.

The cauſes of *fiſſures* are falls, leaps, and contuſions of the parts againſt hard bodies.

Fiſſures, eſpecially in the cranium, either happen on the part where the ſtroke was given, or on the oppoſite part: that on the oppoſite part is called *counter-fiſſure*, or *counter-cleft*, by the Greens ἀπήχημα, and the Latins, *reſonitus*.

Old men are more ſubject to *fiſſures* than young ones, by reaſon that their bones are drier.

Fiſſures are difficult to find; but they are the eaſieſt cured o all fractures; though, if they be not known, or be neglected they bring on ulcers and carieſes, and, in ſuch caſe, become very dangerous; ſo that there is frequently a neceſſity of having recourſe to the ſevereſt operations.

The ſigns of a *fiſſure* of the cranium are bilious vomitings vertigoes, fluxes of the blood at the mouth or noſe, dumbneſs delirium, &c. If there be any *fiſſure* in the ſcull, the patien will feel a pain in the place, upon holding a ſtring between his teeth, while the chirurgeon pulls it ſtrongly.

In ſuch caſes, it is frequently neceſſary to perforate the cranium, to give a vent for the blood and ſanies.

FISTULA, in the antient muſic, an inſtrument of the win kind, reſembling our flute or flageolet.

The principal wind inſtruments of the antients were, the *tibia* and *fiſtula*; though how theſe were conſtituted, or wherei they differed, or how they were plaid on, does not at preſent appear. All we know is, that the *fiſtula* was at firſt mad of reeds, and afterwards of other matters. Some had holes ſome none; ſome again were ſingle pipes; others a combination of ſeveral; witneſs the ſyringa of Pan.

Fistula, in medicine, a deep, winding, callous, cavernous ulcer, with a narrow entrance, but opening thence into a ſpacious bottom, and generally yielding a ſharp and virulen matter.

Fiſtula's differ from ſimple ſinuſes in this, that the former ar callous, and the latter not.

They attack all parts of the body without exception; but particularly the anus, foramen lacrymale, thorax, &c. The general cauſe of *fiſtula's* is ſome abſceſs, or ulcer, which eithe being inveterate, or having been ill treated, comes to be callous, the orifice being at firſt lined or incruſtated therewit and at length the whole ſinus.

The cure conſiſts in conſuming the callus, and healing an conſolidating the ulcer with cleanſing medicines and ſarcotics

The antients gave the name *fiſtula* to this kind of ulcers, fro the reſemblance they bear, on account of their depth, to a flu or pipe, called by the Latins *fiſtula*.

Fistula *in ano*, is a *fiſtula* formed in the anus, or fundament.

Of this ſome authors reckon four kinds, *viz.* the *cæcum internum*, which is open outwards, but not into the rectum: t *cæcum externum*, which has an apperture into the rectum, b none outwards: the *complete*, which opens both ways: a the *cuniculatus*, or that with ſeveral ſinuſes, which diſcharg themſelves into one common cavity, which is the fund, an as it were, the reſervoir of them all.

Others, as Wiſeman, reduce *fiſtula's in ano* into two claſſe

The *firſt* are thoſe ariſing from a phyma: theſe are very pai ful, and difficult to cure, as entering deep among the inte ſtices of the muſcles, and forming various cuniculi, or ſinuſe which, the more remote they are from the anus, the wo they are, by reaſon they do not allow of being cut.

The *ſecond* owe their origin to an internal hæmorrhage, or e travaſation between the coats of the rectum; and have a ſm perforation near the circumference of the anus, whence th yield a thin ſanies, or ichor, without pain; they in time brin ing on itchings and excoriations; and the orifices at leng become callous, and are ſometimes cloſed, and ſometim open again.

Some *fiſtulæ*, if they do no harm by the copiouſneſs of the flu the ſtench, or the like accidents, are a benefit to nature, carrying off cachectic humours, and ought not to be cured, kept open. The freſh, ſimple *fiſtula* may be cured with danger.

The chief way is by cutting, where that may be done w out damage to the muſcle of the anus, which might occaſion an involuntary diſcharge of the excrements.

The cutting is either performed with a thread, or with a cutting inſtrument.

Fistula *lachrymalis* is a *fiſtula* in the greater canthus of the eye: this is frequently confounded with ægilops. See Ægilops.

It is a little deep callous ulcer, in the greater caruncle, or the place of the glandula lachrymalis. It uſually begins with an abſceſs, called *anchilops*, which, in time, produces an ulcer, called *ægilops*, which afterwards degenerates into a *fiſtula*. When preſſed with the finger, it yields a ſtinking matter, not unlike the yolk of an egg; and the corroſive humour, finding, or making, itſelf a paſſage, there enſues a perpetual ouſeing.

Sometimes the os ethmoides itſelf is corroded, and rendered carious by it; in which condition it is ſuppoſed to be only curable by an actual cautery: ſometimes it becomes cancerous; and then Riverius directs all medicines to be laid aſide.

The cure of the *fiſtula lachrymalis* is wholly external, and chirurgical; except that evacuants and mercurials may be given internally; as, alſo, decoctions of the woods. Some, in this caſe, perforate the os naſi, to give room for the matter to be evacuated that way.

A French chirurgeon, named Anel, found out a new way; *viz.* by putting a probe and ſyringe, of an inconceivable fineneſs, through the puncta lachrymalia into the ſacculus lachrymalis.

Fistula * alſo denotes the pipe put into the cup, out of which the communicants antiently ſucked the wine.

FISTULAR, or Fistulous, is applied, by the chirurgeons, to wounds and ulcers, which degenerate into fiſtula's.

Care muſt be taken, not to leave the tent too long in the wound, leſt it render it callous, and *fiſtulous*. Dionis.

Fistular is alſo applied to the leaves of plants which are round and hollow within; as the leaves of leeks, *&c.*

Fistular *flowers*, among herbaliſts, are thoſe made up of many ſmall, long, hollow flowers, like pipes.

FIT, in medicine, an acceſs, or paroxyſm. See Paroxysm.

Fits *of eaſy reflexion*, and *eaſy tranſmiſſion*. See Light.

Fits *of the mother*. See Hysteric *affection*.

FITCHEE, or Fichee, in heraldry, is when the lower-part of any croſs is ſharpened into a point, fit to fix into the ground.

Thus, he bears azure, a croſs-potent *fitchee*. See Tab. *Heraldry*, *fig.* 24.

The origin hereof Mackenzy aſcribes to the primitive Chriſtians, who uſed to carry their croſſes with them, where-ever they went; and, when they ſtopped at any place in a journey, fixed them in the ground.

FITZ, a French term, literally denoting *ſon*; ſometimes given, by way of addition, to the natural ſons of the kings of England: as James *Fitz*-roy, duke of Grafton, *&c.*

FIVE-*leaved graſs*, cinquefoil, in heraldry, is uſed, by ſuch as would introduce a blazon by herbs and flowers, inſtead of metals and colours, to ſignify *vert*, or *green*. See Vert.

FIXATION, the act of fixing, or of rendering a thing firm, and fixed.

Fixation is applied, in the general, to any proceſs that fixes and binds together what, of its own nature, is volatile; and enables it to ſuſtain the force of fire, for ſome conſiderable time.

Geber defines *fixation*, an operation, whereby a volatile thing, *i. e.* a thing that cannot endure the fire, is rendered capable of enduring it. In the general, *fixation* is the changing of a volatile body into a fixed one.

Fixation, among alchemiſts, denotes a peculiar preparation of mercury; whereby it is to be put in a condition to bear the fire without evaporating, or the hammer without flying, or ſeparating.

The alchemiſts hold, that if they had the true ſecret of fixing mercury, without the addition of any foreign leſs heavy and ſolid ingredient; they could make gold, or, at leaſt, ſilver.

M. Homberg had a long proceſs, of many months, to prepare an oil from the fæcal matter, or human excrements; which, he imagined, would have fixed mercury into ſilver: but it failed. See Fæcal *matter*.

FIXING *ſulphur*. See Sulphur.

FIXITY, or Fixedness, in philoſophy, the quality of a body, which denominates and renders it fixed; or, a property which enables it to endure the fire, and other violent agents.

According to Chauvin, *fixity* conſiſts in this; that the component principles of the body are ſo cloſely united, or cohere ſo ſtrongly, and are mixed in ſuch proportion, that they cannot eaſily be divided, either by fire, or any other corroſive menſtruum; or their integral parts ſeparated, and carried off, in vapour. For a body may be ſaid to be fixed, in two reſpects:

Firſt, When, on being expoſed to the fire, or a corroſive menſtruum, its particles are indeed ſeparated, and the body rendered fluid, but without being reſolved into its firſt elements. The ſecond, when the body ſuſtains the active force of the fire, or menſtruums, without its integral parts being carried off in fumes. Each kind of *fixity* is the reſult of a ſtrong, or intimate, coheſion between the particles of the mixed.

Fixity, or Fixedness, in chemiſtry, is, in a peculiar manner, uſed for the affection oppoſite to volatility; *i. e.* the property whereby bodies bear the action of the fire, without being diſſipated in fumes. See Volatility.

The principal cauſes of *fixity*, or the qualifications that contribute moſt to the rendering a body fixed, according to Mr. Boyle, are, 1°, That its corpuſcles be ſingly of a certain proportionable bulk, too big, and unwieldy, to be carried up by heat, or buoyed up in the air. 2°, That they have alſo a proper degree of weight, or ſolidity. 3°, That their figure be ſuch as unfits them for evaporation, or flying off; ſome being branched, others hooked, *&c.* ſo that, being entangled with one another, they cannot eaſily be extricated, looſened, and ſeparated. To theſe may be added, a fourth circumſtance; *viz.* the nearneſs of the particles, and their being contiguous in a great many points, or a deal of their ſurface, which produces a ſtronger force of attraction and coheſion.

FIXT, or Fixed, *bodies*, in the general, are thoſe which neither the fire, nor any corroſive, has ſuch effect on, as to reduce, or reſolve, them into their component elements; *i. e.* abſolutely to deſtroy them.

Chauvin holds it not ſufficient, to denominate a body *fixt*, that it can withſtand the fire, or any one agent; but it ſhould withſtand all. He contends, that fixity ſhould not be reſtrained, as it uſually is, to an exemption from evaporation; but from deſtruction, or reſolution into primary elements: in this ſenſe, gold, precious ſtones, and glaſs, and even ſulphur and mercury itſelf, are properly *fixed* bodies: for mercury and ſulphur retain their nature, notwithſtanding all their evaporation.

Fixt, or Fixed, *bodies*, among chemiſts, are ſuch as bear the violence of the fire, without evaporating.

The chemiſts divide all natural bodies into *fixed*, and volatile; *i. e.* ſuch as bear the utmoſt force of the fire, without diſſipating, or ſpending themſelves in fume; and ſuch as do not.

Of *fixed* bodies, the principal are, gold, ſilver, precious ſtones, particularly the diamond; ſalts, *&c.*

Of all metals, gold and ſilver alone are *fixed*, i. e. on remaining a long time expoſed to the moſt intenſe flame, they, alone, loſe nothing of their weight.

Whence this property ſhould ariſe, is difficult to ſay. If the reader is not contented with the cauſes enumerated under Fixity, he may add the following one from Boerhaave; *viz.* the homogeneity and equality of the parts.

The parts, *e. gr.* of gold, being all homogeneous, and equal, will equally ſuſtain each other, and leave equal pores between them; through which pores, when fuſed, the fire finding an eaſy, equal paſſage, goes off, without carrying any thing of the metal with it: or, rather, the particles of gold being, of all others, the moſt ſolid and heavy (as appears from the weight of that metal); and, of all others, the moſt ſtrongly united, or bound together (as appears, from the immenſe ductility of that metal); the force of the fire is not ſufficient to overcome ſo powerful a reſiſtance: the ſolidity of the particles, and their freedom from air, prevents their being rarefied, or ſet farther apart; which might leſſen their ſpecific gravity, and diminiſh their *vis cohæſionis*: ſo that what has the chief effect in the raiſing of fumes and vapours, *viz.* the rarefaction, or expanſion, of the body, being here precluded, the metal maintains its natural weight, and tendency to the centre.

Mr. Boyle, the prince of Mirandola, M. Homberg, and others, have made numerous experiments on gold, ſilver, *&c.* to ſee how far their fixity extended: in theſe, pure gold, kept in an intenſe heat for two months, loſt nothing ſenſible of its weight: ſilver, under the like circumſtances, and in the like time, loſt one twelfth part of its weight; but Mr. Boyle attributes this to the metal's not being fine and pure. See Silver.

Indeed, by the great burning glaſſes of Meſſ. Tſchirnhauſen and Villetre, the moſt *fixed* bodies, as gold itſelf, are rendered volatile, and loſe of their weight; ſo that there is nobody, in all nature, abſolutely *fixed*.

Fixt *nitre*, a preparation of ſaltpetre, made by fuſing it in a crucible, and then inflaming it, with throwing in a few coals; and this again and again, till no more flame, or detonation, ariſe: then, letting it cool, they pulverize and diſſolve it in water; and afterwards evaporate it into a fine white ſalt; which ſerves to draw the tinctures out of vegetables. This ſalt, *per deliquium*, yields what they call the *liquor of fixed nitre*.

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* *Diviſit eccleſiis cruces, altaria, ſcrinia,——ſitulas,* fiſtulas, *& ornamenta varia.* Flor. Wigorn. Anno 1087.

Fixt *ſalts* are thoſe extracted, or gained, from bodies, by calcination and lotion.

They are called *fixt*, in that the fire was not able to ſublime or raiſe them: as thoſe carried off in the courſe of calcineation, by the vehemence of fire, are called *volatile*.

The aſhes of all plants yield *fixed ſalts*. See LIXIVIUM.

Chemiſts give the appellation *fixed* to certain of their preparations: as *fixt* nitre, &c.

Fixt *ſigns* of the zodiac, according to ſome, are, the *ſigns* Taurus, Leo, Scorpio, and Aquarius.

They are ſo called, becauſe the ſun paſſes them, reſpectively, in the middle of each quarter, when that ſeaſon is more ſettled, and *fixed*, than under the ſign which begins and ends it.

Fixt *ſtars* are ſuch as conſtantly retain the ſame poſition, and diſtance, with reſpect to each other.

By which they are contra-diſtinguiſhed from erratic or wandering ſtars, which are continually ſhifting their ſituation and diſtance.

The *fixed ſtars* are what we properly and abſolutely call *ſtars*; the reſt have their peculiar denomination of *planet*, and *comet*. See STAR, PLANET, and COMET.

FLACCIDITY, in medicine, &c. a diſorder of the fibres, or ſolid parts, of the body; oppoſite to *rigidity*.

The too great *flaccidity* of the parts is cured by cardiacs, exerciſe, friction, a dry warm air, proper food, &c.

FLAG, a general name, including colours, ſtandards, antients, banners, enſigns, &c. which authors frequently confound with each other.

The faſhion of bearing the *flags* pointed, or triangular, which now obtains, Roderic. Toletanus aſſures us, came from the Mahometan Arabs, or Saracens, upon their ſeizing of Spain; before which time, all the enſigns of war were ſquare, ſtretched, or extended, on croſs pieces of wood, like church-banners: on which account they were called, in Latin, *vexilla*, q. d. *velilla*, *à veli diminutione*, as is remarked by Iſidore.

The pirates of Algiers, and thoſe throughout the coaſts of Barbary, are the only people that bear an hexagonal *flag*. It is gules, charged with a moreſk head, coifed with its turban, &c. though this be expreſly contrary to their law; which prohibits the making any image, or repreſentation, of a man: founded on an opinion, that they who make them, ſhall be obliged, at the day of judgment, to find ſouls for them; and that, in defect hereof, they ſhall be damned. But this portrait which they carry, is that of Hali, Mahomet's ſon-in-law, to whoſe party the Africans all retain; who ordered, that his effigy ſhould be expreſſed on their *flags* and ſtandards; believing himſelf ſo formidable to the Chriſtians, that the bare ſight of his image would carry undoubted victory over them. Leunclavius.

Flag is more particularly uſed, at ſea, for the colours, antients, ſtandards, &c. borne on the top of the maſts of veſſels, to notify the quality of the perſon who commands the ſhip; or what nation it is; and whether it be equipped for war, or trade.

The admiral, or commander in chief, carries his *flag* on the main-top, or top of the main-maſt.

The vice-admiral carries his on the fore-top, and the rear-admiral his on the mizzen-top, or top of the mizzen-maſt.

The commanders of ſquadrons bear their *flag* on the mizzen-maſt, when in the body of a fleet; and on the main-maſt, when they command a party. It ſhould be cleft two-thirds of its height, and terminate in a point.

The *flags* borne on the mizzen are particularly called *gallants*. See MAST, &c.

The *flag* of the French nation is blue, charged with a white croſs, and the arms of France.

Beſide the national *flag*, merchant-ſhips frequently bear leſſer *flags*, on the mizzen maſt, with the arms of the city where the maſter ordinarily reſides; and on the fore-maſt with the arms of the place where the perſon who freights them lives.

To *hang out the white* **Flag**, is to aſk quarter; or it ſhews, when a veſſel is arrived on a coaſt, that it has no hoſtile intention, but comes to trade, or the like.—The *red flag* is a ſignal of defiance, and battle.

To *lower*, or *ſtrike, the* **Flag**, is to pull it down, or take it in, out of reſpect, or ſubmiſſion, when a weaker party meets a more powerful one.

By an ordinance of Philip II. king of Spain, 1565. the captains are peremptorily commanded to periſh, rather than lower their royal *flag*, when once hung out.

The way of leading vanquiſhed ſhips in triumph is, to tie the *flags* to the ſhrowds, or the gallery in the hind-part of the ſhip, and let them hang down towards the water; and to tow the veſſels by the ſtern. It was thus the Romans uſed thoſe of Carthage, as Livy relates.

Flag-Officers, thoſe who command the ſeveral ſquadrons of a fleet: as admirals, vice-admirals, and rear-admirals.

The *flag-officers*, in our ſea-pay, are, the admiral, vice admiral, and rear-admiral, of the white, red, and blue.

Flag-Ship, a ſhip commanded by a general, or *flag-officer*, who has a right to carry a *flag*; in contra-diſtinction to the ſecondary veſſels under the command thereof.

Flag-Staves are ſtaves ſet on the heads of the top-gallant maſts, ſerving to let fly, and unfurl, the *flag*.

Flags, in falconry, are the feathers in a hawk's wing, near the principal ones.

FLAGELLANTES, a ſect of hereticks, who chaſtiſed and diſciplined themſelves with whips, in public.

The ſect of the *Flagellantes* had its riſe at Peruſa, in the year 1260. its author was one Rainier, a hermit. It was, in all probability, no more than the effect of an indiſcreet zeal. A great number of perſons, of all ages, made proceſſions; walking two by two, with their ſhoulders bare, which they whipped, till the blood ran down, in order to obtain mercy from God, and appeaſe his indignation againſt the wickedneſs of the age. They were then called the *devout*; and, having eſtabliſhed a ſuperior, he was called the *general of the devotion*.

Women did not appear in theſe public aſſemblies, though they practiſed the ſame ſeverities; but it was in private, and in their own houſes.

In the middle of the fourteenth century, the ſect of the *Flagellantes* was reſtored, on occaſion of a great mortality; and ſpread itſelf into all parts of Europe.

The biſhops and magiſtrates, at length, found it neceſſary to put a ſtop to their exceſs. The writers and preachers diſputed againſt it; but the *Flagellantes* remained unſhaken againſt all they could ſay: ſo that of a number of perhaps innocent well-meaning zealots; pride, obſtinacy, and ſchiſm, converted them into a dangerous ſect. They held, that the blood they thus ſpilt, was mixed with that of Jeſus Chriſt; and that by a *flagellation* of twenty-four days they gained the pardon of all their ſins.

Clement VI. forbad all public *flagellations*; and Gerſon wrote an expreſs treatiſe againſt public *flagellations*.

FLAGELLATION, *whipping*, a voluntary diſcipline, or penance, frequently practiſed by the antient penitents. See DISCIPLINE.

The parliament of Paris prohibited all public *flagellations*, by an arret of 1601. See FLAGELLANTES.

Flagellation is a term more peculiarly appropriated to the ſufferings of Jeſus Chriſt, when whipped and ſcourged by the Jews.—From the Latin *flagellum*, a ſcourge, or whip.

We ſay, a painting of the *flagellation*; or, ſimply, a *flagellation*, to denote a picture, or print, repreſenting this torment inflicted on the Saviour of the world.

In this ſenſe we ſay, the *flagellation* of ſuch a painter, &c.

FLAGEOLET, or FLAJOLET, a kind of little flute; or a muſical inſtrument of the flute kind, uſed chiefly by ſhepherds and country-people.

It is uſually made of box, or ſome other hard wood; ſometimes of ivory. It has ſix holes, or ſtops, beſide that at bottom, the mouth-piece, and that behind the neck.

FLAIL. See the article THRASHING.

FLAMBEAU, or FLAMBOY, a luminary, made of ſeveral thick wicks, covered over with wax; ſerving to burn a-nights in the ſtreets; as, alſo, at funeral proceſſions, illuminations, &c.

Flambeaux differ from links, torches, and tapers. See TORCH.

They are made ſquare; ſometimes of white wax, and ſometimes of yellow: they uſually conſiſt of four wicks, or branches, near an inch thick, and about three feet long; made of a ſort of coarſe hempen yarn, half twiſted.

They are made with the ladle, much as torches, or tapers, are; *viz.* by firſt pouring the melted wax on the top of the ſeveral ſuſpended wicks, and letting it run down to the bottom: this they repeat twice. After each wick has thus got its ſeveral cover of wax, they lay them to dry; then roll them on a table, and ſo join four of them together, by ſoldering them with a red-hot iron.

When joined, they pour on more wax, till the *flamboy* is brought to the ſize required; which is uſually from a pound and half, to three pounds.

The laſt thing is, to finiſh their form, or outſide, which they do, with a kind of poliſhing inſtrument of wood, by running it along all the angles formed by the union of the branches.

The *flambeaux* of the antients were different from ours. They were made of woods, dried in furnaces, or otherwiſe. They uſed divers kinds of wood for this purpoſe: the moſt uſual was pine. Pliny ſays, that, in his time, they frequently alſo burnt oak, elm, and hazle. In the ſeventh book of the *Æneid*, mention is made of a *flambeau* of pine: and Servius, on that paſſage, remarks, that they alſo made them of the cornel-tree.

FLAME, the brighteſt and ſubtileſt part of fire, aſcending above the fewel in a pyramidal, or conical figure.

Flame ſeems to be the ſmoke, *i.e.* the fumes, or volatile parts of the fewel, greatly rarefied, and at laſt kindled, or heated red hot. By this great rarefaction, the matter becomes ſo light, as to be raiſed with great velocity, in the air: and by the preſſure of the incumbent atmoſpherical fluid, it is kept for ſome time together; the air forming a ſort of arch, or ſphere around it, that prevents its immediate diffuſion and diſſipation, and by its contiguity and fixation ſuſtains and feeds the fire of the *flame*: the aqueous and earthy parts of the fume being naturally incapable of being ignited, are only rarefied, and ſo impelled upwards in a duſky cloud without *flaming*.

Flame is defined by Sir I. Newton, in his little piece *De Acido*, to be *fumus candens*, red-hot ſmoke. The ſame author argues, Is not *flame* a vapour, fume, or exhalation heated red-hot; that is, ſo hot as to ſhine? For bodies do not *flame* without emitting a copious fume; and this fume burns in the *flame*. The ignis fatuus is a vapour ſhining without heat; and is there not the ſame difference between this vapour, and *flame*, as between rotten wood ſhining without heat; and burning coals of fire? In diſtilling hot ſpirits, if the head of the ſtill be taken off, the vapour which aſcends, will take fire at the *flame* of a candle, and turn into *flame*. Some bodies, heated by motion or fermentation, if the heat grow intenſe, fume copiouſly; and if the heat be great enough, the fumes will ſhine, and become *flame*. Metals in fuſion do not *flame*, for want of a copious fume. All *flaming* bodies, as oil, tallow, wax, wood, foſſil coal, pitch, ſulphur, &c. by burning, waſte in ſmoke, which at firſt is lucid; but at a little diſtance from the body, ceaſes to be ſo, and only continues hot. When the *flame* is put out, the ſmoke is thick, and frequently ſmells ſtrongly; but in the *flame* it loſes its ſmell; and, according to the nature of the fewel, the *flame* is of divers colours. That of ſulphur, *e. gr.* is blue; that of copper opened with ſublimate, green; that of tallow, yellow; of camphire, white, &c. We find that when gunpowder takes fire, it goes off in a *flaming* ſmoke. The manner we conceive to be this: the charcoal and ſulphur eaſily take fire, and ſet fire to the nitre; by which the ſpirit of the nitre, being rarefied into vapour, ruſhes out, like the vapour of water out of an æolipile. Then the acid ſpirit of the ſulphur, entering violently into the fixed body of the nitre, ſets looſe the ſpirit of the nitre, and excites a greater fermentation, whereby the heat is increaſed, and the fixed body of the nitre rarefied into fume; and thus is a vehement exploſion effected. The *flame* of gunpowder ariſes from a violent action, whereby the mixt being quickly and vehemently heated, is rarefied and converted into fume and vapour: which vapour, by the violence of the action becoming ſo hot as to ſhine, appears in the form of *flame*. Newt. *Optics*, p. 318.

It is a remarkable phænomenon of the *flame* of a candle, torch, or the like, that in the dark it appears bigger at a diſtance than near at hand. The reaſon is, that at a diſtance, *e. gr.* of ſix feet, the eye can readily diſtinguiſh between the *flame*, and the contiguous air illuminated by it; and ſees preciſely where the *flame* terminates: but at the diſtance, *e. gr.* of thirty feet, though the angle ſubtended by the *flame*, be much ſmaller than before; yet the eye, not being able to diſtinguiſh the preciſe bound of the *flame*, takes part of the ſphere of air illuminated by it, for the *flame* itſelf.

We have ſeveral inſtances of actual *flame* being produced by the mixture of two cold liquors. Dr. Slare gives us a liſt of the oils which burſt into *flame* upon mixing them with compound ſpirit of nitre: ſuch are thoſe of caraways, cloves, ſaſſafras, guaiacum, box, camphire, pepper, hartſhorn, blood, &c. *Philoſoph. Tranſact.* N° 213. See Supplement, article SPIRITUS *Nitri*.

ital **FLAME**, FLAMMA, or FLAMMULA *vitalis*, a fine, warm, igneous ſubſtance, ſuppoſed by many both of the antients and moderns, to reſide in the hearts of animals, as neceſſary to life, or rather, as that which conſtitutes life itſelf.

To the preſervation of this *flame*, they ſuppoſe air as neceſſary, as it is to the conſervation of common *flame*; and hence they aſcribe the neceſſity of reſpiration to animal life.

Mr. Boyle, by experiments in an exhauſted receiver, found that the *vital flame* of animals, if life may be ſo called, ſurvives or outlaſts the *flame* of ſpirit of wine, or of a wax or tallow candle, &c. Some animals would remain alive and well in vacuo, for three or four minutes, whereas no common *flame* would laſt there one minute. The light of glow-worms he found would preſently be deſtroyed by exhauſting the air; and retrieved again upon its re-admiſſion.

Dr. Quincy could find nothing more in the notion of vital *flame*, than the natural warmth, which is the effect of a circulating blood; and which is always as its velocity.

LAMEN, among the antient Romans, was a prieſt, or miniſter of ſacrifice.

There were as many kinds of *flamens* at Rome, as there were gods who had prieſts and ſacrifices offered them.

Numa, at firſt, only inſtituted three: one for Jupiter, called *flamen Dialis*; another for Mars, called *flamen Martialis*; and a third for Romulus, or Quirinus, called *flamen Quirinalis*. In after times twelve more were added; which made the number of *flamens* fifteen.

The three firſt were taken from among the patricians; and were held of a rank and diſtinction ſuperior to the reſt. They were called *greater flamens*, *flamines majores*; in contradiſtinction to the other twelve, who were choſe from among the plebeians, and were therefore called *leſſer flamens*, *flamines minores*. The *flamen Dialis*, or of Jupiter, was the firſt inſtituted, and held in the greateſt repute. He bore a peculiar ornament on his head, called *albugalerus*, which was made of the ſkin of a white victim, ſacrificed to Jupiter.

The cap worn by the reſt, was called *Flamma*, or *Apex*. It was made of a ſheep's ſkin, with the wool on: to which was faſtened a little branch of an olive-tree. That of the *flamen* of Jupiter ended in a point called *tutulus*. It was tied under the chin with ſtrings; but in the ſummer-time it was only a woollen thread tied round the head; it being prohibited them ever to appear quite bare-headed. And hence, according to Feſtus, came their denomination of *flamen*; *viz.* from *filamen*, of *filum*, thread.

Though the *flamens* bore one common appellation; yet did not they conſtitute any company, or college. Each god had his ſeveral ſacrifices, feaſts, and ceremonies, a-part: nor had one *flamen* any relation to another; only they were all ſubordinate to the pontifex maximus. Aulus Gellius aſſures us, that they were created by the people in the comitia curiata: but the pontifex maximus afterwards conſecrated them. Their prieſthood, called *flaminatus*, was perpetual; though on ſome occaſions they might be depoſed.

The names of the ſeveral *flamens* are as follow: The three great *flamens*, as already obſerved, were the *flamen Dialis*; *flamen Martialis*, and *flamen Quirinalis*. The twelve leſſer were, the *flamen Carmentalis*, or prieſt of the goddeſs Carmenta: *flamen Falacer*, or prieſt of the god *Falacer*; a name, whoſe origin, Varro obſerves, is not known: *flamen Floralis*, or of the goddeſs Flora: *flamen Furinalis*, whoſe etymology is not known: *flamen Levinalis*: *flamen Lucularis*: *flamen Palatualis*, whom ſome moderns will have to be the prieſt of the goddeſs that preſided over the palatium; though Varro owns himſelf at a loſs for its original: *flamen Pomonalis*, or of Pomona, goddeſs of fruits: *flamen Virbialis*, or of the god Virbius, whom ſome take for the ſame with Hippolytus: *flamen Vulcanalis*, or of Vulcan; and *flamen Volturnalis*, or of the god Volturnus.

They had alſo their *flaminæ* or *flaminicæ*, who were wives of the *flamens*, or the prieſteſſes of the deities. In an antient marble, quoted by Gruter, p. CCCCLIX. n. 9. the word *flamina* is uſed for prieſteſs: and in the ſame author, p. CCCVIII. n. 3. the prieſteſs of the goddeſs Feronia is called FLAM. FERON. that is, *flamina*, or *flaminica Feroniæ*.

The *flamina* bore the ſame ornament on her head with the *flamen*. She had alſo the ſame ſurname of office with her huſband; as *flamina Dialis*, *Martialis*, &c.

FLAMMULA, or FLAMULA, under the eaſtern empire, was a kind of flag, terminating in a point ſomewhat like a flame, ſerving as a mark, or badge, to diſtinguiſh the ſoldiers of the ſeveral companies, battalions, regiments, &c.

In Greek it was called φλαμουλον: it was ſometimes placed on the caſk; ſometimes on the cuiraſs, and ſometimes at the end or tip of the pike, &c.

The emperor Maurice ordered, that the *flammulæ* of each diviſion ſhould be of a particular colour, to diſtinguiſh them from the other battalions, or brigades: φλαμουλα ἑκαστης μοιρας ιδιοχροα ειναι.

They uſed to lay aſide the *flammula* before an engagement, leſt it ſhould prove an incumbrance. The cavalry had alſo *flammulæ* on their horſes, to diſtinguiſh the troops they belonged to.

FLANCH, FLANQUE, or FLASQUE, an ordinary in heraldry, formed by an arched line, which begins at the corners of the chief, and ends in the baſe of the eſcutcheon.—

He beareth ermin two *flanches* vert. See *Tab. Herald. fig.* 25.

Flanches are always borne by pairs.

Leigh makes *flanque* and *flaſk* two diſtinct bearings, whereof the former is more bent in than the latter; but Gibbon judiciouſly makes them but one, which he calls *flanque*.

FLANEL, or FLANNEL, a kind of ſlight, looſe, woollen ſtuff, not quilted, but very warm; compoſed of a woof, and warp, and wove on a loom, with two treddles, after the manner of bays, &c. See BAYS.

FLANK, or FLANC, in the manage, is applied to the ſides of a horſe's buttocks, &c.

In a ſtrict ſenſe, the *flanks* of a horſe are the extremes of the belly, where the ribs are wanting, and are below the loins.

The *flanks* of a horſe ſhould be full; and at the top of each a feather. The diſtance between the laſt rib, and haunch bone, which is properly the *flank*, ſhould be ſhort; which they term *well coupled*; ſuch horſes being moſt hardy, and fit to endure labour.

A horſe is ſaid to have no *flank*, if the laſt of the ſhort ribs be at a conſiderable diſtance from the haunch-bone; as alſo when his ribs are too much ſtreightened in their compaſs.

FLANK, in war, is uſed by way of analogy, for the ſide of a battalion, atmy, *&c.* in contradiſtinction to the *front* and *rear*.

To *attack the enemy in flank*, is to diſcover, and fire upon them on one ſide.

The enemy *took us in flank:* the *flank* of the infantry muſt be covered with the wings of the cavalry.

FLANK, in fortification, is a line, drawn from the extremity of the face, towards the inſide of the work.—Such is the line B A, *Tab. Fortification, fig.* 1.

Or, *flank* is that part of the baſtion, which reaches from the curtin to the face, and defends the oppoſite face, the *flank*, and the curtin.

Oblique, or *ſecond* FLANK, is that part of the curtin, E I, intercepted between the greater line of defence, E C, and the leſſer, I C: and from which they can ſee to ſcour the face of the oppoſite baſtion.

Low, *covered*, or *retired* FLANK, is the platform of the caſemate, which lies hid in the baſtion; otherwiſe called the *orillon*. See ORILLON.

FLANK *Fitchant* is that from whence a cannon playing, fireth its bullets directly in the face of the oppoſite baſtion.

FLANK *Razant* is the point, from whence the line of defence begins, from the conjunction of which with the curtin, the ſhot only raſeth the face of the next baſtion; which happens when the face cannot be diſcovered but from the *flank* alone.

Simple FLANKS, are lines, going from the angle of the ſhoulder, to the curtin; whoſe chief office is for defence of the moat, and place.

FLANKED, FLANQUE', is uſed by the French heralds, to expreſs our party per ſalteer; that is, when the field is divided into four parts, after the manner of an X.

Though Colombiere uſes the term in another ſenſe, which appears more natural; *viz.* for the taking of flanches, or rounding ſections, out of the ſides of the eſcutcheons; the firſt from the angles of it, the latter in ſtrait lines, forming an angle at the feſs, without making any ſalteer.

FLANKED *Angle*, in fortification, is the angle formed by the two faces of the baſtion, and which of courſe forms the point of the baſtion.

FLANKED *Tenaille*, called alſo *tenaille*. See TENAILLE.

FLANKING, in the general, is the act of diſcovering, and firing upon, the ſide of a place, body, battalion, *&c.*

To *flank* a place, is to diſpoſe a baſtion, or other work, in ſuch manner, as that there ſhall be no part of the place, but what may be played on, both in front and rear.

Thus we ſay, to *flank* a wall with towers. This baſtion is *flanked* by the oppoſite flank, and a half-moon. This horn-work is *flanked* by the curtin.

Any fortification that has no defence but juſt right forwards is faulty: and to render it complete, one part ought to be made to *flank* the other. Hence the curtin is always the ſtrongeſt part of any place, becauſe it is *flanked* at each end.

Batalions alſo are ſaid to be *flanked* by the wings of the cavalry.—A houſe is ſometimes ſaid to be *flanked* with two pavilions, or two galleries; meaning it has a gallery, *&c.* on each ſide.

FLANKING *line, of defence.* See RASANT, and LINE *of Defence.*

FLASK, FLASQUE, a bearing more properly called *flanch*, or *flanque.* See FLANCH.

FLATS, in muſic, a kind of additional or half-notes, contrived, together with *ſharps*, to remedy the defects of muſical inſtruments.

The natural ſcale of muſic being limited to fixed ſounds, and adjuſted to an inſtrument, the inſtrument will be found defective in ſeveral points: as particularly, in that we can only proceed from any note, by one particular order of degrees; that for this reaſon we cannot find any interval required from any note, or letter upwards and downwards; and that a ſong may be ſo contrived, as that if it be begun by any particular note or letter, all the intervals, or other notes, ſhall be juſtly found on the inſtrument, or in the fixed ſeries: yet were the ſong begun with any other note, we could not proceed.

To remove or ſupply this defect, muſicians have recourſe to a ſcale proceeding by twelve degrees, that is, thirteen notes, including the extremes, to an octave; which makes the inſtruments ſo perfect, that there is but little to complain of. This, therefore, is the preſent ſyſtem or ſcale for inſtruments; *viz.* betwixt the extremes of every tone of the natural ſcale is put a note, which divides it into two unequal parts, called *ſemitones*; and the whole may be called the *ſemitonic ſcale*, containing twelve ſemitones betwixt thirteen notes, in the compaſs of the octave.

Now, to preſerve the diatonic ſeries diſtinct, theſe inſerted notes either take the name of the natural note next below, with a character called a *ſharp*; or they take the name of the natural note next above, with a mark called a *flat*. Thus D *flat* ſignifies a ſemitone below the D natural. And it is indifferent, in the main, whether the inſerted note be accounted as a *flat*, or a *ſharp*.

This ſemitonic ſeries, or ſcale, is very exactly repreſented by the keys of a ſpinnet: the foremoſt range of keys being the natural notes; and keys behind, the artificial notes, or the *flats* and *ſharps*.

FLATULENT, ſomething that has a relation to flatus's, or blaſts of wind.

Peas, and moſt kinds of puls, onions, *&c.* are *flatulent* foods.

FLATUS, or FLATULENCY, wind gathered in the bowels, or other cavity of the body, by means of indigeſtion, *&c.* It is diſcuſſed by warm aromatics, which rarefy it enough to break away where-ever a vent can be found.

FLATTER, or FLATTENER. } See COINING.
FLATTING, or FLATTENING. }

FLAX, or *line*, *linum*, a plant with a ſlender hollow ſtem, uſually about three feet high; whoſe bark conſiſts of fibres, or threads, much like thoſe of hemp; which, being dreſſed and worked in due manner, makes that noble commodity, linen cloth.

Flax thrives beſt in a ſoil that has long lain fallow. To bear *flax*, it muſt be well plowed, laid flat and even, and the ſeed ſown thick, in a warm ſeaſon, about the middle of March, or beginning of April. The beſt ſeed is that brought from the eaſt; which, though dear, repays the charges with abundance. One ſowing of *flax* will produce two or three crops, before it need be renewed.

Flax, pulled up in the bloom, proves whiter, and ſtronger, than if left ſtanding till the ſeed is ripe; but then the ſeed is loſt.

For the preparations *flax* muſt undergo, to fit it for ſpinning, as pulling, drying, and ſwingling; ſee HEMP.

The ſeed of *flax*, called *linſeed*, has ſeveral conſiderable properties: it enters the compoſition of divers medicines, and yields an oil, by expreſſion, which has moſt of the properties of nut-oil; and which is frequently uſed, in defect thereof, in painting, to burn in lamps, *&c.* That drawn cold, is alſo reputed good in divers diſeaſes.

FLEA, in natural hiſtory.—The generation of this familiar vermin affords ſomething very curious, firſt diſcovered by Sig. Diacinto Ceſtone.

Fleas bring forth eggs, or nits, which they depoſit on animals that afford them a proper food: theſe eggs, being very round and ſmooth, uſually ſlip ſtrait down; unleſs detained by the piles, or other inequalities, of the clothes, hairs, *&c.*

Of theſe eggs are hatched white worms, of a ſhining pearl colour, which feed on the ſcurfy ſubſtance of the cuticle, the downy matter gathered in the piles of clothes, or other the like ſubſtances.

In a fortnight they come to a tolerable ſize, and are very lively and active; and if, at any time, diſturbed, they ſuddenly roll themſelves into a kind of ball.

Soon after this, they come to creep, after the manner of ſilkworms, with a very ſwift motion. When arrived at their ſize, they hide themſelves, as much as poſſible, and ſpin a ſilken thread out of their mouth, wherewith they form themſelves a ſmall round bag, or caſe, white within as paper, but without always dirty, and fouled with duſt.

Here, after a fortnight's reſt, the animalcule burſts out, tranſformed into a perfect *flea*; leaving its exuviæ in the bag. While it remains in the bag, it is milk-white, till the ſecond day before its eruption; when it becomes coloured, grows hard, and gets ſtrength: ſo that, upon its firſt delivery, it ſprings nimbly away. *Philoſ. Tranſ.* N° 249.

FLEA-BITTEN *colour* of a horſe is white, ſpotted all over with dark rediſh ſpots.

FLEAM, a ſmall inſtrument, of pure ſteel, compoſed of two or three moveable lancets, for bleeding a horſe, or the like.

FLEDWITE, or FLIGHT-WITE, in our antient laws, a diſcharge, or freedom, from amercements; when one, having been an outlawed fugitive, comes to the peace of our lord the king, on his own accord, or with licence. Raſtal.

Others rather take it to denote, a mulct, or fine, ſet upon a fugitive to be reſtored to the king's peace.

FLEECE, the covering of wool ſhorn off the bodies of ſheep.

The *golden* FLEECE is famous, among the antient writers. I was this that the Argonauts, under the command of Jaſon, went in purſuit of to Colchis, a province of Aſia, now calle Mingrelia.

The myſtery of the *golden fleece* is variouſly explained,—either of the profit of the wool-trade to Colchis; or of the gol that they commonly gathered there, with fleeces, in the river Arbuth. *Diſſ.* p. 224. See ARGONAUTS.

Order of the golden FLEECE. See GOLDEN FLEECE.

FLEET, a number of veſſels, going in company, whether on deſign of war, or commerce.

In times of peace, merchant-ſhips go in *fleets*, for the mutual aid and aſſiſtance: in times of war, beſides this ſec rity, they likewiſe procure convoys of men of war; eith to eſcort them to the places whither they are bound, or on a part of the way, to a certain point or latitude, beyond which they are judged out of danger of privateers, &c.

The Spaniſh *fleet* ſent againſt England by Philip II. conſiſted of a thouſand veſſels. In the Eaſt there have been *fleets* ſeen of three thouſand veſſels.

Merchant *fleets* generally take their denomination from the place they are bound to; as the Turky *fleet*, Eaſt-India *fleet*, &c.

The Spaniards call ſimply the *fleet*, or *flota*, a certain number of veſſels, belonging partly to the king, and partly to merchants, ſent every year to Vera Crux, a port of New Spain.

The *flota* conſiſts of the captain, admiral, and patach or pinnace, which go on the king's account; and about ſixteen ſhips, from four hundred to a thouſand tons, belonging to particular perſons. They are all ſo heavy laden, both going and coming, that they have much ado to defend themſelves when attacked. The *fleet* puts out from Cadiz about the month of Auguſt, and makes it eighteen or twenty months before its return.

The *fleet* ſent annually from the ſame port to Peru, they call the *galleons*. See GALLEON.

When the two *fleets* put out together, they go in company as far as the Antilles, where they ſeparate; the galleons for Carthagena, and Porto-Bello; and the *flota* for Vera Crux: at their return they join at the Havanna.

Of the two *fleets* the *galleons* are the moſt richly laden; not but the cargo of the *flota* is alſo very conſiderable.

FLEET is alſo a famous priſon in London, thus called from the river Fleet, on the border whereof it ſtands.

To this priſon perſons are uſually committed for contempt of the king and his laws; or upon abſolute command of the king, or ſome of his courts, particularly that of chancery; and laſtly, for debt.

FLEGM, FLEGMATIC, FLEGMAGOGUE, &c. See PHLEGM, PHLEGMATIC, &c.

FLEMISH, or the FLEMISH *tongue*, is that which we otherwiſe call *Low Dutch*, to diſtinguiſh it from the German, whereof it is a corruption, and a kind of dialect.

The *Flemiſh* is the language uſed throughout the provinces of the Netherlands. It differs conſiderably from the Walloon; which is a corrupt French.

There are ſeveral *Flemiſh* tranſlations of the Bible. In the year 1618. it was decreed by the ſynod of Dort, that a new *Flemiſh* verſion ſhould be made of the whole Scriptures; by reaſon the old tranſlation, which had been taken from that of Luther, was full of faults. Accordingly ſeveral perſons, learned in the Greek and Hebrew languages, undertook the work; which was publiſhed with notes in 1637. This Bible is highly valued by the Reformed in Holland, &c. though M. Simon cenſures it as being far from the perfection of a juſt tranſlation.

FLEMISH *bricks*, a neat, ſtrong kind of bricks, of a yellowiſh colour, brought from Flanders, and much uſed for paving. See BRICK.

FLESH, *caro*, in anatomy, a ſimilar fibrous part of an animal body, ſoft and bloody; being that whereof moſt of the other parts are compoſed, and whereby they are connected together.

Fleſh is properly underſtood of ſuch parts of the body where the blood-veſſels are ſo ſmall, as only to retain blood enough to preſerve their colour red.

The antients accounted five different kinds of *fleſh*: the firſt *muſcular*, *fibrous*, or *fiſtular*; as the ſubſtance of the heart, and other muſcles. The ſecond *parenchymous*, as that of the lungs, liver, and ſpleen. The third *viſcerous*, as the *fleſh* of the ſtomach and inteſtines. The fourth *glandulous*, as that of the breaſts, pancreas, tonſils, &c. And the fifth *ſpurious*, as that of the gums, glans of the penis, the lips, &c.

The moderns only admit of one kind of *fleſh*; viz. the muſcular, conſiſting of little tubes and veſſels, with blood therein; ſo that *fleſhy* and muſcular parts of the body with them are the ſame thing.

Sometimes, however, they apply the term to the glands; which they call, by way of diſtinction, *glandulous fleſh*.

As to the parenchyma's, they are now found to be quite other things than the antients imagined. The lungs are only an aſſemblage of membranous veſicles, inflated with air. The liver a collection of glands, wherein the bile is ſeparated. The ſpleen, a heap of veſicles, full of blood. And the kidneys, like the liver, a maſs of glands for ſeparating of the urine.

FLESH is alſo uſed, in theology, in ſpeaking of the myſteries of the incarnation and euchariſt.

The Word was *made fleſh*, *Verbum* caro *factum eſt*. See INCARNATION.

The Romaniſts hold, that the bread in the ſacrament of the ſupper is turned into the real *fleſh* of Jeſus Chriſt. See TRANSUBSTANTIATION.

The reſurrection of the *fleſh* is an article of faith.

The Anthropophagi, or Cannibals, are ſaid to feed upon human *fleſh*.

Fungous FLESH. See the article FUNGUS.

FLESH is ſometimes alſo uſed by botaniſts for the ſoft pulpy ſubſtance of any fruit, incloſed between the outer rind or ſkin, and the ſeeds, or ſtone: or for that part of a root, fruit, &c. fit to be eaten.

FLESH-*colour*. See the article CARNATION.

FLEUR-DE-LISE, FLEURETTÉ, FLEURONNÉ, and FLEURY, in heraldry. See FLORY.

FLEXIBLE, in phyſics, is applied to bodies that are capable of being bent, or changed from their natural form and direction.

Trees that grow near waters, as the willow, poplar, &c. are more *flexible* than others. The fibres being finer and more *flexible* in women than in men, they have generally a greater degree of delicacy of thought and imagination. A *flexible* voice ſucceeds beſt in muſic.

A body is not capable of being inflected or bent, unleſs the whole thereof be at reſt. In bending a body, it conſtitutes, as it were, two levers; and the point it is to be bent in, is a fulcrum: hence, as a moving power, the farther it is from the fulcrum, the greater is its force; the longer the *flexible* body is, the eaſier it is bent.

FLEXION, in anatomy, &c. is applied to the motion of an arm, or other member, whereby it is bent.

The arm has a motion of *flexion*, and another of extenſion.

The motion of *flexion* is, when the radius and humerus approach each other, and form an angle at the elbow.

FLEXION, or FLEXURE *of curves*. See POINT *of contrary flexion*.

FLEXOR, in anatomy, a name given to ſeveral muſcles, in reſpect of their action; *viz.* the bending of the members, or joints, in oppoſition to the extenſors, which open or ſtretch them.

FLEXOR *capitis* is a muſcle of the head, called alſo *rectus major anticus*. See RECTUS *major*, &c.

FLEXOR *carpi radialis*, called alſo *radiæus internus*, riſes from the inner protuberance of the humerus; and, running along the radius, is inſerted into the upper part of the bone of the metacarpus, which is joined with the fore-finger.

FLEXOR *carpi ulnaris*, called alſo *cubitæus internus*, ariſes tendinous from the inner protuberance of the humerus, and upper part of the ulna, upon which it runs along, till, paſſing under the ligamentum annulare, it is inſerted by a ſhort ſtrong tendon into the fourth bone of the firſt row of the carpus. See *Tab. Anat.* (Myol.) *Fig.* 2. *n.* 24.

Both theſe muſcles bend the wriſt.

FLEXOR *pollicis pedis brevis* ariſes from the middle of the cuneiform bone. It is ſhort, thick, and fleſhy, ſeemingly two; and, running over the termination of the peronæus, has a double inſertion into the oſſa ſeſamoidea.

FLEXOR *pollicis pedis longus*; this is a muſcle of the toe. It is derived from the back part of the fibula, with a double order of fibres, and runs tendinous under the inner ankle, and through the chanel in the inner part of the bone of the heel, to its inſertion at the extremity of the great toe, on the under ſide.

FLEXOR *primi internodii digitorum pedis*. See LUMBRICALES *pedis*.

FLEXOR *ſecundi internodii digitorum manus*. See PERFORATUS *manus*.

FLEXOR *tertii internodii digitorum manus*. See PERFORANS *manus*.

FLEXOR *tertii internodii digitorum pedis*. See PERFORANS *pedis*.

FLEXORES *primi internodii digitorum manus* are muſcles of the fingers, called alſo *lumbricales manus*. See LUMBRICALES.

FLEXORES *pollicis manus* are two muſcles ſerving to bend the thumb.

The firſt, called *flexor tertii internodii*, &c. ariſes from the internal protuberance of the humerus, and part of the radius, by different orders of fibres, and, paſſing under the ligamentum annulare, is inſerted into the third bone of the thumb.—The ſecond, called *flexor ſecundi internodii*, &c. ariſes from the bones of the carpus, and annular ligament; and is inſerted into the ſecond bone of the thumb.

FLEXORES *ſecundi internodii digitorum pedis*. See PERFORATUS *pedis*.

FLIE, or FLY, that part of the mariner's compaſs, on which the thirty-two winds are drawn, and over which the needle is placed, and faſtened underneath.

FLIGHT, the act of a bird in flying; or the manner, duration, &c. thereof. See FLYING.

The feathers of birds are admirably contrived and fitted for the eaſe and conveniency of *flight*.

Almoſt every kind of bird has its particular *flight*: the eagle's *flight* is the higheſt: the *flight* of the ſparrow-hawk and vultur are noble, and are fit for high enterprize and combat. The *flight* of ſome birds is low, weak, tranſient, and, as they call it, *terra a terra*: the *flight* of the partridge and pheaſant is but of ſhort continuance: that of the dove is laboured: that of the ſparrow, undulatory, *&c.*

The augurs pretended to foretel future events from the *flight* of birds.

FLIGHT.—In melting the lead-ore in the works at Mendip, there is a ſubſtance which flies away in the ſmoke, which they call the *flight*.

They find it ſweetiſh upon their lips, if their faces happen to be in the way of the ſmoke, which they avoid all they can. This, falling on the graſs, kills cattle that feed thereon: and, being gathered, and carried home, kills rats and mice in their houſes: that which falls on the ſand, they gather, and melt upon a flag-hearth, into ſhot, and ſheet-lead.

Capon's FLIGHT, in ſome cuſtoms, is a compaſs of ground, ſuch as a capon might *fly* over, due to the eldeſt born of ſeveral brothers, in making partition of the father's effects with them, when there is no principal manor in a lordſhip. It is uſually eſtimated by a bow-ſhot.

FLIGHT *of a ſtair-caſe.* See the article STAIR-CASE.

FLIGHT, in heraldry. See the article VOL.

FLINT, *ſilex*, a ſmall, hard, livid, or black pebble; chiefly uſed for yielding ſparks of fire by colliſion againſt ſteel.

The Indians, inſtead of *flint* and ſteel, uſe two pieces of green wood, which they rub violently againſt each other. In the Eaſt, they uſe the wood candon; and in Peru, that called reyaca, for this purpoſe,

Flints are alſo one of the principal ingredients in the making of glaſs. See Supplement, article SILEX.

FLINT-*walls.* See the article WALLS.

FLIP, a ſort of ſailors drink, made of malt liquor, brandy, and ſugar, mixed.

FLOAT, or FLEET. See FLOTA, and FLOTILLA.

FLOAT *of a fiſhing-line*, a cork, or quill, ſwimming on the water, to diſcover what becomes of the hook, whether any thing bites, *&c.* See FISHING-*float.*

FLOAT alſo denotes a certain quantity of pieces of timber joined together with raſters athwart, thrown into a river, to be conveyed down the ſtream; and even ſometimes to carry burdens down a river with the ſtream. The invention of *floats* is of great uſe; it is ſaid to have been firſt put in execution at Paris, in the year 1618.

FLOATING-*veſſels.* See the articles BOAT, VESSELS, *&c.*

FLOATING, in huſbandry, is the drowning or watering of meadows.

FLOOD, a deluge or inundation of waters. See DELUGE.

FLOOD is alſo uſed in ſpeaking of the tides. See TIDE.

When the water is at loweſt, it is called *flood*; when riſing, *young*, or *old flood*; when at higheſt, and beginning to fall, *ebb-water.*

FLOOK, or FLUKE, *of an anchor.* See ANCHOR.

FLOOR, in building, the underſide of a room, or that part we walk on.

Floors are of divers ſorts; ſome of earth, ſome of brick, others of ſtone, others of boards, *&c.*

Carpenters, by the word *floor*, underſtand as well the frame work of timber, as the boarding over it.

For *brick* and *ſtone* FLOORS, ſee the article PAVEMENT.

For *boarded* FLOORS, it is obſervable, that the carpenters never *floor* their rooms with boards, till the carcaſe is ſet up, and alſo incloſed with walls; leſt the weather ſhould injure the *flooring*. Yet they generally rough-plane their boards for the *flooring*, before they begin any thing elſe about the building, that they may ſet them by to dry and ſeaſon; which is done in the moſt careful manner.

Earthen FLOORS are commonly made of loam, and ſometimes, eſpecially to make malt on, of lime, and brook-ſand, and gun-duſt, or anvil-duſt from the forge.

Ox-blood and fine clay, tempered together, Sir Hugh Plat ſays, make the fineſt *floor* in the world.

FLOOR *of a ſhip*, ſtrictly taken, is only ſo much of her bottom as ſhe reſts on, when aground.

Such ſhips as have long, and withal broad *floors*, lie on the ground with moſt ſecurity, and are not apt to ſeel, or tilt on one ſide; whereas others, which are narrow in the *floor*, or, in the ſea-phraſe, *cranked by the ground*, cannot be grounded without danger of being overturned.

FLORALES *ludi*, or FLORAL *games*, in antiquity, were games held in honour of Flora, the goddeſs of flowers.

They were celebrated with horrible debaucheries. The moſt licentious diſcourſes were not enough; but the courteſans were called together by the ſound of a trumpet, and made their appearance naked, and entertained the people with abominable ſhews and poſtures: the comedians appeared after the ſame manner on the ſtage. Val. Maximus relates, that Cato being once preſent in the theatre on this occaſion, the people were aſhamed to aſk for the infamous pleaſure in his preſence; till Cato, appriſed of the reſervedneſs and reſpect he inſpired them withal, withdrew, that the people might not be diſappointed of their accuſtomed diverſion.

There were divers other ſorts of ſhews exhibited on this occaſion; and, if we may believe Suetonius in Galba, c. vi. and Vopiſcus in Carinus, theſe princes preſented elephants dancing on ropes on theſe occaſions.

The *ludi Florales*, according to Pliny, lib. xviii. c. 29. were inſtituted by order of an oracle of the Sibyls, on the 28th of April; not in the year of Rome IↃXVI. as we commonly read it in the antient editions of that author; nor in IↃXIV. as F. Hardouin has corrected it; but, as Voſſius reads it, in 513. They were chiefly held in the night-time, in the Patrician-ſtreet: ſome will have it there was a circus for the purpoſe, on the hill called *Hortulorum.*

The goddeſs Flora is by ſome held to be the ſame with the Chloris of the Greeks. Others maintain, that this Flora was a famous courteſan at Rome, who, having enriched herſelf by proſtitution, made the people of Rome her heir, on condition that they ſhould celebrate the anniverſary of her birth-day, by the games and feaſts above-mentioned. Some time afterward, the ſenate, judging ſuch a foundation unworthy the majeſty of the Roman people, to ennoble the ceremony, converted Flora into a goddeſs, whom they ſuppoſed to preſide over flowers; and ſo made it a piece of religion to render her propitious, that it might be well with their gardens, vineyards, *&c.*

This is the common account: but Voſſius *de Idolol.* lib. i. c. 12. can by no means allow the goddeſs Flora to have been the courteſan above-mentioned: he will rather have her a Sabine deity, and thinks her worſhip might have commenced under Romulus. His reaſon is, that Varro, in his fourth book of the Latin tongue, ranks Flora among the deities, to whom Tatius, king of the Sabines, offered up vows, before he joined battle with the Romans. Add, that from another paſſage in Varro it appears, that there were prieſts of Flora, with ſacrifices, *&c.* as early as the times of Romulus and Numa.

FLORAL *games.*—There is alſo a kind of *Floral games* obſerved at this day in France; firſt inſtituted in 1324.

The deſign and eſtabliſhment is owing to ſeven perſons of condition, lovers of poetry, who about All-ſaints-day, in 1323. ſent a circular letter to all the provincial poets, called *Troubadours*, to meet at Thoulouſe on May-day following, there to rehearſe their poems; promiſing a prize of a violet of gold to the perſon whoſe piece ſhould be judged the beſt. The capitouls found the deſign ſo good, that it was afterwards reſolved, at a council of the city, to continue it at the city-charge; which is ſtill done in a manner that does honour to the place.

In 1325. a chancellor and ſecretary of the new academy were choſen; and the ſeven inſtitutors took the quality of maintainers thereof. Two other prizes were afterwards added to the violet; *viz.* an eglantine for the ſecond prize, and a panſy for the third. It was alſo decreed, that the perſon who bore away the firſt prize, might demand to be made bachelor; and that whoever bore away all three, ſhould be created doctor in the *gay ſcience*, that is, in poetry.

There is a regiſter of theſe games kept at Thoulouſe, which give this account of their origin; though others give the thing another turn. It was an antient cuſtom, they ſay, for the poets of Provence to meet yearly at Thoulouſe, to confer together, rehearſe their verſes, and receive a prize allotted to the beſt performance. This held till about the year 1540. when a lady of quality left the beſt part of her fortune, to eternize the cuſtom, and bear the expence of prizes; the number of which ſhe increaſed, ordering an eglantine, a panſy, a violet, and a pink: the three firſt a cubit high; and worth fifteen piſtoles apiece.

The ceremony begins on May-day, with a ſolemn maſs, muſic, *&c.* The corporation attend; and poems are rehearſed every day: the third day a magnificent treat is given by the magiſtracy, *&c.* and that day the prizes are adjudged. The three prizes are the rewards of three different kinds of compoſitions; *viz.* a poem, an eclogue, and an ode.

FLORALIA, in antiquity, a general name for the feaſts, games, and other ceremonies, held in honour of the goddeſs Flora.

The *Floralia* were alſo called *Anthiſtheſes*: they were held at the latter end of the month of April, as Ovid witneſſes:

Exit & in Maias feſtum Florale calendas.

In effect, the *Floralia* began on the 28th of April, and laſted ſix days.

They who aſſiſted at the ceremony were crowned with ivy, and committed a world of indecencies; which indeed was no extraordinary thing in the heathen feaſts.

Some apply the word *Floralia* indifferently to the feaſts and games of this goddeſs; but others reſtrain it to the feaſts alone; calling the games *ludi Florales.* See FLORALES *ludi.*

FLORID *ſtyle* is that enriched and heightened with figures and flowers of rhetoric. See STYLE.

Longinus uſes the terms *florid* and *affected* ſtyle indifferently, and lays them down as quite contrary to the true ſublime.

FLORILEGIUM, FLORILEGE, a name the Latins hav
give

given to what the Greeks call *ανϑολογιον*, *anthology*; viz. a collection of choice pieces, containing the fineſt and brighteſt things in their kind. See ANTHOLOGY.

FLORILEGE is alſo particularly uſed for a kind of breviary, in the Eaſtern church, compiled by Arcadius, for the conveniency of the Greek prieſts and monks, who cannot carry with them, in their travels and pilgrimages, all the volumes wherein their office is diſperſed.

The *florilegium* contains the general rubrics, pſalter, canticles, the horologium, and the office of the feriæ, *&c.*

FLORIN is ſometimes uſed for a coin, or real money; and ſometimes for an imaginary money, or money of account.

FLORIN, as a *coin*, is of diverſe values, according to the diverſe metals, and diverſe countries where it is ſtruck. Pieces under this denomination were antiently very frequent in commerce: at preſent they are leſs common, though there were abundance of them ſtruck in Holland, of Engliſh ſilver, during the war which was terminated by the treaty of Ryſwick.

In all appearance they took their name from the place where they were firſt ſtruck, *viz.* the city of Florence. Their æra is about the year 1251. Though others aſcribe the name to a fleur-de-lis, which was ſtruck on one ſide.

The gold *florins* are moſt of them of a very coarſe alloy; ſome of them not exceeding thirteen or fourteen caracts, and none ſeventeen and a half. They weigh about two penyweights, and thirteen grains.

Villani obſerves, that there were gold *florins* in the year 1067. from which time the names *frank* or *florin* became applied to the gold coins, which till that time had been called *ſolidi*, ſhillings. See FRANK, *&c.*

As to ſilver *florins*, thoſe of Holland are worth about 40 French ſols, or 1 *s.* 10½ *d.* ſterling. Thoſe of Genoa, *&c.* were worth about 8¼ *d.* ſterling.

Pieces of three *florins* are called *ducatoons*.

FLORIN, as a *money of account*, is uſed by the Italian, Dutch, and German merchants and bankers, in keeping their books, and making up their accounts. But this *florin* is very diverſe, and admits of different diviſions. In Holland it is on the foot of the Dutch coin of that name, containing twenty-four deniers groſch, and is divided into pacards and penins.

At Francfort, Nuremberg, *&c.* it is equivalent to three ſhillings ſterling, and is divided into creutzers and pſennings. At Liege it is equivalent to 2 *s.* 3 *d.* At Straſbourg to 1 *s.* 8 *d.* In Savoy to 11 *d.* At Genoa to 8¼ *d.* And at Geneva to 6½ *d.*

FLORIN, or FLORENCE, was alſo a gold coin, ſtruck in England in the 18th year of Edw. III. of the value of ſix ſhillings.

Camden ſays, it was ſo called, becauſe made by Florentines. Fabian obſerves, the *florins* were not of ſo fine gold as the nobles and half-nobles of that prince.

But what is moſt obſervable is, that Fabian calls the *florin* a peny, value 6 *s.* 8 *d.* the half *florin*, an halfpeny, value 3 *s.* 4 *d.* the quarter *florin*, a farthing, value 1 *s.* 8 *d.*

Theſe words we often meet with in old hiſtories and accounts, applied to ſeveral coins, as royals, angels, *&c.* where we are therefore only to underſtand by *peny* or *denarius* the whole, by *obolus* the half, and by *quadrans* the fourth part, or farthing.

By indenture of the mint, in 18 Edw. III. every pound weight of old ſtandard gold was to be coined into fifty *florences*, or *florins*, to be current at ſix ſhillings apiece; all which made in tale fifteen pounds; or into a proportionable number of half or quarter *florins*.

FLORINIANI, or FLORIANI, a ſect of heretics, of the ſecond century, denominated from its author Florinus, or Florianus, a prieſt of the Roman church, depoſed along with Blaſtus, for his errors.

Florinus had been a diſciple of St. Polycarp, along with Irenæus. He made God the author of evil, or rather aſſerted, that the things forbidden by God are not evil, but of his own appointing.—In which he followed the errors of Valentinus, and joined himſelf with the Carpocratians.

Irenæus relates, that they called their own ſect *ſpirituales*, as having a perfect knowlege of God: and other Chriſtians in reſpect of them were only *pſychici*, *i. e.* animales, as having only a groſs apprehenſion and faith, and not a perfect knowlege of divine things.

According to Philaſtrius, the *Florinians* likewiſe denied a future judgment and reſurrection; and held that Jeſus Chriſt was not born of a virgin; and taught that the reſurrection was in effect a new generation. They are alſo charged with holding criminal aſſemblies in the night-time, and giving into Judaiſm and Paganiſm. Some even deduce the origin of the Adamites from them.

They had alſo other names given them: Philaſtrius ſays, they were the ſame with the *Carpophorians*. He adds, that they were alſo called *ſoldiers*, *milites*, *quia de militaribus fuerunt.* St. Irenæus calls them *Gnoſtics*; St. Epiphanius, *Phibionites*; and Theodoret, *Borborites*, on account of the impurities of their life: others call them *Zaccheans*; others *Coddians*, *&c.* though for what particular reaſons, it is not eaſy to ſay, nor perhaps would it be worth while to inquire.

FLORIST, a perſon curious or ſkilled in flowers; their kinds, names, characters, culture, *&c.*

FLORY, FLOWRY, FLEURY, FLORETTÉ, FLEUR-DE-LISSÉ, *&c.* terms in heraldry, uſed when the outlines of any ordinary are drawn as if trimmed with, or in the form of flowers, as lilies, flower-de-luces, *&c.*

Thus, he bears a croſs *flory*, *&c.* See *Tab. Herald. fig.* 26.

FLOTA, or FLOTTA, *fleet*; a name the Spaniards give particularly to the ſhips which they ſend annually from Cadiz, to the port of Vera-crux, to fetch thence the merchandizes gathered in Mexico for Spain.

Thoſe ſent to fetch the commodities prepared in Peru, are called *Galleons*.

The name FLOTILLA is given to a number of ſhips, which get before the reſt in their return, and give information of the departure and cargo of the *flota* and galleons.

FLOTAGES, all ſuch things as are floating on the top of the ſea, or great rivers; a word chiefly uſed in the commiſſions of water-bailiffs.

FLOTSON, FLOTZAM, or FLOATSAM, a term ſignifying any goods loſt by ſhipwreck, and ſwimming on the top of the water; which, with *jetſon* and *lagon*, and *ſhares*, are given the lord high admiral, by his letters patent.

Jetſon is what is caſt out of the ſhip, being in danger of a wreck, and beaten to the ſhore by the water; or caſt on ſhore by the ſeamen. *Lagon*, or *Lagan*, is that which lies in the bottom of the ſea. *Shares* are goods due to ſeveral perſons by proportion.

FLOUNDER. See FISHING.

FLOWER, FLOS, that part of a plant, which contains the organs of generation; or the parts neceſſary for the propagation of the kind.

The *flower* is a natural production, which precedes the fruit, and yields the grain or ſeed.

The ſtructure of *flowers* is ſomewhat various; though the generality, according to Grew, have theſe three parts in common; *viz.* the empalement, the foliation, and the attire.

Mr. Ray reckons, that every perfect *flower* has the petala, ſtamina, apices, and ſtylus, or piſtil: and ſuch as want any of theſe parts, he deems imperfect *flowers*.

In moſt plants there is a perianthium, calyx, or *flower* cup, of a ſtronger conſiſtence than the *flower* itſelf, and deſigned to ſtrengthen and preſerve it.

In ſome *flowers* the two ſexes are confounded; *i. e.* the male and female parts are found in the ſame *flower*: in others, they are ſeparated; and of theſe again, the female are followed by fruits, and the male *flowers* not: whence, *flowers* become diſtinguiſhed into *male*, *female*, and *hermaphrodite*.

The generality of *flowers* are of the hermaphrodite kind: ſuch, *e. gr.* are the lily, tulip, daffodil, roſemary, ſage, thyme, geranium, althæa, *&c.*

The ſtructure of parts is much the ſame in thoſe where the ſexes are divided: the difference between them conſiſts in this, that the ſtamina and apices, *i. e.* the male parts, in theſe, are ſeparated from the piſtils; being ſometimes on the ſame ſtalk, and ſometimes on different ones.

Thoſe wherein the ſtamina are, in regard they bear no fruit, are called *male*, or *barren flowers*, and by the botaniſt, *ſtamineous flowers*: thoſe which contain the piſtil, being ſucceeded by fruit, are called *female*, or *fruitful flowers*

Among the plants which bear both male and female parts on the ſame plant, but at a diſtance from each other, are reckoned, the cucumber, melon, gourd, turky-wheat, turnſol, walnut, oak, beech, fir, alder, cypreſs, cedar, juniper, mulberry, plantain, *&c.*

Thoſe in which the male and female parts of the *flowers* are borne on different plants, the willow, poplar, hemp, mercury, ſpinage, nettles, and hops.

As Mr. Ray divides *flowers* into *perfect* and *imperfect*;

The *perfect* FLOWERS he accounts all ſuch as have the petala, though they ſhould want the ſtamina; but this is a very erroneous opinion. Theſe he ſubdivides into *ſimple*, which are thoſe not compoſed of other ſmaller ones, and which uſually have but one ſingle ſtyle; and *compounded*, which conſiſt of many floſculi, all making but one *flower*.

Simple FLOWERS are either *monopetalous*, which have the body of the *flower* all of one intire leaf, though ſometimes cut, or divided, a little way, into many ſeeming petala, or leaves; as the borrage, bugloſs, *&c.*—or,

Polypetalous FLOWERS, thoſe which have diſtinct petala, and thoſe falling off ſingly, and not altogether, as the ſeeming petala of the monopetalous *flowers* always do.

Both theſe are farther divided into *uniform* and *difform flowers*.

The former have their right and left hand parts, and the forward and backward parts, all alike; but the difform have no ſuch regularity: ſuch are the *flowers* of ſage, dead-nettle, *&c.*

Monopetalous difform FLOWERS are likewiſe farther divided into

Semifiſtular FLOWERS, thoſe whoſe upper part reſembles a pipe, cut off obliquely; as in the ariſtolochia.

Labiate FLOWERS, thoſe either with one lip only, as in the acanthium and ſcordium; or with two lips, as in the far greater part of the labiate *flowers*.

In theſe the upper lip is ſometimes turned upwards, and ſo turns the convex part downwards, as in the chamæciſſus, &c. but moſt uſually the upper lip is convex above, and turns the hollow part down to its fellow below, and ſo repreſents a kind of helmet, or monk's hood; whence theſe are frequently called *galeate*, *cucullate*, and *galericulate flowers*.

Such are the *flowers* of the lamium, and moſt of the verticillate plants.

Sometimes alſo the labium is intire, and ſometimes jagged or divided.

Corniculate FLOWERS: theſe are ſuch hollow *flowers* as have on their hinder part a kind of ſpur, or little horn; as in the linaria, delphinum, &c. and the corniculum, or calcar, is always impervious at the tip or point.

Compound FLOWERS are either *diſcous*, *planifolious*, or *fiſtular*.

Diſcous, or *diſcoidal* FLOWERS, are thoſe whoſe floſculi are ſet together ſo cloſe, thick, and even, as to make the ſurface of the *flower* plain and flat; which therefore, becauſe of its round form, will be like a diſcus.

This diſk is ſometimes radiated, when there are a row of petala ſtanding round in the diſk, like the points of a ſtar; as in the matricaria, chamæmelum, &c.

And ſometimes naked, having no ſuch radiating leaves round the limb of its diſk; as in the tanacetum.

Planifolious FLOWERS are thoſe which are compoſed of plain *flowers*, ſet together in circular rows, round the centre, and whoſe face is uſually indented, notched, uneven, and jagged; as the hierachia, ſonchi, &c.

Fiſtular FLOWERS are thoſe which are compounded of many long, hollow, little *flowers*, like pipes, all divided into large jags at the ends.

Imperfect FLOWERS are ſuch as want the petala, and are called likewiſe *ſtamineous*, *apetalous*, and *capillaceous flowers*.

Thoſe which hang pendulous by fine threads, like the iuli, are by Tournefort called *amentaceous*; we call them *cats-tails*. Theſe are Mr. Ray's principal diſtinctions of *flowers*; but other botaniſts furniſh other diviſions and denominations of them.

Campaniform, or *bell-like* FLOWERS, are thoſe in ſhape of a bell.

Cruciform FLOWERS, or thoſe conſiſting of four petala, or leaves; the calyx alſo containing four leaves; and the piſtil always producing a fruit. Such are thoſe of the clove-tree, cabbage-tree, &c.

Infundibuliform FLOWERS, are ſuch as reſemble the figure of a funnel, *i. e.* are broad and ample at top, and contracted into a neck at bottom: ſuch is that of the bear's-ear, or auricula.

Cucurbitaceous FLOWERS are ſuch as reſemble the *flower* of the gourd; or have the ſame conformation therewith.

Stamineous FLOWERS are ſuch as have no petala, but conſiſt wholly of ſtamina or threads, with apices at top.

The leaves placed around theſe ſtamina, are not to be eſteemed as petala, but a calyx; in regard they do not fall off, but afterwards become a capſula, or cover, including the ſeed; which is the office of the calyx alone.

In effect, it is eſſential to the leaves of *flowers*, not to ſerve as a cover to the ſeeds that ſucceed them: and this is the only characteriſtic that diſtinguiſhes the leaves or petala of *flowers* from their calyx; for, that no particular colour of the leaves does determine whether the parts in diſpute be leaves of the *flower*, or the calyx of the *flowers*, appears hence, that there are ſome leaves of *flowers*, which are green like the calyx; and ſome calyces coloured like petala.

Leguminous FLOWERS are thoſe of leguminous plants. Theſe bear ſome reſemblance to a flying butterfly; for which reaſon they are alſo called *papilionaceous flowers*.

Papilionaceous FLOWERS conſiſt of four or five leaves, whereof the uppermoſt is called *vexillum*, or ſtandard; and the loweſt *carina*, as reſembling the bottom or keel of a boat: thoſe between the two are called *lateral* leaves, or *alæ*.

From the bottom of the calyx ariſes a piſtil, which is encompaſſed with a ſheath, or cover, fringed with ſtamina. This piſtil always becomes the fruit, and is uſually called the *pod*, in Latin, *ſiliqua*.

Umbelliform FLOWERS are thoſe with ſeveral leaves diſpoſed in manner of a roſe; and whoſe calyx eſſentially becomes a fruit of two ſeeds, joined, before they come to maturity; but afterwards eaſily ſeparated again.

They have this denomination, by reaſon they are generally ſuſtained by a number of pedicles, which, proceeding from the ſame centre, are branched all around, like the ſticks of an umbrella.

Of this kind are the *flowers* of fennel, angelica, &c.

Verticillate FLOWERS are thoſe ranged, as it were, in ſtories, rings, or rays along the ſtems: ſuch are thoſe of horehound, clary, &c. See Supplement, articles CAMPANIFORMIS, &c.

FLOWERS, in gardening, are diſtinguiſhed into *early*, or *ſpring-flowers*, which flouriſh in the months of March, April, and May. Of this claſs are the anemonies, daffodils, hyacinths, tulips, junquils, cowſlips, primroſes, &c.

Summer FLOWERS, which open in June, July, and Auguſt; as pinks, gilly-flowers, lilies, daiſies, campanulas, poppies, ſun-flowers, &c.

Autumnal or *late* FLOWERS, denotes thoſe of September and October; as the oculus Chriſti, Indian pinks, and roſes, panſy, flower-gentle, &c.

Of theſe *flowers*, thoſe which ſubſiſt all the year, we mean in the ſtem, or root at leaſt, are called *perennials*.

And thoſe which are to be planted or ſowed afreſh every year, according to the ſeaſon, are called *annuals*.

FLOWER, in architecture, according to Vitruvius, is a repreſentation of ſome imaginary *flower*, by way of crowning, or finiſhing, on the top of a dome, &c.

In lieu of this the moderns commonly uſe a vaſe, ball, or the like.

FLOWER-DE-LUCE, FLEUR DE LIS, in heraldry, is a bearing antiently of great dignity; being reputed the nobleſt of all *flowers*, and as ſuch having been in all ages the charge of the royal eſcutcheon of the kings of France; though tract of time has made the bearing thereof more vulgar.

In ſome coats it is borne ſingle; in others triple; in others it is ſemée, ſeeded all over the eſcutcheon.

FLOWER *of the capital* is an ornament of ſculpture, in form of a roſe, in the middle of the ſweep of the Corinthian abacus. *Tab. Archit. Fig.* 26. lit. 4.

In that of the Compoſite, it is not a roſe, nor any real, but an imaginary kind of *flower*.

FLOWERS, in chemiſtry, are the fineſt, and moſt ſubtle parts of dry bodies, raiſed by fire, into the veſſel's head, and aludels; and adhering to them, in form of a fine powder, or duſt. Such are the *flowers* of ſulphur, benjamin, &c.

FLOWERS *of ſulphur*, or *brimſtone*, are the vapours of melted brimſtone conveyed from an iron pot (in which it is kept boiling) through a proper flew, into a cloſe room or oven, where this vapour condenſes into *flowers*.

FLOWER *of wheat*, *rye*, and *other pulſe*. See FARINA.

FLOWERS *, in the animal œconomy, denotes womens monthl purgations, or menſes.

* Nicod derives the word in this ſenſe from *fluere*, q. d. *fluors*: others will have the name occaſioned hence, that women d not conceive, till they have had their *flowers*; ſo that theſ are a ſort of forerunners of their fruit.

FLOWERS, in rhetoric, are figures, or ornaments of diſcourſe by the Latins called *floſculi*. See FIGURE.

FLOWERAGE, a collection of flowers of ſeveral kinds ſe together in huſks, and hung up with ſtrings.

FLOWERED, in the manufactures.—A ſtuff, or cloth, ſaid to be *flowered*, *flouriſhed*, *ſprigged*, or *figured*, when ther are repreſentations of *flowers*, either natural, or imaginar wrought thereon.

There are ſtuffs *flowered* of almoſt all kinds of matter *flowers* of gold, ſilver, ſilk, wool, thread, cotton, & Stuffs and cloths are uſually denominated from the groun whereon the *flowers* are raiſed.

Thus, there are *flowered* velvets, taffaties, damaſks, ſattin mohairs, dimities, &c.

Thoſe *flowered* with gold and ſilver, are more uſually call *brocades*. See BROCADE.

The flowers are uſually wrought at the ſame time with t cloth, or ground. The threads of the warp are raiſed a lowered by means of packthreads paſſed through them mounting the loom; and the manufacturer, ſhooting warp, or matter of the flowers, whether gold, ſilver, ſi or the like, between the threads thus raiſed, forms t flowers.

It is very curious to ſee them mount a loom; or, as they c it, *read a deſign*, to be repreſented on a ſtuff: but it is n to impoſſible to deſcribe it; yet we have endeavoured to g ſome idea thereof under the article DESIGN.

FLUIDITY, in phyſics, that ſtate or affection of bodi which denominates or renders them *fluid*.

Fluidity ſtands in direct oppoſition to *firmneſs*, or *ſolidity*.

Fluidity is diſtinguiſhed from *liquidity*, or *humidity*, in that idea of the firſt is abſolute, and the property contained in thing itſelf; whereas that of the latter is relative, and imp wetting, or adhering; *i. e.* ſomewhat that gives us the ſen tion of wetneſs, or moiſture, and which would have no ex ence, but for our ſenſes.

Thus, melted metals, air, æther, and even ſmoke, and fla itſelf, are *fluid* bodies, but not liquid ones; their parts be actually dry, and not leaving any ſenſe of moiſture.

The nature and cauſes of *fluidity* have been variouſly ſigned.

The Gaſſendiſts, and antient Corpuſcularians, require three conditions as neceſſary thereto; *viz.* a ſmalneſs ſmoothneſs of the particles of the body; vacuities interſpe between them; and a ſpherical figure. Thus the Epicu poet, Lucretius:

Illa autem debent ex lævibus atque rotundis
Eſſe magis, fluido *quæ corpore liquida conſtant.*

The Carteſians, and after them Dr. Hook, Mr. Boyle, *&c.* beſide the circumſtances above-mentioned, require a various, perpetual, inteſtine motion of the particles of the bodies, as that which principally contributes to *fluidity*.

Fluidity then, according to theſe philoſophers, conſiſts in this, that the parts of the body, being very fine, and ſmall, are ſo diſpoſed by motion, or figure, as that they can eaſily ſlied over one another's ſurfaces all manner of ways; and that they be in conſtant, various, ſeparate agitation to and fro; and that they only touch one another in ſome few parts of their ſurfaces. Mr. Boyle, in his *hiſtory of fluidity*, mentions theſe three as the conditions principally required to *fluidity*; viz.

1°, The minuteneſs of parts: thus, in effect, we find that fire, by dividing metals into fine, ſmall parts, renders them fluid; and that acid menſtruums diſſolve and render them fluid after the like manner; and that fire turns the hard body of common ſalt almoſt wholly into a liquor, by diſtillation: not but that the figure of the particles may have a conſiderable ſhare in *fluidity*.

Thus mercury, whoſe parts are doubtleſs much groſſer than thoſe of oil and water, is yet more fluid than either of them: and thus oil, by the action of fire, may be converted into a conſiſtent ſubſtance like butter.

2°, Store of vacuities interſperſed between the corpuſcles, to give room for the ſeveral particles to move among themſelves.

3°, A motion and agitation of the corpuſcles; either from ſome principle of mobility within themſelves, or from ſome extraneous agent, penetrating and entering the pores, moving variouſly among them, and communicating to them a part of its motion.

That this laſt is the qualification chiefly required in *fluidity*, he argues from divers obſervations and experiments.

Thus, a little dry powder of alabaſter, or plaſter of Paris finely ſifted, being put in a veſſel over the fire; it ſoon begins to boil like water; exhibiting all the motions and phænomena of a boiling liquor. It will tumble variouſly in great waves like that; will bear ſtirring with a ſtick or ladle like that, without reſiſting; nay, if ſtrongly ſtirred near the ſide of the veſſel, its waves will apparently daſh againſt them: yet it is all the while a dry, parched powder.

The like is obſerved in ſand; a diſh of which being ſet on a drum-head, briſkly beaten by the ſticks, or on the upper ſtone of a mill, it in all reſpects emulates the properties of a fluid body. A heavy body, *e. gr.* will immediately ſink in it to the bottom, and a light one emerge to the top. Each grain of ſand has a conſtant vibratory and dancing motion: and if a hole be made in the ſide of the diſh, the ſand will ſpin out like water.

That the parts of fluids are in continual motion, the Carteſians bring divers conſiderations to prove. As, 1°, The tranſmutation of ſolids into fluids, *e. gr.* ice into water, and vice verſa; the chief difference between the body in thoſe two ſtates conſiſting in this, that the parts, being fixed and at reſt in the one, reſiſt the touch; whereas in the other, being already in motion, they give way upon the ſlighteſt impulſe.

2°, The effects of fluids, which commonly proceed from motion: ſuch are the inſinuation of fluids among the pores of bodies; the ſoftening and diſſolving hard bodies; the actions of corroſive menſtruums, *&c.* Add, that no ſolid can be brought to a ſtate of *fluidity*, without the intervention of ſome moving, or moveable body, as fire, air, or water.

Air, the ſame gentlemen hold the firſt ſpring of theſe cauſes of *fluidity*; it being this that gives motion to fire and water, though itſelf receives its motion and action from the æther, or ſubtle medium.

Boerhaave pleads ſtrenuouſly for fire's being the firſt mover, and the cauſe of all *fluidity* in other bodies, as air, water, *&c.* Without this, he ſhews that the atmoſphere itſelf would fix into one ſolid maſs.

Sir I. Newton ſets aſide this theory of the cauſe of *fluidity*, and ſubſtitutes a new one, the great principle of attraction. —The corpuſcular ſyſtem, with all the improvements of Deſcartes, and Mr. Boyle, did not ſufficiently account for the primary condition, requiſite to conſtitute a body fluid, *viz.* the various inteſtine motion and agitation of its particles. But this motion is naturally enough accounted for, by ſuppoſing it a primary law of nature, that as all the particles of matter attract each other when within a certain diſtance; ſo at all greater diſtances, they fly from, and avoid one another. For then, though their common gravity, together with the preſſure of other bodies upon them, may keep them together in a maſs; yet their continual endeavour to avoid one another ſingly, and the adventitious impulſes of heat, and light, or other external cauſes, may make the particles of fluids continually move round about one another, and ſo produce this quality.

There is a difficulty indeed, in accounting, why the particles of fluids always keep at ſuch a diſtance from one another, as not to come within the ſphere of one another's attraction. The fabric and conſtitution of that fluid body, water, is amazing; that a body ſo very rare, and which has a vaſt over-proportion of pores, or interſperſed vacuity, to ſolid matter, ſhould yet be perfectly incompreſſible by the greateſt force: and yet this fluid is eaſily reducible into that firm, tranſparent, friable body, which we call ice; by being only expoſed to a certain degree of cold.

One would think, that though the particles of water cannot come near enough to attract each other; yet the intervening frigorific matter doth, by being mingled per minima, ſtrongly attract them, and is itſelf likewiſe ſtrongly attracted by them, and ſo wedges or fixes all the maſs into a firm, ſolid body; which ſolid body loſes its ſolidity again, when by heat the vinculum is ſolved, and the frigorific particles are disjoined from thoſe of the water, and are forced to fly out of it. And juſt thus may the fumes of lead perhaps fix quickſilver.

When a firm ſolid body, ſuch as a metal, is by heat reduced into a fluid, the particles of fire disjoin and ſeparate its conſtituent parts, which their mutual attraction cauſed before to cohere; and keep them at ſuch a diſtance from one another, as that they are out of the ſphere of each other's attraction, as long as that violent motion laſts; and when by their lightneſs and activity they are flown off, unleſs they be renewed by a continual ſupply, the component particles of the metal finally come near enough again to feel one another's attractions.

As, therefore, the cauſe of coheſion of the parts of ſolid bodies appears to be their mutual attraction; ſo the chief cauſe of *fluidity* ſeems to be a contrary motion, impreſſed on the particles of fluids; by which they avoid and fly one another, as ſoon as they come at, and as long as they keep at ſuch a diſtance from each other.

It is obſerved alſo in all fluids, that the direction of their preſſure againſt the veſſels which contain them, is in lines perpendicular to the ſides of ſuch veſſels; which property being the neceſſary reſult of the particles of any fluid's being ſpherical, it ſhews that the parts of all fluids are ſo, or of a figure very nearly approaching thereto.

FLUIDS are bodies, whoſe particles are but weakly connected; their mutual coheſion being in great meaſure prevented by ſome external cauſe.

In this ſenſe a *fluid* ſtands oppoſed to a ſolid.

—Sir I. Newton defines a *fluid* body, to be that whoſe parts yield to the ſmalleſt force impreſſed, and by yielding are eaſily moved among each other.

The cauſe, therefore, of fluidity, ſhould ſeem to conſiſt in this, that the parts do not cohere ſo ſtrongly as they do in ſolid or firm bodies; and that their motion is not hindered by any inequality in the ſurface of the parts; as is the caſe in powders.

For, that the particles whereof *fluids* conſiſt, are of the ſame nature, and have the ſame properties, with the particles of ſolids, is evident, from the converſion of liquids and ſolids into each other, *e. gr.* of water into ice, of metals into fluors, *&c.* Nor can it be reaſonably doubted, that the component parts of all bodies are the ſame, *viz.* hard, ſolid, impenetrable, moveable corpuſcles.

The Carteſians define a *fluid* to be a body whoſe parts are in continual inteſtine motion; and Dr. Hook, Mr. Boyle, and Boerhaave, though far from Carteſianiſm, ſubſcribe to the definition: alleging arguments to prove, that the parts of *fluids* are in continual motion; and even that it is this motion, which conſtitutes fluidity.

The later Newtonians dare not go ſo far: to ſay that the parts of a *fluid* are in continual motion, is more than either our ſenſes, experience, or reaſon, will warrant; and to define a thing from a property that is diſputable, is certainly bad philoſophy.

Add, that the great argument from geometry, produced in favour of this continual motion, *viz.* that the reſiſtance of a body moving in a *fluid* is leſs, if the parts of the *fluid* be agitated by an inteſtine motion, than if they were at reſt, is demonſtrated to be falſe.

We obſerve therefore, with Dr. Clark, that if the parts of a body either do not touch each other, or eaſily ſlide over one another; and are of ſuch a magnitude, as that they may be eaſily agitated by heat, and the heat be ſufficiently great to agitate them, though it may perhaps be leſs than ſuffices to prevent water from freezing; or, even, though the parts be not actually moved; yet, if they be ſmall, ſmooth, ſlippery, and of ſuch a figure and magnitude as diſpoſes them to move, and give way; that body is *fluid*.

And yet the particles of ſuch *fluid* bodies, do, in ſome meaſure, cohere; as is evident hence, that mercury, when well purged of air, will be ſuſtained in the barometer, to the height of 60 or 70 inches; that water will aſcend in capillary tubes even in vacuo; and that the drops of liquors in vacuo run into a ſpherical form: as adhering by ſome mutual coheſion like that between poliſhed marble planes. Add, that theſe *fluid* bodies, if they conſiſt of particles that are eaſily entangled within each other, as oil; or if they be capable of being ſtiffened by cold, and joined by the interpoſition of little cunei, or wedges, as water; they are eaſily rendered hard: but if their particles be ſuch as can neither be entangled, as air; nor ſtiffened by cold, as quickſilver; then they never grow hard and fixed.

Fluids are called either *natural*, as water, and mercury; or *animal*, as blood, milk, bile, lymph, urine, *&c.* or *factitious*, as wines, ſpirits, oils, *&c.* See each under its proper article.

The doctrine and laws of *fluids* are of the greateſt extent in philoſophy.—The preſſure and gravitation of bodies in *fluids*, and the action of the *fluids* immerged in them, make the ſubject of hydroſtatics.

Hydroſtatical Laws of Fluids.—I. The upper parts of all *fluids*, as water, *&c.* do preſs upon the lower: or, as ſome philoſophers ſtate it, all *fluids* do gravitate in proprio loco.

The contrary of this was a principle in the ſchool-philoſophy; but the certainty of ſuch preſſure is now demonſtrated by a thouſand experiments: it will be ſufficient to inſtance one or two.

Immerge a tube, open at both ends, and half filled with oil of turpentine, in a veſſel of water, the upper end of the tube being ſtopped with the finger: if now the upper ſurface of the oil lie as low as that of the water; the oil, upon removing the finger, will not run out at the lower end of the tube; nay, and if the tube be thruſt a little lower, the water will riſe up in it, and bear the oil above it: but if the upper ſurface of the oil be conſiderably higher than that of the water, the oil will drop out of the tube. Whence it follows, that the column of oil in one caſe preſſes or gravitates leſs on the plane imagined to paſs under its lower ſurface, than a column of water; and in the other caſe, more.

Or thus; an empty phial, cloſe ſhut, being immerged in water, and ſuſpended by a horſe-hair to the beam of a balance, with a weight at the other end exactly counterpoiſing it; upon unſtopping the phial, and letting it fill with water, it will preponderate, and bear down the end of the balance, without having any communication with the external air.

Which two experiments abundantly prove the propoſition, that the upper parts of *fluids* do really preſs or gravitate on the lower.

From this gravity it follows, that the ſurfaces of ſtagnant *fluids* are plain, and parallel to the horizon; or rather, that they are ſegments of a ſphere concentrical with the earth.

For, as the particles are ſuppoſed to yield to any force impreſſed, they will be moved by the action of gravity, till ſuch time as none of them can deſcend any lower. And this ſituation once attained, the *fluid* muſt remain at reſt, unleſs put in motion by ſome foreign cauſe; inaſmuch as none of the particles can now move without aſcending, contrary to their natural tendency.

II. If a body be immerged in a *fluid*, either wholly, or in part; its lower ſurface will be preſſed upward by the water underneath it.

The truth of this propoſition is evident from the experiment above-mentioned; where the oil of turpentine was ſuſpended, nay and made to mount up in the tube, by the preſſure of the water upwards on its lower parts.

The law or quantity of this preſſure is this; that a body immerged in a *fluid*, loſes juſt ſo much of the weight it would have in air, as ſo much of the *fluid* as is equal to it in bulk, if weighed in the air, would amount to.

This preſſure of *fluids* on the lower parts of an immerſed body is farther confirmed, by attending to the reaſon why bodies ſpecifically lighter than *fluids* aſcend therein. The effect is owing to this, that there is a greater preſſure or weight on every other part of the plane or ſurface of the *fluid* imagined to paſs under the lower ſurface of the body, than there is on that whereon the emerging body inſiſts. Conſequently, to produce an equilibrium in the *fluid*, the parts immediately under the riſing body, being preſſed by the reſt every way, do continually force it upwards.

In effect, the emerging body is continually preſſed on by two columns of water, one bearing againſt its upper, and the other againſt its lower parts: the length of both which columns being to be accounted from the top of the water, that which preſſes on the lower part, will be the longer, by the thickneſs of the aſcending body, and conſequently will overbalance it by the weight of as much water as will fill the ſpace that body takes up.

Hence, 1°, We are furniſhed with one reaſon, why very minute corpuſcles, either heavier, or lighter, than the liquor they are mingled with, will be ſuſtained therein a good while, without either emerging to the top, or precipitating to the bottom; the difference between the two columns of the *fluid* being here inconſiderable.

Hence, 2°, If a body A be ſpecifically lighter than B, an equal portion of the *fluid* in which it is immerged; it will riſe with a force proportionable to the exceſs of gravity of B above A: and if A be ſpecifically heavier than B, it gravitates and deſcends with the exceſs only of its weight above that of B.

III. The preſſure of the upper parts of a *fluid* on the lower exerts itſelf every way, and every way equally, laterally, horizontally, and obliquely, as well as perpendicularly.

For, as the parts of a *fluid* yield to any impreſſion, and are eaſily moved; it is impoſſible any drop ſhould remain in its place; if, while it is preſſed by the ſuperincumbent *fluid*, it be not equally preſſed on every ſide.

The ſame is confirmed from experiments: for ſeveral tubes of divers forms, ſtrait, curved, angular, *&c.* being immerſed in the ſame *fluid*, though the apertures, through which the *fluid* enters, be differently poſited to the ſurface or plane, ſome being perpendicular, others parallel, and others variouſly declined; yet will the *fluid* riſe to an equal height in them all.

Hence, 1. All the particles of *fluids* being thus equally preſſed on all ſides, it is argued, that they muſt be at reſt, and not in continual motion, as has been uſually ſuppoſed.

Hence, 2. alſo, A body, being immerſed in a *fluid*, ſuſtains a lateral preſſure from the *fluid*; which is alſo increaſed as the body is placed deeper beneath the ſurface of the *fluid*.

IV. In tubes that have a communication with each other, whatever their magnitude be, whether equal, or unequal; and whatever their form, whether ſtrait, angular, or crooked; ſtill, *fluids* riſe in them to the ſame height.

V. If a *fluid* riſe to the ſame altitude in two tubes that communicate with each other; the *fluid* in one tube is a balance, or equal in weight, to that in the other.

If the tubes be of equal diameters, the columns of the *fluid*, having the ſame baſe and altitude, are equal, and conſequently their gravities equal; ſo that they preſs and gravitate againſt each other with equal force.

This is demonſtrated from mechanics. *E. gr.* Let the baſe of G I, *Tab. Hydroſtat. fig.* 6. be ſuppoſed quadruple the baſe of H K; and let the *fluid* deſcend in the greater tube the ſpace of an inch, as from L to O; it will then riſe in the other the ſpace of four inches, as from M to N. Wherefore the velocity wherewith the *fluid* moves in the tube H K, is to that wherewith it moves in G I, as the baſe of the tube G I to the baſe of the other, H K. But the altitude of the *fluid* being ſuppoſed the ſame in both tubes, the quantity of the *fluid* in the tube G I will be to that in the other tube H K, as the baſe of the tube G I to the baſe of the other H K.

Conſequently, the momentum of the *fluid* in the tube G I is to that in the tube H K, as the product of the baſe of the tube G I into the baſe of the other H K, to the factum of the tube H K into the baſe of the other G I. Wherefore, the products being equal, the momenta muſt be equal.

The ſame is eaſily demonſtrated where one of the tubes is inclined, and the other perpendicular, *&c.*

Hence in tubes that communicate, the *fluid* will preponderate in that where its altitude is the greateſt.

VI. In communicating tubes, *fluids* of different ſpecific gravities will equiponderate, if their altitudes be in the ratio of their ſpecific gravities.

Hence we have a way of finding the ſpecific gravities of *fluids*; viz. by pouring one *fluid* into one of the communicating tubes, as A B (*fig.* 7.), and another into the other tube C D; and meaſuring the altitudes E B and F D, at which they ſtand when balanced.

For the ſpecific gravity of the *fluid* in A B is to that in D C, as D H to B G.—If the *fluids* employed in this experiment be apt to mix, it may be proper to fill the horizontal tube B D with mercury, to prevent the mixture.

Hence, ſince the denſities of *fluids* are as their ſpecific gravities; the denſities will likewiſe be as the altitudes of the *fluid* D H and B G; ſo that we have hence likewiſe a method o determining the denſities of *fluids*. See Density.

VII. The bottoms and ſides of veſſels are preſſed in th ſame manner, and by the ſame laws, as the liquids containe in them.

And hence, as action and re-action are equal; the *fluids* themſelves ſuſtain an equal preſſure from the bottoms and ſides.—And as the preſſion of *fluids* is equal every way, the botto and ſides are preſſed as much as the neighbouring parts of th *fluids*: and conſequently this action increaſes in proportion t the height of the *fluid*, and is equal every way at the ſam depth; as depending altogether on the height, and not at a on the quantity, of the *fluid*.

VIII. In perpendicular veſſels of equal baſes, the preſſure o *fluids* on the bottoms is in the ratio of their altitudes.

This is evident, in that the veſſels being perpendicular, t bottoms are horizontal: conſequently the tendency of *flu* by the action of gravity will be in lines perpendicular to t bottom, ſo that they will preſs with all their weight; t bottoms therefore are preſſed in the ratio of the graviti But the gravities are as the bulks; and the bulks here a as the altitudes; therefore the preſſures on the bottoms are the altitudes.

IX. In perpendicular veſſels of unequal baſes, the preſſure the bottoms is in a ratio compounded of the baſes, and al tudes.

From the preceding demonſtration it appears, that the bo toms are preſſed in the ratio of the gravities: and the g vit vities of *fluids* are as their bulks; and their bulks in a ratio compounded of the baſes and altitudes. Conſequently, &c.

X. If an inclined veſſel ABCD, *fig.* 8. have the ſame baſe and altitude with a perpendicular one, BEFG; the bottoms of each will be equally preſſed.

For, in the inclined veſſel ABCD, the bottom CD is preſſed in the direction BD. But the force of gravity in the direction BD is to the abſolute gravity, as BE to BD.

Conſequently, the bottom CD is preſſed in the ſame manner, as if it had been preſſed perpendicularly by the *fluid* under the altitude BE. Therefore, the bottoms of the perpendicular and inclined veſſels are equally preſſed.

XI. *Fluids* preſs upon ſubject bodies, according to their perpendicular altitude, and not according to their latitude, or breadth.

Or, as others ſtate it, thus: If a veſſel be taper, or unequally big at top and bottom; yet the bottom will be preſſed after the ſame manner as if the veſſel were cylindrical, and the top and bottom equal.

Or thus: The preſſure ſuſtained by the bottom of a veſſel, whatever the figure of the veſſel be, is ever equal to the weight of a column of the *fluid*, whoſe baſe is the bottom itſelf, and height, the vertical diſtance of the upper ſurface of the water from the bottom.

Or, yet more explicitly, thus: If there be two tubes or veſſels, having the ſame heights, and baſes, both filled with water; but one of them made ſo tapering upwards, that it ſhall contain but twenty ounces of water; whereas the other, widening upwards, holds two hundred ounces; yet the bottoms of the two tubes ſhall ſuſtain an equal preſſure of water, viz. each of them that of the weight of two hundred ounces.

This is a noble paradox in hydroſtatics, firſt diſcovered by M. Paſchal, and which it is well worth the clearing, and inſiſting on. It is found unexceptionably true from abundant experiments; and it may even be demonſtrated and accounted for on principles of mechanics.

Suppoſe, *e. gr.* the bottom of a veſſel CD (*fig.* 9.) leſs than its top AB; ſince the *fluid* preſſes the bottom CD, which we ſuppoſe horizontal, in a perpendicular direction, EC, none but that part within the cylinder ECDF can preſs upon it; the natural tendency and preſſure of the reſt being taken off by the ſides.

Again, ſuppoſing the bottom CD (*fig.* 10.) much bigger than the top FG; or even, for the eaſier demonſtration, ſuppoſe a tube FE fixed in a cylinder ABCD; and ſuppoſe the bottom CD raiſed to L, that the *fluid* may be moved through the interval DL; then will it have riſen through the altitude GH, which is to DL, as the baſe CD to that GF. The velocity therefore of the *fluid* FE is to its velocity in the veſſel AD, as the baſe CD to the baſe FG.

Hence, we have the momentum wherewith the *fluid* in the tubes tends downwards, by multiplying the baſe of the cylinder CD into its altitude CK.

Conſequently, the bottom CD is preſſed with the ſame force, as it would be preſſed by the cylinder HCDI.

To confirm and illuſtrate this doctrine of the preſſure of *fluids* in the ratio of the baſe and altitude, provide a metallic veſſel ACDB (*fig.* 10.) ſo contrived, as that the bottom CD may be moveable, and to that end fitted in the cavity of the veſſel with a rim of wet leather, to ſlide without letting any water paſs. Then, through a hole in the top, AB, apply ſucceſſively ſeveral tubes of equal altitudes, but of different diameters Laſtly, faſtening a ſtring to the beam of a balance, and fixing the other end by a little ring K to the moveable bottom; put weights in the other ſcale, till they be ſufficient to raiſe the bottom CD: then will you not only find, that the ſame weight is required, what diameter or magnitude ſoever the tube be of; but even, that the weight which will raiſe the bottom when preſſed by the ſmalleſt tube, will raiſe it when preſſed by the whole cylinder HCDI.

XII. The moſt ſolid and ponderous body, though, when near the ſurface of the water, it would ſink with great velocity; yet, if placed at a greater depth than twenty times its own thickneſs, will not ſink, unleſs aſſiſted by the weight of the incumbent water.

Thus, immerge the lower end of a ſlender glaſs tube in a veſſel of mercury: then, ſtopping the upper end with your finger, you will by that means keep about half an inch of that ponderous *fluid* ſuſpended in the tube. Laſtly, keeping the finger thus, immerge the tube in a long glaſs of water, till the little column of mercury be more than thirteen or fourteen times its length under water; then, removing the finger, you will find; that the mercury will be kept ſuſpended in the tube by the preſſure of the water upwards: but if you raiſe the tube a very little above the former ſtation, the mercury will immediately run out; whereas, if, before you had removed your finger from the top, you had ſunk the pipe ſo low, as that the mercury were twelve or fourteen inches, &c. below the ſurface of the water; the mercury would be violently forced up, and make ſeveral aſcents and deſcents in the tube, till it had gained its proper ſtation, according to the laws of ſpecific gravity.

Hence then we have a ſolution of the phænomenon of two poliſhed marbles, or other planes, adhering ſo ſtrongly together: in that the atmoſphere preſſes or gravitates with its whole weight on the under ſurface, and ſides of the lower marble; but cannot do ſo at all on its upper ſurface, which is cloſely contiguous to the upper and ſuſpended marble.

For the laws of the preſſure and gravitation in FLUIDS ſpecifically heavier, or lighter, than the bodies immerged, ſee GRAVITY *Specific*.

For the laws of the reſiſtance of FLUIDS, or the retardation of ſolid bodies moving in *fluids*, ſee RESISTANCE.

For the aſcent of FLUIDS in capillary tubes, or between glaſs planes, ſee ASCENT.

The motions of *fluids*, and particularly water, do alſo make the ſubject of hydraulics.

Hydraulic Laws of FLUIDS.—I. The velocity of a *fluid*, as water, moved by the preſſure of a ſuperincumbent *fluid*, as air, is equal at equal depths, and unequal at unequal ones.

For the preſſure being equal at equal depths, the velocity ariſing thence muſt be ſo too; and vice verſa: yet does not the velocity follow the ſame proportion as the depth; notwithſtanding that the preſſure, whence the velocity ariſes, does increaſe in the proportion of the depth. But here the quantity of the matter is concerned: and the quantity of motion, which is compounded of the ratio of the velocity and quantity of matter, is increaſed in equal times as the ſquares of the velocities.

II. The velocity of a *fluid* ariſing from the preſſure of a ſuperincumbent *fluid*, at any depth, is the ſame as that which a body would acquire in falling from a height equal to the depth; as is demonſtrated both from mechanics and experiments. See DESCENT.

III. If two tubes of equal diameters, full of any *fluid*, be placed any how, either erect, or inclined; provided they be of the ſame altitude, they will diſcharge equal quantities of the *fluid* in equal times.

That tubes, every way equal, ſhould, under the ſame circumſtances, empty themſelves equally, is evident; and that the bottom of a perpendicular tube is preſſed with the ſame force, as that of an inclined one, when their altitudes are equal, has already been ſhewn. Whence it eaſily follows, that they muſt yield equal quantities of water, &c.

IV. If two tubes of equal altitudes, but of unequal apertures, be kept conſtantly full of water; the quantities of water they yield in the ſame time, will be as the diameters: and this, whether they be erect, or any way inclined.

Hence, if the apertures be circular, the quantities of water emptied in the ſame time, ought to be in a duplicate ratio of the diameters.

But this law, Mariotte obſerves, is not perfectly agreeable to experiment. If one diameter be double the other, the water flowing out of the leſs is found more than a fourth of what flows out of the greater. But this may have been owing to ſome accidental irregularities in making the experiments.

Wolfius however aſcribes it principally to this, that the column of water directly over the aperture is ſhorter than that next the ſides or parietes of the veſſel: for the water, in its efflux, forms a kind of cavity over the aperture; that part immediately over it being evacuated firſt, and the other water not running faſt enough from the ſides to ſupply it. Now, this cavity, or diminution of altitude, being greater in the greater tube, than in the leſs; hence the preſſure, or endeavour to paſs out, becomes proportionably leſs in the greater tube, than in the leſs.

V. If the apertures E and F of two tubes AB and CD (*fig.* 12. and 13.) be equal, the quantities of water, diſcharged in the ſame time, will be as the velocities.

VI. If two tubes have equal apertures E and F, and unequal altitudes AB and CD; the quantity of water diſcharged from the greater AB, will be to that diſcharged from CD, in the ſame time, in a ſubduplicate ratio of the altitudes AB and CD.

Hence, 1°, The altitudes of waters, AB, and CD, diſcharged through equal apertures E and F, will be in a duplicate ratio of the waters diſcharged in the ſame time.—And as the quantities of water are as the velocities; the velocities are likewiſe in a ſubduplicate ratio of their altitudes.

Hence, 2°, The ratio of the waters diſcharged by two tubes AB, and CD, together with the altitude of one of them, being given; we have a method of finding the altitude of the other, *viz.* by finding a fourth proportional to the three given quantities; which proportional, multiplied by itſelf, gives the altitude of CD, required.

Hence, alſo, 3°, The ratio of the altitudes of two tubes of equal apertures being given, as alſo the quantity of water diſcharged by one of them; we have a method of determining the quantity the other ſhall diſcharge in the ſame time. Thus, to the given altitudes, and the ſquare of the quantity of water diſcharged at one aperture, find a fourth proportional.

tional. The ſquare root of this will be the quantity of water required.

Suppoſe, *e. gr.* the height of the tubes as 9 to 25, and the quantity of water diſcharged at one of them, three inches: that diſcharged by the other will be $=\sqrt{(9\cdot25:9)}=\sqrt{25}=5$.

VII. If the altitude of two tubes AB and CD be unequal, and the apertures E and F be likewiſe unequal; the quantities of water, diſcharged in the ſame time, will be in a ratio compounded of the ſimple ratio of the apertures; and the ſubduplicate one of the altitudes.

And hence, if the quantities of water diſcharged in the ſame time by two tubes, whoſe apertures and altitudes are unequal, be equal, the apertures are reciprocally as the roots of the altitudes, and the altitudes in a reciprocal ratio of the ſquares of the apertures.

VIII. If the altitudes of two tubes be equal, the water will flow out with equal velocity, however unequal the apertures be.

IX. If the altitudes of two tubes, AB and CD, as alſo their apertures, E and F, be unequal; the velocities of the waters diſcharged are in a ſubduplicate ratio of their altitudes.

And hence, 1°, As the velocities of waters flowing out at equal apertures, when the altitudes are unequal, are alſo in a ſubduplicate ratio of the altitudes; and as this ratio is equal, if the altitudes be equal; it appears in the general, that the velocities of waters flowing out of tubes, are in a ſubduplicate ratio of the altitudes.

Hence alſo, 2°, The ſquares of the velocities are as the altitudes.

Mariotte found, from repeated experiments, that if a veſſel ABCD have a tube EG fitted to it, there will more water be evacuated through the tube, than there could have been, in the ſame time, through the aperture of the veſſel E without the tube; and that the motion of the *fluid* is accelerated ſo much the more, as the tube EG is the longer.

E. gr. The altitude of a veſſel AC being one foot, that of the tube EG three feet, and the diameter of the aperture three lines; no leſs than 6½ ſeptiers of water were diſcharged in the ſpace of one minute; whereas, upon taking off the tube, only four ſeptiers were diſcharged. Again, when the length of the tube EG was ſix feet, and the diameter of the aperture G an inch; the whole quantity of water ran out in thirty-ſeven ſeconds; but, cutting off half the tube, the veſſel was not evacuated in leſs than forty-five ſeconds; and, taking it quite away, in leſs than ninety-five ſeconds.

X. The altitudes and apertures of two cylinders full of water, being the ſame, one of them will diſcharge double the quantity of water diſcharged in the ſame time by the other, if the firſt be kept continually full, while the other runs itſelf empty; for the velocity of the full veſſel will be equable, and that of the other will be continually retarded. Now, it is demonſtrated, that, if two bodies be impelled by the ſame force, and the one proceeds equably, and the ſecond is equably retarded, by that time they have loſt all their motion, the one has moved double the ſpace of the other.

XI. If two tubes have the ſame altitudes, and equal apertures, the times wherein they will empty themſelves, will be in the ratio of their baſes.

XII. Cylindric and priſmatic veſſels, as ABCD (fig. 14.), empty themſelves by this law, that the quantities of water diſcharged in equal times decreaſe, according to the uneven numbers 1, 3, 5, 7, 9, &c. taken backwards.

For the velocity of the deſcending level FG is continually decreaſing in the ſubduplicate ratio of the decreaſing altitudes; but the velocity of a heavy body deſcending, increaſes in the ſubduplicate ratio of the increaſing altitudes. The motion, therefore, of the level FG, in its deſcent from G to B, is the ſame as if it were to deſcend in the inverſe ratio from B to G; but, if it deſcend from B to G, the ſpaces, in equal times, would increaſe, according to the progreſſion of the uneven numbers; conſequently the altitudes of the level FG, in equal times, would decreaſe, according to the ſame progreſſion inverſly taken.

Hence, therefore, the level of water FG deſcends by the ſame law, as, by an equal force impreſſed, it would aſcend through an altitude equal to FG.

From this principle might many other particular laws of the motion of *fluids* be demonſtrated, which, for brevity-ſake, we here omit.

To divide a cylindrical veſſel into parts, which ſhall be evacuated in certain parts or diviſions of time, ſee CLEPSYDRA.

XIII. If water, deſcending through a tube HE (fig. 15.), ſpout up at the aperture G, whoſe direction is vertical, it will riſe to the ſame altitude GI, at which the level of the water LM, in veſſel ABCD, does ſtand.

For ſince the water is driven through the aperture G by the force of gravity of the column EK, its velocity will be the ſame as that with which a body, by the ſame force impreſſed, would riſe to the altitude FI: wherefore, ſince the direction of the aperture is vertical, the direction of the water ſpouting through it, will be ſo too; conſequently the water muſt riſe to the height of the level of the water LM in the veſſel.

Indeed, by the experiment, it appears, that the water does not riſe quite ſo high as I: beſide, that the aperture G ſhould be ſmaller, as the height of the level of the water is leſs; and even ſmaller when mercury is to be ſpouted, than when water. But this is no objection to the truth of the theorem; it only ſhews, that there are certain external impediments, which diminiſh the aſcent.

Such are, the reſiſtance of the air, the friction of the tube, and the gravity of the deſcending *fluid*.

XIV. Water, deſcending through an inclined tube, or a tube bent in any manner, will ſpout up, through a perpendicular aperture, to the height at which the level of the water in the veſſel ſtands.

XV. The lengths or diſtances DE and DF, or IH, and IG (fig. 16.) to which water will ſpout either through an inclined, or an horizontal aperture D, are in a ſubduplicate ratio of the altitudes in the veſſel or tube AB and AD.

For ſince water, ſpouted out through the aperture D, endeavours to proceed in the horizontal line DF, and, at the ſame time, by the power of gravity, tends downwards in lines perpendicular to the ſame; nor can the one power hinder the other, inaſmuch as the directions are not contrary; it follows, that the water, by the direction BA, will arrive at the line IG in the ſame time wherein it would have arrived at it, had there been no horizontal impulſe at all. Now, the right lines IH and IG are the ſpaces which the ſame water would have deſcribed in the mean time by the horizontal impetus; but the ſpaces IH and IG, inaſmuch as the motion is uniform, are as the velocities: conſequently the velocities are in a ſubduplicate ratio of the altitudes AB and AD; and therefore the lengths or diſtances, to which the water will ſpout in apertures either horizontal or inclined, are in a ſubduplicate ratio of the altitudes.

Hence, as every body, projected either horizontally or obliquely, in an unreſiſting medium, deſcribes a parabola; water projected either through a vertical or inclined ſpout, will deſcribe a parabola.

Hence we have a way of making a delightful kind of water arbours, or arches, *viz.* by placing ſeveral inclined tubes i the ſame right line.

On theſe principles are formed various hydraulic engines fo the raiſing, &c. of *fluids*, as pumps, ſiphons, fountains, o jets d'eau, &c. which ſee deſcribed under their proper article PUMP, SIPHON, FOUNTAIN, SPIRAL SCREW, &c.

For the laws of the motion of FLUIDS, by their own gravity, along open chanels, &c. ſee RIVER, and WAVE.

For the laws of preſſure and motion of air, conſidered as FLUID, ſee AIR, and WIND.

FLUMMERY, a wholſome ſort of vegetable jelly, made o oatmeal.

The manner of preparing it in the weſtern parts of Englan is, to take half a peck of wheat bran, which muſt be ſoake in cold water three or four days; then ſtrain out the milk water of it, and boil it to a jelly; afterwards ſeaſon it wit ſugar; add ſome roſe and orange-flower water; and let i ſtand till cold and thickened again; and then eat it with whit or rheniſh-wine, or with cream.

FLUOR, in phyſic, &c. denotes a fluid; or, more properl the ſtate of a body, which was before hard and ſolid, but now reduced, by fuſion or fire, into a ſtate of fluidity.

Gold and ſilver will remain a long time in *fluor*, kept to the by the intenſeſt heat, without loſing any thing of their weigh See GOLD, FIXITY, &c.

FLUOR is alſo uſed, by the modern mineral writers, for ſuch ſo tranſparent, ſparry kinds of mineral concretions, as are fre quently found amongſt ores and ſtones, in mines and qua ries.

Theſe are of a ſtony nature, and reſemble gems, but are le hard, and are called *metallic fluors* and *ſpars. See Supplemen article* SPAR.

FLUOR *Albus*, or *Uterinus*, a kind of flux, incident to wome popularly called the *whites*.

It conſiſts in an irregular, diſorderly diſcharge of ſome corru humour from the uterus, ſometimes white and pale, like whe ſometimes yellow, green, or blackiſh. At firſt, it is uſual mild, and harmleſs; but, in time, it grows hot, ſharp, a corroſive, and excoriates all the parts it touches.

It is attended with a pain in the ſpina dorſi, a ſwelling of t feet and eyes, wearineſs, lumbago, a loſs of appetite, chan of complexion, &c.

It is frequently produced from a too heavy and laſting grief.

It muſt be carefully diſtinguiſhed from an ulcer in the uteru and a gonorrhœa, which laſt it greatly reſembles.

It happens to all ages, from girls of three years old; and all times, before, after, or even along with, the menſes, a even to women with child.

Etmuller takes it for a gonorrhœa muliebris, analogous to a non-virulent gonorrhœa in men, flowing out of the glandulæ of the proſtates.

What the coryza is in the noſtrils; too much weeping in the eyes; and coughing and hawking in the fauces; that, according to Etmuller, is this *fluor* in the uterus.

According to Pitcairn, all the difference between the venereal gonorrhœa, and a *fluor albus*, is, that the humour evacuated in the latter is viſcid, and in the former quite thin and ſerous. The ſame author adds, that the *fluor albus* can only be cured by medicines proper for the venereal diſeaſe. See Supplement, article Fluor Albus.

FLUTE *, an inſtrument of muſic, the ſimpleſt of all thoſe of the wind-kind; played, by blowing in it with the mouth; and the tones or notes formed and changed by ſtopping or opening holes diſpoſed for that purpoſe all along it.

* The Latins call it *fiſtula*, and ſometimes *tibia*, pipe; from the former of which, ſome derive the word *flute*: though Borel will have it derived from *flutta*, a lamprey, thus called *a fluitando in fluviis*; in regard the *flute* is long, like the lamprey; and has holes all along it, like that fiſh.

The antient *fiſtulæ*, or *flutes*, were made of reeds; afterwards they were of wood; and at length of metal. But how they were blown, whether as our *flutes*, or hautboys, does not appear.

It is plain, ſome had holes, which at firſt were but few; but afterwards were increaſed to a greater number; and ſome had none. Some were ſingle pipes, and ſome a combination of ſeveral, particularly Pan's ſyringa, which conſiſted of ſeven reeds, joined together ſideways.

Theſe ſeven reeds had no holes, each giving but one note, in all ſeven diſtinct notes; but at what intervals, is not known: perhaps they were the notes of the natural, or diatonic ſcale.

The *German flute* is different from the common one: it is not put into the mouth, by the end, as the ordinary ones are; the end is ſtopped up with a plug, or tampion; but the lower lip is applied to a hole a little way diſtant from it.

It is made equally big every-where, and perforated with ſix holes, beſide that of the mouth.

Flute *, or Fluyt, is alſo a kind of long veſſel, with flat ribs, or floor timbers; round behind, and ſwelled in the middle; ſerving chiefly for the carrying of proviſions in fleets, or ſquadrons of ſhips: though it is alſo uſed in merchandize.

* The word *flute*, taken for a ſort of boat, or veſſel, is derived, according to Borel, from the antient *flotte*, a little boat. In the verbal proceſs of the miracles of St. Catharine of Sweden, in the xiith century, we read, *Unus equum ſuum una cum mercibus magni ponderis introduxit ſuper inſtrumentum de lignis fabricatum, vulgariter dictum* Fluta. Upon which the Bollandiſts obſerve, that in ſome copies it is read *flotta*, an inſtrument called by the Latins *ratis*; and that the word *flutta*, or *flotta*, aroſe from *flotten*, or *vlotten*, to float.

Flute-*Grafting*. See the article Engrafting.

Flutes, or Flutings, in architecture, are perpendicular chanels, or cavities, cut along the ſhaft of a column, or pilaſter. —See *Tab. Archit. fig.* 32. *lit. dd*, *fig.* 28. *lit. uu.*

They are ſuppoſed to have been firſt introduced in imitation of the plaits of womens robes; and are therefore called by the Latins, *ſtriges*, and *rugæ*.

The French call them *cannelures*, as being excavations; and we, *flutes*, or *flutings*, as bearing ſome reſemblance to the muſical inſtrument ſo called.

They are chiefly affected in the Ionic order, in which they had their firſt riſe; though they are alſo uſed in all the richer orders, as the Corinthian, and Compoſite; but rarely in the Doric; and ſcarce ever in the Tuſcan.

Their number is uſually 24, though in the Doric it is only 20.

Each *flute* is hollowed exactly in a quadrant of a circle.

Between the *flutes* are little ſpaces that ſeparate them, called, by Vitruvius, *ſtriæ*, and by us, *liſts*; though in the Doric, the *flutes* are frequently made to join each other, without any intermediate ſpace at all; the liſt being ſharpened off to a thin edge, which forms a part of each *flute*.

In ſome buildings we ſee columns with *flutes* that go winding round the ſhaft, ſpirally; but this is rather looked on as an abuſe.

Vignola determines the depth of the *flutes*, by taking the angle of an equilateral triangle for the centre. Vitruvius deſcribes it from the middle of the ſquare, whoſe ſide is the breadth of the *flute*: which latter method makes them deep.

The *flutes*, or *ſtriges*, are frequently filled up with a prominent, or ſwelling ornament, ſometimes plain, in form of a ſtaff, or reed; and ſometimes a little carved, or enriched, in imitation of a rope, or otherwiſe; and therefore called *rudentures*, or *cablings*; and the columns, thus enriched, are called *cabled columns*.

This is moſt frequent in the Corinthian order. The cablings, or fillings up, commence from about one-third of the height of the column, reckoning from the baſe: and are continued to the capital: that is, they begin and end with the diminution of the column.

Flutes, or *Flutings*, are alſo uſed, in botany, to denote the ſtems and fruits of certain plants, which have furrows analogous to thoſe of theſe columns.

FLUX, Fluxus, in medicine, an extraordinary iſſue, or evacuation of ſome humour.

Fluxes are various, and variouſly denominated, according to their ſeats, or the humours thus voided; as a *flux* of the belly; uterine *flux*, hepatic *flux*, ſalival *flux*, &c.

The *flux* of the belly is of four kinds, which have each their reſpective denominations; *viz.* the *lientery*, or *fluxus lientericus*; the *cœliac*, or *fluxus chyloſus*; the *diarrhœa*; and the *dyſentery*, or *bloody flux*. See each explained under its proper article, Lientery, *&c.*

A wound, or ſcarification croſs the crown of the head, is uſed in Scotland, to cure *fluxes* and dyſenteries. *Phil. Tranſact.* N° 312.

Flux of the mouth, or ſalival *flux*. See Salivation.

The *hepatic* Flux of the antients, is, by ſeveral moderns, held a mere name; being, in reality, a hæmorrhoidal *flux*, out of the hæmorrhoidal veins.

Women are ſubject to three kinds of *fluxes* extraordinary: the firſt, called the *menſes*, or *menſtrual flux*, as happening every month; ſometimes *courſes*, as keeping pace with the moon; and ſometimes *flowers*. See Menses.

The ſecond is after delivery, called *Lochia*. See Lochia.

The third is irregular, and preternatural; and, for want of a better name, called *fluor albus*, or the *whites*. See Fluor *albus*.

Flux, in hydrography, a regular, periodical motion of the ſea, happening twice in twenty-four hours; wherein the water is raiſed, and driven violently againſt the ſhores.

The *flux*, or *flow*, is one of the motions of the tide: the other, whereby the water ſinks and retires, is called the *reflux*, or *ebb*. See Tides.

There is alſo a kind of reſt, or ceſſation of about half an hour, between the *flux*, and reflux; during which time the water is at its greateſt height, called *high-water*.

The *flux* is made by the motion of the water of the ſea, from the equator towards the poles; which, in its progreſs, ſtrikeing againſt the coaſts in its way, and meeting with oppoſition from them, ſwells; and where it can find paſſage, as in flats, rivers, *&c.* riſes up, and runs into the land.

This motion follows, in ſome meaſure, the courſe of the moon; as it loſes, or comes later every day by about three quarters of an hour; or more preciſely, by 48 minutes: and by ſo much is the motion of the moon ſlower than that of the ſun. It is always higheſt and greateſt in full moons, particularly thoſe of the equinoxes. In ſome parts, as at Mount St. Michael, it riſes eighty or ninety feet; though in the open ſea it never riſes above a foot or two; and in ſome places, as about the Morea, there is no *flux* at all.

It runs up ſome rivers above a hundred and twenty miles. Up the river Thames it only goes eighty; *viz.* near to Kingſton in Surry.

Above London-bridge the water flows four hours, and ebbs eight; and below the bridge, flows five hours, and ebbs ſeven.

Flux-*Powders* are thoſe prepared to facilitate the fuſion of the harder metals; as alſo to melt ores, in order to diſcover what proportion of metal they contain.

Powder of antimony is a very good *flux* powder. By this alone may you readily melt iron or ſteel in a crucible, with an ordinary charcoal fire. See Supplement, article Fluxes.

FLUXION, in medicine, a ſudden collection of morbid matter in any part of the body.

Fluxions ariſe either from the weakneſs, flaccidity, and inactivity, of the part affected, which does not diſperſe, protrude, or expel, the humours naturally received into it: or from the derivation of ſome extraordinary quantity of peccant matter from ſome other part.

This latter is properly called *defluxion*, and, by the antients, *attraction*. See Defluxion.

A *fluxion*, or *defluxion*, on the trachea and lungs, is called a *catarrh*. See Catarrh.

Fluxion, in the Newtonian analyſis, denotes the velocity with which a flowing quantity is increaſed by its generative motion.—By which it ſtands contradiſtinguiſhed from *fluent* or the *flowing* quantity, which is gradually, and indefinitely increaſing; after the manner of a ſpace which a body in motion deſcribes.

Method of Fluxions, is the arithmetic and analyſis of *fluxions*, and fluents, or flowing quantities.

Foreigners uſually define the method of *fluxions* the arithmetic, or analyſis, of infinitely, or rather indefinitely, ſmall variable quantities; or the method of finding an infiniteſimal, or infinitely ſmall quantity, which, being taken an infinite number of times, become equal to a given quantity.

Sir I. Newton, and, after him, the Engliſh authors, call theſe infinitely ſmall quantities, *moments*; as conſidering them as the momentary increments, or decrements, of variable quantities, *e. gr.* of a line conſidered as generated by the flux of a point, or of a ſurface generated by the flux of a line.

Accordingly, the variable quantities are called *fluent*, or flowing, quantities; and the method of finding either the *fluxion*, or the fluent, the method of *fluxions*.

M. Leibnitz conſiders the ſame infinitely ſmall quantities as the differences, or differentials, of two quantities; and calls the method of finding thoſe differences, the *differential calculus*.

Each of theſe ways of conſidering and denominating, has its advantages; which the retainers to this or that method ſtrenuouſly aſſert.

Flowing quantities, *i. e.* ſuch as, in the geneſis of figures by local motion, are continually increaſing and diminiſhing, are certainly very properly denominated fluents: and as all figures may be conceived as ſo generated, the infinitely ſmall increments, or decrements, of ſuch quantities are very naturally denominated *fluxions*.

Beſide this difference in the name, there is another in the notation.

Sir I. Newton expreſſes the *fluxion* of a quantity, as x, by a dot placed over it, as $\dot{x}$; and M. Leibnitz expreſſes his differential of the ſame x, by prefixing a d, as $d x$; each of which methods of notation has likewiſe its advantage.

Setting aſide theſe circumſtances, the two methods are the ſame. The method of *fluxions* is one of the greateſt, moſt ſubtle and ſublime diſcoveries of this, or, perhaps, of any age: it opens a new world to us, and extends our knowlege, as it were, to infinity; it carries us beyond the bounds that ſeemed to have been preſcribed to the human mind, at leaſt infinitely beyond thoſe to which the antient geometry was confined.

The hiſtory of this important diſcovery, as freſh as it is, is a little dark, and imbroiled. Two of the greateſt men of this age do both of them claim the invention, Sir I. Newton, and M. Leibnitz; and nothing can be more glorious for the method itſelf, than the zeal wherewith the partiſans of either ſide have aſſerted their title.

To give the reader a juſt view of this noble diſpute, and of the pretenſions of each party, we ſhall lay before him the origins of the diſcovery, and mark where each claim commenced, and how it was ſupported.

The firſt time the method made its appearance in public, was in 1684. when M. Leibnitz gave the rules thereof in the *Leipſic Acts* of that year; but the demonſtrations he kept to himſelf. The two brothers, the Bernoulli's, were preſently ſtruck with it, and found out the demonſtrations, though very difficult; and practiſed the calculus with ſurpriſing ſucceſs. This is all we hear of it, till the year 1687. when Sir I. Newton's admirable *Principia* came forth, which is almoſt wholly founded on the ſame calculus.

The common opinion, at that time, was, that Sir Iſaac, and M. Leibnitz, had each invented it about the ſame time: and what confirmed it was, that neither of them made any mention of the other; and that, though they agreed in the ſubſtance of the thing, yet they differed in their ways of conceiving; called it by different names, and uſed different characters.

In effect, M. Leibnitz's character was ſuppoſed, by foreigners, to be ſomewhat more commodious than that of Sir Iſaac Newton: accordingly, the method ſoon ſpreading itſelf throughout Europe, M. Leibnitz's character went with it; by which means the geometricians were inſenſibly accuſtomed to look on him as the ſole, or principal, inventor.

The two great authors themſelves, without any ſeeming concern, or diſpute, as to the property of the invention, enjoyed the glorious proſpect of the progreſſes continually making under their auſpices, till the year 1699. when the peace began to be diſturbed.

M. Fatio, in a treatiſe *Of the line of ſwifteſt deſcent*, having declared, that he was obliged to own Sir I. Newton as the firſt inventor of the differential calculus, and the firſt by many years; and that he left the world to judge, whether M. Leibnitz, the ſecond inventor, had taken any thing from him. This preciſe diſtinction between firſt and ſecond inventor, with the ſuſpicion it inſinuated, raiſed a controverſy between M. Leibnitz, ſupported by the editors of the *Leipſic Acts*, and the Engliſh geometricians, who declared for Sir I. Newton. Sir Iſaac himſelf never appeared on the ſcene; his glory was become that of the nation; and his adherents, warm in the cauſe of their country, needed not him to animate them.

Writings ſucceeded each other but ſlowly, on either ſide; probably, on account of the diſtance of places; but the controverſy grew ſtill hotter and hotter: till, at length, it came to ſuch paſs, that, in the year 1711. M. Leibnitz complained, to the Royal Society, that Dr. Keill had accuſed him of publiſhing the method of *fluxions* invented by Sir I. Newton, under other names, and characters. He inſiſted, that no-body knew, better than Sir Iſaac himſelf, that he had ſtolen nothing from him; and required, that Dr. Keill ſhould publickly diſavow the ill conſtruction which might be put on his words.

The ſociety, here appealed to as judge, appointed a committee to examine all the old letters, papers, &c. that had paſſed among the ſeveral mathematicians, relating to the point; and, after a ſtrict examen of all the evidences that could be procured, gave in their report, “That it did not appear that M. “Leibnitz knew any thing of the differential calculus before a “letter wrote him by Sir I. Newton, and ſent to him at Paris, “in the year 1672. wherein the method of *fluxions* was ſufficiently explained, to let a man of his ſagacity into the whole “matter; and that Sir I. Newton had even invented his method before the year 1669. and, of conſequence, fifteen years “before M. Leibnitz had given any thing on the ſubject in “the *Leipſic Acts*.” And thence they concluded, that Dr. Keill had not at all injured M. Leibnitz in what he had ſaid.

The ſociety printed this cenſure of theirs, together with all the pieces and materials relating thereto, under the title of *Commercium epiſtolicum de analyſi promota*, London, 1712. This book was carefully diſtributed through Europe, to vindicate the title of the Engliſh nation to the diſcovery; for Sir Iſaac, as already hinted, never appeared in it: whether it were, that he truſted his honour with his compatriots, who were zealous enough in the cauſe; or whether it were, that he was even ſuperior to the glory thereof.

M. Leibnitz and his friends, however, could not ſhew the ſame indifference: he was accuſed of a theft; and the whole *Commercium epiſtolicum* either expreſſes it in terms, or inſinuates it. —Soon after the publication thereof, a looſe ſheet was printed, at Paris, in behalf of M. Leibnitz, then at Vienna. It is wrote with a world of zeal and ſpirit; and maintains, boldly, that the method of *fluxions* had not preceded that of *differences*: and even inſinuates, that it might have ariſen from it. The detail of the proofs, on each ſide, would be too long; and could not be underſtood without a large comment, which muſt enter into the deepeſt geometry.

M. Leibnitz had begun to work upon a *Commercium epiſtolicum*, in oppoſition to that of the Royal Society; but he died before it was compleated.

It muſt be owned, that there are ſtrong preſumptions in favour of M. Leibnitz; preſumptions, we mean, that he was no plagiary: for that Sir Iſaac Newton was the firſt inventor, is paſt all diſpute; his glory is ſecure; the reaſonable part, even among the foreigners, allow it: and the queſtion is only, whether M. Leibnitz took it from him, or fell upon the ſame thing with him: for in his *Theory of abſtract notions*, which he dedicated to the Royal Academy, in 1671. before he had ſeen any thing of Sir I. Newton's, he already ſuppoſed infinitely ſmall quantities, ſome greater than others; which is one of the great principles of the ſyſtem.

The doctrine conſiſts of two parts; *viz.* the *Direct method of fluxions*, called, alſo, *Calculus differentialis*; and the *Inverſe method of fluxions*, or *Calculus integralis*.

The latter is directly oppoſite to the former; and is a ſequel of it: both of them are adopted into the new geometry, and make reigning methods therein.

The firſt deſcends from finite, to infinite; the latter aſcends from infinitely ſmall, to finite: the one de-compounds a magnitude; the other re-eſtabliſhes it.

The foundation of the direct method of *fluxions* amounts to this problem: the length of the ſpace deſcribed being continually (that is, at all times) given; to find the velocity at any time propoſed.

The foundation of the inverſe method of *fluxions* amounts to this problem: the velocity of the motion being continually given, to find the ſpace deſcribed by it at any time propoſed.

Direct method of Fluxions.—All finite magnitudes are here conceived to be reſolved into infinitely ſmall ones; which are the elements, moments, or differences, thereof.

The art of finding theſe infinitely ſmall quantities, and of working on them, and diſcovering other infinite quantities, by their means; makes the direct method of *fluxions*.

What renders the knowlege of infinitely ſmall quantities of ſuch infinite uſe and extent is, that they have relations to each other; which the finite magnitudes, whereof they are the infiniteſimals, have not.

Thus, *e. gr.* in a curve, of any kind whatever, the infinitely ſmall differences of the ordinate and abſciſſe have the ratio to each other, not of the ordinate, and abſciſſe; but of the ordinate and ſubtangent: and, of conſequence, the abſciſſe and ordinate alone being known, give the ſubtangent unknown; or, which amounts to the ſame, the tangent itſelf. See *the inverſe method of* Fluxions.

The method of notation in *fluxions*, introduced by the inventor Sir I. Newton, is thus:

The variable, or flowing quantity, to be uniformly augmented, as ſuppoſe the abſciſſe of a curve; he denotes by the letters $v\ x\ y\ z$; and their *fluxions* by the ſame letters with dots placed over them; thus, $\dot{v}\ \dot{x}\ \dot{y}\ \dot{z}$.

Again, as the *fluxions* themſelves are alſo variable quantities, and are continually increaſing, or decreaſing; he conſiders the velocities with which they increaſe, or decreaſe, as the *fluxions* of the former *fluxions*, or ſecond *fluxions*; which are denoted with two dots over them; thus, $\ddot{y}\ \ddot{x}\ \ddot{z}$.

After the ſame manner one may conſider the augments, and diminutions of theſe, as their *fluxions* alſo; and thus proceed to the third, fourth, fifth, *&c.* *fluxions*, which will be noted thus, $\dddot{y}\ \dddot{x}\ \dddot{z} : \ddddot{y}\ \ddddot{x}\ \ddddot{z} : \overset{\cdot\cdot\cdot\cdot\cdot}{y}\ \overset{\cdot\cdot\cdot\cdot\cdot}{x}\ \overset{\cdot\cdot\cdot\cdot\cdot}{z}$, &c.

Laſtly, if the flowing quantity be a ſurd, as $\sqrt{:\overline{a-b}}$; he notes its *fluxion* $\sqrt{:\overset{\text{——}\dot{}\text{:——}}{a\text{——}b}}$: if a fraction $\frac{x\quad x}{d-y}$ he notes it, $\frac{x}{d-y}\dot{:}\frac{x}{\ }$. V. Wallis's *Algebra*, p. 392.

The chief ſcope and buſineſs of *fluxions* is, from the flowing quantity given, to find the *fluxion*: for this we ſhall lay down one general rule, as ſtated by Dr. Wallis: and afterwards apply and exemplify it in the ſeveral caſes.—

'Multiply each term of the equation ſeparately by the ſeveral 'indices of the powers of all the flowing quantities contained 'in that term; and in each multiplication, change one root 'or letter of the power into its proper *fluxion*: the aggregate 'of all the products connected together by their proper ſigns, 'will be the *fluxion* of the equation deſired.'

The application of this rule will be contained in the following caſes. In the general; To expreſs the *fluxions* of ſimple variable quantities as already mentioned, you need only put the letter, or letters, which expreſs them, with a dot over them: thus, the *fluxion* of x is $\dot{x}$, and the *fluxion* of y is $\dot{y}$, and the *fluxion* of $x+y+v+z$, is $\dot{x}+\dot{y}+\dot{v}+\dot{z}$, *&c.*

Note, For the *fluxion* of permanent quantities, when any ſuch are in the equation, you muſt imagine 0, or a cypher; for ſuch quantities can have no *fluxion*, properly ſpeaking, becauſe they are without motion, or invariable.

To find the FLUXIONS of the products of two or more variable or flowing quantities,—multiply the *fluxion* of each ſimple quantity by the factors of the products, or the product of all the reſt; and connect the laſt products by their proper ſigns: then the ſum, or aggregate, is the *fluxion* ſought.

Thus, the *fluxion* of xy, is $\dot{x}y+x\dot{y}$; and the *fluxion* of xyz, is $\dot{x}yz+x\dot{y}z+xy\dot{z}$; and the *fluxion* of $xvyz$, is $\dot{x}vyz+x\dot{v}yz+xv\dot{y}z+xvy\dot{z}$; and the *fluxion* of $\overline{a+x}\times|\,y\ b-y$ (the common product being $ab+bx-ya-xy$) will be $b\dot{x}-\dot{y}a-\dot{x}y-x\dot{y}$.

To find the FLUXION of a fraction,—multiply the *fluxion* of the numerator by the denominator, and after it place (with the ſign —) the *fluxion* of the denominator; this will be the numerator, and the ſquare of the denominator will be the denominator of the fraction expreſſing the *fluxion* of the given fraction.

Thus the *fluxion* of $\frac{x}{y}$ is $\frac{\dot{x}y-x\dot{y}}{yy}$.

For ſuppoſe $\frac{x}{y}=z$, then will $x=yz$; which equal quantities muſt have equal *fluxions*; therefore $\dot{x}=y\dot{z}+z\dot{y}$, and $\dot{x}-z\dot{y}=\dot{z}y$; and dividing all by y $\frac{\dot{x}-\frac{x\dot{y}}{y}}{y}=\dot{z}=$ (becauſe $\frac{x}{y}=z$) $\frac{y\dot{x}-x\dot{y}}{yy}$: wherefore this laſt is the *fluxion* of the fraction $\frac{x}{y}=z$; becauſe z being $=\frac{x}{y}$, $\dot{z}$ will be equal to the *fluxion* of $\frac{x}{y}$.

And the *fluxion* of $\frac{a}{x}$ will be $\frac{-\dot{x}a}{xx}$; for the permanent quantity a having no *fluxion*, there can be no product of the *fluxion* of the numerator into the denominator, as there would have been, had a been x, z, or any other variable quantity.

To find the FLUXION of a power.—Multiply the power (firſt brought one degree lower) by the index of that firſt power; and the product by the *fluxion* of the root.

Thus, the *fluxion* of xx will be $2x\dot{x}$; for $xx=x\times x$; but the *fluxion* of $x\times z=\dot{x}x+x\dot{x}=2\dot{x}x$, &c. and the *fluxion* of z^3 will be $3xx\dot{x}$. That of x^8 will be $8x^7,\dot{x}$, &c.

Or if m expreſs the index of any power, as ſuppoſe x^m; its *fluxion* will be $m\dot{x}^{m-1}x$, or $\dot{m}xx^{m-1}$: for $x\,m$ brought one degree lower (m being a general index), muſt be x^{m-1}; then that × by m, the index, makes mx^{m-1}; and this laſt, by the *fluxion* of the root, produces $m\dot{x}^{m-1}x$.

If the power be produced from a binomial, *&c.* as ſuppoſe $\dot{x}x+2xy+yy$, its *fluxion* will be $2x\dot{x}+2\dot{x}x+2\dot{x}y+2\dot{y}y$.

If the exponent be negative, as ſuppoſe x^{-m} or $x^{\frac{1}{n}}$; its *fluxion* will be $-m\dot{x}x^{-m-1}$.

Or, if you would do it by way of fraction, $\frac{-mx^{m-1}\dot{x}}{x^2m}$ (for the ſquare of x^m is as well x^{2m} as x^{m2}) or, according to Sir Iſaac Newton's method, which is yet ſhorter, $\frac{-xm}{xm+1}$.

If the power be imperfect, *i. e.* if its exponent be a fraction, as ſuppoſe $\sqrt[n]{:x^m}$; or in the other notation $x^{\frac{m}{n}}$, ſuppoſe $x^{\frac{m}{n}}=z$: then if you raiſe up each member to the power of n, it will ſtand thus, $x^m=z^n$; the *fluxion* of which will be, by this general rule, $mx^{m-1}\dot{x}=nz^{n-1}\dot{z}$. Wherefore $\dot{z}$ will be $=\frac{m\dot{x}x^{m-1}}{nz^{n-1}}$ (by dividing both parts by nz^{n-1}) and $\frac{m\dot{x}x^{m-1}}{nz^{n-1}}=\frac{m}{n}x^{\frac{m}{n}-1}\dot{x}$; or $\frac{m}{n}\dot{x}\sqrt[n]{:x^{m-n}}$, putting, instead of nz^{m-1}, its value nx^{m-n}.

Hence, to find the *fluxion* of any kind of power, proceed thus:—Multiply the power given by its index, or exponent, and then multiply that product by the *fluxion* of the root of the power given; and, after that, ſubtract 1, or unity, from the index of the power.

To find the FLUXIONS of ſurd quantities.—Suppoſe it required to find the *fluxion* of $\sqrt{2rx-xx}$, or $\overline{2rx-xx}|^{\frac{1}{2}}$. Suppoſe $\overline{2rx-xx}|^{\frac{1}{2}}=z$; then is $2rz-xx=zz$; and conſequently $r\dot{x}-x\dot{x}=z\dot{z}$; and, by diviſion, $\frac{r\dot{x}-x\dot{x}}{z}=\dot{z}=$ (by ſubſtitution $\frac{r\dot{x}-x\dot{x}}{\sqrt{2rx-xx}}=$ to the *fluxion* of $\sqrt{2rx-xx}$.

If it be required to find the *fluxion* of $\overline{ay-xx}|^3$; for $\overline{ay-xx}|^3$ put z; then $ay-xx=z^{\frac{1}{3}}$, and $a\dot{y}-2x\dot{x}=\frac{1}{3}z^{-\frac{2}{3}}\dot{z}$: and multiplying by 3, $3a\dot{y}-6x\dot{x}=z^{-\frac{2}{3}}\dot{z}$; and, conſequently, $3az^{\frac{2}{3}}\dot{y}-6z^{\frac{2}{3}}x\dot{x}=\dot{z}$ equal (ſubſtituting $\overline{ay-xx}|^2=z^{\frac{2}{3}}$) $3a^3y^2\dot{y}-6a^2x^2y\dot{y}+3ax^4\dot{y}-6a^2y^2x\dot{x}+12ayx^3\dot{x}-6x^5\dot{x}=$ to the *fluxion* of $\overline{ay-xx}^3$.

To find the FLUXION of quantities compounded of rational and ſurd quantities——let it be required to find the *fluxion* of $\overline{bx^2+cax+ca^2}\times\sqrt{xx+aa}=z$. Put $\overline{bx^2+cax+ca^2}=p$, and $\sqrt{xx+aa}=q$. Then the given quantity is $pq=z$, and the *fluxion* thereof is $\dot{p}q+q\dot{p}=\dot{z}$: but $\dot{q}$ is $=\frac{x\dot{x}}{\sqrt{xx+aa}}$, and $\dot{p}$ is $=2bx\dot{x}+ca\dot{x}$; therefore, in the equation $\dot{p}q+q\dot{p}=\dot{z}$, if in the place of $p, q, \dot{p}, \dot{q}$, we reſtore the quantities they repreſent, we ſhall have $\frac{\overline{bx^2+cax^2+ca^3}\,x\times\dot{x}}{\sqrt{xx+aa}}+2bx\dot{x}\sqrt{xx+aa}\times\dot{x}+ca\times\sqrt{\dot{x}\dot{x}+aa}\times\dot{x}=\dot{z}$. Which being reduced to one denomination, gives $\frac{\overline{3bx^3+2acx^2+ca^2x+2ba^2x+xa^3}\times\dot{x}}{\sqrt{xx+aa}}=\dot{z}=$ to the *fluxion* of the given quantity.

Inverſe method of FLUXIONS, or *calculus integralis*, conſiſts in finding finite magnitudes, from the infinitely ſmall parts thereof.

It proceeds, as already obſerved, from infinitely ſmall quantities to finite; and recompounds and ſums up what the other has reſolved: whence it is alſo called, by ſome, the *ſummatory calculus*.

But what that has decompounded, this does not always reeſtabliſh; ſo that the inverſe method is limited, and imperfect, at leaſt hitherto: if it were once complete, geometry would be arrived at its laſt perfection.

To give an idea of its nature and office, take the inſtance already propoſed in the direct method: in that the infinitely ſmall quantities of the ordinates and abſciſs, being known, give the ſubtangent required: in this, on the contrary, the ſubtangent of an unknown curve being had, gives the infinitely ſmall quantities of the abſciſs and ordinate which produced it, and, of conſequence, the abſciſs and ordinate themſelves; which are finite magnitudes, in whoſe relation the whole eſſence of the curve is founded.

But the diſtinguiſhing uſe of this method is in meaſuring. The baſe of a parallelogram multiplied by the infinitely ſmall element of its altitude, gives an infinitely ſmall parallelogram; which is the element of the finite parallelogram, and is repeated an infinity of times therein, *i. e.* as many times as there are points in the height of the parallelogram.

To have the finite parallelogram, therefore, by means of its element, the element muſt be multiplied by the altitude; which is the inverſe method of *fluxions*, re-aſcending from the infinitely ſmall quantity to the finite.

Such a circuit of infiniteſimals, it is true, would be impertinent, in ſo ſimple a caſe; but when we have to do with ſurfaces terminated by curves, the method then becomes neceſſary, or, at leaſt, ſuperior to any other.

Suppoſe, *e. gr.* in a parabola, the ſpace included between two infinitely near ordinates, an infinitely ſmall portion of the axis, and an infinitely little arch of the curve: it is certain, this infinitely ſmall ſurface is no parallelogram; ſince the two parallel ordinates which terminate it on one ſide are not equal; and the arch of the curve, oppoſite to the little portion of the axis, is frequently neither equal nor parallel thereto: and yet this ſurface, which is no parallelogram, may be conſidered, in the ſtricteſt geometry, as if it really were one, by reaſon it is infinitely ſmall; and the error, of conſequence, infinitely little, *i. e.* none.

So that, to meaſure it, there needs nothing but to multiply an ordinate of the parabola by the infinitely ſmall portion of the axis correſponding thereto. Thus we have the element of the whole parabola; which element being raiſed, by the inverſe method, to a finite magnitude, is the whole ſurface of the parabola.

This advantage, ſo peculiar to the geometry of infinites, of being able, without any error, to treat little arches of curves as if they were right lines; curvilinear ſpaces, as if rectilinear ones, &c. enables it not only to go with more eaſe and readineſs, than the antient geometry, to the ſame truths; but to reach a great number of truths which were inacceſſible to the other.

Its operations, in effect, are more eaſy, and its diſcoveries more extenſive; and ſimplicity and univerſality are its diſtinguiſhing characters.

To find the flowing quantity belonging to any FLUXION *given*.—To have the doctrine of the inverſe method correſpond and keep pace with that of the direct, we will apply it in the ſame caſes.

In the general, to expreſs the variable quantity of a *fluxion*, there needs nothing but to write the letters without the dots.

Thus the flowing quantities of $\dot{x}\,\dot{y}\,\dot{z}$, are $x\,y\,z$.

To find the flowing quantities belonging to the FLUXION of the product of two quantities;

Divide each member of the *fluxion* by the fluxionary quantity, or letter; or change the fluxionary letter into the proper flowing quantity of which it is the *fluxion*: the quotients, connected by their proper ſigns, will be the flowing quantities ſought.

Only, if the letters be all exactly the ſame, the flowing quantity will be a ſimple one, whoſe parts are not to be connected together by the ſigns + and —.

To find the flowing quantity belonging to the *fluxion* of any power, either perfect, or imperfect.—Take the fluxionary letter, or letters, out of the equation; then augment the index of the *fluxion* by 1, or unity: laſtly, divide the *fluxion* by the index of its power ſo increaſed by unity.

Thus ſuppoſe $3\,x\,x\,\dot{x}$ propoſed; by taking away $\dot{x}$ it will be $3\,x\,x\,x$: and by increaſing its index by unity, it will be $3\,x\,x\,x$: then dividing it by 3, its now (augmented) index, the quotient will be $x\,x\,x$, the flowing quantity required.

Again, ſuppoſe $\frac{n}{m}\dot{x}\,x^{\frac{n-1}{m}}$ a *fluxion* propoſed: by taking away the fluxionary x, it will be $\frac{n}{m}x^{\frac{n}{m}-1}$

index by unity (*i. e.* by taking away —1) it will be $\frac{n}{m}x^{\frac{n}{m}}$: and, laſtly, by dividing the remaining part of the *fluxion* by $\frac{n}{m}$, prefixed to, or multiplied into x, the quotient will be $x^{\frac{n}{m}}$; which is the flowing quantity ſought.

The uſes of the direct method of *fluxions*, ſee ſpecified under the articles MAXIMIS *and* MINIMIS, and TANGENTS.

Thoſe of the inverſe method, ſee under QUADRATURE *of curves*, RECTIFICATION *of curves*, and CUBATURE *of ſolids*.

To FLY *groſs*, in falconry, is ſaid of a hawk, when ſhe flies at the great birds; as cranes, geeſe, herons, &c.

FLY *on head*, is when the hawk, miſſing her quarry, betakes herſelf to the next check, as crows, &c. See HAWK.

FLYBOAT, a large veſſel, with a broad bow, uſed by merchants in the coaſting trade.—Some of them will carry 800 ton of goods.

FLYERS, in architecture, ſuch ſtairs as go ſtrait, and do not wind round, nor have the ſteps made tapering; but the fore and back-part of each ſtair, and the ends, reſpectively parallel to one another.

So that if one flight do not carry you to your deſigned height, there is a broad half ſpace; and then you fly again, with ſteps every-where of the ſame breadth and length as before.

FLYING, the progreſſive motion of a bird, or other winged animal, in the liquid air.

Flying is either *natural*, or *artificial*.

Natural FLYING is that performed by an apparatus, or ſtructure, of parts concerted for that end by nature herſelf. Such is that of moſt birds, and inſects; and of ſome fiſhes.

In Virginia, and New-England, they have monſtrouſly large *flying* beetles. *Philoſoph. Tranſact.* N° 127. And in Languedoc graſhoppers, about an inch long, wherewith the ground, in ſeveral parts, in the year 1685. was covered one-third of a foot deep.—*Ibid.* N° 182.

The parts of birds, &c. chiefly concerned in *flying*, are, the wings, and tail: by the firſt, the bird ſuſtains and wafts himſelf along; and by the ſecond, he is aſſiſted, in aſcending and deſcending, to keep his body poiſed, and upright; and to obviate the vacillations thereof.

It is by the largeneſs and ſtrength of the pectoral muſcles, that birds are ſo well diſpoſed for quick, ſtrong, and continued *flying*.—Theſe muſcles, which, in men, are ſcarce a ſeventieth part of the muſcles of the body; in birds, exceed and outweigh all the other muſcles taken together: upon which Mr. Willoughby makes this reflection; that if it be poſſible for man to fly, his wings muſt be ſo contrived and adapted, that he may make uſe of his legs, and not his arms, in managing them.

The *flying* of birds is thus effected:

The bird firſt bends his legs, and ſprings with a violent leap from the ground; then opens, or expands, the jointures of his wings, ſo as to make a right-line, perpendicular to the ſides of his body: thus, as the wings, with the feathers therein, conſtitute one continued lamina; being now raiſed a little above the horizon, and vibrating the wings, with great force and velocity, perpendicularly againſt the ſubject air; the air, though a fluid, reſiſts thoſe ſucceſſions, both from its natural inactivity, and from its elaſticity, which makes it reſtore itſelf after it has been compreſſed, and re-act as much as it is acted on: by ſuch means is the whole body of the bird protruded. The ſagacity of nature is very remarkable in the opening and recovering of the wing for freſh ſtrokes.—To do it directly, and perpendicularly, it muſt needs have a great reſiſtance to overcome; to avoid which, the bony part, or bend, of the wing, into which the feathers are inſerted, moves ſideways with its ſharp end foremoſt; the feathers following it like a flag.

The reſiſtance the air makes to the withdrawing of the wings, and, conſequently, the progreſs of the bird will be ſo much the greater, as the waft, or ſtroke, of the fan of the wing is the longer: but as the force of the wing is continually diminiſhed by this reſiſtance; when the two forces come to be in equilibrio, the bird will remain ſuſpended in the ſame place: for the bird only aſcends ſo long as the arch of air, the wing deſcribes, makes a reſiſtance equal to the exceſs of the ſpecific gravity of the bird above the air: if the air, therefore, be ſo rare as to give way with the ſame velocity as it is ſtruck withal, there will be no reſiſtance; and, conſequently, the bird can never mount on ſuch unſtable ſteps.

Mr. Ray, Willoughby, &c. have ſuppoſed the tail to do the office of a rudder, in ſteering and turning the body this way, or that; but Borelli has ſhewn it unfit for any ſuch office.—The *flying* of a bird, in effect, is quite a different motion from the ſailing of a ſhip: birds do not vibrate their wings towards the tail, as oars are ſtruck towards the ſtern; but waft them downward: nor does the tail of the bird cut the air at right angles, as the rudder does the water; but is diſpoſed horizontally, and preſerves the ſame ſituation, what way ſoever the bird turns.

In effect, as a veſſel in the water is turned about on its centre of gravity to the right, by a briſk application of the oars to the left; ſo a bird, in beating the air with its right wing alone, towards its tail, its fore-part will be turned to the left: as when in ſwimming, by only ſtriking out with the right arm and leg, we are driven to the left.

Thus, we ſee pigeons changing their courſe to the leftward, labour it with their right wing, keeping the other almoſt at reſt.

Add, that birds with long necks have another way of altering their courſe: for by only inclining the head and neck towards this or that ſide, the centre of gravity of the whole being changed, the bird will proceed according to this new direction.

Birds never fly upwards in a perpendicular line, but always in a parabola, the line deſcribed by projectiles.—In a direct aſcent, the natural and artificial tendency would oppoſe and deſtroy each other; ſo that the progreſs would be very ſlow. In a direct deſcent, they would aid one another, ſo that the fall would be too precipitate.

Indeed the hawk we frequently find take that advantage in ſeizing of the partridge: but ordinarily birds keep their wings expanded, and at reſt, to retard their deſcent; and at the ſame time ſtretch out their feet and legs.

Artificial Flying is that attempted by men, by the aſſiſtance of mechanics.

The *art of flying* is one of the great deſiderata of mechanics; it has been attempted in divers ages: the diſcovery of it might prove of great ſervice, and alſo of great diſſervice, to mankind.

Nobody ſeems to have bid ſo fair for that invention, as our famous frier Bacon, who lived upwards of five hundred years ago. He not only affirms the art feaſible; but aſſures us he himſelf knew how to make an engine, in which a man ſitting might be able to carry himſelf through the air, like a bird: and affirms, that there was another perſon who had actually tried it with ſucceſs.

The ſecret conſiſted in a couple of large thin hollow copper globes, exhauſted of air; which being much lighter than air, would ſuſtain a chair, whereon a perſon might ſit.

Fa. Franciſco Lana, in his *Prodromo*, propoſes the ſame thing, as his own thought. He computes, that a round veſſel of plate-braſs, fourteen feet in diameter, weighing three ounces the ſquare foot, will only weigh 1848 ounces; whereas a quantity of air of the ſame bulk will weigh $2155\frac{2}{3}$ ounces; ſo that the globe will not only be ſuſtained in the air, but will carry with it a weight of $373\frac{2}{3}$ ounces; and by increaſing the bulk of the globe, without increaſing the thickneſs of the metal, he adds, a veſſel might be made to carry a much greater weight.

But the fallacy is obvious: a globe of the dimenſions he deſcribes, Dr. Hook ſhews, would not ſuſtain the preſſure of the air, but would be cruſhed inwards. Beſide, in whatever ratio the bulk of the globe were increaſed, in the ſame muſt the thickneſs of the metal be alſo, and conſequently the weight increaſed: ſo that there would be no advantage in ſuch augmentation.

The ſame author deſcribes an engine for *flying*, invented by the Sieur Beſnier, a ſmith of Sable, in the county of Maine. Vid. *Philoſoph. Collect.* N° 1.

Flying *bridges*, in fortification, are thoſe made of two ſmall bridges, laid one upon the other, ſo that the uppermoſt, by means of ropes and pullies, is forced forwards, till the end of it is joined to the place deſigned.

Flying *camp*, a ſmall body of an army, conſiſting of four, five, or ſix thouſand men, and ſometimes a greater number, as well foot as horſe, which continually keep the field, making divers motions, to prevent the incurſions of the enemy, or to fruſtrate their enterprizes; to hinder convoys, to haraſs the adjacent country, and to be thrown into a beſieged place, as occaſion ſhall ſerve.

Flying *pinion* is a part of a clock, having a fly or fan, whereby to gather air, and ſo bridle the rapidity of the clock's motion, when the weight deſcends in the ſtriking part. See Clock.

FOCAGE, or Fuage, fire-money, hearth-money, or chimney-money. See Fuage.

FOCILE, Focil, in anatomy, a name the Arabs gave to the two bones of the arm, reaching from the elbow to the wriſt.

The biggeſt, which is what we call the *cubitus*, and *ulna*, they call the *greater focil*, *focile majus*.

The leſs, which we call *radius*, they call *focile minus*.

The like is obſerved with regard to the bones of the leg. The biggeſt of which, by the Latins called *tibia*, the Arab writers, *&c.* call the *great focil*: and the leſs, or *fibula*, the *leſſer focil*.

FOCUS, in geometry, and the conic ſections, is applied to certain points in the parabola, ellipſis, and hyperbola; wherein the rays reflected from all parts of theſe curves do concur or meet. See Curve.

The Foci *of an ellipſis* are two points, as Ff, *Tab. Con. Fig.* 21. in the axis AB, on which, as centres, the figure is deſcribed: or, two points in the longer axis, whence two right lines being drawn to any point in the circumference, ſhall be together equal to the axis itſelf. Theſe are alſo called *umbilici*.

To find the *foci* of an ellipſis: from B to L, ſet off half the parameter; and in the centre C erect a perpendicular CK, meeting a ſemicircle deſcribed on AL. Then making CF= CK, the point F will be the *focus*.

If then the axis AB be cut in the *focus* F; the rectangle of the ſegments of the axis AF, FB, will be ſubquadruple of the rectangle of the parameter into the axis; whence the ſquare of the diſtance of the *focus* from the centre is equal to the rectangle of half the axis into the difference of the ſemiparameter of half the axis. See Ellipsis.

Focus *of the hyperbola*. See the article Hyperbola.

The Focus *of a parabola* is a point in its axis, as F (*Tab. Conics, Fig.* 18.), wherein the ſemiordinate FN is equal to the ſemiparameter; or, a point in the axis diſtant from the vertex, by a fourth part of the parameter, or latus rectum.

It is demonſtrated in conics, 1°, That, in a parabola, the diſtance of the *focus* from the vertex, AF, is to the parameter in a ſubquadruple ratio.

2°, That the ſquare of the ſemiordinate is quadruple of the rectangle of the diſtance of the *focus* from the vertex, and the abſciſſe.

3°, That the right line FM drawn from the *focus* F to the extremities of the ſemiordinate of the parabola, is equal to the aggregate of the abſciſſe AP, and the diſtance of the *focus* from the vertex AF.

Focus, in optics, is a point wherein ſeveral rays concur, and are collected; either after having undergone refraction, or reflexion.

It is thus called, by reaſon the rays being here brought together, and united; their force and effect are increaſed; ſo that they become able to burn: accordingly, it is in this point, that bodies are placed to ſuſtain the force of burning-glaſſes, or mirrors.

It muſt be obſerved, that the *focus* is not, ſtrictly ſpeaking, a point; the rays are not all accurately collected into the ſame place: Huygens demonſtrates, that the *focus* of a lens convex on both ſides, is $\frac{5}{6}$ of the thickneſs of the lens.

Focus, in dioptrics, is the point wherein refracted rays, rendered convergent by refraction, do concur, or meet, and croſs the axis.

The ſame point is alſo called the *point of concourſe*, or *concurrence*.

Virtual Focus, in dioptrics, is the point from which refracted rays, when by refraction they are rendered divergent, do begin to diverge or recede from each other.

The ſame point is alſo called *punctum diſperſus*, or *point of divergency*.

The effect of convex glaſſes, or lenſes, is to render the rays, tranſmitted through them, convergent, and to bring them together into a *focus*, which will be nearer, or farther off, as the lens is a portion of a greater or leſs ſphere.

The effect of concave lenſes is, to render the rays tranſmitted through them, divergent, or to diſperſe them from a virtual *focus*.

For the place, poſition, diſtance, *&c.* of the *foci* of rays refracted through plain, concave, and convex mediums of divers denſities, as air, water, glaſs, *&c.* ſee Refraction, Lens, *&c.*

The laws of the *foci* of glaſſes, and the methods of finding the ſame, being thoſe of moſt uſe and importance; we ſhall here ſubjoin them apart, as delivered and demonſtrated by Mr. Molyneux, in his *Dioptrica Nova*.

1°, Then, the *focus* of a convex glaſs, *i. e.* the point wherein parallel rays tranſmitted through a convex glaſs, whoſe ſurface is the ſegment of a ſphere, do unite, is diſtant from the pole or vertex of the glaſs, almoſt a diameter and half of the convexity.

2°, In a plano-convex glaſs, the *focus* of parallel rays, or the place where they unite with the axis, is diſtant from the pole of the glaſs a diameter of the convexity; provided the ſegment do not exceed thirty degrees.

The rule or canon in plano-convex glaſſes is as 107 : 193 : : ſo is the radius of the convexity : to the refracted ray taken in its concourſe with the axis; which in glaſſes of larger ſpheres is almoſt equal to the diſtance of the *focus* taken in the axis.

3°, In double-convex glaſſes of the ſame ſphere, the *focus* is diſtant from the pole of the glaſs about the radius of the convexity, if the ſegment be but thirty degrees.

But if the convexities be unequal, or if the two ſides be ſegments of different ſpheres, then the rule is,

As the ſum of the radii of both convexities : to the radius of either convexity alone : : ſo is the double radius of the other convexity : to the diſtance of the *focus*.

Here obſerve, that the rays which fall nearer the axis of any glaſs, are not united with it ſo ſoon as thoſe farther off: nor will the *focal* diſtance be ſo great in a plano-convex glaſs, when the convex ſide is towards the object, as when the contrary way.

Hence it is truly concluded, that, in viewing any object by a plano-convex glaſs, the convex ſide ſhould always be turned outward; as alſo in burning by ſuch a glaſs.

For the *virtual* Focus, obſerve, 1°, That in concave glaſſes, when a ray falls from air parallel to the axis, the virtual *focus*, by its firſt refraction, becomes at the diſtance of a diameter and an half of the concavity.

2°, In plano-concave glaſſes, when the rays fall parallel to the axis, the virtual *focus* is diſtant from the glaſs the diameter of the concavity.

3°, In plano-concave glaſſes, as 107 : 193 : : ſo is the radius of the concavity : to the diſtance of the virtual *focus*.

4°, In double concaves of the ſame ſphere, the virtual *focus* of parallel rays is as the diſtance of the radius of the concavity.

But, whether the concavities be equal or unequal, the virtual *focus*, or point of divergency of the parallel rays, is determined by this rule;

As the ſum of the radii of both concavities : is to the radius of either concavity : : ſo is the double radius of the other concavity : to the diſtance of the virtual *focus*.

5°, In concave glaſſes, if the point to which the incident ray converges, be diſtant from the glaſs farther than the virtual *focus* of parallel rays, the rule for finding the virtual *focus* of this ray is this;

As the difference between the diſtance of this point from the glaſs, and the diſtance of the virtual *focus* from the glaſs : is to the diſtance of the virtual *focus* : : ſo is the diſtance of this point of convergence from the glaſs : to the diſtance of the virtual *focus* of this converging ray.

6°, In concave glaſſes, if the point to which the incident ray converges, be nearer to the glaſs than the virtual *focus* of parallel rays, the rule to find where it croſſes the axis, is this:

As the exceſs of the virtual *focus*, more than this point of convergency : is to the virtual *focus* : : ſo the diſtance of this point of convergency from the glaſs ; is to the diſtance of the point where this ray croſſes the axis.

Rules for finding the Foci *of glaſſes.*—To find the *focus* of a convex ſpherical glaſs, being of a ſmall ſphere, apply it to the end of a ſcale of inches, and decimal parts, and expoſe it before the ſun; upon the ſcale you will have the bright interſection of the rays meaſured out: or, expoſe it in the hole of a dark chamber; and where a white paper receives the diſtinct repreſentation of diſtinct objects, there is the *focus* of the glaſs.

For a glaſs of a pretty long *focus*, obſerve ſome diſtant object through it, and recede from the glaſs till the eye perceives all in confuſion, or the object begins to appear inverted; here the eye is in the *focus*.

For a plano-convex glaſs; make it reflect the ſun againſt a wall; you will on the wall perceive two ſorts of light; one more bright within another more obſcure: withdraw the glaſs from the wall, till the bright image is at its ſmalleſt; the glaſs is then diſtant from the wall about the fourth part of its *focal* length.

For a double convex: expoſe each ſide to the ſun in like manner; and obſerve both the diſtances of the glaſs from the wall. The firſt diſtance is about half the radius of the convexity turned from the ſun; and the ſecond, about half the radius of the other convexity.

Thus we have the radii of the two convexities; whence the *focus* is found by this rule:

As the ſum of the radii of both convexities : is to the radius of either convexity : : ſo is the double radius of the other convexity : to the diſtance of the *focus*.

Focus, in catoptrics, is a point wherein the rays reflected from the ſurface of a mirror, or ſpeculum, and by reflexion rendered convergent, do concur, or meet.

The effect of concave mirrors is to collect the rays falling on the concave ſurface into a *focus*.

The effect of convex mirrors is to diſperſe the rays falling on them, or render them more divergent.

For the laws of the *foci* of rays refracted from mirrors, or ſpecula, ſee REFLECTION.

The *foci* of concave glaſſes are had by reflexion: for, as a concave mirror burns at the diſtance of about half the radius of the concavity; ſo a concave glaſs, being ſuppoſed a reflecting ſpeculum, unites the rays of the ſun at the diſtance of about half the radius of the concavity.

To find the Foci *of all glaſſes geometrically.*—Dr. Halley furniſhes us a general method for finding the *foci* of ſpherical glaſſes of all kinds, both concave and convex; expoſed to any kind of rays, either parallel, converging, or diverging; under the following problem.

To find the *focus* of any parcel of rays diverging from, or converging to, a given point in the axis of a ſpherical lens, and inclined thereto under the ſame angle, the ratio of the ſines of refraction being given:

Suppoſe GL (*Tab. Optics*, *Fig*. 38. N° 2.) a lens; P a point in its ſurface; V its pole; C the centre of the ſphere whereof it is a ſegment; O the object, or point in the axis, to or from which the rays do proceed; and OP a given ray: and ſuppoſe the ratio of refraction to be as *r* to *s*. Then making CR to CO, as *s* to *r* for the immerſion of a ray; or as *r* to *s* for the emerſion (*i. e.* as the ſines of the angles in the medium which the ray enters, to the correſponding ſines in the medium out of which it comes), and laying CR, from C towards O, the point R will be the ſame for all the rays of the point O. Laſtly, drawing the radius PC, if need be, continued; with the centre R, and diſtance OP, ſtrike a piece of an arch, interſecting PC in Q. The line QR, being drawn, ſhall be parallel to the refracted ray; and PF, being made parallel thereto, ſhall interſect the axis in the point F; the *focus* ſought.

Or, make it, as CQ : CP : : CR : CF; then will CF be the diſtance of the *focus* from the centre of the ſphere.

This author gives a demonſtration of the method; and adds various figures, exhibiting the various caſes of rays either diverging or converging as they enter, or emerge out of, the ſurface either of a convex or concave lens.

From this principle all the rules for the *foci* of rays parallel to the axis, as likewiſe for the principal *focus* where the rays neareſt the axis do unite, are deduced. As,

Hence, 1°, If OP be equal to CR; the points Q and C are coincident, and the rays OP, after refraction, run on parallel to the axis. 2°, If the point Q fall on the ſame ſide of the axis, as is the point P; then the beams after refraction do tend on, either diverging or converging, as before: but if Q fall on the other ſide the axis, the diverging rays are made to converge by a convex, or the converging to diverge by a concave glaſs. 3°, If OP do exceed CR, the *focus* is in all caſes on the ſame ſide of the glaſs, as is the centre of the ſphere C. But contrariwiſe, if OP be leſs than CR, the *focus* falls on the other ſide of the glaſs beyond the vertex V. 4°, An object may be ſo placed, that the rays next the axis of a convex glaſs ſhall have an imaginary *focus* tranſmitting diverging rays, when the more remote parts thereof ſhall make them converge to a real *focus*. 5°, If OV, the diſtance of the object from the pole or vertex of the glaſs, be taken inſtead of OP, then will CQ be the difference of OV and CR; and as that difference is to CR, ſo is the radius CV to CF, the diſtance of the principal *focus* from the centre of the ſphere, whereof the glaſs is a ſegment. Or elſe, as CQ : OP; or RQ : : PC : to VF, the *focal* diſtance from the pole of the glaſs. Whence follows a general rule for the *foci* of all glaſſes; only according to *Corol*. 3. if OV do exceed CR, the *focus* is on the ſame ſide of the glaſs as the centre of the ſphere: but if CR be greater, then the *focus* is on the oppoſite ſide of the glaſs: whence it will be determined whether the *focus* be real or imaginary.

What has been ſaid of one ſurface of the lens, is eaſily applicable to the other, taking F the *focus* for an object.

FODDER, any kind of meat for horſes, or other cattle: in ſome places hay and ſtraw mingled together are more peculiarly denominated *fodder*.

In the civil law it is uſed for a prerogative that the prince has, to be provided of corn, and other meat, for his horſes, by the ſubjects, in his warlike expeditions.

FODINA, a name ſome authors give to the labyrinth in the bon of the ear. See LABYRINTH.

FŒCES.	See	FÆCES.
FŒCAL.		FÆCAL.
FŒCULÆ.		FÆCULÆ.
FŒCUNDITY.		FECUNDITY.

FŒTOR, in medicine, ſtinking or fetid effluvia, proceeding from the body, or the parts thereof. See EFFLUVIA.

Fœtors ariſe from ſtagnant, extravaſated, corrupted, or poiſoned humours; as alſo from any thing capable of attenuating and volatilizing the oils and ſalts; as abſtinence, heat, too much motion, acrimony of food, &c.

FOETOR *narium*, ſtench of the noſtrils; a ſort of diſeaſe ariſin from a deep ulcer withinſide the noſe, yielding a fetid ſmell. Its cauſe, according to Galen, is a ſharp humour falling from the brain upon the mamillary proceſſes.

This is one of the cauſes for which marriage might formerl be annulled.

FŒTUS, in medicine, denotes the child, while yet contain in the mother's womb; but particularly after it is perfectl formed; till which time it is more properly called *embryo*. Se EMBRYO.

The manner of the conception, or generation of the *fœtus*, i matter of great controverſy. That all the parts of the anima did exiſt, and that its fluids were in motion, before generation is generally allowed; but whether the animalcule was lodg in the male, or female, is not yet agreed of.

Many of the moderns will have the ova, or eggs, contain in the ovary of the female, to be the firſt matter, or ſtamen of the *fœtus*. Theſe eggs they ſuppoſe to contain all th parts of the *fœtus* in little; and that, being impregnat with the male ſeed, the parts thereof become enlarged a diſplayed; and that, from the ovary, they are conveyed b by the ſallopian tubes into the uterus, where they receive thei impregnation, accretion, &c.

Othe

Others will only have the female ovum to be a proper nidus for the animalcule, which, they contend, is in the male ſeed. The animalcule getting into an ovum fit to receive it; and this falling through one of the tubæ fallopianæ into the womb, the humours which diſtil through the veſſels of the womb penetrating the coats of the egg, ſwell and dilate it, as the juice of the earth does ſeeds thrown into the ground. Or elſe the branches of the veins and arteries, whereby the egg was tied in the ovary, being broken, knit with the veſſels of the womb.

The firſt thing that appears of a *fœtus*, is the placenta, like a little cloud, on one ſide of the external coat of the egg: about the ſame time the ſpine is grown big enough to be viſible; and a little after the cerebrum and cerebellum appear like two ſmall bladders: next, the eyes ſtand prominent in the head: then the punctum ſaliens, or pulſation of the heart, is plainly ſeen. The extremities diſcover themſelves laſt of all.

The *fœtus*, when formed, is almoſt of an oval figure, while it lies in the womb: for its head hangs down, with its chin upon the breaſt: its back is round; with its arms it embraces its knees, which are drawn up to its belly; and its heels are cloſe to its buttocks: its head upwards, and its face towards its mother's belly. About the ninth month, its head, which was hitherto ſpecifically lighter than any other part, becomes ſpecifically heavier; its bulk bearing a much ſmaller proportion to its ſubſtance than it did.

The conſequence of this change is, that it tumbles in the liquor which contains it: its head falls down; its feet get up; and its face turns towards its mother's back. But being now in an irkſome poſture, though at the ſame time a favourable one for its exit; the motion it makes for its relief gives frequent pains to the mother; which cauſe a contraction of the womb, for the expulſion of the *fœtus*.

What ſome anatomiſts pretend to give farther as to the poſture of the *fœtus* in the womb, in the ſeveral ſtages of geſtation, is very precarious.

In the firſt month it is of no moment how it lies in the womb: in the latter months, after the *fœtus* is grown not only quick, but robuſt, it frequently changes its poſture of itſelf; as not only the mothers themſelves feel, but any other perſon, by laying the hand on their bellies, frequently may. However, its ordinary poſture is ſuppoſed to be ſitting: as the time of birth draws near, it turns itſelf, and preſents the head to the os uteri; tho' ſometimes it offers the feet firſt, and ſometimes lies acroſs, and offers either a hand, a knee, or the like; theſe are irregular ſituations, and without a deal of addreſs in the midwife in turning the *fœtus*, both the mother and the infant are in danger.

The *fœtus* is incloſed in two membranes, or coats; the inner, which immediately inveſts the *fœtus*, and the liquor wherein it lies, is called the *amnios*: the outward membrane is called the *chorion*.

In ſome animals there is a third membrane, called the *allantois*, whoſe place is between the other two; and which ſerves for the diſcharge of the urine of the *fœtus*, brought higher by the urachus.

Dr. Needham ſeems to have diſcovered ſomething analogous hereto in the human *fœtus*, and calls it the *membrana urinaria*: but others chooſe only to make it a duplicature of the chorion; though the neceſſity of ſuch third membrane be the ſame in men, as in cows, ſheep, *&c.* See ALLANTOIS.

There are ſome differences in the ſtructure, mechaniſm, and proportion, of the parts of a *fœtus*, from thoſe of an adult: and even ſome additional and extraordinary parts; by which the nutrition of this zoophyte, or plant-animal, as it is called, and the circulation of the blood therein, are effected.

The principal variations are about the liver, heart, and lungs. Of theſe the moſt conſiderable are the umbilical veſſels, which are two arteries, a vein, and the urachus, ariſing from the placenta, and conveyed through the navel to the liver of the *fœtus*, near the navel; all which, after the birth, drying up, become impervious and uſeleſs.

In the liver itſelf there is an extraordinary communication between the porta and cava, called *canalis venoſus*, which, after the birth, gradually dries up. In the heart, at the mouth of the vena cava, is the foramen ovale, whereby that vein has a communication with the pulmonary vein: there is alſo a communication between the aorta, and pulmonary artery, by means of the canalis arterioſus, which paſſes between the two, at about two inches diſtance from the baſe of the heart. It is by means of theſe two canals or paſſages, that the blood circulates in the *fœtus* while incloſed in the womb; they ſerving to convey and paſs the blood from the heart into the arteries; and from the veins into the heart again, without its paſſing through the lungs, which are now uſeleſs.

The lungs of a *fœtus* are of a darker colour, and cloſer conſiſtence, than after they have been breathed into; as appears from their ſwimming in water, after birth, which they will not do before; which difference affords an uſeful experiment, in caſe of the ſuſpected murder of children. For if they were ſtill-born, the lungs ſink in water; if born alive, they ſwim.

The two canals above-mentioned ſerve only to prevent the obſtruction the blood would otherwiſe have within the lungs, before they have been opened. After reſpiration has opened the lungs, the blood taking its courſe thro' them, thoſe paſſages cloſe up.

—The head of the *fœtus* is much bigger in proportion to the body, than afterwards; the bones and brain are ſofter, the ſutures open; and they leave a great ſpace on the top of the head, covered only with a membrane; and the glands, particularly the thymus and renales, are bigger and ſofter. For other differences in the proportion, ſee EMBRYO.

Bartholine, in his treatiſe *de inſolitis partus viis*, relates a great many ſtupendous caſes of *fœtus's* dead and putrefied in the womb; the parts of which have made their way through apoſtemations; one whereof at the navel was ſome years in coming away. And in the *Philoſoph. Tranſactions* we meet with the like inſtances; particularly of one voided piece-meal by the anus, ſeveral years after conception.

Authors give accounts of *fœtus's* found in the fallopian tubes, and others in the cavity of the belly. M. de S. Maurice, in the *Memoirs of the royal academy of ſciences*, relates the hiſtory of a *fœtus* formed in the ovary of the mother; and which, at three months from impregnation, burſting the teſticle, forced its way through, into the epigaſtric region.

During the rupture, the mother felt all the preludes of an imminent travail; and, having called her chirurgeon, died in his arms, crying, I am delivering! I am delivering!

The ſtory of Margaret counteſs of Holland, who is ſaid to have been delivered of 364 *fœtus's*, all alive, and afterwards baptized, paſſes for a fable; and yet there is a picture of this notable delivery ſtill preſerved in the church of Loſdune, as a monument of the truth thereof. Albertus Magnus gives a like inſtance of a woman, who brought forth 150 *fœtus's*, or embryo's, all formed, and as big as the little finger.

FOG, or *miſt*, a meteor, conſiſting of groſs vapours, floating near the ſurface of the earth.

If the vapours, plentifully raiſed from the earth, and waters, either by the ſolar or ſubterraneous heat, meet, at their firſt entrance into the atmoſphere, with cold enough to condenſe them conſiderably; their ſpecific gravity being hereby increaſed, their aſcent will be ſtopped, and they will either return back in form of a dew, or of drizzling rain; or they will remain ſuſpended for ſome time, in form of a *fog*.

Fogs are only low clouds, or clouds in the loweſt region of the air; and clouds are no other than *fogs* raiſed on high.

Objects viewed through *fogs* appear larger, and more remote, than through the common air.

The fiſhing for herring is chiefly practiſed in *foggy* weather.

FOGAGE, in the foreſt law, is rank graſs, not eaten in the ſummer.

FOIBLE, a French term, frequently uſed alſo in our language. It literally ſignifies weak; and in that ſenſe is applied to the body of animals, and the parts thereof: as, *foible* reins, *foible* ſight, *&c.* being derived from the Italian *fievole*, of the Latin *flebilis*, to be lamented, pitied.

But it is chiefly uſed with us ſubſtantively, to denote a defect, or flaw in a perſon, or thing. Thus we ſay, every perſon has his *foible*; and the great ſecret conſiſts in hiding it artfully: princes are gained by flattery, that is their *foible*: the *foible* of young people is pleaſure; the *foible* of old men is avarice; the *foible* of the great and learned is vanity; the *foible* of women and girls, coquetry, or an affectation of having gallants. You ſhould know the fort, and the *foible*, of a man, before you employ him: but we ſhould not let people perceive, that we know their *foible*.

FOIL *, or FOYLE, among looking-glaſs-grinders, a ſheet of tin, with quickſilver, or the like, laid on the back-ſide of a looking-glaſs, to make it reflect. See FOLIATING.

* The word is formed of the Latin *folium*, leaf.

FOILING, among hunters, the footing, and treading of deer, which remains on the graſs, but ſcarce viſible.

FOLDS, in the manufactures. See the articles CLOTH, *&c.*

FOLDS *of the drapery*, in painting. See DRAPERY.

FOLIA, in botany, is uſed for the leaves of plants, and alſo of flowers, but particularly the former; the leaves of flowers being more properly called *petala*.

FOLIACEUM *expanſum*, in anatomy, is that extreme of the fallopian tube, next the ovary; and which is expanded like the mouth of a trumpet, and invironed with a ſort of fringe. See FALLOPIAN *tube*.

FOLIAGE, a cluſter or aſſemblage of flowers, branches, leaves, *&c.*

FOLIAGE is generally uſed for repreſentations of ſuch flowers, leaves, branches, rinds, *&c.* whether natural or artificial;

ficial; uſed as enrichments on capitals, freezes, pediments, &c. See *Tab. Archit. Fig.* 30. lit. aa; ſee alſo CAPITAL, FREEZE, &c.

FOLIATING *of looking-glaſſes* is the ſpreading a compoſition of ſomething which will firmly adhere to the back of the glaſs, and there reflect the image.

This compoſition is called the *foil*, and is uſually made with quickſilver, mixed with tin, and ſome other ingredients.

For the method of *foliating* looking-glaſſes, ſee LOOKING-GLASS.

In *Philoſ. Tranſ.* N° 245. we have a method of *foliating* globe looking-glaſſes, communicated by Sir R. Southwell. The mixture is of quickſilver and biſmuth; of each three ounces; and tin and lead, of each half an ounce: to the two laſt, throw on the marcaſite; and afterwards the quickſilver; ſtir them well together over the fire; but they muſt be taken off, and be towards cooling, before the quickſilver be put to them.

When you uſe it, the glaſs ſhould be well heated, and very dry: but it will do alſo when it is cold, though beſt when the glaſs is heated.

FOLIATION, in botany, &c. is uſed by Dr. Grew to expreſs the aſſemblage of the folia, or petala, of a flower. See PETALA.

The *foliation* is the moſt conſpicuous part of flowers; being that collection of fugacious, coloured leaves, which conſtitutes the compaſs, or body of the flower.

It is of great uſe in the generation and preſervation of the young fruit, or ſeed: it filtrates a fine juice, to nouriſh it in the uterus, or piſtil.

In ſome ſpecies, as apricots, cherries, &c. it likewiſe ſerves to guard the young tender fruit from the violence of wind, weather, &c. for theſe, being of a very tender and pulpous body, and coming forth in the colder times of the ſpring, would be often injured by the extremities of weather, if they were not thus protected, and lodged up within their flowers.

Before the flower opens, the *foliation* is curiouſly and artfully folded up in the calyx or perianthium.

Dr. Grew enumerates ſeveral varieties of their foldings; *viz.* the *cloſe couch*, as in roſes; the *concave couch*, as in the blattaria flore albo; the *ſingle plait*, as in peas bloſſoms; the *couch* and *plait*, as in marigolds; and the *rowl*, as in the ladies bower.

FOLIO, or rather FOLIUM, in books of accounts, &c. ſignifies *page*.

Thus *folio* 7. written abridgedly F° 7. denotes the ſeventh page, &c.

Folio recto, or F° R°, expreſſes the firſt ſide or page of a leaf.

Folio verſo, or F° V°, the ſecond, or back-ſide of the leaf.

The word is Italian, and literally ſignifies *leaf*.

FOLIO, among bookſellers. A *book in* FOLIO, or ſimply, a FOLIO, is that where the ſheet is only folded in two, each leaf making half a ſheet.

Beneath the *folio* are the *quarto*, *octavo*, *duodecimo*, *ſixteens*, *twenty-fours*, &c. See BOOK.

FOLIUM *caryophyllatum*, or clove-leaf. See CLOVES.

FOLIUM *Indicum*, or *Indum*, called alſo *thamalapathra*, and *malabathrum*; a leaf brought from the Indies, growing chiefly about Cambaye, produced by a tree not unlike the lemon-tree; uſed in the compoſition of Venice-treacle. See Supplement, article MALABATHRUM.

FOLK-LAND, in our antient Saxon cuſtoms, denoted *copyhold lands*. See COPYHOLD.

In oppoſition to theſe, charter-lands were called *bock-lands*. See BOCK-LAND.

Fundus ſine ſcripto poſſeſſus (ſays Somner) *cenſum penſitans annuum, & officiorum ſervituti obnoxius: terra popularis.*

FOLKMOTE, FOLCMOTE, or FOLKESMOTE, among our Saxon anceſtors, ſignified any popular or public meeting of all the folk or people of a place, diſtrict, or the like; *e. gr.* of all the tenants at a court-leet, or court-baron; or of all the freemen of a county; or all the barons, &c. of a kingdom.

The word, ſays Stow, is ſtill in uſe among the Londoners, and ſignifies *celebrem ex omni civitate conventum*, an aſſembly of all the citizens. Manwood ſays it is the court holden in London: wherein all the folk and people of the city did complain of the mayor and aldermen for any miſgovernment.

Somner, in his Saxon dictionary, makes *folcmote* to denote a general aſſembly of the people, for doing fealty to the king, and conſidering and ordering matters of the commonwealth[*]. Whence ſome date the origin of parliaments.

When ſuch aſſembly[*] is made in a city, it may be called a *burghmote*; when in the county, a *ſhiregemote*.

FOLLICULUS, among gardeners, the ſeed-veſſel, caſe, coat, huſk, or cover, wherewith ſeveral kinds of ſeeds and fruits are incloſed.

FOLLICULUS *fellis*. See VESICULA *fellis*.

FOLLY, according to Mr. Locke, conſiſts in the drawing of falſe concluſions from juſt principles; by which it is diſtinguiſhed from madneſs, which draws juſt concluſions from falſe principles.

FOMAHANT, or FOMALHAUT, in aſtronomy, a ſtar of the firſt magnitude, in the water of the conſtellation Aquarius.—Its longitude, according to Hevelius, for the year 1700. is 29°, 37′, 48″, and latitude ſouthward, 20°, 59′, 46″. How it ſtands in Mr. Flamſteed's catalogue, ſee in the article AQUARIUS.

FOMENTATION, a liquid medicine, applied on any diſeaſed part, to reſolve, diſcuſs, ſoſten, aſſwage, fortify, or conſtringe the ſame.

Fomentations are either *ſimple* or *compound*.

Compound FOMENTATIONS are decoctions of roots, leaves, flowers, and ſeeds, made in common water, or other proper liquor; to which are ſometimes added ſalts, axungiæ, oils, &c.

To uſe, or apply them, they dip a hot linen cloth, or flannel, in the liquor, and ſpread it on the part affected.

There are alſo *fomentations* made another way; *viz.* by boiling certain drugs in linen bags, and then applying them, bags and all, on the part.

There is alſo a ſort of dry *fomentations*, being bags filled with medicines, but not boiled, only ſometimes ſprinkled with a little wine or brandy.

Simple FOMENTATIONS are thoſe made with lukewarm water, milk, oil, oxycrate, or other the like liquor.

Fomentations are alſo called *local baths*, or partial bathings; becauſe, being applied on a diſeaſed part, they have much the ſame effect as a bath, or half-bath, has on the whole body.

FONT, or *baptiſmal* FONT, a ſtone or marble veſſel, at the lower-end of a pariſh-church, ſerving to hold the water to be uſed in adminiſtring the ſacrament of baptiſm.

A baptiſmal font was antiently the character of a pariſh-church.

Its place, at preſent, is at the bottom of the church, or in a little chapel within the church. Antiently it was placed in a little church, diſtinct from the great one, though near to it, called the *baptiſtery*.

It is ſaid to have been a common thing, during the firſt ages of the church, for the baptiſmal *fonts* to be filled miraculouſly, at the time of Eaſter, which was their great baptizing ſeaſon. Baronius gives divers inſtances of theſe miraculous *fonts* in the years 417. 554. and 558.

Poſſevinus B. of Lilybæum, who wrote in 443. obſerves, that, in the year 417. under the pontificate of Zoſimus, there was an error committed in the time of celebrating Eaſter; it being held on the 25th of March, in lieu of the 22d of April, which was the time on which it was held at Conſtantinople. He adds, that God was pleaſed to ſhew the error in a very convincing manner, by the *fonts* of a certain village, which always uſed to be miraculouſly filled againſt Eaſter; and which, this year, were not full till the 22d of April. See Tillemont. *Hiſt. Eccleſ. t.* x. *p.* 678, and 679. Gregory de Tours, *p.* 320. 516. 746. 950. 1063.

FONTICULUS[*], or FONTANELLA, in chirurgery, a general name for iſſues, ſetons, and the like other ſmall artificial diſcharges. See ISSUE.

FONTINALIA, or FONTANALIA, in antiquity, a religiou feaſt, held among the Romans, in honour of the deities wh preſided over fountains, or ſprings.—Varro obſerves, that i was the cuſtom to viſit the wells on thoſe days, and to ca crowns into fountains.—Scaliger, in his conjectures on Varro takes this not to be a feaſt of fountains in general, as Feſtu inſinuates; but of the Fountain which had a temple a Rome, near the Porta Capena, called alſo *Porta Fontinalis* he adds, that it is of this fountain Cicero ſpeaks in his 2 book *De legib.*—The *Fontinalia* were held on the thirteent of October.

FOOD, or ALIMENT, is whatever matter is taken in at th mouth, digeſted in the ſtomach, and other viſcera, and co verted into the matter of the body, to repair or ſupply wh is ſpent, or wanting.

The operations which the *food* undergoes, before it becom a part of our body, are, 1°, Maſtication; 2°, Deglutition 3°, Concoction; 4°, Chilification; 5°, Sanguificatio 6°, Aſſimilation.

Food is of two kinds; *viz.* *eſculents*, or *meat*; and *potulen* or *drink*.

The firſt *foods* of our great forefathers were water, and t ſpontaneous productions of the earth; with which alſo ma whole nations ſuſtain themſelves to this day.

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[*] *Omnes proceres regni, & milites & liberi homines univerſi totius regni Britanniæ, facere debent in pleno* folcmote *fidelitatem domino regi, coram epiſcopis regni. In* leg. Edw. Confeſſ. cap. 33. *Et amplius non ſit in huſtinga, miſkenninga*, i. e. ſpeaking amiſs; *neque in* folkeſmote, *neque in aliis placitis infra civitatem.* Charta H. I. pro London. *Du Cange.*

[*] *Cum aliquid vero inopinatum & malum contra regnum vel contra coronam regis emerſerit, ſtatim debent, pulſatis campanis, quod Anglice vocatur* Motbel, *convocares omnes & univerſos, quod Anglici vocant* folkmote, &c. Leg. Alfred.

[*] The word is a diminutive of *fons*, fountain, or ſpring.

Tulpius ſomewhere notes, that men antiently fed after the ſame rate as other animals; and lived on hay and corn: that, by degrees, they came to the humours, or juices, of certain beaſts, as milk; and, at length, they commenced carnivorous, and devoured the parts of the animals themſelves.

The variety of *foods*, it ſeems, does not make any difference in the ſubſtance, or actions, of the bodies ſuſtained thereby; the viſcera having a power of altering and aſſimilating them, however heterogeneous, into one ſimilar ſubſtance, like themſelves.

The difference in *foods* conſiſts principally in this; that ſome are more eaſily digeſted, and aſſimilated, than others; and that ſome afford more nutritious juice than others: and to this end it is, that the divers kinds of dreſſing have been invented; *viz.* to diſpoſe the matter for a more eaſy and plentiful aſſimilation.

The beſt, moſt ſimple, and light of digeſtion, are, the *foods* prepared of frumentaceous and leguminous ſeeds; as wheat, rye, barley, oats, and maize, dried, ground, fermented, baked, &c. peas, beans, vetches, &c. alſo, green plants, and pot-herbs; as lettuce, beet, parſly, &c. fruits; as apples, pears, berries, plumbs, cherries, &c. and the lean parts of animals, birds, fiſhes, inſects, &c. prepared by boiling, baking, ſtewing, &c.

And yet, for different intentions, different kinds of *foods* are required. Thus hard, dry, thick, heavy, feculent *foods*, are beſt for thoſe whoſe viſcera are ſtrong, digeſtion quick, &c. and ſoft, light, humid, ſimple *foods*, to ſuch, are pernicious. Again, to the weak, valetudinary, ſtudious, and ſedentary, thoſe *foods* are beſt, which are either by art, or nature, the neareſt to chyle; as milk, broths, &c.

Where the temperature inclines to acidity, there alcalious *foods* are the moſt ſuitable; and acids, where the conſtitution inclines to be alcaline.

Some will have it, that iron, metals, minerals, &c. may, by a proper preparation, become *food*; on which account, decoctions of gold, chalybeats, &c. are cried up: but it is certain, that no ſuch matters can ever be aſſimilated, and become part of our body; they may act, indeed, on the blood, and the blood-veſſels, by their weight, impetus, &c. and, on that account, may be of uſe in medicine; but not as *food*.

A due regulation of the quantity and quality of our *food*, and a nice adjuſtment thereof to the concoctive powers, would be of the utmoſt conſequence to health, and long life.

What we expend in motion, excretion, effluvia, &c. is but a determinate quantity; and the ſupply ſhould only keep pace with the expence: a juſt proportion of the two would, probably, preſerve us from acute diſtempers; as it certainly would from chronical ones; moſt, or all, of which, proceed from repletion; as appears, from their being cured by evacuation.

The qualities of *foods*, as to eaſineſs, or difficulty, of digeſtion, Dr. Cheyne thinks, may be determined, in all caſes, from theſe three principles.

1°, That thoſe ſubſtances which conſiſt of the groſſeſt parts, are hardeſt of digeſtion; by reaſon their conſtituent parts touch in the moſt points, or have the greateſt quantity of contact, upon which their coheſion depends.

2°, That thoſe ſubſtances whoſe parts are brought together with greater force, cohere proportionably cloſer, and are the more difficultly ſeparated.

3°, That ſalts are very hard to be digeſted; becauſe united by plane ſurfaces, under which they are always comprehended: hence, in the laſt ſtages of the circulation, where it is ſlower, they readily ſhoot into larger cluſters, and ſo are hard to be driven out of the habit.

From theſe principles that author infers, that ſuch vegetables and animals as come ſooneſt to their growth, are eaſier of digeſtion than thoſe long in attaining to maturity; the ſmalleſt of their kind, ſooner than the larger; thoſe of a dry, fleſhy, and fibrous ſubſtance, ſooner than the oily, fat, and glutinous; thoſe of a white colour, ſooner than thoſe of a redder; thoſe of a ſoft, mild, and ſweet, ſooner than thoſe of a rich, ſtrong, poignant, aromatic taſte; land animals, than ſea animals; animals that live on light vegetable *food*, than thoſe on hard and heavy *food*; plain dreſſed *food*, than what is pickled, ſalted, baked, ſmoked, or otherwiſe high ſeaſoned; and boiled meat, ſooner than roaſt, &c.

The ſame author adds, that abſtinence and exerciſe muſt concur with the due *food* for the preſervation of health; and that where exerciſe is wanting, as in ſtudious perſons, the defect muſt be ſupplied by abſtinence.

OOL, according to Mr. Locke, is one who makes falſe concluſions from right principles; by which he is diſtinguiſhed from a madman.

Dr. Willis relates, that, upon diſſecting a *fool*, the principal differences found between him and a man of ſenſe, were, that the brain was ſmaller; and that the cervical plexus, formed of the intercoſtal nerve, whereby the correſpondence between the brain and heart is effected, was leſs, and ſent forth fewer branches to the heart, &c. *Nervor. Deſcript. & Uſ.* c. 26.

OOT, a part of the body of moſt animals, whereon they ſtand, walk, &c.

Animals are diſtinguiſhed, with reſpect to the number of *feet*, into bipedes, *q. d.* two-footed; ſuch are men and birds: quadrupedes, *q. d.* four-footed; ſuch are moſt land animals: and multipedes, *q. d.* many-footed; as inſects.

The reptile kind, as ſerpents, &c. have no *feet*.

Travellers would perſuade us, that the bird of paradiſe has no *feet*; that when it ſleeps, it hangs by its wings; and, when it feeds, by its bill: but the truth of the matter is, they who catch them, cut the *feet* off, either that the bird may be thought the more extraordinary, or for fear they ſhould ſpoil the feathers, which are very beautiful.

Lobſters have twelve *feet*; ſpiders, mites, and polypus's, eight; flies, graſhoppers, and butterflies, have ſix *feet*.

Galen has ſeveral good obſervations on the wiſe adjuſtment of the number of *feet* in men, and other animals, in his book *De Uſu Part.* l. iii.

The fore-*feet* of the mole are admirably formed to dig, and ſcratch up, the earth, and make way for its head, &c. in water fowls, the legs and *feet* are excellently adapted to their reſpective occaſions, and manners of living; in ſuch as are to wade in the rivers, the legs are long, and bare of feathers a good way above the knee; their toes, alſo, are broad; and in ſuch as bear the name of *mudſuckers*, two of the toes are ſomewhat alated, that they may not eaſily ſink in walking upon boggy places.

Others, which are to ſwim, are whole-*footed*, *i. e.* have their toes webbed together; as the gooſe, duck, &c. and it is pretty enough to obſerve, how artfully theſe will gather up their toes and *feet*, when they withdraw their legs, or go to take their ſtroke in ſwimming; and again expand, or open, the whole *foot*, when they preſs upon, or drive themſelves forward in, the water.

FOOT, in anatomy. The *great* FOOT denotes the whole extent from the jointure of the hip to the tip of the toes; as the great hand does the whole from the ſhoulder to the fingers ends.

The *pes magnus*, or *great foot*, is divided into the thigh, the leg, and the *foot* properly ſo called.

Its bones are, the femur, or thigh-bone; the tibia and fibula, for the leg; and thoſe of the tarſus, metatarſus, and toes.

Its arteries are branches of the crural artery, and its veins terminate in the crural vein. Of theſe there are five principal ones; *viz.* the ſaphæna, great and little iſchiadic, the muſculous, politea, and ſuralis. See each under its proper article; SAPHÆNA, &c.

FOOT, properly ſo called, or the *leſſer* FOOT, denotes only the extremity of the leg; conſiſting of three parts; *viz.* the tarſus, the ſpace from the ankle to the body of the *foot*, anſwering to the wriſt in the hand; metatarſus, the body of the *foot* to the toes; and digiti, or toes. Each of theſe parts conſiſts of a great number of bones; as the calx, talus, cuneiformia, and cuboides. The bottom of all is called the ſole, or planta pedis. See TALUS, &c.

FOOT, in the Greek and Latin poetry, denotes a metre, or meaſure, compoſed of a certain number of long and ſhort ſyllables.

The ſpondee, iambic, trochee, and pyrrhic, are diſyllabic *feet*; *i. e.* they conſiſt of two ſyllables each: the dactyl, anapæſt, moloſſus, tribrach, bacchius, antibacchius, amphibrachys, and creticus, are triſyllabic; or conſiſt of three ſyllables each: the proceleuſmaticus, choriambus, and epitrite, are quadriſyllabic, or compoſed of four ſyllables. See each under its proper head; SPONDEE, IAMBIC, &c.

There are alſo other *feet*, invented by idle grammarians, of five, ſix, or more, ſyllables; but they are not worth the reciting.

Hexameter verſes conſiſt of ſix *feet*; pentameters, only of five.

Even and odd FOOT, par and impar. In poetry, and, particularly, in iambic verſes, *feet* are denominated *odd* and *even*, in reſpect of their ſituation in the verſe. Thus, the firſt, third, and fifth, *foot* of the verſe, are uneven; in regard thoſe numbers are not capable of being divided into two equal parts.

In the antient tragedy, the iambic verſes, which prevailed therein, only allowed uneven *feet* to the ſpondees; ſo that the ſecond, the fourth, and ſixth, *feet*, were to be iambus's; in regard they were even. This regular mixture of ſpondees in the uneven *feet*, rendered the verſe the more ſolemn and noble.

The comic poets, the better to diſguiſe their verſe, and make it more like proſe, took the contrary courſe; putting ſpondees, where the tragic poets would only have allowed iambus's.

FOOT is alſo a long meaſure, conſiſting of twelve inches.

The *foot* long is divided into twelve inches, and the inch into barley-corns. See INCH, &c.

Geometricians divide the *foot* into ten digits, and the digit into ten lines, &c.

The French divide their *foot*, like us, into twelve inches; and the inch into twelve lines.

The *foot* ſquare is the ſame meaſure both in length, and breadth, containing 144 ſquare, or ſuperficial inches.

The cubic, or ſolid *foot* is the ſame meaſure in all the three dimenſions, containing 1728 cubic inches.

The *foot* is of different lengths, in different countries. The Paris Royal *foot* exceeds the Engliſh by ſeven lines and a half: the antient Roman *foot* of the capitol conſiſted of four palms; equal to eleven inches and ſeven-tenths Engliſh: the Rhinland, or Leyden *foot*, by which the northern nations go, is to the Roman *foot*, as 950 to 1000. The proportions of the principal *feet* of ſeveral nations, compared with the Engliſh and French, are here ſubjoined.

The Engliſh *foot* being divided into one thouſand parts, or into twelve inches, the other *feet* will be as follow;

		Th. Pts.	*F.*	*Inch.*	*Li.*
London	Foot	1000	0	12	0
Paris - the royal	Foot	1068	1	00	8
Amſterdam	Foot	942	0	11	3
Antwerp	Foot	946	0	11	2
Dort	Foot	1184	0	02	2
Rhinland, or Leyden	Foot	1033	1	00	4
Lorrain	Foot	958	0	11	4
Mechlin	Foot	919	0	11	0
Middleburg	Foot	991	0	11	9
Straſbourg	Foot	920	0	11	0
Bremen	Foot	964	0	11	6
Cologn	Foot	954	0	11	4
Francfort on the Mayn	Foot	948	0	11	4
Spaniſh	Foot	1001	0	11	0
Toledo	Foot	899	0	10	7
Roman	Foot	967	0	11	6
Bononia	Foot	1204	1	02	4
Mantua	Foot	1569	1	06	8
Venice	Foot	1162	1	01	9
Dantzick	Foot	944	0	11	3
Copenhagen	Foot	965	0	11	6
Prague	Foot	1026	1	00	3
Riga	Foot	1831	1	09	9
Turin	Foot	1062	1	00	7
The Greek	Foot	1007	1	00	1
Paris Foot, by Dr. Bernard	- - -	1066	1	00	1
Old Roman	Foot	970	0	00	0

The Paris *foot* being ſuppoſed to contain 1440 parts; the reſt will be as follow:

Paris	Foot	1440
Rhinland	Foot	1391
Roman	Foot	1320
London	Foot	1350
Swediſh	Foot	1320
Daniſh	Foot	1403
Venetian	Foot	$1540\frac{2}{3}$
Conſtantinopolitan	Foot	3120
Bononian	Foot	$1682\frac{2}{5}$
Straſbourg	Foot	$1282\frac{3}{4}$
Norimberg	Foot	$1346\frac{1}{4}$
Dantzick	Foot	$1721\frac{1}{2}$
Hall	Foot	1320

Foot-Bank, or **Foot-Step**, *Banquette*, in fortification, is a ſmall ſtep of earth, on which the ſoldiers ſtand to fire over the parapet.

Foot *of the Foreſt* *, Pes foreſtæ, in our antient cuſtoms, contained 18 inches, or $1\frac{1}{2}$ of the common *feet*.

* *Notandum eſt, quod* pes foreſtæ *uſitatus tempore Ric. Oyſell, in arrentatione vaſtorum, factus eſt, ſignatus & ſculptus in pariete cancellæ eccleſiæ de Edwynſtone, & in eccleſia Beatæ Mariæ de Nottingham: Et dictus* pes *continet in longitudine octodecim pollices, &c.* Ex Regiſt. Abb. de Novo Loco in Com. Nott.

Foot-Geld was an antient amerciament, for not cutting out the balls of the feet of great dogs in the foreſt; to prevent their running after the king's deer.

Foot Guards, ſee the article **Guards**.

Foot Husks, among gardeners, are the ſhort heads out of which flowers grow.

Foot Level, an inſtrument, which ſerves to do the office both of a level, a ſquare, and a *foot* rule.

The *foot level*, repreſented *Tab. Surveying*, *fig.* 22. conſiſts of two branches, about an inch broad; opening and ſhutting like a two-foot rule.

Theſe branches are hollowed half way up the ſide of each, to receive a kind of tongue, or thin piece of braſs, which is faſtened to one of them, by means whereof the branches may be ſhut cloſe together. The uſe of this tongue is ſuch, that when the end of it is placed in the branch it is not faſtened to, where there is a pin that holds it, the two branches will ſtand at right angles: to the head of the inſtrument is likewiſe added a ſquare piece of braſs; by means whereof it does the office of a ſquare. At the bottom of the angle of the ſaid piece of braſs is a little hole, wherein is faſtened a line with a plumbet; which falling on a perpendicular line drawn on the tongue, ſhews whether any thing the inſtrument is applied to, be level or not.

Lieutenant Colonel of **Foot**. See **Lieutenant**.

Foot *Pace*, *half pace*, or *landing place*, ſee **Stair-Case**.

Foot *Rule*, ſee the article **Rule**.

Forage.—*Truſs of* **Forage**. See the article **Truss**.

FORAMEN, in anatomy, a name given to certain holes, or perforations, in divers parts of the body; as the

Foramen *Lacerum*, ſee **Dura** *Mater*.

Foramen *of the membrana tympani*, is a perforation in the membrane of the tympanum, or drum in the ear; which admits of the paſſage of wind, ſmoke, *&c.* from the meatus a palato to the drum.

This paſſage is very ſmall, and runs obliquely from the tympanum through the upper part of its membrane, near the proceſs of the malleus. The exiſtence of this perforation is more evident, when ulcers affect the palate, by the egreſs of wind upon the patient's ſtopping his noſe and mouth, and forcing the wind by the ears, than by any anatomical inſpection.

Foramen *Ovale*, or **Foramen** *Botalli*, an oval aperture, or paſſage through the heart of a fœtus, which cloſes up after birth. See *Tab. Anat. Splanch. fig.* 12. *lit. g.*

It ariſes above the coronary vein, near the right auricle; and paſſes directly into the left auricle of the heart.

The *foramen ovale* is one of the temporary parts of the fœtus, wherein it differs from an adult. It ſerves for the circulating of the blood in the fœtus, till ſuch time as the infant breathes, and the lungs are opened.

Its uſe was firſt exactly deſcribed by Leon. Botallus of Aſti in Piedmont, in the year 1562. who, tracing the courſe and paſſage of the blood, aſſerted the *foramen ovale* to be that opening whereby the blood in fœtus's was conveyed from the right ventricle to the left.

The modern anatomiſts ſtand to the diſcovery; and the *foramen ovale* is now generally allowed a part neceſſary in the ſyſtem of the circulation of the blood in the fœtus.

At the aperture of the *foramen*, there is a kind of floating membrane, which looks like a valve; but it has nothing of the office thereof: it does not hinder the blood from paſſing from either auricle to the other. All it ſerves for, according to Mr. Winſlow, is, to cloſe the *foramen* after the birth.

It has generally been thought, that the *foramen ovale* may ſometimes remain open, even in adults: and, in effect, divers authors furniſh us with inſtances thereof.

Dr. Connor aſſures us, he found it but half cloſed in a gir of four or five years old; and in another girl, which he opened at Oxford, there was room left to thruſt a tent through. *Diſſert. Med. Phyſ. de Stup. Oſ. Coal.*

The accurate Mr. Cowper adds, that he has often found th *foramen ovale* open in adults. *Anat. Append. fig.* 3.

And the Paris anatomiſts obſerve, that in a ſea-calf the *forame ovale* is always open; by which means it is enabled to ſtay ſ long under water.

Somewhat of this, too, is ſuppoſed to have been the caſe i the extraordinary recoveries of divers perſons drowned, hang ed, *&c.* See **Drowning**.

But Mr. Cheſelden ventures to ſet aſide all theſe authorities and contends, that the *foramen ovale* is neither open in any adult land-animals, nor in amphibious creatures.

When he firſt applied himſelf to diſſection, he tells us, h had no diſtruſt of the frequent accounts in authors of the *foramen* being open; but he afterwards found, that he himſel often miſtook the oſtium of the coronary veins for the *foramen*; and the like he imagines other authors to have done who aſſert, that it is always open in amphibious animals for that, upon a diligent inquiry into theſe animals, he coul never find it open in any of them.

Neither does he think that ſufficient to enable thoſe creature to live under water, as the fœtus does in utero; unleſs th ductus arterioſus were open alſo. *Cheſel. Ap. Der. Phyſ Theol.* l. iv. c. 7.

FORCE, *vis*, or *power*, in mechanics, philoſophy, *&c.* Se **Vis**, and **Power**.

Accelerating **Force**.	See	**Acceleration**.
Attractive **Force**.		**Attraction**.
Central **Force**.		**Central**.
Centrifugal **Force**.		**Centrifugal**.
Centripetal **Force**.		**Centripetal**.
Force *of Coheſion*.		**Cohesion**.
Contractile **Force**.		**Contractile**.
Elaſtic **Force**.		**Elastic**, and **Elasticit**
Electrical **Force**.		**Electricity**.
Force *of Gravity*.		**Gravity**.
Force *of the Heart*.		**Heart**.
Force *of Inactivity*.		**Vis** *Inertiæ*.
Repelling **Force**.		**Repulsion**.
Reſiſting **Force**.		**Resistance**.
Retarding **Force**.		**Retardation**.
Force *of Wind*.		**Wind**, *&c.*

Force, in common law, ſignifies an offence, by which violence is uſed either to perſons, or things.

Force is either *ſimple*, or *compound*.

Mixed, or *compound* Force is violence committed with ſome fact, which of itſelf alone were criminal: as if any man by *force* enter into another man's poſſeſſion, and there kill a man, or raviſh a woman, *&c.*

Simple Force is that which has no other crime adjoined to it: as if one, by *force*, enter into another man's poſſeſſion, without doing any other unlawful act.

Force is alſo divided into *true force*, and *force after a ſort*.

There are other branches; as *forcible* entries, *forcible* detaining, or holding; unlawful aſſembly, routs, riots, rebellions, *&c.* See Forcible *Entry*, &c.

Freſh Force. See the article Fresh.

Force, in grammar, and ſome other arts, is applied to a thing which ſtands in lieu of, or has the ſame effect as another.

In our language, the *ſ* between two vowels has the *force* or power of a z, and is ſometimes put for a *z*: as in horiſon, baptiſing, *&c.*

In Hebrew, the Dageſh; and in Arabic, the Teſdid; have the *force* of a letter ſuppreſſed. An unit before a cypher, has the *force* of ten.

FORCEPS *, a chirurgeon's inſtrument, wherewith dead and corrupt parts are ſeized, cut, or pulled off, *&c.* As alſo foreign bodies extracted out of wounds, *&c.*

* The word literally denotes a pair of tongs.

They are of divers forms, long, crooked, with teeth, with beaks, half-mooned, *&c.*

FORCIBLE *Entry*, a violent, actual entry into houſes, or lands, *&c.* weaponed; whether violence or hurt be offered any perſon therein, or not.

Forcible *holding*, or *detaining*, a with-holding by violence, and with a ſtrong hand, of the poſſeſſion of land, *&c.* whereby he who has a lawful right of entry is barred or hindered.

FORDICIDIA *, in antiquity, a religious feaſt among the Romans, held on the fifteenth of April: thus called from the Latin *forda*, a cow big with calf, and *cædo*, I ſlay, or ſacrifice; by reaſon ſuch cows were herein ſacrificed to the goddeſs *Tellus*, or the earth.

* *Forda*, a cow with calf, is formed, according to Ovid, from *fero*, I bear; or rather, as Scaliger and Salmaſius imagine, from the Greek φορας, φοραδος, the ſame.

Varro writes, that there were ſeveral of theſe cows ſacrificed in the Curiæ. And Livy and Halicarnaſſeus relate, that there was one in each Curia; ſo that there were thirty in all; which is confirmed by Ovid. *Faſtor.* l. iv. ver. 631.

The *fordicidia* were firſt inſtituted by Numa, on occaſion of a general barrenneſs among the cattle: Ovid gives a particular deſcription of the ceremony, in the paſſage above quoted: he adds, that part of theſe cows were ſacrificed in the temple of Jupiter; that is, in the capitol.

FORE-CASTLE of a ſhip, is that part where the fore-maſt ſtands. See *Tab. Ship.* fig. 2. lit. BC, n. 23.

It is divided from the reſt of the floor by a bulk-head: that part of the *fore-caſtle* which is aloft, and not in the hold, is called the *prow*.

FORECLOSED, in our antient law books, ſignifies barred, ſhut out, or excluded for ever: as, when the equity of redemption on mortgages is barred.

FOREFOOT, in the ſea-language, is when one veſſel ſails, or lies acroſs another's way.

As if two ſhips being under ſail, and in ken of one another; one of them lies in a courſe with her ſtern ſo much aweather of the other, that if both hold on, the windward ſhip will run a-head of the other. Such ſhip is ſaid to lie with the other's *forefoot*.

Though, as ſoon as ſhe has paſſed, they ſay, ſhe is gone out a-head.

FOREIGN *, ſomething extraneous, or that comes from abroad.

* The word is formed of the Latin *fores*, doors; or *foris*, out of doors; or *forum*, market, *&c.*

Foreign miniſter, *foreign* prince, *foreign* goods, *&c.* are thoſe belonging to other nations. See Minister, *&c.*

Foreign to the purpoſe, ſignifies a thing remote or impertinent. Matter is *foreign* to the idea of ſpace, *i. e.* it is not inherent therein, but adventitious thereto.

Foreign plants are particularly called *exotics*.—*Foreign foſſils*, ſee Fossil.—*Foreign motion*, ſee Motion.—*Foreign Cannons*, ſee Cannon.

In ſome univerſities they give the appellation *foreign doctors*, *doctores forenſes*, to ſuch as do not reſide in the place, or the univerſity; but take degrees to go and live elſewhere, and in other countries.

In the life of St. Paul, biſhop of Verdun, written by an anonymous author, and publiſhed from a MS, above four hundred years old, by Bollandus, we meet with *forenſis presbyter*, for a prieſt who lives in another part. The ſame Bollandus notes, that St. Ambroſe uſes the word *forenſis* for exterior.

Foreign, or Foraine *Traitte*, is a duty belonging to the king of France, of one-twentieth of the value of all goods imported, or exported out of the kingdom.

Foreign, is uſed, in law, in ſeveral ſenſes, and joined with divers ſubſtantives.—Thus,

Foreign *Anſwer*, is ſuch an anſwer, as is not triable in the county where it is made.

Foreign *Attachment*, is an attachment of foreigners goods found within a liberty, or city, in the hands of a third perſon, for the ſatisfaction of ſome citizen, to whom the foreigner oweth money.

Foreign *Matter*, in law, is matter triable in another county; or matter done in another county.

Foreign *Oppoſer*, or *Appoſer*, is an officer in the exchequer, to whom all ſheriffs or bailiffs do repair to be appoſed by him of their green wax, after they are appoſed of their ſums out of the Pipe-office; and who from thence draws down a charge upon one of them to the clerk of the pipe.

His buſineſs is, to examine the ſheriff's eſtreats with the record, to aſk the ſheriff, what he ſays to every particular ſum therein.

Foreign *Plea*, is a refuſal of the judge as incompetent, becauſe the matter in hand was not within his precinct.

Foreign *Service*, is ſuch ſervice whereby a mean lord holdeth of another, without the compaſs of his own fee: or, that which a tenant performeth, either to his own lord, or to the lord paramount, out of his own fee.

FOREJUDGED *the Court*, is when an officer of any court is baniſhed, or expelled the ſame, for ſome offence; or for not appearing to an action by bill filed againſt him: in which latter caſe, he is not to be admitted to officiate, till he appear to the bill. Anno 2 Hen. IV. c. 8.

He ſhall loſe his office, and be *forejudged* the court, *&c.* *Forejudicare, interdum eſt male judicare.* Spel.

FOREJUDGER, in law, ſignifies a judgment, whereby a man is deprived, or put by the thing in queſtion.

FORE-KNIGHT, in the ſea-language, a piece of wood, carved in figure of a man's head, and faſt bolted to the beams upon the ſecond deck.

FORELAND, or Foreness, in navigation, a point of land jutting out into the ſea.

Foreland, in fortification, is a ſmall ſpace of ground between the wall of a place, and the moat; called alſo *berme*, and *liziere*.

FORELOCKS, in a ſhip, are little flat wedges, like pieces of iron, uſed at the ends of bolts, to keep them from flying out of the holes.

FORELOIN, among hunters, is when a hound going before the reſt of the cry, meets chace, and goes away with it.

FORELORN *Hope*, in an army, *Enfans perdus*. See Enfans *Perdus*.

FORE-MAST of a ſhip, is a round large piece of timber, ſeated in her fore-part, on which is borne the fore-ſail, and foretop-ſail yard (See *Tab. Ship. fig.* 1. *n.* 81.).

Its length is uſually $\frac{4}{5}$ of the main-maſt.

FORENSIC *Service*, ſee the article Service.

FORENSIS *Toga*, ſee the article Toga.

FORE-SAIL, the ſail of the fore-maſt. See Sail.

FORESCHOKE, *Derelictum*, antiently ſignified as much as *forſaken* in modern language.

It is eſpecially uſed in one of our ſtatutes, for land or tenements ſeized by the lord, for want of ſervices due from the tenant; and ſo quietly held and poſſeſſed beyond the year and day.

As if we ſhould ſay, that the tenant, who ſeeing his lands or tenements taken into the lord's hand, and poſſeſſed ſo long, takes not the courſe appointed by law to recover them; does, in due preſumption of law, diſavow or forſake all the right he has to them.—In which caſe, ſuch lands ſhall be called *foreſchoke*, ſays the ſtat. 10 Ed. II. c. 1.

FORESKIN, ſee the article Prepuce.

FOREST *, *Sylva*, in geography, a great wood; or, a large extent of ground, covered with trees.

* The word is formed of the Latin *foreſta*, which firſt occurs in the *Capitulars* of Charlemaign, and which itſelf is derived from the German *forſt*, ſignifying the ſame thing. Spelman derives it from the Latin *foris reſtat*, by reaſon *foreſts* are out of towns. Others derive *foreſta a feris*, q. d. *fereſta*, *quod ſit tuta ſtatio ferarum*, as being a ſafe ſtation, or abode, for wild beaſts.

The Caledonian and Hercynian *foreſts* are famous in hiſtory. The firſt was a celebrated retreat of the antient Picts and Scots: the latter antiently poſſeſſed the greateſt part of Europe; particularly Germany, Poland, Hungary, *&c.* In Cæſar's time it extended from the borders of Alſatia and Switzerland to Tranſylvania; and was computed ſixty days journey long, and nine broad: ſome parts or cantons thereof are ſtill remaning.—The *foreſt* of Dean in Glouceſterſhire is famous for the iron works therein.

The antients adored *foreſts*, and imagined a great part of their gods to reſide therein: temples were frequently built in the thickeſt *foreſts*; the gloom and ſilence whereof naturally inſpired ſentiments of devotion, and turned mens thoughts within themſelves.

For the like reaſon, the antient Druids made *foreſts* the place of their reſidence, and performed their ſacrifices, inſtructed their youth, and gave laws therein. See Druids.

Forest *Trees*, ſee the articles Tree, and Timber.

Pruning Forest *Trees*, ſee the article Pruning.

Tranſplanting of Forest *Trees*, ſee Transplanting.

Forest, in a law ſenſe, is defined a certain territory of woody grounds and fruitful paſtures, privileged for wild beaſts, and fowls of *foreſt*, chace and warren, to reſt and abide in, under the ſafe protection of the king, for his princely delight; bounded with unremoveable marks, and meres, either known by matter of record, or preſcription; repleniſhed with wild beaſts of venery, or chace, and with great coverts of vert for ſuccour of the ſaid beaſts; for preſervation and continuance whereof, with the vert and veniſon, there are certain peculiar laws, privileges, and officers.

The properties and characters of a *foreſt*, are,—Firſt, That it cannot be in the hands of any, but the king; becauſe none elſe hath power to conſtitute ſuch commiſſions as are neceſſary to the being of a *foreſt*, beſide the king; as, particularly, that of a juſtice in eyre of the *foreſt*.

And yet the abbot of Whitby had a *foreſt* by grant of king Henry II. and king John; with all officers incident thereto.

The ſecond character, is the courts belonging thereto, which are, the *juſtice-ſeat*, held every three years; the *ſwanimote*, held thrice every year; and the *attachment*, once every forty days.

The third characteriſtic is the officers belonging thereto, for preſervation of the vert and veniſon; as the juſtices of the foreſt, the warder or keeper, ranger, verderers, foreſters, agiſtors, regarders, bailiffs, beadles, &c. See each under its proper article, Justice *of the Foreſt*, Keeper, &c.

But the moſt eſſential mark of a *foreſt* is the ſwanimote, which is no leſs incident thereto, than the court of pye-powder to a fair. If this fail, it ceaſes to be a *foreſt*, and commences a chace. See Swanimote.

The way of making a *foreſt* is thus: certain commiſſioners, appointed under the great ſeal, view the ground intended, and fence it round: this being reported in chancery, the king cauſes it to be proclaimed throughout the county where the land lies, that it is a *foreſt*; and is thenceforth to be governed by the laws of the *foreſt*: and prohibits all perſons from hunting therein, without his leave.

New Foreſt in Hampſhire, hiſtory tells us, was made by the deſtruction of twenty-two pariſh-churches, and all the villages, manors, chapels, &c. for the ſpace of thirty miles together. Beſide *New Foreſt*, there are now ſubſiſting ſixty-eight *foreſts* in England; thirteen chaces; and more than ſeven hundred eighty-one parks.

Our antient Norman kings were the firſt who incloſed *foreſts*, and ſettled the juriſdiction thereof: their taſte ran mightily that way. In the courſe of a few reigns from the conqueſt, no leſs than ſixty-eight *foreſts* were incloſed; the ſtricteſt laws were made to ſecure them; and the ſevereſt penalties inflicted on all treſpaſſers theron.

William the Conqueror decreed the eyes of any perſon to be pulled out, who took either a buck, or boar: William Rufus made the ſtealing of a doe a hanging matter: the takeing of a hare was fined at 20*s*. and a coney at 10*s*.

Eadmer adds, that fifty perſons of fortune, being apprehended by that laſt prince, for killing his bucks, were forced to purge themſelves by the fire of ordeal, &c.

Henry I. made no diſtinction between him who killed a man, and him who killed a buck; and puniſhed thoſe who deſtroyed the game, though not in the *foreſt*, either by forfeiture of their goods, or loſs of limbs; though Henry II. remitted it for a temporary impriſonment.

Richard I. revived the old diſcipline of gelding and pulling out the eyes of thoſe convicted of hunting in the *foreſt*: but he afterwards relaxed a little, and was contented to make ſuch convicts abjure the realm, or be committed, or pay a fine.

Aſſiſe of the Forest, ſee the article Assise.

Charter of the Forest, ſee Charta *de Foreſta*.

Drift of the Forest, ſee the article Drift.

Foot of the Forest, ſee the article Foot.

Keeper of the Forest, ſee the article Keeper.

Perambulation of the Forest, ſee Perambulation.

Repoſition of the Forest, ſee Reposition.

Waſte of the Forest, ſee the article Waste.

Forestæ *Pes*, ſee the article Pes.

Forest is alſo uſed adjectively.—The *foreſt* cities of the empire are four cities ſituate in the antient Black *Foreſt*, or Sylva Nigra, a part of the antient Hercynian *Foreſt*; *viz.* Rhinfield, Waldhuſt, Seckinghen, and Lauffembourg. But, now that the bounds of the Black *Foreſt* are contracted, theſe cities are out of the limits thereof.

Forest *Law*.—The *foreſt* laws are peculiar laws, different from the common law of England.

Before the making of *Charta de Foreſta*, offences committed therein were puniſhed at the pleaſure of the king, in the ſevereſt manner; and even in the charter there were ſome grievous articles, which the clemency of later princes have ſince by ſtatute thought fit to alter *per Aſſiſas Foreſtæ*.

Yet to this day, in treſpaſſes relating to the *foreſt*, *voluntas reputabitur pro facto*; ſo that if a man be taken hunting a deer, he may be arreſted, as if he had taken a deer. The foreſter may take and arreſt a man, if he be taken either at dog-draw, ſtable-ſtand, back-bear, or bloody-hand; notwithſtanding that three of theſe be only preſumptions. See Dog-draw, Stable-stand, &c.

FORE-STAFF, an inſtrument uſed at ſea, for taking the altitudes of heavenly bodies.

The *fore-ſtaff*, called alſo *croſs-ſtaff*, takes its denomination hence, that the obſerver, in uſing it, turns his face towards the object; in contradiſtinction to the back-ſtaff, where he turns his back to the object.

The *fore*, or *croſs-ſtaff*, repreſented in *Tab. Navigation*, *fig.* 14. conſiſts of a ſtrait, ſquare, graduated ſtaff, AB, and four croſſes, or vanes, FF, EE, DD, CC, which ſlide thereon. The firſt and ſhorteſt of theſe vanes, FF, is called the *ten croſs*, or *vane*, and belongs to that ſide of the inſtrument, whereon the diviſions begin at 3 degrees, and end at 10. The next longer vane, EE, is called the *thirty croſs*, belonging to that ſide of the ſtaff, wherein the diviſions begin at 10 degrees, and end at 30, called the *thirty ſcale*. The next vane, DD, is called the *ſixty croſs*, and belongs to the ſide where the diviſions begin at 20 degrees, and end at 60. The laſt, and longeſt, CC, called the *ninety croſs*, belongs to the ſide whereon the diviſions begin at 30 degrees, and end at 90.

Uſe of the Fore-staff.—The great uſe of this inſtrument is to take the height of the ſun, and ſtars, or the diſtance of two ſtars: and the ten, thirty, ſixty, or ninety croſſes are to be uſed according as the altitude is greater, or leſſer; that is, if the altitude be leſs than ten degrees, the ten croſs is to be uſed; if above ten, but leſſer than thirty, the thirty croſs to be uſed, &c.

Note, For altitudes greater than ſixty degrees, this inſtrument is not ſo convenient as a quadrant, or ſemicircle.

To obſerve an altitude by the Fore-staff.—Apply the flat end of the ſtaff to your eye, and look at the upper-end *d* of the croſs of the centre of the ſun, or ſtar, and at the lower end *a* for the horizon. If you ſee the ſky inſtead of the horizon, ſlide the croſs a little nearer the eye; and if you ſee the ſea, inſtead of the horizon, ſlide the croſs further from the eye: and thus continue moving, till you ſee exactly the ſun or ſtar's centre by the top of the croſs *b*, and the horizon by the bottom thereof *a*.

Then the degrees and minutes cut by the inner edge *c* of the croſs upon the ſide of the ſtaff, peculiar to the croſs you uſe, is the altitude of the ſun or ſtar.

If it be the meridian altitude you want, continue your obſervation as long as you find the altitude increaſe; ſtill moving the croſs nearer to the eye.

By ſubtracting the meridian altitude thus found, from ninety degrees, you will have the zenith diſtance.

To work accurately, an allowance muſt be made for the height of the eye above the ſurface of the ſea; *viz.* for one Engliſh foot, 1 minute; for five foot, $2\frac{1}{2}$; for ten foot, $3\frac{1}{2}$; for twenty foot, 5; for forty foot, 7, &c.

Theſe minutes ſubtracted from the altitude obſerved, and added by the zenith diſtance obſerved, give the true altitude, and zenith diſtance.

To obſerve the diſtance of two ſtars, or the moon's diſtance from a ſtar, by the Fore-staff.—Apply the inſtrument to the eye; and looking to both ends *a* and *b* of the croſs, move it nearer, or farther from the eye, till you ſee the two ſtars; the one on the one end, and the other on the other end of the croſs. Then the degrees and minutes cut by the croſs on the ſide proper to the vane in uſe, give the ſtars diſtance.

FORESTAGE, Forestagium, in our antient cuſtoms; an obſolete duty, or ſervice, paid by the foreſters to the king.

In Britany, Lobineau obſerves, the office of foreſters was held by gentlemen of the firſt rank, who for their *foreſtage* were obliged to furniſh the lord, when he kept open houſe, with cups and ſpoons.

Forestage alſo ſeems to have been uſed for a duty, payable to the king's foreſters. *Et ſint quieti de thelonio, & paſſagio, & de* foreſtagio, &c. *Chart*. Edv. I.

It may likewiſe be taken for a right to uſe the foreſt; or a taking of reaſonable eſtovers. See Estover.

FORESTAL *, or Forstal, in Domeſday wrote Foristel, is an intercepting in the highway; or ſtopping, or even inſulting a paſſenger therein.

* The word is formed of the Saxon, *fore*, before; and *ſtal*, ſtation.—In the laws of Hen. I. the ſenſe of the word is thus explained: Foreſtal *eſt, ſi quis ex tranſverſo incurrat, vel in viam expectet, & aſſaliet inimicum ſuum.*

FORESTALLER, a perſon who *foreſtalls* the market, or buys up goods upon the road.

FORESTALLING *, the buying or bargaining for corn, cattle, or other merchandize, by the way, before it reaches the market, or fair, to be ſold; or by the way, as it comes beyond the ſeas, or otherwiſe, toward any city, port, haven, or creek, of this realm, with deſign to take advantage thereof, and ſell it again at a more advanced and dear rate.

* Fleta ſays, it ſignifies *obſtructionem viæ, vel impedimentum tranſitus & fugæ averiorum.*

Forestalling is particularly uſed, in Crompton, for ſtopping a deer broken out of the foreſt, and preventing its returning home again; or, a lying between him and the foreſt in the way he is to return.

FORESTER, a ſworn officer of the foreſt, appointed by the king's letters patent to walk the foreſt, and watch the vert and veniſon; as alſo to attach and preſent all treſpaſſes againſt both, within his bailiwick or walk, to the foreſt-courts, to be puniſhed according to their offences.

Though the letters patent of a *foreſter* be ordinarily only granted *quamdiu bene ſe geſſerit*; yet they are granted to ſome and their heirs, who are hereby called *foreſters in fee.*

Sir William Temple relates, that the Franks having ſubdued all Gaul, their princes reduced Flanders into a kind of government, and gave the quality of *foreſter*, with part of the province, to the braveſt of their captains.

This quality of lord *foreſter* held till the time of Charlemaign, or, according to others, of Charles the Bald, in whoſe time Flanders being erected into a county, the title of *foreſter* was changed into that of count.

FORE-TOP-MAST is half the length of the fore-maſt. (See *Tab. Ship.* fig. 1. 11. 102.) and the fore-top-gallant-maſt half the length of the *fore-top-maſt.*

FORFEITURE * originally ſignifies a tranſgreſſion or offence againſt ſome penal law.

* The word is formed of the baſe Latin *foriſfactura*; whence *forfaitura*, and *forfaictura*, and the French *forfait*. *Foriſfactura* comes of *foriſfacere*, which, according to Iſidore, ſignifies to hurt, or offend, *facere contra rationem*; and which is not improbably derived of *foris*, out, and *facere*, to do, q. d. an action out of rule, or contrary to the rules. Borel will have *forfait* derived from the uſing of force or violence. Lobinneu, in his gloſſary, will have *forſfacta* properly ſignify a mulct, or amend, not a *forfeit*; which latter he derives from the baſe Briton *forfed*, a penalty.

But with us, it is now more frequently uſed for the effect of ſuch tranſgreſſion, or the loſing ſome right, privilege, eſtate, honour, office, or effects, in conſequence thereof, than for the tranſgreſſion itſelf. As *forfeiture of eſcheats*, *forfeiture of goods*, &c. A fee becomes vacant by the *forfeiture* or rebellion of the vaſſal.

Goods *forfeited*, and goods confiſcated, differ: thoſe which have a known owner, who has committed ſome offence, whereby he loſes his goods, are ſaid to be *forfeited.* Thoſe which an offender diſavows, as not his own, and which are not claimed by any other, are ſaid to be confiſcated, Stat. 25 Edv. III. Add, that *forfeiture*, or *forfeit*, is more general; and confiſcation more particular, being principally uſed for ſuch as *forfeit* only to the king's exchequer.

Full **Forfeiture**, *plena foriſfactura*, called alſo *plena wita*, is a *forfeiture* of life and member, and all elſe that a man has.

Forfeiture *of marriage*, *foriſfactura maritagii*, a writ, which formerly lay againſt him, who, holding by knight's ſervice, and being under age, and unmarried, refuſed her whom the lord offered him, without his diſparagement, and married another.

FORFEX, in ſurgery, a pair of ſciſſars wherewith things may be cut.

The word is ſometimes alſo uſed for pincers, nippers, or pliers; and is often confounded with *forceps.* Blanchard, and after him Quincy, deſcribes a *forfex* as an inſtrument to draw teeth withal.

FORGE properly ſignifies a little furnace, wherein ſmiths, and other artificers in iron and ſteel, &c. heat their metals red-hot, in order to ſoften and render them more malleable and manageable on the anvil, &c.

We ſay, a farrier's *forge*, ſilverſmith's *forge*, cutler's *forge*, lockſmith's *forge*, &c.—The *forge* uſed by the ſeveral operators in iron is very ſimple; we ſhall inſtance in that of the blackſmith, to which all the reſt are reducible.

The hearth, or fire-place, is a maſs of brick, about two feet ſix inches high: the back of the *forge* is built upright to the cieling, and is incloſed over the fire-place with a hovel, which leads into a chimney, to carry away the ſmoke. In the back of the *forge*, againſt the fire-place, is a thick iron plate, with a taper pipe fixed therein, about five inches long, called the *tewel*, into which the noſe or pipe of the bellows is received: the uſe of this plate and tewel is, to preſerve the pipe of the bellows, and the back of the hearth from being burnt. Right before the back, at about two feet diſtance, is the trough, filled with water, to wet the coals with, and thereby increaſe their force, as alſo to quench the iron in.

Behind the back of the *forge* is placed the bellows, one of whoſe boards is fixed ſo, that it moves not, either upward or downward; and to the other is fitted a rope, chain, or even a rod, which riſing perpendicularly, is fixed to a croſs piece, called the *rocker*; which, moving on a kind of fulcrum near the middle, ſerves as a handle.

By drawing down this handle, the moveable board of the bellows riſes, and, by a conſiderable weight atop of its upper ſide, it ſinks down again, and, by this alternate agitation, performs the neceſſary motions of a pair of bellows. See **Bellows.**

Braziers and copperſmiths *forge* differs but little from that already deſcribed; only that it is much leſs, and that nothing is burnt in it but charcoal, the metals uſed by theſe operators not working well with pit-coal.

Forge is alſo uſed for a large furnace, wherein iron ore, taken out of the mine, is melted down.

But this is not ſo properly called a *forge* as a furnace.

Forge is more properly uſed for another kind of furnace, wherein the iron ore, melted down and ſeparated in a former furnace, and there caſt into ſows and pigs, is heated, and fuſed over again, and beaten afterwards with large hammers; and thus rendered more ſoft, pure, ductile, and fit for uſe.

Of theſe *forges* there are two kinds, which the iron ſucceſſively paſſes through, before it comes to the ſmith.

The firſt is called the *finary*, where the pigs are worked into groſs iron, and prepared for the ſecond, which is called the *chafery*,* where it is further wrought into bars fit for uſe.

Forge *Mills.* See the article **Mill.**

FORGER *of falſe deeds* ſignifies either him that fraudulently makes and publiſhes falſe writings, to the prejudice of any man's right, or elſe the writ that lies againſt him who commits this offence.

Fitz. *Nat. Br. fol.* 69. *b.* ſays, that a writ of deceit lies againſt him, who commits this offence; and the penalty of it is declared in the ſtat. 5 Eliz. cap. 14.

FORGING, in the mechanic arts, the act of beating or hammering iron on an anvil, after having firſt made it red-hot in the *forge*, in order to extend it into various forms, and faſhion it into works.

Iron is hammered and *forged* two ways; either by the force of the hand, in which there are uſually ſeveral perſons employed, one of them turning the iron, and hammering likewiſe, and the reſt only hammering.

Or, it is done by the force of a water-mill, which raiſes and works ſeveral huge hammers, beyond the force of man, under the ſtrokes whereof the workmen preſent large lumps or pieces of iron, which are ſuſtained, at one end, by the anvils, and, at the other, by iron-chains faſtened to the cieling of the forge.

This laſt way of *forging* is only uſed in the largeſt works, as anchors for ſhips, &c. which uſually weigh ſeveral thouſand pounds.—For the lighter works, a ſingle man ſuffices to hold, heat, and turn, with one hand, while he ſtrikes with the other.—Each purpoſe the work is deſigned for, requires its proper heat.—If it be too cold, it will not feel the weight of the hammer, as the ſmiths call it (*i. e.* it will not ſtretch or give way); and, if it be too hot, it will red-ſear, *i. e.* it will break or crackle under the hammer.

The ſeveral heats the ſmiths give their irons are, 1°, A blood-red heat. 2°, A white-flame heat. 3°, A ſparkling or welding heat.

FORKED *Heads*, among hunters, thoſe horns of deer which bear two croches on the top; or which have their croches doubled.

FORLET *Land*, ſuch land in the biſhoprick of Hereford, as was granted or leaſed, *dum epiſcopus in epiſcopatu ſteterit*, that the ſucceſſor might have it for his preſent income.

But now that cuſtom is diſuſed, and the ſame lands are granted, as others, by leaſe; yet they ſtill retain the name. Butterfield's *Survey*, fol. 56.

FORM, **Forma**, in phyſics, denotes the manner of being peculiar to each body; or that which conſtitutes it ſuch a particular body, and diſtinguiſhes it from every other.

The philoſophers generally allow two principles of bodies: *matter*, as the common baſis, or ſubſtratum of all; and *form*, as that which ſpecifies and diſtinguiſhes each; and which, added to a quantity of common matter, determines or denominates it this, or that; wood, or fire, or aſhes, &c.

Ariſtotle calls *form* λογος της ȣσιας, the reaſon or manner of the eſſence or being of a thing: but as ȣσια denotes ſubſtance, as well as eſſence, a mighty controverſy has ariſen in the ſchools, in which ſenſe the word is here to be uſed; and whether *forms* are to be accounted ſubſtantial, or only eſſential; *i. e.* whether the *forms* of bodies be real ſubſtances, and have an exiſtence diſtinct from that of matter, or not. It is certain, the moſt antient philoſophers never dreamt of making *form* a ſubſtance. Parmenides, and after him Teleſius, expreſly aſſert all natural things to conſiſt of one and the ſame kind of ſubſtance, and only to differ in accidents. And though Empedocles allowed of a ſubſtantial *form* in mixt bodies; yet he denied it in the elements, and only held an eſſential one.

Galen allowed of nothing in matter more than the temperature of the primary elements; in which he was ſeconded by Alex. Aphrodiſæus, Philoponus, and others.

Subſtantial *forms* ſeem to have been firſt broached by the followers of Ariſtotle, who thought matter, under different modes or modifications, not ſufficient to conſtitute different bodies; but that ſomething ſubſtantial was neceſſary to ſet them at a greater diſtance: and thus introduced ſubſtantial *forms*, on the footing of ſouls, which ſpecify and diſtinguiſh animals.

The conſiderations which the Peripatetics principally inſiſt on, in confirmation of this doctrine, are: 1°, That, without ſubſtantial *forms*, all natural things would be of the ſame ſpecies, nature, and eſſence; which is ſuppoſed an abſurdity.

2°, That every thing has its peculiar power, motion, and operation; as the magnet, *e. gr.* has that of attracting iron; but that this power does not flow from the matter of the body, which is only paſſive; nor from the accidents: and therefore that it muſt ariſe from a ſubſtantial *form*.

3°, That, without ſubſtantial *forms*, there would be no generation; for a production of accidents is only an alteration.

4°, That, without ſuch *form*, the nature of a man and of a lion would not differ.

What contributed much to their error, was the circumſtances of life and death: for obſerving, that, as ſoon as the ſoul was departed out of a man, all motion, reſpiration, nutrition, *&c.* immediately ceaſed, they concluded, that all thoſe functions depended on the ſoul; and conſequently that the ſoul was the *form* of the animal body, or that which conſtituted it ſuch: that the ſoul was a ſubſtance, independent of matter, nobody doubted; and hence the *forms* of other bodies were concluded equally ſubſtantial.

But to this it is anſwered, that though the ſoul be that by which a man is man, and conſequently is the *form* of the human body, as human; yet it does not follow, that it is properly the *form* of this body of ours, as it is a body; nor of the ſeveral parts thereof, conſidered as diſtinct from each other.

For thoſe ſeveral parts have their proper *forms* ſo cloſely connected with their matter, that it remains inſeparable therefrom, long after the ſoul has quitted the body: thus, fleſh has the *form* of fleſh; bone of bone, *&c.* long after the ſoul is removed, as well as before.

The truth is, the body does not become incapable of performing its accuſtomed functions, by reaſon the ſoul has deſerted it; but the ſoul takes its leave, by reaſon the body is not in a condition to perform its functions.

The antient and modern corpuſcular philoſophers, therefore, with the Carteſians, exclude the notion of ſubſtantial *forms*; and ſhew, by many arguments, that the *form* is only the modus or manner of the body it is inherent in.

And as there are only three primary modes of matter, *viz.* figure, reſt, and motion, with two others ariſing therefrom, *viz.* magnitude, and ſituation, the *forms* of all bodies they hold to conſiſt therein; and ſuppoſe the variations theſe modes are capable of, ſufficient to preſent all the variety obſervable in bodies. See MODE.

Many varieties we actually ſee reſult from changes in theſe modes, which may very well paſs for differences of *form*: thus, an awl only differs from a needle in magnitude; a globe from a cube in figure: and tranſparent glaſs, being pulverized, will reflect the light, and appear white; and yet all the alteration conſiſts in the order and arrangement of the parts: when wheat is ground into flour, all the change conſiſts in a ſeparation of the contiguous parts; and when the flour is baked into bread, what is it but the ſame particles aſſociated again in another manner? By agitating water, a froth is formed; if the agitation be increaſed, the particles will exhale, and form clouds; which being congregated again, return in dew, ſnow, hail, or rain: and the ſame water, by the acceſſion of cold, might have been formed into ice. So many different bodies, endued with different qualities, and which the Peripatetics themſelves allow ſpecifically different, ariſe from one and the ſame body, by mere motion and reſt!

The philoſophy of ſubſtantial *forms*, its riſe, uſe, and extent, are ſet in an excellent light by Fa. Malebranche.

The way of thinking, that firſt introduced it, is this: every thing I perceive in taſting, ſeeing, and handling this honey and ſalt, is in the honey and ſalt; but it is certain, that the things I perceive in the honey, *e. gr.* the colour, taſte, *&c.* differ eſſentially from thoſe I perceive in the ſalt; conſequently there is an eſſential difference between the two.

Hence it follows, that they are groſly deceived, who take all the differences between thoſe bodies to conſiſt in the different configurations of the component parts; ſince the different figure is not at all eſſential to the different bodies: for, change the figure of the parts of the honey how you will, and even give them thoſe of the parts of ſalt, yet it is honey ſtill.

There muſt, therefore, be ſome ſubſtance added to the common matter of all bodies, to make them eſſentially different. And thus are ſubſtantial *forms* hooked in; thoſe fertile ſubſtances, which perform every thing that we ſee in all nature. Since then, in every natural body, there are two ſubſtances; the one common to honey, ſalt, and all other bodies; and the other, that which makes the honey, honey; the ſalt, ſalt; and all other bodies what they are; it follows, that the firſt, *viz.* matter, having no contrary, but being indifferent to all *forms*, muſt remain without force and action, as having no occaſion to defend itſelf.

But, for the others, *viz.* the ſubſtantial forms, there is a neceſſity of their being accompanied and inveſted with faculties and qualities, for their defence and ſubſiſtence. Theſe muſt be always on their guard, for fear of being ſurpriſed: they are in poſſeſſion of a thing, which they are to hold againſt numerous pretenders; and therefore they muſt be continually at work to fortify themſelves, and extend their dominion over the neighbouring matters, and puſh their conqueſts as far as they can: were they to remain unactive, and unprepared, other *forms* would lay hold of them, and baniſh and deſtroy them for ever. To guard againſt this, they keep conſtant watch, and entertain mortal enmities and antipathies againſt thoſe other *forms*, which only wait to deſtroy them.

If now it happen, that one *form* ſeize the matter or receptacle of another, that the *form* of a carcaſe, for inſtance, ſeize the body of a dog, it is not enough that this new *form* annihilate the former; but its hatred muſt be further gratified with the deſtruction of all the qualities, that took its enemy's part.

The hair of the carcaſe, then, muſt be turned white, by a creation of a new colour: its blood muſt become red, but of ſuch a red, as is not to be ſuſpected in the intereſt of the enemy; and the whole body to be inveſted with qualities, truſty to their new maſter, whom they are to defend with all the power the qualities of a carcaſe can have, till ſuch time as, being overpowered, this *form* gives way too, in its turn, to the *form* of maggots, worms, *&c.*

But, as nothing can be in perpetual war, but every thing has its place of reſt, it follows, that even the fire muſt likewiſe have its centre, whither its natural levity always prompts it, that it may remain at reſt, ceaſe to burn, and even quit its heat, which it only maintains here below for its defence.

Theſe may ſerve as a taſte of the conſequences drawn from that important principle, *ſubſtantial forms*; which is infinitely fertile, and furniſhes every philoſopher with all ſorts of ſolutions, according to his ability, addreſs, inclination, *&c.*

Forms are uſually diſtinguiſhed into *eſſential* and *accidental.*

Eſſential FORMS. Though the five modes above-mentioned, generally taken, be adventitious; yet, to this or that body, *e. gr.* to fire, or water, they are eſſential: thus, it is *accidental* to iron to have this or that magnitude, figure, or ſituation, ſince it might exiſt in different ones; yet, to a knife, or hammer, the figure, magnitude, and poſition of parts, which conſtitute it a hammer, or knife, are *eſſential*; and they cannot exiſt, or be conceived, without them.

Hence it is inferred, that, though there be no *ſubſtantial*, there are *eſſential forms*, whereby the ſeveral ſpecies of bodies become each what they are, and are diſtinguiſhed from all others.

Accidental FORMS are thoſe really inherent in bodies, but in ſuch manner as that the body may exiſt in all its perfection without them.—Such is whiteneſs in a wall; heat in water; a figure of a man in wax, *&c.*

Metaphyſical FORM is nothing elſe but ſpecific difference; as metaphyſical matter is nothing elſe but the genus.—Thus, *rational* is the metaphyſical *form* of man.

Forms, again, are diſtinguiſhed into *ſimple* and *compound.*

Simple FORMS are thoſe of ſimple bodies, *i. e.* of ſuch as have but few properties.

Compound FORMS are thoſe of more compound bodies; or of ſuch as have more properties.

Thus, *e. gr.* if the *form* of a hard body be compared with the *form* of wood, the former may be accounted *ſimple*, and the latter *complex*; inaſmuch as a hard body, conſidered only as hard, has fewer properties than wood.—Abſolutely ſpeaking, however, ſimple *forms* are thoſe of the elements; and compound, thoſe of mixt bodies.

Laſtly, ſome diſtinguiſh *forms* into *natural*, and *artificial.*

Natural FORMS are thoſe inherent in bodies, without any thing contributed thereto on the part of man. Such is the *form* of marble.

Artificial FORMS are thoſe ariſing from human induſtry. Such is that of a ſtatue—But this diſtinction is uſeleſs, and does not imply any intrinſic difference in the *forms* themſelves.

FORM *of Corporeity*, according to Avicenna, and the Scotiſts, is that which conſtitutes body in the generical eſſe of body.

That there is ſuch a thing, they prove thus: the human body is a natural body, which cannot be placed in the eſſe of body, but by the *form* of corporeity: for it is either ſo placed by this, or by the rational ſoul; not by the ſoul, ſince that is ſpiritual; therefore by the *form* of corporeity. And the ſame may be underſtood of other bodies: but the later philoſophers ſet this aſide as a chimæra.

Syllogiſtic **Form** is a juſt diſpoſition, both of the terms, in reſpect of predicate and ſubject; and of the propoſitions, in reſpect of quantity and quality.

By juſt diſpoſition, we mean ſuch an one, wherein the concluſion follows duly and legitimately from the two premiſes, there being no *form* where there is no concluſion. See Syllogism.

The diſpoſition of the ſeveral terms, being, as it were, ſo many ſteps or degrees of a *ſyllogiſtic form*, is called the *figure of the ſyllogiſm*.

The diſpoſition of the premiſes alone, being, as it were, another degree, is called the *mode of the ſyllogiſm*.

Form, in theology, denotes one of the eſſential parts of the ſacraments, being that which gives them their ſacramental nature and efficacy.

The *form* conſiſts in certain words, which the prieſt pronounces in adminiſtring them.—In ſome of the Romiſh ſacraments, the *form* is deprecative; in ours it is abſolute, or indicative.

The fathers and antient divines held, that the ſacraments conſiſted of things and words, *rebus & verbis*. William of Auxerre was the firſt, who, about the beginning of the 13th century, introduced the terms, *matter* and *form*, in lieu thereof.

Form is alſo uſed, in a moral ſenſe, for a manner of being, or doing a thing according to rules.

This republic has frequently changed its *form* of government; that is, its conſtitution. Pardons generally expreſs a remiſſion or abolition of a crime, in what *form* or manner ſoever it were committed. He was admitted doctor in *form*. Put your argument in *form*.

Form, in law, is applied to certain eſtabliſhed rules to be obſerved in proceſſes or judiciary proceedings.

In which ſenſe, the word ſtands oppoſed to the ground or matter in diſpute.

It is a maxim in law, that the *form* leads or ſways the matter: the very contrary maxim ſhould be true.

Contra **Formam** *feoffamenti*.
Contra **Formam** *collationis*. } See the article Contra.

Modo & **Forma**. See the article Forma.

Form *, in joinery, *&c.* is applied to the long ſeats or benches in the choirs of churches, for the prieſts, canons, prebends, religious, *&c.* to ſit on.

Form alſo denotes the external appearance or ſurface of a body; or the diſpoſition of its parts, as to length, breadth, and thickneſs.

In which ſenſe it coincides with figure.

Form is alſo uſed, in the mechanic arts, for a kind of mould, whereon a thing is faſhioned or wrought.

Such are the hatters *form*, the paper-makers *form*, *&c.*

Hatters **Form** is a large block or piece of wood of a cylindrical figure; the top thereof being rounded, and the bottom quite flat.

Its uſe is, to mould or faſhion the crown of the hat, after the matter thereof has been beaten and fulled.

To *form* a hat, it is neceſſary the wool, hair, *&c.* be very hot, juſt reeking out of the copper.

Paper-makers **Form** is the frame or mould wherein the ſheets are faſhioned. See Paper.

Printers **Form** is an aſſemblage of letters, words, and lines, ranged in order, and diſpoſed into pages, by the compoſitor; from which, by means of ink and a preſs, the printed ſheets are drawn.

Every *form* is incloſed in an iron chaſe, wherein it is firmly locked by a number of pieces of wood, ſome long and narrow, and others in *form* of wedges.

There are two *forms* required for every ſheet; one for each ſide; and each *form* conſiſts of more or fewer pages, according to the volume of the book.

Form, in hunting, denotes the ſeat of a hare; or the place and time when and where ſhe ſquats.

FORMA *Pauperis*, or *in* **Forma** *Pauperis*, is when any perſon has cauſe of ſuit, but is ſo poor that he cannot diſpend the uſual charges of ſuing at law, or in equity.

In this caſe, upon his making oath that he is not worth 5 *l.* his debts being paid, and bringing a certificate from ſome lawyer, that he has juſt cauſe of ſuit, the judge admits him to ſue *in forma pauperis*; that is, without paying fees to the counſellor, attorney, or clerk. This cuſtom has its beginning from ſtat. 11 Hen. VII. c. 12.

FORMAL, ſomething that regards the *form*; or that gives the manner, or *form*.

The *formal* cauſe, joining itſelf to the material, produces the body, or compound.

The ſchoolmen alſo apply the word to any thing which has a kind of *form*, either eſſential or accidental, at leaſt, in our conception.

Thus, we frequently hear the philoſophers talk of the *formal* object of knowlege; and of the *formal* reaſon of any thing; *formal* unity, *&c.*

Formal *Cauſe* is defined, by certain philoſophers, to be ſomething implanted in one parcel of matter, whereby it is diſtinguiſhed from all other matter.

For matter is ſuppoſed common to all bodies; conſequently, that they are diſtinguiſhable from one another, does not ariſe from their matter, but from the *form* which is peculiar to each: hence, what is produced by ſuch cauſe, is ſaid to be *formed*.

Hence it follows, that the caſualty of matter and form is not the ſame; or that the component power, and the actual compoſition, are different; contrary to the opinion of the generality of ſchoolmen, who, maintaining *form* to be a ſubſtance co-extended with matter, make it a real component part, as much as matter itſelf.

Formal *Circle*. See the article Circle.

Formal *Notion*. See the article Notion.

Formal is alſo uſed in a moral ſenſe, importing poſitive, expreſs, and preciſe.

Thus we ſay, a *formal* agreement, a *formal* text, *formal* anſwer, *&c.*—*Formal* evidence. See Evidence.

FORMALITER, **Formally**, is variouſly uſed in the ſchools.

Sometimes it is underſtood of the ſubject, when a predicate is therein on account of ſome form: thus, white, *formally* taken, diffuſes light; *q. d.* the form inherent in this ſubject, *viz.* whiteneſs, is the cauſe why the ſubject diſperſes the light.

Formally has alſo place in ſuppoſitions; a word being *formally* ſuppoſed, when it is taken for the thing it was intended to ſignify: as, *man is an animal.*

Formally is alſo uſed in the ſame ſenſe with *adequately*, and totally: thus, a ſyllogiſm *formally*, *i. e.* adequately taken, requires three propoſitions.

Sometimes it is alſo uſed for *quidditatively*: thus, man, *formally* taken, is a reaſonable animal.

Formally is alſo uſed for *really*, in oppoſition to objectively: thus, a thing is ſaid to be *formally* ſuch, when it is ſuch in the proper notion of the thing ſpoken of.

Formally, again, is uſed in ſpeaking of the manner wherein a thing is contained in another, in oppoſition to *virtually*, and *eminently*. See Virtually, and Eminently.

FORMALITY, the quality of a *form*, or *formula*; or that which conſtitutes and denominates them ſuch.

Formality, as defined in the ſchools, is any manner, wherein a thing is conceived: or, a manner in any object, importing a relation to the underſtanding, whereby it may be diſtinguiſhed from another object.

Thus, animality and rationality are *formalities*.—The Scotiſts make great uſe of *formalities*, in oppoſition to the virtualities of the Thomiſts.

The Scotiſts hold, that the metaphyſical degrees in man are ſo many *formalities*, really diſtinct from each other; as *man*, *living*, *animal*, &c. And the ſame they hold of the attributes of God. The Thomiſts, on the contrary, contend, that they are really and intrinſically the ſame.

Formalities, in matters of law, are frequently uſed for the formula's themſelves; or the rules preſcribed for judiciary proceedings.—In contracts of ſtrict law, all the *formalities* muſt be ſtrictly obſerved: an omiſſion of the leaſt *formality* may ruin the whole convention.

The term is alſo uſed for a certain order, or decorum, to be obſerved.

The compoſition of *formalities*, decencies, and circumſpections, may form a political pedant; but not an ambaſſador, who muſt be a gallant man. Wicquefort.

FORMATION, in philoſophy, *&c.* the act of forming, faſhioning, or producing, a thing.

The *formation* of the chick in the egg is admirably explained by Malpighi, in an expreſs treatiſe, *De formatione pulli in ovo*.

The *formation* of the fœtus, the embryo, in the womb, is a proceſs, of which we have but very dark conceptions.

The *formation* of metals is effected in the earth, of fumes or vapours raiſed by the ſubterraneous fire, and fixed or condenſed as they arrive towards the ſurface of the earth.

Formation *of ſtones*. See the article Stones.

Formation *of the tails of comets*. See Comets.

FORMATRIX, or **Formatrice**. The antient philoſophers admitted a *virtus*, or *facultas formatrix*, whereby all bodies had their forms given them.

FORMATUM *Punctum*. See the article Punctum.

FORME, or **Formy**, in heraldry. A *Croſs* **Forme**, or *Formy*, is a croſs narrow in the centre, and broad at the extremes; ſo called by Leigh and Morgan; though moſt other authors call it *patee*.

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* Du Cange takes the name to be derived from hence, that the backs of theſe ſeats were antiently enriched with figures of painting and ſculpture, called in Latin *formæ & typi*.—In the life of St. William of Roſchild, we meet with *forma* as ſignifying a ſeat for an eccleſiaſtic, or religious, in a choir; and in that of St. Lupicin, we have *formula* in the ſame ſenſe. In the rule of the monaſtery of St. Cæſarea, the nun, who preſides over the choir, is called *primiceria*, *vel formari*.

FORMED, or **FIGURED** *Stones*, among naturaliſts, are ſuch bodies, as, being either pure ſtone, flint, or ſpar, are found in the earth, ſo *formed*, as that they bear a near reſemblance to the external figure of muſcles, cockles, oyſters, or other ſhells, or to plants, or animals.

Authors have been greatly divided as to their origin: the ſeveral opinions ſee under the articles FOSSIL, SHELL, *&c.*

FORMED *Bachelor*. See the article BACHELOR.

FORMED, in heraldry, *&c.* the ſame with *ſeated*.

FORMEDON, in law, a writ which lies for him who has right to lands or tenements, by virtue of any entail ariſing from the ſtatute of Weſtm. 2. c. 1.

There are three kinds, *viz. forma donationis*, or *formedon in the deſcender*; *formedon in the reverter*; and *formedon in the remainder*.

FORMEDON *in the deſcender* lies for the recovery of lands, *&c.* given to one and the heirs of his body; or to a man and his wife, and the heirs of their two bodies; or to a man and his wife, being couſin to the donor, in frank marriage, and afterwards alienated by the donee.

After his deceaſe, his heir ſhall have this writ againſt the tenant or alienee.

Fitz. *Nat. Br. fol.* 211, *&c.* makes three ſorts of *formedon* in the deſcender: the firſt is that now expreſſed: the ſecond, for the heir of a coparcener that aliens, and dies: the third he calls, *inſimul tenuit*; which lies for a coparcener, or heir in gavel-kind, before partition, againſt him to whom the other coparcener or heir has alienated, and is dead.

FORMEDON *in the remainder* lies, where a man gives land in tail, the remainder to another in tail; and afterwards the former tenant in tail dies without iſſue, and a ſtranger abates; then he in remainder ſhall have this writ.

FORMEDON *in the reverter* lies for the donor, or his heirs (whoſe land is entailed to certain perſons, and their iſſue, with condition, for want of ſuch iſſue, to revert to the donor, and his heirs), againſt him to whom the donee alienates after the iſſue extinct to which it was entailed.

FORMICA *, in medicine, a ſpecies of tumid, callous wart, of a blackiſh colour, and broad baſe; which appears like the ſtingings of ants.

* And hence the name *formica*, which literally denotes an ant: for the like reaſon it is denominated by the Greeks, μυρμηκια.

FORMING is uſed for the act of giving being or birth to any thing: thus, GOD is ſaid to have *formed* man after his own image. Every thing generated is *formed* of ſomething corrupted.

The word is alſo ſimply uſed for giving the figure to any thing. The potter *forms* his veſſels as he pleaſes. Geometry teaches how to *form* all kinds of figures.

It is alſo uſed for the producing of a thing: thus, thunder is *formed* of exhalations: the lineaments of the face began to be *formed*.

FORMING *of a ſiege* is the making lines of circumvallation, to fortify the camp, and diſpoſing things for the attack of a place in *form*.

They alſo ſay, to *form* a ſquadron or battalion; meaning, to range the ſoldiers in *form* of a ſquadron, *&c.*

The term is alſo uſed in ſpeaking of a body of forces; which, being out of any order of ſquadrons, battalions, *&c.* do halt, range themſelves in order, and put themſelves in a condition for the attack.—As ſoon as the enemy obſerved this motion, they began to *form* themſelves.

Angle **FORMING** *the flank*. See the article ANGLE.

FORMING is alſo uſed in grammar, in ſpeaking of certain tenſes of verbs, which are made from others, by a change of certain letters.

The preſent tenſe is *formed* from the infinitive. Compound and derivative words alſo, and even all that have any etymology, are ſaid to be *formed*.

FORMULA, a rule, or model; or certain terms preſcribed and decreed by authority, for the form and manner of an act, inſtrument, proceeding, or the like.

The Roman law was full of *formula's*: divorces, adoptions, ſtipulations, *&c.* were performed by certain *formula's*, or in certain terms.—Cneius Flavius publiſhed a collection of the *formula's* of his time; which were well received.—The leaſt ſlip or failure in any of the terms of theſe *formulæ* rendered the whole tranſaction null.—The *formula's* of Marculphus, with M. Bignon's comment, are in great eſteem.

FORMULA, in church-hiſtory and theology, denotes a formulary, or profeſſion of faith.

The council of Seleucia was diſſolved by Leonas, the emperor's commiſſary, as not able to bring them to ſign the *formula*.

FORMULA, in medicine, denotes a little form, or preſcription; ſuch as phyſicians direct in extemporaneous practice: in diſtinction from the greater forms, which are the officinal medicines. See PRESCRIPTION.

FORMULARY, a writing, containing the form or formula of an oath, declaration, atteſtation, or abjuration, *&c.* to be made on certain occaſions.

There are alſo *formularies* of devotion, of prayers, *&c.* Liturgies are *formularies* of the public ſervice in moſt churches.

FORNACALIA, or **FORNICALIA**, a feaſt held among the antient Romans, in honour of the goddeſs Fornax, or Fornix.

It was ſolemnized with ſacrifices, performed before the mouth of an oven, wherein they dried their corn, baked their bread, *&c.*

The *fornacalia* were moveable: the grand curio proclaimed the time of celebration every year on the twelfth of the calends of March.

They were firſt inſtituted by Numa; and the Quirinalia were inſtituted for the ſake of ſuch as had not kept the *fornacalia*. See QUIRINALIA.

FORNICATION, *Whoredom*; the act or crime of incontinency between ſingle perſons; for, if either of the parties be married, it becomes adultery.

St. Thomas labours much to prove ſimple *fornication* contrary to the law of nature.

By the antient law of England, the firſt offence herein was puniſhed with three months impriſonment: the ſecond was made felony, by an act in the time of the late uſurpation. At preſent, doing public penance is the chief puniſhment.

FORNICATION is ſometimes uſed as a generical term, including all kinds of offences againſt chaſtity.

Its ſpecies are, 1°, *Simple fornication*, which is that committed with a proſtitute. 2°, *Stuprum*, that committed with perſons of reputation and ſobriety. 3°, That committed with relations, called *inceſt*. 4°, That committed with married perſons, *adultery*. 5°, That committed with perſons conſecrated to God, *ſacrilege*. 6°, That committed between perſons of the ſame ſex, *ſodomy*. 7°, That committed by perſons on themſelves, *manuſtupration*. And, 8°, That committed with beaſts, *beſtiality*.

FORNIX, in anatomy, the extremity of the corpus calloſum, next the cerebellum; which is ſeparated or divaricated into two legs, forming a kind of arch, or *fornix*. See CORPUS *Calloſum*.

FORPRISE, in law, an exception, or reſervation.—In which ſenſe the word is uſed in the ſtatute of Exon, 14 Edv. I.

We ſtill uſe it in conveyances and leaſes, wherein excepted and *forpriſed* are ſynonymous terms.

FORPRISE * is alſo uſed for an exaction.—In which ſenſe it amounts to the ſame with forecapium.

* *Totum pratum,* &c. *ſine quacunque* forrpiſa *in excambium pro placea dedit.*

FORRAGE *, proviſion for cattle, of hay, oats, and ſtraw; particularly in war.

* Skinner derives the word from *foras agere*, by reaſon they go abroad to ſeek *forrage*: others from *far*, which antiently ſignified any kind of corn or grains: Menage, from *foderagium*, of *foderum*, or *fodrum*, which the Romans uſed in the ſame ſenſe: Cujas and Du Cange derive it from the German *futter*, horſe-meat: Voſſius, from the German *foden*, or *voeden*, to feed: Nicod, from *farrago*, which literally ſignifies what we call *forrage*; and figuratively, a mixture of divers kinds of things. Hicks derives it from the Saxon *fodra*, or the Engliſh *fodder*, or the baſe Latin *fodrum*. See FODDER.

In marching, encamping, *&c.* care muſt be taken, that the cavalry may find *forrage*. To go to *forrage*. They were ſent *a forraging*.

A ration of *forrage* is the portion of hay, ſtraw, and oats, allowed each horſeman, for the ſubſiſtence of his horſe one day: which is twelve pounds of hay, as much ſtraw, and three pecks of oats.

FORSTAL. } See { FORESTAL.
FORSTALLING. } See { FORESTALLING.

FORT, a little caſtle or fortreſs; or a place of ſmall extent, fortified by art, or nature, or both.

A *fort* is a work encompaſſed round with a moat, rampart, and parapet, to ſecure ſome high ground, or paſſage of a river; to make good an advantageous poſt; to fortify the lines and quarters of a ſiege, *&c.*

Field **FORT**. See the article FORTIN.

Paine **FORT**, *& dure*. See the article PAINE.

Royal **FORT** is a *fort*, whole line of defence is at leaſt twenty-ſix fathoms long.

Star **FORT** is a ſconce or redoubt, conſtituted by re-entering and ſaliant angles, having commonly from five to eight points, and the ſides flanking each other.

FORTERESSE, or **FORTRESSE**, a general name for all fortified places, whether ſo made by nature or art.

Such are fortified towns, caſtles, citadels, forts, towers, redoubts, ſconces, *&c.*

FORTIFICATION, called alſo *military architecture*, is the art of *fortifying* or ſtrengthening a place, by making works around the ſame, to render it capable of being defended by a ſmall force, againſt the attacks of a more numerous enemy.

Fig.
Ba
Fig. 4.
Fig
Fig. 15
Fig. 17
Fig. 22
Ba

TAB: FORTIFICATION

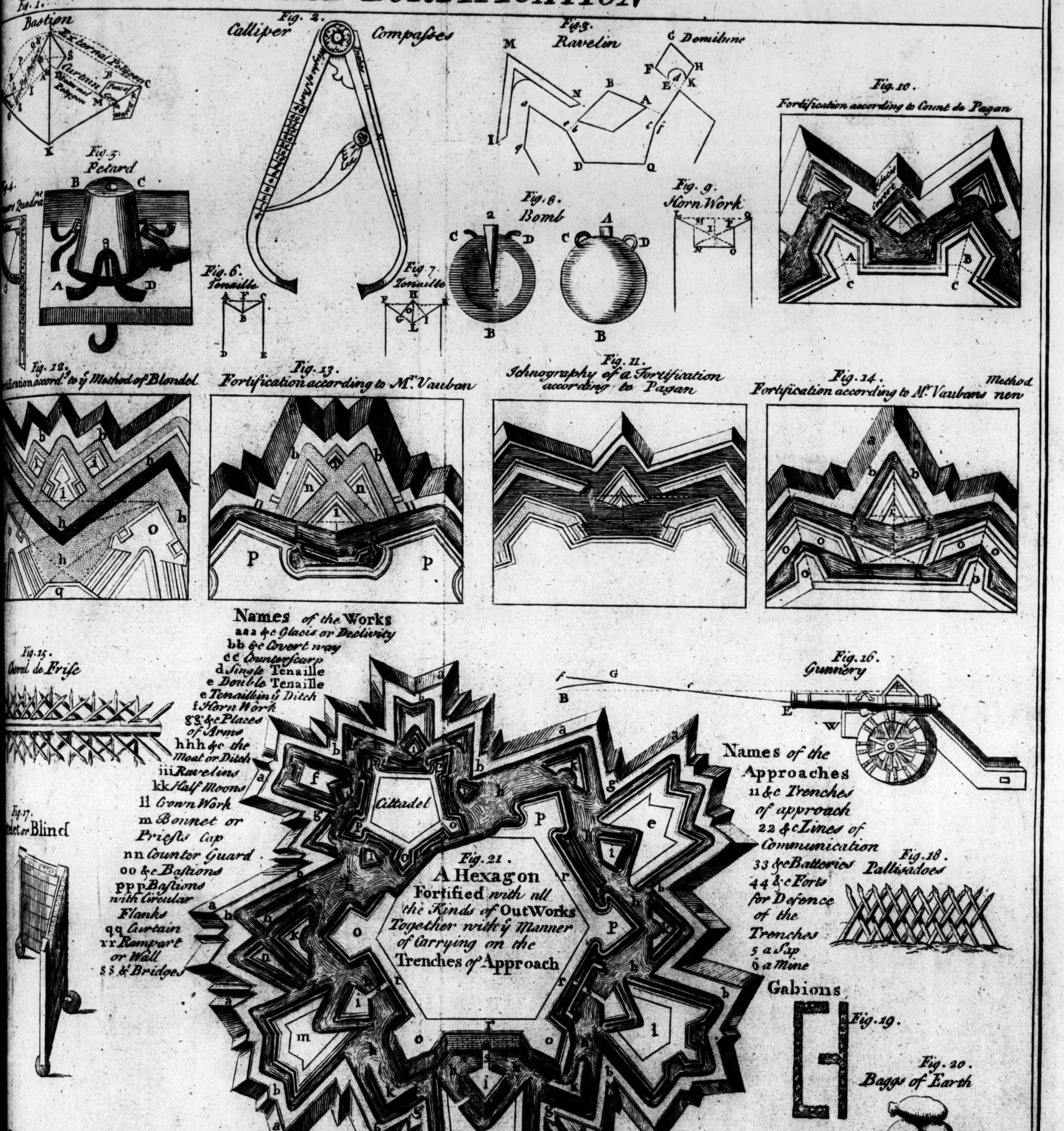
Fig. 1. Bastion
External Polygon
Curtain
Internal Polygon
Face of
Gorge
K
Fig. 2. Calliper Compasses
Fig. 3. Ravelin
Demilune
Fig. 4.
Fig. 5. Petard
Fig. 6. Tenaille
Fig. 7. Tenaille
Fig. 8. Bomb
Fig. 9. Horn Work
Fig. 10. Fortification according to Count de Pagan
Fig. 12. Fortification accord.t to ye Method of Blondel
Fig. 13. Fortification according to Mr. Vauban
Fig. 11. Ichnography of a Fortification according to Pagan
Fig. 14. Fortification according to Mr. Vaubans new Method
Names of the Works
aaa &c Glacis or Declivity
bb &c Covert way
cc Counterscarp
d Single Tenaille
e Double Tenaille
e Tenaillin ye Ditch
f Horn Work
gg &c Places of Arms
hhh &c the Moat or Ditch
iii Ravelins
kk Half Moons
ll Crown Work
m Bonnet or Priests Cap
nn Counter Guard
oo &c Bastions
ppp Bastions with Circular Flanks
qq Curtain
rr Rampart or Wall
ss & Bridges
Fig. 15. Cheval de Frise
Fig. 16. Gunnery
Fig. 17. Mantelet or Blind
Fig. 21. A Hexagon Fortified with all the Kinds of OutWorks Together with ye Manner of Carrying on the Trenches of Approach
Citadel
Names of the Approaches
11 &c Trenches of approach
22 &c Lines of Communication
33 &c Batteries
44 &c Forts for Defence of the Trenches
5 a Sap
6 a Mine
Fig. 18. Pallisadoes
Gabions
Fig. 19.
Fig. 20. Baggs of Earth
Fig. 22. Gallery
Battery
Fig. 23.
Fig. 24. Fascines
Fig. 25. Chandileer
Fig. 26. Bastion

her, Sculp.

Nº VII

Some authors go back to the beginning of the world, for the author and origin of military architecture. According to them, God himſelf was the firſt engineer; and paradiſe, or the garden of Eden, was the firſt fortreſs. Cain improved on the hint, in building the firſt city, Gen. iv. 17. After him came Nimrod, Gen. x. 10. Then Semiramis, as Polyænus relates, *Stratagem.* l. viii. c. 27. The Canaanites, Numb. xiii. 19. Deut. i. 28. David, 2 Sam. v. 9. Solomon, 2 Chron. viii. 4. Rehoboam his ſon, 2 Chron. xi. 5. and the other kings of Judah and Iſrael; and at length the Greeks and Romans. Vitruvius, l. x. cap. ult. and l. i. c. 5.

Such is the ſeries of thoſe who *fortified* places; to which might be added Pharaoh, the perſecutor of the Iſraelites, who built the cities of Pithom and Raamſes, Exod. i. 11.

But how antient ſoever the ſurrounding of cities with walls, towers, &c. may be, the name *fortification*, and the art now underſtood thereby, are of no very old ſtanding.

Theſe have had their riſe ſince the invention of cannons; the terrible effects whereof rendered it neceſſary to change the ſtructure of the antient walls, and to add ſo many things thereto, that thoſe changes were thought enough to conſtitute a new art, which was called *fortification*, by reaſon of the ſtrength it afforded thoſe cities, to defend them againſt an enemy.

The firſt authors who have written of *fortification*, conſidered as a particular formed art, are Ramelli, and Cataneo, Italians. After them Errard, engineer to Henry the Great of France; Stevinus, engineer to the prince of Orange; Marolois, the chevalier de Ville, Lorini, Coehorn, the count de Pagan, and the marſhal de Vauban: which laſt two noble authors have contributed greatly to the perfection of the art.

From the idea and office of *fortification*, ſome general fundamental rules or axioms may be drawn: as,

1°, That the manner of *fortifying* ſhould be accommodated to that of attacking: ſo that no one manner can be aſſured always to hold, unleſs it be aſſured the manner of beſieging be incapable of being altered; and that to judge of the perfection of a *fortification*, the method of beſieging at the time when it was built muſt be conſidered.

2°, All the parts of a *fortification* ſhould be able to reſiſt the moſt forcible machines uſed in beſieging.

3°, A *fortification* ſhould be ſo contrived, as that it may be defended with as few men as poſſible: which conſideration, when well attended to, ſaves a vaſt deal of expence.

4°, That the defendants may be in the better condition, they muſt not be expoſed to the enemy's guns and mortars; but the aggreſſors muſt be expoſed to theirs.

Hence, 5°, All the parts of a *fortification* ſhould be ſo diſpoſed, as that they may defend each other: in order to this, every part there is to be flanked, *i. e.* capable of being ſeen and defended from ſome other; ſo that there be no place where an enemy can lodge himſelf, either unſeen, or under ſhelter.

6°, All the campaign around muſt lie open to the defendants; ſo that no hills or eminence muſt be allowed, behind which the enemy might ſhelter himſelf from the guns of the *fortification*; or from which he might annoy them with his own.

The fortreſs, then, is to command all the place round about; conſequently the out-works muſt all be lower than the body of the place.

7°, No line of defence is to be above point-blank muſquet-ſhot, which is about one hundred and twenty fathom.

8°, The acuter the angle at the centre, the ſtronger is the place; as conſiſting of the more ſides, and conſequently more defenſible.

Such are the general laws and views of *fortification:* the particular ones, reſpecting each ſeveral work or member thereof, will be delivered under their proper articles. See Bastion, and Fortified *place*.

rtification is alſo uſed for the place *fortified*; or the ſeveral works raiſed to defend and flank it, and keep off the enemy.

All *fortifications* conſiſt of lines and angles, which have various names, according to their various offices.

The principal angles are thoſe of the *centre*, the *flanking* angle, *flanked* angle, angle of the *epaule*, &c.

The principal lines are thoſe of *circumvallation*, of *contravallation*, of the capital, &c. See each in its place.

Fortifications are divided into *regular*, and *irregular*; and again into *durable* and *temporary*.

ular Fortification is that wherein the baſtions are all equal; or that which is built in a regular polygon, the ſides and angles whereof are generally about a muſquet-ſhot from each other.

In a regular *fortification*, the parts being all equal, have the advantage of being equally defenſible; ſo that there are no weak places.

egular Fortification is that wherein the baſtions are unequal, and unlike; or the ſides and angles not all equal, and equidiſtant.

In an irregular *fortification*, the defence and ſtrength being unequal; there is a neceſſity for reducing the irregular figure, as near as may be, to a regular one.

And, as the irregularity of a figure depends on the quantity of angles and ſides; the irregularity of a *fortification* ariſes either from the angles being too ſmall, or the ſides being too long, or too ſhort.

Conſequently, an irregular figure being propoſed to be fortified; all the angles, with the quantity of the ſides, muſt be found, to be able to judge how it is to be fortified.

Durable Fortification is that built with deſign to remain a ſtanding ſhelter for ages. Such are the uſual *fortifications* of cities, frontier places, &c.

Temporary Fortification is that erected on ſome emergent occaſion, and only for a little time.

Such are field-works, caſt up for the ſeizing and maintaining a poſt, or paſſage; thoſe about camps, &c. as circumvallations, contravallations, redoubts, trenches, batteries, &c.

The methods of *fortifying*, that have been invented, are various; and new methods continue ſtill to be propoſed. The principal, and thoſe which chiefly obtain through Europe, are thoſe of Coehorn, Pagan, Vauban, and Scheiter, from which all the reſt are eaſily conceived.

Fortification, *according to the Dutch method*, is that which, making the flank perpendicular to the curtin, makes the flank the ſubduple of the face, and ſubtriple of the curtin; and the angle of the baſtion, equal either to two thirds of the angle of the polygon; or to half thereof, with the addition of fifteen or twenty degrees, to make it equal to a right angle.

Freitach determines the quantity of the flank in a ſquare to be ſix; in a pentagon, ſeven; in a hexagon, eight; in a heptagon, nine; in an enneagon, ten; in a decagon, eleven; and in all other figures, twelve Rhinland perches: conſequently, the face twenty-four, and the curtin thirty-ſix perches.

To draw the profile of a *fortification* after the Dutch manner; draw the inner polygon GH, *Tab. Fortification*, *Fig.* 6. into five equal parts: the demigorge AH is to contain one of them; and the capital HC, two. Then divide the curtin EA into four parts; and make the flank AB one.

This is Freitach's method: but the French make both the demigorge, and flank, a ſixth part of the polygon; and in ſquares, and pentagons, ſetting aſide the ſecond flanks, they deſcribe a ſemicircle upon BS, that the angle of the baſtion C may be a right angle.

The Italians, giving the ſame dimenſions to the gorge and flank, make the ſecondary flank half the curtin, in polygons exceeding a hexagon, and a third of the curtin in the reſt.

Laſtly, the Spaniards, giving the ſame dimenſions to the flanks, omit the ſecondary flanks.

But flanks perpendicular to the curtin with ſecondary flanks are in diſrepute, on account of the obliquity of the defence; ſo that the Dutch method of fortifying, with the other antient ones, founded on the ſame principles, are now out of doors.

Fortification, *according to the count de Pagan's method*, ſuppoſes, in the larger *fortifications*, the external polygon AB, *Fig.* 7. to be one hundred, and the face AG, thirty perches; in the ſmaller, the firſt eighty, and the ſecond twenty-five; and in the middle ſize, the firſt ninety, and the ſecond twenty-ſeven and a half: the perpendicular CD, fifteen, and the flanks GF and HE perpendicular to the lines of defence AF and BE, covered with an orillon, and threefold, to which add a ravelin and counterguard, to ſerve for outworks.

This method was received with great applauſe, and muſt be allowed greatly preferable to the Dutch method.

But it has its defects; for, beſides that the *fortifying* of places by it is very expenſive, its triple flanks are too cloſe, ſo as to lie expoſed to the violence of the bombs; the orillon is ſo large as to prejudice the length of the flanks; and the outer rampart of the baſtion is too big.

Fortification, *according to Monſ. Blondel's method*, has a great affinity with that of the count de Pagan; only that the quantity of the lines and angles is differently determined. See *Tab. Fortification*, *Fig.* 12.

Thus, a right angle being ſubtracted from the angle of the polygon, and, to a third part of the remainder, fifteen added; the ſum gives the diminiſhed angle. In the greater *fortifications*, the outer polygon is one hundred, in the ſmaller eighty-five. The external polygon being divided into ten parts, ſeven of them give the lines of defence; and the faces are half thoſe of the tenaille.

This method is very well calculated for the purpoſes of architecture; only, being ſomewhat expenſive, it is but little uſed.

Fortification, *according to Monſ. Vauban's method*, ſuppoſes the outer polygon in the larger *fortifications* to be one hundred; in ſmaller, eighty; and in the middle ſize, ninety: the faces are made $\frac{2}{7}$ of the ſame; the perpendicular, in a ſquare $\frac{1}{8}$, in a pentagon $\frac{1}{7}$, in the other polygons $\frac{1}{6}$ of the ſame. The complement of the face to the line of defence, he makes equal to the diſtance of the epaule; he uſes re-entering and crooked flanks; and places a low tenaille before the curtin; and the Dutch ravelin with lunettes. See *Tab. Fortification*, *Fig.* 13.

This method of *fortifying* pleaſes moſt people; both as it increaſes the ſtrength, without much expence; and as it is perfectly well accommodated to the principles of military architecture, above laid down.

Yet it ſeems defective in this, that the faces are too much expoſed to the view of the enemy; and that the lunettes are a little too long to be defended.

Monſ. Vauban's newer method of FORTIFYING is that which builds large baſtions before ſmall ones, and covers the curtin with a double ravelin; drawing a low tenaille before the ſame curtin. See *Tab. Fortification, Fig.* 14.

Detached baſtions are perfectly ſuitable to what we have delivered in the former method; excepting that the flanks are rectilinear, and deſtitute of an orillon.

FORTIFICATION *according to the method of Scheiter*, ſuppoſes the external polygon, in the larger *fortifications* to be one hundred perches; in the leſſer eighty; in the middle ſize ninety: the flanks perpendicular to the lines of defence; and the lines of defence in the greater *fortifications* ſeventy perches, in the leſſer ſixty, and the middle ſize ſixty-five.

It detaches baſtions from the curtin, and forms a kind of inner receſs behind the curtin; it aſſumes the angle of the baſtion, in a ſquare, to be ſixty-four degrees; to this adding eight, the product is the angle in a pentagon; to which adding ſix degrees, the ſum is the angle of the baſtion in a hexagon; and adding five to this, the ſum is the ſame angle in a heptagon.

FORTIFIED *place*, a *fortreſs*, or *fortification*, *i. e.* a place well flanked, and ſheltered with works.—See *Tab. Fortification, Fig.* 20.

Places fortified after the modern way, conſiſt chiefly of baſtions, and curtins, and ſometimes of demi-baſtions; according to the ſituation of the ground; of cavaliers, ramparts, fauſſe-brayes, ditches, counterſcarps, covert-ways, half-moons, ravelins, hornworks, crownworks, outworks, eſplanades, redents, and tenailles. See each under its proper article, BASTION, &c.

There are other moveable and additional parts; as bermes, parapets, banquettes, embraſures, cordons, boyaux, moulinets, chevaux de friſe, chauſſetrapes, galleries, mantelets, batteries, ſaps, mines, blinds, gabions, and paliſades. See each in its place, BERME, PARAPET, &c.

Several of theſe works, again, conſiſt of diverſe parts, which have different denominations; thus a baſtion conſiſts of faces, flanks, caſemates, orillons, gorge, &c. which ſee.

FORTIN, or FORTLET, a diminutive of the word *fort*, importing a little *fort*, or ſconce, called alſo *field fort*, built in haſte, for the defence of a paſs, or poſt; but particularly to defend a camp, in the time of a ſiege; where the principal quarters are uſually joined, or made to communicate with each other by lines defended by *fortins* and redoubts.

Fortins being very ſmall, their flanked angles are generally one hundred and twenty fathom diſtant from each other; but their figure and extent is various, according to the place and occaſion; ſome having whole baſtions, and others only half baſtions.

Star FORTIN is that whoſe ſides flank each other, &c. See *Star* FORT.

FORTIORI. *A multo* FORTIORI. See MULTO.

FORTIS *Aqua*. See the article AQUA.

FORTUNA *Equeſtris*. See the article EQUESTRIS.

FORTUNA, in our antient law-books, is the ſame with what we call *treaſure-trove*.

Theſaurum ducente fortuna *invenire inquirendum eſt per* 12 *juratores pro rege*, &c. *quod fideliter præſentabunt*, &c. *omnes* fortunas, *abjurationes*, *appella*, &c.

Some pretend it alſo ſignifies *fortuito occiſos*; but this ſeems to be very fanciful.

FORTUNATE *iſlands* in the antient geography, an appellation which has given the critics and antiquaries a world of perplexity; being the name of a place famous for golden apples which grew therein; or, as Varro ſays, for ſheep, with golden fleeces.

The antients deſcribe them as ſituate without the ſtreights of Gibraltar, in the Atlantic ocean.—The common opinion of the moderns takes them for the Canary iſlands; this is grounded principally on the ſituation and temperature of thoſe iſlands, which renders the uſe of cloaths there unneceſſary; and from the abundance of oranges, lemons, grapes, and other delicious fruit growing therein.

Ol. Rudbecks has found a very different place for them. That learned author, who makes his native country, Sweden, the ſcene of all that is great and extraordinary in antient tradition and fable, will have the *fortunate iſlands* to be Sweden; and the delicious fruits, talked of by the antients, his imagination ſuggeſts, were nothing but the virtue, and good manners, which antiently flouriſhed in that cold hyperborean nation.

FORTUNE. See the articles PROVIDENCE, FATE, &c.

FORTUNE, τυχη, is a name unknown in the earlier ages; and does not occur either in Homer or Heſiod; as not being invented in their time.

In after days it was introduced as a machine; and made to ſerve divers purpoſes in natural philoſophy and theology. Men, obſerving a world of evils and diſorders to fall out; and not daring directly to complain of Providence; and being willing withal to excuſe themſelves from being the occaſions of their own misfortunes; had recourſe to the notion of *fortune*, againſt whom they might vent all their reſentments with impunity.

Plutarch, in an expreſs treatiſe of the *fortune* of the Romans, accounts for the practice of the antient poets, who ſeem to make Jupiter the author of all the evils of life. Mankind, he obſerves, before the name of *fortune* had got into the world, perceiving a certain arbitrary cauſe, diſpoſing of things in an irreſiſtible manner, called it *God*; but the ſame cauſe being often obſerved to act at random, and without any rule or order at all, the ſupreme being came to be diveſted of the attribute; and *fortune*, or deſtiny, acknowleged in his ſtead.

It is not eaſy to unravel, what the antients meant by the name *fortune*.—The Romans underſtood by it, I know not what principle of fortuity, whereby things came to paſs, without being neceſſitated thereto: but what, and whence that principle is, they do not ſeem to have ever preciſely thought; whence their philoſophers are often intimating, that men only framed the phantom *fortune*, to hide their ignorance; and that they call *fortune* whatever befals a man without his knowing why. Hence Juvenal affirms, they were men who made a deity of *fortune*:

> *Nullum numen abeſt, ſi ſit prudentia; ſed te*
> *Nos facimus*, Fortuna, *deam, cœloque locamus.*

According to the opinion of the heathens, therefore, *fortune*, at bottom, was only the arrival of things in a ſudden and unexpected manner, without any apparent cauſe, or reaſon: ſo that the philoſophical ſenſe of the word coincides with what is vulgarly called *chance*.

But in religion it had a further force; altars and temples in great numbers were conſecrated to this *fortune*, as a deity.—This intimates that the heathens had perſonified, and even deified, their chance; and conceived her as a ſort of goddeſs, who diſpoſed of the fate of men at her pleaſure. Hence that invocation of Horace, *O diva, gratum quæ regis Antium*; in the 35th ode of the firſt book, where he recommends Auguſtus, then preparing for a viſit to Britain, to her protection. From theſe different ſentiments it may be inferred, that the antients at one time took *fortune* for a peremptory cauſe, bent upon doing good to ſome, and perſecuting others: and ſometimes for a blind, inconſtant cauſe, without any view or determination at all.

If then the word *fortune* had no certain idea in the mouth of thoſe who erected altars to her: much leſs can it be aſcertained what it denotes in the mind of thoſe who now uſe the word in their writings.

They who would ſubſtitute the name *Providence* in lieu of that of *fortune*, cannot give any tolerable ſenſe to half the phraſes wherein the word occurs.

To theſe, *e. gr.* We muſt always diſtruſt *fortune*, but eſpecially when ſhe ſeems to flatter us moſt: the contempt of riches, in the philoſophers, is a ſecret deſire of revenging their merit againſt the injuſtice of *fortune*, by a contempt of thoſe very benefits ſhe deprives them of: *fortune* is ſo blind, that amidſt a croud, wherein there is but one wiſe man, we muſt not imagine ſhe will trace him out, to accumulate him with her favours.

On theſe, and the like occaſions, the word Providence cannot be ſubſtituted in lieu of *fortune*: the idea anſwering to the expreſſion, is pagan, as well as the expreſſion itſelf. Add, that it is a fault, even in point of accuracy, to uſe a term that ſignifies nothing; as much as it is in point of religion, to aſſociate *fortune* with Providence, in the direction of the univerſe.

Horace paints the goddeſs, preceded by Neceſſity, holding nails and wedges in her hands, with a cramp-iron, and melted lead to faſten it; rarely accompanied with Fidelity, unleſs when ſhe abandons a family; for in that caſe Fidelity never fails to depart with her, as well as friends.

The painters repreſent her in a woman's habit with a bandage before her eyes, to ſhew that ſhe acts without diſcernment: and ſtanding on a wheel, to expreſs her inſtability. The Romans, ſays Lactantius, repreſented her with a cornucopiæ, and the helm of a ſhip, to ſhew that ſhe diſtributes riches, and directs the affairs of the world. In effect, it is with ſuch characters, that we ſee her repreſented on ſo many medals, with the inſcriptions, FORTVNA AVG. FORTVNA REDVX. FORTVNAE AVG. or REDVCIS, &c. Sometimes ſhe is ſeen pointing at a globe before her feet, with a ſceptre in one hand, and holding the cornucopiæ in the other.

The Romans had a virile, as well as a muliebrian *fortune*, for the objects of their adoration: the *fortuna virilis* was honoured by the men, and the *fortuna muliebris* by the women.

On the reverſe of a medal of Commodus, we have a repreſentation of *fortune*, under the quality, or ſurname of *manens*, *i. e.* ſtable, permanent; holding a horſe by the reins. On the Greek medals we meet with ΑΓΑΘΗ or ΚΑΛΗ ΤΥΧΗ, good *fortune*. Conſtantine gave the epithet *anthouſia*, *i. e.* flouriſhing, to the *fortune* of his new city Conſtantinople.

Part of FORTUNE. See the article PART.

FORTY *days.* See QUADRAGESIMA, and LENT.

Prayers of FORTY *hours.* See PRAYERS.

FORUM, in antiquity, is uſed in divers acceptations: ſometimes for a place of traffick; anſwering to our market-place; in which ſenſe it has uſually ſome adjective added to it, as *forum boarium*, the beaſt-market; *forum piſcarium*, the fiſh-market; *olitorium forum*, the herb-market, *&c.*

FORUM, again, is uſed for any place, where the governor of a province convenes his people, to give judgment, according to courſe of law.

Whence a man is ſaid *forum agere*, when he keeps the aſſizes; *forum indicere*, when he appoints the place where they are to be kept, *&c.*

FORUM was alſo a public ſtanding place in the city of Rome, where cauſes were judicially tried, and orations delivered to the people.

Of theſe *forums* there were ſeveral; at firſt only three, *viz. Romanum*, *Julianum*, and *Auguſtum:* but that number was afterwards increaſed to ſix, by the addition of the *Tranſitorium*, called alſo *Palladium*; the *Trojanum*, and *Salluſtii forum.*

The firſt, and moſt eminent of theſe, was the *forum Romanum*, called alſo *forum vetus*; and abſolutely, *forum*, or *the forum.*

In this was an apartment, called the *roſtra*, where the lawyers pleaded; the officers harangued; funeral orations were delivered, *&c.* See ROSTRA.

In the ſame *forum* was the *comitium*, or hall of juſtice, with the ſanctuary of Saturn, the temple of Caſtor, *&c.*

FORUM is alſo uſed among caſuiſts, *&c.* for *juriſdiction.* Thus, they ſay *in foro legis*, or the *outer forum*, i. e. in the eye of the law, or the common courſe of juſtice: *in foro conſcientiæ*, or the *inner forum*, i. e. in the eye of God, or a man's own conſcience.

There are a great many things not condemned *in foro legis*, which yet are criminal *in foro conſcientiæ.*

FOSS*, or FOSSE, in fortification, *&c.* a ditch, or moat. See DITCH.

* The word is French, formed of the Latin participle *foſſum*, of the verb *fodio*, I dig.

Advance FOSSE. See the article ADVANCE.

Van FOSSE. See the article VAN.

FOSS, FOSSA, in anatomy, a kind of cavity in a bone, with a large aperture, but no exit, or perforation.

When the aperture is very narrow, it is called a *ſinus.*

In the cranium there are ſix internal, and fourteen external *foſſes.* The cavity of the orbit, which contains the eye, is a *foſs.*

FOSS is particularly uſed for the cavity, or denture in the back part of the neck.

FOSSA *magna*, or *navicularis*, is an oblong cavity, forming the inſide of the pudendum mulíebre, and which preſents itſelf upon opening the labia; and in the middle whereof are the carunculæ myrtiformes.—See *Tab. Anat.* (Splanch.) *Fig.* 9. lit. t.

FOSSA, in our antient cuſtoms, was a ditch full of water, where women committing felony were drowned; as men were hanged. *Nam & ipſi in omnibus tenementis ſuis omnem ab antiquo legalem habuere juſtitiam, videlicet ferrum*, foſſam, *furcas, & ſimilia.* In another ſenſe it is taken for a grave, as appears by theſe old verſes;

Hic jacent in foſſa *Bedæ venerabilis oſſa:*
Hic eſt foſſatus, *qui bis erat hic cathedratus.*

FOSS-*Way* was antiently one of the four great Roman highways of England; ſo called, according to Camden, becauſe it was ditched on both ſides, which was the Roman method of making highways.

FOSSARII, in antiquity, a kind of officers in the Eaſtern church, whoſe buſineſs was to inter the dead.

Ciaconius relates, that Conſtantine created nine hundred and fifty *foſſaries*, whom he took out of the divers colleges or companies of tradeſmen: he adds, that they were exempted from taxes, ſervices, onerary offices, *&c.*

Fa. Goar, in his notes on the Greek *euchologion*, inſinuates, that the *foſſarii* were eſtabliſhed in the times of the apoſtles; and that the young men, who carried off the body of Ananias, and thoſe perſons full of the fear of God, who interred St. Stephen, were of the number.

St. Jerom aſſures us, that the rank of *foſſarius* held the firſt place among the clerks: but he is to be underſtood of thoſe clerks only, who had the direction and intendance of the interment of the devout.

FOSSIL, in natural hiſtory, is uſed, in a general ſenſe, for any thing dug up, or found under-ground.—Such are all minerals, metals, rock ſalts, *&c.*

The chemiſts divide all bodies into three claſſes, or kingdoms; viz. *foſſil*, or *mineral*; *vegetable*; and *animal.*

Foſſils may be diſtinguiſhed into, 1°, Such as are *natives* of the earth; and, 2°, Such as are *adventitious*, and repoſited therein by any extraordinary means; as earthquakes, deluges, *&c.*

Native FOSSILS, or FOSSILS *properly ſo called*, are ſenſible bodies, generated and growing in the earth; whoſe conſtituent parts are ſo ſimple, and homogeneous, that there is no apparent diſtinction of veſſels, and juices; nor any difference between the part, and the whole.

Native *foſſils* are either *ſimple*, or *compound.*

Simple FOSSILS are thoſe, whoſe parts, however divided, are all of the ſame nature, *i. e.* of the ſame gravity, magnitude, figure, hardneſs, and mobility.

Such is quickſilver, which, however divided, is always found the ſame.

Compound FOSSILS are thoſe which may be divided into different, or diſſimilar parts.

As antimony, which may be reſolved by fire into ſulphur, and a metalline part.

The *ſimple foſſils* are all metals, ſalts, ſtones, both vulgar and precious, and earths.

The *compound foſſils* are all ſulphurs, all ſemimetals, or what we properly call minerals; and all bodies combined out of any two or more of the preceding, either ſimple, or compound *foſſils.*

Adventitious, or *foreign* FOSSILS, include the ſubterraneous exuviæ of ſea and land animals, and even vegetables; as ſhells, bones, teeth, leaves, ſtalks, *&c.* which are found buried in great abundance, in divers parts of the earth.

Theſe extraneous *foſſils* have employed the curioſity of ſeveral of our lateſt naturaliſts, who have each their ſeveral ſyſtem to account for the ſurpriſing appearances of petrified ſea-fiſhes, in places far remote from the ſea, and on the tops of mountains; ſhells in the middle of quarries of ſtones; and of elephants teeth, and bones of divers animals, peculiar to the ſouthern climates; and plants only growing in the Eaſt, found foſſile in our Northern and Weſtern parts.

Some will have theſe ſhells, *&c.* to be real ſtones, and ſtone plants, formed after the uſual manner of other figured ſtones: of which opinion is our learned Dr. Liſter.

That author, though he allows of petrified ſhells on the ſea-ſhores, will by no means agree, that there are any ſuch petrifactions in the midland countries. The ſhell-like ſtones, found in our quarries, he contends, are *lapides ſui generis*; and never were any part of an animal.

His reaſons are, that their matter, and texture, is perfectly the ſame with that of the rock, or quarry, where they are taken; as iron-ſtone ſhells are all iron-ſtone; ſpar, or cryſtalline, all ſpar, *&c.* Add, that the quarries of different ſtone yield different ſorts of theſe ſhells; and that there are no animals in nature, which yield any thing exactly like many of them.

But to this erroneous doctrine it is to be anſwered, 1°, That theſe ſhells found under-ground, are often perfectly conformable to thoſe in the ſea in figure, ſubſtance, magnitude, *&c.* 2°, The ſubſtance of theſe *foſſils* often alſo differs eſſentially from the common ſubſtance of ſtones. It is true, we frequently find them covered, or impregnated with a mineral, or ſtony matter, which has gradually inſinuated itſelf into the pores; but it is in many caſes eaſy to diſtinguiſh that matter from the ſubſtance of the ſhell.

The more judicious opinion is, that theſe *foſſil* ſhells, with all other foreign bodies, found within the earth, as bones, trees, plants, *&c.* were buried therein at the time of the univerſal deluge; and that having been penetrated either by the bituminous matter, abounding chiefly in watery places, or by the ſalts of the earth, they have been preſerved intire, and ſometimes petrified.

Others think, that thoſe ſhells, found at the tops of the higheſt mountains, could never have been carried thither by the waters, even of the deluge; inaſmuch as moſt of theſe aquatic animals, by reaſon of the weight of their ſhells, always remain at the bottom of the water, and never move but cloſe along the ground.

They imagine, that a year's continuance of the waters of the deluge, intermixed with the ſalt waters of the ſea, upon the ſurface of the earth, might well give occaſion to the production of ſhells of diverſe kinds in different climates; and that the univerſal ſaltneſs of the water was the real cauſe of their reſemblance with the ſea ſhells. As the lakes formed daily by the retention of rain, or ſpring, water, produce different kinds.

Others think, that the waters of the ſea, and the rivers, with thoſe which fell from heaven, turned the whole ſurface of the earth upſide down; after the ſame manner as the waters of the Loire, and other rivers, which roll in a ſandy bottom, overturn all their ſands, and even the earth itſelf, in their ſwellings and inundations: and that in this general ſubverſion, the ſhells came to be interred here, fiſhes there, trees there, *&c.* See the *Journ. des Scavans*, 1715. p. 19. and *Mem. de Trev.* 1713.

But nobody has ſet this ſyſtem in a better light, than Dr. Woodward, in his *Nat. hiſtory of the earth.* That author maintains the whole maſs of earth, with every thing belonging thereto, to have been ſo broken, and diſſolved, at the time of the deluge, that a new earth was then formed in the boſom of the water, conſiſting of different ſtrata, or beds of terreſtrial matter, ranged over each other uſually, according to the order of their ſpecific gravities. By this means, plants, animals, and eſpecially fiſhes, and ſhells, not yet diſſolved among the reſt, remained mixed and blended among the mineral and *foſſil* matters; which preſerved them, or at leaſt aſſumed and retained their figures and impreſſions, either indentedly, or in relievo.

Camerarius attacks this opinion of Dr. Woodward, and goes yet higher, and advances many new notions. He ſuppoſes, 1°, That the greateſt part of the ſhells now dug from underground, had been placed there before the deluge, that is, at the time of the creation, when God ſeparated the earth from the waters. 2°, That, without having recourſe to the diſſolution of the earth by the waters, one might ſuppoſe moſt of them to have ſlipped in at the chinks and crevices naturally happening after the waters were retired, and the earth ſufficiently drained. 3°, That particular inundations might have ſwept moſt of theſe ſhells into the places where we now find them. 4°, That the ſea may have wrought, or caſt up, moſt of theſe ſhells through ſubterraneous ſpiracles and canals. 5°, That God has created divers ſtony and metalline bodies, perfectly like the vegetables and animals, which we ſee on earth, and in the ſea.

To all theſe ſuppoſitions, Dr. Woodward anſwers, 1°, That it is no-ways probable, God ſhould create ſuch a number of ſhell-fiſh of the ſame ſpecies at once; and that purely with a deſign to deſtroy them all again ſo ſoon after: that among the *foſſil* ſhells of the ſame ſpecies it is eaſy to diſtinguiſh thoſe of different ages: that ſome appear preciſely ſuch as we now find them in the ſpring, the ſeaſon when the deluge began: that it is not only ſhells, we find under-ground, but alſo bones of quadrupeds, plants, and trees of extraordinary ſizes, and which are not of the number of aquatics: and laſtly, that the waters were ſeparated from the earth on the third day; and that none of theſe things were created, till afterwards. 2°, That, on the ſecond ſuppoſition, theſe ſhells would be diſpoſed perpendicularly, and not horizontally, as they are always found: that we ſhould ſometimes find them in the clefts of the earth, where in fact there are none but what are broken. 3°, That we have no acquaintance with any of theſe pretended inundations: that they could never have brought ſhells, ſtags horns, and elephants teeth, from America, and the Eaſt-Indies, to England, and other parts of Europe; nor the fruits, pines, and beeches, frequently found far greater than any of our growth. Add, that theſe particular inundations muſt have riſen to the tops of the higheſt mountains, and of conſequence they muſt have been general. 4°, On the fourth ſuppoſition it muſt be held, that God did not only create all theſe ſeveral bodies in the entrails of the earth; but their ſeveral parts, and the ſeparate pieces and fragments of thoſe parts; a piece of ſhell, for inſtance; one ſide of a ſhell, which conſiſts of two; a ſhell void of the fiſh it ſhould contain; beards of corn, without the grain; pieces of cedar-bark, without the wood; pieces of bullocks hides without fleſh and bones; human ſkins without bodies; a bone without the reſt of the ſkeleton; a tooth without the jaw, *&c.* Add, that the *foſſil* ſhells have not only external, but eſſential reſemblances to ſea-ſhells; both, *e. gr.* yielding, by analyſis, a quantity of ſea-ſalt: that among the *foſſil* teeth of fiſhes, we meet with ſome apparently worn: and laſtly, that the ſhell-fiſh, called *purple*, has a long ſharp tongue, by means whereof it pierces other ſhells, and picks the fiſh out of them; and that in digging under-ground we actually meet with divers of theſe ſhells thus pierced. Can ſuch minute thorough-paced reſemblances be the accidental effect of a *luſus naturæ?*

This is the ſubſtance of what has hitherto been advanced on the point; wherein it is evident that Dr. Woodward has greatly the better of the argument.

Foſſil SALT. See the article SALT.

Foſſil WOOD. See the article WOOD.

FOSTERLEAN *, antiently ſignified nuptial gifts: much the ſame with what we now call *jointure.*

* The word is originally Saxon, and ſignifies *ciborum exhibitio*, that is, a ſtipend which the wife has for her maintenance. *Poſtea ſciendum eſt cui* foſterlean *pertineat, vadiet hoc Brigdunia, & plegient amici ſui.*

FOTUS, in medicine, the ſame as fomentation. See FOMENTATION.

FOVEA *cordis*, the pit of the heart, or rather of the ſtomach, called alſo *ſcrobiculus cordis.*

FOUGADE *, or FOUGASSE, in the art of war: a little mine, in manner of a well, ſeldom exceeding ten feet in width, and twelve in depth; dug under ſome work, or poſt, that is like to be loſt; and charged with barrels, or ſacks of gunpowder, covered with earth.—It is ſet on fire like other mines, with a sauciſſe.

* The word is French: M. Huet derives it from *focata*, of *focus*, fire.

FOUL, in the ſea-language, is uſed when a ſhip has been long untrimmed, ſo that graſs, weeds, periwinkles, barnacles, or the like, ſtick or grow to her ſides under water. In this ſtate, ſhe is ſaid to be *foul.*

Again, a rope is ſaid to be *foul*, when it is either tangled in itſelf, or hindered by another, ſo that it cannot run, or be haled.

A ſhip is ſaid to make *foul water*, when, being under ſail, ſhe comes into ſuch ſhoal, or low water, that though her keel do not touch the ground, yet ſhe comes ſo near it, that the motion of the water under her raiſes the mud from the bottom, and ſo *fouls* the water.

FOUNDATION, that part of a building which is underground: or, that maſs of ſtone, *&c.* which ſupports a building; or upon which the walls of the ſuperſtructure are raiſed: or, it is the coffer, or bed, dug below the level of the ground, to raiſe a building upon.

The *foundation* either takes up the whole area and extent of the building, as when there are to be vaults, cellars, or the like: or it is drawn in cuts, or trenches, as when only walls are to be raiſed.

The *foundation* is properly ſo much of the maſonry, as reaches as high as the ſurface of the ground; and this is always to be proportioned to the load or weight of the building which it is to bear.

Sometimes it is maſſive, and continued under the whole building; as in the antique arches, and aqueducts, and ſome amphitheatres: more uſually it is only in ſpaces, or intervals; either to avoid expence, or becauſe the vacuities are at too great a diſtance; in which latter caſe they make uſe of inſulated pillars, bound together by arches.

That we may *found* our habitation firmly, ſays Sir H. Wotton, we muſt firſt examine the bed of earth, upon which we are to build; and then the under-cielings, or ſubſtruction, as the antients called it. For the former, we have the general precept in Vitruvius: *Subſtructionis* fundationes *fodiantur, ſi queant inveniri ad ſolidum, & in ſolido:* by which he recommends not only a diligent, but even jealous examination of what the ſoil will bear; adviſing us not to reſt upon any appearing ſolidity, unleſs the whole mould, through which we cut, have likewiſe been ſolid.

But how deep we ſhould go in this ſearch, he has no-where determined, as perhaps depending more on diſcretion, than regularity, according to the weight of the work: yet Palladio has ventured to reduce it to a rule; allowing for the cavaſione, *i. e.* the hollowing or under-digging, a ſixth part of the height of the whole fabric, unleſs there be cellars underground, in which caſe he would have it ſomewhat lower. Sir H. Wotton's *Elem. of Architecture.*

The *foundations* of buildings are either *natural* or *artificial.* —*Natural*, as when we build on a rock, or a very ſolid earth; in which caſe we need not ſeek for any further ſtrengthening. —*Artificial*, where the ground is ſandy, or marſhy, or has lately been dug. In the former caſe, the architect muſt adjuſt the depth of the *foundation* by the height, weight, *&c.* of the building: a ſixth part of the whole height is looked on as a medium; and as to thickneſs, double that of the width of the wall, is a good rule.

Where the natural *foundation* may not be truſted, they either fortify the ground by pallifying it, *i. e.* driving it full of piles (ſee PALLIFICATION): or elſe they lay large wooden planks at the bottom of the trenches dug for the *foundation.*

In ſome places they *found* the piers of bridges, and other buildings near the water, on ſacks of wool, laid like matraſſes; which, being well preſſed, and greaſy, will never give way, nor rot in water.

FOUNDATION is alſo uſed figuratively for the eſtabliſhment of a city, empire, or the like.

The Romans reckoned their years from the *foundation* of Rome, *ab urbe condita*; which we ſometimes expreſs by *ab U. C.* Chronologers make 779 years from the Iſraelites paſſing out of Egypt, to the *foundation* of Rome.

FOUNDATION alſo denotes a donation, or legacy, either in money, or lands, for the maintenance and ſupport of ſome community, hoſpital, ſchool, lecture, or other work of piety.

Among the order of Auguſtines, there is a *foundation* for the marrying of poor maids; and another for the furniſhing of truſſes to poor people who have ruptures, or hernia's.

FOUNDER, he who lays a foundation, or who *founds* and endows a church, ſchool, religious houſe, or other work of charity and piety.

The *founders* of churches may preſerve to themſelves the right of patronage, or preſentation to the living.

FOUNDER * is alſo an artiſt that melts or caſts metals into various forms, for divers uſes; as guns, bells, ſtatues, bombs, types, or printing characters; and other ſmall works, as candleſticks, buckles, *&c.*

* The word in this ſenſe is formed of the French *fondre*, to melt, or fuſe.—In the Roman law they are called *ſtatuarii.*

From the different productions, or works of the *founders*, they are differently denominated, as *founders of ſmall works*; *bell-founders*; *gun-founders*; *letter-founders*; *figure-caſters*, &c. What belongs to each, ſee under FOUNDERY.

FOUNDER'*s furnace.* See the article FURNACE.

Moulds of FOUNDERS. See the article MOULDS.

FOUNDER'*s preſs.* See the article PRESS.

FOUNDER, in the ſea-language. A ſhip is ſaid to *founder* at ſea, when by an extraordinary leak, or a great ſea breaking in upon her, ſhe is ſo filled with water, that ſhe cannot be freed of it, nor is able to ſwim under it, but ſinks with the weight thereof.

Foundering *in the manage*, a diſorder in horſes, whereof there are two kinds, *viz.* in the feet, and in the cheſt.

Foundering *in the feet*, ariſes from hard riding, ſore labour, great heats, ſudden colds, &c. which inflame the blood, and, as the farriers term it, melt the greaſe, and make it deſcend downward, to the feet, and there ſettle; which cauſes ſuch a numbneſs, and pricking in the hoof, that the horſe has no ſenſe or feeling in it, being hardly able to ſtand; or, when he does, ſhaking and trembling as if he had an ague.

A horſe may likewiſe be *foundered*, by wearing ſtreight ſhoes, and by travelling upon hard ground.

It may be known when he is *foundered* on his fore-feet, and not his hind-feet, by his treading firmly on his hind-feet, and ſparing the other; or his going crouching or crippling on his buttocks.

Sometimes, tho' rarely, he is *foundered* in his hind-feet, and not his fore; which is known by his ſeeming weak behind; and reſting, as much as poſſible, on the fore-feet.

The general methods of curing this diſtemper are, firſt, by paring all the horſe's ſoles ſo thin, that the quick may be ſeen; then bleeding him well at the toes; ſtopping the vein with tallow and reſin; and then, having tacked hollow ſhoes on his feet, ſtopping them with bran, tar, and tallow, as boiling hot as may be; which is to be renewed once in two days, for a week together; after which he is to have good exerciſe.

Or, after he is pared thin, and let blood at the toes, his feet are to be ſtopped with cows-dung, kitchen-fee, tar, and ſoot, boiled together, and poured, boiling hot, into them.

Foundering *in the cheſt, or body*, uſually befals a horſe by eating too much provender ſuddenly, when too hot; as alſo by drinking too much upon travelling, when he is hot, and riding him after it.

The effect of which is, that the body is oppreſſed with ill humours, which take away his ſtrength, and put him in ſuch condition, that he can neither go, nor bow his joints; and, being once laid, he cannot riſe again, &c. his legs ſwell; and, ſoon after, begin to peel; he has a dry cough, which makes his eyes water; and his noſe runs with white phlegmatic matter.

FOUNDERY, or **Foundry**, the art of melting and caſting all ſorts of metals; particularly braſs, iron, bell-metal, &c.

The word is alſo uſed for a place, or workhouſe, furniſhed with furnaces, or forges, for this purpoſe.

Foundery *of ſmall works, or the manner of caſting in ſand.*—The ſand uſed by the founders, in caſting braſs, &c. is yellowiſh, and pretty ſoft; but, after it has been uſed, it becomes quite black, by reaſon of the charcoal-duſt uſed in the moulds.

Every time they would uſe this ſand, they work and tew it, ſeveral times over, in a board about a foot ſquare, placed over a kind of trunk, or box, into which it may fall from off the board. This tewing is performed with a roller, or cylinder, about two feet long, and two inches in diameter; and a kind of knife, made of the blade of a ſword: with theſe two inſtruments they alternately roll and cut the ſand; and, at length, turn it down into the box underneath.

Then, taking a wooden board, or table, of a length and breadth proportional to the quantity of things to be caſt; round this they put a frame, or ledge; and thus make a ſort of mould. This mould they fill with the ſand before prepared, and moderately moiſtened: which done, they take wooden, or metalline models, or patterns of the things intended to be caſt; apply them on the mould, and preſs them down in the ſand, ſo as to leave their form indented; along the middle of the mould is laid half a little cylinder of braſs, which is to be the maſter-jet, or canal for running the metal; being ſo diſpoſed, as to touch the ledge on one ſide, and only to reach to the laſt pattern on the other: from this are placed ſeveral leſſer jets, or branches, reaching to each pattern, whereby the metal is conveyed through the whole frame.

This firſt frame being thus finiſhed, they turn it upſide down, to take out the patterns from the ſand; in order to which, they firſt looſen them a little all round, with a ſmall cutting inſtrument.

After the ſame manner they proceed to work the counter-part, or other half of the mould, with the ſame patterns, in a frame exactly like the former; excepting that it has pins, which, entering holes correſponding thereto in the other, make, when the two are joined together, the two cavities of the pattern fall exactly on each other.

The frame, being thus moulded, is carried to the founder, or melter; who, after enlarging the principal jet, or canal, of the counter-part, with a kind of knife, or adding the croſs jets, or canals, to the ſeveral patterns in both, and ſprinkling them over with mill-duſt, ſets them to dry in an oven.

When both parts of the mould are ſufficiently dried, they join them together, by means of the pins; and, to prevent their ſtarting, or ſlipping aſide, by the force of the metal, which is to come in flaming hot, through a hole contrived at the maſter jet, they lock them in a kind of preſs, either with ſcrews; or, if the mould be too big for this, with wedges.

The moulds, thus put in the preſs, are ranged near the furnace, to be in readineſs to receive the metal as it comes out of the crucible.

While the moulds are thus preparing, the metal is put in fuſion in an earthen crucible, about ten inches high, and four in diameter.

The furnace wherein the fuſion is made, is much like the ſmiths forge; having, like that, a chimney, to carry off the ſmoke; a pair of bellows, to blow up the fire; and a hearth, where the fire is made, and the crucible placed. It is the uſe of this hearth, that chiefly diſtinguiſhes the furnace from the forge.

In the middle thereof is a ſquare cavity, ten or twelve inches wide, which goes to the very bottom: it is divided into two, by an iron grate; the upper partition ſerves to hold the crucible, and the fuel; and the lower to receive the aſhes.

When the fuel, which is to be of dry wood, is pretty well lighted, they put the crucible full of metal in the middle, and cover it with an earthen lid; and, to increaſe the force of the fire, beſides blowing it up with the bellows, they lay a tile over part of the aperture or cavity of the furnace.

The metal firſt put in being brought to a fuſion, they fill the crucible with pieces of braſs beaten in a mortar; to put them in they make uſe of a kind of iron ladle, with a long ſhank at the end thereof, formed into a kind of hollow cylinder, out of which the piece is dropped.

Nothing now remains, but for the founder to take the crucible out of the fire, and carry it, in a pair of iron tongs (whoſe feet are bent, the better to embrace the top of the crucible), to the mould; into which he pours the melted metal, thro' the hole anſwering to the maſter-jet of each mould.

Thus he goes ſucceſſively, from one to another, till his crucible is emptied, or there is not matter enough left for another mould.

Then, caſting cold water on the moulds, they take the frames out of the preſſes, and the caſtworks out of the ſand; which afterwards they work again, for another caſting. Laſtly, they cut off the jets, or caſts, and ſell or deliver the work to thoſe who beſpoke it, without any farther repairing.

Foundery *of ſtatues, great guns, and bells.*—The art of caſting ſtatues in braſs is very antient; inſomuch that its origin was too remote and obſcure, even for the reſearch of Pliny; an author admirably ſkilled at diſcovering the inventors of other arts.

All we can learn for certain, is, that it was practiſed, in all its perfection, firſt among the Greeks; and, afterwards, among the Romans: and, that the number of their ſtatues conſecrated to their gods and heroes ſurpaſſed all belief. See Statue.

The ſingle cities of Athens, Delphos, Rhodes, &c. had each three thouſand ſtatues; and Marcus Scaurus alone, though only ædile, adorned the circus with no leſs than three thouſand ſtatues of braſs, for the time of the Circenſian games.

This taſte for ſtatues was finally carried to ſuch a pitch, that it became a proverb, that in Rome the people of braſs were not leſs numerous than the Roman people.

Among us, the caſting of ſtatues was but little known, or practiſed, before the ſeventeenth century.

As to the *caſting of guns*, it is quite modern; and it were, perhaps, to be wiſhed, we were as ignorant of it as the antients.—All authors agree, that the firſt cannon were caſt in the fourteenth century; though ſome fix the event to the year 1338. and others to 1380.

The *caſting of bells* is of a middle ſtanding, between the other two.—The uſe of bells is certainly very antient in the weſtern church; and the ſame were likewiſe once uſed in the church of the eaſt. But, at preſent, F. Vanſleb aſſures us, in his ſecondaccount of Egypt, he had found but one bell in all the eaſtern church, and that in a monaſtery in the Upper Egypt.

The matter of theſe large works is rarely any ſimple metal, but commonly a mixture of ſeveral, as braſs, bell-metal, &c. We ſhall here give the proceſs in the *foundery* of each.

Method of caſting ſtatues, or figures.—There are three things chiefly required in caſting of ſtatues, buſts, baſſo-relievo's vaſes, and other works of ſculpture; *viz.* the mould, the wax, and ſhell, or coat.

The inner mould, or core (thus called from *cœur*, as being in the heart, or middle of the ſtatue), is a rude, lumpiſh figure, a little reſembling the ſtatue intended: it is raiſed on an iron grate, ſtrong enough to ſuſtain it; and is ſtrengthened withinſide by ſeveral bars, or ribs, of iron.

It may be made indifferently, of two ſorts of metal, at the diſcretion of the workmen; *viz.* potters clay, mixed up with horſe-dung and hair; or of plaſter of Paris, mixed with fine brickduſt.

The uſe of the core in ſtatues is to leſſen the weight, and ſave metal. In bells it takes up all the inſide, and preſerves the ſpace vacant where the clapper is hung. In great guns it forms the whole chace, from the mouth to the breech: and, in mortars, the chace, and chamber.

The wax is a repreſentation of the intended ſtatue in wax. If it be a piece of ſculpture, the wax muſt be all of the ſculptor's own hand: who uſually faſhions it on the core itſelf; though it may be wrought a part, in cavities, moulded, or formed, on a model, and afterwards diſpoſed and arranged on the ribs of iron over the grate, as before; filling the vacant ſpace in the middle with liquid plaſter, and brick-duſt; by which means the inner mould, or core, is formed in proportion as the ſculptor carries on the wax.

When the wax (which is to be of the intended thickneſs of the metal) is finiſhed, they fix little waxen tubes perpendicularly to it, from top to bottom; to ſerve, both as jets, for the conveyance of the metal to all parts of the work; and as vent-holes, to give paſſage to the air, which would, otherwiſe, occaſion great diſorder, when the hot metal came to encompaſs it. By the weight of the wax uſed herein, is that of the metal adjuſted; ten pounds of this laſt being the proportion to one pound of the former.

The work brought thus far, wants nothing but to be covered with its ſhell; which is a kind of coat, or cruſt, laid over the wax; and which, being of a ſoft matter, and even, at firſt, liquid, eaſily takes and preſerves the impreſſion of every part thereof; which it afterwards communicates to the metal, upon its taking the place of the wax, between the ſhell and the core.

The matter of this outer mould, or ſhell, is varied according as different layers, or ſtrata, are applied. The firſt is a compoſition of clay, and old crucibles, well ground and ſifted, and mixed up with water, to the conſiſtence of a colour fit for painting: accordingly, they apply it with a pencil, laying it ſeven or eight times over, letting it dry betwixt whiles. For the ſecond impreſſion, they add horſes dung and natural earth to the former compoſition. The third impreſſion is only horſes dung and earth. Laſtly, the ſhell is finiſhed by laying on ſeveral more impreſſions of this laſt matter, made very thick with the hand.

The ſhell, thus finiſhed, is ſecured and ſtrengthened by ſeveral bands, or girts, of iron, wound around it at half a foot's diſtance from one another, and faſtened at bottom to the grate under the ſtatue; and at the top to a circle of iron, where they all terminate.

Here it muſt be obſerved, that if the ſtatue be ſo big, that it would not be eaſy to move the moulds, when thus provided, it muſt be wrought on the ſpot where it is to be caſt.

This is performed two ways: in the firſt, a ſquare hole is dug under-ground, much bigger than the mould to be made therein, and its inſides lined with walls of freeſtone, or brick. At the bottom is made a hole, of the ſame materials, with a kind of furnace, having its aperture outwards: in this is a fire to be lighted, to dry the mould; and, afterwards, to melt the wax. Over this furnace is placed the grate; and on this the mould, *&c.* framed as above explained. Laſtly, at one of the edges of the ſquare pit is made another large furnace, to melt the metal, as hereafter mentioned.

In the other way, it is ſufficient to work the mould above-ground: but with the ſame precaution of a furnace, and grate, underneath: when finiſhed, four walls are to be run up around it; and, by the ſide thereof, a maſſive made, for a melting furnace.—For the reſt, the method is the ſame in both.

The mould being finiſhed, and incloſed between four walls, whether under-ground, or above it, a moderate fire is lighted in the furnace under it, and the hole covered with planks, that the wax may melt gently down, and run out at pipes contrived for the purpoſe, at the foot of the mould; which are afterwards very exactly cloſed with earth, as ſoon as all the wax is carried off.

This done, the hole is filled up with bricks thrown in at random, and the fire in the furnace is augmented till ſuch time as both the bricks and the mould become red-hot; which ordinarily happens in twenty-four hours. Then, the fire being extinguiſhed, and every thing cold again, they take out the bricks, and fill up their place with earth, moiſtened, and a little beaten, to the top of the mould, in order to make it the more firm and ſteady.

Things being in this condition, there remains nothing but to melt the metal, and run it into the mould: this is the office of the furnace above, which is made in manner of an oven, with three apertures; one to put in the wood; another for a vent; and a third to run the metal out at. From this laſt aperture, which is kept very cloſe all the time the metal is in fuſion, a little tube or canal is laid, whereby the molten metal is conveyed into a large earthen baſon over the mould; into the bottom of which all the big branches of the jets, or caſts, which are to carry the metal into all the parts of the mould, are inſerted.

It muſt be added, that theſe jets are all terminated, or ſtopped, with a kind of plugs, which are kept cloſe, that, upon opening the furnace, the braſs, which guſhes out like a torrent of fire, may not enter any of them till the baſon be full enough of matter to run into them all at once; upon which occaſion they pull out the plugs, which are long iron rods, with a head at one end, capable of filling the whole diameter of each tube. The hole of the furnace is opened with a long piece of iron, fitted at the end of each pole; and the mould is then filled in an inſtant.

The work is now finiſhed, at leaſt ſo much as belongs to the caſting, the reſt being the ſculptor's, or carver's buſineſs; who, taking the figure out of the mould and earth it is encompaſſed withal, ſaws off the jets, wherewith it appears covered over; and repairs it, with inſtruments proper to his art; as chiſſels, gravers, puncheons, *&c.*

The manner of caſting bells. What has been hitherto ſhewn of the caſting of ſtatues, holds, in proportion, of the caſting of bells: all that there is particular in theſe latter, is as follows: Firſt, then, the metal is different; there being no tin in the metal of ſtatues, but no leſs than a fifth part of tin in that of bells. Secondly, the dimenſions of the core, and the wax of bells, eſpecially if it be a ring of ſeveral bells that is to be caſt, are not left to chance, or the caprice of the workman; but muſt be meaſured, on a kind of ſcale, or diapaſon; which gives the height, aperture, and thickneſs, neceſſary for the ſeveral tones required.

It need not be added, that it is on the wax that the ſeveral mouldings, and other ornaments, and inſcriptions, to be repreſented in relievo, on the outſide of the bell, are formed.

The clapper, or tongue, is not properly a part of the bell, but is furniſhed from other hands. In Europe, it is uſually of iron, with a large lump at the extreme; and is ſuſpended in the middle of the bell. In China, it is only a huge wooden mallet, ſtruck by force of arm againſt the bell; whence they can have but little of that conſonancy ſo much admired in ſome of our rings of bells. The Chineſe have an extraordinary way of increaſing the ſound of their bells; *viz.* by leaving a hole under the cannon; which our bell-founders would reckon a defect.

The proportions of our bells differ very much from thoſe of the Chineſe. In ours, the modern proportions are, to make the diameter fifteen times the thickneſs of the brim, and the height twelve times.

Manner of caſting great guns, or pieces of artillery. The caſting of cannons, mortars, and other pieces of artillery, is performed like that of ſtatues, and bells; eſpecially as to what regards the mould, wax, ſhell, furnaces, *&c.*

As to the metal, it is ſomewhat different from both; as having a mixture of tin, which is not in that of ſtatues; and only having half the quantity of tin that is in bells, *i. e.* at the rate of ten pound of tin, to an hundred of copper. A cannon is always ſhaped a little conical, being thickeſt of metal at the breech, where the greateſt effort of the gunpowder is made, and diminiſhing thence to the muzzle: ſo that if the mouth be two inches thick of metal, the breech is ſix.

Its length is meaſured in calibers, *i. e.* in diameters of the muzzle. Six inches at the muzzle require twenty calibers, or ten feet in length; there is always about a ſixth of an inch allowed play for the ball.

Letter FOUNDERY, *or the manner of caſting printing letters.* The invention of printing letters we ſhall ſpeak of under the articles PRINTING, and LETTER.

Their difference, kind, *&c.* has already been explained under the articles CHARACTER, *&c.*

The two things principally to be regarded in the caſting of letters, are the *matter*, and the *matrices*.

The matter is a compound metal; partly braſs, or copper; and partly lead, mixed in a certain proportion: which every letter-founder regulates at his own diſcretion; and to which he frequently adds, a certain quantity of ſome other metal, or mineral, as his experience directs him, to render his compoſition the harder.

The moſt uſual proportion of the two metals is, an hundred pounds of lead, to twenty or twenty-five pounds of braſs. Some (though not the beſt founders) uſe iron, inſtead of braſs; in the proportion of an hundred pounds of lead, to thirty or thirty-five of iron.

Theſe metals are melted ſeparately, in large crucibles; the braſs, or iron, with antimony; and the lead by itſelf: when in fuſion, they are mixed together: this fuſion, and mixture, are the moſt laborious parts of the letter-founder's art.

The matrices of the letters are pieces of copper, whereon the impreſſion of the intended character has been cut, or ſtruck, in creux, by means of puncheons, *&c.* graven in relievo.

Each letter has its proper matrice; and there are particular ones for points, virgula's, figures, rules, head-pieces, and other ornaments of printing; excepting the quadrats, which, being only of lead, and not intended to leave any impreſſion, are caſt without matrices, and only in moulds; and each matrice has its puncheon, made of ſteel, or iron, well tempered.

The matrices being ſtruck, and touched up, or repaired, where needful, are put each at the end of an iron mould, incloſed between two thin pieces of board, two or three inches ſquare, the two upper angles being cut off, ſo as to compoſe an irregular hexagon.

The principal parts of theſe moulds, which, as already mentioned, are hid between the ſlips of wood, are, 1°, Two ſteel plates, with each its ſcrew, to keep them faſt, at a diſtance from the boards. 2°, Two called *long pieces*. 3°, A piece called the *blank*; which is what properly forms the body of the character, at the extremity whereof the matrice is put. 4°, A jet, or caſt, which is a ſort of little funnel, to receive and convey the melted matter to the matrice. 5°, A regiſter, ſerving to rejoin the two parts of the mould, after they have been opened to take out the letter, when caſt.

On the outſide of the moulds are three other pieces; *viz.* the bow, at bottom; and two hooks, a-top. The bow is a thick ſteel wire, two or three lines in diameter, and eight or ten inches long, bent in manner of a bow, or arch; whereof the lower piece of wood is, as it were, the chord, or ſtring: one end is faſtened to the board; and the other, which is left at liberty, ſerves, by its ſpring, or elaſticity, to preſs and retain the matrice of the character againſt the extremity of the blank; where the melted matter running in, makes the impreſſion.

The hooks a-top of the mould are alſo of wire, about the ſame ſize with the bow, and about an inch and an half long; being faſtened, one of them to one board, and the other to the other: their uſe is, to open the mould, and to take out the character, when caſt; ſo as the workman may not be incommoded with the heat.

Every thing belonging to the mould being thus diſpoſed, they begin to prepare the matter.—The furnace, whereon the baſon is placed, for the metal to be melted in, is made of the ſame matter as crucibles: it is uſually eighteen or twenty inches high, and ten or twelve in diameter. An iron grate, horizontally placed, divides it into two: the lower part ſerves to hold the aſhes; and is furniſhed with the hole to let in the air. The wood is put in the upper part, through an aperture over the grate. An earthen pipe ſerves to carry off the ſmoke out at a window, near which the furnace is ordinarily placed. And, laſtly, a ſtone, or wooden ſtool, ſerves to ſupport the furnace, and raiſe it to a proper height for the workman to work ſtanding.

Over the furnace is placed the melting baſon, or copper; it is about nine inches in diameter, and takes up the whole aperture a-top, being even luted to it all round, with potters-earth: its matter is a kind of pot-metal; and, that it may be fit for melting both hard and ſoft metals, it is divided into two equal parts, by a perpendicular partition.

In this baſon they melt only the matter already prepared; that is, the mixture, or compoſition, made in the crucibles above-mentioned. A little iron ladle ſerves to ſcum off the ſcoriæ, or impurities, from the ſurface of the melted metal; and theſe ſcoriæ are not all loſt, but ſerve to melt over again.

Two workmen are uſually employed at each furnace; each of them has his part of the baſon to empty; and they have a table, or bench, in common, where they lay the characters as faſt as they are caſt.

To run the metal into the mould, the founder holds it in his left hand: and, in his right, has a little iron ladle, with a wooden handle, containing juſt enough for one letter.

Having now filled this ladle with liquid metal, he pours it into the jet, or funnel, whoſe aperture is in the middle of the two hooks of the mould; and, thruſting his hand briſkly forward, wherewith he holds the mould, he makes the metal run into the matrice of the character; which, without ſuch motion, might grow cold before it arrived there.

He then unbends the bow, opens the mould, and, with one of the hooks, takes out the character; and, without loſs of time, ſhuts it again, replaces the matrice, and caſts a new letter. It is incredible with what expedition and addreſs all this is done. The letter being caſt, they view it, before they break off the jet, to ſee whether it be perfect; otherwiſe to throw it among the refuſe of the fount.

If it be found complete, the jet, or tail, is broke off; the ſuperfluous metal, occaſioned by the mould's not being exactly cloſed, is taken off with a knife; and the long-tailed letters, as *f*, and *ſ*, hollowed at bottom, to give room for the maſſive of the other letters to be placed underneath.

With the ſame knife they ſcrape the letter, to ſmooth its two broadeſt ſides, or faces, and fit them to be rubbed on the ſtone: they take care only to rub thoſe ſides, for fear of damaging a notch on one of the other ſides, which is to diſtinguiſh the ſides to the compoſitor, when he ſets his forms.

The ſtone they grind them on, is a ſort of hard, coarſe-grained freeſtone, placed horizontally; before which the workman ſits. To ſave his fingers from the friction, he has a kind of finger-ſtalls, made of ſome old piece of leather; with which he covers the two fingers next the thumb; with theſe he works each ſide of the letter, backwards and forwards: to ſhift ſides, he makes uſe of the thumb, but, without diſcontinuing the motion; ſo that the by-ſtander would eaſily be deceived, and be ready to ſwear they had all the while rubbed on the ſame ſide.

The letters, thus ground, are placed on the compoſitory, to be ſcraped, and brought to the proper thickneſs, on the two other ſides, *viz.* that of the notch, and its oppoſite: this they ſometimes call *compoſition*.

The compoſitory is a wooden ruler, with a little ledge at bottom, againſt which the letters are ranged. On the ſame inſtrument the quadrats, rules, borders, &c. are alſo adjuſted.

When the letters are compoſed, they remain to be juſtified, both as to thickneſs and height: in order to this, they uſe a little copper plate, which is their level.

The juſtification, as to thickneſs, is made on a piece of marble; and that for the height, on an iron compoſitory. The juſtification of the height is guided by the *m* of ſome body of characters already juſtified.

Letters are ſaid be of their juſt height, when the part of the plate, or level, bears equally on the ſtandard *m*, placed on its foot, in the little compoſitory, and the face of two letters, newly caſt, placed aſide of it, to be juſtified: as to the thickneſs, the juſtification is performed by laying the ſtandard letter flat on the little marble, and two new letters aſide of it; and thus levelling the three with the plate.

All that then remains is to dreſs the letters, *i. e.* to cut the foot, or rather hollow it, and make that ſort of groove which every letter has at the bottom, preciſely oppoſite to the eye, or upper part, or face of the letter.

In order to this, they turn a long line of them upſide down in the juſtificator; which is an inſtrument of poliſhed iron or ſteel; conſiſting of two long pieces, joined together by ſcrews: between theſe two they incloſe as many letters as they will hold, all placed againſt each other, in the ſame ſituation as when compoſed for books; excepting that the face in the former caſe is downwards, and the foot a-top. When the juſtificator is full of letters, they ſet it on the table of the cutter, between two cheeks of wood, which preſſing it very tight, enables the workman to run his plane along the ſide of the line thus inverted.

This plane conſiſts of three parts, two ſteel, and the third wood. Of the ſteel ones, that at bottom conſiſts of two moveable ſteel plates, which may be drawn cloſer, or ſet farther off, at pleaſure, by means of two ſcrews: within the interval between the two, they paſs the feet of the row of letters; and thus is the plane kept from deviating.

The ſecond part of the plane, anſwering to the bit of ſteel in the common planes, conſiſts of two branches, and two ſcrews, which ſerve to raiſe, or let down, the ſteel, as the groove is to be cut deeper, or ſhallower. The poſition of this piece of ſteel, which is four or five inches long, is almoſt perpendicular.

The laſt part of the plane, which is wood, ſerves to join the other two; its form is that of an arch; one end of it is faſtened to the poſterior extreme of the plates, and the other to the branches which carry the bit of ſteel; ſo that the three parts together make a kind of triangle, voided in the middle.

The cutter is a ſteel inſtrument, with a wooden handle, made in manner of a chiſſel; ſerving to pare off the rough wire edge of the letters, when they are dreſſed.

When the letters have paſſed all theſe operations, they are fit for the printer's uſe.

The perfection of letters thus caſt, &c. conſiſts in their being all ſeverally ſquare and ſtrait, on every ſide; and all generally of the ſame height, and evenly lined, without ſtooping one way or other; neither too big in the foot, nor the head; well grooved, ſo as the two extremes of the foot contain half the body of the letter; and well ground, barbed, and ſcraped; with a ſenſible notch, &c.

FOUNT, or **Font**, among printers, &c. a ſet, or quantity, of characters, or letters, of each kind; caſt by a letter-founder, and ſorted.

We ſay, a founder has caſt a *fount* of pica, of engliſh, of pearl, &c. meaning he has caſt a ſet of characters of theſe kinds.

A complete *fount* does not only include the running letter, but alſo majuſcules, or large and ſmall capitals, ſingle letters, double letters, points, comma's, lines, borders, head-pieces, tail-pieces, and numeral characters.

The letter-founders have a kind of liſt, or tariff, whereby they regulate their *founts*: the occaſion thereof is, that ſome letters being in much more uſe, and oftener repeated, than others, their cells, or caſes, ſhould be better filled and ſtored, than thoſe of the letters which do not return ſo frequently.

Thus the *o*, and *i*, for inſtance, are always in greater quantity than the *k*, or *z*.

This difference will be beſt perceived from a proportional compariſon of thoſe letters with themſelves, or ſome others.

Suppoſe a *fount* of an hundred thouſand characters, which is a common *fount*; here the *a*, ſhould have five thouſand; the *c*, three thouſand; the *e*, eleven thouſand; the *i*, ſix thouſand; the *m*, three thouſand; the *k*, only thirty; and the *x*, *y*, and *z*, not many more.

But this is only to be underſtood of the letters of the lower-caſe; thoſe of the upper having other proportions; which it would be, here, too long to inſiſt on. See Letter, and Character.

FOUNTAIN, **Fons**, in philoſophy, a ſpring, or ſource, of water, riſing out of the ground.

For the phænomena, theory, origin, &c. of ſprings, or *fountains*, ſee Spring.

Among the antients, the *fountains*, or ſources of rivers, were held ſacred, and even worſhiped, as a kind of divinities.

Seneca obſerves as much, in his forty-firſt epiſtle; and Cicero, l. iii. *de Nat. Deor.* c. 20. mentions, that the Roman prieſts, and augurs, uſed, in their prayers and invocations, to call on the names of the Tyber, and other rivers, brooks, and ſprings, about Rome. And the ſeventh inſcription, in p. 94. of Gruter, has *FONTI* DIVINO ET GENIO NVMINIS *FONTIS*.

It was a point of religion, not to diſturb, or muddy, theſe waters in waſhing or bathing:—Tacitus gives an inſtance hereof in Nero, *Annal.* l. xiv. c. 22. And Struvius, *Antiq. Rom. Syntag.* c. 1. p. 167.

Fountain, or *artificial* **Fountain**, in hydraulics, a machine, or contrivance, whereby water is violently ſpouted, or darted up; called alſo a *jet d'eau.* See **Jet** *d'Eau*, **Fluid**, *&c.*

There are divers kinds of artificial *fountains*; ſome founded on the ſpring, or elaſticity, of the air; and others, on the preſſure, or weight, of the water, *&c.*

The ſtructure of each hereof being pretty and curious, and affording a good illuſtration of the doctrine of hydraulics, and pneumatics, ſhall be here explained.

Construction of an artificial **Fountain**, *playing by the ſpring, or elaſticity, of the air.*—A veſſel, proper for a reſervoir, as AB, *Tab. Hydraulics, fig.* 17. is provided, of metal, glaſs, or the like, ending in a ſmall neck *c*, a-top: through this neck a tube is put, *c a*, traverſing the middle of the veſſel, till its lower orifice *d*, nearly, but not abſolutely, reach the bottom of the veſſel; the veſſel being firſt half filled with water. The neck is ſo contrived, as that a ſyringe, or condenſing-pipe, may be ſcrewed upon the tube; by means whereof, a large quantity of air may be intruded through the tube into the water; out of which it will diſengage itſelf, and emerge into the vacant part of the veſſel, and lie over the ſurface of the water CD.

Now, the water here contained being thus preſſed by the air, which is, *e. gr.* twice as denſe as the external air; and the elaſtic force of air being equal to its gravitating force; the effect will be the ſame, as if the weight of the column of air over the ſurface of the water were double that of the column preſſing in the tube; ſo that the water muſt, of neceſſity, ſpout up, through the tube, with a force equal to the exceſs of preſſure of the included, above that of the external air.

Construction of an artificial **Fountain**, *playing by the preſſure of the water.*—Having the conveniency of a fund, or reſervoir, of water, in a place conſiderably higher than that where the *fountain* is to be (whether that fund have been placed there by nature, or whether it have been raiſed for the purpoſe, by a proper engine, as a pump, ſiphon, ſpiral ſcrew, or the like); from the reſervoir lay vertical tubes, for the water to deſcend through; and, to theſe vertical tubes, fit other horizontal ones, under-ground, to carry the water to the place where the *fountain* is to play. Laſtly, from theſe horizontal tubes, erect other vertical ones, by way of adjutages, jets, or ſpouts, their altitude being much leſs than that of the tubes whereby the water was carried to the horizontal ones.

Then will the water, by the preſſure of the ſuperincumbent column, be ſpouted up at theſe jets; and that to the height, or level, of the water in the reſervoir; and this, howſoever any of the tubes be bent or incurvated.—The demonſtration hereof, ſee under **Fluids**.

Thus may water be ſpouted to any given height at pleaſure: and the tubes may be ſo proportioned as to yield any given quantity of water, in a given time; or ſeveral tubes, of the ſame *fountain*, may be made to yield water in any given ratio; or, laſtly, different tubes may project the water to different altitudes. Rules for all which, the reader will find among the laws of **Fluids**.

Theſe aereal or aquatic *fountains* may be applied in various manners, ſo as to exhibit various appearances; and, from theſe alone, ariſes the greateſt part of our artificial water-works. An inſtance, or two, will not be diſagreeable.

A **Fountain** *ſpouting the water in various directions.*—Suppoſe the vertical tube, or ſpout, in which the water riſes, to be AB (*Tab. Hydraulics, fig.* 18.); into this fit ſeveral other tubes; ſome horizontal, others oblique; ſome inclining, others reclining, as OP, MN, FL, *&c.*

Then, as all water retains the direction of the aperture through which it is ſpouted, that iſſuing through A will riſe perpendicularly; and that through L, H, N, P, E, will deſcribe arches of different magnitudes, and tending different ways.

Or thus: Suppoſe the vertical tube AB, *fig.* 19. through which the water riſes, to be ſtopped a-top, as in A; and, inſtead of pipes, or jets, let it be only perforated with little holes all round; or only round half its ſurface: then will the water ſpin forth, in all directions, through the little apertures; and to a diſtance proportional to the height of the fall of the water.

And hence, if the tube AB be ſuppoſed the height of a man, and be furniſhed with an epiſtomium, or cock, at C, upon opening the cock, the ſpectators, dreaming of no ſuch matter, will be covered with a ſhower.

It muſt be here obſerved, that the diameters of the apertures by which the water is emitted, muſt be conſiderably leſs than thoſe of the tubes in which the water is brought; leſt the reſiſtance of the air, and other impediments, ſpecified under **Fluid**, break the force of the water.

A **Fountain** *playing by the draught of the breath.*—Suppoſe AB, *fig.* 20. a glaſs, or metalline ſphere, wherein is fitted a tube CD, having a little orifice in C, and reaching almoſt to D, the bottom of the ſphere. If, now, the air be ſucked out of the tube CD, and the orifice C be immediately immerged under cold water, the water will aſcend through the tube into the ſphere.

Thus proceeding, by repeated exſuctions, till the veſſel be above half full of water; and then applying the mouth to C, and blowing air into the tube; upon removing the mouth the water will ſpout forth.

Or, if the ſphere be put in hot water, the air, being thereby rarefied, will make the water ſpout as before.

This kind of *fountain* is called *Pila Heronis*, or Hero's ball; from the name of its inventor.

A **Fountain**, *the ſtream whereof raiſes and plays a braſs ball.*—Provide a hollow braſs ball A, *fig.* 21. made of a thin plate, that its weight may not be too great for the force of the water. Let the tube BC, through which the water riſes, be exactly perpendicular to the horizon.

Then, the ball, being laid in the bottom of the cup, or baſon, B, will be taken up in the ſtream, and ſuſtained at a conſiderable height, as A; alternately vibrating, or playing up and down.

Hence, as the figure of the ball contributes nothing to its reciprocal riſe, and fall, any other body, not too heavy, may be ſubſtituted in lieu thereof; *e. gr.* a bird, with its wings ſtretched forth.

But note, that, as it is neceſſary the ball, when on the deſcent, ſhould keep the ſame preciſe perpendicular wherein it roſe (ſince, otherwiſe, it would miſs the ſtream, and fall downright), ſuch a *fountain* can only be played in a place free from wind.

A **Fountain** *which ſpouts water in form of a ſhower.*—To the tube wherein the water is to riſe, fit a ſpherical, or lenticular head AB, *fig.* 22. made of a plate of metal, and perforated a-top with a great number of little holes.

The water riſing with vehemence towards AB, will be there divided into innumerable little threads; and afterwards broke, and diſperſed into the fineſt drops.

A **Fountain** *which ſpreads the water in form of a table-cloth.*—To the tube AB, *fig.* 23. ſolder two ſpherical ſegments, C and D, almoſt touching each other; with a ſcrew E, t contract, or amplify, the interſtice, or chink, at pleaſure.

Others chooſe to make a ſmooth, even cleft, in a ſpherical, or lenticular head, fitted upon the tube.

The water ſpouting through this chink, or cleft, will expand itſelf in manner of a cloth.

Fountains, *wherein the water ſpouts out of the figures of men and other animals.*—Since water may be derived, or conveyed by tubes in any ſituation, and always retains the direction o the aperture, all here required is, to incloſe tubes within th figures of men, or other animals; having their orifices i thoſe parts whence the water is intended to ſpout forth.

From the principles hitherto laid down, it will be very eaſ to deduce whatever relates to the furniture of *fountains*, an the various forms water may be put into by their means all depending on the magnitude, figure, and direction, of th adjutages, or apertures.

A **Fountain**, *which, when it has done ſpouting, may be turne like an hour-glaſs.*—Provide two veſſels, LM, and NO, *fi* 24. to be ſo much the bigger as the *fountain* is to play th longer; and placed at ſo much the greater diſtance from eac other PN, as the water is deſired to ſpout the higher. L BAC be a crooked tube, furniſhed in C with a cock; an FED another bent tube, furniſhed with a cock in D. In and C are to be other leſſer tubes, open at both ends, an reaching near to the bottom of the veſſels NO, and LM; which the tubes QR, and ST, are likewiſe to reach.

If, now, the veſſel LM be filled with water, it will deſcen through the tube BA; and, upon opening the cock C, w ſpout up near to the height of K; and, after its fall agai will ſink through the little tube I, into the veſſel NO, a expel the air through the tube QO. At length, when the water is emptied out of the veſſel LM, by turning t machine upſide down, the veſſel NO will be the reſervo and make the water ſpout up through the cock D.

Hence, if the veſſels LM, and NO, contain juſt as mu water as will be ſpouted up in an hour's time, we ſhall ha a ſpouting clepſydra, or water-clock; which may be g duated, or divided, into quarters, minutes, *&c.* as ſhe under the article **Clepsydra**.

A **Fountain** *that begins to play upon the lighting of cand and ceaſes as they go out.*—Provide two cylindrical veſſ

AB, and CD, *fig.* 25. connect them by tubes, open at both ends, KL, BF, *&c.* ſo that the air may deſcend out of the higher into the lower: to the tubes ſolder candleſticks, H, *&c.* and to the hollow cover of the lower veſſel, CF, fit a little tube, or jet FE, furniſhed with a cock G, and reaching almoſt to the bottom of the veſſels. In G let there be an aperture, furniſhed with a ſcrew, whereby water may be poured into CD.

Then, upon lighting the candles H, *&c.* the air in the contiguous tubes becoming rarefied thereby, the water will begin to ſpout through EF.

By the ſame contrivance may a ſtatue be made to ſhed tears upon the preſence of the ſun, or on the lighting of a candle, *&c.* all here required being only to lay tubes from the cavity wherein the air is rarefied, to ſome other cavities placed near the eyes, and full of water.

Fountain, with regard to architecture, is an aſſemblage of maſonry, ſculpture, *&c.* either for the decoration or conveniency of a city, garden, or the like.

Fountains acquire various denominations, according to their form, and ſituation: as,

Arched Fountain, that whoſe baſon and jet are placed perpendicularly under the arch.—Such are the *fountains* of the Colonade, and the triumphal water-arch at Verſailles.

Baſon Fountain is that with only a ſimple baſon, of any figure whatever; in the middle whereof is a jet, or ſpout, or perhaps a ſtatue; or even a group of figures.—As the *fountain* in the court of Buckingham-houſe.

Covered Fountain, a kind of pavilion, built of ſtone; either inſulate, and ſquare; or round; or multilateral; or backed: and that either with a projecture, or indenture; incloſing a reſervoir, and ſpouting or darting forth the water thereof through one or more cocks; in the middle of a ſtreet, ſquare, garden, court, or the like. Such is that in Lincoln's-Inn new ſquare, London.

Cup Fountain is that which, beſide a baſon, has likewiſe a cup of one ſingle piece of ſtone, or marble, ſupported on a ſhaft, or pedeſtal, and receiving a jet, or ſpout, riſing out of the middle thereof.

As the *fountain* in the court of the Vatican; the cup whereof is of granite, and antique; being brought from the baths of Titus at Rome.

Marine Fountain, that compoſed of aquatic figures, as ſea divinities, naiads, tritons, rivers, dolphins, and other fiſhes, and ſhells. Such is the *fountain* of the palace Paleſtrina at Rome; where a ſhell, ſupported by four dolphins, ſerves as a cup, and ſupports a triton, that ſpouts water out of his concha marina.

Naval Fountain is that made in form of a veſſel. Such is that of the place D'Eſpagne at Paris, repreſenting a bark; that at Monte-Cavallo, repreſenting a galley; or that before the vineyard Mattei at Rome, reſembling a boat.

Open Fountain is any ſpouting *fountain* with a baſon, cup, and other ornaments; all open: as is frequent in our gardens, and in the vineyards at Rome.

Pyramidal Fountain, that formed of ſeveral baſons, or cups, ranged in ſtories over each other, and diminiſhing all the way; being ſupported by a hollow ſtem, or ſhaft.—As the *fountain* of Monte-Dragone at Freſcati.

Or elſe ſupported by figures, fiſhes, or conſoles; the water whereof, in its fall, makes nets in divers ſtories, and repreſents a kind of water-pyramid.—As that at the head of the caſcades at Verſailles.

Ruſtic Fountain is that formed, or enriched, with rock-work, ſhell-work, petrifactions, *&c.*

Satyric Fountain is a kind of ruſtic *fountain*, in manner of a grotto; adorned with termini, maſcaroons, fauns, ſylvans, bacchantes, and other ſatyrical figures; ſerving for ornaments, as well as jets d'eau.

Spouting Fountain, or *jet d'eau*, is any *fountain* whoſe water is darted forth impetuouſly through one or more jets, or adjutages, and returns in form of rains, nets, folds, or the like.

Spring Fountain, a kind of plain ſpout, or ſtream, of water, iſſuing out of a ſtone, or hole, in a wall, without any decoration.—Such is the *fountain* of Trevi, at Rome.

Statuary Fountain, that which, being open and inſulated, or even-backed, is adorned with one or more ſtatues, by way of finiſhing, or crowning.—As the *fountain* of Latona, at Verſailles; and that of the ſhepherd, at Caprarola.

There are, alſo, ſtatues which ſpout forth water at ſome of their parts; or at ſea-ſhells, vaſes, urns, and other attributes of the ſea.

Symbolical Fountain, that where the principal ornaments are the attributes, arms, or cognizances, of the perſon who erected it.—Such are the *fountain* of St. Peter in Montorio, reſembling a caſtle flanked with towers, and donjons, repreſenting the arms of Caſtile; and ſome other *fountains* at Rome; among which are, the flower-de-lis, and the dove; the bearings of the family of pope Innocent X.

Fountain-Pen is a ſort of pen contrived to contain a great quantity of ink, and let it flow, by gentle degrees, ſo as to ſupply the writer a long time without a neceſſity of taking freſh ink.

The *fountain*-pen, repreſented Tab. *Miſcellany*, *fig.* 5. conſiſts of divers pieces, F, G, H, of braſs, ſilver, *&c.* whereof the middle-piece F carries the pen, which is ſcrewed into the inſide of a little pipe; which, again, is ſoldered to another pipe of the ſame bigneſs, as the lid G; in which lid is ſoldered a male-ſcrew, for ſcrewing on the cover; as, alſo, for ſtopping a little hole at the place, and hindering the ink from paſſing through it: at the other end of the piece F is a little pipe, on the outſide whereof the top cover H may be ſcrewed. In the cover there goes a port-crajon, to be ſcrewed into the laſt-mentioned pipe, in order to ſtop the end of the pipe into which the ink is to be poured by a funnel.

To uſe the pen, the cover G muſt be taken off, and the pen a little ſhaken, to make the ink run more freely.

FOUR, *Cul de four*. See the article Cul.

FOURCHEE, or Fourchy, in heraldry.—A croſs *fourchee* is that forked at the ends.

Upton rather repreſents it as anchored, the extremities turning in a circular manner to ſharp points; whereas the true croſs *fourchee*, *i. e.* forked, has its forks compoſed of ſtrait lines, and blunt ends.—Vid. Tab. *Herald. fig.* 33.

FOURCHER, an antient law term, ſignifying a putting off, prolonging, or delaying, an action.

As by ſtammering we draw out our ſpeech, not delivering that we have to ſay, in ordinary time; ſo by *fourching* we prolong a ſuit, that might be ended in a ſhorter ſpace.

In Stat. *Weſtm.* 1. cap. 42. we have theſe words: "Coparceners and joint tenants ſhall no more *fourch*, but only "ſhall have one eſſoin," *&c.* and *anno* 6 Edv. I. cap. 10. it is uſed in the ſame ſenſe; "The defendants ſhall be put to anſwer without *fourching*," &c. In the Latin it is called *furcare*, and is uſed where a man and his wife do eſſoin ſeverally. *Caveat vir & mulier implacitati, quod ſemper in eſſonio alterius alter compareat, quamdiu* furcare *poſſint; & cum ultra non poſſint, concurrant coram eſſonio in ſuis locis: alter autem earum tantum unum eſſonium de malo lecti habere poteſt.* Hengham mag. cap. 9.

FOURCHETTE. *Fer de* Fourchette; ſee the article Fer.

FOURTH, in muſic, one of the harmonic intervals, or concords.

The *fourth* is the fourth in order of the concords. It conſiſts in the mixture of two ſounds, which are in the ratio of 4 to 3; *i. e.* of ſounds produced by chords, whoſe lengths are to each other as 4 : 3.

It is called *fourth*, becauſe containing *four* terms, or ſounds, between its extremes; and three degrees: or, as being the *fourth*, in the order of the natural ſcale, from the fundamental.

The antients call the *fourth*, *diateſſaron*, and ſpeak of it as the firſt and principal of all concords; and yet the moderns find it one of the moſt imperfect. It is ſo very barren, and jejune, that it affords nothing good, either by multiplication, or diviſion.

The *redundant* Fourth is a diſcord compoſed of the ratio's of 27 to 20; and of 4 to 5.

Arches of the Fourth *point*. See the article Arch.

Fourth *rate*. See the article Rate.

FOUTGELD, or Footgeld. See Footgeld.

FOWL, in its general ſenſe, is of equal import with bird. See Bird.

Fowl is, in a more peculiar manner, underſtood of poultry, or the larger ſort of birds, both domeſtic and wild, either bred up, or hunted, for the table.

Such are turkeys, geeſe, cocks, hens, and ducks, both wild and tame; pheaſants, partridges, pigeons, ſnipes, *&c.*

Tame Fowl are a neceſſary part of the ſtock of a country farm; and yield conſiderable ſervice, and profit, by their eggs, brood, feathers, dung, *&c.*

They may be kept at a very eaſy expence near any highway-ſide; as being able to ſhift for themſelves, during the greateſt part of the year, by their feeding on inſects, worms, ſnails, and almoſt any thing eatable.

The oldeſt hens are always the beſt for ſitting, and the youngeſt for laying; but no ſort will be good for either, if kept too fat.

The beſt age to ſet a hen for chickens, is, from two years old to five; and the moſt proper month to ſet them in, is February; though it may be done, to good purpoſe, any time between that and Michaelmas. One cock will ſerve ten hens. A hen ſits but twenty days; whereas geeſe, ducks, and turkeys, ſit thirty.

Buckwheat, or French wheat, or hempſeed, it is ſaid, makes them lay faſter than any other food; and the ſame buckwheat, either whole, or ground, and made into a paſte, fats them apace: though the common food, for that purpoſe, is barley-meal, or wheat-flour, ſoaked in milk, or water, made into a paſte, and crammed down their throats twice a day, till they will hold no more. A gooſe will ſcarce ſit on any but her own eggs: a hen will ſit indifferently on all.

The lighteſt-coloured geeſe are the beſt, and thoſe that begin to lay the ſooneſt; as they have a chance of hatching twice in one year. They begin to lay in the ſpring, and lay twelve or ſixteen eggs. Green geeſe are begun to be fattened at a month old, and will be fat in a month more. Old geeſe are chiefly fattened at ſix months old, in or after the harveſt. A wild gooſe, if red-footed, and hairy, is old; but if white-footed, and not hairy, ſhe is young.

When the eggs are ſet under a hen, or other *fowl*, it is adviſeable to mark the upper ſides thereof; and when ſhe goes to feed, to note whether ſhe minds to turn them upſide down, or not; that if ſhe neglect that office, it may be done for her.

FOWLING, the act, or art, of catching birds with nets, birdlime, decoys, and other devices; as alſo of breeding up the ſame.

FOWLING is alſo uſed for the purſuing and taking of birds with hawks, falcons, and other birds of prey; more properly called *falconry*, and *hawking*.

FOWLING-PIECE, a portable fire-arm for the ſhooting of birds.

Of *fowling*-pieces, thoſe are reputed the beſt, which have the longeſt barrel; *viz.* from $5\frac{1}{2}$ feet, to 6; with an indifferent-bore, under the harquebus: though for different occaſions they ſhould be of different ſorts and ſizes. But in all, it is eſſential the barrel be well poliſhed, and ſmooth within; and the bore all of a bigneſs, from one end to another; which may be proved by thruſting in a piece of wood, cut exactly to the bore of the muzzle, down to the touch-hole.

FOX *Hunting*, ſee the article *Fox* HUNTING.

FRACTION, in arithmetic, a part or diviſion of an unit, or integer; or, a number which ſtands to an unit in the relation of a part to its whole.

The word literally imports a broken number.

Fractions are uſually divided into *decimal*, *ſexageſimal*, and *vulgar.*

For *decimal*, and *ſexageſimal fractions*, ſee DECIMAL, and SEXAGESIMAL *fractions*.

Vulgar **FRACTIONS**, called alſo ſimply, *fractions*, are always expreſſed by two numbers, the one wrote over the other, with a line between them.

The lower, called the *denominator of the fraction*, denotes the unit, or whole, that is divided into parts; and the upper, called the *numerator of the fraction*, expreſſes the parts given in the preſent caſe.

Thus, two-third parts of a line, or other thing, are wrote $\frac{2}{3}$; where the denominator 3 ſhews, that the whole line is ſuppoſed to be divided into three equal parts; and the numerator 2 indicates or aſſigns two of ſuch parts.

Again, twenty-nine ſixtieths is wrote $\frac{29}{60}$; where the numerator 29 expreſſes 29 parts of an integer divided into 60; and the denominator 60 gives the denomination to theſe parts, which are called *ſixtieths*.

The real deſign of adding the denominator is, to ſhew what aliquot part the broken number has in common with unity.

In all *fractions*, as the numerator is to the denominator; ſo is the *fraction* itſelf, to the whole whereof it is a *fraction*.

Thus, ſuppoſing $\frac{3}{4}$ of a pound equal to 15*s.* it is evident, that 3 : 4 : : 15 : 20. Whence it follows, 1°, That there may be infinite *fractions* of the ſame value, one with another; inaſmuch as there may be infinite numbers found, which ſhall have the ratio of 3 : 4.

Fractions are either *proper*, or *improper*,

Proper **FRACTION** is that where the numerator is leſs than the denominator; and conſequently the *fraction* leſs than the whole, or integer; as $\frac{25}{40}$.

Improper **FRACTION** is, where the numerator is either equal to, or bigger than the denominator; and, of courſe, the *fraction* equal to, or greater than the whole, or integer, as $\frac{25}{25}$; or $\frac{27}{23}$; or $\frac{90}{22}$.

Fractions, again, are either *ſimple*, or *compound*.

Simple **FRACTIONS** are ſuch, as conſiſt of only one numerator, and one denominator; as $\frac{2}{7}$, or $\frac{14}{350}$, &c.

Compound **FRACTIONS**, called alſo *fractions of fractions*, are ſuch as conſiſt of ſeveral numerators, and denominators; as $\frac{4}{7}$ of $\frac{11}{12}$ of $\frac{5}{9}$ of $\frac{15}{80}$, &c.

Of *fractions*, thoſe are equal to each other, whoſe numerators have the ſame ratio to their denominators.—Thoſe are greater, whoſe numerators have a greater ratio; and thoſe leſs, which have leſs: thus, $\frac{3}{6}=\frac{4}{8}=\frac{5}{10}=\frac{25}{50}=\frac{1}{2}$. But $\frac{3}{24}$ is greater than $\frac{2}{6}$; and $\frac{4}{6}$ leſs than $\frac{10}{18}$.

Hence if both the numerator, and denominator of a *fraction*, as $\frac{4}{6}$, be multiplied, or divided by the ſame number, 2; the facta in the former caſe, $\frac{8}{12}$, and the quotients in the latter, ^{2}, will conſtitute *fractions*, equal to the firſt *fraction* given.

The arithmetic of *fractions* conſiſts in the *reduction*, *addition*, *ſubtraction*, and *multiplication* thereof.

Reduction of **FRACTIONS**.—1°, *To reduce a given whole number into a* fraction *of any given denominator.*—Multiply the given integer, by the given denominator, the factum will be the numerator. Thus we ſhall find $3=\frac{7}{24}$; and $5=\frac{30}{6}$; and $7=\frac{88}{44}$, &c.

If no denominator be given, the number is reduced to a *fraction*, by writing 1 underneath it, as a denominator. Thus $\frac{2}{1}$, $\frac{4}{1}$, $\frac{55}{01}$.

2°, *To reduce a given* fraction *to its loweſt terms*; i. e. to find a *fraction*, equivalent to a given *fraction* ($\frac{20}{48}$), but expreſſed in leſs numbers—divide both the numerator 20, and denominator 48, by ſome one number, that will divide them both without any remainder, as here by 4. The quotients 5 and 12 make a new *fraction* $\frac{5}{12}$, equal to $\frac{20}{48}$.

And if the diviſion be performed with the greateſt number that will divide them both, the *fraction* is reduced to its loweſt terms.

To find the greateſt common diviſor of two quantities.—Divide the greater by the leſs: then divide the diviſor of the diviſion by the remainder thereof: again, divide the diviſor of the ſecond diviſion by the remainder of the ſecond; and ſo on, till there remain nothing. The laſt diviſor is the greateſt common meaſure of the given numbers.

If it happen that unity is the only common meaſure of the numerator and denominator; then is the *fraction* incapable of being reduced any lower.

3°, *To reduce two or more* fractions *to the ſame denomination*; i. e. to find *fractions* equal to the given ones, and with the ſame denominator.—If only two *fractions* be given, multiply the numerator, and denominator of each, by the denominator of the other: the products given are the new *fractions* required. Thus $\frac{2}{3}$ and $\frac{4}{5}$ make $\frac{10}{15}$ and $\frac{12}{15}$. If more than two be given, multiply both the numerator and denominator of each into the product of the denominators of the reſt. Thus $\frac{2}{3}$. $\frac{1}{6}$. $\frac{3}{4}=\frac{48}{72}$. $\frac{12}{72}$. $\frac{54}{72}$.

4°, *To find the value of a* fraction *in the known parts of its integer*. Suppoſe, *e. gr.* it were required to know what is $\frac{9}{16}$ of a pound; multiply the numerator 9 by 20, the number of known parts in a pound, and divide the product by the denominator 16, the quotient gives 11*s.* Then multiply the remainder 4 by 12, the number of known parts in the next inferior denomination; and dividing the product by 16, as before, the quotient is 3*d.* So that $\frac{9}{16}$ of a pound = 11*s.* 3*d.*

5°, *To reduce a mixed number, as* $4\frac{11}{12}$ *into an improper* fraction *of the ſame value.*—Multiply the integer, 4, by 12, the denominator of the *fraction*; and to the product 48 add the numerator; the ſum 59 ſet over the former denominator, $\frac{59}{12}$, conſtitutes the *fraction* required.

6°, *To reduce an improper* fraction *into its equivalent mixed number*. Suppoſe the given *fraction* $\frac{59}{12}$; divide the numerator by the denominator; the quotient $4\frac{11}{12}$ is the number ſought.

7°, *To reduce a compound* fraction *into a ſimple one.*—Multiply all the numerators into each other for a new numerator; and all the denominators for a new denominator. Thus $\frac{1}{2}$ of $\frac{3}{4}$ of $\frac{5}{8}$ reduced, will be $\frac{15}{64}$.

Addition of vulgar **FRACTIONS**.—1°, If the given *fractions* have different denominators, reduce them to the ſame. Then, add the numerators together, and under the ſum write the common denominator. Thus, *e. gr.* $\frac{2}{3}+\frac{4}{5}=\frac{10}{15}+\frac{12}{15}=1\frac{7}{15}$. And $\frac{2}{3}+\frac{1}{6}+\frac{3}{4}+\frac{48}{72}+\frac{12}{72}+\frac{54}{72}=\frac{114}{72}=1\frac{42}{72}=1\frac{7}{12}$.

2°, If compound *fractions* are given to be added, they muſt firſt be reduced to ſimple ones: and if the *fractions* be of different denominations, as $\frac{5}{8}$ of a pound, and $\frac{3}{4}$ of a ſhilling, they muſt firſt be reduced to *fractions* of the ſame denomination of pounds.

3°, *To add mixed numbers.* The integers are firſt to be added, then the fractional parts: and if their ſum be a proper *fraction*, only annex it to the ſum of the integers. If it be an improper *fraction*, reduce it to a mixed number, adding the integral part thereof to the ſum of the integers, and the fractional part after it. Thus, $5\frac{2}{3}+4\frac{1}{2}=10\frac{1}{6}$.

Subtraction of **FRACTIONS**.—1°, If they have the ſame common denominator, ſubtract the leſſer numerator from the greater, and ſet the remainder over the common denominator. Thus from $\frac{7}{12}$ take $\frac{3}{12}$, and there remains $\frac{4}{12}$.

2°, If they have not a common denominator, they muſt be reduced to *fractions* of the ſame value, having a common denominator, and then, as in the firſt rule. Thus, $\frac{5}{7}-\frac{2}{5}=\frac{25}{35}-\frac{14}{35}=\frac{11}{35}$.

3°, *To ſubtract a whole number from a mixed number, or one mixed number from another.*—Reduce the whole, or mixed numbers to improper *fractions*, and then proceed as in the firſt and ſecond rule.

Multiplication of **FRACTIONS**.—1°, If the *fractions* propoſed be both ſimple, multiply the numerators one by another for a new numerator, and the denominators for a new denominator. Thus $\frac{2}{3}$ into $\frac{4}{5}$ produces $\frac{8}{15}$.

2°, If one of them be a mixed, or whole number, it muſt be reduced to an improper *fraction*; and then proceed as in the laſt rule. Thus $\frac{5}{8}$ into $5\frac{2}{3}$, gives $\frac{85}{24}$; and $\frac{4}{9}$ into $\frac{10}{1}=\frac{40}{9}$.

In multiplication of *fractions*, obſerve that the product is leſs in value, than either the multiplicand, or multiplicator; becauſe in all multiplications, as unity is to the multiplicator, ſo is the multiplicand, to the product: or, as unity is to either factor, ſo is the other factor, to the product. But unity is bigger than either factor, if the *fractions* be proper; and therefore either of them muſt be greater than the product.

Thus in the whole numbers, if 5 be multiplied by 8, it will be as 1 : 5 : : 8 : 40; or 1 : 8 : : 5 : 40. Wherefore in *fractions*,

fractions, alſo, as $1 : \frac{3}{4} :: \frac{5}{8} : \frac{15}{32}$; or as $1 : \frac{5}{8} :: \frac{3}{4} : \frac{15}{32}$. But 1 is greater than either $\frac{3}{4}$, or $\frac{5}{8}$: wherefore either of them muſt be bigger than $\frac{15}{32}$.

Diviſion of FRACTIONS.—1°, If the *fractions* propoſed be both ſimple, multiply the denominator of the diviſor by the numerator of the dividend; the product is the numerator of the quotient: then multiply the numerator of the diviſor by the denominator of the dividend, the product is the denominator of the quotient.—Thus $\frac{3}{5})\frac{4}{9}(\frac{20}{27}$.

2°, If either dividend, diviſor, or both, be whole, or mixed, numbers, reduce them to improper *fractions*; and if they be compound *fractions*, reduce them to ſimple ones, and proceed as in the firſt rule.

In diviſions of *fractions* obſerve, that the quotient is always greater than the dividend; becauſe in all diviſion, as the diviſor is to unity, ſo is the dividend to the quotient: as if 3 divide 12, it will be, as $3 : 1 :: 12 : 4$. Now 3 is greater than 1; wherefore 12 muſt be greater than 4: but in *fractions*, as $\frac{3}{5} : 1 :: \frac{4}{9} : \frac{20}{27}$; where, $\frac{3}{5}$ is leſs than 1; wherefore $\frac{4}{9}$ muſt alſo be leſs than $\frac{20}{27}$.

FRACTIONS *in ſpecies*, or *algebraic quantities*.—1°, *To reduce* fractions *in ſpecies to their leaſt terms*.—The numerators and denominators are to be divided by the greateſt common diviſor, as in numbers.

Thus the *fraction* $\frac{aac}{bc}$ is reduced to a more ſimple one $\frac{aa}{b}$ by dividing both aac, and bc, by c: and $\frac{203}{667}$ is reduced to a more ſimple one $\frac{7}{23}$ by dividing both 203 and 667 by 29; and $\frac{203aac}{667bc}$ is reduced to $\frac{7aa}{23b}$ by dividing by $29c$. And ſo $\frac{6a^3-9acc}{6aa+3ac}$ becomes $\frac{2aa-3cc}{2a+c}$ by divideing by $3a$. And $\frac{a^3-aab+abb-b^3}{aa-ab}$ becomes $\frac{aa+bb}{a}$ by dividing by $a-b$.

2°, *To reduce* fractions *in ſpecies to a common denominator*.—The terms of each are to be multiplied by the denominator of the other.

Thus, having $\frac{a}{b}$ and $\frac{c}{d}$; multiply the terms of one $\frac{a}{b}$ by d, and alſo the terms of the other $\frac{c}{d}$ by b, and they will become $\frac{ad}{bd}$ and $\frac{bc}{bd}$, whereof the common denominator is bd. And thus a and $\frac{ab}{c}$, or $\frac{a}{1}$ and $\frac{ab}{c}$, become $\frac{ac}{c}$ and $\frac{ab}{c}$.

But where the denominators have a common diviſor, it is ſufficient to multiply them alternately by the quotients.

Thus the *fraction* $\frac{a^3}{bc}$ and $\frac{a^3}{bd}$ are reduced to theſe $\frac{a^3d}{bcd}$ and $\frac{a^3c}{bcd}$ by multiplying alternately by the quotients c and d, ariſing by the diviſion of the denominators by the common diviſor b.

Addition and ſubtraction of fractions *in ſpecies*.—The proceſs is, in all reſpects, the ſame in ſpecies as in numbers. *E. gr.*

Suppoſe it be required to add the *fractions* $\frac{a}{b}$ and $\frac{c}{d}$. Theſe, when reduced to the ſame denomination, will be $\frac{ad}{bd}$ and $\frac{bc}{bd}$; conſequently their ſum is $\frac{ad+bc}{bd}$.

So, if the *fraction* $\frac{a}{b}$ were to be ſubtracted from $\frac{c}{d}$; having reduced them, they will be $\frac{ad}{bd}$ and $\frac{bc}{bd}$, as before.

Their difference, therefore, is $\frac{bc-ad}{bd}$.

Multiplication and diviſion of fractions *in ſpecies*.—Here, too, the proceſs is perfectly the ſame as in vulgar arithmetic. Thus, *e. gr.* ſuppoſe the factors, or *fractions*, to be multiplied, $\frac{a}{b}$ and $\frac{c}{d}$: the product will be, $\frac{ac}{bd}$.

Or ſuppoſe the *fractions*, required to be divided, $\frac{ac}{bd}$ and $\frac{a}{b}$; the quotient will be, $\frac{ac}{bd}\,\frac{b}{a} = \frac{abc}{abd} = \frac{c}{d}$.

Hence, as $a = \frac{a}{1}$; the product of a into $\frac{c}{d}$, that is, of an integral quantity into a *fraction*, $\frac{c}{d}\,\frac{a}{1} = \frac{ac}{d}$. Whence it appears, that the numerator of the *fraction* is to be multiplied by the integer.

Hence, alſo, the quotient of $\frac{c}{d}$ by a, that is, of the broken quantity, divided by the whole one, $\frac{c}{d}\,\frac{1}{a} = \frac{c}{ad}$.

Beſide the common notion of a *fraction*, there is another neceſſary to be underſtood. Thus,

Suppoſe $\frac{3}{4}$ of 20*s.* or a pound ſterling, were the *fraction*: this *fraction*, inſtead of three quarters of one pound, may be conſidered as a fourth part of three pounds; that is, by taking as many of the integers as the numerator expreſſes (*viz.* 3), and dividing them by 4, the denominator; for then the quotient of the ſame value will ariſe for 4) 60*s.*(15*s.* This ſhews the reaſon of that manner of expreſſion uſed by geometers and algebraiſts, who read $\frac{a}{b}$, thus, a divided by b.

Logarithm of a FRACTION. See LOGARITHM.

Summing of infinite FRACTIONS. See CALCULUS, and FLUXIONS.

FRACTURE, in medicine and chirurgery, a breach, or rupture, of a bone; or a ſolution of continuity in a bone, when it is cruſhed, or broken, by ſome external cauſe.

In *fractures*, the bone is either broken breadth-wiſe, that is, tranſverſly; or length-wiſe; which laſt is more properly called a *fiſſure*.

Tranſverſe *fractures* are more eaſy to diſcover, but more difficult to cure, than longitudinal ones. A *fracture* in the middle of a bone is leſs dangerous than one towards the articulation. When the *fracture* is attended with a wound, contuſion, &c. or when the bone is ſhattered into ſeveral pieces, it is highly dangerous. A *fracture* of the femur in adults is rarely, if ever, ſo well cured, but there ſtill remains a lameneſs. *Fractures* of the leſſer bones are uſually cured in ſeven or fourteen days; thoſe of the greater, in twenty or forty days.

In the cure of *fractures*, the chirurgeon has two things to attend to: firſt, to reſtore the fractured bone into its natural ſituation; and then, to keep it tight with ferulæ, or ſplinters, and bandages: in which caſe, nature takes on herſelf the office of healing and conglutinating it, by forming a callus thereon.

If there be an inflammation, it muſt be cured before any thing be attempted about the *fracture*: if the bone happen to be broken again, it never breaks in the callus, but at a diſtance from it. After ſetting, or replacing, the *fractured* bone, bleeding is required, to prevent any lodgment of blood on the part aggrieved, by the violence upon the fibres.

A *fracture* of the cranium is uſually certain death, without trepanning.

Capillary FRACTURE. See the article CAPILLATION.

FRÆNUM, or FRENUM, *bridle*, in anatomy, a name given to divers ligaments, from their office in retaining and curbing the motions of the parts they are fitted to.

FRÆNUM *linguæ*, or *bridle of the tongue*, is a membranous ligament, which ties the tongue to the os hyoides, larynx, fauces, and lower-part of the mouth.

In ſome ſubjects the *frænum* runs the whole length of the tongue, to the very tip; in which caſes, if it were not cut, it would take away all poſſibility of ſpeech.

FRÆNUM *of the penis* is a ſlender ligament, whereby the prepuce is tied to the lower-part of the glans.

Nature varies in the make of this part; it being ſo ſhort in ſome, that, unleſs divided, it would not admit of perfect erection. There is alſo a kind of little *frænum*, faſtened to the lower-part of the clitoris. See CLITORIS.

FRAIGHT*, or FREIGHT, in navigation and commerce, the hire of a ſhip, or of a part of it; for the conveyance and carriage of goods from one part, or place, to another: or the ſum agreed on, between the owner and the merchant, for the hire and uſe of a veſſel.

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* The word is formed of the French *fret*, ſignifying the ſame thing; or from *fret*, of *fretum*, an arm of the ſea: though others chooſe to derive it from the German *fracht*, or the Flemiſh *vracht*, ſignifying carriage.

The *fraight* of a veſſel is uſually agreed on either at the rate of ſo much for the voyage, or by the month, or per tun.

Fraighting, or letting out of veſſels on *fraight*, or hire, is one of the principal articles in the trade of the Hollanders: they are the carriers of all the nations of Europe, and their purveyors; notwithſtanding that their country produces nothing at all, and that they are forced to have every thing neceſſary for the building of a veſſel from other countries.

The principal laws and rules relating to *fraighting* are, that if a whole veſſel be hired, and the merchant, or perſon who hires it, do not give it its full load, or burthen; the maſter of the veſſel cannot, without his conſent, take in any other goods, without accounting to him for *fraight*.

That, tho' the merchant do not load the full quantity of goods agreed on in the charter-party, yet he ſhall pay the whole *fraight*; and if he load more, he ſhall pay for the exceſs.

That the maſter may ſet aſhore ſuch goods as he finds in his veſſel, which were not notified to him; or take them at a higher rate than was agreed on for the reſt.

That if a ſhip be ſtopped or detained in its courſe, either through the maſter's, or the merchant's default, the delinquent ſhall be accountable to the other.

That if the maſter be obliged to refit his veſſel during the voyage, the merchant ſhall wait, or elſe pay the whole *fraight*: if the veſſel could not be refitted, the maſter is obliged to hire another immediately; otherwiſe only to be paid his *fraight* in proportion to the part of the voyage performed; though, in caſe the merchant prove that the veſſel at the time it ſet ſail, was not capable of the voyage, the maſter muſt loſe his *fraight*, and account for damages to the merchant.

That *fraight* ſhall be paid for merchandizes which the maſter was obliged to ſell for victuals, or refitting, or other neceſſary occaſions; paying for the goods at the rate the reſt were ſold at, where they were landed.

That in caſe of a prohibition of commerce with the country whither the veſſel is bound, ſo that it is obliged to be brought back again, the maſter ſhall only be paid *fraight* for going.

And if a ſhip be ſtopped or detained in its voyage, by an embargo by order of the prince, there ſhall neither be any *fraight* paid for the time of the detention, in caſe it be hired per month; nor ſhall the *fraight* be increaſed, if hired for the voyage; but the pay, and the victuals, of the ſailors, during the detention, ſhall be deemed average.

That the maſter ſhall take no *fraight* for any goods loſt by ſhipwreck, plundered by pirates, or taken by the enemy, unleſs the ſhip and goods be redeemed; in which caſe he ſhall be paid his *fraight* to the place where he was taken; upon contributing to the redemption.

That the maſter ſhall be paid his *fraight* for the goods ſaved from ſhipwreck; and in caſe he cannot get a veſſel to carry them unto the place where they were bound, that he ſhall be paid in proportion to the part of the voyage already gone.

That the maſter may not detain any merchandize in his veſſel, in default of payment of *fraight*; though he may order them to be ſeized any time, or any-where afterwards. That if merchandizes in caſks, as wines, oils, &c. have ſo run out in carriage, that the veſſels are left empty, or almoſt empty; the merchant may relinquiſh them, and the maſter be obliged to take them for their *fraight*; though this does not hold of any other goods damaged, or diminiſhed of themſelves, or through accidents.

Fraight is alſo uſed for the burthen, or lading of a ſhip; or the cargo of goods, &c. which ſhe has on board.

Fraight is alſo a duty of fifty ſols per tun, paid to the crown of France by the captains and maſters of all foreign veſſels at their entrance into and going out of the ports and havens of that kingdom. And note, that all veſſels not built in France, however they may belong to the ſubjects of France, are reputed foreigners, and ſubject to this impoſt; unleſs it be made appear, that two-thirds of the ſhip's crew are French.

By the 11th article of the treaty of commerce concluded at Utrecht between England and France, this duty of 50 ſols per tun was to have been remitted the Engliſh; and at the ſame time the duty of 5*s.* ſterling to have been ſuppreſſed in favour of the French: but the execution of that article, as well as the tariff ſettled between the two nations, has been ſuſpended.

The Dutch, however, and the Hans towns, are exempted from the duty of *fraight*.

FRAIL, a baſket of ruſhes, or the like matter, wherein to pack up figs, raiſins, &c.

Frail alſo denotes a certain quantity of raiſins, about ſeventy-five pounds.

FRAISE, in fortification, a kind of defence, conſiſting of pointed ſtakes, driven parallel to the horizon, into the retrenchments of a camp, a half-moon, or the like, to ſend off and prevent any approach, or ſcalade.

Fraiſes differ from paliſades chiefly in this, that the latter ſtand perpendicular to the horizon: and the former jet out parallel to the horizon, at leaſt nearly ſo; being uſually made a little ſloping, or with the points hanging down.

Fraiſes are chiefly uſed in retrenchments, and other works thrown up of earth: ſometimes they are found under the parapet of a rampart; ſerving inſtead of the cordon of ſtone uſed in ſtone works.

He fortified all the weak places of his camp with *fraiſes* and paliſades.—All the outworks of the place were *fraiſed* and paliſaded.

Fraising *of a battalion*, is the lining it all around with pikes; in caſe of being charged by a body of horſe.

FRAME, in joinery, &c. a kind of caſe, wherein a thing is ſet, or incloſed, or even ſupported; as a window *frame*, a *frame* of a picture, of a table, &c.

Frame is alſo a machine, uſed in divers arts. The printers *frame* is more uſually called a *chaſe*.

The founders *frame* is a kind of ledge, incloſing a board; which being filled with wetted ſand, ſerves as a mould to caſt their work in. See **Foundery**.

Frame is more particularly uſed for a ſort of loom, whereon artizans ſtretch their linens, ſilks, ſtuffs, &c. to be embroidered, quilted, or the like.

Frame, among painters, &c. is a kind of chaſſy, or ſquare, compoſed of four long pieces, or ſlips of wood, joined together; the intermediate ſpace whereof is divided by little ſtrings or threads, into a great number of little ſquares, like the maſhes of a net; and for that reaſon ſometimes called *reticula*.

Its uſe is in reducing of figures from great to ſmall; or augmenting their ſize from ſmall to great.

Frame *Law*. See the article **Law**.

FRAMING *of a houſe*, all the timber-work therein; *viz.* the carcaſe, flooring, partitioning, roofing, cieling, beams, aſhlering, &c.

FRAMPOLE *Fence*, a privilege enjoyed by the tenants of the manor of Writtel in Eſſex; whereby they are entitled to the wood growing on the fence; and as many trees or poles as they can reach from the top of the ditch with the helve of an ax, toward the repair of their fences.

The late chief juſtice Brampton, whilſt ſteward of this court, acknowleged he could not find out the reaſon, why theſe fences were called *frampole*.—It may come from the Saxon *fremful*, profitable; or may be a corruption of *franc-pole*, becauſe the poles are free for the tenant to take.

FRANC, ſee the article **Frank**.

FRANCHISE, a privilege, or exemption from ordinary juriſdiction.

Franchise is alſo uſed for an aſylum, or ſanctuary, where people are ſecure of their perſons, &c.

Churches and monaſteries in Spain are *franchiſes* for criminals; ſo were they antiently in England; till they were abuſed to ſuch a degree, that there was a neceſſity for aboliſhing the cuſtom.

One of the moſt remarkable capitulars made by Charlemain in his palace of Heriſtal, in 779. was that relating to the *franchiſes* of churches.—The right of *franchiſe* was held ſo ſacred, that even the leſs religious kings obſerved it to a degree of ſcrupulouſneſs: but to ſuch exceſs in time was it carried, that Charlemain reſolved to bring it down. Accordingly he forbad any proviſion being carried to criminals retired into churches for refuge.

Franchise is alſo uſed for an immunity from the ordinary tributes, and taxes.

This is either real, or perſonal; that is, either belonging immediately to the perſon; or accruing on account of this or that place, or office of immunity. See **Immunity**.

Franchise *of quarters*, is a certain ſpace, or diſtrict at Rome, wherein are the houſes of the embaſſadors of the princes of Europe; and where ſuch as retire, cannot be arreſted, or ſeized by the ſbirri, or ſerjeants, nor proſecuted at law.

The people of Rome look on this as an old uſurpation, and a ſcandalous privilege, which embaſſadors, out of a jealouſy of their power, carried to a great length in the 15th century, by enlarging inſenſibly the dependences of their palaces or houſes, within which the right of *franchiſe* was antiently confined. Several of the popes, Julius III. Pius XIV. Gregory XIII. and Sixtus V. publiſhed bulls and ordinances againſt this abuſe; which had reſcued ſo conſiderable a part of the city from their authority, and rendered it a retreat for the moſt abandoned perſons.

At length Innocent XI. expreſly refuſed to receive any more embaſſadors but ſuch as would make a formal renunciation of the *franchiſe of quarters*.

Franchise *royal*, is a place where the king's writ runs not; as at Cheſter, and Durham: and antiently at Tyndal, and Examſhire in Northumberland.

FRANCHISING, ſee **Enfranchisement**, and **Manumission**.

FRANCIGENA, or **Frenchman**, in our antient cuſtoms, was a general appellation of all foreigners; *i. e.* all perſons who could not prove themſelves Engliſhmen.

FRANGIPANE, an exquiſite kind of perfume, frequently given to the leather whereof gloves, purſes, bags, &c. are made.

It takes its name from a Roman nobleman, of the antient family of Frangipani; who was the inventor thereof.

There is alſo a kind of perfumed liquor of the ſame denomination, ſaid to have been invented by a grandſon of Mutio Frangipani; and alſo a perfumed kind of *ros ſolis*, called by the ſame name.

FRANK, or FRANC, a term literally ſignifying free, open, exempt from public impoſitions and charges: as *frank* confeſſion, *frank* fair, *frank* letter, &c.

The term *frank* is much uſed in our antient cuſtoms and tenures; where it receives various particular modifications and meanings, according to the words it is combined with; as

FRANK *alleu*, or *allodium*, is a land, tenement, or demeſne, that is not held of any ſuperior lord.

FRANK *almoin*, or *free alms*, is a tenure of lands or tenements beſtowed on God; that is, given to ſuch people as devote themſelves to the ſervice of God, in pure and perpetual alms.

Whence the feoffers, or givers, cannot demand any terreſtrial ſervice, ſo long as the lands remain in the hands of the ſeoffees.

Briton mentions another kind of this land given in alms, but not free alms; the tenants being tied in certain ſervices to the feoffer.

FRANK *bank*. See the article FREE *bench*.

FRANK *chace* denotes liberty of free chace, in a circuit adjoining to a foreſt, on account of which, men, though they have land of their own within that compaſs, are forbidden to cut down wood, without the view of the foreſter; though it be their own demeſne. See CHACE.

FRANK *fee*, *feudum francum*, as defined by Brooke, is that which is in the hands of the king, or lord of the manor; being antient demeſne of the crown.

FRANK *fee*, *feudum liberum*, according to ſome, denotes that for which no ſervice is performed to any lord.

According to Fachin, l. vii. c. 39. lands held in *frank fee* were exempted from all ſervices, except homage.

In contradiſtinction to that in the tenants hands, which is only antient demeſne.

In the reg. of writs, *frank fee* is ſaid to be that which a man holds at common law to him, and his heirs; and not by ſuch ſervice as is required in antient demeſne, according to the cuſtom of the manor.

It is added, that the land in the hands of king Edward the Confeſſor, at the making of domeſday book, is antient demeſne; and all the reſt, *frank fee*. On which footing, all the lands in the realm are either antient demeſne, or *frank fee*.

Others define *frank fee* to be a tenure in fee-ſimple, of lands pleadable at common law; and not in antient demeſne.

FRANK *ferm*, *firma libera*, is lands or tenements, wherein the nature of the fee is changed, by feoffment, from knight's ſervice, to a certain yearly ſervice; and whence neither homage, wardſhip, marriage, nor relief, may be demanded: nor any other ſervice not contained in the feoffment. See FEE *farm*.

FRANK *fold* is where the lord hath the benefit of folding his tenants ſheep, within his manor; for the manuring of his land.

FRANK *language*, or *lingua* FRANCA, is a kind of jargon, ſpoken on the Mediterranean, and particularly throughout the coaſts and ports of the Levant; compoſed of Italian, Spaniſh, French, vulgar Greek, and other languages.

The *lingua Franca* is the trading language; and is thus called from the *Franks*, a common appellation given in the Levant to all the European merchants and traders, who come thither to traffick.

In this language, if it may be ſo called, nothing but the infinitive mood of each verb is uſed; this ſerving for all the tenſes and moods of the conjugation: and yet this lame, mutilated diction, this barbarous medley, is learnt and underſtood by the merchants and mariners of all nations who repair thither.

FRANK *law*, *lex libera*, is the benefit of the free and common law of the land.

He that for any offence, as conſpiracy, &c. loſeth his *frank law*, incurs theſe inconveniencies: 1°, That he may not be impanelled on any jury or aſſize; or otherwiſe uſed as an evidence, or witneſs to the truth. 2°, That if he have any thing to do in the king's court, he muſt not approach it in perſon, but appoint his attorney. 3°, That his lands, goods, and chattels, be ſeized into the king's hands; and his lands be eſtreated, his trees rooted up, and his body committed to cuſtody.

FRANK *marriage*, *liberum maritagium*, is a tenure in tail ſpecial, whereby lands or tenements are held to a perſon and his wife, and the heirs of their bodies, on condition of doing fealty to the donor from the fourth degree.

This tenure ariſes from thoſe words in the gift: *Sciant*, &c. *me T. B. de O. dediſſe ac conceſſiſſe, & præſenti charta mea confirmâſſe, A. B. filio meo, & Mariæ uxori ejus, filiæ C. D. in* liberum maritagium *unum meſſuagium*, &c.

Fleta gives this reaſon, why the heirs do no ſervice, till the fourth degree: *ne donatores, vel eorum hæredes, per homagii receptionem a reverſione repellantur*: and why in the fourth deſcent they ſhall do ſervice to the donor, *quia in quarto gradu vehementer præſumitur quod terra eſt pro defectu hæredum donatariorum reverſura.*

Frank marriage is more clearly expreſſed, by Bracton, to be that where the donor intends, that the land thus beſtowed ſhall remain quiet, and free from all ſecular ſervice that might be affected to the fee; ſo that he who gave it, ſhall claim no manner of ſervice from it, until the third heir, and the fourth deſcent, or degree; reckoning the donee in the firſt degree, his heir in the ſecond, the heir of him in the third, and his, again, in the fourth; but afterwards the ſame land to become ſubject to all the former ſervices; as being then ſuppoſed to revert to the lord, for want of heirs.

The lands otherwiſe given in marriage, *viz. ſervitio obligatæ*, were with a reſervation of the ſervices due to the lord, which the donee, and his heirs, were bound to perform for ever: only, homage was not to commence till the fourth degree; when both ſervice and homage were to be injoined for ever.

FRANK-*pledge* ſignifies a pledge or ſurety for the behaviour of a freeman; called alſo *friburgh*.

The antient cuſtom of England, for preſervation of the public peace, was, that every free-born man, at fourteen years of age (religious perſons, clerks, knights, and their eldeſt ſons, excepted), ſhould find ſurety for his truth towards the king and his ſubjects, or elſe to be kept up in priſon.

Accordingly, a number of neighbours became interchangeably bound for each other, to ſee each man of their pledge forthcoming at all times; or to anſwer for the offence committed by any one gone away: ſo that whenever one offended, it was preſently inquired in what *pledge* he was; and then thoſe of the *pledge* either brought him forth within one-and-thirty days to his anſwer; or they ſatisfied for his offence.

This cuſtom was called *frank-pledge*; and the circuit it extended to, *decenna*, by reaſon it uſually conſiſted of ten houſholds; and every perſon thus bound for himſelf and neighbours was called a *decennier*.

In obſervance of this cuſtom, the ſheriffs at every county-court did from time to time take the oaths of young perſons, as they arrived at the age of fourteen; and ſee they were ſettled in one *decenna*, or *dozein*, or another. Whereupon this branch of the ſheriff's office and authority was called *Viſus franci plegi*, i. e. *View of frank-pledge* *.

FRANK *ſervice*. See the article SERVICE.

FRANK *tenement*. See TENEMENT, and FREEHOLD.

FRANK, or FRANC, alſo denotes an antient coin, ſtruck, and current in France; thus called from its impreſſion, which repreſented a Frenchman, ſometimes on horſeback, and ſometimes on foot.

The *frank* was either of gold or ſilver: the firſt was worth ſomewhat more than the ecu d'or, or gold crown. See CROWN. The ſecond was a third of the firſt: but theſe coins have been long diſuſed.

The term *frank*, however, is ſtill retained as the name of a money of account. In this ſenſe it is equivalent to a livre, or 20 ſols, or a third of a French crown.

Thus they ſay indifferently, a hundred *franks*, or a hundred livres.

FRANKINCENSE *, or ſimply INCENSE, an odoriferous aromatic gum, or reſin, antiently burnt in temples, as a perfume, and now uſed in pharmacy as an agglutinant and ſtrengthener.

Frankincenſe diſtils from inciſions made in a tree called *arbor thurifera*, during the heats of ſummer.—But, for all the great uſe of this gum. both in the antient religion, and the modern medicine; the tree that produces it, or even the place where the tree grows, is but little known.

The moſt common opinion has always been, that it was brought from Arabia Felix, and was found near the city of Saba; whence its epithet *Sabæum*: and yet the name *Olibanum*, which it ſometimes alſo bears, ſeems to intimate, that there are of theſe thuriferous or incenſe-bearing trees in the Holy Land near mount Lebanon. And travelers are poſitive, that there are others in the Eaſt Indies.

Nor are we leſs at a loſs as to the form or kind of the tree from which it flows. Pliny contents himſelf to ſay, that it at firſt reſembles the pear-tree; then the maſtic-tree; then the laurel; but that in reality it is a kind of turpentine-tree.

Frankincenſe is uſually divided into *male* and *female*.

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* *Omnis homo, ſive liber, ſive ſervus, aut eſt, vel debet eſſe, in* franco plegio, *aut de alicujus manupaſtu, niſi ſit aliquis itinerans de loco in locum, qui non plus ſe teneat ad unum quam ad alium, vel qui habet quod ſufficiat pro* franco plegio, *ſicut dignitatem, vel ordinem, vel liberum tenementum, vel in civitate rem immobilem*, &c. Bracton. l. iii. Tract. de Corona, c. 20.

* The word is formed from the Latin *incenſum*, burnt; as alluding to its antient uſe in temples.

The beſt *male incenſe*, *thus maſculum*, called alſo *olibanum*, is in fair, white bits, or tears, a little yellowiſh, of a bitter diſagreeable taſte; and when chewed, it promotes the flux of ſaliva.

It is called *male*, in reſpect of its tears, which are larger than thoſe of the common, or female.

That brought from the Indies is not near ſo good as that from Arabia, or mount Lebanon; it is ſometimes called *Incenſe of Mocha*; though it be not brought from that city.

It is often in a maſs, but ſometimes in looſe drops or tears; ſomewhat rediſh, and bitter to the taſte. Some ſell this for the true bdellium.

Male incenſe, or *olibanum*, is an ingredient in divers galenical and chemical preparations: it warms, dries, and binds; and is uſed not only in divers diſeaſes of the head and breaſt; but in vomitings, diarrhœas, and dyſenteries. Externally it is applied to ſtrengthen the brain, and heal wounds. Some uſe it to aſſwage the tooth-ach; but it is apt to ſpoil the good teeth.

For *female incenſe*, or *frankincenſe*, authors deſcribe it to be ſofter, and more reſinous, but of leſſer virtue, than the former.

Bark of incenſe, *cortex thuris*, is the bark of the tree whence the *incenſe* flows, which has the ſame qualities with the *incenſe* itſelf.

There is another bark brought from the Indies, called alſo *bark of incenſe*, and ſometimes *Jews incenſe*, in regard the Jews make frequent uſe thereof in their perfumes; this is the *cortex Eleutheriæ*.

Manna of incenſe is the flour or farina of *incenſe*, occaſioned by the friction of the grains againſt each other in the ſacks wherein they carry it.

There is alſo a ſoot of *incenſe*, which is a preparation of it; burnt like reſin to make lamp-black.

Frankincenſe was formerly burnt in the temples of all religions, to do honour to the divinities that were there adored. Many of the primitive Chriſtians were put to death, becauſe they would not offer *incenſe* to idols.

In the Romiſh church they ſtill retain the uſe of *incenſe* in many of their ceremonies, particularly at ſolemn funerals, beſtowing it on ſuch perſons as they would honour, as on prelates, &c. and ſometimes alſo on the people. See Supplement, article THUS.

FRANKS, FRANCS, FRANKIS, or FRANQUIS, a name which the Turks, Arabs, Greeks, &c. give to all the people of the weſtern parts of Europe.

The appellation is commonly ſuppoſed to have had its riſe in Aſia, at the time of the croiſades; when the French made the moſt conſiderable figure among the croiſſees: from which time the Turks, Saracens, Greeks, Abyſſinians, &c. uſed it as a common term for all the Chriſtians of Europe; and called Europe itſelf *Frankiſtan*.

The Arabs and Mahometans, ſays Monſ. d'Herbelot, apply the term *Franks* not only to the French (to whom the name originally belonged), but alſo to the Latins and Europeans in general.

Frank, or *Frenc*, primarily denotes a *Frenchman*; and, by extenſion, an European, or rather a Latin, by reaſon, ſays the ſame author, the French diſtinguiſhed themſelves above the other nations engaged in the holy war.

But Fa. Goar, in his notes on Codinus, cap. v. n. 43. furniſhes another origin of the appellation *Franks*, of greater antiquity than the former.—He obſerves, that the Greeks at firſt confined the name to the *Franci*, i. e. the German nations, who had ſettled themſelves in France or Gaul: but afterwards they gave the ſame name to the Apulians and Calabrians, after they had been conquered by the Normans; and at length the name was farther extended to all the Latins.

In this ſenſe is the word uſed by divers Greek writers; as Comnenus, &c. who, to diſtinguiſh the French, call them the *weſtern Franks*.

Du Cange adds, that about the time of Charlemaign, they diſtinguiſhed eaſtern France; weſtern France, Latin, or Roman France; and German France, which was the antient France, afterwards called *Franconia*.

FRATERNITY, *brotherhood*; the relation or union of brothers, friends, partners, aſſociates, &c.

FRATERNITY, in a civil ſenſe, is uſed for a gild, aſſociation, or ſociety of perſons, united into a body, for ſome common intereſt, or advantage.

For the origin, uſe, &c. of *fraternities*, ſee GILD.

FRATERNITY, in a religious ſenſe, is a ſociety of perſons meeting together to perform ſome exerciſes of devotion, or divine worſhip.

In the Romiſh church, ſuch *fraternities* are very numerous and conſiderable; being moſt of them eſtabliſhed by royal patents: as the *fraternity* of the Scapulary; of St. Francis's cord. The biſhop may hinder the eſtabliſhment of any ſuch *fraternity* in his dioceſe.

At Rome there is a *fraternity* called the *archi-fraternity*, or *grand fraternity*, under the title of *Our Lady of the Suffrages*; eſtabliſhed in favour of the ſouls in purgatory; approved and confirmed by a bull of pope Clement VIII. in 1584.

There are nine different ſorts of *fraternities*, or confrairies, in France; *viz.* 1°, Of Devotion. 2°, Of Charity, or Mercy. 3°, Of Penitents, under divers names. 4°, Of Pilgrimages. 5°, Of Merchants, to procure the divine favour on their endeavours. 6°, Of Officers of Juſtice. 7°, Of the Sufferings of Chriſt. 8°, Of Arts and Trades of divers kinds. And, 9°, Of Factions.

Fraternities, in Latin called *ſodalitates*, derive their origin from the heathens; as is ſhewn by Polydore Virgil, in his book *de Inventoribus rerum*. But the good uſe made of them by the Chriſtians has effectually purged them of any impurities derived from ſo ill a ſource.

Numa Pompilius is ſaid to have eſtabliſhed *fraternities* of all arts and trades in antient Rome; and to have preſcribed the ſacrifices each profeſſion was to perform to the patrons or tutelary gods he had aſſigned them.

FRATERNITY *of the holy Trinity*. See TRINITY.

FRATERNITY is alſo a title or quality which kings and emperors gave to each other; ſo alſo do biſhops and monks. We meet with it frequently in authors under the eaſtern empire, both Greek and Latin: the Greek term is ἀδελφότης, *fraternitas*.

FRATERNITY *of arms* was an alliance, or aſſociation in arms, antiently concluded between two knights, who thereby agreed to go together, ſhare their fortune, and mutually aſſiſt each other againſt all the world.

Bertrand du Gueſclin and Oliver Cliſſon ſwore a *fraternity* of arms in the year 1579. laying their hands on the goſpels. *Hiſt. de Bret.* T. i. p. 395.

FRATICELLI *, a ſect of heretics, who roſe in the marquiſate of Ancona, about the year 1294.

* The word is an Italian diminutive, ſignifying *fratriculi*, or little brothers; and was here uſed by reaſon they were moſt of them apoſtate monks, whom the Italians call *fratelli*, or *fraticelli*.

The founders were P. Maurato, and P. de Foſſombroni; who having obtained of pope Celeſtin V. a permiſſion to live in ſolitude, after the manner of hermits, and to obſerve the rule of St. Francis in all its rigour, ſeveral idle vagabond monks joined them; who, living after their own fancies, and makeing all perfection to conſiſt in poverty, were ſoon condemned by pope Boniface VIII. and the inquiſitors ordered to proceed againſt them as heretics. Upon this, retiring into Sicily, Peter John Oliva de Serignan had no ſooner publiſhed his comment on the Apocalypſe, than they adopted his errors.

They held the Romiſh church to be Babylon; and propoſed to eſtabliſh another far more perfect one: they maintained, that the rule of St. Francis was the evangelical rule obſerved by Jeſus Chriſt, and his apoſtles.

Some ſay they even elected a pope of their new church: at leaſt they appointed a general, with ſuperiors: and built monaſteries, &c. Beſide the opinions of Oliva, they held, that the ſacraments of the church were invalid; by reaſon thoſe who adminiſtred them, had no longer any power or juriſdiction.

They were condemned afreſh by pope John XXII.; but ſeveral of them returning into Germany, were ſheltered by the duke of Bavaria.

The *fraticelli* had divers other denominations: they were called *fraticelli*, according to ſome, by reaſon they lived in community, in imitation of the primitive Chriſtians; *dulcini*, from one of their doctors; and *biſoches*, for what reaſon we do not know.

FRATRIAGE, FRATRIAGIUM, or FRERAGE, the partition among brothers, or coheirs, coming to the ſame inheritance or ſucceſſion.

FRATRIAGE is more particularly uſed for that part of the inheritance which comes to the youngeſt brothers.

Whatever the cadets, or younger brothers, poſſeſs of the father's eſtate, they poſſeſs *ratione fratriagii*, and they are to do homage to the elder brother for it; in regard he is to do homage for the whole to the ſuperior lord.

FRATRES *arvales*. See the article ARVALES.

FRATRES *conjurati*, in our antient law-books, &c. denote ſworn brothers, or companions.

Sometimes they are alſo ſo called who were ſworn to defend the king againſt his enemies, *Leg.* W. I. *cap.* 59. *Præcipimus, ut omnes liberi homines ſint* fratres conjurati *ad monarchiam noſtram & regnum noſtrum contra inimicos pro poſſe ſuo defendendum*.

FRATRICIDE, the crime of murdering one's brother. See PARRICIDE.

Cain committed the firſt *fratricide*: and the empire of Rome began with a *fratricide*.

FRAUD, FRAUS, a ſecret underhand deceit, or injury, done to any one.

To export or import goods by *fraud*, or fraudulently, is to do it by indirect ways; in order to avoid the paying of duty, &c. if they be permitted goods; or if they be contraband goods, to avoid the penalties adjudged by the laws.

FRAY literally ſignifies to fret; as cloth or ſtuff does by rubbing, or over-much wearing.

Among hunters a deer is ſaid to *fray his head*, when he rubs it againſt a tree, to cauſe the ſkins of his new horns to come off.

FRECKLES, ſmall, duſky ſpots, ſprinkled on the ſkin of the face or hands; particularly in perſons of the faireſt ſkins, and during the hot ſeaſons, after being expoſed to the ſun and air. They are ſuppoſed to be formed of fuliginous vapours, ſtopped and coagulated in the ſkin. Vide Turner's diſcourſe of the ſkin, p. 256.

They are called in Latin *lentigines*, from their reſemblance in ſize and colour to a lentil: by the French they are called *rouſſeurs*, and *bran de Judas*; by the Italians *roſſore*, and *lentigine*.

Freckles ſeem to be only the earthy, oily, and ſaline part of the ſweat, retained in the plexus or maſhes of the ſkin. While the aqueous liquor, which was their vehicle, is evaporated by the heat of the body, theſe groſſer parts are gradually accumulated, till the maſhes are full.

Some parts of this ſweat are continually ouſing through the cuticle; and, being of a viſcid nature, they retain the dirt, duſt, *&c.* that fly about the face. This viſcid matter on the ſurface of the *freckles*, will ſtick there, notwithſtanding any repeated wipings, which rather condenſe, and preſs it into the cavities thereof, than clear it off.

They are found more about the noſe, than any-where elſe; by reaſon the ſkin is more ſtretched there, and conſequently the pores more patent, to receive the duſt, *&c.*

It follows, that there can ſcarce be any ſuch thing as an adequate remedy, or preventive, of *freckles*. Temporary ones there may be, which ſhall draw out and diſſipate what matter is already gathered: but the ſpaces will fill up again in time.

Bullocks gall, mixed with alum, and, after the alum has precipitated, expoſed three or four months to the ſun in a cloſe phial, Monſ. Homberg ſhews, is one of the beſt remedies known for *freckles*. It acts as a lixivium; and enters the pores, and dilutes and diſſolves the coagulum of the *freckles*. *Mem. de l'Academ. Royal. des Sciences, An.* 1709. p. 472, *&c.*

FREE, a term variouſly uſed; but generally in oppoſition io conſtrained, confined, or neceſſitated. See FRANK.

Thus, a man is ſaid to be *free*, who is out of priſon: and a bird is *free*, when let out of the cage: *free* from pain, *i. e.* void of pain: we ſay, a *free* air, a *free* paſſage, *&c.*

FREE, in ſpeaking of things endued with underſtanding, has a more peculiar relation to the will, and implies its being at full liberty.

The Stoics maintain, that their ſage or wiſe men alone are *free*.

FREE is alſo uſed in oppoſition to ſlave.

The moment a ſlave ſets foot on Engliſh ground, he becomes *free*. The fineſt legacy the antient Romans could leave their ſlaves, was their *freedom*.

FREE *agents*. See the articles AGENTS.

FREE *bench*, or *franc banc*, ſignifies that eſtate in copyhold-lands, which the wife hath after the deceaſe of her huſband, for her dower, according to the cuſtom of the manor.

Fitzherbert calls *free bench* a cuſtom, whereby, in certain cities, the wife ſhall have her huſband's whole lands, *&c.* for her dower.

Thus, at Orleton, in the county of Hereford, the relict of a copyhold tenant is admitted to her *free bench*, i. e. to all her huſband's copyhold land, during her life, at the next court after her huſband's death.

In the manors of Eaſt and Weſt Emborne, in Berks, if a cuſtomary tenant die, the widow ſhall have her *free bench* in all his copyhold lands, only *dum ſola & caſta fuerit*: if ſhe commit incontinency, ſhe forfeits her eſtate: but if ſhe will come into court, riding backwards on a black ram, with his tail in her hand, rehearſing a certain form of words, the ſteward is bound by the cuſtom to reſtore her to her *free bench*.

The like cuſtoms hold alſo in the manor of Chadleworth, in Berks, that of Tor in Devonſhire; and in ſome other parts of the Weſt.

FREE *bord* *, *franc bord*.—In ſome places three feet, in others more, and in others leſs, is claimed by way of *free bord*, beyond or without the fence.

FREE *chapel* is a chapel founded by the king, and by him exempted from the juriſdiction of the ordinary. See CHAPEL.

A ſubject may alſo be licenſed by the king to build ſuch a chapel; and by his charter may exempt it from the viſitation of the biſhop, *&c.*

FREE or *imperial cities* in Germany are thoſe not ſubject to any particular prince; but governed, like republics, by their own magiſtrates.

There were *free cities, liberæ civitates*, even under the antient Roman empire: ſuch were thoſe to whom the emperor, by the advice or conſent of the ſenate, gave the privilege of appointing their own magiſtrates, and governing themſelves by their own laws. See CITY.

FREE *fair*. See the article FAIR.

FREE *fee*. See the article FEE.

FREE *maſon*. See the article MASON.

FREE *port*. See the article PORT.

FREE *ſtate* is a republic governed by magiſtrates, elected by the *free* ſuffrages of the inhabitants.

FREE *ſtone*, a whitiſh ſtone, dug up in many parts of England, that works like alabaſter; but is more hard and durable; being of excellent uſe in building, *&c.*

It is a kind of the greet ſtone, but finer ſanded, and a ſmoother ſtone; and is called *free ſtone* from its being of ſuch a conſtitution as to be cut freely in any direction.

FREE *ſtool*. See the article FRIDSTOLL.

FREE *thinker*. See the article DEIST.

FREE *warren*, the power of granting or denying licence to any one to hunt in ſuch and ſuch ground.

FREE *will*. See the article WILL.

FREEBOOTER, or FLIBUSTER, a name given to the pirates, who ſcour the American ſeas; particularly ſuch as make war againſt the Spaniards.

The French call them *flibuſters*, deducing the word from the Engliſh flibote, or flybote; by reaſon the firſt adventurers of this kind were the people of S. Domingo, who made their excurſions with flybotes, which they had taken from the Engliſh. See BUCCANEER.

FREEDOM, the quality or ſtate of being *free*. See FREE.

FREEDOM *of a city, town*, &c. denotes a right or capacity of exerciſing a certain trade or employment in that city or town corporate; and of being elected to the dignities and offices thereof. It is procured regularly, by ſerving an apprenticeſhip; but ſometimes purchaſed with money; and ſometimes conferred as a favouy or compliment.

FREEDOM *of the will*, a ſtate or faculty of the mind, wherein all the motions of our will are in our own power; and we are enabled to determine on this or that; to do good or evil, without any force or conſtraint from any external cauſe whatever. See LIBERTY.

FREEDOM *of conſcience*. See LIBERTY, and TOLERATION.

The ſchoolmen diſtinguiſh two kinds of this *freedom*— viz.

FREEDOM *of contradiction*, whereby we are at our choice to will, or nill; to love, or not love, *&c.*

Thus, if I give my friend a power to take my horſe; that friend has *freedom* of contradiction with reſpect to the horſe; ſince it is in his own power either to uſe him, or let him alone.

FREEDOM *of contrariety*, or of *contraries*, is that whereby we are at our choice to do good or evil; to be virtuous or vicious.

Thus, if I offer my friend a horſe, or a lion; and give him his option of the two; he is ſaid to have a *liberty of contrariety* over the horſe and lion.

But the logicians charge this as a faulty or unartful diviſion; in regard one member of the diviſion is contained in the other, as a ſpecies in the genus: for whatever is free, in reſpect of contradiction, is alſo free in reſpect of contrariety: tho' not vice verſa: for if it be free for my friend to take the horſe, or the lion; it is alſo free for him to let them both alone: but he may be free to take one of them, without a *freedom* of chooſing which to take.

Yet is the diſtinction of ſome uſe; as it intimates, that the will is not always poſſeſſed of both kinds of *freedom*; and that the matter or ſubject of the two is different.

The will, though free, has not a liberty of contrariety: thus, any evident truth being propoſed to the mind, *e. gr.* that the whole is greater than a part, we have a power of not aſſenting thereto, by diverting our attention to ſomething elſe: but we have not a power of diſſenting from that propoſition, and judging that the whole is not greater than the part.

Hence moraliſts commonly hold, that with reſpect to the ſupreme good, mankind has a liberty of contradiction; inaſmuch as he may abſtain from the love or purſuit thereof: but he has not a liberty of contrariety, whereby to hate goodneſs.

Add, that though the human mind may have a *freedom* of contradiction with reſpect to all objects, even the ſupreme good itſelf; yet the *freedom* of contrariety is reſtrained to certain particulars, which either are, or appear to be good: the will having ſuch a natural propenſity to good, that it cannot deſire evil, but under the notion and appearance of good.

FREEDOM *of thinking*. See the article DEISM.

FREEHOLD, FRANK TENEMENT, *liberum tenementum*, is land, or tenement, which a man holds in fee-ſimple, fee-tail, or for term of life.

Freehold is of two kinds, in *deed*, and in *law*.

The firſt is the real poſſeſſion of land or tenement in fee, fee-tail, or for life: the other is the right a man has to ſuch land or tenement before his entry or ſeizure.

FREEHOLD is likewiſe extended to ſuch offices as a man holds in fee, or for life. See FEE.

FREEHOLD is alſo ſometimes taken in oppoſition to *villenage*. See VILLENAGE.

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* *Et totum boſcum, quod vocatur* brendewode, *cum* franc bordo *duorum pedum, & dimid. per circuitum illius boſci.* Mon. Ang. 2d Part, fol. 241.

Lambard obſerves, that land, in the Saxons time, was diſtinguiſhed into bockland, *i. e.* holden by book, or writing; and folkland, held without writing.

The former, he ſays, was held on far better condition, and by the better ſort of tenants; as noblemen and gentlemen; being ſuch as we now call *freehold:* the latter was moſtly in poſſeſſion of peaſants; being the ſame with what we now call *at the will of the lord.*

In the antient laws of Scotland, *freeholders* are called *milites*, knights.—In *reg. judicial.* it is expreſſed, that he who holds land upon an execution of a ſtatute merchant, until he hath ſatisfied the debt, *tenet ut liberum tenementum ſibi & aſſignatis ſuis*; and the ſame of a tenant per elegit: the meaning of which ſeems to be, not that ſuch tenants are *freeholders*; but as *freeholders* for the time, till they have received profits to the value of their debt.

FREEZE, or **Frize**, in architecture, that part of the entablature of columns, between the architrave and corniche.—See *Tab. Archit. Fig.* 24. 26. 28. 30. 32. 49. lit. e. and 26. lit. u.

The *freeze* is properly a large, flat face, or member, ſeparating the architrave from the corniche.

The antients called it *zoophorus*, ζωοφορος, by reaſon it was uſually enriched with figures of animals; and our denomination *freeze* has a like origin, being formed of the Latin *phrygio*, an embroiderer, becauſe it is commonly adorned with ſculptures in baſſo relievo, imitating embroidery.

The *freeze* is ſuppoſed to be intended to repreſent the heads of the tranſverſe beams that ſuſtain the roof or covering.

In the Tuſcan order it is quite plain: in the Doric, enriched with triglyphs: in the Ionic, it is ſometimes made arched, or ſwelling, in which caſe it is called by Vitruvius, *pulvinatus*, q. d. bolſtered: in the Corinthian, and Compoſite, it is frequently joined to the architrave, by a little ſweep; and ſometimes to the corniche. And in theſe richer orders it is uſually adorned with ſculpture, figures, compartiments, hiſtories, foliages, feſtoons, *&c.*

As to the height of the *freeze*, it is in general much the ſame with that at the architrave.—The Tuſcan *freeze*, Vitruvius makes 30 minutes; Vignola, 35; Palladio, who makes it ſwelling, gives it but 26; and Scammozzi, 42. The Doric, in Vitruvius and Vignola, is 30 or 40 minutes; in Palladio, *&c.* 45. The Ionic, Vitruvius makes flat, adorned with acanthus-leaves, lions, *&c.* and makes it 30 minutes high: Vignola, who alſo makes it flat, gives it 45 minutes; and Palladio, who makes it convex, or ſwelling, 27 minutes; and Scamozzi, 28. The Corinthian, Vitruvius enriches with acanthus-leaves, human figures, *&c.* and makes its height 37 minutes; Vignola, 45; Palladio, 28; and Scamozzi 31¾. Laſtly, the Compoſite, which in Vitruvius is ſet with cartoozes, and carved between them, is 52½ minutes; Vignola, who makes it like Vitruvius, only gives it 45 minutes; Palladio, who makes it ſwelling, only 30; and Scamozzi, 32.

From the variety of enrichments practiſed on the *freezes*, they become variouſly denominated: as

Convex, or *pulvinated* **Freezes** are thoſe whoſe profile is a curve; the beſt proportion whereof is, when drawn on the baſe of an equilateral triangle.

In ſome, the ſwelling is only at the top, as in a conſole: in others at bottom, as in a balluſter.

Flouriſhed **Freezes** are thoſe enriched with rinds, or imaginary foliages; as the Corinthian *freeze* of the frontiſpiece of Nero: or with natural leaves, either in cluſters, or garlands: or continued, as in the Ionic of the gallery of Apollo in the Louvre.

Hiſtorical **Freezes** are thoſe adorned with baſs-relievo's, repreſenting hiſtories, ſacrifices, *&c.* as that of the arch of Titus at Rome.

Marine **Freezes** are thoſe repreſenting ſea-horſes, tritons, and other attributes of the ſea; or ſhells, baths, grotto's, *&c.*

Ruſtic **Freezes** are thoſe whoſe courſes are ruſticated, or imboſſed; as the Tuſcan *freeze* of Palladio.

Symbolical **Freezes** are thoſe adorned with the attributes of religion; as the Corinthian of the temple behind the capitol at Rome, whereon are repreſented the inſtruments and apparatus of ſacrifice.

Freeze *of the capitol.* See Hypotrachelium.

Freeze, in commerce, a kind of cloth, or ſtuff. See Frize.

FREEZING, *congelation*, in phyſiology, the fixing of a fluid, or depriving it of its natural mobility, by the action of cold: or it is the act of converting a fluid ſubſtance into a firm, coherent, rigid one, called *ice.*

The Carteſians define *freezing* by the quietude or reſting of a fluid body, hardened by cold; which follows naturally enough from their notion of fluidity, where the parts are ſuppoſed to be in a continual motion.

In effect, one may pretty ſafely ſay, with ſome of thoſe philoſophers, that water only *freezes*, becauſe its parts loſe their natural motion, and adhere cloſe to each other.

The principal phænomena of **Freezing** are, 1°, That water, and all fluids, oil alone excepted, dilate in *freezing*, i. e. take more ſpace, and are ſpecifically lighter, than before.

That the bulk or dimenſions of water are increaſed by *freezing*, is matter of abundant experiment: and here it may be proper to obſerve the proceſs of nature in this alteration. A glaſs veſſel, then, BD (*Tab. Pneumatic. Fig* 20.) full of water to D, being immerged in a veſſel of water, mixed with ſalt, RSTV, the water preſently riſes from E to F; which ſeems owing to the ſudden conſtriction of the veſſel haſtily plunged into ſo cold a medium. Soon after, from the point F it continually deſcends, condenſing, till it arrives at the point G; where, for ſome time, it ſeems to remain at reſt. But it ſoon recovers itſelf, and begins to expand; riſing from G to H; and from thence, ſoon after, by one violent leap, mounts to I. And here the water in B is immediately ſeen all thick and cloudy; and, in the very inſtant of this leap, is converted into ice. Add, that while the ice is growing harder, and ſome of the water near the neck of the veſſel B is *freezing*, the flux of water is continued above I, towards D, and at length runs out of the veſſel.

2°, That they loſe not only of their ſpecific, but alſo of their abſolute gravity, by *freezing*; ſo that, when thawed again, they are found conſiderably lighter than they were before.

3°, That *frozen* water is not quite ſo tranſparent as when liquid; and that bodies do not perſpire ſo freely through it.

4°, That water, when *frozen*, evaporates almoſt as much as when fluid.

5°, That water does not *freeze* in vacuo; but neceſſarily requires the preſence and contiguity of the air.

6°, That water which has been boiled, does not *freeze* quite ſo readily as that which has not.

7°, That the water, being covered over with a ſurface of oil of olives, does not *freeze* ſo readily as without it; and that nut-oil abſolutely preſerves it under a ſtrong froſt, when olive-oil would not.

8°, That ſpirit of wine, nut-oil, and oil of turpentine, do not *freeze* at all.

9°, That the ſurface of the water, in *freezing*, appears all wrinkled; the rugæ, or wrinkles, being ſometimes in parallel lines, and ſometimes like rays, proceeding from a centre to the circumference.

The theories of **Freezing**, or the methods of accounting for theſe phænomena, are very numerous.—The great principles different authors have gone upon, are either, that ſome foreign matter is introduced within the pores of the fluid, by whoſe means it is fixed, its bulk increaſed, *&c.*

Or, that ſome matter naturally contained in the fluid, is now expelled; by the abſence whereof the body becomes fixed, *&c.*

Or, that there is ſome alteration produced in the texture or form, either of the particles of the fluid itſelf, or of ſomething contained within it.

To ſome one of theſe principles all the ſyſtems of *freezing* are reducible.

The Carteſians, who aſcribe all to the quietude of the parts of the fluid, before in motion, account for *freezing* from the receſs of the æthereal matter out of the pores of the water. The activity of that æther, or ſubtle matter, they hold to be that which gave the particles of the fluid their motion: conſequently, upon the abſence of this matter, the fluidity muſt ceaſe.

Tho' others of the ſame ſect aſcribe *freezing* to a diminution of the uſual force and efficacy of the æthereal matter, occaſioned by an alteration in the temperature of the air, whereby it is incapacitated for agitating the parts of the fluid as uſual.

The Gaſſendiſts, and other corpuſcularians, with more probability, aſcribe the *freezing* of water to the ingreſs of multitudes of cold or frigorific particles, which, entering the liquor in ſwarms, and diſperſing themſelves every way thro' it, do croud into the minuteſt parts of the water, and hinder the wonted agitation of its parts; wedging it up, as it were, into the hard and conſiſtent body of ice. And hence its increaſe of dimenſions, coldneſs, *&c.*

This intromiſſion of a foreign frigorific matter, they ſuppoſe eſſential to congelation; as that which characterizes and diſtinguiſhes it from coagulation; the latter being effected indifferently by a hot or cold mixture; but the former only by a cold one.

Of what kind theſe frigorific particles are, or how they produce their effect, is matter of debate; and has given occaſion to various ſyſtems.

Hobbes will have them to be common air, which, intruding into the water in congelation, entangles itſelf with the particles of the fluid, prevents their motion, and produces thoſe numerous bubbles obſerved in ice; thus expanding its bulk, and rendering it ſpecifically lighter: but this opinion is overturned by Mr. Boyle, who ſhews, that water will freeze in veſſels hermetically ſealed, and into which the air can have no ingreſs; and yet the bubbles will be as numerous herein as in that frozen in the open air. Add, that oil is condenſed in *freezing:* conſequently, the air cannot there be the cauſe.

Others, and thoſe the greateſt number, will have the *freezing* matter to be a ſalt; arguing, that an exceſs of cold will render water torpid; but can never congeal it, without ſal

They are ſaline particles, ſay they, and thoſe diſſolved an mixed in a due proportion, that are the chief cauſe of *freezing*; congelation bearing a near relation to cryſtallization.

This ſalt they ſuppoſe of the nitrous kind, and to be furniſhed by the air, which is generally allowed to abound in nitre. See AIR, and NITRE.

How the particles of nitre may prevent the fluidity of water, is pretty eaſily accounted for: theſe particles are ſuppoſed to be ſo many rigid, pointed ſpicula, which are eaſily driven into the ſtamina, or globules, of the water; and thus becoming variouſly mingled and entangled therewith, by degrees infeeble and deſtroy the motion thereof.

The reaſon this effect only ariſes in ſevere winter weather is, that it is then only that the retarding action of the nitrous ſpicula is more than equal to the power, or principle, whereby the fluid is otherwiſe kept in motion, or diſpoſed for motion.

This opinion is ſupported by the known experiment of artificial *freezing*.—A quantity of common ſalt, or ſaltpetre, being mixed with ſnow, or ice pulverized, and the mixture diſſolved by the fire; upon immerging a tube full of water in the ſolution, the water, or at leaſt that part of it next the mixture, preſently freezes, even in warm air. Whence it is imagined, that the ſpicula of the ſalt, by the gravity of the mixture, and of the incumbent air, are driven through the pores of the glaſs, and mixed with the water: for that it is the ſalt has the effect, is ſuppoſed evident; inaſmuch as we know, aſſuredly, that the particles of water cannot find their way through the pores of glaſs. In theſe artificial *freezings*, whatever part the mixture is applied in, there is preſently produced a ſkin, or lamina, of ice, whether at top, or bottom, or on the ſides; by reaſon there is always a ſtock of ſaline corpuſcles ſufficient to overpower the corpuſcles of fire: but natural congelations are confined to the top of the water, where the ſalt moſt abounds.

Againſt this ſyſtem the author of the *Nouvelle conjecture pour expliquer la nature de la glace*, objects, that it does not appear, that nitre always enters the compoſition of ice; but that if it did, it would come ſhort of accounting for ſome of the principal effects. For how, for inſtance, ſhould the particles of nitre, by entering the pores of water, and fixing the parts, oblige the water to dilate, and render it ſpecifically lighter? Naturally they ſhould augment its weight. This difficulty, with ſome others, ſhew the neceſſity of a new theory. That author, therefore, advances the following one, which ſeems to ſolve the phænomena in a more eaſy and ſimple manner; as not depending on the precarious admiſſion, or extruſion, of any heterogeneous matter.

Water, then, *freezes* in the winter only, becauſe its parts, being then more cloſely joined together, mutually embarraſs one another, and loſe all the motion they had: and the cauſe of this cloſer union of the water, is the air; or, more expreſly, an alteration in the ſpring and force of the air.

That there are an infinite number of particles of groſs air interſperſed among the globules of water, is abundantly evident from experiment: and that each particle of air has the virtue of a ſpring, is confeſſed: now this author argues, that the ſmall ſprings of groſs air, mixed with the water, have more force in cold winter weather, and unbend themſelves more, than at other times: hence thoſe ſprings, thus unbending themſelves on one ſide, and the external air continuing to preſs the ſurface of the water on the other; the particles of water, thus conſtringed and locked up together, muſt loſe their motion and fluidity, and form a hard conſiſtent body; till a relaxation of the ſpring of the air, from an increaſe of heat, reduce the particles to their old dimenſions, and leave room for the globules to flow again.

But this ſyſtem has its foible: even the principle on which it ſtands, may be demonſtrated to be falſe. The ſpring, or elaſticity, of the air, is not increaſed by cold, but diminiſhed. Air expands itſelf by heat, and condenſes by cold; and it is demonſtrated, in pneumatics, that the elaſtic force of expanded air, is to that of the ſame air condenſed, as its bulk, when rarefied, to its bulk condenſed.

It is ſcarce worth mentioning, that ſome authors have advanced, to account for the increaſe of bulk and diminution of ſpecific gravity of frozen water, that the aqueous particles, in their natural ſtate, were nearly cubes, and ſo filled that ſpace without the interpoſition of many pores; but that, by congelation, they are changed from cubes to ſpheres: whence a neceſſity of a deal of empty ſpace between them. Cubic particles are certainly much leſs proper to conſtitute a fluid, than ſpherical ones; and ſpherical particles leſs diſpoſed to form a fixt, than cubic ones.—Thus much the nature of fluidity and firmneſs eaſily ſuggeſts. After all, for a conſiſtent theory of *freezing*, we muſt recur either to the frigorific matter of the Corpuſcularians, conſidered under the light and advantages of the Newtonian philoſophy; or to the æthereal matter of the Carteſians, under the improvements of Monſ. Gauteron, in the *Memoires de l'Academie Royale des Sciences*, *an.* 1709.

Each of which we ſhall here ſubjoin; and leave the reader to make his choice.—For the firſt: a number of cold, ſaline corpuſcles, being introduced into the interſtices between the globules of water, may be ſo near each other, as to be within the ſpheres of one another's attractions; the conſequence of which muſt be, that they will cohere into one ſolid, or firm, body: till heat, afterwards, ſeparating them, and putting them into various motions, breaks this union, and ſeparates the particles ſo far from one another, that they get out of the diſtance of the attracting force, and into the verge of the repelling force; and then the water reaſſumes its fluid form.

For that cold and *freezing* do ariſe from ſome ſubſtance of a ſaline nature, floating in the air, ſeems probable, hence, that all ſalts, and more eminently ſome particular ones, when mixed with ſnow, or ice, do prodigiouſly increaſe the force and effects of cold: add, that all ſaline bodies do produce a ſtiffneſs and rigidity in the parts of thoſe bodies into which they enter.

Microſcopical obſervations upon ſalts manifeſt, that the figures of ſome ſalts, before they ſhoot into maſſes, are thin, double, wedge-like particles, which have abundance of ſurface with reſpect to their ſolidity (the reaſon why they ſwim in water, when once raiſed in it, though ſpecifically heavier): theſe ſmall points of the ſalt getting into the pores of the water, whereby, alſo, they are in ſome meaſure ſuſpended in the winter-time (when the heat of the ſun is not ſtrong enough to diſſolve the ſalts into a fluid, to break their points, or to keep them in perpetual motion), being leſs diſturbed, and more at liberty to approach one another; and, by ſhooting into cryſtals of the form above-mentioned, do, by their extremities, inſinuate themſelves into the minuteſt pores of the water, and, by that means, *freeze* it into a ſolid form.

Farther, there are many little volumes, or particles, of air, included at ſeveral diſtances, both in the pores of the watery particles, and in the interſtices left by the ſpherical figures. By the inſinuation of the ſaline cryſtals, the volumes of air are driven out of the watery particles, and many of them uniting, form larger volumes, which thereby have a greater force to expand themſelves, than when diſperſed; and ſo both enlarge the dimenſions, and leſſen the ſpecific gravity of the water, thus congealed into ice.

Hence, alſo, we may conceive how water, impregnated with ſalts, ſulphurs, or earths, which are not eaſily diſſolvable, may form itſelf into metals, minerals, bitumens, and other foſſils; the parts of theſe mixtures becoming a cement to the particles of water; or, getting into their pores, change them into theſe different ſubſtances.

For the ſecond: as an æthereal matter, or medium, is generally allowed the cauſe of the motion of fluids; and as the air itſelf has all its motion from the ſame principle; it follows, that all fluids muſt remain in a ſtate of reſt, or fixity, when this matter loſes of its neceſſary force: of conſequence, the air, being leſs warmed in the winter-time, from the obliquity of the rays of the ſun, is denſer, and more fixed, in winter, than any other ſeaſon of the year.

But, farther, from divers experiments we have learned, that the air contains a ſalt, ſuppoſed to be of the nature of nitre: this granted, and the denſity of the air allowed, it follows, that the molecules of this nitre muſt likewiſe be brought nearer together, and thickened, by the condenſation of the air; as, on the contrary, a rarefaction of the air, and an augmentation of its fluidity, muſt divide and ſeparate them.

If, now, the ſame thing happen to all liquors that have imbibed or diſſolved any ſalt; if the warmth of the liquid keep the ſalt exactly divided; and if the coolneſs of a cellar, or of ice, give occaſion to the molecules of the diſſolved ſalt to approach, run into each other, and ſhoot into cryſtals; why ſhould the air, which is allowed a fluid, be exempt from the general law of fluids?

It is true, the nitre, or the air, being groſſer in cold weather than hot, muſt have leſs velocity; but ſtill, the product of its augmented maſs, into the velocity remaining, will give it a greater momentum, or quantity of motion: nor is any thing farther required to make this ſalt act with greater force againſt the parts of fluids; and, probably, this is the cauſe of the great evaporation in froſty weather.

This aerial nitre muſt promote the concretion of liquids: for it is not the air, nor yet the nitre it contains, that gives the motion to fluids; it is the æthereal medium. From a diminution of the force of that, therefore, ariſes a diminution of the motion of the reſt.

Now the æthereal matter being weak enough of itſelf, in the winter-time, muſt loſe ſtill more of its force by its action againſt air condenſed, and loaded with large molecules of ſalt: it muſt, therefore, loſe of its force in cold weather, and become leſs diſpoſed to maintain the motion of fluids. In a word, the air, during froſt, may be eſteemed like the ice impregnated with ſalt, wherewith we ice our liquors in ſummer time. Thoſe liquors, in all probability, *freeze*, from a diminution of the motion of the æthereal medium, by its acting againſt the ice and ſalt together; and the air, for all its ſcorching heat, is not able to prevent its concretion.

Freezing *mixture*, a preparation for the artificial congelation of water, and other liquors.

All kinds of ſalts, whether alcaliſate, or acid; and even all ſpirits, as thoſe of wines, *&c.* as alſo ſugar, and ſaccharum Saturni, mixed with ſnow, are capable of *freezing* moſt fluids; and the ſame effect is produced, in a very great degree, by a mixtion of oil of vitriol, or ſpirit of nitre, with ſnow. Thus Mr. Boyle.

Monſ. Homberg obſerves the ſame of equal quantities of corroſive ſublimate, and ſal armoniac, with four times the quantity of diſtilled vinegar.

Freezing *rain*, or *raining ice*, a very uncommon kind of ſhower, which fell, in the weſt of England, in December *anno* 1672. whereof we have divers accounts in the *Philoſophical Tranſactions*.

This rain, as ſoon as it touched any thing above-ground, as a bough, or the like, immediately ſettled into ice; and, by multiplying and enlarging the icicles, it broke all down with its weight. The rain that fell on the ſnow, immediately *froze* into ice, without ſinking in the ſnow at all.

It made an incredible deſtruction of trees, beyond any thing in all hiſtory: "had it concluded with ſome guſt of wind," ſays a gentleman on the ſpot, "it might have been of terrible "conſequence."

"The ſprig of an aſh-tree, of juſt three quarters of a pound, "being weighed, the ice thereon weighed ſixteen pounds.—"Some were frighted with the noiſe in the air; till they diſ"cerned it was the clatter of icy boughs daſhed againſt each "other." Dr. Beale obſerves, that there was no conſiderable froſt obſerved on the ground during the whole: whence he concludes, that a froſt may be very fierce, and dangerous, on the tops of ſome hills; while, in other places, it keeps at two, three, or four, feet diſtance above the ground, rivers, lakes, *&c.* and may wander about, very furiouſly, in ſome places; and remiſs in others, not far off. This froſt was followed by glowing heats, and a wonderful forwardneſs of flowers and fruits.

Freezing, in commerce and manufactures. See **Frising**.

FREEZELAND, Friezeland, or **Frizeland**, *horſe*, in war, the ſame with *cheval de friſe*. See **Cheval** *de friſe*.

FREGIT *clauſum*. See the article **Clausum**.

FREIGHT. See the article **Fraight**.

FRENCH, François, abſolutely uſed, ſignifies the language of the people of France.

The *French*, as it now ſtands, is no original, or mother-language, but a medley of ſeveral: there is ſcarce any language, but it has borrowed words, or perhaps phraſes, from.

The languages that prevail moſt, and that are, as it were, the baſis thereof, are, 1°, The Celtic; whether that were a particular language itſelf, or whether it were only a dialect of the Gothic, as ſpoke in the weſt and north. 2°, The Latin, which the Romans carried with them into the Gauls, when they made the conqueſt thereof. And, 3°, The Teutonic, or that dialect of the Teutonic ſpoke by the Franks, when they paſſed the Rhine, and eſtabliſhed themſelves in the Gauls.

Of theſe three languages, in the ſpace of about thirteen hundred years, was the preſent *French* formed, ſuch as it is now found.

Its progreſs was very ſlow; and both the Italian and Spaniſh were regular languages long before the *French*.

Paſquier obſerves, it was under Philip de Valois, that the *French* tongue firſt began to be poliſhed: and that, in the regiſter of the chamber of accounts of that time, there is a purity ſeen almoſt equal to that of the preſent age.

However, the *French* was ſtill a very imperfect language till the reign of Francis I. the cuſtom of ſpeaking Latin at the bar, and of writing the public acts and inſtruments of the courts of juſtice in that language, had made them overlook the *French*, their own language. Add, that the preceding ages had been remarkable for their ignorance, which was owing, in good meaſure, to the long and calamitous wars which France had been engaged in: whence, the *French* nobleſſe deemed it a kind of merit, not to know any thing; and the generals regarded little, whether or no they wrote and talked politely, provided they could but fight well.

But Francis I. who was the reſtorer of learning, and the father of the learned, changed the face of things; and, after his time, Henry Stevens printed his book, *De la Precellence du Langage François*.

The change was become very conſpicuous at the end of the 16th century; and under Henry IV. Amyot, Coeffeteau, and Malherbe, contributed towards bringing it to its perfection; which the cardinal De Richelieu compleated, by the eſtabliſhment of the *French* Academy; an aſſembly, wherein the moſt diſtinguiſhed perſons of the church, the ſword, and the gown, have been members.

Nor did the long reign of Louis XIV. contribute a little to the improvement of the language: the perſonal qualities of that prince, and his taſte for the polite arts, and that of the princes of the blood, rendered his court the politeſt in Europe. Wit and magnificence ſeemed to vie; and his generals might have diſputed with the Greeks, Romans, *&c.* the glory of writing well, if they could not that of fighting.

From court, the elegance and purity of the language ſoon ſpread itſelf into the provinces; and now there is ſcarce any body there but writes and ſpeaks good *French*.

One of the characters of the *French* language is, to be natural and eaſy. The words are ranged in it much in the ſame order as the ideas in our minds; in which it differs exceedingly from the Greek and Latin, where the inverſion of the natural order of words is reputed a beauty.—Indeed the Hebrew ſurpaſſes even the *French*, in this point; but then it comes ſhort of it in copiouſneſs and variety.

It muſt be added, however, that as to the analogy of grammar, and the ſimplicity wherewith the moods of verbs are formed; the Engliſh has the advantage, not only over the *French*, but over all the known languages in the world: but then the turns, the expreſſions, and the idioms, of the Engliſh, are ſometimes ſo quaint, and extraordinary, that it loſes a good deal of the advantage which its grammatical ſimplicity gives it over the reſt.

The *French* has but few compound words; wherein it differs widely from the Greek, High Dutch, and Engliſh. This the *French* authors own a great diſadvantage in their language; the Greek and Dutch deriving a great part of their force and energy from the compoſition of words, and frequently expreſſing that in one ſounding word, which the *French* cannot expreſs but by a periphraſis. The diminutives in the *French* are as few as the compounds; the greateſt part of thoſe remaining in uſe having loſt their diminutive ſignification: but what diſtinguiſhes the *French* moſt is, its juſtneſs, purity, accuracy, and flexibility.

French is the moſt univerſal and extenſive language in Europe. The policy of ſtates and courts has rendered it neceſſary for the miniſters of princes, and their officers, *&c.* and the taſte of arts and ſciences has had the ſame effect, with regard to the learned.

In Germany, and elſewhere, the princeſſes and perſons of diſtinction value themſelves on underſtanding *French*; and in ſeveral courts of Europe, *French* is almoſt as much known as the language of the country: though the court of Vienna is an exception from this rule. *French* is there very little uſed; the emperor Leopold could not bear to hear it ſpoke in his court: the Latin and Italian are there cultivated inſtead of it. This extenſiveneſs of the *French* language is no modern advantage: William the Conqueror gave laws to England in the *French* language; and the antient cuſtoms of moſt of the provinces of the Netherlands are wrote in the ſame.

Laſtly, the *French* is the ſame language every-where; not only in all the provinces of France, but in all the places where it is ſpoken, out of France.

The ſeveral nations who ſpeak Sclavonic, do not ſo much ſpeak the ſame language, as different dialects of the ſame language. In ſeveral parts of Europe there are as many different languages, as there are ſtates; and in Italy there are reckoned no fewer than ten or twelve dialects, ſome of which differ as much from the common Italian, as from the *French*, or Spaniſh. In Holland, the ſeamen of Rotterdam, and the banks of the Meuſe, do not underſtand thoſe of Amſterdam, and the coaſts of the Zuyder Zee. They who underſtand Caſtilian, will not underſtand the language of Catalonia and Cerdana. The High Dutch is not the ſame in Sweden, as in Jutland: in the Low Countries, as at Lubeck. Bohemia, Hungary, Croatia, *&c.* are countries belonging to the emperor; yet they have a language different from that ſpoken at Vienna. The king of Sweden, when he ſpeaks the language of his country, will not be underſtood by his ſubjects in Pomerania, Lapland, *&c.* and the like may be obſerved of the king of Denmark, with regard to his ſubjects of Norway, and Iceland: whereas, at Quebec, the Louiſiania, Martinico, St. Domingo, Pondicheri, *&c.* they ſpeak the ſame language as at Paris, and throughout the reſt of France.

For a critical acquaintance with what regards the *French* tongue, ſee the *Remarques* of M. Vaugelas; and the *Obſervations* M. Corneille has made on thoſe remarks: the *Remarques* of Fa. Bouhours; and the *Doubts of a Bas-Breton* gentleman, by the ſame father: the *Converſations of Ariſte and Eugene*: the *Obſervations* of M. Menage, and his *Etymologies*; with thoſe of M. Huet: Fa. Buffier's *French grammar*; and that of the Abbé Regnier. Add, the two diſcourſes of the Abbé de Dangeau; one on the vowels, and the other on the conſonants, and many later works.

French *bread*, a ſort of bread valued for its lightneſs, and delicacy.

It is prepared by taking half a buſhel of fine flour to ten eggs, and a pound and half of freſh butter; and into that putting as much yeſt with a manchet.—Then, tempering the whole maſs with new milk, pretty hot, let it remain half an hour to riſe: which done, make it into loaves, or rolls, and waſh it over with an egg, beaten with milk. The oven is not to be too hot. See **Baking**.

French *character*.	See	**Character.**
French *coins*.		**Coins.**
French *companies*.		**Company.**
French *crown*.		**Crown.**
French *man*.		**Francigena**, and **Englicery.**
French *meaſures*.		**Measures.**
French *money*.		**Money.**
French *order*.		**Order.**
French *padſaddle*.		**Saddle.**
French *pox*.		**Pox.**
French *ſilks*.		**Silks.**
French *weights*.		**Weights.**
French *wines*, duty on.		**Duty.**
Frenk.		**Frank.**

FRENUM, or Frænum, ſee Frænum.

FRENZY, and Frenetic, ſee Phrenzy, and Phrenetic.

FRESCO, a kind of painting performed on *freſh* plaiſter, or on a wall laid with morter not yet dry; and with water-colours.

This ſort of painting has a great advantage; by its incorporating with the morter, and drying along with it, it is rendered extremely durable; and never fails or falls, but along with it. The Italians, from whom we borrow the term, call it *freſco*: Vitruvius, lib. vii. c. 4. calls it *Udo Tectorio.*

Painting *in freſco* is very antient; having been practiſed in the earlieſt ages of Greece, and Rome.—It is chiefly performed on walls and vaults, newly plaiſtered with lime and ſand: but the plaiſter is only to be laid, in proportion as the painting goes on; no more being to be done at once, than the painter can diſpatch in a day, while it dries.

Before he begins to paint, a cartoon or deſign is uſually made on paper, to be calked, and transferred to the wall, about half an hour after the plaiſter is applied.

The antients painted on ſtucco; and we may remark in Vitruvius, what infinite care they took in making the incruſtation or plaiſtering of their buildings to render them beautiful and laſting: though the modern painters find a plaiſter made of lime and ſand preferable thereto; both as it does not dry ſo haſtily; and as being a little browniſh, it is fitter to lay colours on, than a ground ſo white as ſtucco.

In this kind of painting, all the compound and artificial colours, and almoſt all the minerals, are ſet aſide; and ſcarce any thing is uſed but earths; which are capable of preſerving their colour, defending it from the burning of the lime, and reſiſting its ſalt, which Vitruvius calls its bitterneſs.

For the work to come out in all its beauty; the colours muſt be laid on quick, while the plaiſter is yet moiſt: nor ſhould they ever be retouched, dry, with colours mixed up with the white of an egg, or ſize, or gum, as ſome workmen do; by reaſon ſuch colours grow blackiſh: nor do any preſerve themſelves, but only ſuch as were laid on haſtily at firſt.

The colours uſed, are white made of lime ſlacked long before, and white marble duſt; oker, both red, and yellow; verditer; lapis lazuli; ſmalt; black chalk, &c. All which are only ground, and worked up with water; and moſt of them grow brighter and brighter, as the *freſco* dries.

FRESH *Fine*, is that which was levied within a year paſt. Weſtm. 2. c. 45. See Fine.

Fresh *Force*, *Friſca Fortia*, in law, denotes a force done within forty days.

If a man be diſſeiſed of lands or tenements, within any city or borough; or deforced from them after the death of his anceſtors, to whom he is heir; or after the death of his tenant for life, or in tail; he may, within forty days after his title accrued, have his remedy by an aſſize, or bill of *freſh force*.

Fresh *Shot*, in the ſea-phraſe, ſignifies the falling down of any great river, into the ſea; by means whereof the ſea hath *freſh* water a good way from the mouth of the river.—As this is more or leſs, they call it a *great*, or *ſmall freſh ſhot*.

Fresh *Spell*, in the ſea-language, a freſh gang, to relieve the rowers in the long-boat.

Fresh *Suite*, *recens inſecutio*, is ſuch a preſent and active proſecution of an offender, where a robbery is committed, as never ceaſes, from the time of the offence committed, or diſcovered, till he be apprehended.

The benefit of ſuch purſuit of a felon is, that the party purſuing ſhall have his goods reſtored to him; whereas otherwiſe they are the king's.

Freſh ſuit is either within the view, or without. Manwood ſays, that upon *freſh ſuit* within the view, treſpaſſers in the foreſt may be attached by the officers purſuing them, though without the limits of the foreſt.—*Freſh ſuit* may continue for ſeven years.

Fresh *Water*, is that not tinctured or impregnated with ſalt, or ſaline particles, enough to be diſcoverable by the ſenſe. Such generally is that of ſprings, rains, wells, lakes, &c.

Dr. Liſter is of opinion, that the natural and original ſtate of water is to be ſalt: the *freſhneſs* he ſuppoſes to be accidental, and to be owing to the vapours of plants, and the breath of animals therein; and to the exhalations raiſed by the ſun.

Others will have all water originally *freſh*, and take its ſaltneſs to be accidental: to account for which, a great number of hypotheſes have been framed.

The ſaltneſs of water is a foreign, and in moſt caſes a hurtful quality. It renders it not only nauſeous to the taſte, but greatly prejudicial to the body: and it is generally agreed, that thoſe waters, *cæteris paribus*, are beſt, not only for drinking, but alſo for œconomical uſes, as waſhing, boiling, and brewing, which are the freeſt from ſaltneſs.

Hence, various methods have been contrived for examining the *freſhneſs* of waters; and of dulcifying or making ſalt water *freſh*.

Mr. Boyle gives us a method of examining the *freſhneſs* of water, by means of a precipitate, which caſts down any ſaline particles before floating therein. Into one thouſand grains of diſtilled water he puts one grain of ſalt; and into the ſolution lets fall a few drops of a ſtrong well filtrated ſolution of a well refined ſilver, diſſolved in clear aqua fortis; upon which there immediately appears a whitiſh cloud, which, though but ſlowly, deſcends to the bottom, and there ſettles in a white precipitate, in which is the ſaline matter of the fluid.

This method, if it were required, would examine water to a greater nicety, than that here ſpecified. It has diſcovered ſalt in water, where there was but one grain of ſalt in two thouſand, nay in three thouſand times the weight of water.

The experiment was tried before the Royal Society, in 1692. by Sir Hans Sloan; where it was likewiſe found that a drop or two, even of ſpirit of ſalt, mixed with common water, would be diſcovered by the ſame method.

Dr. Hook, in the ſame year, read a lecture before the Royal Society, on a method of his own, for diſcovering the ſmalleſt quantity of ſalt contained in water, on a principle of hydroſtatics. The operation was performed by means of a large poiſe of glaſs, of the ſhape of a bolt-head; the ball thereof was three inches in diameter, and the neck $\frac{1}{24}$ of an inch. This being ſo poiſed, with red lead put in it, as to make it very little heavier than *freſh* water; and then ſuſpended by the ſmall ſtem, which was graduated, to the end of a nice beam of a balance; and the degree or diviſion of the neck, contiguous to the ſurface of the water, noted; upon infuſing a quantity of ſalt, only equal to the two thouſandth part of the weight of the water, the neck of the poiſe ſunk near half an inch lower in the water.

The dulcifying, or making of ſalt water *freſh*, is a ſecret, that has been long ſought with great attention.—Dr. Liſter takes the moſt eaſy, ſafe, and natural way of procuring *freſh* water from the ſea, to be by putting ſea-plants, as alga marina, or common ſea-weed, into a quantity of the water, in a glaſs body, with a head, beak, and receiver: from which a *freſh*, ſweet, and potable liquor will continually diſtil.

Monſ. Hauton has alſo at length declared his ſecret of makeing ſea-water *freſh*.—It conſiſts, firſt, in a precipitation, made with oil of tartar, which he can prepare at a ſmall expence. Next he diſtils the ſea-water, with a furnace contrived to take up little room, and which, with a very little fire, will diſtil twenty-four French quarts of water in a day. For the cooling thereof, inſtead of making the worm paſs through a veſſel full of water, he makes it paſs through a hole made on purpoſe out of the ſhip, and enter it again at another; ſo that the ſea-water does the office of a refrigeratory. To the two preceding operations he joins filtration, which is performed by a peculiar kind of earth, mixed and ſtirred with the diſtilled water; and at length ſuffered to ſettle. This filtration, he ſays, finally leaves it perfectly ſalubrious. *Phil. Tranſact.* N° 67.

FRET, or Frett, in architecture, a kind of knot, or ornament, conſiſting of two liſts, or fillets, variouſly interlaced, or woven; and running at parallel diſtances, equal to their breadth. See *Tab. Archit. fig.* 55.

A neceſſary condition of theſe *frets* is, that every return, and interſection, be at right angles. This is ſo indiſpenſable, that they have no beauty without it; but become perfectly gothic.

Sometimes the *fret* conſiſts but of a ſingle fillet; which, if well managed, may be made to fill its ſpace exceedingly well.

The antients made great uſe of theſe *frets*: the places they were chiefly applied on, were even, flat members, or parts of building; as the faces of the corona, and eves of cornices; under the roofs, foffits, &c. on the plinths of baſes, &c.

The appellation was occaſioned hence, that the French word *frette* literally ſignified the timber-work of a roof, which conſiſts chiefly of beams, rafters, &c. laid acroſs each other, and, as it were, *fretted*.

Fret *, or Frette, in heraldry, is a bearing conſiſting of ſix bars, croſſed, and interlaced, *fret-wiſe*: as in *Tab. Herald. fig.* 39.

He bears diamond a *fret* topaz: the coat armour formerly of the lord Maltrevers, and now quartered by the duke of Norfolk. When it conſiſts of more than ſix pieces, the number muſt be ſpecified.

Some call this the *true lovers knot*; others *Harrington's knot*, becauſe it is their arms; and *Nodo firmo* the motto.

Gibbon is for calling it *Heraldorum nodus amatorius.*

FRETTY, or Frette, in heraldry, is where there are divers bars laid acroſs each other.

Fretty is of ſix, eight, or more pieces. Azure, *fretty* of eight pieces, or, the coat of the lord Willoughby.

Columbiere obſerves, that *fretty*, abſolutely uſed, without any addition, is ſuppoſed to be of ſix pieces; that is, ſo many bars, or pieces, croſſing each other: which, therefore, need not be expreſſed; but if there be more, as much muſt be mentioned. And yet Guillim has azure, *fretty* of ſix, argent: the coat of the antient lords Elthingham of Suſſex.

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* Guillim derives the word from the French *rets*, net: but the reader will eaſily furniſh himſelf with a better etymology from the word *fret*, in architecture.

FRET-WORK, an enrichment of *frets*; or a place adorned with ſomething in manner thereof. See FRET.

Fret-work is ſometimes uſed, among us, to fill up and enrich flat, empty ſpaces; but it is principally practiſed in roofs, which are *fretted* over with plaſter-work.

The Italians, alſo, apply it to the mantlings of chimneys with great figures: a cheap piece of magnificence, and as durable almoſt within-doors, as harder matters in the weather.

FRIABLE is applied to bodies, to denote them tender and brittle; eaſily crumbled, or reduced, to powder between the fingers: their force of coheſion being ſuch as eaſily expoſes them to ſuch ſolution. Such are pumice, and all calcined ſtones, burnt alum, &c.

Friability is ſuppoſed to ariſe hence, that the body conſiſts wholly of dry parts, irregularly combined, and which are readily ſeparated, as having nothing unctuous, or glutinous, to bind them together.

FRIAR, or **FRIER**, by the Latins called *frater*, the Italians *fra*, and the French *frere*, that is, *brother*; is a term common to the monks of all orders: founded on this, that there is a kind of fraternity, or brotherhood, preſumed between the ſeveral religious perſons of the ſame convent, or monaſtery.

The kinds of *friars* are very numerous: Auguſtine *friars*; Dominican, or black, or preaching, *friars*; Franciſcan, or grey, or minor, or begging, *friars*; and Carmelites, or white *friars*.

FRIAR, in a more peculiar ſenſe, is reſtrained to ſuch monks as are not prieſts; for thoſe in orders are uſually dignified with the appellation of *father*. See FATHER.

FRIARS, or **FRIERS** *obſervant*, *fratres obſervantes*, were a branch of the Franciſcans; thus called, becauſe not combined together in any cloyſter, convent, or corporation, as the conventuals are; but only agreed among themſelves to *obſerve* the rules of their order, and that more ſtrictly than the conventuals did; from whom they ſeparated themſelves out of a ſingularity of zeal; living in certain places of their own chooſing.

FRIARY *of the holy Trinity*. See the article TRINITY.

FRIBURGH *, **FRIDBURGH**, or **FRITHEBORG**, among our Anglo-Saxon anceſtors, denoted the ſame as frank-pledge did after the time of the conqueſt.

* *Præterea eſt quædam ſumma & maxima ſecuritas, per quam omnes ſtatu firmiſſimo ſuſtinentur*; viz. *ut unuſquiſque ſtabiliat ſe ſub fidejuſſionis ſecuritate, quam Angli vocant* freoborghes: *ſoli tamen Eboracenſes dicunt eandem* tienmannatale, *quod ſonat Latine decem hominum numerum.* LL. Edv. II. ap. Lamb.

Every man in this kingdom was antiently aſſociated in ſome decennary, or company of ten families, who were pledged, or bound, for each other, to keep the peace, and obſerve the law. See TITHING.—If any offence was done by one, the other nine were to anſwer it; that is, if the criminal fled from juſtice, they had thirty days allowed to apprehend him: if he was not taken in that time, he who was the *friburgh*, *i. e.* the principal pledge of the ten, ſhould take two of his own number, and the chief pledges of three neighbouring *friburghs*, with two others out of each of the ſaid *friburghs*; who were to purge themſelves, and their *friburgh*, of the forfeiture and flight of the criminal. If they could not do this, the principal pledge, with the other eight, were to make ſatisfaction.

Great men were not combined in any ordinary decenna, or dozein; as being deemed a ſufficient aſſurance for themſelves and their menial ſervants.

FRICASSEE *, a diſh, or meſs, haſtily dreſſed in a frying-pan, and ſeaſoned with butter, oil, or the like.

* The word is French; formed of the Latin *frixatura*, frying. Others will have *fricaſſee* formed in imitation of the noiſe made by butter, or other fat, when melted in the pan.

We ſay, a *fricaſſee* of pullets, of rabbets, of tench, of tripe, of frogs, of eggs, of peas, &c.

FRICTION, the act of rubbing, or grating, the ſurface of one body againſt that of another; called, alſo, *attrition*.

The phænomena ariſing upon the *friction* of divers bodies, under different circumſtances, are very numerous, and conſiderable.

Mr. Hawkſbee gives us a number of experiments of this kind: particularly of the attrition, or *friction*, of glaſs, under various circumſtances; the reſult of which was, that it yielded light, and became electrical.

All bodies by *friction* are brought to conceive heat; many of them to emit light; particularly, a cat's back, ſugar, beaten ſulphur, mercury, ſea-water, gold, copper, &c. but, above all, diamonds; which, when briſkly rubbed againſt glaſs, gold, or the like, yield a light equal to that of a live coal, when blowed by the bellows.

FRICTION, in mechanics, denotes the reſiſtance a moving body meets withal from the ſurface whereon it moves.

Friction ariſes from the roughneſs or aſperity of the ſurface of the body moved on, and that of the body moving. For ſuch ſurfaces conſiſting alternately of eminences, and cavities; either the eminences of the one muſt be raiſed over thoſe of the other; or they muſt be both broke, and worn off: but neither can happen without motion; nor can motion be produced without a force impreſſed. Hence, the force applied to move the body, is either wholly, or partly, ſpent on this effect; and conſequently there ariſes a reſiſtance, or *friction*; which will be greater, *cæteris paribus*, as the eminences are the greater, and the ſubſtance the harder. And as the body, by continual *friction*, grows more and more polite, the *friction* diminiſhes.

Hence it follows, that the ſurfaces of the parts of machines that touch each other, ſhould be as ſmooth and poliſhed as poſſible. But, as no body can be ſo much poliſhed, as quite to take away all inequality; witneſs thoſe numerous ridges diſcovered by the microſcope on the ſmootheſt ſurfaces; hence ariſes the neceſſity of anointing the parts that touch, with oil, or ſome other fatty matter.

Laws of FRICTION. 1°, As the weight of a body moving on another, is increaſed, ſo is the *friction*.

This we ſee experimentally in a balance; which, when only charged with a ſmall weight, eaſily turns; but with a greater, a greater force is required.

Hence, if the line of direction of a moving body be oblique to the ſurface moved on, the *friction* is the greater; this having the ſame effect as an increaſe of weight.

And hence, again, as a perpendicular ſtroke, or impreſſion, is to an oblique one; as the whole ſine, to the ſine of the angle of incidence; and the ſine of a greater angle is greater, and that of a leſſer leſs; the *friction* is the greater, as the line of direction approaches nearer to a perpendicular.

This is eaſily obſervable, and eſpecially in the teeth of wheels, which are frequently broke on this very account. The *friction*, therefore, is taken away, if the line of direction of the moving body be parallel to the ſurface.

2°, The *friction* is leſs in a body that rolls, than it would be, were the ſame body to ſlide, as is eaſily demonſtrated.

For ſuppoſe a dented ruler, AB, *Tab. Mechanics*, *fig.* 38. and ſuppoſe a wheel DE to move along with it, with its teeth perpendicular to the circumference; if now the body were to ſlide, the tooth F, when it touched the ruler, would deſcribe a right line on the ſurface thereof: and, as the tooth of the ruler, H, reſiſts the ſame; it could not proceed without removing, or breaking either the tooth H, or that F. And the ſame will hold in the ſliding of any rough ſurface upon another; where all the *friction* will take place, that can any way ariſe from the roughneſs of the ſurface. But if the wheel ED roll along the ruler, then the tooth H will no longer reſiſt its motion, only as it is to be hoiſted out of the cavity F over the eminence of the tooth H: and the ſame holds in the rubbing of any rough body over the ſurface of another.

Hence, in machines, leſt the *friction* ſhould employ a great part of the power; care is to be taken, that no part of the machine ſlide along another, if it can be avoided: but rather that they roll, or turn upon each other. With this view it may be proper to lay the axes of cylinders, not, as is uſually done, in a groove, or concave matrix; but between little wheels, AB CD, *fig.* 39. moveable on their reſpective axes. This was long ago recommended by P. Caſabus; and experience confirms, that we ſave a deal of power by it. Hence alſo it is, that a pulley moveable on its axis reſiſts leſs than if it were fixed. And the ſame may be obſerved of the wheels of coaches, and other carriages.

From theſe principles, with a little further help from the higher geometry, Olaus Roemer determined the figure of the teeth of wheels, that ſhould make the leaſt reſiſtance poſſible; and which ſhould be epicycloidal. And the ſame was afterwards demonſtrated by De la Hire; though, which is much to be lamented, the thing is not yet taken into practice.

Hence, in ſawing-mills, the ſides of the wooden rectangle the ſaws are fitted into, ſhould be furniſhed with rotulæ, or little wheels; which would greatly leſſen the *friction*; and the like in other caſes.

Calculation of the quantity of FRICTION. The *friction* is a point of the utmoſt importance in machines; and by all means to be conſidered, in calculating the force thereof: yet it is generally overlooked in ſuch calculations: but this is principally, by reaſon its preciſe value is not known.

It is not yet reduced to certain and infallible rules: the common method is, barely to compute the advantage, which a moving power has from the machine; either on account of its diſtance from a fixed point; or of the direction in which it acts. And in all the demonſtrations it is ſuppoſed, that the ſurfaces of bodies are perfectly ſmooth and poliſhed. Indeed the engineers expect, that in the practice they ſhould loſe part of the advantage of their force, by the *friction*: but how much, it is ſuppoſed, nothing but the practice can determine. M. Amontons, indeed, has made an attempt to ſettle, by experiment, a foundation for the preciſe calculation of the quantity of *friction*; and M. Parent has confirmed it, from reaſoning and geometry: but their theory, however warranted, is not generally and fully received.

M. Amontons's principle is, that the *friction* of two bodies depends on the weight, or force, wherewith they bear on each other; and only increaſes as the bodies are more ſtrongly preſſed, or applied, againſt each other, or are charged with a greater weight; and that it is a vulgar error, that the quantity of *friction* has any dependence on the bigneſs of the ſurfaces rubbed againſt each other; or that the *friction* increaſes as the ſurfaces do.

Upon the firſt propoſal of this paradox, M. de la Hire had recourſe to experiments; which ſucceeded much in favour of the new ſyſtem. He laid ſeveral pieces of rough wood on a rough table; their ſizes were unequal; but he laid weights on them, ſo as to render them all equally heavy: and he found, that the ſame preciſe force, or weight, applied to them by a little pulley, was required to put each in motion, notwithſtanding all the inequality of the ſurfaces. The experiment ſucceeded in the ſame manner in pieces of marble, laid on a marble table. Upon this M. de la Hire betook himſelf to the rationale of the thing; and has given us a phyſical ſolution of the effect. And M. Amontons has ſettled a calculus of the value of *friction*; and the loſs ſuſtained thereby in machines, on the footing of the new principle.

In wood, iron, lead, and braſs, which are the principal materials uſed in machines, he finds the reſiſtance, cauſed by *friction*, to be nearly the ſame, when thoſe materials are anointed with oil, or other fatty matter; and this reſiſtance, independent of the quantity of ſurface, he makes to be nearly equal to a third part of the force wherewith the bodies are preſſed againſt each other.

Beſide the preſſion, the magnitude whereof determines that of the *friction*, there is another circumſtance to be conſidered; *viz.* the velocity. The *friction* is the greater, and the more difficult to ſurmount, as the parts are rubbed againſt each other with the greater ſwiftneſs; ſo that this velocity muſt be compared with that of the power neceſſary to move the machine, and overcome the *friction*. If the velocity of the power be double that of the parts rubbed, it acquires, by that means, an advantage that makes it double; or, which amounts to the ſame, it diminiſhes the contrary force of *friction* by one half; and reduces it to a ſixth part of the weight, or preſſion. But this velocity M. Amontons only conſiders as a circumſtance that augments or diminiſhes the effect of the preſſion, *i. e.* the difficulty of the motion: ſo that the *friction* ſtill follows the proportion of the weight. Only, we are hereby directed to diſpoſe the parts of machines that rub againſt each other, in ſuch manner, as that they may have the leaſt velocity poſſible: and thus the diameter of the axis of a wheel ſhould be as ſmall as poſſible, with regard to that of the wheel; in that the leſſer the axis, the ſlower will be the motion of the ſurfaces rubbing againſt each other; ſince the velocity of a circular motion always goes diminiſhing from the circumference to the centre: and, for the ſame reaſon, the teeth of dented wheels ſhould be as ſmall and thin as poſſible; for a tooth catching on a notch, &c. rubs one of its ſides againſt a ſurface equal to its own; and is to diſengage itſelf, in a certain time, by paſſing over a ſpace equal to the ſurface; conſequently, the leſſer the ſurface, the leſs ſpace it has to move; the ſmalneſs of the ſurface diminiſhing the reſiſtance of the *friction*; not as it is a leſs ſurface that rubs, but as there is a leſs ſpace to move.

But, notwithſtanding all the confirmations and illuſtrations of this theory of *friction*, the public, or even the academy itſelf where it was propoſed, could not be brought fully to acquieſce in it. It is granted, that the preſſion has a great effect, and is, in many caſes, the only thing to be conſidered in *frictions*: but it will be hard to perſuade us abſolutely to exclude the conſideration of the ſurface. In effect, the contrary ſeems capable of a metaphyſical demonſtration.

If two bodies, with plain ſurfaces, ſuppoſed infinitely hard, and poliſhed, be moved along each other, the *friction* will be none, or infinitely ſmall; but if, in lieu of ſuch ſuppoſition, which has no place in nature, we ſuppoſe two bodies, with rough uneven ſurfaces; the difficulty of moving one of them on the other muſt either ariſe from this; that the firſt is to be raiſed, in order to diſengage the parts catched or locked in the ſecond; or that the parts muſt be broken, and worn off; or both. In the firſt caſe, the difficulty of raiſing one of the bodies makes that of the motion; and of conſequence the *friction* ariſes wholly from the weight, or preſſion; and the ſurface has nothing to do in it.

In the ſecond caſe, the magnitude of the ſurface would be all; were it poſſible this ſecond caſe could be abſolutely abſtracted from the firſt; *i. e.* could the parts of one body be rubbed and worn againſt thoſe of the other, without raiſing one of them; it being viſible, that a greater number of parts to be broken would make a greater reſiſtance than a leſs: but as in practice we never rub, or grind, without raiſing the body, the reſiſtance ariſing from the greatneſs of the ſurface in the ſecond caſe, is always combined with that from the preſſion; whereas, in the former caſe, that ariſing from the preſſion may be alone, and uncompounded.

Add, that what is worn off a body, is ordinarily very little, with regard to the great number of times the body muſt have been raiſed during the *friction*, and all the little heights added together, which the body muſt have been raiſed to.

Hence, as the reſiſtance from preſſion may be ſingle; and as the ſame always accompanies that ariſing from the magnitude of the ſurfaces, and is uſually much the more conſiderable of the two, when it does accompany it; for theſe reaſons, in moſt of the experiments that are made, it is the only one perceived, and the only one that needs to be conſidered.

But then, as it is poſſible, in certain caſes, for the preſſion to be very ſlender, and the number of parts to be rubbed, very great, it muſt be owned, there are caſes wherein the *friction* follows, very ſenſibly, the proportion of the ſurfaces.

For the FRICTION *of the parts of fluids*, ſee RESISTANCE, and RETARDATION *of Fluids*.

FRICTION, in medicine, and chirurgery, denotes the act of rubbing a diſeaſed part with oils, unguents, or other matters; in order to eaſe, relieve, and cure it.

Frictions are much uſed of late in venereal caſes. They prefer the applying of mercury externally by way of *friction*, to that of giving it internally, to raiſe a ſalivation.

There are alſo *frictions* with the fleſh-bruſh, a linen cloth, or the hand only: for the effect of which laſt, ſee STROAKING.

Frictions of any kind are a ſort of exerciſe which contributes greatly to health; as they excite and ſtir up the natural warmth, divert defluxions, promote perſpiration, open the pores of the ſkin, and carry off ſtagnant humours.

The fleſh-bruſh, Dr. Cheyne obſerves, is an exerciſe extremely uſeful for promoting a full and free perſpiration and circulation. Every-body knows the effect of currying horſes; that it makes them ſleek, gay, lively, and active; ſo as even to be judged equivalent to half the feeding.

This it can no otherwiſe effect, but by aſſiſting nature to throw off the recrements of the juices, which ſtop the free circulation; and, by conſtant *friction*, irritation, and ſtimulation, to call the blood and ſpirits to the parts moſt diſtant from the ſeat of heat and motion; and ſo plump up the ſuperficial muſcles. And the ſame effect it would have in other creatures, and man himſelf, if managed in the ſame manner, and with the ſame care and regularity.

Perſons, therefore, of weak nerves, and ſedentary lives, would do well to ſupply the want of other exerciſe with ſpending half an hour, morning and night, in currying and rubbing their whole body, eſpecially their limbs, with a fleſh-bruſh.

FRICTION, or rather FRIXION, in chymiſtry, is the ſame with what in cookery we call *frying*; *viz.* the coction of certain matters in a pan, with the addition of ſome unctuous thing, as oil, fat, &c.

The *frixion* of medicines is performed over a ſlow, moderate fire; and that of foods over a quick one.

FRIDSTOLL *, or FRITHSTOW, in our antient writers, ſignifies a ſeat, chair, or place of peace, where criminals might find ſafety and protection.

* In the charter of immunities confirmed to the church of St. Peter in York, ann. 5. H. VII. it is explained by *Cathedra quietudinis & pacis.—Quod ſi aliquis veſano ſpiritu agitatus diabolico auſu quemquam capere præſumpſerit in cathedra lapidea juxta altare, quod Angli vocant Fridſtol,* i. e. *cathedra quietudinis vel pacis; hujus tam flagitioſi ſacrilegii emendatio ſub nullo judicio erat, ſub nullo pecuniæ numero claudebatur, ſed apud Anglos Boteles hoc eſt, ſine emenda, vocabatur.* Monaſt. t. 3. p. 135.

Of theſe there were many in England; but the moſt famous was at Beverley, which had this inſcription, *Hæc ſedes lapidea* Freedſtoll *dicitur*, *i. e.* Pacis Cathedra, *ad quem reus fugiendo perveniens, omnimodam habet ſecuritatem.* Camden.

FRIENDLESS *Man*, was the old Saxon name for him whom we call an outlaw.

The reaſon is, becauſe he was, upon his excluſion from the king's peace and protection, denied all help of friends, after certain days. *Nam foris fecit amicos.*

FRIERS *Alien*. See the article ALIEN.

FRIEZE, FRIZE, or FREEZE, in architecture, a member, or diviſion, of the entablature of columns, by the antients called *Zoophoros*. See FREEZE.

FRIGATOON, a Venetian veſſel, commonly uſed in the Adriatic, built with a ſquare ſtern, and without any fore-maſt, having only a main-maſt, mizen-maſt, and bow-ſprit.

FRIGID, FRIGIDUS, cold, is variouſly uſed.—A *frigid* ſtyle, is a low, jejune, manner of diction; wanting force, warmth of imagination, figures of ſpeech, &c.

FRIGID *Zone*, or *Frozen Zone*, in geography. See ZONE.

FRIGIDITY is alſo uſed in the ſame ſenſe with impotency. See IMPOTENCE.

FRIGORIFIC, in phyſics, ſomething that occaſions cold.

Some philoſophers, particularly Gaſſendus, and other corpuſcularians, denying cold to be a mere privation, or abſence of heat, contend that there are actual *frigorific* corpuſcles, or particles as well as fiery ones: whence proceed cold and heat. But later philoſophers allow of no other *frigorific* particles beſide thoſe nitrous ſalts, which float in the air in cold weather, and occaſion freezing.

FRIPPERY, a French term, ſometimes uſed in our language; properly importing the trade, or traffick, of old, ſecond-hand cloaths, and goods.

The word is alſo uſed for the place where ſuch ſort of commerce is carried on: and even for the commodities themſelves.

The company of *Frippiers*, or *Fripperers*, at Paris, are a regular corporation, of an antient ſtanding; and make a conſiderable figure among the communautés of that city.

FRISELAND *Horſe*, *Cheval de* FRISE. See CHEVAL.

FRIT, or FRITT, in the glaſs manufacture, is the matter, or ingredients, whereof glaſs is to be made; when they have been calcined, or baked, in a furnace.

A ſalt drawn from the aſhes of the plant kali, or from fern, or other plants mixed with ſand, or flint, and baked together, make an opake maſs, called by glaſs-men *frit*; probably from the Italian *frittare*, to fry; or by reaſon the *frit*, when melted, runs into lumps, like fritters, called by the Italians *fritelli*.

Frit, by the antients, was called *hammonitrum*, or *ammonitrum*, of αμμ☉, ſand, and νιτρον, nitre: under which name it is deſcribed by Pliny thus: Fine ſand from the Volturnian ſea, mixed with three times the quantity of nitre, and melted, makes a maſs called *ammonitrum*; which, being rebaked, makes pure glaſs. *Hiſt. Nat.* l. xxxvi. c. 26.

Frit, Neri obſerves, is only the calx of the materials which make glaſs; which, though they might be melted, and glaſs be made, without thus calcining them, yet would it take up much more time. This calcining, or making, of *frit*, ſerves to mix and incorporate the materials together, and to evaporate all the ſuperfluous humidity. The *frit*, once made, is readily fuſed, and turned into glaſs.

There are three kinds of *frits*; the firſt, *cryſtal frit*, or that for cryſtal metal; made with ſalt of pulverine, and ſand.

The ſecond, and ordinary *frit*, is made of the bare aſhes of pulverine, or barillia, without extracting the ſalt from them. This makes the ordinary white, or cryſtal metal.

The third is *frit* for green glaſſes, made of common aſhes, without any preparation. This laſt *frit* will require ten or twelve hours baking.

The materials in each are to be finely powdered, waſhed, and ſeirced; then equally mixed, and frequently ſtirred together in the melting pot. For the reſt, ſee GLASS, and CRYSTAL.

FRITBURGH. See the article FRIBURGH.

FRITHGILD, was antiently the ſame with what we now call a *guild*, or a *fraternity*, or *company*. See GILD.

FRIXION. See the article FRICTION.

FRIZE, or FRIEZE, in architecture, a part of the entablature of columns; more uſually written, and pronounced, *freeze*. See FREEZE.

FRIZE, or FREEZE, in commerce, a kind of woollen cloth, or ſtuff, for winter wear; being *frized*, or knapt, on one ſide; whence, in all probability, it derives its name.

Of *frizes*, ſome are croſſed, others not croſſed: the former are chiefly of Engliſh manufacture; the latter of Iriſh.

FRIZING *of cloth*, a term in the woollen manufactory, applied to the forming of the knap of a cloth, or ſtuff, into a number of little hard burrs, or prominences, covering almoſt the whole ground thereof.

Some cloths are only *frized* on the back-ſide, as black cloths; others on the right ſide, as coloured and mixed cloths, rateens, bays, frizes, &c.

Frizing may be performed two ways; one with the hand, *i. e.* by means of two workmen, who conduct a kind of plank, that ſerves as a *frizing* inſtrument.

The other way is by a mill, worked either by water, or a horſe; or, ſometimes, by men. This latter is eſteemed the better way of *frizing*; by reaſon the motion being uniform, and regular, the little knobs of the *frizing* are formed more equably, and regularly.

The ſtructure of this uſeful machine is as follows:

The three principal parts are, the *frizer*, or criſper; the *frizing*-table; and the drawer, or beam.—The two firſt are two equal planks, or boards, each about ten feet long, and fifteen inches broad; differing only in this, that the *frizing*-table is lined, or covered, with a kind of coarſe woollen ſtuff, of a rough, ſturdy knap; and that the *frizer* is incruſtated with a kind of cement, compoſed of glue, gum Arabic, and yellow ſand, with a little aqua vitæ, or urine. The beam, or drawer, thus called, by reaſon it draws the ſtuff from between the *frizer*, and *frizing*-table, is a wooden roller, beſet all over with little, fine, ſhort points, or ends, of wire, like thoſe of cards uſed in carding of wool.

The diſpoſition and uſe of the machine is thus: the table ſtands immoveable; and bears, or ſuſtains, the cloth to be *frized*, which is laid with that ſide uppermoſt on which the knap is to be raiſed. Over the table is placed the *frizer*, at ſuch diſtance from it as to give room for the ſtuff to be paſſed between them; ſo that the *frizer*, having a very ſlow, ſemicircular motion, meeting the long hairs, or knap, of the cloth, twiſts and rolls them into little knobs, or burrs; while, at the ſame time, the drawer, which is continually turning, draws away the ſtuff from under the *frizer*, and winds it over its own points.

All that the workman has to do while the machine is going, is to ſtretch the ſtuff on the table, as faſt as the drawer takes it off; and, from time to time, to take off the ſtuff from the points of the drawer.

It has already been obſerved, that the *frizing*-table is lined with ſtuff of a ſhort, ſtiff, ſtubby knap; the uſe whereof is, to detain the cloth between the table, and *frizer*, long enough for the grain to be formed, that the drawer may not take it away too readily; which muſt otherwiſe be the caſe, inaſmuch as it is not held by any thing at the other end.

It were needleſs to ſay any thing particular of the manner of *frizing* ſtuffs with the hand, it being the aim of the workmen to imitate, as near as they can, with their wooden inſtrument, the ſlow, equable, and circular motion, of this machine. It needs only be added, that their *frizer* is but about two feet long, and one broad; and that, to form the knap more eaſily, they moiſten the ſurface of the ſtuff lightly with water, mingled with whites of eggs, or honey.

FRONT *, the forehead, or that part of the face above the eyebrows.

> * The word is formed of the Latin *frons*; and that from the Greek φρονειν, to think, perceive; of φρην, *mens*, the mind, thought. Martinius, to make out this etymology, obſerves, that from the forehead of a perſon we perceive what he is; what he is capable of; and what he thinks of. Du Laurens chooſes to derive it from *ferre*; by reaſon it bears the marks of what we have in our head.

FRONT is alſo uſed where ſeveral perſons, or things, are ranged ſide by ſide, and ſhew their *front*, or fore-parts.

Thoſe troops ranged in form of battle made a large *front*: the three legions were here diſpoſed in two lines, as Cæſar uſed to do, when, with a few forces, he had occaſion to extend his *front*. The *front* of the army conſiſted of ſo many battalions, and ſo many ſquadrons.

The military evolutions teach how to make a *front* of any ſide, *i. e.* how to preſent the face, and arms, to the enemy, what ſide ſoever he attack on. They attacked the enemy in *front*, and in flank.

FRONT, in architecture, denotes the principal face, or ſide, of a building; or that preſented to the chief aſpect, or view.

The palace conſiſts of a large pile in *front*, flanked with two wings.

FRONT, in perſpective, a projection, or repreſentation, of the face, or fore-part, of an object; or of that part directly oppoſite to the eye: called alſo, and more uſually, *orthography*. See ORTHOGRAPHY.

Line of the FRONT. See the article LINE.

FRONT *Scale*. See the article SCALE.

FRONTAL, in architecture, a little fronton, or pediment; ſometimes placed over a ſmall door, or window.

FRONTAL, FRONTLET, or *Brow-band*, is alſo uſed in ſpeaking of the Jewiſh ceremonies.

This *frontal* conſiſts of four ſeveral pieces of vellum, on each whereof is written ſome text of Scripture: they are all laid on a piece of a black calf's leather, with thongs to tie it by. The Jews apply the leather with the vellum on their foreheads, in the ſynagogue, and tie it round the head with the thongs.

FRONTALE *Os*, in anatomy. See *Os* FRONTIS.

FRONTALE, or FRONTAL, in medicine, an external form of remedy, applied on the forehead, and temples, with a bandage; for the cure of the head-ach, megrim, vapours, defluxions on the eyes, &c.

Frontals are compoſed of roſes, elder flowers, betony, marjoram, lavender, camphire, &c. wrapped in a linen cloth, and applied over the forehead, and temples.

There are alſo *frontals* in manner of liniments, made of unguentum populeum, and extract of opium; or of paſtes, powders, ſeeds, &c.

In *frontals* applied to eaſe the violence of the head-ach, in the height of fevers, they frequently mix the kernels of cherries.

FRONTALES, in anatomy, two muſcles, one on each ſide the forehead, commonly ſuppoſed to ſpring from the ſkull, but now known to ariſe from the occipital muſcles; or rather, it appears that the *frontales*, and occipitales, are only one continued digaſtric muſcle, on each ſide, moving the ſcalp and ſkin of the forehead and eyebrows.—See *Tab. Anat.* (Myol.) *fig.* 1. *n.* 1.

The *frontales* begin to be thus denominated after they have begun to paſs the coronal ſuture, with fibres paſſing obliquely to the eyebrows, where they terminate; and in the lower part of the ſkin of the forehead.

They have each two appendages; the ſuperior, or external, is commonly fixed to the bone of the noſe; the lower is fixed to the os frontis, and is, by Volcherus Coiter, made a diſtinct muſcle, and called *corrugator*, from its uſe in drawing the eyebrows to each other, and wrinkling the forehead.

FRONTATED, a term uſed by botaniſts, to expreſs that the petalum, or leaf of a flower, grows broader and broader; and, at laſt, perhaps, terminates in a right line.—In oppoſition to *cuſpidated*; which expreſſes, that the leaves terminate in a point.

FRONTIER *, the border, confine, or extreme, of a kingdom, or province; which the enemies find in front when they would enter the ſame. Thus we ſay, a *frontier* town, *frontier* province, &c. *Frontiers* were antiently called *marches*.

* The word is derived from the French *frontiere*, and that of the Latin *frontaria*; as being a kind of front oppoſed to the enemy. Skinner derives *frontier* from *front*; inaſmuch as the *frontier* is the exterior, and moſt advanced part of a ſtate; as the front is that of the face of a man.

FRONTIS *Os*, in anatomy, the bone of the forehead. See *Tab. Anat.* (Oſteol.) *fig.* 1. *lit. a.*

The *os frontis* is a bone of the cranium, in form almoſt round; it joins the bones of the ſinciput, and temples, by the coronal ſuture; and the bones of the upper jaw, by the tranſverſe ſuture; and the os ſphenoides, by the ſphenoidal ſuture.

It forms the upper part of the orbits; and has four apophyſes, which are at the four angles of the two orbits.

It has two holes above the orbits, through which paſs the vein, artery, and ſome twigs of the firſt branch of the fifth pair of nerves; it has alſo one in each orbit, a little above the os planum, through which a twig of the ophthalmic branch of the fifth pair of nerves paſſes to the noſe.

It has two ſinus's above the eyebrows, between its two tables; they are lined with a thin membrane, in which there are ſeveral blood-veſſels and glands; which ſeparate a mucous ſeroſity, which falls into the noſtrils.

The inſide of this bone has ſeveral inequalities, made by the veſſels of the dura mater: it has two large dimples, made by the anterior lobes of the brain: above the criſta galli it has a ſmall blind hole; into which the end of the ſinus longitudinalis is inſerted.

FRONTISPIECE *, in architecture, the portail, or principal face, of a fine building.

* The word is formed of the Latin *frontiſpicium*, q. d. *frontis hominis inſpectio*.

The *frontiſpiece* of the Louvre is the fineſt piece of architecture in France.

Hence, alſo, by a figure, we ſay, the *frontiſpiece* of a book; meaning an ornament, with an engraven title, on the firſt page.

FRONTLET. See the article FRONTAL.

FRONTON, in architecture, an ornament, among us more uſually called *pediment*. See PEDIMENT.

FROST, an exceſſive cold ſtate of the weather, whereby the motion and fluidity of liquors is ſuſpended: or, it is that ſtate of the air, &c. whereby fluids are converted into ice.

Metals contract, or are ſhortened, in *froſt*. Monſ. Auzout found, by experience, that an iron tube, twelve feet long, loſt two lines of its length, upon being expoſed to the air in a *froſty* night: but this we ſuppoſe wholly the effect of the cold.

Froſt does not contract fluids, as was formerly imagined; on the contrary, it ſwells or dilates them, by nearly a tenth of their bulk.

Scheffer aſſures us, that in Sweden the *froſt* pierces into the earth two cubits, or Swediſh ells; and turns what moiſture is found therein into a whitiſh ſubſtance, like ice: he adds, the ſtanding waters freeze to a greater depth, even to three ells, or more; but thoſe that have a current, leſs; and rapid waters, and bubbling ſprings, never freeze, even there.

Mr. Boyle gives us ſeveral experiments, of veſſels made of metals, exceeding thick and ſtrong, which, being filled with water, cloſe ſtopped, and expoſed to the cold, in which the water, in freezing, coming to be expanded, and not finding either room, or vent, burſt the veſſels.

A ſtrong barrel of a gun, with water in it, cloſe ſtopped, and *frozen*, was rent the whole length; and a ſmall braſs veſſel, five inches deep, and two in diameter, filled with water, &c. lift up its lid, which was preſſed with a weight of fifty-ſix pounds.

Olearius aſſures us, that in the city of Moſcow he obſerved the earth to be cleft by the *froſt* many yards in length, and a foot broad. Scheffer mentions ſudden cracks or rifts in the ice of the lakes of Sweden, nine or ten feet deep, and many leagues long; and adds, that the rupture is made with a noiſe not leſs terrible than if many guns were diſcharged together. By ſuch means the fiſhes are furniſhed with air; ſo that they are rarely found dead.

In the great *froſt* in 1683. oaks, aſhes, walnut-trees, &c. Mr. Bobart tells us, were miſerably ſplit and cleft, ſo that one might ſee through them; and this, frequently, with terrible noiſes, like the exploſion of fire-arms: the clefts were not only in the bodies, but continued to the larger boughs, roots, &c. See an inquiry into the circumſtances and cauſes hereof in the *Philoſ. Tranſact.* N° 165.

The natural hiſtories of *froſts* furniſh very extraordinary effects thereof. The trees are frequently ſcorched, and burnt up, as with the moſt exceſſive heat; of which there are divers inſtances in ſo warm a climate as that of Provence. See Mezeray, *Hiſt. de France*, an. 1570.

The year 1708. was remarkable, throughout the greateſt part of Europe, for a ſevere *froſt*. Mr. Derham ſays, it was the greateſt in degree, if not the moſt univerſal, in the memory of man: it extended throughout England, France, Germany, Denmark, Italy, &c. but it was ſcarce felt in Scotland or Ireland. All the orange-trees, and olives, in Italy, Provence, &c. and all the walnut-trees throughout France, with an infinity of other trees, periſhed by this *froſt*. They had a kind of gangrene grew on them; which Monſ. Gauteron takes to have been the effect of a corroſive ſalt corrupting and deſtroying their texture. He adds, there is ſo much reſemblance between the gangrene befalling plants through *froſt*, and that which the parts of animals are liable to, that they muſt have ſome analogous cauſe. Corroſive humours burn the parts of animals; and the aereal nitre condenſed has the ſame effect on the parts of plants. *Penetrabile* frigus *adurit*. *Memoires de l'Academie Royale des Sciences*, an. 1709.

In Germany, the freſh-water fiſh were every-where killed; and a vaſt deſtruction befel the ſmaller birds. The ſpittle was no ſooner out of a man's mouth than it was froze. The Luſatian letters add, that many cows were froze to death in their ſtalls; and many travellers on the road were, ſome quite froze to death; others loſt their hands, feet, noſes, and ears.

G. Remus, the author of an academical exerciſe on this ſubject, publiſhed at Hall in Saxony, intituled, *Conſideratio phyſico-mathematica hyemis proxime præterlapſæ*, gives inſtances from the news-papers, of two gentlemen, and a ſmith, in England; and above ſixty men, and many cattle, near Paris; and the like at Venice; and eighty French ſoldiers near Namur; all killed on the road with cold. On the coaſts of Italy many of the mariners aboard the Engliſh men of war died of the cold; and ſeveral loſt part of their fingers and toes.

In England, the greateſt ſufferers in the animal kingdom, Mr. Derham obſerves, were birds, and inſects; particularly larks, and robin-red-breaſts; much the greateſt part of which periſhed. But the vegetables were far the greater ſufferers; few of the tender ſorts eſcaped: bays, hollies, roſmary, cypreſs, alaterni, phillyrea's, arbuti, lauruſtines, and even furze; with moſt of the fruteſcent herbs, as lavenders, abrotanums, rue, thyme, &c. Mr. Bobart informs us, were generally deſtroyed. The ſame writer adds, that the ſap of the finer wall-fruit was ſo congealed and diſordered, that it ſtagnated in the limbs and branches, and produced diſorders like to chilbains in human bodies; which, in many parts of trees, would turn to mortifications; and that the very buds of the finer trees, both the leaf-buds, and bloſſom-buds, were quite killed, and dried into a farinaceous matter.

In Switzerland, Scheuchzer relates, that not only the walnut-trees, and vines, but even the beech, larix, &c. were deſtroyed: and yet, in ſome parts of thoſe cantons, he adds, there never was a milder winter ſeaſon known.

Mr. Derham relates it, as a common obſervation, that vegetables ſuffered more in this winter from the ſun, than the *froſt*; in that the ſun-ſhine melting the ſnow, and opening the ground, left them more expoſed to the rigours of the enſuing night: and, at a meeting of the Royal Society, it was obſerved, that the calamities which befel trees, aroſe, not purely from their being frozen, but, principally, from the winds ſhaking and rocking them, when they were ſo; which rent and parted their fibres. *Philoſoph. Tranſact.* N° 324.

Hoar-FROST, or *White* FROST, *Pruina*, is the dew *frozen*, or congealed, early in cold mornings; chiefly in autumn.

Hoar-froſt, Mr. Regis obſerves, conſiſts of an aſſemblage of little parcels of ice-cryſtals; which are of various figures, according the different diſpoſition of the vapours, when met, and condenſed, by the cold.

Dew is, in all appearance, the matter of *hoar-froſt*: though many of the Carteſians will have it formed of a cloud; and either congealed in the cloud, and ſo let fall; or ready to be congealed as ſoon as it arrives at the earth.

FROTH, a white, light ſubſtance, formed on the ſurface of fluids, by vehement agitation.

Froth conſiſts wholly of little ſpherules, or globules; and, accordingly, may be defined, an aſſemblage of aqueo-aereal bubbles.

FROZEN, or FRIGID *Zone*. See the article ZONE.

FROZEN *Ocean*. See the article OCEAN.

FROZEN *Waters*. See the article WATERS.

FRUGIVOROUS *Birds*, are ſuch as feed on fruits; either wholly, or in part.

The *frugivorous*, according to Mr. Willoughby, are a ſpecies of terreſtrial birds, ſome of which have crooked bills, and claws; yet are of gentler nature, and not rapacious. Such are the parrot kind; which, though ſometimes carnivorous, yet feed likewiſe on fruit.

FRUIT, in its general ſenſe, includes whatever the earth produces for the nouriſhment and ſupport of men, and other animals; as herbs, grain, pulſe, hay, corn, flax; and every thing expreſſed by the Latins under the name *fruges*.

The devotion and ſolemnity of rogation week were inſtituted to procure a bleſſing on the *fruits* of the earth.

In the civil law, they diſtinguiſh three kinds of *fruits*.

Natural FRUITS, which the earth produces ſpontaneouſly, and without any culture; as thoſe of trees.

FRUITS *of induſtry*; which, though natural, require ſom eculture to perfect them.—And.

Civil FRUITS, which are only *fruits* in the eye of law; as rent, ſalaries, wages, *&c.*

In the canon law, *fruits* include every thing whereof the revenue of a benefice conſiſts; as glebe-land, tythes, rents, offerings, mills, *&c.*

FRUIT, in natural hiſtory, denotes the laſt production of a tree, or plant, for the propagation, or multiplication, of its kind: in which ſenſe *fruit* includes all kinds of ſeeds, with their furniture, *&c.*

FRUIT, in botany, is properly that part of a plant wherein the ſeed is contained; called by the Latins *fructus*; and, by the Greeks, καρπος.

FRUITS are ſometimes dry; and ſometimes ſoft, and fleſhy.

FRUIT alſo implies an aſſemblage of ſeeds in a head; as in a ranunculus, *&c.* and, in the general, all kinds of ſeeds, or grains, whether naked, or incloſed in a cover, capſula, or pod; and whether bony, fleſhy, ſkinny, membranous, or the like. The *fruit* is the product, or reſult, of the flower; or that for whoſe production, nutrition, *&c.* the flower is intended.

The ſtructure and parts of different *fruits* are ſomewhat different; but, in all the ſpecies, the eſſential parts of the *fruit* appear to be only continuations, or expanſions, of thoſe obſerved in the other parts of the tree.

Dr. Beal ſuggeſts ſome very good reaſons for a direct communication between the remoteſt parts of the tree, and the *fruit*; ſo that the ſame fibres, or ſtamina, which conſtitute the root, trunk, and boughs, are extended into the very *fruit*.

Thus, cutting open an apple tranſverſly, it will be found to conſiſt of four parts; *viz.* 1°, a ſkin, or cortex; which is only a production of the ſkin, or outer bark, of the tree. 2°, A parenchyma, or pulp; which is an expanſion, and intumeſcence of the inner bark of the tree. 3°, Fibres, or ramifications, of the woody part of the tree, diſperſed throughout the parenchyma.

Of theſe laſt, authors generally reckon fifteen principal branches; ten whereof penetrate the parenchyma, and incline to the baſis of the flower; the other five aſcend more perpendicularly from the pedicle, or ſtalk; and meet with the former at the baſe of the flower: to theſe branches are faſtened the capſulæ, or coats, of the kernels.

Theſe branches, being at firſt extended through the parenchyma, to the flower, furniſh the neceſſary matter for the vegetation thereof; but, the *fruit* increaſing, it intercepts the aliment; and thus the flower is ſtarved, and falls off.

4°, The core, which is the produce of the pith, or medulla, of the plant, indurated and ſtrengthened by twigs of the wood and fibres, inoſculated therewith: it ſerves to furniſh a cell, or lodge, for the kernels; filtrates the juice of the parenchyma; and conveys it, thus prepared, to the kernel.

In a pear we diſtinguiſh five parts; *viz.* the ſkin, parenchyma, ramification, ſtone, and acetarium.

The three firſt parts are common to the apple. The ſtone, obſerved chiefly in choak pears, is a congeries of hard corpuſcles, diſperſed throughout the whole parenchyma; but in the greateſt plenty, and cloſeſt together, about the centre, or acetarium: it is formed of the harder, or calculous parts, of the nutritious juice of the parenchyma, extravaſated in maſſes. The acetarium is a ſubſtance of a tart, acid taſte, of a globular figure, incloſed in an aſſemblage of ſeveral of the ſtony parts above-mentioned.

In the plum, cherry, *&c.* there are four parts; *viz.* a coat, parenchyma, ramification, and ſtone or nucleus. The ſtone conſiſts of two very different parts: the inner, called the kernel, is ſoft, tender, and light; being derived from the pith, or medulla, of the tree, by ſeminal branches, which penetrate the baſe of the ſtone: the external, or harder part, called the ſhell, is a concretion of the ſtony, or calculous parts, of the nutritious juice, like the ſtone in pears; and, like that, it contains a ſoft, parenchymous matter within it.

The nut, analogous to which is the acorn, conſiſts of a ſhell, cortex, and medulla. The ſhell conſiſts of a coat, and parenchyma, derived from the bark, and wood, of the tree. The cortex conſiſts of an inner, and outer part; the firſt is a duplicature of the inner tunic of the ſhell; the ſecond is a moſſy ſubſtance, derived from the ſame ſource as the parenchyma of the ſhell. But, whether the medulla, or pulp, of the kernel, ariſe from the pith of the tree, or the cortical part of the fruit, is not yet agreed.

Laſtly, berries, as grapes, *&c.* beſides the three general parts, *viz.* coat, parenchyma, and ramification, contain grains of a ſtony nature, which do the office of ſeeds.

As to the uſe of *fruits*, beſide the pleaſure and advantage they afford men, *&c.* they are of ſervice in guarding, preſerving, and feeding the ſeed incloſed; in filtrating the coarſer, more earthy, and ſtony parts of the nutritious juice of the plant, and retaining them to themſelves; and ſending none to the ſeed but the pureſt, moſt elaborated, and ſpirituous parts, for the ſupport and growth of the tender, delicate embryo, or plantule, contained therein.

So that the *fruit* does the ſame office to the ſeed, that the leaves of the flower do to the *fruit*.

FRUIT, in gardening, denotes the production of a *fruit*-tree; as the apple, pear, plum, peach, apricot, cherry, grape, curran, orange, fig, almond, *&c.*

Fruits are diſtinguiſhed, by gardeners, into ſtone-*fruit*, and kernel-*fruit*; ſummer-*fruit*, and winter-*fruit*; wall-*fruit*, and dwarf-*fruit*, &c.

Monſ. Quintinie obſerves, that cold, heavy, moiſt lands, produce the faireſt and largeſt *fruit*; but the hotter, drier, and lighter, the more delicious, and rich-taſted.

Fruits, with regard to commerce, are diſtinguiſhed into *recent*, or *freſh*; and *dry*.

Recent FRUITS are thoſe ſold juſt as they are gathered from the tree, without any further preparation.—As are moſt of the productions of our gardens, and orchards, ſold by the fruiterers.

Dry FRUITS are thoſe dried in the ſun, or by fire, with other ingredients, ſometimes added to them, to make them keep; imported chiefly from beyond ſea, and ſold by the grocers.

Such are raiſins, currans, figs, capers, olives, cloves, nutmegs, pepper, and other ſpices: which ſee under their reſpective articles.

Under the denomination of *dry fruits* are alſo frequently included apples, pears, almonds, filberds, *&c.*

Polypyreneous FRUITS. See the article POLYPYRENEOUS.

FRUITS *current* for coins. See the article COIN.

Firſt-FRUITS. See the article FIRST *Fruit*.

FRUIT-TREES are diſtinguiſhed, like the fruits they bear, into wall *fruit-trees*, ſtandard *fruit-trees*, &c.

With regard to *fruit-trees*, Monſ. Quintinie obſerves, 1°, That the cutting and trimming of young trees hinders them from quick bearing; though it contributes both to the beauty of the tree, and to the richneſs and flavour of the fruit.

2°, That *kernel-fruit-trees* come later to bear than *ſtone-fruit-trees*; the time required by the firſt, before they arrive at a fit age for bearing, being, one with another, about four or five years; but, when they do begin, they bear in greater plenty than ſtone-*fruit*.

3°, That ſtone-*fruits*, figs, and grapes, commonly bear conſiderably in three or four years; and bear full crops the fifth and ſixth years; and hold it for many years, if well ordered.

4°, That *fruits*, in the ſame neighbourhood, will ripen a fortnight ſooner in ſome grounds, than in others, of a different temperature.

5°, That, in the ſame country, hot or cold ſummers ſet conſiderably forwards, or put backwards, the ſame *fruit*.

6°, That the *fruits* of wall-trees generally ripen before thoſe on ſtandards; and thoſe on ſtandards before thoſe on dwarfs.

7°, That the *fruit* of all wall-trees, planted in the ſouth and eaſt quarters, commonly ripen about the ſame time; only thoſe in the ſouth rather earlier than thoſe in the eaſt; thoſe in the weſt are later by eight or ten days; and thoſe in the north by fifteen or twenty.

For the planting, pruning, engrafting, *&c.* of *fruit-trees*, ſee PLANTING, TRANSPLANTING, PRUNING, and ENGRAFTING. See alſo ORCHARD, GARDEN, and NURSERY.

Monſ. de Reſſons, in the *Memoires de l' Academie Royale des Sciences*, an. 1716. gives us a method of grafting ſtone-*fruit-trees* without loſing of time; ſo that a tree which bore ſorry *fruit* the preceding year, ſhall bear the choiceſt *fruit* the year following.

It frequently happens that perſons are deceived in their *fruit-trees*, eſpecially thoſe bought of the nurſery-men; and it is a melancholy thing, after having waited three years for *fruit*, to find it naught at laſt, and to be obliged to graft the tree again, and wait four years more, for the ſecond hopes. In effect, in the common methods of grafting, they know nothing better than to cut off the head of a tree, and make it put forth new wood to graft in: this neceſſarily makes a long delay; which Monſ. Reſſons ſhews how to abridge.

Upon conſidering the union of the ſap in grafts, that author was led to think, that all the office the bark has in grafting is, to receive the ſcutcheon; ſo that if the bark be not quite hard, dry, and inflexible, and incapable of yielding without cracking or burſting; it ſhould ſeem indifferent, whether one grafted on new wood, or old: the ſap paſſing equally into both. Which reaſoning had the good fortune to be verified by a number of experiments made with that view.

We are at liberty, then, to graft almoſt at any age, and in any wood. Accordingly, a peach-tree of a worſe kind or quality may be grafted from another of the beſt, in autumn, in the height of its *fruit* and ſap, without cutting off any branches; the graft ſoon cements to the tree by the union of the ſaps, without ſhooting at all: ſo that, cutting off the branches above the grafts the ſpring following, the ſame graft inſerted the preceding autumn will ſhoot vigorouſly; and, being on a wood of the ſame kind, the *fruit* thenceforth produced will be much the larger and finer. But this is not the great point: for the tree thus engrafted will not bear till the third year; and we want *fruit* the firſt.

In order to this, it is to be obſerved, that there are three kinds of branches: wood-branches, growing immediately from the ſtem or ſtock of the tree: *fruit*-branches: and branches half of the wood, half of the *fruit* kind, being ſuch as, ariſing from the largeſt wood-branches, preſerve the character thereof, but which, in two years time, will produce *fruit*-branches. Now, it is theſe intermediate kind of branches that we are to chooſe for ſcutcheons or grafts. They are eaſily known by being bigger than the *fruit*-branches, and leſs than the wood-branches: they have each of them two, three, four, or even five leaves to each eye; and the eyes are farther diſtant from each other than thoſe of the *fruit*-branches, but cloſer than thoſe of the wood-branches. It muſt be added, that the eyes on ſuch branch are three; one intended for a wood-branch, being ſituate between the two leaves, and advancing farther than the other two, which are intended for *fruit*, and are placed without-ſide the leaves.

It is theſe laſt that are the preciſe ſubjects to be choſen for the grafting withal. Twelve of theſe ſcutcheons, more or leſs, according to the ſtrength of the tree to be grafted on, being duly applied; we may depend on a crop of good *fruit*, the very next year, on the ſame tree which the laſt year produced the worſt.

FRUITERY, a place for the laying up and keeping of *fruit*. See **Fruit**, and **Granary**.

The *fruitery* ſhould be inacceſſible to any thing of moiſture, or even froſt.

FRUITFULNESS, the quality of bearing plenty of fruit; called alſo *fertility*, and *fecundity*. See **Fecundity**.

FRUMENTACEOUS *plants* * are thoſe which produce geniculated or knotted ſtalks, with reed-like leaves; and whoſe ſeed growing in ſpikes or jubæ is uſeful to make pultage, or bread.

* The word is formed from *frumentum*, a general name comprehending all ſorts of corn, or grain, for bread. Hence the Italians, who follow the Latins, uſe *grano* and *frumento* for the ſame.

Wheat, barley, rye, millet, &c. are *frumentaceous* plants.

Some authors uſe *frumentaceous* in a narrower ſenſe; reſtraining it to plants which bear a conformity to wheat; either in reſpect of their fruits, leaves, ears, or the like.

But this ſeems founded on a miſtaken notion of *frumentum*, as if it denoted only *wheat*; which is rather the ſenſe of the word *triticum*.

FRUMENTARII, in antiquity, a kind of ſoldiers, or archers, under the weſtern empire.

St. Cyprian relates, in one of his letters, that ſome of theſe *frumentarii* were ſent to take him.

The firſt time we read of *frumentarii*, as officers, is in the time of the emperor Adrian. Spartian, in his life of that prince, aſſures us, that he made uſe of them to inform himſelf of what paſſed.

Before, the name *frumentarius* was only given to the corn-merchants, or meaſurers of corn.

Theſe *frumentarii* did not make any particular corps, diſtinct from the other forces; but there was a certain number of them in each legion; as, among us, there is a certain number of grenadiers in each battalion. Accordingly, in antient inſcriptions, we meet with *frumentarii* of this or that legion.

It is ſuppoſed they were originally a number of young perſons, diſpoſed by Auguſtus throughout the provinces, particularly on all the grand roads, to advertiſe the emperor, with all expedition, of every thing that happened.

In order to this, they had a kind of intendance of all the carriages; and on this account came to be employed for the conveyance of corn, *frumentum*, to the armies: whence their appellation.

Afterwards they were incorporated into the troops themſelves; where they ſtill retained their antient name.

Their principal office was the giving of intelligence; in which they agreed with thoſe called *curioſi*, with whom they were frequently joined.

FRUMENTY, popularly **Furmety**, a kind of pottage, the baſis whereof is wheat, boiled up with milk, ſugar, and ſometimes ſpice.

Pliny tells us, that in his time they mixed chalk among it. Galen deſcribes it as a very nutricious food made of corn, or pulſe, boiled with water, wine, and oil.

The Latins called it *alica*, which Feſtus derives *ab alendo*; as being very nouriſhing. But then it muſt be obſerved, they made it of any kind of corn.

Ours being reſtrained to wheat, we have given its denomination accordingly, from *frumentum*.—An emulſion, wherein wheat was an ingredient, would be a kind of *frumenty*.

FRUSTUM, in mathematics, a piece cut off, or ſeparated from a body.

Frustum of a pyramid, or cone, is a part, or piece thereof, cut off, uſually, by a plane parallel to the baſe.

All round and ſquare timber that goes tapering, may be conceived as the *fruſtum* of a cone, or pyramid: to find the quantity whereof, take the following theorem; which in the main is Mr. Oughtred's. Given, B (*Tab. Survey. Fig.* 5. Nº 2.) the ſide of the greater baſe, b the leſſer baſe's ſide, A the height of the *fruſtum*: though, below, we ſuppoſe B and b to repreſent the areas of the two baſes. Whole height $a+A=H$.

Firſt, to find a, ſay, as $B-b : b :: A : \frac{bA}{B-b}$, or $\frac{bA}{x}$.

Now $BH=3$ times the whole pyramid, becauſe any priſm is three times a pyramid of the ſame baſe and height with it, by 7 and 10 Euclid, and $ba=3$ times the upper pyramid.

Wherefore $\frac{BA-ba}{3}$ equal to the *fruſtum* of the pyramid required; which theorem in words is this:

Multiply the lower baſe by the whole height; and from the product ſubtract the upper baſe multiplied by the height of the top-piece wanting; and then one third of the remainder ſhall give the *fruſtum*.

And the ſame way you may proceed for the *fruſtum* of a cone; only it will be more difficult to find the circular baſes.

FRUTEX, *ſhrub*, a vegetable of a genus between a tree and an herb; being low, but of a woody ſubſtance, and yielding woody branches.

FRUTICOSE *ſtalks* of plants are thoſe of a hard, woody ſubſtance.

FRYTH, or **Frith**, is explained, by Sir Edward Coke, as a plain between two woods; or a lawn.

Camden uſes it for an arm of the ſea; or a ſtreight between two lands; from *fretum*.—Maketh his iſſue into the æſtuary, or *frith*, of Thames.

Smith, in his *England's Improvement*, makes *frith* ſignify all hedge-wood, except thorns.

How to reconcile theſe different ſentiments, we know not: but we are ſure the Saxon word *frith* ſignifies *peace*: and that *fryth*, in our records, is often uſed for a wood: *Lector, tu tibi Oedipus eſto.*

FUAGE, or **Focage**, a tax or impoſition laid on hearths or chimneys, *i. e.* on fire-places, or families; called alſo *hearth-ſilver*, and *chimney-money*.

Edward the Black prince, having Aquitain granted him, laid an impoſition of *fuage*, or *focage*, upon the ſubjects of that dukedom, *viz.* one ſhilling for every fire place. After his example, Charles V. of France laid a tax of a franc for each fire-place, for one year only. His ſucceſſor Charles VI. augmented it under the ſame name. Charles VII. rendered it perpetual, and called it *taille*.

By an ordonnance of Humbert II. dauphin of Viennois, the impoſition of *fouage*, or *feuage*, was then laid per feu, *i. e.* per fire, or family, *ſeu per lares focum habentes*. In Latin it was called *focagium*, q. d. *pro ſingulis focis*.—Sometimes it was alſo called *fournage*, on account of the oven, or furnace: in Greek, καπνικον, or καπνος, *fumus*, ſmoke.—In Will. Tyr. *De bello ſacro*, it is called *foagium*: for it was alſo impoſed by the kings of Jeruſalem. The counts, and other lords, likewiſe impoſed it on the feudataries, or vaſſals. Zonaras aſſures us, that the general Nicephorus firſt eſtabliſhed it among the Greeks.

FUCUS is uſed for a paint, or compoſition, applied on the face, to beautify it, and heighten the complexion.

Old women make uſe of *fucus's*, and pomatums, to appear young. The *fucus* made with ceruſs is corroſive and pernicious to the ſkin.

The chemiſts abuſe the ladies in ſelling them oil of bricks, as an excellent *fucus*. Pliny ſays, that the *fucus* of the Roman dames was a kind of white earth, or chalk, brought from Chio and Samos, diſſolved in water.

The *fucus Solimanni* is a compoſition of prepared ſublimate, in great repute among the Spaniards of Peru.

FUEL, or **Fewel**, the pabulum of fire. See **Fewel**, and **Fire**.

FUGA *vacui*, in the antient ſchool-philoſophy, a ſuppoſed averſion in nature to a vacuum.

The *fuga vacui* was a very fertile and extenſive principle; and ſolved abundance of difficulties with a great deal of eaſe. Suppoſe, *e. gr.* a ſyringe; immerge one extreme of it in water; and draw up the embolus, or ſucker; then hear how the antients will reaſon upon it. They firſt laid it down for granted, that there can be no vacuum; then arguing, that there muſt be a vacuum, unleſs the water ſhould follow the embolus; they conclude, that the higher the embolus is drawn, the higher ſhall the water aſcend; and this *fuga vacui* is to keep out a vacuum.

In after-times the matter was ſtated in other terms, and the water was ſaid to riſe, *metu vacui*, for fear of the vacuum, which muſt otherwiſe enſue. And at length, as if this were not enough, inſtead of *fuga* and *metus*, they ſubſtituted the word *horror*; and affirmed, that the water roſe out of nature's *abhorrence* of a vacuum. This was juſt as good ſenſe, as if a perſon, being aſked, How coals were brought to London? ſhould anſwer, that it was done *fuga*, or *metu*, or *horrore frigoris*; for *fear of cold!* Which is giving the final cauſe, when the efficient one was required.

Moſt of the phænomena, which the antients aſcribed to the *fuga vacui*, the moderns have demonſtrated to ariſe from the gravity and preſſure of the air. This is the caſe in the aſcent of water in ſyringes, pumps, *&c.*

FUGALIA, in antiquity, a feaſt celebrated among the Romans; ſuppoſed by ſome to be the ſame with the *regifugium*, held, on the 24th of February, in memory of the expulſion of the kings, and the aboliſhing of the monarchical government. Struvius, *Antiq. Roman. Syntag.* c. 9. diſtinguiſhes the *fugalia* from the *regifuge*: and even doubts whether the regifugium were thus called on account of the expulſion of the kings; or by reaſon the rex ſacrorum, after the ſacrifice was ended, fled haſtily out of the forum, and comitia.

Be this as it will, the only antient author of note, that makes expreſs mention of the *fugalia*, is St. Auguſtine, *de civitat. Dei*, lib. ii. c. 6. And his commentator Vives ſhews a great inclination to correct the reading of the word, were it not that St. Auguſtine adds, that the feaſt was a true *fugalia*; all decency and modeſty being baniſhed therefrom.

That learned perſon conjectures, that the *fugalia* were the ſame thing with the *poplifugia*, or the feaſt of *Fugia*, the goddeſs of joy, occaſioned by the rout of an enemy; which was the reaſon why the people abandoned themſelves to riot and debauchery: and that the feaſt was firſt inſtituted on occaſion of the victory gained over the Ficulneates, Fidenates, and neighbouring nations, upon their attempt to take poſſeſſion of Rome, the day after the people had withdrawn from it. As related by Varro, l. v. *de Ling. Lat.*

But, according to Varro, the *poplifugia*, which fell in the month of June, were held in memory of the flight or retreat of the people, in a ſedition raiſed among them: it is true, he adds, that the day followed ſoon after the retreat of the Gauls, and the time when the neighbouring nations conſpired againſt them: but this does not appear to have any relation to the *poplifugia*, being only meant to mark the æra, or time when the ſedition and flight of the Roman people happened.

After all, though the *poplifugia* might have been originally eſtabliſhed in commemoration of the flight of the people, and not that of the enemies; this does not hinder, but the *fugalia* of St. Auguſtine may probably be the *poplifugia* of Varro; according to the conjecture of Vives.

FUGITIVE, *refugee*, a perſon obliged to fly his country, or remove from a place where he had ſome abode or eſtabliſhment; on account of his crimes, debts, or on other occaſions.

A perſon who has broken open, or eſcaped out of priſon, is obliged to be a *fugitive*. Cain became a *fugitive*, after the murder of his brother.

Among the learned, *fugitive* pieces denote thoſe little compoſitions which are printed on looſe ſheets, or half ſheets; thus called, becauſe eaſily loſt, and ſoon forgot.

In the Roman law, a *fugitive* ſlave was ſuch a one as was apt to run away from his maſter. And in ſelling a ſlave, the maſter was obliged to declare, whether or no he were *fugitive*.

The term is alſo applied to deſerters in an army; or thoſe who fly from the combat.

FUGITIVES *goods*, *bona fugitivorum*, the proper goods of him that flies upon felony; which, after the flight lawfully found on record, do belong to the king, or lord of the manor.

FUGUE, in muſic, is when the different parts of a muſical compoſition follow each other; each repeating what the firſt had performed.

There are three kinds of *fugues: the ſingle fugue*, *double fugue*, and *counterfugue*.

Single, or *ſimple* FUGUE is ſome point conſiſting of 4, 5, 6, or any other number of notes, begun by one ſingle part, and then ſeconded by a third, fourth, fifth, and ſixth part, if the compoſition conſiſts of ſo many, repeating the ſame, or ſuch-like notes; ſo that the ſeveral parts follow, or come in, one after another, in the ſame manner, the leading parts ſtill flying before thoſe which follow.

Double FUGUE is when two or more different points move together in a *fugue*, and are alternately interchanged by ſeveral parts.

For the Counter FUGUE, ſee COUNTER *fugue*.

The Italians ſay, a *fugue*, or flight *of rooms*, or *chambers*, meaning a ſeries or range of rooms, the doors whereof anſwer in a right line behind each other; ſo as they may be all ſeen at once, from one extreme to the other.

FULCRUM, *prop*, in mechanics. See LEVER.

FULIGINOUS *, an epithet applied to a thick ſmoke, or vapour, replete with ſoot, or other craſs matter. See SMOKE.

* The word is formed from the Latin *fuligo*, ſoot; and is rarely uſed but when joined with vapour.

In the firſt fuſion of lead, there exhales a great deal of *fuliginous* vapour; which, retained and collected, makes what we call *litharge*.

Lampblack is what is gathered from the *fuliginous* vapours of pines, and other reſinous woods, when burnt.

Some phyſicians talk of *fuliginous* vapours emitted from the ſpleen to the brain; which they will have to be the cauſe of the hypochondriac and hyſteric diſorders; thence called the *vapours*, and by ſome the *ſpleen*.

FULL is variouſly uſed in oppoſition to empty, narrow, confined, *&c.*

The Carteſians hold, that the univerſe is *full*, i. e. that every part or point has matter in it.

When the body is *full* of humours, it ſhould be purged. See PLENITUDE, and PLETHORA.

An embaſſador has *full* power given him to act, tranſact, *&c.*—The army was in *full* march, *i. e.* the whole army was in march, with all the forces it conſiſted of.

A man is ſaid to bear the arms of a family *full*, i. e. without any difference or diminution.

FULL *forfeiture*. See the article FORFEITURE.

FULL *arms*. See the article ARMS.

FULL *moon*, *plenilunium*, that phaſis of the moon, when her whole diſk or face is illuminated; which is in the time of her oppoſition to the ſun.

Eclipſes of the moon always happen at the time of *full moon*.

FULLER *, a workman employed in the manufactories, to full, mill, or ſcour cloths, rateens, ſerges, and other woollen ſtuffs, by means of a mill, to render them thicker, and more compact and durable.

* The word is formed of the Latin *fullo*, which ſignifies the ſame thing.

The *fullers* among the Romans waſhed, ſcoured, and fitted up cloaths; and their office was judged of that importance, that there were formal laws preſcribed them for the manner of performing it. Such was the *Lex Metalla de fullonibus*. See alſo Pliny, l. vii. c. 56. Ulpian. leg. 12. ff. *de furtis*, l. xiii. §. 6. *Locati*, l. xii. §. 6. ff. *&c.*

FULLERS-*earth*, a fatty foſſil earth, ſoft and brittle; of great uſe in the woollen manufacture.

It ſerves to ſcour cloths, ſtuffs, *&c.* and imbibe all the greaſe and oil neceſſarily uſed in the preparing, dreſſing, *&c.* of the *wool*.

Fullers-earth is dug in great plenty out of certain pits near Brick-hill, in Staffordſhire; alſo near Ryegate, in Surry; near Maidſtone, in Kent; near Nutley and Petworth, in Suſſex; and near Wooburn, in Bedfordſhire.

It is abſolutely neceſſary to the well dreſſing of cloth; and hence foreigners, though they can procure wool to be clandeſtinely exported out of the kingdom, can never reach to the perfection of the Engliſh cloths, *&c.* without *fullers-earth*.

For this reaſon it is made a contraband commodity; and the export made equally criminal with that of exporting wool.

Abroad they make great uſe of urine, in lieu of *fullers-earth*.

This earth abounds much in the vegetative ſalt, which promotes the growth of plants; and is therefore reckoned by Sir H. Plat, and others, a great improver of land. When mixed with vinegar, it diſperſes pimples and puſhes; checks inflammations, and cures burns. See Supplement, article CIMOLIA.

FULLERS *weed*, *thiſtle*, or *teazle*. See TEAZLE.

FULLERY, a workhouſe, or place where cloths, *&c.* are *fulled*, or ſcoured.

The term is principally underſtood of the fulling-mill.

Thus, when they ſay, carry that cloth, ſerge, or the like, to the *fullery*, they mean it is to be ſent to the mill, to be ſcoured and fulled.

FULLING, the art, or act of cleanſing, ſcouring, and preſſing cloths, ſtuffs, and ſtockens, to render them ſtronger, cloſer, and firmer: called alſo *milling*.

Pliny, lib. vii. cap. 56. aſſures us, that one Nicias, the ſon of Hermias, was the firſt inventor of the art of *fulling*: and it appears by an inſcription quoted by Sir G. Wheeler, in his travels through Greece, that this ſame Nicias was a governor in Greece in the time of the Romans.

The *fulling* of cloths, and other ſtuffs, is performed by a kind of water-mill; thence called a *fulling*, or *ſcouring-mill*.

Theſe mills, excepting in what relates to the mill-ſtones and hopper, are much the ſame with corn-mills. And there are even ſome, which ſerve indifferently for both purpoſes; corn being ground, and cloths fulled, by the motion of the ſame wheel.

Hence, in ſome places, particularly France, the fullers are called *millers*; as grinding corn, and milling ſtuffs, at the ſame time.

The principal parts of the *fulling-mill* are, the wheel, with its trundle; which gives motion to the tree, or ſpindle, whoſe teeth communicate it to the peſtles, or ſtampers, which are hereby raiſed and fallen alternately, according as its teeth catch on, or quit, a kind of latch in the middle of each peſtle. The peſtles and troughs are of wood; each trough having at leaſt two, ſometimes three peſtles, at the diſcretion of the maſter, and according to the force of the ſtream of water.

In theſe troughs are laid the cloths, ſtuffs, *&c.* intended to be *fulled:* then, letting the current of water fall on the wheel, the peſtles are ſucceſſively let fall thereon, and by their weight and velocity they ſtamp and preſs the ſtuffs very ſtrongly, which by this means become thickened and condenſed.

In the courſe of the operation, they ſometimes make uſe of urine, ſometimes of fullers-earth, and ſometimes of ſope.

To prepare the ſtuffs to receive the firſt impreſſions of the peſtle, they are uſually laid in urine; then in fullers-earth, and water; and laſtly in ſope, diſſolved in hot water.

Sope alone would do very well; but this is expenſive; though fullers-earth, in the way of our dreſſing, is ſuperior thereto; but then it muſt be firſt well cleared of all ſtones and grittineſſes, which are apt to make holes in the ſtuff.

As to urine, it is certainly prejudicial, and ought to be intirely diſcarded; not ſo much on account of its ill ſmell, as of its ſharpneſs and ſaltneſs; which is apt to render the ſtuffs dry and harſh.

The true method of *fulling* with ſope is delivered by Monſ. Colinet, in an authentic memoir on that ſubject, ſupported by experiments made by order of the marquis de Louvois, then ſuperintendant of the arts and manufactories of France. The ſubſtance of which we ſhall here ſubjoin.

Method of FULLING *cloth, and woollen ſtuffs, with ſope.*— A coloured cloth, of about forty-five ells, ie to be laid in the uſual manner, in the trough of a *fulling mill*; without firſt ſoaking it in water, as is commonly practiſed in many places.

To *full* this trough of cloth, fifteen pounds of ſope are required; one half of which is to be diſſolved in two pails of river or ſpring-water, made as hot as the hand can well bear it. This ſolution is to be poured by little and little upon the cloth, in proportion as it is laid in the trough: and thus it is to be *fulled* for at leaſt two hours; after which it is to be taken out, and ſtretched.

This done, the cloth is immediately returned into the ſame trough, without any new ſope; and there *fulled* two hours more. Then taking it out, they wring it well, to expreſs all the greaſe and filth.

After the ſecond *fulling*, the remainder of the ſope is melted, as the former, and caſt at four different times, on the cloth; remembring to take out the cloth every two hours, to ſtretch it, and undo the plaits and wrinkles which it has acquired in the trough. When they perceive it ſufficiently *fulled*, and brought to the quality and thickneſs required, they ſcour it out for the laſt time in hot water, keeping it in the trough till it be quite clean.

As to white cloths; in regard theſe *full* more eaſily, and in leſs time, than coloured ones, a third part of the ſope may be ſpared.

FULLING *of ſtockens, caps,* &c. may be performed ſomewhat differently; *viz.* either with the feet, or the hands; on a kind of rack, or wooden machine, either armed with teeth of the ſame matter, or elſe with horſes or bullocks teeth.

The ingredients made uſe of herein, are urine, green ſope, white ſope, and fullers-earth. But the urine alſo is reckoned prejudicial here.

Note, woven ſtockens, *&c.* ſhould be *fulled* with ſope alone: for thoſe that are knit, fullers-earth may be uſed with the ſope.

Indeed, it is frequent to *full* theſe kinds of works with the mill, after the uſual manner ot cloths, *&c.* But that is too coarſe and violent a manner, and is apt to damage the work, unleſs it be very ſtrong.

FULLONUM *carduus.* See the article CARDUUS.

FULMINANT, FULMINANS, or FULMINATING, an epithet applied to ſomething that thunders, or makes a noiſe like that of thunder.

We ſay, *Jupiter fulminans, aurum fulminans, pulvis fulminans,* &c.

Aurum FULMINANS. See the article AURUM.

Pulvis FULMINANS is a compoſition of three parts of nitre, two parts of ſalt of tartar, and one of ſulphur.

Both the *aurum* and *pulvis fulminans* produce their effect principally downwards: in which they differ from gunpowder, which acts *in orbem*; but principally upwards. If they be laid in braſs ladles, and ſo ſet on fire; after fulmination, the ladles will be often found perforated.

FULMINATING *Legion.* See the article THUNDERING *Legion.*

FULMINATION, in the Romiſh canon law, a ſentence of a biſhop, official, or other eccleſiaſtic appointed by the pope; whereby it is decreed, that ſome bull, ſent from the pope, ſhall be executed.

Fulmination is the ſame thing with the verification, or recognition, of a letter, or inſtrument, of a prince in a lay court.

FULMINATION is alſo uſed for the denunciation, or execution, of a ſentence of anathema, made in public, with due ſolemnity.

In *fulminating* anathema's, the biſhop who pronounces ſentence, is to be cloathed in his epiſcopalia. See ANATHEMA.

FULMINATION, or FULGURATION, in chemiſtry, a vehement noiſe, or ſhock made by divers preparations; as *aurum fulminans*, &c. when ſet on fire.

FUMIGATION, in medicine, and chemiſtry, is underſtood of things taken in the way of fume, or ſmoke; or that are turned into ſmoke, or ſteam.

A northern phyſician has an expreſs treatiſe to juſtify the uſe of *fumigations* in many caſes.

It is dangerous taking mercury by *fumigation.* This *fumigation* is a kind of potential calcination; the vapour of mercury, laid on the fire, corroding and reducing into a calx the little laminæ of metals ſuſpended over it.

FUMIGATION is alſo uſed for the act of making a ſuſpended body receive the fumes or ſteams of one or more other bodies; in order to calcine it, to correct it, or impart to it ſome new quality.

Ceruſs is made by the *fumigation*, or vapour, of vinegar, gnawing and corroding plates of lead.

FUNAMBULUS, among the Romans, was what we call a *rope-dancer*, and the Greeks, *ſchœnobates.* See *Rope*-DANCER.

The term is alſo uſed for ſuch as, letting themſelves down by a rope, or cord, make their eſcape out of a city, or place beſieged: as is obſerved by Du Cange.

Julius Capitolinus, and Horace, make mention of *funambuli:* Acron on Horace aſſures us, that it was the orator Meſſala, who firſt introduced the word *funambulus*, in lieu of *ſchœnobates*, uſed by the Greeks. For the Greeks ſeem to have had of theſe rope-dancers from the firſt inſtitution of their ſcenic games, which are ſaid to have been invented about the time of Icarius, father of Erigone; or of Dionyſus, ſurnamed *Liber Pater*, whom Theſeus firſt introduced into Athens.

At Rome, the *funambuli* firſt appeared under the conſulate of Sulpicius Pæticus, and Licinius Stolo, who were the firſt introducers of the ſcenic repreſentations. It is added, that they were firſt exhibited in the iſland of the Tiber; and that the cenſors Meſſala and Caſſius afterwards promoted them to the theatre.

In the Floralia, or ludi Florales, held under Galba, there were *funambulatory* elephants, as we are informed by Suetonius. Nero alſo ſhewed the like, in honour of his mother Agrippina. Vopiſcus relates the ſame of the time of Carinus and Numerianus.

There was a *funambulus*, it ſeems, who performed at the time when the Hecyra of Terence was acted; and the poet complains, that the ſpectacle prevented the people from attending to his comedy: *Ita populus ſtudio ſtupidus in* funambulo *animum occupârat.*

FUNCTION, the act of doing ſomething for which the agent was appointed, or which he was obliged to.

Thus we ſay, the ſtomach performs its *function*; i. e. digeſts well; the fumes of wine diſturb the brain in the performance of its *functions.*

Phyſicians divide the *functions* of the human body into *vital, natural,* and *animal.*

Vital FUNCTIONS are thoſe neceſſary to life; and without which it cannot ſubſiſt: as, the actions of the heart, brain, lungs, *&c.*

Natural FUNCTIONS are thoſe which change the food, *&c.* ſo as to aſſimilate it to our own nature: ſuch are the actions of the viſcera, and the veſſels which receive, retain, ſecern, *&c.* the humours.

Animal FUNCTIONS are thoſe without which we cannot perceive, will, remember, *&c.* Such are feeling, ſeeing, imagining, judging, paſſions, voluntary motion, *&c.*

FUNCTION is alſo uſed figuratively in ſpeaking of the offices, duties, or occupations, a perſon is engaged in.

He acquitted himſelf of all the *functions* of the magiſtracy with applauſe. The actions of an embaſſador muſt be diſtinguiſhed from his *functions*; the one regards his character, the other his perſon.

FUND, **FUNDUS**, a Latin term, uſed for the bottom of certain things; and particularly of certain parts of the body.

FUND *of the eye*, **FUNDUS** *oculi*, is that part poſſeſſed by the choroides and retina.

The images of objects are repreſented in an inverted ſituation, in the *fund* of the eye. See VISION.

FUNDUS *uteri*, or *bottom of the womb*, is the body or principal part thereof: ſo called in contradiſtinction to the cervix, or neck; the oſculum, or mouth; and the vagina, or ſheath.—See *Tab. Anat. (Splanc.) Fig.* 9. lit. a. *Fig.* 11. lit. d.

FUNDUS *veſicæ*, or *bottom of the bladder*, is the cavity thereof, wherein the urine is contained. In men it is placed over the rectum; and in women over the matrix.

FUND *of the gall-bladder*, the *ſtomach*, &c. See GALL-*bladder*, STOMACH, *&c.*

FUNDUS *plantæ* is that part of a plant, where the ſtalk juſt meets, and joins the root.

FUNDUS *cœli* is the point oppoſite to the point of culmination; or the point of the ecliptic, wherein it is interſected by the meridian, beneath the horizon.

FUND, in commerce, is uſed for the capital, or ſtock of a merchant, company, or corporation; or the ſum of money they put into trade.

In this ſenſe we ſay abſolutely, the *funds*, the *public funds*, meaning the ſtock of the great companies, or corporations, as the Bank, South-Sea, Eaſt-India, *&c.*

FUNDAMENT, the anus, or aperture, through which an animal voids his excrements.

FUNDAMENTAL, ſomething that ſerves as a baſe, reſt, ſupport, or foundation, for any thing.

The Apoſtles creed contains the *fundamental* points of religion.

The Salic law is the *fundamental* law of the polity of France.

FUNDAMENTAL, in muſic, denotes the principal note of a ſong, or compoſition, to which all the reſt are in ſome meaſure adapted, and by which they are ſwayed; called alſo the *key* of the ſong. See KEY.

FUNERAL *, the ceremonies performed at an interment; or the laſt offices paid the deceaſed.

* The word is formed of the Latin *funus*; and that of *funalia*, by reaſon of the torches (which were *funes, cera circumdati*) uſed in the *funerals* of the Romans: though others derive *funus* from the Greek, φονος, death or ſlaughter.

The *funeral* rites among the antient Romans were very numerous.—The deceaſed was kept ſeven days; and every day waſhed with hot water, and ſometimes with oil, that, in caſe he were only in a ſlumber, he might thus be waked; and every now and then his friends meeting, made a horrible outcry or ſhout, with the ſame view; which laſt action they called *conclamatio*.

The third conclamation was on the ſeventh day; when, if no ſigns of life appeared, the defunct was dreſſed and embalmed by the pollinctores; placed in a bed near the door, with his face and heels toward the ſtreet; and the outſide of the gate, if the deceaſed were of condition, was garniſhed with cypreſs boughs.

In the courſe of theſe ſeven days, an altar was raiſed near his bed-ſide, called *acerra*; on which his friends every day offered incenſe; and the Libitinarii provided things for the *funeral*.

On the ſeventh day a crier was ſent about the city to invite the people to the ſolemnization of the *funeral* in theſe words, *Exequias* L. Tit. L. *filii, quibus eſt commodum ire, jam tempus eſt. Ollus ex ædibus effertur.*

The people being aſſembled, the laſt conclamation ended, and the bed was covered with purple; a trumpeter marched forth, followed by old women, called *præficæ*, ſinging ſongs in praiſe of the deceaſed: and laſtly, the bed followed, borne by the next relations. And if the perſon were of quality and office, the waxen images of all his predeceſſors were carried before him on poles.

The bed was followed by his children, kindred, *&c. atrati*, or in mourning: from which act of following the corps, theſe *funeral* rites were called *exequiæ*.

The body thus brought to the roſtra, the next of kin *laudabat defunctum pro roſtris*, made a *funeral* oration in his praiſe, and that of his anceſtors.

This done, the body was carried to the *pyra*, or *funeral* pile, and there burnt: his friends firſt cutting off a finger, to be buried with a ſecond ſolemnity.

The body conſumed, the aſhes were gathered; and the prieſt ſprinkling the company thrice with clean water, the eldeſt of the *præficæ* crying aloud, *ilicet*, diſmiſſed the people, who took their leave of the deceaſed in this form, *Vale, vale, vale: nos te ordine quo natura permiſerit, ſequemur.*

The aſhes, incloſed in an urn, were laid in the ſepulchre, or tomb. The firſt Romans did not burn their dead, but interred them, as we do. Pliny, lib. vii. c. 54. aſſures us, that the cuſtom of burning was not introduced till after they had learnt, that their enemies dug up, and expoſed, the bodies of their ſoldiers buried in remote countries. And yet Plutarch, in his life of Numa, obſerves, that Numa was buried; as having expreſly forbid them by his teſtament to burn him: this ſhews that the Romans had practiſed burning before him.

This cuſtom of burning the dead, ſo religiouſly obſerved by the Greeks and Romans, was held in abhorrence by ſeveral other nations.

Herodotus relates, that the Perſians deteſted it; as holding fire to be a god. The Egyptians declined to burn their dead; as taking fire for an inanimate beaſt; and judging it impiety to commit the bodies of the deceaſed to be devoured by beaſts. The cuſtom of burning among the Romans ceaſed under the empire of the Antonines.

FUNERAL *column*, a column crowned with an urn, wherein the aſhes of ſome deceaſed perſon are ſuppoſed to be incloſed; the fuſt, or ſhaft, being beſet with tears, or flames; the ſymbols of grief, and of immortality.

FUNERAL *games*, *ludi funebres*, were a part of the ceremony of the antient *funerals*.

They conſiſted chiefly in proceſſions, and ſometimes in mortal combats of gladiators around the *funeral* pile.

The cuſtom was very antient; though it had not always been the ſame. At firſt, they cut the throats of a number of captives before the pyra, as victims to appeaſe the manes of the deceaſed. This Achilles does in Homer, Iliad ψ, at the *funeral* of Patroclus: and Æneas, in Virgil, l. ix. at that of Pallas, ſon of Evander. Cæſar, in his *Commentaries*, l. vii. relates, that the Gauls alſo did the like.

But at length it appeared barbarous, thus to butcher men; and therefore to ſave the horror of the ſpectacle, yet without the dead's loſing any thing thereby; they made the poor captives fight and kill one another, only ſaving ſome few of ſuch as came off victors.

This cuſtom was borrowed of the Greeks by the Romans; among whom the cruel diverſion was called *Munus*.

The firſt who introduced it at Rome, was Junius Brutus, at the obſequies of his father; or, according to others, Ap. Claudius, and M. Fulvius, during their conſulate.

The like horrible combats were alſo occaſionally exhibited by the magiſtrates; and ſometimes they were added to the theatrical pieces.

The emperor Claudius decreed, that whereas theſe accurſed games were till then frequent and arbitrary; it ſhould be the practice for the future, only to perform them regularly every year, at the expence of the ſtate; and that the ædiles ſhould have the care and direction thereof. But he conceived a horror for them himſelf; and ſoon after aboliſhed them: though it was ſtill allowed particular perſons to have them, provided they were worth forty thouſand ſeſterces *per annum*.—They were not finally aboliſhed before Theodoric king of the Goths, at the end of the fifth century.

FUNERAL *honours*. See the article HONOURS.

FUNERAL *oration*, or *ſermon*, a diſcourſe pronounced in praiſe of a perſon deceaſed, at the ceremony of his *funeral*.

The cuſtom of making *funeral* orations is very antient. The Romans had it of a long ſtanding; and it was always one of the neareſt relations that made the harangue. Auguſtus did the office to his grandmother Julia, when only twelve years of age. Suet. Aug. c. 8. And we have divers parallel inſtances.

The cuſtom ſeems to have begun with the republic; at leaſt, the firſt *funeral* oration we read of, was that of Brutus, who expelled the kings, and was the firſt conſul; who, having been killed in a battle againſt the Hetrurians, was *laudatus pro roſtris*, praiſed in the forum by Valerius Publicola his collegue.

Indeed, ſome authors will have the practice more antient. They maintain it to have been in uſe among the Greeks; and that Solon, who, according to Aulus Gellius, gave laws to the Athenians, in the time when the elder Tarquin reigned at Rome, was the firſt author thereof: ſomething like which, it ſeems, the orator Anaximenes has left in writing. See Polydore Virgil *de Invent. Rer.* l. iii. c. 10.

FUNGUS, in natural hiſtory. See MUSHROOM.

FUNGUS, in medicine, a fleſhy tumor, or excreſcence, very ſpongious, ſoft, and pale; ariſing on the membranes, tendons, and other nervous parts, in conſequence of ulcers, wounds, contuſions, and ſtrains.

Fungus's are frequently formed on the meninges, or membranes of the brain, in wounds of the head when not well covered, or defended from the external air: they are alſo frequent about the joints; which laſt grow very inſenſibly. But where the ſkin is open, finding more room, they grow to a prodigious degree in a very little time, aſſuming the form of a muſhroom, or *fungus*.

There are alſo *fungus*'s of the anus, and uterus. They ar al all ſuppoſed to proceed from a retention and depravation of the nutritious juice.

The *fungus* is a general kind of excreſcence, whereof there are divers particular ſpecies: as the *ficus*, the *ſarcoma*, *condyloma*, &c.

FUNGOUS *fleſh* is a ſpongeous excreſcence, or (as we popularly call it) *proud fleſh*, frequently growing on the lips of wounds, ulcers, *&c.*

The ſarcocele is the effect of a ſort of *fungous* fleſh.

In ulcers, Wiſeman obſerves, there frequently ariſes a ſpongeous, or *fungous*, fleſh, either from the too great afflux of humours, or through the ſurgeon's unſkilfulneſs.

It muſt be ſuppreſſed, or taken off, by drying medicines, or even by cauſtics: as *lapis tutiæ*, burnt allum, precipitate of mercury, Roman vitriol, *&c.*

FUNICULUS *umbilicalis.* See the article UMBILICALIS.

FUNNEL *of a chimney*, the ſhaft, or ſmalleſt part, of the chimney, from the waiſt upwards.

Palladio orders, that the *funnel* be raiſed three, four, or five, feet, at leaſt, above the roof, that it may carry the ſmoke clear from the houſe into the air.

Care, too, is to be taken, as to the width; for that, if it be too wide, the wind will drive back the ſmoke into the room; and if too narrow, the ſmoke will not be able to make its way. Chamber-chimneys, therefore, are not to be made narrower than ten or eleven inches; nor broader than fifteen.

FUNNEL. See the article TUNNEL.

FURBISHER, a perſon who *furbiſhes*, or poliſhes, arms, and gives them a brightneſs, and luſtre.

In the general ſenſe of the word, it includes what we now call *armourers* and *ſword cutlers*; in a more reſtrained ſenſe, it is appropriated to thoſe who clean, and ſcour up, old ſwords, guns, and halbards, and put them in order.

Among the officers of the Tower, there is a *furbiſher* of ſmall arms, and another of ſwords; and the like there is in moſt other armories of England; as at St. James's, Windſor, Cheſter, Plymouth, Hull, and Berwick.

FURBISHING*, the act of cleaning, ſcouring, and poliſhing, arms; as guns, piſtols, ſwords, *&c.*

* The word is formed of the French *fourbiſſure*, which Hicks derives from *furben*, which, in the language of the antient Franks, ſignified to clean and poliſh: though M. Huet chooſes rather to derive the French *fourbir*, and *fourbiſſure*, from the Engliſh *furbiſh*, and *furbiſhing*. Skinner obſerves, that ſome authors derive the Engliſh *furbiſh* from the Latin *furvus*, and *fervor*; but, for his part, he rather derives it from the German *farb*, colour; and *farben*, to dye, or give a colour.

Furbiſhing is principally performed with emery.

FURCA, FORK, in antiquity, a kind of puniſhment, or, rather, inſtrument of puniſhment, among the Romans.

The form of the Roman *furca* is very obſcurely deſcribed by the antients, and much controverted by the moderns.

All we know for certain is, that it was of wood, and reſembled a fork; whence it is called, in writers, ξυλον διπλουν, δικρουν, διδυμον, that is, *lignum duplex*, *bicornutum*, *geminum*; a double-forked, or horned, timber. Plutarch, treating of the *furca*, ſays, it is originally the piece of timber wherewith the beam of the waggon is upheld: he adds, that it is the ſame with what the Greeks call *apoſtates*, and *ſterigma*; and the *ſterigma* is deſcribed, by Heſychius, as the forked piece of timber put under the yoke of the waggon.

From theſe accounts, Godwyn takes the *furca* to have been the beam of a waggon, to which the yokes were faſtened.

The puniſhment of the *furca* was of three kinds: the firſt, only *ignominious*, was when a maſter forced his ſervant, for ſmall offences, to carry a *furca*, or fork, on his ſhoulders, about the city; confeſſing his fault, and warning others to beware of the like: whence ſuch ſervant came to be denominated *furcifer*.

The ſecond kind was *penal*; when the party, having the *furca* on his neck, was led about the circus, or other place, and whipped all the way.

The third was *capital*; the malefactor having his head faſtened to the *furca*, and ſo being whipped to death.

In after-times of the empire, when this ſort of puniſhment became interdicted, the form of the *furca* was changed, and made like our gibbets, or gallows. See the articles CROSS, GIBBET, *&c.*

FURCA, *and foſſa*, in our antient cuſtoms, *i. e.* gallows and pit; denoted a right, or juriſdiction, of puniſhing felons; *viz.* men with hanging, women with drowning.

FURCHE, in heraldry, a croſs in the form repreſented in Tab. *Herald. fig.* 41. See CROSS.

FURCULA, in anatomy, the ſame with *clavicula*; which ſee.

FURFUR literally ſignifies bran; and is therefore uſed for the ſcales, ſcurf, or dandriff, which grow upon the ſkin; having ſome likeneſs thereto. See CUTICLE. Hence,

FURFURATION, the falling off of *furfures* in combing, *&c.*

FURIES, *Eumenides*, *Diræ*, in the heathen theology, and poetry, were infernal deities, ſuppoſed to enter, and poſſeſs, men; to torment, and puniſh them.

The *furies* were reputed the miniſters of Pluto, and the avengers of crimes. Strabo paints them cloathed in long robes falling to their heels, but girt about the breaſt. They were three in number; Tiſiphone, Megæra, and Alecto.

Patin, Spanheim, *&c.* will have it to be them which we ſee on a medal of the emperor Philip ſtruck at Antioch, on whoſe reverſe are repreſented three women dreſſed as above-mentioned, and armed with a key, and with burning torches, poniards, and ſerpents.

Struvius, *Antiq. Rom. Synt.* c. i. p. 182. adds, that the three *furies* may probably be no other than the triple Hecate, whom the antients believed to purſue and torment the wicked in hell, on earth, and in heaven.

Some of the poets add a fourth *fury*, called *Lyſſa*; a Greek word, ſignifying madneſs, or rage.

They repreſent the *furies* with eyes inflamed, their heads twiſted round with ſnakes, and furniſhed with whips and burning torches in their hands, to puniſh the guilty.

The daffodil was ſacred to the *furies*; and ſuch as offered ſacrifices to them, were crowned therewith. This we learn from Euſtathius, on the firſt book of the *Iliad*, p. 87.

Theſe *furies* were alſo called *pœnæ*, ποιναι, by reaſon of the puniſhments they inflicted on criminals; as their denomination *furies* aroſe from the rage and madneſs which they threw into the conſcience. Voſſ. *De Idolol.* l. viii. c. 18.

The Greeks called them *eumenides*; the origin of which name is much controverted among the learned. The etymology that ſeems beſt authorized, derives it from ευμενης, gentle, mild; which was applied to them on occaſion of Oreſtes's being abſolved of the murder committed by him on the perſon of his mother. Minerva, it ſeems, appeaſed and pacified the *furies*; ſo that they ceaſed to purſue him: upon which, the Athenians ever after denominated them *eumenides*.

But it muſt be obſerved, that, in truth, the Athenians called them by the ſame name long before Oreſtes's time; as appears from the Oedipus of Sophocles. There was a temple in Athens, near the areopagus, conſecrated to the eumenides, whom the Athenians called *venerable goddeſſes*: Ariſtides, and the ſcholiaſt of Thucydides, ſpeak of this temple as erected in memory of the judgment of Oreſtes.

FURLING *lines* are ſmall lines made faſt to the top-ſails, top-gallant-ſails, and the miſſen-yard-arms; ſerving to *furl* up thoſe ſails.—The miſſen has but one *furling* line, but all the reſt have two; one at each end.

FURLONG, an Engliſh long meaſure, containing the eighth part of a mile.

The Engliſh *furlong* is equal to forty poles, or perches; and the perch to 16½ feet.—Though in an old law-book, printed in Henry the VIIIth's time, we read, that ſix hundred feet, of fiveſcore to the hundred, make a *furlong*.

Hercules is ſaid to have run a ſtadium, or *furlong*, at one breath.

FURLONG is alſo uſed for the eighth part of an acre, or half a rood.

FURLONG* is ſometimes alſo uſed for a piece of land, of more or leſs acres.

* *Omnibus Chriſti fidel. Johannes Blunt de Eye, arm.——Dedit Thomæ Croft & Franciſco Lovel, arm. unum* furlongum *terræ arabilis continen. per æſtimationem quatuor acras*, &c. *Dat.* 20 *Jan.* 3 *Eliz.*

FURLOUGH, a licence granted by an officer to a ſoldier, to be abſent for a while.

FURNACE, an utenſil, or veſſel, proper to contain fire; or to raiſe and maintain a vehement fire in; whether of coal, or wood.

There are divers kinds of *furnaces*, of various forms, and for various uſes.

The domeſtic *furnace*, uſed in making confections, *&c.* is uſually of iron, or earth.

Thoſe uſed by the goldſmiths, refiners, *&c.* are much larger, and of a different ſtructure.

Thoſe wherein lime, bricks, *&c.* are burnt, are called *kilns*.

FURNACE is particularly uſed for a kind of oven, wherein the ores of metals, after beating, waſhing, *&c.* are melted down, by a great coal or wood fire.

The ſtructure and application of theſe *furnaces* are ſomewhat different, for the different metals. See Supplement, article FURNACE.

FURNACE is more ſtrictly applied to thoſe uſed in the melting of iron; which authors frequently confound with iron forges, though there is a conſiderable difference between them.

This *furnace* is a brick ſtructure, much in the ſhape of an egg ſet an-end, wherein the iron ore, after it has been burnt in a kiln, is put, intermixed with cinders and charcoal; and the whole melted, till it trickle down into a receiver underneath; where, the ſcum and droſs being taken away, the metal is thrown into furrows made in a bed of ſand, and thus is caſt into ſows, or pigs, of iron.

The forge is a place where the pigs are heated, and fuſed a ſecond, and even a third time, to prepare and fit them further for uſe. See FORGE.

Bellows-FURNACE is one of the two kinds of *furnaces* uſed in coinage for the fuſion of metals. It conſiſts of a flat hearth at bottom, into which the air may be admitted by a hole contrived therein.

On a level with the hearth is a ſecond aperture, which gives paſſage to the pipe of the bellows, from which the *furnace* is denominated: about a foot over this is a moveable grate, which may be taken off, and put on, at pleaſure: laſtly, over this is the place where the crucible is ſet, which is ſquare, and made of the ſame earth with the crucible, of breadth ſufficient to bear a range of coals around the crucible. To melt a metal in this *furnace*, they lay a little plate of forged iron over the grate, and on this they ſet the crucible, which is likewiſe covered with an iron, or earthen, lid; then they fill the *furnace* with charcoal, and when it is well lighted, and the crucible ſufficiently hot, they ſtop the vent-hole: laſtly, throwing on freſh coals, they ſtop the *furnace* with an iron lid; thus continuing to work the bellows, and ſupply freſh fuel, till the metal be in fuſion.

Founders FURNACE is of divers kinds, according to the different kinds of work to be caſt.

That uſed by the founders of ſmall work is much like the ſmiths forge; with this only difference, that the fire is made on a hearth built in a cavity in the middle of the *furnace*, to which the pipe of the bellows reaches.

This cavity goes to the bottom of the maſſive; acroſs the middle of it is placed a grate, which holds the fire and the crucible; and below is the place for the aſhes, &c.

The ſtatuaries, or figure-makers, uſe two kinds of *furnaces*; which ſee deſcribed under the article FOUNDERY *of ſtatues*.

Glaſs-houſe FURNACE is the place wherein the ingredients, or materials, of glaſs are fuſed, and vitrified.

There are three kinds of *furnaces* uſed in the glaſs-works.—The firſt, called the *calcar*, ſerves to prepare, or calcine, the frit in. It is made in faſhion of an oven, ten feet long, ſeven broad, and two deep. The fewel, which is ſea-coal, is put in a trench, on one ſide of the *furnace*; and the flame reverberates from the roof back upon the frit. The coals burn in an iron grate, and the aſhes fall hence into a hole underneath.

The ſecond is the *working furnace*, ſerving to melt the metal in, or make the glaſs. Its figure is round, three yards in diameter, and two high, being arched over: round the inſide there are eight, or more, pots placed, and piling-pots on theſe: the number of pots is always double that of the boccas, or mouths, or that of the workmen, that each may have one pot refined, to work out of, and another for metal, to refine in, while he works out of the former.

The *furnace* has two partitions: the lower, ſeparating the pots from the fire-place, has a circular hole in the centre, covered with a grate, through which the flame paſſes from the fire-place into the *furnace*; from the arched ſides and roof whereof it is reverberated into the melting-pots.

The ſecond partition divides this from the leer, or annealing *furnace*: through the boccas, or working-holes, the metal is taken out of the pots, and the pots put in the *furnace*; theſe boccas are ſtopped with moveable covers, made of lute and brick, to ſcreen the workmens eyes from the fire: on each ſide the bocca is a boccarella, out of which coloured glaſs, or the finer metal, is taken from the piling-pot. To the *furnace*, likewiſe, belong ovens, or holes, near the leer, for the calcining of tartar, iron, &c.

The *leer*, which ſerves to anneal and cool the veſſels, and which Agricola makes a particular *furnace*, conſiſts of a tower, beſides the leer: the tower lies directly over the melting *furnace*, with a partition betwixt them a foot thick, having an aperture, called *occhio*, or *lumella*, through which the flame, or heat, aſcends out of the *furnace* into the tower: on the floor, or bottom, of this tower, the veſſels, faſhioned by the maſters, are ſet to anneal; this has alſo two boccas, or mouths, by which the glaſſes are put in with a fork, and ſet on the floor.

The leer is an avenue five or ſix yards long, continued to the tower: through this the glaſſes, when annealed, are drawn in iron pans, called *fraches*, by which they come to cool by degrees; being quite cold, by that time they reach the mouth of the leer, which enters the ſaroſel, or room where the glaſſes are to be ſet.

The third is the *green glaſs furnace*, which is a kind of compound of all the former. It is made ſquare (the two former being circular), having an arch at each angle thereof, for annealing and cooling the glaſſes. The metal is wrought on two oppoſite ſides, and on the other two they have their calcars, into which are made linnet-holes for the fire to come from the *furnace*, to bake the frit; as, alſo, to diſcharge the ſmoke. Fires are made in the arches, to anneal the veſſels; ſo that the whole proceſs is done in one *furnace*.

The ſtones wherewith the inſides of theſe *furnaces* are built, are not brick (which would ſoon melt down into glaſs, as alſo all the ſofter ſtones), but hard and ſandy kinds, by Imperatus called *pyramachia*.

Glaſs-painters FURNACE is made of brick, nearly ſquare, and about two feet and a half each way: it is cut horizontally, in the middle, by a grate, which ſuſtains the pan, or ſhovel, the glaſs is baked in. This *furnace* has two apertures: one below the grate, to put the fuel in at; the other above it, through which the workman ſpies how the coction of the colours goes on.

Hatters FURNACES are of three kinds: a little one under the mould whereon they form their hats; a larger, in the ſcouring room, under a little copper full of water and lees; and a very large one under the great copper, which they dye their hats in.

Letter-founders FURNACE is very ſmall, not exceeding a foot and half in height, and a foot in diameter; being placed on a wooden ſtand, or bench, to raiſe it to a proper height for the artiſt, who works ſtanding. It is made of the ſame earth with crucibles.

Plumbers FURNACE is of three kinds: in the firſt they melt the lead, whereof ſheets are to be caſt.

This is only a ſort of large copper, or receptacle like a copper, made of free-ſtone, and coated well round with potters clay, having a little iron pan at bottom.

In the ſecond they melt the lead to be caſt in moulds for pipes, &c. which are not to be ſoldered.

The third is the tinning *furnace*, which is a ſquare frame of wood, or ſometimes a maſs of ſtone-work, with a brick hearth, whereon is made a charcoal fire, which ſerves them for the applying of thin tin leaves on their works.

Wind FURNACE is the ſecond *furnace* uſed in the fuſion of metals for coinage. At bottom it has a hearth made hollow, in manner of a cupel, with a vent-hole in the fore-part thereof; over the vent-hole is a grate ſealed in the maſſive of the *furnace*; over the grate is the place for the crucible, which is uſually of forged iron.

The fire being lighted, the crucible is ſet in, with a cover over it; and a capital, or cover, of earth, or iron, is laid likewiſe over the *furnace*; and at the top of this capital is a hole, five or ſix inches in diameter.

It is called *wind-furnace*, by reaſon the air, entering through the vent-hole at bottom, which is always open, ſerves the ſame purpoſe as the bellows in other *furnaces*.

Gold is uſually melted in the bellows-*furnace*, as requiring an intenſer heat before it fuſes.—Silver and copper are commonly melted by the *wind furnace*.

FURNACE, in chemiſtry, is a receptacle either of brick, iron, or ſtone, wherein the fire, neceſſary for the ſeveral operations, is contained, determined, and directed.

The *furnace* conſiſts of ſeveral parts: as a place for the veſſel, or body, to be wrought on; a hearth, or hole, for the aſhes; a chimney; a grate; a door; a dome; and a fan, or elſe regiſters, whereby to let in air, to increaſe or abate the fire.

The perfection of a *furnace* conſiſts in its maintaining a conſtant, equable fire; and this eaſily tempered, and at an eaſy expence.

To have the expence eaſy, the whole action of the fire, or fuel, muſt be employed on the ſubject that is to undergo the operation.

It muſt be equable, ſince different degrees of fire have different effects: ſo that if any given degree would anſwer any given intention, an alteration of that degree will prevent the intention from taking place. And on theſe circumſtances does all the variety of *furnaces* depend.

Furnaces are either *fixed* and immoveable, called *athanors*; or *portable*, called *catholic*, *i. e.* univerſal, as being proper for all operations, where the body to be operated on is not too large.

The firſt ſpecies of athanor, or fixed *furnace*, is fitted to give a heat equal to that of a healthy man.

The ſecond is the *furnace* of the *balneum Mariæ*, fit for the diſtillation of the more ſubtil ſpirits.

The third is the digeſting *furnace*. See DIGESTION.

The fourth is the anemius, or *wind furnace*, called, alſo, *melting furnace*, and *metallic furnace*; uſed in the fuſion of metals, minerals, and vitrifications.

It is called *wind furnace*, by reaſon the air drives forcibly in, to blow up the coals. Its form is much like that of the reverberatory *furnace*, only it is leſs.

For the reverberatory *furnace*, ſee REVERBERATORY.

Almond FURNACE. See the article ALMOND.

Mortar for FURNACES. See the article MORTAR.

FURNACE *of a mine*, in the art of war. See CHAMBERS, and MINE.

FURNITURE, in dialling, certain additional points and lines drawn on a dial, by way of ornament.

Such are the ſigns of the zodiac, length of days, parallels of declination, azimuths, meridians of the principal cities, Babylonic and Italian hours, points of the compaſs, *&c.*

For drawing *furniture* on dials, the analemma, or trigon of ſigns, is an inſtrument of principal uſe. See ANALEMMA.

FUROR *uterinus*, a ſpecies of madneſs, peculiar to women, exciting them to a vehement deſire of venery, and rendering them inſatiate therewith.

It is owing, according to Sennertus, to a too great abundance of the humours of the part, and a preternatural heat and pungency thereof.

FURR*, the ſkins of divers kinds of wild beaſts, dreſſed with the hair on; to be uſed as a lining, or doubling, of garments, robes, *&c.* either for warmth, ornament, or diſtinction of rank and dignity.

* The word is formed of the French *fourrure*, a lining; which Du Cange derives from *furrura*, uſed, in the barbarous Latin, for the ſame thing. We alſo meet with *forratura*, *foderata*, *fodraium*, and *fodratura*, in the ſame ſenſe.

The robes of kings, dukes, and peers, are lined with divers kinds of *furrs*, and, in particular, ermine, to render them more magnificent.

The ſame may be obſerved of ſeveral chief magiſtrates, judges, and doctors of different faculties in the univerſities.

The kinds of *furrs*, or ſkins, chiefly dreſſed in alum, and with the hair on, are thoſe of the ermine, ſable, ſquirrel, coney, caſtor, otter, dog, fox, wolf, tiger, bear, *&c.*

Timber of FURRS. See the article TIMBER.

FURR, in heraldry, a repreſentation of the ſkins of certain wild beaſts, ſeen, both in the doublings of the mantles of coat-armour, and in the armour itſelf.

The heralds uſe two metals, five colours, and two *furrs*, or hairy ſkins; *viz.* ermine, and vair.

The origin of theſe *furrs* Mackenzy aſcribes to the ſhield's being antiently covered with ſkins; which ſkins, or coverings, were afterwards repreſented in the ſhields: a more probable derivation, in our opinion, than to ſay they were placed on ſhields, becauſe they had been worn in mantles and garments.

Furrs either conſiſt of one colour, which is white; or more than one; and theſe either two, or more than two.

Furrs of two colours are either ermine, being white with black ſpots; ermines, black with white ſpots; erminois, whoſe ground is yellow; or pean, which is black powdered with yellow.

Furrs of more than two colours are called *vair*. See VAIR, and VAIRY.

FURRIER, a perſon who trades, or works, in *furrs*, or lines robes, *&c.* therewith.

FURRINGS, or FURRS, in architecture, the making good of the rafter-feet in the cornice.

When rafters are cut with a knee, theſe *furrings* are pieces which go ſtrait along with the rafter, from the top of the knee to the cornice.

When rafters are rotten, or ſunk hollow in the middle, there are pieces cut thickeſt in the middle, and tapering towards each end, which are nailed upon them to make them ſtrait.—Such pieces are called *furrs*; and the putting them on is called *furring* the rafters.

FUSAROLE*, in architecture, a moulding, or ornament, placed immediately under the echinus, in the Doric, Ionic, and Compoſite, capitals.

* The Italians call it *fuſciolo*; and the French, from whom we borrow it, *fuſarole*.

The *fuſarole* is a round member, carved, in manner of a collar, or chaplet, with oval beads. The *fuſarole* ſhould always anſwer exactly under the eye of the volute, in the Ionic capital.

FUSEE*, or FUSY, in watch-work, is that conical part, drawn by the ſpring, and about which the chain, or ſtring, is wound.

* The word is French; where it literally ſignifies a *ſpindle*.

The ſpring of a watch is the firſt mover. It is rolled up in a cylindrical box, againſt which it acts, and which it turns round in unbending itſelf. The ſtring, or little chain, which at one end is wound about the *fuſee*, and at the other faſtened to the ſpring-box, diſengages itſelf from the *fuſee*, in proportion as the box is turned. And hence the motion of all the other parts of the ſpring-watch.

Now the effort, or action, of the ſpring, is continually diminiſhing from firſt to laſt; and, of conſequence, unleſs that inequality was rectified, it would draw the ſtring with more force, and wind a greater quantity of it upon the box at one time than another; ſo that the movement would never keep equal time.

To correct this irregularity of the ſpring, nothing could be more happily contrived than to have the ſpring applied to the arms of levers which are continually longer as the force of the ſpring is weaker. This foreign aſſiſtance, always increaſing as it is moſt needed, maintains the action and effect of the ſpring in an equality.

It is for this reaſon that the *fuſee* is made of a conical figure. Its axis, which is immoveable, is the ſeries of the centres of all the unequal circumferences which compoſe the ſurface of the *fuſee*: according as the part of a ſtring, which is untwiſting, is applied to a larger circumference, it is at a greater diſtance from the fixed point in the axis correſponding thereto; and, of conſequence, the power which draws by this ſtring, *viz.* the ſpring, acts with the more advantage; the ſpring begins to draw from the vertex of the cone, the moſt diſadvantageous part, by reaſon its own force is then the greateſt.

If the action of the ſpring diminiſhed equally, as the parallel baſes of a triangle do; the cone, which is generated of a triangle, would be the preciſe figure required for the *fuſee*: but, it is certain, the weakening of the ſpring is not in that proportion; and, of conſequence, the *fuſee* ſhould not be conical.

In effect, experience ſhews, that it ſhould not be ſtrictly ſo; but that it be a little hollow toward the middle, *i.e.* the arm of the lever muſt be there a little ſhortened; by reaſon the action of the ſpring is not ſufficiently diminiſhed of itſelf.

It is a matter of inquiry, among geometricians, what the preciſe figure of the *fuſee* ſhould be; that is, what the curve is, by whoſe revolution round its axis, the ſolid, whoſe figure the *fuſee* is to have, ſhall be produced.

M. Varignon has determined this curve. The axis of the *fuſee* is alſo the axis of the curve, which is convex on the ſide toward the axis, and, of conſequence, concave all the way on the other, or outer-ſide; and the ordinates are the different diſtances at which the ſtring is to be, with regard to all the ſucceſſive fixed points of the axis.

The force of the ſpring multiplied by the arm of the lever it is applied to, each moment, being always to make an equal product; it follows, that when the ſolid of the curve ſhall be formed, an ordinate multiplied by the ſurface of the ſolid compriſed between that ordinate and the greateſt of all the ordinates, *viz.* that of the baſe, will always yield a product equal to that of any other ordinates multiplied in the ſame manner.

For the ordinates are only arms of the lever; and the parts of the ſurface comprehended between them and the baſe are equal to the lengths of the ſtring which cover them, *i. e.* to the correſpondent forces of the ſpring; which is what conſtitutes the equation and the eſſence of the curve.

FUSEE*, FUZE, or FUSE, in war, an appendage of a bomb, or granado-ſhell, by which the powder, or compoſition, in the ſhell, is ſet on fire, to do the deſigned execution.

* The word is French, and literally denotes a *ſpindle*.

The *fuſee* is a wooden pipe, or tap, filled with wild-fire, or the like compoſition; and is deſigned to burn ſo long, and no longer, as is the time of the motion of the bomb from the mouth of the mortar to the place where it is to fall, which time is about twenty-ſeven ſeconds: ſo that the *fuſee* muſt be contrived, either from the nature of the compoſition, or the length of the pipe which contains it, to burn juſt that time.

The uſual compoſition of *fuſees* is, two ounces of nitre, to one of ſulphur, and three of gunpowder-duſt.

FUSIBILITY, that quality in metals, and minerals, which diſpoſes them for fuſion.

Gold is more *fuſible* than iron, or copper; but leſs ſo than ſilver, tin, and lead.

Borax is frequently mixed with metals, to render them more *fuſible*.

FUSIL, in heraldry, by the French called *fuſee*, *q. d.* ſpindle, is a bearing of a rhomboidal figure, more ſlender than the lozenge; its upper and lower angles being more acute than the two middle ones.—See Tab. *Herald. fig.* 42.

FUSILE *column*. See the article COLUMN.

FUSILIERS*, or FUZILEERS, in the military art, foot-ſoldiers armed with firelocks, which are generally ſlung. There is a regiment of *fuſileers*, for the guard of the artillery.

* The word is formed from the French *fuſil*, à *fuſee*, firelock.

FUSILY, or FUSILE, in heraldry, is when a field, or ordinary, is intirely covered over, or divided into *fuſils*.

FUSION*, the ſolution, or melting, of metals, minerals, *&c.* by means of fire; or the act of changing them from their ſolid ſtate to a fluor.

* The word is derived from the Latin *fuſio*; of *fundo*, I pour out.—Whence, alſo, *effuſion*, *infuſion*, *ſuffuſion*, and *transfuſion*; which ſee.

To give the ore its metallic form, they *fuſe* it: when it is in *fuſion*, the metalline ſubſtance, being the heavieſt, ſinks to the bottom of the furnace; the other terreſtrial matters riſing, in form of ſcoria, to the ſurface.

It is commonly imagined, that the *fuſion* and metalline form of ores is wholly the effect of fire; and we have theories of fuſibility built on this principle: but it is a miſtaken one. Fire, no doubt, is the principal agent; but fire, alone, is not ſufficient.

A mineral, or piece of metal not purified, being put alone in a crucible, melts with a world of difficulty, and never becomes a perfect metal: copper ore, for inſtance, being thus applied, its impure part forms a ſcoria, and vitrifies; the metalline part reſiding at bottom, under the appearance of a black regulus. To promote the *fuſion* and ſeparation, they mix coals, or ſtones, or cinders, or old ſcoriæ, along with the ore; the inflammable principle in which, by help of fire, fuſes them perfectly, ſets the heterogeneous part at liberty, and raiſes it to the top.

The general reaſon of *fuſion* is prettily eaſily aſſigned. The firmneſs or ſolidity of a body ariſes from the force wherewith its particles cohere. And the coheſion of all bodies is as the quantity of contact in the component particles.

Now, the corpuſcles of fire, entering with rapidity into the pores of the metal, agitate; and, by degrees, looſen, divide, and diminiſh their contact; till at length there is not enough to hinder their rolling over each other, and giving way upon the leaſt impulſe.

The dilatation obſervable in all *fuſion*, is a proof, that the particles of the bodies are ſeparated, and ſet at a diſtance from each other; and, conſequently, their contacts and coheſions diminiſhed.

In effect, rarefaction and dilatation are the neceſſary conſequences of fire and heat.

From the difference of coheſion proceeds that variety we obſerve in the *fuſion* of bodies: for ſuch as have leaſt contact of parts, ſooneſt give way to the fire; and ſome will melt away by the warmth of a vapour only; when others, which have a ſtronger contact, are not to be ſeparated without much difficulty. Upon this account, vegetables very eaſily diſunite; minerals ſlower; and metals ſloweſt of all: and of the laſt, thoſe wherein the contact of parts is leaſt; as in lead and tin, moſt readily melt; but thoſe which are more compact, as gold, and ſilver, are not to be managed, but by a violent heat.

If now the force of coheſion were proportional to the quantity of matter, or to the weight of bodies, we might from ſtatics account for all the variety that occurs in *fuſion*: for by knowing the ſpecific gravity of a body, we ſhould then know what force is required to melt it: but becauſe the ſame quantity of matter may be ſo variouſly diſpoſed, that in one body there ſhall be a much greater contact, than in another, though the gravity be equal, or even greater, in the latter; therefore the force of coheſion cannot be eſtimated by gravity: for lead, though more ponderous than all other metals, except gold; yet in the fire is more eaſily melted, than almoſt any other: ſo that it neceſſarily follows, that in this metal there muſt be a leſs coheſion, or contact of parts, how much ſoever it may exceed others in the quantity of its matter.

Bodies after *fuſion* return again into a ſolid maſs, upon removing them from the fire; becauſe their particles hereupon approach nearer to one another by their attractive force, and are to compelled to unite.

Such as conſiſt of homogeneous and unalterable parts, as wax, gums, and the purer metals, recover their antient form: for when the ſame texture of parts remains in the whole body, it muſt of courſe reaſſume the ſame appearance, when the ſeparating power ceaſeth to act; but other bodies, whoſe parts, with reſpect to denſity and ſurface, are extremely different from one another, while ſome are carried off by the force of heat, and others are changed as to figure and poſition, muſt be forced to appear in another form: for they cannot recover their original phaſes, unleſs every particle could reinſtate itſelf in that very ſituation it had before, which may be hindered infinite ways; as may be experienced eaſily in heterogeneous bodies.

The difference therefore, obſerved even in homogeneous bodies after liquefaction, is no-ways to be accounted for but from the changeableneſs of ſurface in their parts: for thoſe bodies whoſe parts conſtantly retain the ſame ſurfaces, never loſe their form; but others, by having the ſurfaces of their parts altered, have a different texture, and put on another appearance.

FUST *, in architecture, the ſhaft of a column; or that part comprehended between the baſe, and the capital; called alſo *the naked*.

* The word is French, and literally ſignifies a *caſk*,

The *fuſt* is that cylindrical part, which makes, as it were, the body, or trunk of the column, excluſive of the head and foot.

FUSTIAN *, in commerce, a kind of cotton ſtuff, which ſeems, as it were, quilted, or whaled on one ſide.

* Menage derives the word from *fuſtanum*, which in the corrupt Latin writers is uſed in the ſame ſenſe, and is ſuppoſed to be formed from *fuſtis*, on account of the tree whereon the cotton grows. Bochart derives it from *fuſtat*, which, in Arabic, ſignifies the antient city of Memphis, where cotton is produced in great abundance.

Right *fuſtians* ſhould be made altogether of cotton thread, both woof, and warp.

There are *fuſtians* of divers kinds, wide, narrow, coarſe, fine; with ſhag, or knap, and without it. There are alſo a great many made whereof the warp is flax, or even hemp.

FUSTIAN, in criticiſm, a word uſed to expreſs bombaſt.

FUSTICK, or FUSTOCK, a yellow wood, uſed by the dyers.

The colour it yields is a fine golden yellow; but there ſhould be ſome other ingredients mixed with it, to make it laſting.

The tree that yields it, grows in all the Caribbee iſlands; particularly in Barbados, and Tobago, where it riſes to a great height.

The dyers uſe it chiefly for black. See BLACK. But ſome of the ableſt and honeſteſt among them, who would dye none but the beſt and moſt laſting colours, are of opinion it ſhould be abſolutely excluded out of all dying.

Beſide this, there is another kind of *fuſtick* or *fuſtel*, growing in Italy, Provence, *&c.* this is uſed to dye a coffee-colour.

F-UT-FA, in muſic. See F, and CLEF.

FUTURE, ſomething to come hereafter.

We ſay, a *future* ſtate, a *future* contingency; there is none but God to whom *future* things are preſent.

FUTURE, or FUTURE *Tenſe*, in grammar, denotes an inflexion of verbs, whereby they denote, that a thing will be, in ſome time yet to come. As, The laſt day will come: I ſhall ſee an end.

The *future* time admits of two caſes: either we may intend to expreſs a thing that ſhall come to paſs in a ſhort time; or a thing that ſhall happen in any indefinite time.

Thus the Greeks have their *paulo poſt futurum*, μετ' ολιγον μελλων, which marks a thing juſt going to be done; as ϖοιησομαι; beſide the common, indefinite *future*, ϖοιησω, I will do it; *amabo*, I will love.

In Latin, Italian, French, and even in Engliſh, the *future* of the indicative expreſſes only the deſign, or intention of doing a thing, or ſimply that the thing will be; as, I will praiſe, I will be approved: and the *future* of the ſubjunctive ſhews, that the thing will be done under certain circumſtances: when I ſhall have ſeen Verſailles, I will tell you. Sometimes the *future* is expreſſed in Engliſh by the preſent; if I meet your friend, I will ſend him to you; *ſi offendero*, *ſi incidero*, &c.

FUZE, or FUZEE. See the article FUSEE.

FUZILEERS. See the article FUSILEERS.

G.

G, The ſeventh letter of our alphabet, and the fifth conſonant: though in the alphabets of all the oriental languages, the Hebrew, Phœnician, Chaldee, Syriac, Samaritan, Arabic, and even Greek, *G* is the third letter.

The Hebrews call it *Ghimel*, or *Gimel*, *q. d.* camel; by reaſon it reſembles in its form the neck of that animal: and the ſame appellation it bears in the Samaritan, Phœnician, and Chaldee: in the Syriac it is called *Gomel*, in Arabic *Giim*, and in Greek *Gamma*.

The letter *G* is of the mute kind, and cannot be any way ſounded without the help of a vowel. It is formed by the reflexion of the air againſt the palate, made by the tongue, as the air paſſes out of the throat: which Martianus Capella expreſſes thus, *G ſpiritus cum palato*; ſo that the *G* is a palatal letter.

The Latins took the liberty to drop the letter *G* at the beginnings of words, before an *n*; as in *gnatus*, *gnoſco*, *gnobilis*, *gnarrat*, &c. which they ordinarily wrote *natus*, *noſco*, *nobilis*, &c. They alſo frequently changed it into *C*; as *gamelus*, into *camelus*; *gragulus*, *graculus*; *quingentum*, *quincentum*, &c. Sometimes it was put inſtead of *N*, before a *C*, and for another *C*; as *Agchiſes*, *aggora*, *agguilla*, &c. for *Anchiſes*, *ancora*, *anguilla*, &c. And inſtead of *P*; as *magalia*, for *mapalia*, &c. *G* is alſo uſed inſtead of *Q*, and *Q* inſtead of *G*, as in *anquina*, *angina*, *anguina*, &c. Inſtead of *R*, as in *aquagium*, for *aquarium*; *agger*, for *arger*, &c And inſtead of *S*, as in *ſpargo*, *ſparſi*, *ſparſum*; or, rather, it is retrenched from thoſe laſt words, to avoid the cacophony of *ſpargſi*, or *ſparcſi*. *G* is alſo put for *C*; as in *Cneius*, for *Gneius*; *Caius*, for *Gaius*; *Gaeta*, for *Caieta*: And for *V*; as in *figere*, for *fivere*. See N, P, *&c.*

The northern people frequently change the *G* into *V*, or *W*; as in *Gallus*, *Wallus*; *Gallia*, *Wallia*, *Vallia*, &c. For in this inſtance it muſt not be ſaid that the French have changed the *W* into *G*; by reaſon they wrote *Gallus* long before *Wallus*, or *Wallia*, were known; as appears from all the antient Roman and Greek writers.

And yet it is equally true, that the French change the *W* of the northern nations, and *V* conſonant, into *G*; as *Willielmus*, *William*, into *Guillaume*; *Wulphilas*, into *Gulphilas*; *Vaſco*, into *Gaſcon*, &c.

Diomed. l. ii. c. *de Litera*, calls *G*, a new letter; his reaſon is, that the Romans had not introduced it before the firſt Punic war; as appears from the roſtral column, erected by C. Duilius, on which we every-where find a *C* in lieu of *G*. It was Sp. Carvilius, who firſt diſtinguiſhed between thoſe two letters; and invented the figure of the *G*: as we are aſſured by Terentius Scaurus. The *C* ſerved very well for *G*; it being the third letter of the Latin alphabet, as the *g* or γ was of the Greek.

The *G* is found inſtead of *C* on ſeveral medals: Vaillant *Num. Imperat.* t. i. p. 39. M. Beger produces a medal of the Familia Ogulnia, where Gar is read inſtead of Car, which is on thoſe of M. Patin. But the *C* is more frequently ſeen on medals, in lieu of *G*; as Aucustalis Callaecia Cartacinences, *&c.* for Augustalis, *&c.* Not that the pronunciation of thoſe words was altered; but only that the *G* was unartfully or negligently cut by the workmen. As is the caſe in divers inſcriptions of the eaſtern empire; where auc, aucc, auccc, are frequently found for aug, *&c.*

The form of our *G* is taken from that of the Latins, who borrowed it from the Greeks; the Latin *G* being certainly a corruption of the Greek gamma, Γ, as might eaſily be ſhewn, had our printers all the characters and forms of this letter, which we meet withal in the Greek and Latin MSS. thro' which the letter paſſed from Γ to *G*.

As to the gamma of the Greeks, it is manifeſtly the ג ghimel of the Hebrews or Samaritans. All the difference between the gamma and ghimel conſiſts in this, that the one is turned to the right, and the other to the left, according to the different manners of writing and reading, which obtained among thoſe different nations: ſo that all the pains Salmaſius has taken on Solinus, to prove that the *G* was derived from the Greek kappa, is loſt.

G has alſo been uſed as a numeral letter, ſignifying 400, according to the verſe,

G quadringentos demonſtrativa tenebit.

When a daſh was added atop, $\overline{\text{G}}$, it ſignified forty thouſand.

G is alſo uſed, in muſic, to ſignify one of the clefs; *viz.* that of the higheſt part, called the *treble*, or *alt*. See Clef, and Treble.

GABBARA, a name which the Egyptians gave the dead bodies, which they kept by them, inſtead of burying them. That people, out of a cuſtom which they had received from their anceſtors, and which aroſe in ſome meaſure from the poſition of their country, which is expoſed to the inundations of the Nile, uſed to wrap up the bodies of perſons of eminence, particularly thoſe of ſaints and martyrs, in a great number of linen cloths, with balms and ſpices; and inſtead of interring them, they preſerved them in their houſes: thinking, that thereby they did them much more honour. And theſe, St. Auguſtine tells us, were what they called *gabbaras*. Sermon cxx. *de diverſis*, c. 12.

Pliny makes mention of the ſame thing, lib. vii. c. 16. where he relates, that in the time of Claudius, a *gabbara* was brought from Arabia, almoſt ten feet long *.

* Fa. Hardouin imagines, that Pliny here took the word for a proper name; and accordingly ſearches in Tacitus, for one Abbarus, a king of Arabia: but Hardouin himſelf is not of that opinion; taking the word to be rather the גובר *ghibbor*, of the Hebrews; or גבאר *ghabbar*, of the Arabians: and to ſignify a *giant*.—But the Jeſuit Roſweyd gives us a better account in his learned notes on the life of St. Antony, c. 7. and in his *Onomaſticon*, under the word *gabbara*; where he ſhews, that we meet with both *gabbara*, *gabbares*, *gabarus*, and *gabbarus*; and that they all ſignify a body embalmed; which he proves from the teſtimonies of Cicero, *Tuſcul. Quæſt.* of Pompon. Mela, lib. i. c. 9. of Sextus Empiricus, lib. iii. *Pyrrhon. hypotheſ.* c. 24. of Lucian, *de luctu*; of Corippus, lib. iii. *de funere Juſtiniani*; of St. Auguſtine, Caſſian, Damaſcenus, *&c.*—The word, in reality, is Arabic, Syriac, and Hebrew, formed of גבר *gaber*, a man.

GABEL, in building. See the article Gavel.

Gabel, or **Gabelle** *, in the French cuſtoms, a duty or impoſition on ſalt.

* Etymologiſts are divided as to the origin of the word. Some derive it from the Hebrew *gab*, a preſent; others from קבל, to deliver; others from קבלה *kabbalah*, receipt; others from *ghauel*, or *gabe*, unjuſt law; and others from the corrupt Latin *gabella*, or *gablum*, tribute.

The *gabel* is let out to farm; and makes the ſecond article in the king's revenue.

There are three farms of *gabels*: the firſt comprehends the greateſt part of the kingdom; the ſecond is that of the Lyonnois, and Languedoc; and the third that of Dauphiné and Provence. There are ſeveral provinces exempt from the *gabel*; having purchaſed that privilege of Henry II.

This duty is ſaid to have had its riſe in France, in 1286. under Philip the Fair. Philip the Long took a double per livre on ſalt, by an edict in 1331. which he promiſed to remit when he was delivered from his enemies; and which he did accordingly in 1345. King John reſumed it in 1355. and it was granted the dauphin in 1358. to ranſom king John: Charles V. made it perpetual; Charles VII. raiſed it to ſix deniers; Louis XI. to twelve; and Francis I. to twenty-four livres per muid. And it has been conſiderably augmented ſince that time. Philip de Valois firſt eſtabliſhed granaries and officers of the *gabelles*, and prohibited any other perſons from ſelling ſalt: from which time the whole commerce of ſalt, for the inland conſumption, has lain wholly in the king's hands, who ſells and diſtributes every grain thereof by his farmers, and officers created for the purpoſe.

The produce of this impoſt is ſo conſiderable, that it is computed to make one-fourth of the whole revenue of the kingdom; and yields the crown as much as all the mines of Peru, Chili, Potoſi, and the reſt of America, do the king of Spain.

Gabel, or **Gable**, is alſo uſed, in ſome of our antient writers, for any ſort of tax, or impoſition: as *gabel* of wines, of ſilks, *&c.*

GABINIA *Toga*. See the article Toga.

GABIONS, in fortification, *&c.* large baſkets, made of oſier-twigs, woven of a cylindrical form, ſix feet high, and four wide; which, being filled with earth, ſerve as a defence or ſhelter from the enemy's fire.—See *Tab. Fortif. fig.* 19.

They are commonly uſed in batteries, to ſcreen the engineers, *&c.* In order to which one is placed on either ſide each gun, only leaving room for the muzzle to appear through. See Battery.

There are alſo a ſmaller ſort of *gabions*, uſed on parapets, in trenches, *&c.* to cover the muſqueteers; being placed ſo cloſe as that a muſquet can but juſt peep through.

They alſo ſerve as a parapet on lines, lodgments, *&c.* where the ground proves too hard to dig into.

To render the *gabions* uſeleſs, they endeavour to ſet them on fire, by throwing pitched faggots among them.

GABLE, or **Gable**-*End* of a houſe, is the upright triangular end; from the cornice, or eaves, to the top of its roof.

Land-**Gable**. See the article Land-*gable*.

GABRES, or **Gavres**, a religious ſect in Perſia; called, alſo, *Gebres*, *Gevres*, &c.

The Turks call the Chriſtians *Gabres*; *q. d.* infidels, or people of a falſe religion: or, rather, as Leunclavius obſerves, Heathens, or Gentiles: the word *Gabre*, among the Turks, having the ſame ſignification as Pagan, or Infidel, among the Chriſtians; and denoting any thing not Mahometan.

In Perſia, the word has a more peculiar ſignification; wherein it is applied to a ſect diſperſed through the country, and ſaid to be the remains of the antient Perſians, worſhippers of fire: though, upon the whole, they rather appear to have been Perſians converted to Chriſtianity; who, being afterwards left to themſelves, mingled their antient ſuperſtitions with the truths and practices of Chriſtianity, and ſo formed themſelves a religion apart.

The *Gabres* pretend, they derive their religion from one Azer, a Frank by nation, and by profeſſion a ſculptor: this man, coming to Babylon, where they then dwelt, they ſay, married a maid of the country, named Dogdon; who, after a viſit which ſhe received from an angel, was filled with a divine light; and ſoon afterwards found herſelf with child. The aſtrologers, at the ſame time, perceiving that the child would be a great prophet, and the founder of a new religion; Neubrout, the prince then reigning, was advertiſed hereof; who gave immediate orders for all the women with child to be put to death, throughout the empire.

The order was executed accordingly; but the mother of the future prophet, ſhewing no token of pregnancy, eſcaped; and was, at length, happily delivered of a ſon, called *Ebrahim Zer-Ateucht*.

After his birth, new dangers aroſe; and the king, being informed thereof, had him brought before him; and, drawing his ſabre, would have ſlain him with his own hand; but, they ſay, his arm grew motionleſs upon the ſpot: upon this, a huge fire was lighted, and the child caſt into the ſame; but he reſted therein, as on a bed of roſes. He was afterwards delivered from other kinds of death, by a ſort of flies, which infeſted the kingdom; one whereof, entering the king's ear, rendered him frantic, and at length killed him.

Cha-Glochtes, his ſucceſſor, made the like attempts on the child; but was ſo ſtruck with the miracles which he ſaw him work, that he began to adore him, as all the reſt of the people already did.

At length, after a great number of miracles, the prophet diſappeared.—Some held, he was tranſlated into heaven, body and ſoul; others, that he found an iron coffin, near Bagdat, where, ſhutting himſelf up, he was carried away by the angels. After he was in poſſeſſion of paradiſe, God ſent them, they ſay, through his means, ſeven books, which contained all the matters of religion; and afterwards ſeven more, of the explanation of dreams; and, laſtly, ſeven of medicine. Alexander the Great burnt the firſt ſeven, by reaſon nobody underſtood the language, and kept the other fourteen for his own uſe.

After his death, ſome of the prieſts and doctors among the *Gabres* retrieved as much as their memory would allow them, of the loſt books, and compoſed a large volume, ſtill extant among the modern *Gabres*; though they underſtand nothing, either of the words, or the character.

Throughout the whole of this romantic ſtory, we may diſcern the marks and traces of Chriſtianity, though grievouſly defaced: the annunciation; the magi; the maſſacre of the infants; our Saviour's miracles; his perſecutions, aſcenſion, *&c.*

GAGE, in our antient cuſtoms, ſignifies a pledge, or pawn, given by way of ſecurity.

The word is only properly uſed in ſpeaking of moveables: for immoveables, the term *hypotheca* is uſed.

If the *gage* periſh, the perſon who received it is not to anſwer for it, but only for extreme negligence, *&c.*

Gage is alſo uſed for a challenge, to combat. See Cartel.

In which ſenſe, it was a pledge, which the accuſer, or challenger, caſt on the ground, and the other took up, as accepting the challenge: this was uſually a glove, gantlet, chaperoon, or the like.

The *Grand cuſtomary* mentions *gages pleiges de duel.* Theſe were gentlemen, of the relations, or friends, of the combatants. If he who had given the *gages pleiges* was overcome, he was to pay a mulct agreed on.

Gage is only now retained as a ſubſtantive: as a verb, the *g* is changed into *w*; and of *gage* is formed *wage*. As, to *wage* law, to *wage* deliverance; *q. d.* to give ſecurity a thing ſhall be delivered.

If a perſon who has diſtrained be ſued for not having delivered what he had took by diſtreſs, he ſhould *wage*, or *gage*, or *gager*, deliverance; that is, put in ſurety that he will deliver them.

Mort-**Gage** is that which is left in the hands of the proprietor, ſo that he reaps the fruits thereof.

In oppoſition to *vif-gage*, where the fruits, or revenues, are reaped by the creditor, and reckoned on the foot of the debt, which diminiſhes in proportion thereto. The ſecond acquits, or diſcharges, itſelf; the firſt does not.

Pomey alſo uſes *mort-gage* for the poſſeſſion of any effects, on condition of ſurrendering them up at the good pleaſure of the perſon who gave them. See Mortgage.

Gage, in the ſea-language. When one ſhip is to windward of another, ſhe is ſaid to have the *weather-gage* of her.

The ſeamen, alſo, call trying how much water a ſhip draws, *gaging*, or, rather, *gauging* of her; and it is done thus: They drive a nail into a pike, near the end, and then put down this pike by the rudder, till the nail catch hold under it; for then as many feet as the pike is under water, is the ſhip's *gage*, or depth of water ſhe draws.

Gage, in joinery, is an inſtrument made to ſtrike a line truly parallel to the ſtrait ſide of any board, or piece of ſtuff.

Its chief uſe is for *gaging* of tenons true, to fit into mortiſſes; and for *gaging* ſtuff of an equal thickneſs.

It is made of an oval piece of wood, fitted upon a ſquare ſtick, to ſlide up and down ſtifly thereon, and with a tooth at the end of a ſtaff, to ſcore, to ſtrike a line upon the ſtuff at any diſtance, according to the diſtance of the oval from it.

Water-**Gage**. See the article Water-*gage*.

GAGER *del ley*. See Wage, and Wager *of law*.

Gager, and } in geometry. See { Gauger.
GAGING, } { Gauging.

GAIANITES, **Gaianitæ**, a ſect of antient hereticks, ſprung from the Eutychians.

This ſect was of an older ſtanding than Gaian, a biſhop of Alexandria in the ſixth century; from whom, however, they took their name. They adhered to the opinion of Julian Halicarnaſſeus, the chief of the Incorruptibiles and Phantaſtici; and came, at length, to be denominated *Gaianites*, upon *Gaian*'s putting himſelf at their head. They denied that Jeſus Chriſt, after the hypoſtatical union, was ſubject to any of the infirmities of human nature.

GAIN*, the profit, or lucre, a perſon reaps from his trade, employment, or induſtry.

* Some derive the word from the German *gewin*; whereof the Italians have made *guadagno*; the French, and Engliſh, *gain*.

There are legal and reputable *gains*, as well as ſordid and infamous ones. What is *gained* by gaming, is all liable to be reſtored again, if the loſer will take the benefit of the law.

Gain, in architecture, is the workmens term for the bevelling ſhoulder of a joiſt, or other timber.

It is uſed, alſo, for the lapping of the end of the joiſt, *&c.* upon a trimmer, or girder; and then the thickneſs of the ſhoulder is cut into the trimmer, alſo, bevelling upwards, that it may juſt receive the *gain*; and ſo the joiſt and trimmer lie even and level with their ſurface.—This way of working is uſed in floors and hearths.

GAINAGE, **Gainagium**, in our antient writers, ſignifies the draught-oxen, horſes, wain, plough, and furniture, for carrying on the work of tillage by the baſer ſort of ſokemen and villains.

Gainage is the ſame with what is otherwiſe called *wainage*. Bracton, lib. i. cap. 9. ſpeaking of lords and ſervants, ſays, *Ut ſi eos deſtruant, quod ſalvum non poſſit eis eſſe* wainagium *ſuum*. And again, lib. iii. tract. 2. cap. 1. *Villanus non amerciabitur, niſi ſalvo* wainagio *ſuo*. For antiently, as it appears both by *Mag. Chart.* and other books, the villain, when amerced, had his *gainage*, or *wainage*, free; to the end his plough might not ſtand ſtill: and the law, for the ſame reaſon, does ſtill allow a like privilege to the huſbandman; that is, his draught-horſes are not, in many caſes, diſtrainable.

Gainage is alſo uſed for the land itſelf, or the profit raiſed by cultivating it.

GALACTITES, γαλακτιτης, in natural hiſtory, a ſtone, thus called, by reaſon when broken, or ground with water, it yields a white liquor, like milk, which the Greeks call γαλα.

The ſtone is of an aſh-colour, and pretty ſoft, and ſweet to the taſte. It is ſaid to be ſtill found in Tuſcany, Saxony, and other parts.

Authors recommend it as good in defluxions of the eyes, and for ulcers. It is ſuppoſed to make the milk more copious in nurſes; and when hung on the necks of children, they ſay, it promotes dentition. See Supplement, article Galactites.

GALACTOPHAGI*, and **Galactopotæ**, in antiquity, perſons who lived wholly on milk, without corn, or the uſe of any other food.

* The words are compounded of γαλα, γαλακτος, milk; φαγειν, to eat; and ποτης, of πινω, I drink.

Certain nations in Scythia Aſiatica, as the Getæ, Nomades, *&c.* are famous, in antient hiſtory, in quality of *galactophagi*, milk-eaters. Homer makes their eloge, *Iliad*, lib. iii.

Ptolemy, in his geography, places the *galactophagi* between the Riphæan mountains, on one ſide; and the Hircanian ſea on the other.

GALACTOPHOROUS *ducts* are ſuch veſſels as ſerve to convey milk.

GALACTOPOTÆ. See the article Galactophagi.

GALACTOSIS, the production of milk; or the action whereby the food, or chyle, is converted into milk.

GALANGAL, **Galanga**, a medicinal root, brought from the Eaſt-Indies; the produce of a plant of the ſame name.

There are two kinds of *galangals*; the *ſmall*, and the *great*. The *ſmall* is a rough, knotty root, of a ruddy colour both within and without, and of a very pungent, aromatic taſte, and ſmell. It is brought from China, and is uſed, with good ſucceſs, in all diſorders of the ſtomach, bowels, and womb, ariſing from the weakneſs of the nerves.

The *greater galangal*, growing chiefly in Java and Malabar, inclines more to the aſh-colour. Its qualities are of the ſame kind with thoſe of the other, only leſs efficacious; but it uſed to be more common. The vinegar-makers uſe both.

GALANT. See the article Gallant.

GALAXY *, in aſtronomy, that long, white, luminous track, which ſeems to encompaſs the heavens like a ſwath, ſcarf, or girdle; and which is eaſily perceivable in a clear night, eſpecially when the moon does not appear.

* The Greeks call it γαλαξιας, *galaxy*; of γαλα, γαλακτος, milk; on account of its colour, and appearance. The Latins, for the ſame reaſon, call it *via lactea*; and we, the *milky way*.

It paſſes between Sagittary and Gemini, and divides the ſphere into two parts. It is unequally broad; and in ſome parts is ſingle, in others double.

The antient poets, and even philoſophers, ſpeak of the *galaxy* as the road, or way, by which the heroes went to heaven.

Ariſtotle makes it a kind of meteor, formed of a croud of vapours, drawn into that part by certain large ſtars diſpoſed in the region of the heavens anſwering hereto.

Others, finding that the *galaxy* was ſeen all over the globe; that it always correſponded to the ſame fixed ſtars; and that it tranſcended the height of the higheſt planets; ſet aſide Ariſtotle's opinion, and placed the *galaxy* in the firmament, or region of the fixed ſtars; and concluded it to be nothing but an aſſemblage of an infinite number of minute ſtars.

Since the invention of the teleſcope, this opinion has been abundantly confirmed. By directing a good teleſcope to any part of the milky way, where, before, we only ſaw a confuſed whiteneſs; we now deſcry an innumerable multitude of little ſtars. Theſe ſtars are ſo remote, that a naked eye confounds them: the like we obſerve in thoſe other ſpots, called *nebuloſe ſtars*; which, when examined with the teleſcope, are diſtinctly perceived to be cluſters of little ſtars, too faint to affect the eye ſingly. See Star.

GALBANETUM, a compoſition, or preparation, of galbanum formerly preſcribed; but now much out of uſe.

GALBANUM *, in pharmacy, a gum iſſuing from an inciſion in the root of a ferulaceous plant; called, in Latin, *ferula galbanifera*, growing in Arabia, Syria, *&c.*

* The word is derived, according to Martinius, from the Hebrew *chelbenah*, fat.

There are two kinds of *galbanum*: the one in grains, or tears; the other in a coarſe maſs. The firſt is to be choſen of a golden yellow without-ſide, but much paler within; of a bitter taſte, and ſtrong, diſagreeable ſmell: for the ſecond, take that which is fulleſt of tears, very dry, clear, and not ſtinking. This laſt is eaſily ſophiſticated with broken beans, reſin, and gum armoniac.

Galbanum is of an emollient and reſolutive nature; good in all hyſteric caſes, and in aſthma's, and inveterate coughs: it provokes the menſes, and brings on delivery; but it is chiefly uſed externally, in plaſters for the belly, which it alſo looſens, what way ſoever applied.

GALE, a ſea phraſe for the blowing of the wind.

When the ſea is not blown ſo hard, but that a ſhip can carry her top-ſails a-trip, that is, hoiſted up to the higheſt, they ſay it is a *loom gale*.

When it blows very ſtrong, they ſay it is a *ſtiff gale*, or, at leaſt, a *freſh gale*; but when it blows ſo hard, and violently, that a ſhip cannot bear any ſail, they ſay, it blows a *ſtorm*.

When two ſhips are near one another at ſea, and there being but little wind blowing, one feels more of it than the other; they ſay, the ſhip *gales* away from the other.

GALEARII, in antiquity, *helmet-bearers*; a name the Romans gave to the black guards, or ſervants of the ſoldiers.—See Vegetius iii. 6. and Salmaſius on the third chapter of the life of Adrian by Spartian.

GALEASSE, a large, low-built, heavy veſſel, uſing both ſails and oars; being the biggeſt of all the veſſels that go with the latter.

It may carry twenty guns; with a ſtern, capable of lodging a great number of muſqueteers. It has three maſts; the main, mizzen, and bowſprit; which are never to be taken down, or lowered, as they may be in galleys. It has thirty-two benches of rowers, and to each bench five or ſix ſlaves. Will. of Tyre makes mention of *galeaſſes* with one hundred benches of oars.

It has three tire of guns in the head, one over the other: they are of two guns each, bearing balls of thirty-ſix, twenty four, and ten pounds. It has but two tire in the ſtern, each containing three guns carrying balls of eighteen pounds.

The Venetians are the only people who now uſe *galeaſſes*: antiently the French, likewiſe, made uſe of them.

GALEATE *flowers*. See the article Flowers.

GALENIC, or **Galenical**, *medicine*, is that manner of conſidering and treating diſeaſes, founded on the principles of Galen, or introduced by Galen.

Claud. Galen was of Pergamus in Aſia, the ſon of Nicon, a famous geometrician, architect; and was a pupil of Satyron and Pelops, two able phyſicians. He firſt diſtinguiſhed himſelf at Athens, then at Alexandria, and, laſtly, at Rome; where he wrote a great deal; and where he alſo died, in the year of Chriſt 140.

He is ſaid to have compoſed two hundred treatiſes, whereof there are one hundred and ſeventy ſtill extant. There have been twenty-three ſeveral editions of this author. The firſt is that of Venice, in folio, in the year 1525. but the beſt is that of Paris, in thirteen volumes in folio, Greek and Latin, publiſhed in 1639.

This author, collecting and digeſting what the phyſicians before him had done, and explaining every thing according to the ſtricteſt doctrines of the Peripatetics, ſet phyſic on a new footing: he introduced the doctrine of the four elements; the cardinal qualities, and their degrees; and the four humours, or temperaments.

Galenic is now more frequently uſed, as contradiſtinguiſhed from *chemical*.

In this ſenſe, *Galenical medicine*, and *Galenical pharmacy*, are thoſe which go upon the eaſier preparations of herbs, roots, *&c.* by infuſion, decoction, *&c.* and attain their ends, and make their remedies effectual, by the combining and multiplying of ingredients: in oppoſition to the chemical medicine, or pharmacy; which torture the materia medica by fire, and draw their more intimate and remote virtues by elaborate preparations; as calcination, digeſtion, fermentation, *&c.*

Medicine was wholly *Galenical*, till the time of Paracelſus. Geber, indeed, and after him Raymund Lully, Arnoldus De Villa Nova, and Baſil Valentine, made ſome attempts to apply chemiſtry to medicine; eſpecially the laſt of them: but no great advance was made. Paracelſus, and after him Van Helmont, altered the whole body of medicine; exploded *Galeniſm*, and the Peripatetic doctrine, and rendered medicine almoſt wholly chemical.

The late improvements in philoſophy have reformed and retrieved the *Galenical* medicine; which, however, has now little of *Galen*'s in it. It is become all mechanical, and corpuſcular: inſtead of qualities and degrees, every thing is now reduced to mechanical affections; to the figures, bulks, gravities, *&c.* of the component particles, and to the great principle of attraction.

Galenical *phyſicians*. See the article Physician.

GALENISTS, a denomination given to ſuch phyſicians as practiſe, preſcribe, or write, on the *Galenical* principles.

The *Galeniſts* ſtand oppoſed to the *chemiſts*. The materia medica of the firſt is chiefly of the vegetable kind, the virtues of which they procure by the more ſimple and eaſy means, and ſeldom go beyond decoction; the latter take in minerals, ſalts, ſtones, and even metals, and ſemimetals: theſe, they hold, afford more efficacious remedies; and their virtues are procured by long, artful, laboured proceſſes, with the help of fire, are had more pure, and in a leſſer compaſs.

At preſent, the *Galeniſts* and chemiſts are pretty well accommodated; and moſt of our phyſicians uſe the preparations and remedies of both.

Galenists, or **Galenites**, are alſo a branch of Mennonites, or Anabaptiſts, who take in ſeveral of the opinions of the Socinians, or rather Arians, touching the divinity of our Saviour.

They are thus called from their leader, Abr. Galenus, a learned and eloquent phyſician of Amſterdam, who is accuſed of being a thorough Socinian. *Jovet.* t. i. p. 413, *&c.*

GALERICULATE *flowers*. See Flowers.

GALILEANS, **Galilæi**, a ſect, among the antient Jews, denominated from Judas of *Galilee*, their chief; who, eſteeming it unworthy, that the Jews ſhould pay tribute to ſtrangers, raiſed up his countrymen againſt the edict of the emperor Auguſtus, which had ordered a cenſus, or enumeration, to be made of all his ſubjects.

Their pretence was, that God alone ſhould be owned as maſter, and called by the name of the *Lord*: in other reſpects they had much the ſame doctrine as the Phariſees; but as they judged it unlawful to pray for infidel princes, they ſeparated themſelves from the reſt of the Jews, and performed their ſacrifices apart.

As our Saviour, and his apoſtles, were of *Galilee*, they were ſuſpected to be of the ſect of *Galileans*; and it was on this principle, as St. Jerome obſerves, that the Phariſees laid a ſnare for him; aſking, Whether it was lawful to give tribute to Cæſar; that, in caſe he denied it, they might have an occaſion of accuſing him. Vid. Joſeph. *Ant. Jud.* lib. xviii.

GALILEO's *teleſcope*. See the article TELESCOPE.

GALL, a yellow, bitter juice, or humour, called alſo *bile*, ſecreted from the blood, in the glands of the liver, and depoſited in a peculiar reſervoir, called the *gall-bladder*.

The bile contained in the *gall*-bladder, properly called *gall*, is ſomewhat different from the bile depoſited in the porus biliarius; being of a brighter yellow, a greater conſiſtence, and more bitter, and acrimonious. For the reſt, the manner of ſecretion, with the qualities, uſe, &c. of the two juices, are the ſame; which ſee, under the article BILE.

The *gall* of divers animals is found of divers uſes. That of a hog is ſaid to make the hair grow; and deterges and heals ulcers of the ears: that of a lamb is recommended for the epilepſy: that of the pike, for intermitting fevers: that of the carp clears and ſtrengthens the ſight: that of a kid, mixed with the white of an egg, bread, and oil of bays, and applied in form of poultice on the navel, is an approved remedy for a quotidian ague: that of a cock, and a bullock, are reputed good in diſeaſes of the eyes, and to take away freckles, and other diſfigurements of the ſkin: that of a roe-buck, or hare, deterges and carries off clouds, ſpecks, and cataracts, of the eyes: that of the boar, externally applied, is reſolutive, and good in ſcrophulous tumours: thoſe of the ſheep, and partridge, ſerve to deterge and cleanſe ulcers of the eyes. Fa. Roger adds, that the Mahometans of Paleſtine uſe no other remedy, againſt poiſons, but ſeven or eight drops of the *gall* of a bear.

GALL-BLADDER, *veſicula*, or *folliculus fellis*, is a membranous receptacle, in figure ſomewhat like a pear; ſituate at the lower margin of the liver, on the concave ſide; being about the bigneſs of a pullet's egg.—See Tab. *Anat.* (Splanch.) *fig.* 1. *lit. c. fig.* 5. *lit. e.* (Angeiol.) *fig.* 1. *n.* 34.

The *gall-bladder* adheres to the liver, both by its veſſels, which it receives from it; and likewiſe by its membranes, whereof the external is common with that of the liver. The lower-part, which hangs out of the liver, reſts on the pylorus of the ſtomach, which it dyes yellow with the *gall* tranſuding through its membranes.

Its membranes are reckoned five: an outer, or common one, from the peritonæum; an inner one, from the capſula of the porta, and porus biliarius; and three proper ones: the firſt, *vaſculous*, conſiſting of white fibres, interwoven with veſſels; the ſecond, *muſcular*, conſiſting of a double row of fleſhy fibres, the one longitudinal, the other angular; the third, or inner coat, *glandulous*, conſiſting of a great number of glands, like the cruſta villoſa of the ſtomach, which ſeparate a mucus that lines the inſide of the *gall-bladder*, and defends it from the acrimony of the bile.

This bladder is uſually divided into two parts: the *fundus*, or bottom; and the *collum*, or neck: at the orifice of which latter is placed a ring, or circle, of muſcular fibres, which ſerve as a ſphincter to conſtringe the orifice of the *gall-bladder*, and hinder the too liberal diſcharge of the bile.

There are ſome animals without *gall-bladders*; as deer, horſes, aſſes, mules, camels; and, among fiſhes, the ſea-calf, and dolphin. The *gall* of theſe animals is incloſed in ducts, which terminate in the inteſtines.

Wind-GALL. See the article WIND-*gall*.

GALLÆ. See the article GALLI.

GALLANT, or GALANT, a French term, ſignifying civil, polite, well-bred; or a perſon of wit, and addreſs; who does every thing with a good grace: in fine, a civil perſon, ſomewhat brighter, gayer, and more agreeable, than ordinary.

It is difficult to define all the qualities annexed to the idea of a *gallant* man. It frequently implies, an air of the world; a diſpoſition to pleaſe, and particularly the ladies; and a great devotion to the ſex. The French authors are very nice on the point: they diſtinguiſh *galant homme*, and *homme galant*.

Mercure GALANT is the title of a book, which appeared monthly at Paris for ſeveral years.

It contained abundance of pretty, curious things; though ſeveral of the wits have made it their buſineſs to decry it. M. De Vize was the firſt projector, and author, or rather collector of it; and after his death it was continued by other perſons ſucceſſively.

GALLED *ſaddle*. See the article SADDLE-*galled*.

GALLEON. See the article GALLION.

GALLERY*, in architecture, a covered place in a houſe, much longer than broad; and which is uſually placed in the wings of the buildings, and ſerves to walk in.

* Savot, in his architecture, derives the word *Gallery* from *Gaul*, as ſuppoſing the antient Gauls to have been the firſt who uſed them: Nicod fetches it from the French *aller*, to go; *q. d. allerie*: others bring it from *galere*, galley; by reaſon it bears ſome reſemblance thereto in reſpect of length. In the corrupt Latin we meet with *galilæa*, for the *gallery* of a monaſtery.

The *galleries* of the Louvre are magnificent: a *gallery* of painting: a complete apartment is to conſiſt of a hall, antechamber, chamber, cabinet, and *gallery*.

GALLERY, alſo, denotes a little iſle, or walk, ſerving as a common paſſage to ſeveral rooms placed in a line, or row.

The *gallery* of a church is a kind of continued tribune, with a baluſtrade, built along the ſides or lower-end of a church, to make it hold the more people; and, in the Greek churches, to ſeparate the women from the men.

GALLERY, in fortification, a covered walk, or paſſage, made acroſs the ditch of a town beſieged, with timbers faſtened on the ground, and planked over.—See Tab. *Fortif. fig.* 22.

The ſides of the *gallery* are to be muſquet-proof, and to conſiſt of a double row of planks, lined with plates of iron; and the top is ſometimes covered with earth, or turf, to hinder the effect of the ſtones, artificial fires, &c. of the enemy.

Galleries are chiefly uſed to ſecure and facilitate the miners approach to the face of the baſtion, over the moat, which is already ſuppoſed filled up with faggots and bavins, and the artillery of the oppoſite flank diſmounted. Sometimes this is called a *traverſe*.

GALLERY *of a mine* denotes the *branch*, or that narrow paſſage, under-ground, leading to a mine carrying on under any work deſigned to be blown up.

The beſiegers and beſieged do each of them carry *galleries*, or branches, under-ground, in ſearch of each other's mines; and theſe ſometimes meet and deſtroy each other.

GALLERY *in a ſhip* is a kind of balcony, made upon the ſtern, without-board, into which there is a paſſage out of the great cabin.—See Tab. *Ship. fig.* 1. *lit. m. fig.* 2. *n.* 98. and 101.

Theſe *galleries* are for ſhew, and the captain's pleaſure, rather than any other benefit; for, in ſhips of war, all open *galleries* of this kind are to be avoided; in regard of the facility of an enemy's entrance, and boarding of the ſhip that way.

GALLEY*, a low-built veſſel, going both with oars and ſails; chiefly uſed by the ſtates bordering on the Mediterranean.

* The *galley* is called, by the Greek authors under the eaſtern empire, γαλαια, and γαλεια; and, by the Latin authors of the ſame time, *galea*; whence the modern denomination. Some ſay, it was called *galea*, on account of the figure of a caſk, or helmet, which it bore on its head, or prow, as Ovid atteſts, *De Triſtib* The French call it *galere*; by reaſon, they ſay, that the top of the maſt is uſually cut in manner of a hat, which the Italians call *galero*. Others derive both *galea* and *galere* from a fiſh, by the Greeks called γαλιώτης, or ξιφιας, and by us the *ſword-fiſh*, whoſe ſhape this veſſel reſembles. Laſtly, others derive *galley*, *galea*, *galere*, *galeaſſe*, &c, from the Syriac and Chaldee *gaul*, and *gallin*, a man expoſed on the water, or in a veſſel of wood.

Galleys have uſually from twenty-five to thirty benches of oars, on each ſide; and four or five *galley*-ſlaves, to each bench.

The *galley* carries a large gun, called the *courſer*; two baſtard pieces, and two ſmall pieces; with two maſts, and two latin or ſquare ſails. It is uſually from twenty to twenty-two fathoms long, three broad, and one deep; and has two maſts; *viz.* a main-maſt, and a fore-maſt; which may be ſtruck, or lowered, at pleaſure.

All the *galleys*, both antient and modern, are of a finer and ſlenderer make than ſhips. Formerly they made divers kinds; at preſent the *galleys* are all alike: all the difference between them is as to ſize, and nothing as to figure. They uſually keep towards the coaſts; though ſometimes they croſs the ſea.

The king of France keeps up forty *galleys* for the uſe of the Mediterranean, the arſenal thereof being at Marſeilles. The general of the *galleys* bears a double anchor, placed in pale, behind the eſcutcheon of his arms, as a mark of his office.

Galleys, in Latin, are called *biremes*, *triremes*, and *quadriremes*; not on account of their having two, three, or four, ranges of oars before one another, as many learned men have imagined, and particularly Scaliger and Snellius, though this laſt has wrote excellently on the ſubject of navigation; for this were impracticable: nor yet on account of their having but two, three, or four oars; for then they would want ſtrength: but by reaſon there were two, three, or four, rowers faſtened to each oar, as in the *galleys* uſed among us; as is very well ſhewn by the jeſuit Dechales, in his *Art of ſailing*. The error was occaſioned by ſome antient *galleys*, repreſented on medals, or baſſo-relievo's, wherein are ſeveral ranges of rowers placed over each other; but all the mathematicians, pilots, and ſhip-builders, look on this as a mere viſion: inaſmuch as Pliny makes mention of *galleys* of fifteen, twenty, thirty, forty, fifty rows of rowers: ſo that, if they were ranged over each other, though we were only to allow four feet for each deck, there would be a diſtance of one hundred and ſixty feet between the loweſt rowers and the higheſt: and yet we are aſſured, that the higheſt veſſel ever built was only ſeventy-two feet high.

Scaliger affirms, that the firſt *triremis*, or *galley* of three ſtories, was built at Corinth; and is of opinion, that what

Pliny calls *long ſhips*, were what we call *galeaſſes*; the firſt whereof was that of the Argonauts. Vegetius mentions a *galley* of five decks; and Memnon, another with eight, and only one man to each oar. See Supplement, article TRIREMIS.

Captain-**GALLEY** is the principal *galley* of a ſtate, commanded by the captain-general of the *galleys*: in France, the *royal galley* is the firſt.

Patroon-**GALLEY** denotes the ſecond *galley*, both of France, Tuſcany, and Malta.

The ſecond general of the *galleys* is always on board the royal *galley*; and the lieutenant on board the patroon.

The terms peculiar to *galleys* are very numerous, and make a new ſyſtem of ſea-language, different from that uſed in ſhips. Monſ. de Baras, an antient officer on board the king of France's *galleys*, engaged himſelf in writing a new dictionary of the dialect of the *galleys*.

Condemnation to the **GALLEYS** is a penalty impoſed on criminals and delinquents, particularly in France; whereby they are adjudged to ſerve the king, or ſtate, as ſlaves on board the *galleys*, either for ever, or for a limited time.

Condemnation to the *galleys* for ever imports confiſcation of lands, goods, *&c.* For in France, that which confiſcates the perſon, confiſcates the goods.

A man condemned to the *galleys* for perpetuity, is dead in a civil ſenſe. He cannot diſpoſe of any of his effects; cannot inherit; and, if he be married, his marriage is null; nor can his widow have any of her dower out of his goods.

The eccleſiaſtical courts cannot ſentence to the *galleys*: it is out of their juriſdiction.

By an ordonnance of Charles IX. in 1564. the judges are injoined not to condemn a criminal to the *galleys* for leſs than ten years: and Hen. III. by another of 1579. injoins the captains not to detain their *galley* ſlaves after their time is expired. But neither of theſe laws are now obſerved.

GALLEY, in printing, a wooden frame, or inſtrument, into which the compoſitor empties the letters out of his compoſing-ſtick, as often as it is filled.

The *galley*, when filled, contains the matter of one page; and when they have compoſed as many pages as are required for a whole ſheet, half ſheet, or the like, they impoſe them, *i. e.* they take the ſeveral pages out of the *galleys*; put them into a chaſe; lock them up with the furniture; and ſo make forms, ready for the preſs.

GALLI, or **GALLÆ**, in antiquity, a name given in Phrygia to the eunuch-prieſts of the goddeſs Cybele.

The principal of them was called *Archi-Gallus*. The *Galli* were alſo called *Dactyli*, *Idæi*, *Corybantes*, &c. Authors are not agreed as to the reaſon of this denomination. St. Jerom, on the fourth chapter of Hoſea, ſays, it was, becauſe they took Gauls for the prieſts of this goddeſs, and, by way of puniſhment and deriſion for burning of Rome, caſtrated them. Forcatulus maintains the ſame opinion, l. v. *de Gallor. Imp. & Philoſ.* But Valla, *Eleg.* v. c. 6. and Voſſius, *de Idolol.* l. i. c. 20. reject it, with reaſon; as the Phrygians were no-way intereſted in the burning and ſacking of Rome.

Others derive the name from the river Gallus; by reaſon theſe prieſts drank of its waters, which inſpired them with I know not what religious fury and enthuſiaſm, and deprived them of their ſenſes to ſuch degree, that they mutilated themſelves.

Others hold, that the firſt prieſt of Cybele having been named *Gallus*, the name became appropriated to all his ſucceſſors. Voſſius, who propoſes theſe two opinions, ſeems to incline moſt to the latter; though Ovid, in the fourth of his *faſti*, and Herodian, l. i. favour the former.

Theſe prieſts threw themſelves into a kind of phrenſy, when they performed the ceremonies of the goddeſs; apparently, in imitation of the young Atys, her favourite; whom they likewiſe imitated, by mutilating themſelves.

For authors relate, that Cybele being deſperately in love with that young Phrygian, ſhe gave him the ſuperintendence of her ſacrifices, on condition he would keep his virginity; but that ſoon after, forgetting his promiſe, he had an affair with the nymph Sangaritis: that Cybele, provoked hereat, ſtruck him mad: that in a vehement acceſs of his phrenſy he was going to kill himſelf; and that the goddeſs, relenting, reſtored him to his underſtanding; that out of his own remorſe, he caſtrated himſelf; and that after his example all the prieſts of Cybele from that time did the like.

Their phrenſy, at the time of the ſacrifices, conſiſted in throwing round the head with great rapidity, and making violent contorſions of the whole body: they had alſo drums and flutes, wherewith they played, and danced to them; as already obſerved under the articles CORYBANTES, and CURETES.

Caput GALLI. } See the articles { CAPUT.
Criſta GALLI. } { CRISTA.

GALLIAMBIC, in the antient poetry.—GALLIAMBIC *poem* is a compoſition in *Galliambic* verſes.

GALLIAMBIC verſe, a ſort of Iambic, conſiſting of ſix feet: 1°, An Anapæſt, or a Spondee; 2°, An Iambic, or an Anapæſt, or Tribrarch; 3°, An Iambus; 4°, A Dactyl; 5°, A Dactyl; and 6°, An Anapæſt.

Though one might meaſure the *Galliambic* verſe in another manner; and make a different arrangement and combination of ſyllables; which would give different feet.—It is certain the antients regarded little more in the *Galliambic* verſe, beſide the number of meaſures, or intervals, without troubling themſelves about the number of ſyllables, or the kinds of feet, whereof it was compoſed.

GALLIAMBUS *, in poetry, a pleaſant kind of verſe, uſed to be ſung by the Galli, prieſts of Cybele, in honour of that goddeſs.

* The word is a compound of *Gallus*, a prieſt of Cybele; and *iambus*, a foot in the Greek and Latin verſe.

Galliambus alſo denotes a piece or compoſition in *Galliambic* verſes.

GALLIARD *, or **GAGLIARDA**, in muſic and dancing, a ſort of dance, antiently in great requeſt; conſiſting of very different motions, and actions, ſometimes proceeding *terra à terra*, or ſmoothly along; ſometimes capering; ſometimes along the room, and ſometimes acroſs.

* The word is French, *gailliarde*, or rather Italian; and literally ſignifies gay, merry, ſprightly. This dance was alſo called *Romaneſque*, becauſe brought from Rome.

Thoinot Arbeau, in his *Orcheſography*, deſcribes it as conſiſting of five ſteps, and five poſitions of the feet, which the dancers performed before each other, and whereof he gives us the ſcore, or tablature, which is of ſix minims, and two triple times.

GALLICAN *church* denotes the church of France; or the aſſembly or convocation of the prelates of France.

M. du Puy has an expreſs treatiſe of the liberties of the *Gallican* church.

GALLICAN *breviary* denotes the breviary uſed by the church of Agrigentum, in Sicily; which the modern writers call *breviarium Gallicanum*.

The reaſon, no doubt, is its having been introduced by St. Gerlan, who was made biſhop of Agrigentum, after earl Roger had been driven out of Sicily by the Saracens; and by the other French biſhops, which the Norman princes brought thither.

GALLICAN *liturgy* is the manner of performing divine ſervice, antiently obſerved in the Gauls.

Fa. Mabillon ſhews wherein it differed from the Roman liturgy. 1. *Liturg. Gall.* c. 5, *&c.*

GALLICAN *maſs*. See the article MESSE.

GALLICISM, a phraſe, or conſtruction, peculiar to the French language; or which has ſomething contrary to the ordinary rules of grammar of other languages.

Thus, *Cet homme eſt ſur ſa bouche* is a *Gallciſm*, having no regular conſtruction: and the ſame may be ſaid of *Faire de la terre le foſſé*; which no grammar could ever find out.

GALLIMATHIAS *, a dark, perplexed diſcourſe, where words and things are huddled together ſo as to make an inconceivable jargon.

* The word is French, formed, as ſome will have it, from *polymathia*, which ſignifies diverſity of ſciences; by reaſon ſuch as have their memory burdened with ſeveral kinds of ſciences, are uſually confuſed, and expreſs themſelves ill. M. Huet rather takes the word *gallimathias* to have had the ſame origin with *aliborum*; and to have firſt ariſen at the time when all the pleadings at the bar were in Latin. There was a cauſe, it ſeems, upon the carpet, about a cock, belonging to the plaintiff Matthias. The counſel, in the heat of his harangue, by often repeating the words *gallus* and *Matthias*, happened to blunder; and, inſtead of ſaying *gallus Matthiæ*, ſaid *galli Matthias*; which at length became a general name for all confuſed, imbroiled language and diſcourſe.

GALLIMAWFRY *, a ragou, hache, or hotch-pot, made of the remains of ſeveral kinds of meats.

* The word is French, *gallimafrée*, which ſignifies the ſame.

Hence the word is alſo uſed in a figurative ſenſe for a piece, or compoſition, of ſeveral different parts, ill-digeſted, and embarraſſed.

GALLINAGINIS *caput*. See CAPUT.

GALLING. See BARK-*galling*, SADDLE, *&c.*

GALLION, or **GALLEON**, formerly denoted a large veſſel, or ſhip of war, of three or four decks.

GALLION is now only uſed in ſpeaking of the Spaniſh fleet; the *gallions* being a part of the ſhips employed in the commerce of the Weſt Indies.

The Spaniards ſend every year two fleets; the one for Mexico, which they call the *flota*; and the other for Peru, which they call the *gallions*. The firſt, we have already given an account of, under the article FLOTA.

The *gallions* are eight in number, the principal whereof are the Capitana, the Amirante, il Governo, the Patache, and Marguarita, of fifty pieces of braſs cannon; beſide which there is a Patache of advice. Theſe are all ſhips of war, and go on the king's account; but they are ſo loaden and embarraſſed with merchandizes, that, in caſe of an attack, they find it difficult to defend themſelves.

Beſide the king's *gallions*, there are uſually twelve or ſixteen merchant-ſhips, called *regiſter-ſhips*, belonging to private perſons, who obtain leave for the ſame, or rather buy it; there being no Weſt India Company in Spain. See Regiſter.

The *gallions* are loaded at Cadiz, from whence they may put out at any time: they are about two years in the whole voyage. Their departure is uſually ſome months before that of the flota; which cannot put out before Auguſt, by reaſon of the wind. When they put out together, they ſeparate about the Antilles iſlands; the *gallions* for Carthagena and Porto Bello: and the flota for Vera Crux. At their return, they rejoin at the Havanna in the iſle of Cuba.

The loading of the *gallions* is always the richeſt: an eſtimate of the yearly returns or cargoes, both of the flota and *gallions*, is as follows:

Of gold, the *gallions* bring yearly about two or three millions of crowns; and the flota about one. Of ſilver, the *gallions* bring eighteen or twenty thouſand crowns; and the flota ten or twelve. Of precious ſtones, the *gallions* bring as follow; two hundred thouſand crowns worth of pearls; two or three hundred thouſand crowns of emeralds; and twenty or thirty thouſand crowns worth of bezoards, amethyſts, and other ſtones of leſs value: the flota brings none at all. Of wools, the *gallions* bring forty or fifty thouſand crowns: the flota, none. Of quinquina, the *gallions* bring the value of twenty thouſand crowns: the flota, none. Of ſkins and leathers, the *gallions* bring ſeventy thouſand crowns worth: the flota, as much. Of campeche wood, the *gallions* bring ſixty thouſand crowns worth: the flota, none. Of ſkins and leathers from Buenos Ayres, the regiſter-ſhips may bring to about two hundred thouſand crowns: of cochineel, about a million of crowns: and of indigo, about ſix hundred thouſand crowns.

GALLIOT, a ſmall galley; or a ſort of brigantine, built very ſlightly, and deſigned only for chace.

She hath but one maſt, and can both ſail and row. She uſually carries two or three pedrero's, and hath ſixteen or twenty oars.

Some alſo call the bomb-ketches, *galliots*.

GALLOGLASSES, a kind of militia, or ſoldiery, in Ireland.

Camden, in his annals of Ireland, p. 792. relates, that the Iriſh militia conſiſts of cavalry, or horſemen, called *galloglaſſes*, or *galloglaſſii*, who uſe a very ſharp ſort of hatchet: and infantry, called *kernes*.

GALLON, an Engliſh meaſure, for things both liquid and dry, containing two pottles, or four quarts.

The *gallon* always contains eight pints, or four quarts; but thoſe pints and quarts, and conſequently the *gallon* itſelf, are different, according to the quality of the things meaſured: the wine *gallon*, for inſtance, contains 231 cubic inches, and holds eight pounds, averdupois, of pure water: the beer, and ale *gallon*, contain 282 ſolid inches: and the *gallon* for grains, meals, &c. 272 inches, and hold nine pounds thirteen ounces of pure water.

GALLOON, in commerce, a thick, narrow kind of ferret, ribband, or lace, uſed to edge or border cloaths.

The term is ordinarily underſtood of that made of wool; ſometimes that of a thread, or even gold or ſilver.

GALLOP *, in the manage, is the ſwifteſt natural pace of a horſe, performed by reaches or leaps; the two fore-feet being raiſed almoſt at the ſame time; and when theſe are in the air, and juſt ready to touch the ground again, the two hind-feet are lifted almoſt at once.

* The word is borrowed from the barbarous Latin *calupare*, or *calpare*, to run. Some derive it from *caballicare*: others from the Greek καλπαζειν, or καλπαν, to ſpur a horſe.

In *galloping*, the horſe may lead with which fore-leg he pleaſes; the moſt uſual way is that with the right: but whichſoever it be, the hind-leg of the ſame ſide muſt follow it next; otherwiſe the legs are ſaid to be *diſunited*, and the *gallop* to be *falſe*. To remedy which diſorder, the rider muſt ſtay the horſe a little on the hand, and help him with the ſpur on the contrary ſide to that on which he is diſunited.

In a circle the horſe is confined always to lead with his fore-leg, within the turn; otherwiſe he is ſaid to *gallop falſe*. But here, too, the hind-leg of the ſame ſide muſt follow.

We ſay, a *hand-gallop*, a *Canterbury-gallop*, a *ſchool-gallop*, &c. A ſmooth *gallop*, cloſe to the ground, the French call the *Engliſh gallop*, *galop à l'Angloiſe*.

GALLOWS, an inſtrument of puniſhment whereon perſons convicted capitally of felony, &c. are executed by hanging.

Among our anceſtors it was called *furca*, a fork; a name by which it is ſtill denominated abroad, particularly in France and Italy. In this latter country, the reaſon of the name ſtill ſubſiſts; the *gallows* being a real fork driven into the ground, acroſs the legs whereof is laid a beam, to which the rope is tied.

GALLS, or Gall-nuts, in natural hiſtory, &c. a kind of morbid tumours, or excreſcences, found on divers trees and plants, as the oak, willow, &c. in form of balls, cones, or little apples, ſometimes ſolid, ſometimes perforated. The manner of the production of *galls* is well deſcribed by Malpighi, in an expreſs treatiſe *De gallis*. The proceſs, as obſerved in the cone-*galls*, or apples on the gems of oaks, is alſo given us by Mr. Derham.

Theſe cones, ſays that author, are in outward appearance perfectly like the gems or buds themſelves, only vaſtly bigger; and, in effect, they are no other than the gems ſwelled out in bulk, which naturally ought to be puſhed out at length. The cauſe of which obſtruction of vegetation is this: Into the very heart of the young, tender bud, which begins to be turgid in June, and ſhoots out in a month more, an inſect, of the ichneumon fly kind, thruſts one, or more eggs; and, in all probability, ſome venomous ichor therewith. This egg ſoon becomes a maggot; which eats itſelf a little cell in the very heart or pith of the gem, which ſhould be the rudiment of the branch, leaves, and fruit.

The branch thus deſtroyed, or, at leaſt, its vegetation obſtructed; the ſap that was to nouriſh it, is diverted into the remaining parts of the bud, which are only the ſcaly teguments; and which by this means grow large and flouriſhing, and become a covering to the inſect caſe, as before they were to the tender branch.

The caſe lying within this cone, is, at firſt, but ſmall; but, by degrees, as the included maggot increaſes; ſo does the caſe; till it comes to the ſize of a large white pea, ſhaped like an acorn.

It may be added, that even nettles, ground-ivy, &c. have a kind of balls or caſes produced on their leaves, by the injection of the eggs of a fly of the ſame kind. Theſe caſes always grow in, or adjoining to, ſome rib of the leaf; and their production Malpighi and Mr. Derham deſcribe thus:

The parent-inſect, with its ſtiff ſetaceous tail, bores into the rib of the leaf, when tender, and makes way for its eggs into the very pith or heart thereof; emitting along with them a proper juice to pervert the regular vegetations.

From this wound riſes a ſmall excreſcence, which, when the maggot is hatched, increaſes and ſwells on each ſide the leaf, between the two membranes; extending itſelf into the parenchymous parts thereof, till it be grown as big as two grains of wheat. In this caſe lies a ſmall, white, rough maggot; which turns to an aurelia, and afterwards to an ichneumon fly. See Supplement, article Galls.

Galls, or *Aleppo* Galls, are a particular kind of vegetable tumours, or excreſcences, wherein inſects are hatched; and which are much uſed in dying, making ink, &c.

Theſe *galls* are produced on the hardeſt ſpecies of oak, called *quercus gallam ferens*. Thoſe on other oaks are leſs fit for the purpoſe. They are hard as ſhells; and yet are no other than the caſes of the inſects, which are bred in them after the manner above deſcribed; and which, when come to maturity, gnaw their way out; which is the cauſe of thoſe little holes obſervable in them.——Of theſe inſects bred in them, we have a particular account in *Philoſ. Tranſact.* N° 245.

There are three ſorts of theſe *galls*: the firſt, blackiſh; the ſecond, bordering on green; the third, whitiſh. The dyers uſe them all, according to their reſpective qualities; the green and black ſerve to dye in black; and the white for linens. 'Tis the black and green that are uſed in making of ink.

The Engliſh and Dutch import yearly, from Aleppo, ten thouſand quintals of *galls*. The Turks have likewiſe a kind of ruddy *gall*, of the ſize of a ſmall nut, which they mix with cochineel and tartar, to dye ſcarlet with.

GAMBEZON, Gambeyson, Gambeso, in the antient military language, was a kind of coat, or doublet, worn under the cuiraſs, to make it fit eaſy, and prevent its hurting the body.

It was made of wool, or cotton, quilted between two ſtuffs; and was likewiſe called *counter-point*.

Others define the *gambezon* a kind of ſoft, quilted waiſtcoat, worn under the coat of mail, and hanging down over the thighs.

Pectora tot coriis, tot gambeſonibus *ornant.*

GAME, *ludus*, a regular diverſion; or a ſport preſcribed, and limited by rules.

Games may be diſtinguiſhed into thoſe of *exerciſe* and *addreſs*; and thoſe of *chance*, or *hazard*.

To the firſt, belong *tennis*, *billiards*, *cheſs*, *bowls*, *cudgels*, *wreſtling*, *quoits*, *ſhooting* with bows, &c.

To theſe alſo belong the antient *juſts* and *tournaments*.

Under the ſecond come *cards*, and *dice*, &c.

Under cards, again, come ſeveral ſubordinate *games*; the principal whereof are *ombre*, *picquet*, *baſſet*, *whiſt*, &c. See Ombre, and Picquet.

Games, *ludi*, in the plural, were ſhews, or public repreſentations, uſed among the antients, on religious, funerary, and other ſolemn occaſions.

Such, among the Greeks, were the *Olympic*, *Pythian*, *Iſthmian*, and *Iſelaſtic games*.

Among the Romans, there were three ſorts of *games*; *ſacred*, *honorary*, and *ludicrous*: and Auſonius obſerves a difference, ſomewhat of the ſame kind, among thoſe of the Greeks; two of their celebrated *games* being dedicated to gods, and two to heroes.

Sacred GAMES were thoſe inſtituted immediately in honour of ſome deity; of which kind were the *ludi Cereales*, *Florales*, *Martiales*, *Apollinares*, *Megalenſes*, *Romani*, *Conſuales*, or *Circenſes*, *Capitolini*, *ſeculares*, *plebeii*, *compitalitii*, *Auguſtales*, *palatini*, and *votivi*. See each deſcribed in its place.

To this claſs may alſo be referred thoſe celebrated in memory of ſome illuſtrious perſon, or action; as the *ludi Neroniani*, and *Actiaci*, &c.

Authors mention a decree of the Roman ſenate, by which it was enacted, that the public *games* ſhould be conſecrated, and united with the worſhip of the gods as a part thereof; and accordingly, feaſts, ſacrifices, and *games*, appear to have made up the greateſt part, or rather the whole, of the external worſhip, or ſervice, offered to the deities of the Romans.

Honorary GAMES, *ludi honorarii*, were thoſe exhibited by private perſons, out of their own purſe; in order to gratify the people, or ingratiate themſelves with them, to make way for their own preferment.—Such were the combats of gladiators, ſcenic *games*, tragedies, comedies, and other theatrical and amphitheatrical ſports.

Ludicrous GAMES were of the ſame kind with the *games* of exerciſe and hazard among us.—Such were the *ludus Trojanus*, or *Pyrrhius*; the *teſſeræ*, and *tali*, or dice; and the *latrunculi*, or cheſs; the *diſcus*, or quoit; the *pila*, ball; *trochus*, top; *nuces*, or *par impar*, odd and even, with nuts; *harpaſtum*, foot-ball; *capita vel navem*, croſs and pile, *&c.*

Others diſtinguiſh the antient *games* into three claſſes; *viz.* *races*, *combats*, and *ſpectacles*. The firſt were called *equeſtrian*, or *curule games*, *ludi equeſtres*, or *curules*; being races of horſes, and chariots, performed in the circus, in honour of the Sun and Neptune.

The ſecond were called *agonales*, or *gymnici*; being combats of men, or beaſts, in the amphitheatre, dedicated to Mars and Minerva.

The laſt, called *ſcenici*, *poetici*, and *muſici*, were tragedies, comedies, balls, *&c.* repreſented on the theatres, ſacred to Venus, Bacchus, Apollo, and Minerva.

Homer gives us a fine deſcription of the *games* which Achilles inſtituted at the funeral of his friend Patroclus, in his *Iliad*; and others of the different *games* held among the Pheaces, Ithacans, and at the court of Alcinous, in his *Odyſſee*. And Virgil's deſcription of the *games* celebrated by Æneas, at the funeral of old Anchiſes, is nothing inferior to any of them.

GAME is alſo uſed for all kinds of wild beaſts and birds fit for eating, and which are ſought after on that account.

Game includes wild beaſts of venery and chace; and alſo beaſts and fowls of warren.

Some authors divide *game* into *large*; which include red and fallow deer: and *ſmall*, to which belong hares, rabbets, pheaſants, and partridges.

A foreſt is a place ſet apart for preſerving, feeding, breeding, *&c.* of all ſorts of *game*; and conſiſts of divers things; *viz.* ſoil, covert, laws, courts, judges, officers, *game*, and bounds. A chaſe differs from a foreſt, in this, among other things, that it has no ſuch variety of *game*.

Ways of catching *game*, are by hunting, hawking, fowling, *&c.*

There are abundance of *laws made for the ſecurity and preſervation of the game*.—The *foreſt laws* of king Canutus, the *charta de foreſta* of king Henry III. we have elſewhere mentioned.

By a ſtatute in 33 Hen. VIII. it is enacted, That no perſon ſhoot with, or keep in his houſe, any croſs-bow, or ſtone-bow, hand-gun, or hagbut, under the length of one yard; unleſs he have lands of the yearly value of 100 *l.* on pain of a forfeiture of 10 *l.* for every offence: nor ſhall any perſon travel with a croſs-bow bent, or gun charged; or ſhoot within a quarter of a mile of a city or town, except at a dead mark, or in defence of his houſe, under the like forfeiture, to be divided between the king and the proſecutor.—None, under the degree of a baron, ſhall ſhoot with any hand-gun, within a city, or town; or ſhoot at any fowl whatever with hail-ſhot; on the ſame forfeiture. *Id. ſtat.*

Any perſon ſhooting in the night-time, or diſguiſed, ſhall be deemed a felon, if he deny; if he confeſs, he is fineable at the next general ſeſſions. 1 *Hen.* VII.

None ſhall kill or take pheaſants or partridges, with any net, or engine, in the night-time; on forfeiture of 20 *s.* for every pheaſant; and 10 *s.* for every partridge. 33 *Eliz.*

None ſhall hawk or hunt with ſpaniels in ſtanding corn, or before it be ſhocked, unleſs on his own ground; on the penalty of 40 *s.* half to the king, and the other half to the proprietor of the ground.

He that is convicted of killing or taking a pheaſant, partridge, duck, heron, hare, or other *game*; or of taking and deſtroying the eggs of ſwans, pheaſants, or partridges; ſhall pay 20 *s.* for every ſuch fowl, hare, *&c.* to the uſe of the poor. 1 *Jac.* I.

Every perſon convicted to have kept a greyhound dog, or net, to kill or take deer, hare, pheaſant, or partridge, unleſs he have inheritance of 10 *l.* per annum, a leaſe for life of 31 *l.* per annum; or be worth 200 *l.* in goods; or be the ſon of a knight, or heir apparent of an eſquire; ſhall pay 40 *s.* for the uſe aforeſaid.—Nor ſhall any ſell, or buy to ſell again, any deer, hare, pheaſant, or partridge, on pain of 40 *s.* *Id. ſtat.*

The lord of a manor, or one having inheritance of 40 *l.* per annum, freehold of 10 *l.* or goods worth 400 *l.* or their ſervants licenſed by them, may take pheaſants or partridges within their own lands or precincts, in the day-time, between Michaelmas and Chriſtmas. 7 *Jac.* I.

No layman, who hath not lands of 40 *s.* per annum; nor clerk, who hath not 10 *l.* revenue; ſhall keep any greyhound, hound, ferret, net, or engine, to deſtroy deer, hares, conies, or other gentleman's *game*; on pain of a year's impriſonment. 13 *Jac.* I.

They that kill or take away any red or fallow deer, without conſent of the owner, ſhall forfeit 20 *l.* to be taken by diſtreſs; one half to the owner, and the other to the informer; or, for want of ſuch diſtreſs, ſhall ſuffer a year's impriſonment. 13 *Car.* II.

Lords of manors, or other royalties, not under the degree of eſquire, may commiſſion one or more *game*-keepers, who may ſeize all guns, dogs, bows, *&c.* of perſons not having eſtates of 100 *l.* per annum freehold, or 150 *l.* per annum leaſehold, or are not ſons and heirs of eſquires; and deſtroy, or convert ſuch guns, *&c.* to the uſe of the lord. 22 *Car.* II.

If any enter a coney-warren, though not incloſed, and chaſe or kill conies, he ſhall forfeit treble damages, and be impriſoned three months: and they that kill conies in the night-time upon the borders of warrens, or grounds uſed for keeping conies, ſhall be amerced at the diſcretion of the juſtice of peace, in any ſum not exceeding 10 *s.* *Id. ſtat.*

He who unlawfully hunts, takes in toils, kills, or takes away, any deer, in any foreſt, chaſe, park, purlieu, or other incloſed ground; or ſhall be aiding and aſſiſting therein; ſhall forfeit 30 *l.* for every deer killed, taken, or even wounded; and 20 *l.* though none ſhall be wounded or taken; to be levied by diſtreſs, 3 *Will.* and *Mar.*—And if the keeper of a foreſt, *&c.* be an offender herein, or be aiding thereto, he ſhall forfeit 50 *l.* 5 *Georg.* I. to be levied as above.

In caſe any hare, partridge, pheaſant, fiſh, fowl, or other *game*, ſhall be found in any offender's houſe, he ſhall forfeit a ſum not leſs than 5 *s.* nor more than 20, to be levied by diſtreſs; or, in want thereof, he ſhall be committed to the houſe of correction for a ſpace of time not greater than a month; nor leſs than ten days. And if any perſon, not qualified by law, ſhall keep or uſe any bows, greyhounds, ſetting-dogs, ferrets, tumblers, ſnares, *&c.* he ſhall be ſubject to the ſame penalties.

If any higler, chapman, carrier, innkeeper, or victualler, ſhall have in his keeping any hare, pheaſant, partridge, heath *game*, or growſe, not put in his hands by a perſon qualified by law, he ſhall forfeit 5 *l.* for every ſuch hare, *&c.* half to the informer, and half to the poor, to be levied by diſtreſs; or, for want thereof, he ſhall be ſent to the houſe of correction for three months. 5 *Annæ.*

Perſons not qualified, keeping greyhounds, lurchers, ſetting-dogs, or engines to deſtroy *game*; and *game-keepers*, who, under colour of office, kill and ſell *game*, without their maſters knowlege; are liable to the like penalty. *Id. ſtat.*

No lord of a manor to appoint more than one *game-keeper*, and his name to be entered with the clerk of the peace, who is to give a certificate thereof; otherwiſe he is liable to the penalties againſt higlers. 5 *Annæ.*

If any hare, pheaſant, *&c.* be found in the poſſeſſion of a perſon not qualified; unleſs he be intitled to it by ſome perſon that is qualified; the ſame ſhall be adjudged an expoſing it to ſale. Perſons deſtroying a hare in the night, ſhall incur the forfeiture of 5 *l.* 5 *Ann.*

No lord of a manor ſhall appoint a *game-keeper*, with power to kill or deſtroy *game*, unleſs he be truly a ſervant of ſuch lord; or be immediately employed to kill *game* for the ſole uſe of ſuch lord: nor ſhall any lord authorize a perſon not qualified to keep or uſe gun, greyhounds, *&c.* and ſuch perſons as ſhall be found offending in either of theſe points, ſhall, for every offence, forfeit 5 *l.* 3 *Geo.* I.

Laſtly, if any perſon enter a park, paddock, or other incloſed ground, where deer are uſually kept, and wilfully wound or kill any red or fallow deer, he ſhall be tranſported to the plantations for ſeven years. 5 *Georg.* I.

GAMELIA *, *γαμηλια*, a nuptial feaſt, or rather ſacrifice, held in the antient Greek families on the day before a marriage.

* It was thus called from *γαμος*, marriage; whence alſo *γαμηλιος*, an epithet, or ſurname, given to Jupiter and Juno, conſidered as preſiding over marriages.

GAMELION, or Gamelium, a poem, or compoſition in verſe, on the ſubject of a marriage; more uſually called an *epithalamium*.

GAMETRIA. See the article Gematria.

GAMING, the art, or act, of performing or practiſing a game; particularly a game of hazard.

All public *gaming* is ſeverely prohibited; and what money is thus loſt, is recoverable again by law.

In China, *gaming* is equally prohibited the common people, and the mandarins; and yet this does not hinder their playing, and frequently loſing all they have; their lands, houſes, children, and even wife, which are all, ſometimes, laid on a ſingle card. F. le Comte.

The buſineſs of chance, or hazard, is of mathematical conſideration; inaſmuch as it admits of more, and leſs. It is, or is ſuppoſed to be, an equality of chance, upon which the gameſters ſet out: this equality is to be broken in upon in the courſe of the game by the greater good fortune, or addreſs, of one of the parties; upon which he comes to have a better chance; ſo that his ſhare in the depoſit, or ſtakes, is now proportionably more, or better, than at firſt: this more and leſs is continually varying, and runs through all the ratio's between equality, and infinite difference; or from an infinitely little difference till it arrives at an infinitely great one, upon which the game is ended. The whole game, therefore, with reſpect to the event or iſſue thereof, is only a change of the quantity of each perſon's ſhare, or chance; or of the propoption their two ſhares bear to each other; which mathematics alone can meaſure.

Hence ſeveral authors have computed the variety of chance in ſeveral caſes and circumſtances that occur in *gaming*; particularly M. de Moivre, in a treatiſe *De menſura ſortis*: which, as it may either be of ſervice to the practical gameſter, or the better, in teaching them on what ſide the advantage lies; and whether they lay on the ſquare; or to the ſpeculative one, in letting him into the way of thinking and determining in ſuch caſes; we ſhall here give the reader an abſtract of.

Laws of chance applied to Gaming.—Suppoſe p the number of caſes wherein an event may happen, and q the number of caſes wherein it may not happen; both ſides, the contingent and non-contingent, have their degree of probability: and if all the caſes wherein the event may and may not happen, be equally eaſy, the probability of the happening, to that of not happening, will be as p to q.

If two gameſters, A and B, engage on this footing, that if the caſes p happen, A ſhall win; but if q happen, B ſhall win; and the ſtake be a: the chance, or expectancy of A will be $\frac{pa}{p+q}$; and that of B $\frac{qa}{p+q}$; conſequently if A or B ſell their expectancies, they ſhould have for them $\frac{pa}{p+q}$ and $\frac{qa}{p+q}$ reſpectively.

If there be two independent events; and p the number of caſes wherein the firſt may happen, and q the number of thoſe wherein it may not happen, and r the number of caſes wherein the ſecond event may happen, and s the number of thoſe wherein it may not happen; multiply $p+q$ by $r+s$; the product, *viz.* $pr+qr+ps+qs$ will be the number of caſes wherein the contingency or non-contingency of the events may be varied.

Hence, if A lay with B, that both events ſhall happen, the ratio of the chances will be as pr to $qr+ps+qs$. Or if he lay that the firſt ſhall happen, but not the ſecond; the ratio of the chances will be as ps to $pr+qr+qs$. And if there were three, or more events; the ratio of the chances would be found by multiplication alone.

If all the events have a given number of caſes wherein they may happen, and alſo a given number of caſes wherein they may not; and a be the number of caſes wherein any one may happen, and b the number of caſes wherein it may not; and n be the number of all the events; raiſe $a+b$ to the power of n.

If now A and B agree, that if one or more of the events happen, A ſhall win; if none, B: the ratio of the chances will be as $\overline{a+b}|^{n}-b^{n}$ to b^{n}; for the only term where a is not found, is b_{n}.

If A *and* B *play with a ſingle die, on this condition, that if* A *throw two or more aces at eight throws, he ſhall win; otherwiſe* B *ſhall win: what is the ratio of their chances?*—Since there is but one caſe wherein an ace may turn up; and five where it may not; let $a=1$, and $b=5$. And again, ſince there are eight throws of the die, let $n=8$; and you will have $\overline{a+b}|^{n}-b^{n}-nab^{n}-1$, to $b^{n}+nab^{n}-1$. That is, the chance of A will be to that of B as 663991 to 1015625; or nearly as 2 to 3.

A *and* B *are engaged at ſingle quoits, and after playing ſome time,* A *wants* 4 *of being up, and* B, 6; *but* B *is ſo much the better gameſter, that his chance againſt* A *upon a ſingle throw, would be as* 3 *to* 2: *what is the ratio of their chances?*—Since A wants 4, and B, 6, the game will be ended in 9 throws at the moſt; therefore raiſe $a+b$ to the ninth power, and it will be $a^9+9a^8b+36a^7bb+84a^6b^3+126a^5b^4+126a^4b^5+84a^3b^6+36aab^7+9ab^8+b^9$: and take all the terms wherein a has 4 or more dimenſions, for A; and all thoſe wherein it has 6 or more, for B: and the ratio of the chances will be as $a^9+a^8b+36a^7bb+84a^6b^3+126a^5b^4+126a^4b^5$, to $84a^3b^6+36aab^7+9ab^8+b^9$. Call a, 3; and b, 2; and you will have the ratio of the chances in numbers 1759077 to 194048.

A *and* B *are to play with ſingle quoits; and* A *is the beſt gameſter; ſo that he can give* B, 2 *in* 3: *what is the ratio of their chances, then, in a ſingle throw?*—Suppoſe the chances as z to 1; and raiſe $z+1$ to its cube: it will be $z^3+3zz+3z+1$. Now ſince A could give B 2 out of 3; A might undertake to win three throws running; and conſequently the chances in this caſe will be as z^3 to $3zz+3z+1$. Conſequently, $z^3=3zz+3z+1$. Or, $2z^3=z^3+3zz+3z+1$.

And therefore $z\sqrt[3]{2}=z+1$; and conſequently $z=\frac{1}{\sqrt[3]{2}-1}$.

The chances therefore are $\frac{1}{\sqrt[3]{2}-1}$ and 1 reſpectively.

To find at how many trials it is probable any event will happen; ſo that A *and* B *may lay a wager upon even terms.*—Let the number of caſes, wherein the thing may happen at the firſt trial, be a; thoſe wherein it may not, b; and x the number of trials, wherein it is an even chance, whether the thing happen or not. By what is above ſhewn $\overline{a+b}|^{x}-b^{x}=b^{x}$: Or, $\overline{a+b}|^{x}=2bx$. Therefore, $x=\frac{Log.\ 2.}{Log.\ \overline{a+b}-Log.\ b}$ Again, reſume the equation $\overline{a+b}|^{x}=2b^{x}$, and let $a:b::1\,q$, and the equation will change into this, $\overline{1+\frac{1}{q}}\Big|^{x}=2$. Raiſe $1+\frac{1}{q}$ to the power of x, by Sir I. Newton's theorem, and it will be $1+\frac{x}{q}+\frac{x}{1}\times\frac{x-1}{2qq}+\frac{x}{1}\times\frac{x-1}{2}\times\frac{x-2}{3q^3}$, &c. $=2$.

In this equation, therefore, if $q=1$, then $x=1$: if q be infinite, x will alſo be infinite. Suppoſing x to be infinite, the equation above will be $1+\frac{x}{q}+\frac{xx}{2qq}+\frac{x^3}{6q^3}$, &c. $=2$.

Again, let $\frac{x}{q}=z$, and we ſhall have $1+z+\frac{1}{2}zz+\frac{1}{6}x^3$, &c. $=2$. But $1+z+\frac{1}{2}zz+\frac{1}{6}z^3$, &c. is a number whoſe hyperbolical logarithm is z; conſequently $z=log.\ 2$. But the hyperbolical logarithm of 2 is .7 very nearly; and therefore $z=.7$ nearly.

Hence where q is 1, there $x=1q$; and where q is infinite, $x=.7q$ nearly. Thus are the limits of the ratio of x to q fixed; for that ratio begins with equality, and when raiſed to infinity, ends at length in the ratio of 7 to 10 nearly.

To find in how many throws A *may undertake to throw two aces with two dice?*—Since A has but one caſe wherein he may throw two aces with two dice; and 35 wherein he may not; $q=35$: therefore multiply 35 by 7; the product 24. 5. ſhews that the number of throws required is between 24. and 25.

To find the number of caſes, wherein any given number of points may be thrown with a given number of dice?—Let $p+1$ be the given number of points; n the number of dice; and f the number of ſides or faces of each die: let $p-f=q$, $q-f=r$, $r-f=s$, $s-f=t$, &c. The number of caſes required will be,

$$+\frac{p}{1}\times\frac{p-1}{2}\times\frac{p-2}{3},\ \&c.$$

$$-\frac{q}{1}\times\frac{q-1}{2}\times\frac{q-2}{3},\ \&c.\times\frac{n}{1}.$$

$$+\frac{r}{1}\times\frac{r-1}{2}\times\frac{r-2}{3}\ \&c.\times\frac{n}{1}\times\frac{n-1}{2}$$

$$-\frac{s}{1}\times\frac{s-1}{2}\times\frac{s-2}{3}\ \&c.\times\frac{n}{1}\times\frac{n-1}{2}\times\frac{n-2}{3}$$

Which ſeries is to be continued, till ſome of the factors either become equal to nothing, or negative. And note, ſo many factors of the ſeveral products $\frac{q}{1}\times\frac{p-1}{2}\times\frac{p-2}{3}$ &c. $\frac{r}{1}\times\frac{r-1}{2}\times\frac{r-2}{3}$ &c. $\frac{s}{1}\times\frac{s-1}{2}$ &c. are to be taken as there are units in $n-1$.

Suppoſe the number of caſes required, wherein 16 *points may be thrown with four dice?*

$$+\tfrac{15}{1}\times\tfrac{14}{2}\times\tfrac{13}{3} \;=\; 455$$
$$-\tfrac{9}{1}\times\tfrac{8}{2}\times\tfrac{7}{3}\times 4 \;=\; -336$$
$$+\tfrac{3}{1}\times\tfrac{2}{2}\times\tfrac{1}{3}\times\tfrac{4}{1}\,\tfrac{3}{2} \;=\; +\;6$$

Now, 455—336+6=125; ſo that 125 is the number required.

To find at how many caſts A *may undertake to throw* 15 *points with ſix dice?*—Since A has 1666 caſes, wherein we may turn up 15 points, and 44990 againſt him; divide 44990 by 1666; and the quotient 27 will be $=q$. Therefore, multiply 27 by 7; the product 18,9 ſhews the number of throws required to be nearly 19.

To find the number of trials wherein it is probable any event may happen twice; ſo that A, *and* B, *may lay a wager thereon with an equal chance?*—Suppoſe the number of caſes wherein the event may happen the firſt trial, to be a; and thoſe wherein it may not, b; and call the number of trials required, x: it appears from what is above ſhewn, that $\overline{a+b}|^{x} = 2b^{x}+2axb^{x-1}$. Or, making $a:b::1:q$, $\overline{1+\frac{1}{q}}\Big|^{x} = 2+\frac{2x}{q}$. 1°, Let $q=1$, and then $x=3$. 2°, Let q be infinite, and x will alſo be infinite: ſuppoſe x infinite, and $\frac{x}{q}=z$, and then $1+z+\frac{1}{2}z^{2}+\frac{1}{2}z^{3}$, &c. $=2+2z$; and therefore $z=\text{log. }2+\text{log. }\overline{1+z}$: if then log. 2 be called y; the equation will be transformed into the following fluxional one $\frac{z\dot{z}}{1+z}=\dot{y}$. And inveſtigating the value of z by the powers of y, we ſhall find $z=1.678$, nearly; and therefore x will always be between the limits $3q$ and $1.678\,q$; but x will ſoon converge to $1.678\,q$; and therefore, if q have not a very ſmall ratio to 1, we may take $x=1.678\,q$. Or if there be any ſuſpicion of x being too ſmall, ſubſtitute its value in the equation $\overline{1+\frac{1}{q}}\Big|^{x}=2+\frac{2x}{q}$, and note the error, if it be worth regarding: thus will x be a little increaſed: ſubſtitute the thus increaſed value for x in the foreſaid equation, and note the new error: thus, from the two errors, may the value of x be corrected with ſufficient accuracy. Here we may add a table of limits, that will carry the intent of this problem much farther.

If the wager be upon happening once, the number of trials will be between	$1\,q$ and $0.693\,q$
If upon twice, between	$3\,q$ and $1.678\,q$
If upon thrice, between	$5\,q$ and $2.675\,q$
If upon four times, between	$7\,q$ and $3.671\,q$
If upon five times, between	$9\,q$ and $4.673\,q$
If upon ſix times, between	$11\,q$ and $5.668\,q$

To find at how many throws A *may undertake to throw three aces, twice, with three dice?*—Since A has but one caſe wherein he may throw three aces; and 215 wherein he may not; $q=215$. Therefore multiply 215 by 1.678. The product 360.7 will ſhew the number of throws required to be between 360 and 361.

A *and* B *depoſit each* 12 *pieces of money, and play with three dice, on this footing, that every time* 11 *points are thrown,* A *ſhall give* B *one piece; and every time* 14 *points are thrown,* B *ſhall give* A *a piece; and that he ſhall win the whole, that firſt gets all the money in his hands: we demand the ratio of the chance of* A *to that of* B.—Let p be the number of pieces each ſeverally takes; and a and b the number of caſes wherein A and B may reſpectively gain each a piece; the ratio of their chances will be as a^{p} to b^{p}: In this caſe, $p=12$, $a=27$, $b=15$; or if when $27:15::9:5$, you make $a=9$, $b=5$; and therefore the ratio of the expectancies will be as 9^{12} to 5^{12}, or as 244140625 to 282429536481.

N. B. Great care muſt be taken to avoid the confounding of different problems together, from ſome appearance of affinity between them. The following one ſeems very like the former.

C *having* 24 *pieces, or counters, throws three dice; and every time* 27 *points turn up, gives one counter to* A; *and every time* 14 *turn up, gives one to* B; *and* A *and* B *engage on this footing, that he who firſt gets* 12 *counters, ſhall win the ſtake: we require the ratio of their expectancies.*—This problem differs from the preceding one, in that the game muſt neceſſarily end in 23 throws; whereas, in the former, it might hold out to eternity, by reaſon of the reciprocations of loſs and gain, which deſtroy one another.—Raiſe $a+b$ to the 23ᵈ power, and the 12 former terms will be to the 12 latter, as the expectancy of A to that of B.

Three gameſters, A, B, *and* C, *have each* 12 *balls,* 4 *of them white, and* 8 *black; and, being hoodwinked, play on this condition, that the firſt who chooſes a white ball ſhall win the ſtake; and that* A *ſhall have the firſt choice, then* B, *then* C; *and ſo round again: what, then, is the ratio of the chances of* A, B, C?—Let n be the number of balls, a the number of white ones, b of black ones, and n the ſtake. Here,

1°, A has the caſes a, wherein he may chooſe a white ball; and the caſes b for a black one: conſequently, his expectancy, from the firſt choice, is $\frac{a}{a+b}$, or $\frac{a}{n}$. Wherefore, ſubtracting $\frac{a}{n}$ from 1; the value of the remaining expectancies will be $1-\frac{a}{n}=\frac{n-a}{n}=\frac{b}{n}$.

2°, B, has the caſes a for a white, and the caſes $b-1$ for a black one; but the firſt election is in A; and it is uncertain, whether or no he may have won the ſtake; and therefore the ſtake, in reſpect of B, is not 1, but only $\frac{b}{n}$; ſo that his expectancy from the ſecond choice is $\frac{a}{\overline{a+b-1}}\times\frac{b}{n}=\frac{ab}{n\times\overline{n-1}}$

Subtract $\frac{ab}{n\times\overline{n-1}}$ from $\frac{b}{n}$ and the value of the remaining expectancies will be $\frac{nb-b-ab}{n\times\overline{\;-1}}=\frac{b\times\overline{b-1}}{n\times\overline{n-1}}$.

3°, C, has the caſes a for a white; and the caſes $b-2$ for a black one; and therefore his expectancy from the third choice is $\frac{a\times b\times\overline{b-1}}{n\times\overline{n-1}\times\overline{n-2}}$.

4°, After the like manner, A has the caſes a for a white, and $b-3$ for a black; ſo that, at the fourth choice, the expectancy will be $\frac{a\times b\times\overline{b-1}\times\overline{b-2}}{n\times\overline{n-1}\times\overline{n-2}\times\overline{n-3}}$. And ſo of the reſt.

Write down, therefore, the ſeries $\frac{a}{n}+\frac{b}{n-1}P+\frac{b-1}{n-2}Q+\frac{b-2}{n-3}R+\frac{b-3}{n-4}S$, where P, Q, R, S, &c. denote the preceding terms, with their characters; and take as many terms of this ſeries, as there are units in $b+1$ (for there cannot be more choices than there are units in $b+1$); and the ſum of all the third terms, ſkipping the two intermediate, beginning from $\frac{a}{n}$, will be the whole expectancy of A; the ſum likewiſe of all the third terms, commencing from $\frac{b}{n-1}$ P, will be the whole expectancy of B; and the ſum of the thirds, commencing from $\frac{b-1}{n-2}$ Q, the whole expectancy of C.

Laſtly, making $a=4$, $b=8$, $n=12$; and the general ſeries will change into the following one $\frac{4}{12}+\frac{8}{11}P+\frac{7}{10}Q+\frac{6}{9}R+\frac{5}{8}S+\frac{4}{7}T+\frac{3}{6}V+\frac{2}{5}X+\frac{1}{4}Y$.

Or into this other (by multiplying all the terms by ſome common number judged moſt expedient for the throwing out of fractions; *viz.* in the preſent caſe by 495),

$$165+120+84+56+35+20+10+4+1$$

And therefore A will have 165+56+10=231: B will have 120+35+4=159; and C will have 84+20+1=105. So that their ſeveral expectancies will be as 231, 159, 105; or as 77, 53, 35.

A *and* B *having* 12 *counters, four of them white, and eight black;* A *wagers with* B, *that taking out ſeven counters, blindfold, three of them ſhall be white: what is the ratio of their expectancies?*—1°, Seek how many caſes there are for ſeven counters to be taken out of 12; they will be found from the doctrine of combinations to be 792.

$$\tfrac{12}{1}\times\tfrac{11}{2}\times\tfrac{10}{3}\times\tfrac{9}{4}\times\tfrac{8}{5}\times\tfrac{7}{6}\times\tfrac{6}{7}=792.$$

2°, Set aſide three white ones, and find all the caſes wherein 4 of the 8 black ones may be combined therewith; they will be found to be 70.

$$\tfrac{8}{1}\times\tfrac{7}{2}\times\tfrac{6}{3}\times\tfrac{5}{4}=70.$$

And ſince there are 4 caſes in, in which 3 white may be taken out of four; multiply 70 by 4: thus the caſes, wherein three whites may come out with four blacks, are found to be 280.

3°, By the common laws of *gaming,* he is reputed conqueror, who produces an effect oftener than he undertook to do, unleſs the contrary be expreſsly agreed on; and therefore, if A take out 4 whites with 3 blacks, he wins. Set aſide 4 whites, and then find all the caſes wherein 3 of the 8 blacks may be combined with 4 whites: theſe caſes will appear to be 56.

$$\tfrac{8}{1}\times\tfrac{7}{2}\times\tfrac{6}{3}=56.$$

4, A, therefore, has 280+56=336 caſes, wherein he may win; which, ſubtracted from the whole number of caſes 792, leaves 456, the number of caſes wherein he may loſe. The ratio of the chance of A, therefore, to that of B, is as 336 to 456; or as 14 to 19.

To avoid much prolixity in this article, we muſt deſiſt from further inveſtigations; which, in the following problems, grow very long, and more perplexed. In the reſt, therefore, we ſhall content ourſelves to give the anſwer, or reſult, without the proceſs of arriving at it; which may be of uſe, as it furniſhes ſo many data, from whence, as ſtandards, we may be enabled occaſionally to judge of the probability of events of the like kinds; though without letting the mind into the preciſe manner and reaſon thereof.

A *and* B *play with two dice on this condition, that* A *ſhall win, if he throw ſix; and* B, *if he throw ſeven:* A *to have the firſt throw, in lieu of which* B *to have two throws; and both to continue with two throws each turn, till one of them wins: What is the ratio of the chance of* A *to that of* B?—*Anſ. As* 10355 *to* 12276.

If any number of gameſters, A, B, C, D, E, *&c. equal in point of dexterity, depoſit each one piece of money; and engage, on theſe conditions, that two of them*, A *and* B, *beginning the game, whichever of them ſhall be overcome, ſhall give place to the third* C, *who is to play with the conqueror; and the conqueror here to be taken up by the fourth man* D; *and thus on, till ſome one, having conquered them all round, draws the ſtake: what is the ratio of their expectancies?*—This problem, M. Bernouilli ſolves analytically. Here, calling the number of gameſters $n+1$, he finds that the probabilities of any two immediately following each other in the courſe of playing, are in the ratio $1+2^n$ to 2^n; and therefore the expectancies of the ſeveral gameſters A, B, C, D, E, *&c.* are in a geometrical progreſſion $1+2^n : 2^n :: a : c :: c : d :: d : e$, &c.

Hence it is eaſy to determine the ſtate of the probabilities of any two gameſters, either before the game, or in the courſe thereof. If, *e. gr.* there be three gameſters, A, B, C, then $n=2$ and $1=2^n : 2^n :: 5 : 4 :: a : c$; that is, their ſeveral probabilities of winning, before A have overcome B, or B, C, are as the numbers 5, 5, 4; and therefore their expectancies are $\frac{5}{14}$, $\frac{5}{14}$, $\frac{4}{14}$: for all of them taken together muſt make 1, or abſolute certainty. After A has overcome B, the probabilities from A, B, and C, will be $\frac{1}{7}$, $\frac{2}{7}$, $\frac{4}{7}$, as in the anſwer above. If there be four gameſters, A, B, C, D, their probabilities from the beginning will be as 81, 81, 72, 64. After A has beat B, the ſeveral probabilities of B, D, C, A, will be as 25, 32, 36, 56, reſpectively. After A has beat B and C, the probabilities of C, B, D, A, will be as 16, 18, 28, 87.

Three gameſters, A, B, *and* C, *whoſe dexterities are equal, depoſit each one piece, and engage upon theſe terms: that two of them ſhall begin to play, and that the vanquiſhed party ſhall give place to the third, who is to take up the conqueror; and the ſame condition to go round: each perſon, when vanquiſhed, forfeiting a certain ſum to the main ſtake; which ſhall be all ſwept by the perſon who firſt beats the other two ſucceſſively. How much, now, is the chance of* A, *and* B, *better or worſe than that of* C?—1°, If the forfeiture be to the ſum each perſon firſt depoſited, as 7 to 6, the gameſters are upon an equal footing. 2°, If the forfeiture be in a leſs ratio to the depoſit, A and B are on a better footing than C; if in a greater ratio, the advantage is on the ſide of C. 3°, After A has overcome B once, the probabilities are as $\frac{12}{7}$, $\frac{6}{7}$, $\frac{3}{7}$; or as 4, 2, 1; *viz.* that of A the greateſt, and of B the leaſt.

M. Bernouilli gives an analytical ſolution of the ſame problem, only made more general; as not being confined to three gameſters, but extending to any number, at pleaſure.

A *and* B, *two gameſters of equal dexterity, play with a given number of balls; after ſome time,* A *wants* 1 *of being up, and* B 3: *what is the ratio of their chances?*—A's expectancy is worth $\frac{7}{8}$ of the ſtake, and B's only $\frac{1}{8}$; ſo that their chances are as 7 to 1.

Two gameſters, A, *and* B, *of equal dexterity, are engaged in play, on this condition, that as often as* A *exceeds* B, *he ſhall give him one piece of money; and that* B *ſhall do the like, as oft as* A *exceeds him; and that they ſhall not leave off till one has won all the other's money: each now having four pieces, two by-ſtanders,* R, *and* S, *lay a wager on the number of turns in which the game ſhall be finiſhed;* viz. R, *that it ſhall be over in ten turns: what is the value of the expectancy of* S?—$\frac{560}{1024}$, or $\frac{35}{64}$ of the wager; or it is to that of R as 560 to 464.

If each player had 5 pieces, and the wager were, that the game ſhall end in ten turns, and the dexterity of A were double that of B, the expectancy of S would be $\frac{3109}{8581}$.

If each gameſter have four pieces, and the ratio of the dexterities be required to make it an even wager, that the game ſhall end in 4 turns, it will be found that the one muſt be to the other as 5.274 to 1.

If each gameſter have 4 pieces, and the ratio of their dexterities be required to make it an even lay, that the game ſhall be ended in 6 turns, the anſwer will be found to be as 2.576 to 1.

Two gameſters, A, and B, *of equal dexterity, having agreed not to leave off playing till ten games are over; a ſpectator,* R, *lays a wager with another,* S, *that by that time, or before,* A *ſhall have beat* B *by three games: what is the value of the expectancy of* R?—$\frac{352}{1024}$ of the ſame wager; or it is to that of S, as 352 to 672.

GAMMUT, Gamut, or Gam-*ut*, in muſic, a ſcale, whereon we may learn to ſound the muſical notes, *ut*, *re*, *mi*, *fa*, *ſol*, *la*, in their ſeveral orders, and diſpoſitions.

The invention of this ſcale is owing to Guido Aretin, a monk of Arezzo, in Tuſcany; though it is not ſo properly an invention, as an improvement on the diagramma, or ſcale, of the antients.

The *gammut* is alſo called the *harmonical hand*; by reaſon Guido firſt made uſe of the figure of the hand to arrange his notes on.

Finding the Greek diagramma of too ſmall extent, Guido added five more chords, or notes, to it; one below the proſlambanomenos, or graveſt note, of the antients; and four above the nete, or acuteſt.

The firſt he called *hypo-proſlambanomenos*; and denoted it by the letter G, or rather the Greek Γ, gamma: which note being at the head of the ſcale, occaſioned the whole ſcale to be called by the barbarous name *gamm*, or *gammut*.

Some ſay, Guido's intention in calling his firſt note Γ, *gamm*, was to ſhew that the Greeks were the inventors of muſic; others, that he meant hereby to record himſelf, this being the firſt letter of his own name.

Guido's ſcale is divided into three ſeries, or columns; the firſt called *molle*, or flat; the ſecond *natural*; and the third *durum*, or ſharp; as repreſented in the ſcheme *Tab. Miſcel. fig.* 17. But, ſince his time, ſome alterations have been made therein.

The uſe of this ſcale is, to make the paſſages, and tranſpoſitions, from B molle, to B durum, by means of the tones and ſemitones. The ſeries of B natural, ſtanding betwixt the other two, communicates with both; ſo that, to name the chords of the ſcale by theſe ſyllables, if we would have the ſemitones in their natural places; *viz.* *b c*, and *e f*; then we apply *ut* to *g*; and after *la* we go into the ſeries of *b* natural, at *fa*; and after *la* of this we return to the former at *mi*, and ſo on: or we may begin at *ut* in *c*, and paſs into the firſt ſeries at *mi*, and then back to the other at *fa*; by which means the one tranſition is a ſemitone; *viz.* *la*, *fa*; and the other a tone *la*, *mi*. To follow the order of *b* molle, we may begin with *ut* in *c*, or *f*; and make tranſitions after the ſame manner.

Hence came the barbarous names of *gammut*, *are*, *bmi*, &c. But what a perplexed work is this, with ſo many different ſyllables applied to every chord; and all to mark the places of the ſemitones; which the ſimple letters *a*, *b*, *c*, &c. do as well, and with more eaſe?

Several alterations have ſince been made in the *gammut*. M. le Maire, particularly, has added a ſeventh note; *viz.* *ſi*; and the Engliſh uſually throw out both *ut*, and *ſi*, and make the other five ſerve for all; as will be ſhewn under the article Solfa-ing.

Gammut, or Gamm, is alſo the firſt or graveſt note in the modern ſcale of muſic; the reaſon whereof is ſhewn under the preceding article.

GANG, in the ſea-language, ſignifies a crew.

To man a boat is called, to *put a gang of men* (which is a company) into her; they are commonly called the *cockſwain's gang*, who have the charge of her.

Gang-way, is applied to all the ſeveral entrances, ways, or paſſages, from one part of the ſhip to the other.

Whatſoever is put in any of theſe paſſages, is ſaid to be laid, or put, in the *gang-way*. See *Tab. Ship. fig.* 2. *n.* 22. 84. 94.

Water-Gang. See the article Water-*gang*.

GANGLIO *, Ganglion, in medicine, a ſmall, hard, knotty tumour, formed on the nervous and tendinous parts, without any diſcolouring of the ſkin, or any ſenſe of pain.

* The word is Greek, γαγγλιον, which ſignifies the ſame. The tumor, when on the nerves, tendons, articulations, or any of the membranous parts, retains its name *ganglio*; every-where elſe it is called *nodus*.

The cauſe of the *ganglio* is a too great diſtention of the pores of the part; or the too great compreſſion; or a laceration thereof: any of theſe occaſion the nutritious juice to be there ſtopped, and retained; and even to exude, condenſe, and harden, into a tumour. The ſame effect is ſometimes alſo produced by a bruiſe, hard labour, or the like. Moſt authors hold the cauſe of the *ganglio* to be a heavy viſcid pituita.

The *ganglio* is ſometimes removed, and reſolved, by mere dry friction, long continued; and ſometimes by friction with ſaliva; ſome chooſe to apply a plate of lead, anointed with mercury; others uſe gum ammoniac, or the emplaſter of vigo, with mercury. If theſe do not ſucceed, recourſe is had to ſection.

GANGRENE, Gangræna, in medicine, is a mortification, in its firſt or beginning ſtate, while yet the part retains ſome ſenſe of pain, and a ſhare of the natural heat.—By which this diſeaſe is diſtinguiſhed from a *ſphacelus*, or thorough mortification, where there is no ſenſe or warmth left.

> * The word is Greek, Γαγγραινα, derived, by ſome authors, from the Paphlagonian *gangra*, a goat; it being the character of a goat to brouſe the graſs all around, without ſhifting its place. It is juſter, perhaps, to derive it from the Greek verb γραω, γραινω, *manduco*, *abſumo*, I eat, conſume.

The *gangrene* is a diſeaſe in the fleſh of the part, which it corrupts, conſumes, and turns black; ſpreading, and ſeiſing itſelf of the adjoining parts: and it is rarely cure dwithout amputation.

It ariſes from a ſtoppage, or interception, of the circulatory motion of the blood; which, by this means, fails to furniſh the part with the nutritious and ſpirituous juices, neceſſary to preſerve its warmth and life.

This interception of circulation, which is the proximate cauſe of the *gangrene*, is itſelf occaſioned divers ways; as by large tumours, eryſipelas's, great inflammations, violent cold, tight bandages, or compreſſions, ſudden fluxions of ſome malignant humour, bites of venomous beaſts, fractures, wounds, and ulcers ill managed, *&c.*

It is diſtinguiſhed by the colour of the fleſh; which firſt turns pale, then duſky, or ſublivid; and by its growing looſe, and flabby, from vehemently tenſe, which it was before. In the progreſs of the diſeaſe the part diſtils a fetid, diſcoloured water; and emits a cadaverous ſmell.

Upon the firſt ſeizure the ſkin turns pale; afterwards it becomes livid; veſications ariſe, and the colour, at length, changes to black; the fleſh becomes fetid, ſanious, and moiſt; then withers, and ſoon becomes inſenſible; the heat and pulſation of the part being likewiſe diminiſhed. Shaw.

If, in a large wound, the tumour of the lips do not ſuppurate, nor any flux of matter, or inflammation, ariſe; if the lips do not ſwell, or, after ſwelling, grow lank and flaccid again on a ſudden; it is reckoned a ſure ſign of an approaching *gangrene*.

When a *gangrene* proceeds from extreme cold, the part affected is firſt benumbed, or ſeized with a pricking pain; this is followed by a redneſs, which gradually changes to black.

When a tight bandage is the cauſe, a flaccidity of the part is joined to the inſenſibility thereof: when the ſcurvy, it often begins in the great toe, and appears in form of a blackiſh ſpot; which turns to a dry cruſt, ſucceeded by a ſtupor of the part, *&c.*—When the bite of any venomous creature is the cauſe, a continual fever attends, *&c.* and pain is felt in the part; which uſually brings on a ſyncope, or delirium; and puſtules ariſe about the bite.

By the microſcope a *gangrene* has been diſcovered to contain an infinite number of little worms, ingendered in the morbid fleſh; and which continually producing new broods, ſwarm, and over-run the adjacent parts.

To ſtop the progreſs of the *gangrene*, phyſicians preſcribe, internally, ſudorifics, and alexipharmics; externally, decoctions of quick-lime, either ſimple, or with the addition of ſulphur, mercurius dulcis, and ſpirit of wine camphorated.

In a ſevere ſtage of the diſtemper they ſcarify deep, to the very quick; and afterwards apply hot liquors, cataplaſms, *&c.* Some recommend horſe-dung, boiled in wine, or urine. The unguent Ægyptiacum alſo comes into uſe in this caſe.

Belloſte preſcribes the following, as the moſt efficacious remedy known for *gangrenes*; *viz.* quickſilver, diſſolved in double the quantity of ſpirit of nitre, or aqua fortis, a linen cloth being dipt therein, and applied to the *gangrenous* part. This alone, he aſſures us, was ſufficient. If the *gangrene* be occaſioned by an intenſe froſt, ſnow-water, or a linen cloth dipt in cold water, and applied to the part affected, Boerhaave directs as the beſt cure.

If the *gangrene* proceed to an utter ſphacelation, and be ſeated in any of the limbs, or extreme parts, recourſe muſt be had to the operation of amputation.

GANTLET *, or Gauntlet, a large, ſtrong glove, made to cover the arm, or hand, of a cavalier, armed at all points.

> * The word is derived of the French *gantelet*; and that from *gand*, or *gant*, glove.

The *gauntlet* was of iron, and the fingers plated.—The caſk, and *gauntlets*, were always borne in the antient marches in ceremony.—*Gauntlets* were not introduced till about the thirteenth century.

The *gauntlet* was frequently thrown, like the glove, by way of challenge.

Gantlet, in chirurgery, is a kind of bandage for the hand, being a ſwathe, four or five yards long, wherewith they wrap up the hand, and all the fingers, one after another.

GANYMEDE, Γανυμηδης, a term lately come in uſe to expreſs a catamite, or bardacio. See Sodomy.

The expreſſion takes its riſe from a young beautiful Trojan ſhepherd, thus called; whom Jupiter raviſhed, or carried off, by his eagle, or rather by himſelf, under the figure of an eagle, as he was hunting on mount Ida; and made him his cupbearer, in the place of Hebe; who, having made a falſe ſtep, and ſpilt her liquor, was turned out of that office.

Some ſay, that the Jupiter who raviſhed *Ganymede* was Tantalus, king of Phrygia; the eagle expreſſed the ſwiftneſs wherewith he was carried off. See Voſſius, *de Idolol. l.* i. *c.* 14. *&c.* and Barthius, on the *Thebaid*, *l.* i. *ver.* 548.

GAOL *, a priſon, or place of legal confinement.

> * The word is formed of the French *geole*; and that of the barbarous Latin *geola*, *gaola*, *gayola*, a *cage*; whence the Picards ſtill call a bird-cage *gayolle*.—The gaoler, geolier, was called *gaularius*, and *cajularius*. Scaliger derives the word *gaoler* from *janicularius*. And ſome Latin authors call him *commentarienſis*, by reaſon he keeps a regiſter, or liſt, of all thoſe under his cuſtody.

Gaol-*Delivery*. See the article Justice.

GARBE, in heraldry, a repreſentation of a ſheaf of corn, or other grain; ſometimes borne in coat-armour, to ſignify ſummer, or the month of Auguſt; as the bunch of grapes does autumn.

He bears azure a *garbe* or; the arms of the Groſvenors of Eaton in Cheſhire.

GARBLER *of ſpices*, an officer of great antiquity in the city of London; who is impowered to enter any ſhop, warehouſe, *&c.* to view and ſearch drugs, *&c.* and to *garble*, and cleanſe them.

GARBLES, the duſt, ſoil, or filth, ſevered from good ſpice, drugs, *&c.*

GARBLING * of ſpice, drugs, *&c.* is the cleanſing it from the droſs, and duſt, mixed therewith; and ſevering the good from the bad.

> * The word comes from the Italian *garbellare*, to ſhake.

Garbling *of bow-ſtaves*, is the ſorting, or culling out, the good from the bad.

GARCON *, or Garsoon, a French term, literally ſignifying a boy, or male child, any time before his marriage.

> * Pontanus remarks, that the word was antiently written *warçon*. Etymologiſts cannot agree as to its origin.—To ſay nothing of all the reſt, Martinius alone propoſes ſeven derivations; without pitching upon any; *viz.* the Latin *garrire*, to prattle; the Chaldee גרס, ſtudent, learner; the French *garder*, to guard; the German *warten*, to tarry, or wait; the Greek κυρος, young man; the Arabic גירה, young man; and the Hebrew גור, the young of any brute.

Garçon is alſo applied to divers inferior officers, among us called *grooms*, *garciones*.—Thus all the ſervants in the French king's chamber, wardrobe, *&c.* who do the leſſer offices thereof under the proper officers, are called *garçons de la chambre*, *de la garderobe*, &c.

GARD. See the article Guard.

Raviſhment de Gard. See the article Ravishment.

Garde—*Corps de* Garde. See the article Corps.

GARDANT, in heraldry. See the article Guardant.

GARDEN, an incloſure, or plot of ground, curiouſly cultivated; and furniſhed with variety of plants, flowers, fruits, *&c.*

Gardens are diſtinguiſhed into *flower-gardens*, *fruit-gardens*, and *kitchen-gardens*; the firſt are for pleaſure, and ornament; and, therefore, are placed in the moſt conſpicuous parts: the two latter are for ſervice; and, therefore, made in by-places.

In a *garden* the principal things to be conſidered are, the form, ſoil, ſituation, and aſpect, or expoſure.

For the form; a ſquare, or rather oblong, is moſt eligible; leading from the middle of the houſe, with a gravel-walk in the midſt; narrow graſs-borders on each ſide; and, on either ſide of theſe, rows of variety of winter-greens. If the ground be irregular, it may be made uniform, ſo as to form a proſpect nothing inferior to the moſt regular; ſtrait lines will reduce any figure to order. A triangle has its beauties, as well as a ſquare; and the moſt irregular ſpots may be brought, by borders, and walks, to thoſe two figures.

Indeed, an irregularity is eaſily hid in a large *garden*, by long walks, and tall hedges, interrupting a diſtant view; and the little corners, and triangular ſpaces, may be agreeably filled up with borders of flowers, dwarf-trees, flowering-ſhrubs, or ever-greens. Nor is it prudent to be ſolicitous to throw the whole *garden* into a ſingle view; as irregularities, and unevenneſſes, afford many uncommon and pretty devices, *&c.*

For the ſecond point, or the ſoil; a deep, rich, black mould, is beſt for plants; ſandy land is warm, and forward, and good for flowers; chalky land is cold, and backward: but both are eaſily corrected by compoſts, or materials of oppoſite kinds.

For the ſituation; if the *garden* be too high, it will be expoſed to the winds, which are highly prejudicial to trees; if too low, the dampneſs will be injurious, beſide the breeding of vermin; a flat, therefore, or the ſide of a hill, are the happieſt ſituations; eſpecially the latter, as it is uſually well watered, and ſheltered from the extremities of weather; beſide that the water, deſcending from on high, will ſupply it with fountains, caſcades, and other ornaments of a *garden.*

For the *aſpect*, or *expoſure*, we have already conſidered what relates thereto, under the article EXPOSURE.

Of all things, the ground, or ſoil, of the *garden*, is the moſt important: unleſs this be rich, and fertile, all the other advantages will be vain. To judge of the quality of the ſoil, ſome direct us to look whether there be any heath, thiſtles, or other ſuch weeds, growing ſpontaneouſly therein, this being a certain ſign of a poor ground; the growth of the trees, too, thereabout, is to be conſidered; if they grow crooked, ill-ſhaped, and grubby; of a faded green, and full of moſs, the place is to be immediately rejected: if the contrary be found, you muſt proceed to examine the depth of the ſoil, by digging holes into the ground. The ſoil ſhould be three feet deep, but leſs than two is not ſufficient.

The chief furniture of pleaſure-*gardens* are, parterres, viſta's, glades, groves, compartiments, quincunces, verdant halls, arbour-work, mazes, labyrinths, fountains, cabinets, caſcades, canals, terraces, *&c.* See each under its proper article.

In the planting a fruit, or kitchen-*garden*, if the ſoil be a hungry gravel, or ſand, Mr. Switzer directs the holes where the trees are to be planted, to be dug two feet deep, and three or four over, and filled with rotten horſes or cows dung, mixed with rich mould; if it be marl, or ſtiff clay, a compoſt of rubbiſh, lime, pieces of brick, aſhes, ſand, *&c.* will be beſt to mix with the dung and mould; though he is of opinion, that untried earth, dung from a waſte, or common, where cattle have been fed, would prove the beſt ſoil of any for young trees.

The trees being now taken out of the nurſery, the biggeſt roots are to be ſhortened to about ſix inches; all the ſmall fibres taken off; and the head to be pruned, ſo as not to leave above two branches; and thoſe not above ſix inches long.

The wall-trees to be placed as far from the wall as may be; that there may be the more room for the roots to ſpread: then, filling up the hole with mould, there remains nothing but to ſecure the roots from the winter's froſt, by covering the ſpot with ſtraw, fern, dung, *&c.* And in ſummer from the ſun, by ſand and pebble ſtones.

For trees planted in borders the common practice is, to make a trench by the wall-ſide, two feet broad, and as many deep; this trench they fill with old dung, mixed with earth, lightly laid, near as high as the borders are intended to be, and then trodden down to half the height, in the places where the trees are intended to be. It is prudent to plant the trees ſhallow, and to raiſe the earth about them; eſpecially in a wet, clayey ſoil.

It is an obſervation of ſome importance, that wall-trees, and fruits, thrive beſt when the walks that run parallel to them are gravel; more of the rays of the ſun being thereby reflected to them, than if they were graſs. Add, that no ſort of tall trees are to be ſuffered to grow in any of the oppoſite borders, or intermediate ſpaces, ſo that their ſhade might reach to the ſouth-eaſt, or ſouth-weſt walls. The places near the walls are moſt advantageouſly filled with dwarfs.

GARDENING, *Horticulture*, the art of cultivating a *garden.*

Gardening has, in all ages, been eſteemed an employment worthy the greateſt heroes, and philoſophers: the emperor Diocleſian, at Salona; and Epicurus, and Metrodorus, at Athens; have ennobled the art beyond all encomium.

Goetzius, ſuperintendent of Lubeck, printed a diſſertation in 1706. intituled Κηποφιλος, *ſeu de eruditis hortorum cultoribus.* of the learned men who have loved and cultivated gardens: among which number he ranks Adam, Gregory Nazianzen, St. Auguſtine, Pliny, and Cicero: nor ſhould he have forgot the elder Cato, Democritus, and Plato, and his academy.

The ſieur le Noſtre firſt carried *gardening* to any thing of perfection; M. la Quintinie has gone yet farther; nor have our own countrymen, of late, been wanting to its improvement; as London, Wiſe, Bradley, Laurence, Fairchild, Miller, *&c.*

M. Fatio has lately applied mathematical reaſoning to *gardening*; and ſhewn how to make the beſt uſe of the ſun's rays in gardens.

The principal operations in *gardening* are, planting, tranſplanting, engrafting, inoculating, pruning, ſowing, *&c.* All which ſee under their proper articles.

Other particulars, relating to the art of *gardening*, ſee under PINCHING, VARIEGATING, NURSERY, SEED, GREEN-HOUSE, HOT-BED, *&c.* See alſo FRUIT-TREE, DWARF, *&c.* See alſo SALLET, *&c.*

GARDENING, in falconry—To *garden a hawk*, is to put her on a turf of graſs, to chear her. Some alſo uſe the ſame phraſe for the giving her an airing, or letting her fly at large.

GARDEROBE. See the article WARD-ROBE.

GARDEVISURE, in heraldry. See VISOR.

GARDEYN. See the article GUARDIAN.

GARDIAN. See the article GUARDIAN.

GARDS. See the article GUARDS.

GARGARISM *, GARGLE, in medicine, a liquid form of remedy, for diſorders of the mouth, gums, throat, *&c.*

* The word is Greek Γαργαρισμα, formed of Γαργαριζειν, *colluere*, to waſh.——Or the Hebrew *garghera*, the throat.

Gargariſms are compoſed of honey, ſalt, ſyrups, ſpirits, vinegar, waters, and decoctions; and produce their effect by cleanſing, lubricating, *&c.* the parts.

We ſay, an aſtringent *gargariſm*, detergent *gargariſm*, refrigerant *gargariſm*, emollient *gargariſm*, apoplectic *gargariſm*, &c.

GARLAND *, an ornament for the head; made in manner of a crown, or chaplet.

* The word is farmed of the French *guirlande*, and that of the barbarous Latin *garlanda*, or Italian *ghirlanda*. Menage traces its origin from *gyrus*, thro' *gyrulus*, to *gyrulare, gyrlandum, ghirlandum*; and at length *ghirlanda*, and *guirlande:* ſo that *guirlande*, and *garland*, are deſcended, in the ſixth or ſeventh degree, from *gyrus*. Hicks rejects this derivation, and brings the word from *gardel handa*; which, in the northern languages, ſignify, a *noſegay artfully wrought with the hand.*

Garlands are a ſort of chaplets, made of flowers, feathers, or even of precious ſtones, but eſpecially of flowers; to which the word, in our language, is more immediately appropriated. Janus paſſes in antiquity for the inventor of *garlands*. *Athen. Dipnoſ.* l. xv.

GARLANDS alſo denote ornaments of flowers, fruits, and leaves, intermixed; antiently much uſed at the gates of temples, where feaſts, or ſolemn rejoicings, were held; or at any other places where marks of public joy and gaiety were deſired; as at triumphal arches, turnaments, *&c.* *Garlands*, or feſtoons, were alſo put on the heads of victims, in the antient heathen ſacrifices. St. Paulinus, in his poem on St. Felix, does not forget the *garlands*, and crowns of flowers, placed at the door of the church, and on the tomb of that ſaint.

The Italians have a ſort of artificers called *feſtaroli*; whoſe office is, to make *garlands*, or feſtoons, and other decorations for feaſts.

GARLAND, in a ſhip, denotes a collar of ropes, wound about the head of the main-maſt, to keep the ſhrouds from galling.

GARNET. See the article GRANATE.

GARNISH, in ſome antient writings and ſtatutes.—To *garniſh* the heir, ſignifies to warn the heir.

GARNISHEE, in law, the party in whoſe hands money is attached within the liberties of the city of London; ſo called in the ſheriffs court, becauſe he has had *garniſhment*, or warning, not to pay the money, but to appear and anſwer to the plaintiff-creditor's ſuit. See ATTACHMENT.

GARNISHING *, is popularly uſed for the furniture, aſſemblage, or ſortment, neceſſary for the uſing or adorning any thing.

* The word is French, formed of the verb *garnir*, to furniſh, or fit out.

The *garniſhing* of a diſh conſiſts of certain things which accompany it, either as a part and ingredient thereof; in which ſenſe pickles, muſhrooms, oyſters, *&c.* are *garniſhing:* or as a circumſtance, or ornament; as when leaves, flowers, roots, *&c.* are laid about a ſervice to amuſe the eye.

The ſame word is uſed for the finer herbs, fruits, *&c.* laid about a ſallet: *garniſhings* are of lemon, piſtacho's, pomgranate, yolks of hard eggs, artichoke-bottoms, capers, truffles, ſweatbread, *&c.*

GARNISHMENT, in law, denotes a warning given any one to appear, for the better furniſhing the cauſe, and court. Thus, if one be ſued for the detinue of certain charters; and ſays, they were delivered to him, not only by the plaintiff, but by J. S. alſo; and therefore prays, that J. S. may be warned to plead with the plaintiff, whether the conditions are performed, or no.—In this petition he is ſaid to pray *garniſhment*; which may be interpreted, a warning to J. S. to provide himſelf of a defence; or elſe a furniſhing the court with all parties to the action, whereby it may thoroughly determine the cauſe.

GARRISON *, a body of forces, diſpoſed in a fortreſs, to defend it againſt the enemy; or to keep the inhabitants in ſubjection; or even to be ſubſiſted during the winter ſeaſon.

* Du Cange derives the word from the corrupt Latin *garniſio*; which the latter writers uſe to ſignify all manner of munition, arms, victuals, *&c.* neceſſary for the defence of a place, and the ſuſtaining of a ſiege.

Garriſon, and *winter quarters*, are ſometimes uſed indifferently for the ſame thing; and ſometimes they denote different things.

In the latter caſe, a *garriſon* is a place wherein forces are maintained, to ſecure it, and where they keep regular guard; as, a frontier town, a citadel, caſtle, tower, *&c.*—The *garriſon* ſhould always be ſtronger than the townſmen.

Winter-quarters ſignify a place where a number of forces are laid up in the winter-ſeaſon, without keeping the regular guard. The ſoldiers, therefore, like better to be in winter-quarters, than in *garriſon.*

GARTER, Περισκελις, a ligature to keep up the ſtockings; it is alſo particularly uſed for the badge or cognizance of a noble order of knights, hence denominated the

Order of the **GARTER**, a military order, inſtituted by king Edward III. in 1350. under the title of the *ſovereign*, and *knights-companions, of the moſt noble order of the garter.*

This order conſiſts of twenty-ſix knights, or companions, generally all peers or princes; whereof the king of England is the ſovereign, or chief.

They wear a *garter*, ſet with pearls and precious ſtones, on the left leg, with this motto, *honi ſoit qui mal y penſe*, q. d. ſhame to him that thinks evil hereof.

They are a college or corporation, having a great and little ſeal: their officers are, a prelate, chancellor, regiſter, king at arms, and uſher.

Beſides which, they have a dean, and twelve canons, with petty canons, vergers, and twenty-ſix penſioners, or poor knights.

The order is under the patronage or protection of St. George of Cappadocia, the tutelar ſaint of this kingdom.

Their college is held in the caſtle of Windſor, within the chapel of St. George, and the chapter-houſe, erected by the founder for that purpoſe. Their robes, *&c.* are the *garter*, decked with gold and gems, and a buckle of gold, to be worn daily; and, at feaſts and ſolemnities, a ſur-coat, mantle, high velvet cap, collar of SS's, compoſed of roſes enamelled, *&c.*

When they wear not their robes, they are to have a ſilver ſtar on the left-ſide; and they commonly bear the picture of St. George, enamelled on gold, and beſet with diamonds, at the end of a blue ribbon, croſſing the body from the left ſhoulder.

They are not to appear abroad without the *garter*, on penalty of 6 *s.* 8 *d.* paid to the regiſter.

The order of the *garter* appears the moſt antient and noble lay-order in the world. It is prior to the French order of St. Michael by 50 years; to that of the golden fleece by 80 years; to that of St. Andrew by 190 years; and to that of the elephant, 209 years.

Since its inſtitution, there have been eight emperors, and twenty-ſeven or twenty-eight foreign kings, beſides numerous ſovereign princes, enrolled as companions thereof.

Its origin is ſomewhat differently related: the common account is, that it was erected in honour of a *garter* of the counteſs of Saliſbury, which ſhe dropped in dancing, and which king Edward picked up: but our beſt antiquaries ſet this aſide as fabulous.

Camden, Fern, *&c.* take it to have been inſtituted on occaſion of the victory obtained over the French at the battle of Creſſy: that prince, ſay ſome hiſtorians, ordered his *garter* to be diſplayed, as a ſignal of battle; in commemoration whereof, he made a *garter* the principal ornament of the order, erected in memory of this ſignal victory, and a ſymbol of the indiſſoluble union of the knights.

Fa. Papebroche, in his *Analecta* on St. George, in the third tome of the *Acta Sanctorum* publiſhed by the Bollandiſts, has a diſſertation on the *order of the garter*. This order, he obſerves, is not leſs known under the name of *St. George*, than under that of *garter*; and that, though it was only inſtituted by king Edward III. yet it had been projected before him by king Richard I. in his expedition to the Holy-Land, if we may credit an author who wrote under Henry VIII. Papebroche adds, however, that he does not ſee what that author grounds his opinion on; and that, though the generality of writers fix the epocha of this inſtitution to the year 1350. he rather chooſes, with Froiſſard, to refer it to the year 1344. which agrees better with the hiſtory of that prince, where we read, that he called an extraordinary aſſembly of knights that year.

In 1551. Edward VI. made ſome alterations in the ritual of this order: that prince compoſed it in Latin, the original whereof is ſtill extant in his own hand-writing. He there ordained, that the order ſhould no longer be called the order of *St. George*, but that of the *garter*; and, inſtead of the George, hung at the collar, he ſubſtituted a cavalier, bearing a book on the point of his ſword, with the word *protectio* graven on the ſword, and *verbum Dei* on the book; with a buckle in the left-hand, and the word *fides* thereon. Larrey.

For a further account of the order of the *garter*, ſee Camden, Aſhmole, Dawſon, Leland, Polydore Virgil, Heylin, Legar, Glover, and Fauyn.

Erhard, Cellius, and the prince of Orange, adds Papebroche, have given deſcriptions of the ceremonies uſed at the inſtalment of knights. A Ciſtercian monk, named Mendocius Belvaletus, has a treatiſe, intituled, *La Garretiere*, or *Speculum Anglicanum*, ſince printed under the title of the *Catechiſm of the order of the garter*; wherein he explains all the allegories, real or pretended, of thoſe ceremonies, with the moral ſignifications thereof.

GARTER *principal king at arms.* See KING *at arms.*

Garter, and *principal king at arms*, are two diſtinct offices, united in one perſon: *garter*'s employment is to attend the ſervice of the order of the *garter*; for which he is allowed a mantle and badge, a houſe in Windſor-caſtle, and penſions both from the ſovereign and knights, and, laſtly, fees. He alſo carries the rod and ſceptre at every feaſt of St. George, when the ſovereign is preſent; and notifies the election of ſuch as are new-choſen; attends the ſolemnity of their inſtallations; and takes care of placing their arms over their ſeats; and carries the *garter* to foreign kings and princes; for which ſervice, it has been uſual to join him in commiſſion with ſome peer, or other perſon of diſtinction.

Garter's oath relates only to ſervices to be performed within the order, and is taken in chapter before the ſovereign and knights.

His oath, as king at arms, is taken before the earl marſhal.

GARTER is alſo a term in heraldry, ſignifying the moiety, or half, of a bend.

GARTH. See the article FISHGARTH.

GAS, in chemiſtry, a term uſed by Van Helmont, to expreſs a ſpirit not coagulable; ſuch as that ariſing from wine when fermenting; or from aqua regia, when preying on gold.

In reality, he applies the word ſo obſcurely and precariouſly, that it is hard reducing it to any one ſenſe.

Thus, he calls the vital principle in man, *gas vitale*; and the ſame denomination *gas* he gives to the ſulphurous ſteams which occaſion damps: add, that he calls the air, *gas ventoſum*; and water, the *gas of ſalts.*

Some would fix his meaning to the ſpirit, or ſubtle and moſt volatile part of a body: and thus, *gas cereviſiæ* is the ſpiritous ſteam, which flies off from ale while in working; but this does not take in his whole idea of *gas.*

GASCOIGN, or GASKOING, the hinder thigh of an horſe, commencing from the ſtifle, and reaching to the ply, or bending of the ham.

GASCONADE, a boaſt or vaunt of ſomething very improbable.—He pretended he had fought ſingly againſt three men; a downright *gaſconaae!*

The term has its riſe from the Gaſcoons, or people of Gaſcony, in France, who, it ſeems, have been diſtinguiſhed for bragging and rhodomontado.

GASKOIN. See the article GASCOIN.

GASTALDUS *, or CASTALDUS, an officer antiently entertained in the courts of divers princes.

> * The word is alſo written *gaſtaldius*, *gaſtaldio*, *gaſtaldatus*, *guaſtaldus*, &c. Macri derives it from the Arabic *chaſendar*, purveyor of an houſe; others from the German *gaſt*, and *halten*, to retain travellers,

The *gaſtaldus* was what in Italy and Spain is now called *majordomo*, viz. the maſter or ſteward of an houſhold. The *gaſtaldus* was a comes, or count; which ſhews his office to have been very conſiderable.

In the laws of Italy, we ſometimes alſo meet with *gaſtaldus* in the ſenſe of a courier; and ſometimes as an eccleſiaſtical officer: ſo that it is ſomewhere expreſſed to be ſimony, to buy the function of *gaſtaldus.*

GASTREPIPLOICA, in anatomy, a vein, which opens into the trunk of the vena porta, formed of ſeveral branches, derived from the ſtomach and epiploon *.

> * Whence its name, from γαστηρ, ſtomach, and επιπλοον, epiploon.

GASTRIC, GASTRICUS, in anatomy, is applied to divers veins, on account of their proceeding from the ſtomach or ventricle, which the Greeks call γαστηρ.

The *gaſtricus major*, or greater *gaſtric* vein, is inſerted into the ſplenic vein; and the *minor*, or leſſer *gaſtric*, into the trunk of the vena porta.

GASTRILOQUUS *, or GASTRILOQUOUS, a perſon who ſpeaks inwardly, or within his ſtomach; and whoſe voice ſeems to come from afar off; more uſually called *ventriloquus.* See VENTRILOQUUS.

> * The word is formed of the Greek, γαστηρ, belly, ſtomach, and the Latin *loqui*, to ſpeak.

GASTROCNEMIUS, in anatomy, a name common to two muſcles conſtituting the ſura, or calf of the leg; the one called *externus*, the other *internus.* See *Tab. Anat. (Myol.)* fig. 6. 11. 41. 41.

GASTROCNEMIUS *externus*, called alſo *ſuralis externus*, and *gemellus*, has two diſtinct, fleſhy originations from the ſuperior and hindermoſt part of each tubercle of the lower appendage of the thigh-bone, which, in their deſcent, are each dilated into two ſmall fleſhy bellies, the innermoſt of which is thickeſt and largeſt; having each a different ſeries of fleſhy fibres, which at length uniting, make a broad, ſtrong tendon; which, narrowing itſelf, joins the great tendon of the ſolæus, four fingers breadth above its inſertion into the os calcis. See *Tab. Anat. (Myol.)* fig. 1. n. 66. fig. 2. n. 48.

When this muſcle acts, the foot is ſaid to be extended, or pulled backwards; which motion is very neceſſary in walking, running, leaping, or ſtanding on tip-toe, *&c.* whence it is, that thoſe who walk much, or carry heavy burdens, and who wear low-heeled ſhoes, have theſe muſcles larger than others.

Gastrocnemius, or *ſuralis internus*, called alſo *ſolæus*, from its figure reſembling a ſole-fiſh, is placed under the external. Its outer fleſhy part is covered with a tranſparent tendinous expanſion, which makes it appear of a livid colour.—See *Tab. Anat. (Myol.)* fig. 1. n. 63. fig. 2. n. 47.

It begins partly tendinous, chiefly from the hindermoſt part of the upper appendix of the fibula, and back-part of the tibia, that is, below the inſertion of the ſubpoplitæus; and increaſes to a large fleſhy belly, compoſed of various orders of fleſhy fibres, ſome of them underneath aptly expreſſing the figure of the top of a feather, whoſe ſtamina, being here tendinous, join with the great tendon, which is about a finger's breadth long, and inſerted into the ſuperior and hindermoſt part of the os calcis.

The foot, together with the toes, being, as it were, a lever to the whole body, ought therefore to be attended with muſcles of great ſtrength to extend it; which is the reaſon that theſe muſcles ſo much exceed their antagoniſts.

ASTROLATER, a glutton, or belly-god; *cujus deus venter eſt.*

GASTROMANCY *, or Gastromantia, a kind of divination, practiſed among the antients, by means of words coming, or ſeeming to come, out of the belly.

* The word is Greek, γαςρομαντεια, compoſed of γαςηρ, belly; and μαντεια, divination.

There is another kind of divination, called by the ſame name *gaſtromancy*, which is performed by means of glaſſes, or other round, tranſparent veſſels, within which certain figures appear by magic art. It is thus called, by reaſon the figures appear as in the belly of the veſſels.

GASTROTOMY, the operation of cutting open the belly; otherwiſe called the *Cæſarean ſection.* See Cæsarean *ſection.*

GATE, a large door, leading, or giving entrance, into a city, town, caſtle, palace, or other conſiderable building.

Thebes, in Egypt, was antiently known by the appellation, *with an hundred gates.* Fez, in Africa, has thirty-one *gates.* In antient Rome, there was a triumphal *gate, porta triumphalis.* In modern Rome, there is the *jubilee gate*, which is only opened in the year of a grand jubilee. See Jubilee.

The *gates* of London are many of them converted into gaols, or priſons, as *Ludgate, Newgate*, &c.—The leſſer, or *bygates*, are called *poſterns.*

Gates, through which coaches, *&c.* are to paſs, ſhould not be leſs than ſeven feet broad, nor more than twelve; the height to be 1½ the breadth.

Opening of Gates, in aſtrology. See Opening.

GAVEL, or Gabel, in law, ſignifies tribute, toll, cuſtom, yearly rent, payment, or revenue; of which there were antiently ſeveral kinds, *gavel-corn, gavel-malt, out-gavel, gavel-fodder*, &c.

Gavel is ſometimes alſo uſed for what we more uſually call the *gable.* See Gable.

GAVELET, Gaveletum, in law, a ſpecial and antient kind of ceſſavit, uſed in Kent, where the cuſtom of gavelkind continues; whereby the tenant ſhall forfeit his lands and tenements to the lord, if he withdraw from him his due rents and ſervices *.

* The proceſs of the *gavelet* is thus: the lord is firſt to ſeek by the ſteward of his court, from three weeks to three weeks, to find ſome diſtreſs upon the tenement, till the fourth court; and if, at that time, he find none, at this fourth court it is awarded, that he take the tenement in his hand, in name of a diſtreſs, and keep it a year and a day, without manuring; within which time, if the tenant pays his arrears, and make reaſonable amends for the with-holding, he ſhall have and enjoy his tenement as before: if he come not before the year and day be paſt, the lord is to go to the next county-court, with witneſſes of what had paſſed at his own court, and pronounce there his proceſs to have further witneſſes; and then, by the award of his own court, he ſhall enter and manure the tenement as his own: ſo that, if the tenant deſire afterwards to have and hold it as before, he muſt agree with the lord, according to this old ſaying: "Has he not ſince any thing "given, or any thing paid, then let him pay five pound for "his were, ere he become healder again."—Other copies have the latter part with ſome variation; "Let him nine times "pay, and nine times repay."

GAVELKIND, a tenure or cuſtom, whereby the lands of the father are equally divided, at his death, among all his ſons; or the land of the brother among all the brethren, if he have no iſſue of his own.

Tuetonicis priſcis patrios ſuccedit in agros
Maſcula ſtirps omnis, ne foret ulla potens.

This cuſtom, which antiently obtained throughout England, is ſtill of force in the greateſt part of Kent, Urchenfield in Herefordſhire, and elſewhere, though with ſome difference; but, by the ſtat. 34 and 55 Hen. VIII. all *gavelkind* lands in Wales are made deſcendable to the heir, according to the courſe of common law.

In an antient book of records in Chriſt-church, Canterbury, of the time of Henry VIII. our Saxon anceſtors are ſaid to have held all their lands either by writing, or without: the firſt were called *bockland*, whoſe owners were men, whom we now call *freeholders:* the ſecond was called *folkland*, the owners whereof were of ſervile condtion, and poſſeſſed *ad voluntatem domini.* Now, the inheritance, or freehold, did not, in thoſe days, deſcend to the eldeſt ſon, but to all alike; which, in Saxon, was called *landeſcyftan*, and, in Kent, *to ſhift land*; whence came the cuſtom *gavelkind.* And the reaſon why it was retained in Kent more than other places, was, that "the people of Kent, upon the Norman invaſion, "could not be reduced to ſurrender to the conqueror, but "on theſe conditions, that they ſhould retain their antient "country-cuſtoms without any infringement or diminution; "and eſpecially that called *gavelkind.*

"The lands, held under this denomination, deſcend equally, "and are divided, ſhare and ſhare alike, among all the male "children; and, in defect of theſe, among the females." He adds, "That they are of age, or qualified to take the "lands upon them, at fifteen; and may then give, vend, or "alienate the ſame to any perſon, without the conſent of any "lord: and children here inherit their father's land, though "convicted of felony, murder, *&c.* The tenants in *gavelkind* "are to do fealty, and to be in the tuition of the next akin, "who is not next heir after them, till fifteen years of age; "to pay acknowlegement to the lord for the lands," *&c.*

GAVELMAN *, a tenant who is liable to tribute.

* *Villani de Terring, qui vocantur* gavelmanni. Somner, *gavelkind.*

GAUGE-*Line*, a line on the common gauging-rod, whoſe deſcription and uſe ſee under the article Gauging.

Gauge-*Point* of a ſolid meaſure, is the diameter of a circle, whoſe area is equal to the ſolid content of the ſame meaſure.

Thus, the ſolidity of a wine gallon being 231 cubic inches; if you conceive a circle to contain ſo many inches, the diameter of it will be 17.15; and that will be the *gauge-point* of wine-meaſure.

And an ale gallon containing 288 cubic inches; by the ſame rule, the *gauge-point* for ale-meaſure will be found to be 19.15: and after the ſame manner may the *gauge-point* of any other meaſure be determined.

Hence we deduce, that when the diameter of a cylinder in inches is equal to the *gauge-point* in any meaſure (given likewiſe in inches) every inch in length thereof will contain an integer of the ſame meaſure. In a cylinder, whoſe diameter is 17.15 inches, every inch in height contains one intire gallon in wine-meaſure; and in another, whoſe diameter is 19.15, every inch in length contains one ale gallon.

GAUGER, an officer appointed by the king to gauge, *i. e.* to examine or meaſure, all caſks, tuns, pipes, barrels, hogſheads, of beer, wine, oil, *&c.* and to give them a mark of allowance (which is a circle burnt with an iron) before they be ſold in any place within the extent of this office.

GAUGING, the art or act of meaſuring the capacities or contents of all kinds of veſſels, and determining the quantity of fluids, or other matters, contained therein.

Gauging is the art of reducing the unknown capacity of veſſels of divers forms, cubical, parallelepepidal, cylindrical, ſpheroidal, conical, *&c.* to ſome known cubic meaſure; and of computing, for inſtance, how many gallons, quarts, pints, or the like, of any liquor, *e. gr.* ale, beer, wine, brandy, *&c.* are contained therein.

Gauging is a branch of ſtereometry.

The principal veſſels, that come under its operation, are pipes, barrels, rundlets, and other caſks; alſo backs, coolers, vats, *&c.*

The ſolid content of cubical, parallelepepidal, and priſmatical veſſels, is eaſily found in cubic inches, or the like, by multiplying the area of the baſe by the perpendicular altitude.

And for cylindrical veſſels, the ſame is found by multiplying the area of the circular baſe by the perpendicular altitude, as before.

Caſks of the uſual form of hogſheads, kilderkins, *&c.* may be conſidered as ſegments of a ſpheroid cut off by two planes perpendicular to the axis; which brings them to Oughtred's theorem for meaſuring ale and wine caſks; which is thus: add twice the area of the circle at the bung to the area of the circle of the head: multiply the ſum by one-third of the length of the caſk, the product is the content of the veſſel in cubic inches.

But, for accuracy, Dr. Wallis, Mr. Caſwel, *&c.* think, that moſt of our caſks had better be conſidered as fruſtums of parabolic ſpindles, which are leſs than the fruſtums of ſpheroids of the ſame baſe and height, and give the capacity of veſſels nearer the truth, than either Oughtred's method, which ſuppoſes them ſpheroids; or than that of multiplying the circles at the bung and head into half the length of the caſk, which ſuppoſes them parabolic conoids; or than that of Clavius, *&c.* who takes them for two truncated cones; which is fartheſt off of all.

The common rule for all wine or ale caſks is, to take the diameters at the bung, and at the head, by which you may find the areas of the circle there; then taking two-thirds of the area of the circle at the bung, and one-third of the area of the circle at the head, and adding them together into one ſum, this ſum, multiplied by the internal length of the caſk, gives the content in ſolid inches; which are converted into gallons, by dividing by 282 for ale, and by 231 for wine, gallons.

But *gauging*, as now practiſed, is chiefly done by means of inſtruments, called *gauging-rods*, or *rules*, which do the buſineſs at once, and anſwer the queſtion, without ſo much calculation; which is no inconſiderable addition, both to the eaſe and diſpatch of the work. This inſtrumental way of *gauging*, therefore, we ſhall here chiefly inſiſt upon.

Conſtruction of a GAUGING-*rod, whereby the content of any cylindrical, or other common veſſel, is eaſily had.*—Take the diameter AB of a cylindrical veſſel, ABDE, *Tab. Surveying*, fig. 26. that holds one of the meaſures wherein the fluid is eſtimated, *e. gr.* gallons, and join it at right angles to the indefinite line A 7. From B to 1, ſet off a right line equal to A B; then will B 1 be the diameter of a veſſel, that holds two meaſures, or gallons, of the ſame height as the former.

Again, let A 2 = B 2; then will B 3 be the diameter of a veſſel that holds three meaſures, but of the ſame height as that which only holds one. And, after the ſame manner, find the diameter of other large veſſels, B 4, B 5, B 6, B 7, *&c.*

Laſtly, ſet off the ſeveral diviſions thus found, A 1, A 2, A 3, *&c.* upon the ſide of a rod or rule; and, on the other, the height or depth of a cylinder, that holds one meaſure or gallon, repeated as oft as it will go. Thus is the *gauging-rod* complete.

For cylinders, that have the ſame altitude, are to each other as the ſquares of their diameters; conſequently the ſquare of the diameter that holds 2, 3, or 4 gallons, muſt be double, triple, or quadruple of that, which only holds one. And ſince, in the firſt, AB = A 1, the ſquare of B 1 is double, that of B 2 triple, that of B 3 is quadruple, *&c.* it is evident, that the right lines A 2, A 3, A 4, *&c.* are the diameters of the veſſels required.

Theſe diviſions, therefore, being applied to the ſide of a cylindrical veſſel, it will immediately appear how many meaſures, *e. gr.* gallons, a cylindrical veſſel of that baſe, and of the height of that which holds one gallon, will contain.

Wherefore, finding by the diviſions on the other ſide of the rod, how often the height of one gallon is contained in the height of the given veſſel; and multiplying the diameter before found by this number; the product will be the number of gallons the veſſel contains.

Thus, *e. gr.* if the diameter of the cylindrical veſſel be 8, and its height 12, its content will be 96 gallons.

Note, 1°, The leſs you take the height of the cylinder containing one gallon, the greater will the diameter of the baſe be: whence both that, and the diameters of the cylinders containing ſeveral gallons, will be the more eaſily diviſible into leſſer parts. Bayer directs ſuch height to be only one digit, or tenth of an inch.

2°, The diameters of veſſels holding one or more decimal parts of a gallon, will be had, by dividing one or more decimal parts of the veſſel holding a whole gallon, by its height; which gives us the area of the circular baſe; from whence the diameter is eaſily found by the rules delivered under DIAMETER, CIRCLE, *&c.* And, after the ſame manner, the diameters are found for the diviſions of veſſels, that hold two or more gallons.

Uſe of the GAUGING-*rod.*—To find the content of a caſk; that is, to determine the number of meaſures, *e. gr.* gallons, it will hold: apply the *gauging-rod* to the veſſel, as directed in the preceding article, and find both the length of the caſk, AC, fig. 27. and both diameters, GH, and AB. Now, as we find, by experiment, how far ſoever it may be from geometrical exactneſs, that a common caſk of this form may ſafely enough be reputed as a cylinder, whoſe baſe is a medium between the head and the belly; find ſuch medium, which call the *equated diameter*.

Then multiplying the number thus found by the length of the caſk AC, the product will be the number of meaſures the veſſel contains.

Suppoſe, *e. gr.* AB = 8, and GH = 12, and AC = 15, the equated diameter will be 10; which, multiplied by 15, gives the capacity of the caſk, 150 meaſures.

If it happen, that the diameters of the two ends be not equal, meaſure them both, and take half their ſum for the diameter to work by.

There is another method, whereby the content of a veſſel is had, without any calculation at all, which obtains in divers parts of Germany and the Low-Countries: but, as this ſuppoſes all veſſels to be ſimilar to each other, and their length double of the equated diameter, that is, of half the ſum of the diameters AB, and GH, it is not ſafe to uſe it in all places. Kepler, however, prefers it ſo much before all others, as including all the precautions poſſible, that he recommends it to the public, to enact it by law, that all caſks be made in this proportion.

The methods of *gauging*, which chiefly obtain among us, are, by the four-foot *gauging-rod*, and Everard's *ſliding-rule*.

Deſcription and uſe of the four-foot GAUGING-*rod.*—The four-foot *gauging-rod*, repreſented in *Tab. Surveying*, fig. 18. n. 2. is uſually made of box, and conſiſts of four rules, each a foot long, and about three-eighths of an inch ſquare, joined together by three braſs joints; by which means the rod is rendered four feet long, when the four rules are quite opened, and but one foot when they are all folded together.

On the firſt face of this rod, marked 4, are placed two diagonal lines; one for beer, and the other for wine: by means of which the content of any common veſſel in beer or wine gallons may be readily found, by putting the rod in at the bung-hole of the veſſel, till it meets the interſection of the head of the veſſel with the ſtaves oppoſite to the bung-hole. For diſtinction of this line, there is written thereon, *beer and wine gallons*.

On the ſecond face, 5, are a line of inches, and the gauge-line; which is a line expreſſing the areas of circles, whoſe diameters are the correſpondent inches in ale gallons. At the beginning is written, *ale area*.

On the third face, 6, are three ſcales of lines; the firſt, at the end of which is written *hogſhead*, is for finding how many gallons there are in a hogſhead, when it is not full, lying with its axis parallel to the horizon. The ſecond line, at the end of which is written *B. L.* ſignifying a *butt lying*, is for the ſame uſe as that for the hogſhead. The third line is to find how much liquor is wanting to fill up a butt when it is ſtanding: at the end of it is written *B. S.* ſignifying a *butt ſtanding*.

Half-way the fourth face of the *gauging-rod*, 7, there are three ſcales of lines, to find the wants in a firkin, kilderkin, and barrel, lying with their areas parallel to the horizon. They are diſtinguiſhed by letters *F. K. B.* ſignifying a *firkin*, *kilderkin*, and *barrel*.

Uſe of the diagonal lines on the GAUGING-*rod.*—To find the content of a veſſel in beer or wine gallons, put the braſed end of the *gauging-rod* into the bung-hole of the caſk, with the diagonal lines upwards; and thruſt this braſed end to the meeting of the head and ſtaves; then, with chalk, make a mark at the middle of the bung-hole of the veſſel, and alſo on the diagonal lines of the rod, right againſt, or over one another, when the braſed end is thruſt home to the head and ſtaves: then turn the *gauging-rod* to the other end of the veſſel, and thruſt the braſed end home to the end, as before.

Laſtly, ſee if the mark made on the *gauging-rod* come even with the mark made on the bung-hole, when the rod was thruſt to the other end; which if it be, the mark made on the diagonal lines, will, on the ſame lines, ſhew the whole content of the caſk in beer or wine gallons.

If the mark made on the bung-hole be not right againſt that made on the rod, when you put it the other way, then, right againſt the mark made on the bung-hole, make another on the diagonal lines; and the diviſion on the diagonal line, between the two chalks, will ſhew the veſſel's whole content in beer or wine gallons.

Thus, *e. gr.* if the diagonal line of a veſſel be 28 inches four tenths, its content in beer gallons will be near 51, and in wine gallons 62.

If a veſſel be open, as a half-barrel, tun, or copper, and the meaſure from the middle on one ſide, to the head and ſtaves, be 38 inches, the diagonal line gives 122 beer gallons; half of which, *viz.* 61, is the content of the open half-tub.

If you have a large veſſel, as a tun or copper, and the diagonal line, taken by a long rule, prove 70 inches; the content of that veſſel may be found thus:

Every inch, at the beginning-end of the diagonal line, call ten inches. Thus, ten inches become 100 inches; and every tenth of a gallon call 100 gallons; and every whole gallon call 1000 gallons.

Exam. at 44.8 inches, on the diagonal beer-line, is 200 gallons; ſo that 4 inches 48 parts, now called 44 inches 8 tenths, is juſt two-tenths of a gallon, now called 200 gallons: ſo alſo, if the diagonal line be 76 inches and 7 tenths, a cloſe caſk, of ſuch diagonal, will hold 1000 beer gallons; but an open caſk but half ſo much, *viz.* 500 beer gallons.

Uſe of the GAUGE-*line.*—To find the content of any cylindrical veſſel in ale gallons: ſeek the diameter of the veſſel in inches, and, juſt againſt it, on the *gauge-line*, is the quantity of ale gallons contained in one inch deep: this, multiplied by the length of the cylinder, will give its content in ale gallons.

For example, ſuppoſe the length of the veſſel 32.06, and the diameter of its baſe 25 inches; to find what is the content in ale gallons?

Right againſt 25 inches, on the *gauge-line*, is one gallon, and .745 of a gallon; which, multiplied by 32.06, the length, gives 55.9447 gallons for the content of the veſſel.

The bung diameter of a hogſhead being 25 inches, the head diameter 22 inches, and the length 32.06 inches; to find the quantity of ale gallons contained in it?

Seek 25, the bung diameter, on the line of inches; and right againſt it, on the *gauge-line*, you will find 1.745: take one-third of it, which is .580, and ſet it down twice: ſeek 22 inches the head diameter, and againſt it you will find, on the *gauge-line*, 1.356; one-third of which added to twice .580, gives 1.6096; which multiplied by the length 32.06, the product will be 51.603776, the content in ale gallons.

Note, this operation ſuppoſes, that the aforeſaid hogſhead is in the figure of the middle fruſtum of a ſpheroid.

The uſe of the lines on the two other faces of the rod, is very eaſy; you need only put it downright into the bung-hole (if the veſſel you deſire to know the quantity of ale gallons contained therein be lying) to the oppoſite ſtaves; and then, where the ſurface of the liquor cuts any one of the lines appropriated to that veſſel, will be the number of gallons contained in that veſſel.

The deſcription and uſe of Everard's ſliding-rule for *gauging*, ſee under the article SLIDING-*Rule*.

GAUGING-*Rod*. See the article GAUGING.

GAULISH *Language*. See ROMAN, and FRENCH.

GAUNT, an old word for lean, or lank.—Thus, we ſay, a *gaunt*-bellied or light-bellied horſe, when his belly ſhrinks up towards his flanks.

GAUNTLET. See the article GANTLET.

GAURES, or rather GAVRES, or GABRES. See the article GABRES.

GAWZE, in commerce, a very thin, ſlight, tranſparent kind of ſtuff, woven ſometimes of ſilk, and ſometimes only of thread.

To warp the ſilk for making of *gawze*, they uſe a peculiar kind of mill, upon which the ſilk is wound: this mill is a wooden machine, about ſix feet high, having an axis perpendicularly placed in the middle thereof, with ſix large wings, on which the ſilk is wound from off the bobbins, by the axis turning round.

When all the ſilk is on the mill, they uſe another inſtrument to wind it off again on two beams: this done, the ſilk is paſſed through as many little beads as there are threads of ſilk; and thus rolled on another beam, to ſupply the loom.

The *gawze*-loom is much like that of the common weavers, though it has ſeveral appendages peculiar thereto. See LOOM.

There are figured *gawzes*; ſome with flowers of gold and ſilver, on a ſilk ground: theſe laſt are chiefly brought from China.

GAYAC. See the article GUAIACUM.

GAZE-*Hound*. See the article HOUND.

GAZETTE *, a news-paper, or printed account of the tranſactions of divers countries, in a looſe ſheet, or half-ſheet.

* The word is formed of *gazetta*, a kind of coin, formerly current at Venice, which was the ordinary price of the firſt news-papers printed there: though others derive it, by corruption, from the Hebrew *izgad*, which ſignifies *nuntius*, a meſſenger; but this etymology is too much forced.

We ſay, the *London gazette*, *Paris gazette*, *Gazette à la main*, &c.—*Gazettes*, which moſt people look on as trifles, are by ſome held the moſt difficult kind of compoſitions, that have appeared. They require a very extenſive acquaintance with the languages, and all the terms thereof, and a great facility and command of writing, and of relating, things cleanlily, and in a few words.

To write a *gazette*, a man ſhould be able to ſpeak of war both by land and ſea; be throughly acquainted with every thing relating to geography, the hiſtory of the time, and that of the noble families; with the ſeveral intereſts of princes, the ſecrets of courts, and the manners and cuſtoms of all nations.

Vigneul de Marville recommends a ſet of *gazettes*, well written, as the fitteſt books for the inſtruction of young perſons coming into the world.

The firſt *gazette* publiſhed in theſe parts, is ſaid to have been that of Paris, begun in the year 1631. by Theophraſt Renaudot, a phyſician of Montpelier, in his office of intelligence.

GAZONS, in fortification, turfs, or pieces of freſh earth covered with graſs, cut in form of a wedge, about a foot long, and half a foot thick, to line or face the outſides of works made of earth, in order to keep up the ſame, and prevent their mouldering.

GEERS, a general term for trappings, harneſs, and all other things, that belong to draught-horſes, or oxen.

GEHENNA, Γεεννα, a ſcripture term, which has given ſome pain to the critics. It occurs in St. Matthew v. 22. 29. 30. x. 28. xviii. 9. xxiii. 15. 33. Mark ix. 43. 45. 47. Luke xii. 5. James iii. 6.

The authors of the Louvain and Geneva verſions retain the word *gehenna*, as it ſtands in the Greek; the like does M. Simon: the Engliſh tranſlators render it by *hell*, and *hell-fire*; and the like do the tranſlators of Mons, and father Bouhours.

The word is formed from the Hebrew *gehinnom*, i. e. valley of Hinnom. In that valley, which was near Jeruſalem, there was a place named *Tophet*, where ſome Jews ſacrificed their children to Moloch, by making them paſs through the fire. King Joſias, to render this place for ever abominable, made a cloaca or common-ſewer thereof, where all the filth and carcaſes in the city were caſt.

The Jews obſerve further, that there was a continual fire kept up there, to burn and conſume thoſe carcaſes; for which reaſon, as they had no proper term in their language to ſignify *hell*, they made uſe of that of *gehenna*, or *gehinnom*, to denote a fire unextinguiſhable.

GELALEAN *Calendar*. See the article CALENDAR.

GELATINOUS, among phyſicians, is applied to any thing approaching the glutinous conſiſtence of a jelly.

GELD, or GILD, in our antient cuſtoms, a mulct, or compenſation for a crime or delinquency. See GILD.

Hence *wergild* was antiently uſed for the value or price of a man ſlain; and *orfgild*, of a beaſt *, &c.

* *Et ſint quieti de* Geldis, & *Danegeldis*, *Horngeldis*, & *Fortgeldis*, & *de Blodwita* & *Flitwita*, & *Leirwita*, & *Heingwita*, & *Freminesſeuda*, & *Werdpeni*, & *Averpeni*, & *Hundredpeni*, & *Tolingpeni*. Charta Ric. II. Priorat. de Hatland. in Devon.

Foot-GELD.	See the articles	FOOT-*Geld*.
Horn-GELD.		HORN-*Geld*.
Wood-GELD.		WOOD-*Geld*.

GELDABLE. See the article GILDABLE.

GELDING, the operation of caſtrating, and particularly horſes.

The ſame term is alſo applied to an horſe thus caſtrated, or whoſe teſticles are cut out, to diſable him from being a ſtallion.

In *gelding* of horſes, regard is to be had to their age, the ſeaſon of the year, and, as the farriers ſay, to the ſtate of the moon.—For the firſt, if it be a colt, the operation may be performed at nine, or at fifteen days old, if the teſticles be come down; in regard the ſooner he is *gelt*, the better it will be for his growth, ſhape, and courage; though an horſe may be *gelded* at any age, if care be taken in the cure.—As for the ſecond, the beſt time is about April, or May, or elſe about the latter end of September. And for the third, the wane of the moon is preferred as the fitteſt time.

The manner of *gelding* is thus: the beaſt being caſt on ſome ſoft place, the operator takes the teſticles between his fore and great finger; ſlits the cod, and preſſes out the ſtones; then taking a pair of nippers made very ſmooth, either of ſteel, box, or brazil, he claps the ſtrings of the ſtones between them, very near to where the ſtones are ſet on, and preſſes them ſo hard, that there may be no flux of the blood, and then ſears away the ſtone with a thin drawing cauterizing iron, made red-hot.

This done, he takes a hard plaiſter, made of wax, reſin, and waſhed turpentine, melted together, and melts it on the head of the ſtrings with the hot iron; and afterwards ſears the ſtrings, and melts more of the ſalve, till there is a good thickneſs of the ſalve laid on the ſtrings.

This being done to one ſtone, the nippers are looſened, and the like is done to the other; and the two ſlits of the cod are then filled with white ſalt, and the outſide of the cod anointed with hogs greaſe; and thus they let him riſe, and keep him in a warm ſtable, without tying him up.

If he ſwells much in his cod or ſheath, they chafe him up and down, and make him trot an hour in a day; and he ſoon recovers.

GELOSCOPY, GELOSCOPIA, a kind of divination, drawn from laughter; or a knowlege of any perſon's character and qualities, acquired from the conſideration of his laughter.

GEM, or GEMM, GEMMA, a common name for all precious ſtones or jewels.

Among *gems*, the principal are the diamond, ruby, ſapphire, emerald, turcoiſe, opal, agat, &c. See each under its proper article, DIAMOND, RUBY, SAPPHIRE, EMERALD, &c. Pearls are alſo ranked among *gems*, though not ſtones.

Several authors, both antient and modern, relate wonders of the virtues and medicinal properties of *gems*: but their reputation, in this reſpect, is now not a little fallen; and many even deny them any virtue at all: yet are the fragments of ſuch ſtones ſtill preſerved by ſome phyſicians, in ſome of the moſt celebrated compoſitions; and there are ſeveral chemical preparations made of them.

In effect, as ſeveral perſons of the greateſt candour and experience have related ſome conſiderable effects of certain *gems*, on their own particular obſervations; and as it is no ways improbable, that ſome of the ſofter ſtones may have conſiderable operations on the human body; it might be imprudent indiſcriminately to exclude them all from any medicinal virtue at all.

When much the greateſt part of their traditionary qualities are ſet aſide as fabulous, there will ſtill remain ſome, on as real and well-warranted a footing as many of our other medicines.

On ſuch conſiderations, Mr. Boyle was induced to give us a treatiſe of the *Origin and virtues of gems*; the purport whereof is to make appear, that ſuch ſtones were originally in a fluid ſtate, or made up of ſuch ſubſtances as were formerly fluid; and that many of their general virtues are probably derived from the mixture of metalline and other mineral ſubſtances uſually incorporated with them; while the great variety, and the particular efficacy, of their virtues, ariſe from ſome happy concurrent circumſtances of that commixture; *e. gr.* the peculiar nature of the impregnating liquor, the proportion wherein it is mixed with the petreſcent juice, and the like.

To ſupport this hypotheſis of the virtues of *gems*, he ſhews, that ſeveral of them are not ſimple concretions of any petreſcent liquo s; but that they conſiſt, alſo, of other mineral adventitious parts: which he argues, from the ſeparableneſs of ſuch ſubſtances in ſome ſtones, the ſpecific gravity in others, and the different waters, or tinctures, to be met with in *gems* of the ſame ſpecies; as rubies, ſapphires, granates, and even diamonds; of which laſt ſome are yellow, ſome of other colours, and ſome green, almoſt like emeralds.

There may, therefore, be in ſome *gems* numberleſs adventitious corpuſcles; but there is great reaſon to think, that ſome of theſe corpuſcles may be indued with ſeveral properties, and medicinal virtues. There is a great difference among theſe impregnating particles; and, probably, a greater variety than known by us: and, laſtly, many *gems* are very richly impregnated with theſe particles: why, then, may not they exert ſome power? This is the ſubſtance of what is directly alleged in behalf of *gems*.

The ſtreſs of what is objected againſt them is, that the mineral ſubſtances, they contain, are ſo cloſely locked up, that they can communicate nothing to the body, and ſo can have no medicinal operation, being unconquerable by ſo ſmall a heat, as that of the ſtomach, and other parts of the body.

Which objection might be plauſible enough to prevent one's aſcribing any medicinal virtues to them *a priori*; but can conclude nothing againſt what is warranted by ſo many facts, and obſervations; eſpecially when there are ſeveral particulars that obviate this objection.

For a vigorous loadſtone, though frequently harder than many *gems*, is known to emit copious effluvia; and there are many which have been found to have a manifeſt and inconvenient operation on the human body, by being wore in the pocket, or long held in the hand. Mr. Boyle has found divers tranſparent pebbles, which, when cut, would reſemble diamonds, that might be immediately brought to emit copious and ſtrong-ſcented ſteams: and if electrical attractions be owing to the effluvia of bodies excited by rubbing; very ſlight alterations may ſuffice to procure expirations from tranſparent *gems*, many of which are electrical, and even the hardeſt of all, *viz.* diamonds; one of which Mr. Boyle kept by him, which, upon a little friction, would attract very vigorouſly.

To that part of the objection which pretends *gems* not to be digeſtible by the heat of the ſtomach, it may be replied, that we do not know how far the digeſtion of things in the ſtomach is owing to heat: nor is it proved, that ſuch materials can have no operation on the body, without being digeſted, *i. e.* in paſſing through it, without undergoing any ſenſible change of bulk, figure, *&c.* as *gems*, when ſwallowed, are ſuppoſed to do.

For ſome chemiſts make a kind of bullets of regulus of antimony, which they call *pilulæ perpetuæ*; becauſe, when they have performed their operation in the body, and are caſt forth with the excrements, they may be uſed again, and again, for the ſame purpoſe: nor do we know what analogy there may be between ſome juices in the body, and thoſe mineral parts which impregnate *gems*. For though the oculus mundi be reckoned among the rare *gems*; yet, if one of the beſt ſort be, for a while, kept in common water, it will undergo an alteration obvious to the eye.

Add, that Mr. Boyle has, without heat, obtained a manifeſt tincture from ſeveral hard bodies, and even from a tranſparent ſort of *gems*, by means of a faint liquor diſtilled from a vegetable ſubſtance, as harmleſs, and as plentifully eaten, as bread: and whether ſome juices of the body, aſſiſted by the natural heat thereof, may not ſerve for menſtrua to ſome *gems*, we will not ſay: but even the natural heat of a human ſtomach, nay, perhaps of the external parts of the body, may be able, though not to digeſt precious ſtones, yet to fetch out ſome of their virtues: for, it is certain, it makes a ſenſible alteration in the hardeſt ſort of them. Witneſs a diamond of Mr. Boyle's, whoſe electrical faculty might be excited, without rubbing, only by a languid degree of adventitious heat; and another, which, by means of water made a little more than lukewarm, might be brought to ſhine in the dark. See Phosphorus.

Laſtly, If it be yet objected, that it is not likely *gems* ſhould part with any effluvia, or portions of themſelves, inaſmuch as they loſe none of their weight; it may be anſwered, that the antimonial glaſs and cup imbue wine, and other liquors, with a ſtrong emetic quality, without undergoing any ſenſible diminution of weight. Add, that though common water be not allowed a menſtruum fit to draw any thing from mercuy; yet both Helmont, and others, inform us, that a large quantity of it, being kept a day, or two, upon a ſmall proportion of that drug, will acquire a virtue of killing worms, though the mercury retains its former weight.

Gem, Gemma, in botany, an eye. See Gemma.

GEMARA*, or Ghemara, the ſecond part of the Babylonic Talmud.

* The word גמרה *gemara* is commonly ſuppoſed to denote a ſupplement; but, in ſtrictneſs, it rather ſignifies complement, perfection: being formed of the Chaldee גמר *gemar*, or *ghemar*, to finiſh, perfect, or complete, any thing.

The rabbins call the Pentateuch, ſimply, the *law*. The firſt part of the Talmud, which is only an explication of that law, or an application thereof to particular caſes, with the deciſions of the antient rabbins thereon, they call the *miſchna*, i. e. ſecond law: and the ſecond part, which is a more extenſive and ample explication of the ſame law, and a collection of deciſions of the rabbins poſterior to the *miſchna*, they call *gemara*, q. d. perfection, completion, finiſhing; by reaſon they eſteem it the finiſhing of the law, or an explication, beyond which there is nothing farther to be deſired.

The *gemara* is uſually called, ſimply, *talmud*, the common name of the whole work. In this ſenſe we ſay, there are two *gemara's*, or talmuds; that of Jeruſalem, and that of Babylon: though, in ſtrictneſs, the *gemara* is only an explication of the *miſchna*, given by the Jewiſh doctors in their ſchools; much as the commentaries of our ſchool-divines on St. Thomas, or the maſter of the ſentences, are an explication of the writings of thoſe authors.

A commentary, Monſ. Tillemont obſerves, was wrote on the *miſchna*, by one Jochanan, whom the Jews place about the end of the ſecond century: but Fa. Morin proves, from the work itſelf, wherein mention is made of the Turks, that it was not wrote till the time of Heraclius, or about the year 620: and this is what is called the *gemara*, or *talmud of Jeruſalem*; which the Jews do not uſe or eſteem much, by reaſon of its obſcurity.

They ſet a much greater value on the *gemara*, or *talmud of Babylon*, begun by one Aſa; diſcontinued for ſeventy-three years, on occaſion of the wars with the Saracens and Perſians; and finiſhed by one Joſa, about the cloſe of the ſeventh century.

Though the name talmud, in its latitude, includes both the *miſchna*, and the two *gemara's*; yet is it properly that of Aſa and Joſa, alone, which is meant under that name,

This the Jews prize above all their other writings, and even ſet it on a level with Scripture itſelf: in effect, they conceive it as the word of God, derived by tradition from Moſes, and preſerved, without interruption, to their time.—Ra. Jehuda, and afterwards R. Jochanan, R. Aſa, and R. Joſa, fearing the traditions ſhould be loſt in the diſperſion of the Jews, collected them into the *miſchna* and the *gemara*.

GEMATRIA*, or Gametria, the firſt kind of artificial cabbala uſed by the Jews.

* The word is formed from the rabbinical Hebrew גימטריא; formed by corruption of the Greek *γεωμετρια*.

Gematria is a geometrical or arithmetical method of explaining words; whereof there are two kinds: the firſt bearing a more immediate relation to arithmetic, and the latter to geometry.

The firſt conſiſts in taking the numerical value of each letter in a word, or phraſe, and giving it the ſenſe of ſome other word whoſe numerical letters, taken after the ſame manner, make the ſame ſum.—For it is to be obſerved, that neither the Hebrews, nor Greeks, have any other numeral figures, beſide the letters of the alphabet.

Thus, a cabbaliſt, taking the two firſt words in Geneſis, בראשית ברא, and by addition getting the ſum total of all the numbers, ſignified by thoſe letters, finds that theſe two words ſignify the ſame as thoſe other three, בראש : השנה נברא. For, as to the firſt; ב, is 2; ר, 200; א, 1; ש, 300; י, 10; ת, 400; ב, 2; ר, 200; and א, 1: which, together, make 1116. And as to the latter; ב, ſignifies 2; ר, 200; א, 1; ש, 300; ה, 5; נ, 50; ש, 300; ה, 5; נ, 50; ב, 2; ר, 200; and א, 1: which, ſummed up, yield the ſame number 1116.

Whence the cabbaliſt concludes, בראשית ברא, *in the beginning he created:* ſignifies the ſame thing as בראש השגה גברא, *it was created at the beginning of the year:* and, accordingly, the received opinion of the cabbaliſts is, that the world was created at the beginning of the month Thiſri, which was antiently the firſt month in the year, and anſwers to our firſt month in autumn; *viz.* September.

So, again, in the prophecy of Jacob, *Gen.* xlix. 10. the words יבא שולה are underſtood of the Meſſiah; by reaſon they make the ſame number with משיח, which ſignifies the Meſſiah.

The ſecond kind of *gematria* is much more obſcure, and difficult; and, accordingly, is leſs uſed. It is employed in ſeeking for abſtruſe and hidden interpretations in the dimenſions and parts of the buildings mentioned in Scripture, by dividing, multiplying, &c. thoſe meaſures by each other.—Of this we ſhall give an example from ſome Chriſtian cabbaliſts.

The Scripture ſays, that Noah's ark was 300 cubits long, 50 wide, and 30 high: now, the cabbaliſt takes the length for the baſis of his operations; 300, in the Hebrew, is expreſſed by the letter ש; which length, divided by the height 30, gives the quotient 10, the Hebrew character whereof is י: this is to be placed on the right ſide of ש: he then divides the ſame length by the width, 50; the quotient whereof, 6, is expreſſed by a ו; which, being placed on the left ſide of ש, makes, together with the other two letters, the name JESUS, ישו.—Thus, by the rules of the cabbala, it appears, that there is no ſalvation but in Jeſus Chriſt; as, at the deluge, no perſon was ſaved but thoſe in the ark.

After the like manner is the ſame name ישו found in the dimenſions of Solomon's temple.—But it is rather an injury than an advantage to the Chriſtian religion, to ſupport it by ſuch frivolous evidences.

GEMELLES, in heraldry, a bearing of bars by pairs, or in couples, in a coat of arms.—He beareth gules on a chevron argent, three bars *gemelles* ſable, by the name of Throgmorton. See BAR.

GEMELLUS, in anatomy, a muſcle of the arm, called alſo *biceps externus*, as having two heads.—See Tab. *Anat.* (Myol.) *fig.* 1. *n.* 26. *fig.* 6. *n.* 14. *fig.* 7. *n.* 13. 13. 13. 13. ſee, alſo, the article BICEPS.

One of the heads of this muſcle riſes tendinous from the upper-part of the inferior coſta of the ſcapula: whence paſſing between the muſcles to the back-part of the humerus, it joins the other head, and both run together to their inſertion at the ancon, or tip of the elbow.

The *gemellus* is the firſt extenſor of the cubit, and is by many reckoned two diſtinct muſcles; the firſt called *longus*, the latter *brevis*.

GEMINATED *column*. See the article COLUMN.

GEMINI, in aſtronomy, the *twins*; a conſtellation, or ſign of the zodiac, the third in order, repreſenting Caſtor and Pollux. See SIGN, and CONSTELLATION.

The ſtars in the ſign *Gemini*, in Ptolemy's catalogue, are 24; in Tycho's, 29; in the Britannic catalogue, 89. The order, names, longitudes, latitudes, magnitudes, &c. whereof, are as follow:

Names and ſituations of the ſtars.	Signs	Longit.	Latitude.	Mag.
		° ′ ″	° ′ ″	
That preced. Caſtor's foot, Προπους	♊	26 37 24	0 12 19 A	4
		27 13 25	0 9 50 B	8
		27 54 29	0 21 05 A	8
		28 5 24	0 28 05 A	7
		28 18 11	0 57 59 B	7
5				
		28 30 25	0 32 35 A	7
In preced. foot of Caſtor		29 6 43	0 56 00 A	4
		29 23 55	0 32 20 B	7 8
		29 33 5	0 18 48 B	7
		00 0 9	0 11 25 B	8
10				
	♋	0 5 39	0 3 40 B	8
		0 6 35	0 8 05 A	8
Subſeq. in the ſame foot		0 58 10	0 51 22 A	3
		1 38 30	1 42 18 A	7 8
		1 54 12	0 32 25 A	7
15				
		2 9 43	2 32 13 A	7
		2 13 30	2 50 09 A	7
In extrem. of Caſtor's hind foot		2 38 20	3 06 03 A	4
		3 19 16	7 22 33 A	7
		3 23 4	5 29 15 A	7 8
20				
		3 38 19	5 28 26 A	7
		3 27 46	4 46 30 B	6
		3 50 57	3 48 39 A	7
		4 20 7	6 14 57 A	7
		4 6 16	5 47 05 B	6
25				
Lucid in foot of Pollux		4 46 18	6 47 19 A	2 3
		4 24 39	5 4 50 B	6
		4 48 34	5 2 43 B	7
		5 48 2	5 27 34 A	5
In Caſtor's upper knee		5 36 37	2 1 30 B	3
30				
		5 30 22	5 52 00 B	6
		5 35 25	5 51 40 B	6 7
		6 31 48	9 50 24 A	7
In extrem. of Pollux's hind foot		6 52 53	10 07 57 A	5 4
		7 2 57	10 20 13 A	7
35				

Names and ſituations of the ſtars.	Sign.	Longit.	Latitude.	Mag.
		° ′ ″	° ′ ″	
	♋	7 41 5	6 45 50 A	6 7
In Caſtor's fore arm		6 47 30	10 58 25 B	4 3
		8 5 48	9 31 38 A	7
That preced. Pollux's knee		7 37 39	1 11 15 A	6
		8 9 46	2 29 9 B	6
40				
In the heel of Pollux's hind foot		9 8 19	9 40 15 A	6
		8 53 7	3 15 36 B	6 7
		9 2 13	3 7 12 B	6
In Caſtor's thigh		9 52 20	1 30 14 B	6
In hind knee of Pollux		10 39 40	2 5 27 A	3
45				
In Caſtor's groin		10 42 25	0 0 11 B	6 7
		12 11 13	6 34 25 A	6 5
In fore arm of Caſtor		11 9 53	7 43 3 B	5
		11 34 30	4 21 25 B	6
Loweſt in Caſtor's loins		12 9 12	1 41 5 B	6
50				
		12 3 8	3 17 36 B	7
		13 13 35	7 13 25 A	7
		13 21 51	6 13 13 A	6 7
Upper in Caſtor's loins		12 33 46	2 29 56 B	5
That againſt Pollux's leg		14 27 14	5 40 37 A	5
55				
In Pollux's groin		14 11 20	0 13 7 A	3
In Pollux's belly		14 49 39	1 40 58 A	6 7
That againſt Pollux's ſide		14 32 05	2 55 41 B	5 6
		14 49 33	0 50 57 B	7 8
		14 23 25	5 31 6 B	7
60				
In hind ſhoulder of Caſtor		14 38 10	5 43 35 B	4 5
South againſt Pollux's ſide		16 00 45	1 41 55 A	6
Againſt Caſtor's ear		14 44 46	9 45 10 B	5
North againſt Pollux's ſide		16 01 29	0 29 28 A	6
Againſt Caſtor's hind ſhoulder		15 22 58	6 9 23 B	6
65				
Contiguous thereto, but more S.		15 30 51	5 58 20 B	7
In the head of the foremoſt twin,		15 55 20	10 3 48 B	1 2
(Caſtor		18 13 58	6 2 17 A	7 8
Preced. of 4 under Pollux's ſide		18 15 24	5 50 21 A	6
Subſeq. in Caſtor's ſhoulder		17 01 34	5 11 1 B	5
70				
		16 10 28	13 18 13 B	6
Over Caſtor's head		16 23 22	12 52 49 B	5
		17 35 36	6 26 15 B	6
		17 43 29	6 14 26 B	7
Second under Pollux's ſide		19 20 32	3 47 19 A	6
75				
Between the two heads		18 17 56	7 25 46 B	5
Over Pollux's hind ſhoulder		19 01 13	4 24 00 B	6
In the hind ſhoulder of Pollux		19 20 18	3 2 23 B	4 5
In the head of Pollux, and called		18 56 09	6 39 27 B	2
(by his name		20 12 59	0 57 03 A	7
80				
Over Pollux's head		18 20 47	12 1 41 B	6
Third under Pollux's ſide		20 45 53	2 40 59 A	6
		20 29 59	1 57 19 B	6
Preced. of thoſe that follow Pollux		20 55 12	5 44 38 B	6
		21 40 57	1 21 33 B	5
85				
Laſt of four under Pollux's ſide		22 43 34	0 54 41 A	7
Middle of thoſe that follow Pollux		22 54 28	7 11 26 B	5
		24 07 46	7 8 1 B	6
North of thoſe that follow Pollux		24 35 27	9 27 22 B	6
89				

GEMINI, in anatomy, two muſcles of the thigh, which ariſe from the protuberance of the iſchium, and are inſerted with the pyriformis into the dent at the root of the great trochanter.

GEMMA. See the article GEM.

Sal GEMMÆ is peculiarly uſed for rock ſalt, or ſalt dug out of mines.

The name *gemma* is applied hereto on occaſion of its luſtre, and brilliancy; which is not unlike that of cryſtal.

The principal mines of this ſalt are thoſe of Wiliſca, in Poland; thoſe of Eperie, in Upper Hungary; and thoſe of Cardonna, in Catalonia.

The chief uſe of this ſalt is for the powdering or pickling of meats, in places deſtitute of ſalt ſprings, &c. See SALT.

GEMMA, or GEM, among old botaniſts, the turgid bud of a vine*, or other tree, when it is beginning to bear; called alſo *oculus*, eye.

* *Gemma eſt a qua oriens uva ſe oſtendit.* Cic. *De Senect.* c. 15.

GEMONIÆ *ſcalæ**, or *gradus* GEMONII, among the Romans, were much the ſame as gallows, or gibbets, in England.

* Some ſay, they were thus denominated from the perſon who raiſed them; others, from the firſt criminals that ſuffered on them; and others, from the verb *gemo*, I ſigh, or groan.

The *gradus gemonii*, according to Publius Victor, or Sextus Rufus, was a place raiſed on ſeveral ſteps, from whence they precipitated their criminals: others repreſent it as a place whereon offenders were executed, and afterwards expoſed to public view.—The *gemoniæ ſcalæ* were in the tenth region of the city, near the temple of Juno. Camillus firſt appropriated the place to this uſe, in the year of Rome 358.

GEMOTE, or GEMOT, *conventus*, a Saxon word, denoting a meeting, or aſſembly *.

* *Omnis homo pacem habeat eundo ad* Gemotum *&* *rediens de* Gemoto, *niſi probatus fur fuerit.* LL. Ed. Conf. See WITTENA.

GENÆ *Quadratus.* See the article QUADRATUS.

GENDARMES, or GENS D'ARMES, *q. d.* men of arms; a term uſed among the French, for a ſelect body of horſe-guards; by reaſon that they ſucceeded the antient men of arms, who were armed at all points, and thence were called *gendarmes.*

At preſent, the troops of the king's guard de corps, the muſqueteers, and light horſe, are reputed to belong to the gendarmerie.

The *grand gendarmes*, ſometimes called ſimply the *gendarmes*, are a troop of gentlemen, to the number of about 250, who guard the king's perſon. The king himſelf is their captain; and one of the prime peers, the captain-lieutenant. When the king marches with all his houſhold troops, the *gens d'armes* cloſe the march.

Their device is, a thunder-bolt, falling from heaven, with the motto, *Quo jubet iratus Jupiter.* There are alſo, beſide theſe, *gens d'armes* of the queen, the dauphin, *&c.*

GENDARMERY, or GENS D'ARMERIE, the French cavalry; and particularly that of the king's houſhold.

The *gendarmery*, at preſent, is a body of horſe, conſiſting of ſixteen companies; *viz.* the Scotch gendarmes, the Engliſh gendarmes, the Burgundy gendarmes, and the Flemiſh gendarmes; which four companies compoſe the king's gens d'armes, or life-guard.

The other companies take their names from the princes who command them, as captains; *viz.* the queen's gendarmes; the queen's light horſe: the dauphin's gendarmes; the dauphin's light horſe: the duke of Burgundy's gendarmes; the duke of Burgundy's light horſe: the duke of Orleans's gendarmes, *&c.* each troop, at a medium, conſiſts of ſeventy-ſix gendarmes, or light horſe.

GENDER, GENUS, in metaphyſics. See GENUS, and KIND.

GENDER, in grammar, denotes a diviſion or diſtinction of nouns, or names, according to the different ſexes of the things they denote.

It has been thought proper, in order to render diſcourſe more expreſs and diſtinct, as alſo to embelliſh it by a variety of terminations, to contrive certain diverſities in adjectives, abcommodated to the ſubſtantives they are applied to: whence, from a regard to that notable difference there is between the two ſexes, all nouns ſubſtantives have been diſtinguiſhed into maſculine and feminine; and the nouns adjectives alſo varied to correſpond therewith.

But as there was an infinity of words, which had no proper relation, either to the one ſex, or the other; they had genders aſſigned them, rather out of caprice, than reaſon: and hence it is, that the *gender* of a noun is frequently dubious and fluctuating.

It ſhould here, however, be obſerved, that this inſtitution of *genders* was not made with deſign and deliberation, by the maſters of language; but was introduced by cuſtom and uſage. At firſt, there was only a difference between the names of animals, when ſpoke of males and females; and, by degrees, the ſame regulation was extended to other things: the grammarians have only noted and allowed, what uſage had been eſtabliſhed.

The oriental languages frequently neglect the uſe of *genders*; and the Perſian language has abſolutely none at all, which is no diſadvantage; the diſtinction of *genders* being in great meaſure uſeleſs.

The Latins, Greeks, *&c.* generally content themſelves to expreſs the different *genders* by different terminations, as *bonus equus*, a good horſe; *bona equa*, a good mare, *&c.* But in Engliſh we frequently go farther, and expreſs the difference of ſex by different words: as boar, ſow; boy, girl; buck, doe; bull, cow; cock, hen; dog, bitch; *&c.*

We have only about twenty-four feminines, diſtinguiſh'd from the males, by the variation of the termination of the male into *eſs*; of which number are abbot, abbeſs; count, counteſs; actor, actreſs; heir, heireſs; prince, princeſs; *&c.* which is all that our language knows of any thing like *genders.*

The eaſtern languages, as well as the vulgar languages of the weſt, have only two *genders*; the maſculine and feminine.

The Greek and Latin have likewiſe the neuter, common, and the doubtful *gender*; and beſides theſe, they have the epicene, or promiſcuous, which under one ſingle *gender*, and termination, includes both the kinds.

GENDER, in geometry.—Geometrical lines are diſtinguiſhed into *genders*, claſſes, or orders, according to the number of the dimenſions of the equation that expreſſes the relation between their ordinates, and the abſciſſes. See GEOMETRICAL *Line.*

GENDER, in botany.	See GENUS.	
GENDER, in muſic, *&c.*		

GENEALOGICA *Arbor.* See ARBOR.

GENEALOGY *, a ſeries or ſucceſſion of anceſtors, or progenitors; or, a ſummary account of the relations and kindred of a perſon, or family, both in the direct, and collateral lines.

* The word is Greek, γενεαλογια, which is formed of γενος, *genus, proſapia*, race, lineage; and λογος, *ſermo*, diſcourſe.

In divers chapters, and military orders, it is required, that the candidates produce their *genealogy*, to ſhew that they are noble by ſo many deſcents.

Genealogical table, *genealogical tree*, *genealogical trunk*, or *column*, &c. See ARBOR.—The *genealogical* degrees are uſually repreſented in circles, ranged over, under, and aſide of each other. The antients had the like; which they called *ſtemmata*, from a Greek word, ſignifying *crown*, *garland*, or the like.

GENERAL, ſomething that comprehends all, or extends to a whole genus, or kind.

We ſay, a *general* rule, *q. d.* an univerſal rule; a *general* loſs, *&c.* It is diſputed by many, whether Noah's flood was *general*, or no.

All the ſciences have ſome *general* principles, or axioms. See AXIOM. A *general* court: *general* councils are particularly called *oecumenical.* See OECUMENICAL.

GENERAL *aſſizes.*	See	ASSISE.
GENERAL *averment.*		AVERMENT.
GENERAL *council.*		COUNCIL.
GENERAL *diet.*		DIET.
GENERAL *fee tail.*		FEE-TAIL.
GENERAL *geography.*		GEOGRAPHY.
GENERAL *gravity.*		GRAVITY.
GENERAL *iſſue.*		ISSUE.
GENERAL *nature.*		NATURE.

GENERAL *officers*, in an army, are thoſe who do not only command over a ſingle company, or regiment; but whoſe office and authority extend over a body of ſeveral regiments of horſe and foot.

Such are lieutenant-generals, major-generals, generals of the horſe, of the foot; paymaſter-general, commiſſary-general, chirurgeon-general, muſter-maſter-general, *&c.*

The term is alſo now uſed in a more extenſive ſenſe; and comprehends ſuch as may command, by virtue of their rank, over ſeveral bodies of forces, though all of the ſame kind.—In which ſenſe brigadiers are *general* officers, notwithſtanding that they are attached to one kind of forces, either infantry, or cavalry.

The pay of a lieutenant-*general*, when in ſervice, is 4*l.* per day: of a major-*general*, 2*l.* of a brigadier-*general*, 1*l.* 10*s.* of a captain-*general*, 10*l.* See LIEUTENANT-*general*, MAJOR-*general*, &c.

We have alſo officers in the law, in the revenues, *&c.* diſtinguiſhed by the appellation of *general:* as, attorney-*general*, ſolicitor-*general*, &c. See ATTORNEY, and SOLICITOR.—Receiver-*general*, controller-*general*, &c. See RECEIVER, and CONTROLLER.

GENERAL *pauſe.*	See	PAUSE.
GENERAL *qualities.*		QUALITY.
States-GENERAL.		STATES.
GENERAL *tail.*		TAIL.

GENERAL *terms*, or *words*, are ſuch as expreſs or denote *general* ideas.

Ideas become *general*, by ſeparating from them the circumſtances of time, place, or any other ideas that may determine them to this or that particular exiſtence.

By this way of abſtraction they become capable of repreſenting more individuals than one; each of which having a conformity to that abſtract idea, is of that ſort.

All things, Mr. Locke obſerves, that exiſt, being particulars, it might be expected that words ſhould be ſo too in their ſignification; but we find it quite contrary; for moſt of the words that make all languages, are *general* terms.

This is the effect of reaſon and neceſſity: for, 1°, It is impoſſible that every particular thing ſhould have a diſtinct, peculiar name: becauſe it is impoſſible to have diſtinct ideas of every particular thing, to retain its name with its peculiar appropriation to that idea. 2°, It would be uſeleſs, unleſs all could be ſuppoſed to have the ſame ideas in their minds: for names applied to particular things, whereof one alone has the ideas in his mind, could not be ſignificant, or intelligible to another, who is not acquainted with all thoſe particular things which had fallen under his notice. 3°, It would be of no great uſe for the improvement of knowlege; which, though founded in particular things, enlarges itſelf by *general* views, to which things reduced into ſorts under general names, are properly ſubſervient.

In things, where we have occaſion to conſider and diſcourſe of individuals, and particulars, we uſe proper names: as in perſons, countries, cities, rivers, mountains, *&c.* Thus we ſee that jockeys have particular names for their horſes, becauſe they have often occaſion to mention this or that horſe particularly, when he is out of ſight.

The firſt ideas children get, are only particular; as thoſe of the nurſe, or mother; and the names they give them, are confined to theſe individuals: afterwards, obſerving that there are a great many other things in the world that reſemble them in ſhape, and other qualities, they frame an idea, which they find thoſe many particulars do partake in: to that they give, with others, the name, *man*, for example. In this they make nothing new, but only leave out of the complex idea they had of Peter, James, Mary, *&c.* that which is peculiar to each, and retain only what is common to all. And thus they come to have a *general* name, and a *general* idea.

By the ſame method they advance to more *general* names and notions: for, obſerving ſeveral things that differ from their idea of man, and which cannot, therefore, be comprehended under that name, to agree with man in ſome certain qualities; by retaining only thoſe qualities, and uniting them into one idea, they have another, more *general* idea; to which, giving a name, they make a term of a more comprehenſive extenſion.

Thus, by leaving out the ſhape, and ſome other properties ſignified by the name, man; and retaining only body, with life, ſenſe, and ſpontaneous motion; we form the idea ſignified by the name *animal.* After the ſame manner, the mind proceeds to body, ſubſtance, and at laſt to being, thing, and ſuch univerſal terms, which ſtand for any ideas whatſoever.

Hence we ſee the whole myſtery of genus and ſpecies, is nothing but abſtract ideas, more or leſs comprehenſive, with names annexed to them: this ſhews us the reaſon, why, in defining words, we make uſe of the genus; namely, to ſave the labour of enumerating the ſeveral ſimple ideas, which the next general term ſtands for.

From what has been ſaid, it is plain, that *general* and univerſal belong not to the real exiſtence of things: but are the inventions of the underſtanding, made by it for its own uſe, and concern only ſigns, either words, or ideas.

General words do not barely ſignify one particular thing; for then they would not be *general* terms, but proper names: neither do they ſignify a plurality; for then man and men would ſignify the ſame thing: but what they ſignify, is a ſort of things: and this they do, by being made ſigns of abſtract ideas in the mind; to which ideas, as things exiſting are found to agree, ſo they come to be ranked under that name, or to be of that ſort.

The eſſences then of the ſorts, or ſpecies of things, are nothing but theſe abſtract ideas.

It is not denied here, that nature makes things alike; and ſo lays the foundation of this ſorting and claſſing: but the ſorts or ſpecies themſelves are the workmanſhip of human underſtanding; ſo that every diſtinct abſtract idea is a diſtinct eſſence; and the names that ſtand for ſuch diſtinct ideas, are the names of things eſſentially different. Thus oval, circle, rain, and ſnow, are eſſentially different. See this further illuſtrated under **Essence**, and **Substance**.

General *verdict.*	See	**Verdict.**
Vicar-**General.**		**Vicar.**
General *wind.*		**Wind.**

General is alſo uſed, in a monaſtic ſenſe, for the chief of an order; or of all the houſes or congregations eſtabliſhed under the ſame rule.

Thus we ſay, the *general* of the Ciſtercians, the Franciſcans, *&c.*

Fa. Thomaſſin derives the origin of *generals* of orders, from the privileges granted by the antient patriarchs to the monaſteries ſituate in their capital cities. By ſuch means they were exempted from the juriſdiction of the biſhop, and immediately ſubjected to the of that patriarch alone.

General is alſo uſed, in the military art, for a particular march, or beat of drum; being the firſt which gives notice, commonly in the morning early, for the infantry to be in a readineſs to march.

GENERALISSIMO, called alſo *Captain*-**General**, and ſimply the **General**; is an officer, who commands all the military powers of a nation; who gives orders to all the other general officers; and receives no orders himſelf but from the king.

Monſ. Balzac obſerves, that the cardinal de Richelieu firſt coined this word, of his own abſolute authority, upon his going to command the French army in Italy.

GENERATED, or **Genited**, is uſed, by ſome mathematical writers, for whatever is produced, either in arithmetic, by the multiplication, diviſion, or extraction of roots; or in geometry, by the invention of the contents, areas, and ſides; or of extreme and mean proportionals, without arithmetical addition, and ſubtraction. Harris.

GENERATING *line*, or *figure*, in geometry, is that which, by its motion or revolution, produces any other figure, plane, or ſolid. See **Genesis**.

GENERATION, in phyſics, denotes the act of procreating, or producing a thing which before was not: or, the total change or converſion of a body into a new one, which retains no ſenſible part, or mark of its former ſtate.

Thus, fire is ſaid to be *generated*, when we perceive it to be where before was only wood, or other fuel; or, when the wood is ſo changed, as to retain no ſenſible character of wood: thus, alſo, a chick is ſaid to be *generated*, when we perceive the chick, where before was only an egg; or when the egg is changed into the form of a chick.

In *generation*, there is not properly any production of new parts, but only a new modification or manner of exiſtence of the old ones; by this, *generation* is diſtinguiſhed from *creation.*

It is diſtinguiſhed from *alteration*, in that the ſubject, in this latter, remains apparently the ſame; and only the accidents, or affections, are changed: as when the ſame body is to-day well, and to-morrow ſick; or that braſs, which before was round, is now ſquare.

Laſtly, *generation* ſtands oppoſite to *corruption*, which is the utter extinction of a former thing: as, when that which before was wood, or an egg, is no longer the one or the other; whence it appears, that the *generation* of one thing is the corruption of another.

The Peripatetics explain *generation* by a change, or paſſage from a privation, or want of a ſubſtantial form, to the having of ſuch a form.

The moderns allow of no other change in *generation*, than what is local: according to them, it is only a tranſpoſition, or new arrangement of parts; and thus, the ſame matter ſhall ſucceſſively undergo an infinity of *generations.*

A grain of wheat, *e. gr.* is committed to the ground: this, imbibing the humidity of the ſoil, becomes turgid, and dilates to ſuch degree, that it becomes a plant; and, by a continual acceſſion of matter, ripens by degrees into an ear; and at length into new ſeed. This ſeed, ground in the mill, appears in form of flour; which, mixed up with water, makes a paſte; whereof, with the addition of yeſt, fire, *&c.* bread is *generated:* and this bread, broken with the teeth, digeſted in the ſtomach, and conveyed through the canals of the body, becomes fleſh.

Now, in all this ſeries of *generations*, the only thing effected, is a local motion of the parts of the matter, and their ſettling again in a different order; ſo that, in reality, whereever there is a new arrangement or compoſition of elements, there is a new *generation*; and therefore *generation* is finally reducible to motion.

Generation is more immediately underſtood of the production of animal and vegetable bodies, from ſeed, or the coition of others of different ſexes; but of the ſame genus, or kind.

Some modern naturaliſts maintain, after Monſ. Perrault, that there is not properly any new *generation:* that God created all things at firſt: and that what we call *generations*, are only augmentations and expanſions of the minute parts of the bodies of ſeeds; ſo that the whole ſpecies, to be afterwards produced, were really all formed in the firſt, and incloſed therein; to be brought forth and diſcloſed to view in a certain time, and according to a certain order and œconomy.

Thus, Dr. Garden: ‘ It is moſt probable, that the ſtamina ‘ of all the plants and animals that have been, or ever ſhall ‘ be in the world, have been formed ab origine mundi, by ‘ the Almighty Creator, within the firſt of each reſpective ‘ kind. And he who conſiders the nature of viſion, that it ‘ does not give us the true magnitude, but only the propor‘ tion of things; and that what ſeems to our naked eye but ‘ a point, may truly be made up of as many parts as appear to ‘ be in the whole univerſe; will not think this an abſurd or ‘ impoſſible thing.’ *Mod. Theor. of Generat.*

The manner, wherein the ſeed of the male animal acts on that of the female, in order to impregnate, and render it prolific, has long been inquired after; and yet remains ſtill a myſtery. Some, with Ariſtotle, hold the male ſemen to do the office of a coagulum; and the female that of milk: which ſome later authors have improved on, by ſuppoſing the male ſeed an acid; and the female an alcali.—Others conſider the thicker ſeed of the male, as the flour; and the thinner ſeed of the female, as water; out of which two an animal paſte is wrought, and baked by the heat of the womb.—But the moderns are generally agreed, that what effect ſoever the male ſeed produces on the female, it is by motion and mechanics, that it produces it.

Generation *of animals*, or *animal* **Generation**, is a proceſs in the œconomy of nature, very difficult to be traced. The parts concurring hereto are numerous; and their functions are moſtly diſcharged in the dark.

The antients diſtinguiſhed two kinds of *generation: regular*, called *univocal*; and *anomalous*, called alſo *equivocal*, or *ſpontaneous:*

The firſt is that effected by parent-animals of the ſame kind; as that of men, birds, beaſts, *&c.*—The ſecond was ſuppoſed effected by corruption, the ſun, &c. as that of inſects, frogs, &c. But this latter kind is now generally and deſervedly exploded.

There are two principal theories, or methods of accounting for the *generation* of animals: the one ſuppoſes the embryo, or fœtus, to be originally in the ſeed of the male; the other, in the ovum, or egg of the female.

The *firſt* ſuppoſes the animalcules found in the male ſeed, to be the firſt rudiments of the fœtus; and that the female only furniſhes a proper nidus, and nutriment, to bring them forwards.

The *ſecond* ſuppoſes the firſt rudiments of the animal to be in the ova; and that the male ſeed only ſerves to warm, cheriſh, and ripen the ova, till they fall off out of the ovary into the womb.

The *firſt* ſyſtem is well illuſtrated by Dr. Geo. Garden.—That author, upon comparing the obſervations and diſcoveries of Harvey, Malpighi, De Graaff, and Leewenhoeck, together, concludes it moſt probable, “ That all animals are “ ex animalculo: that theſe animalcules are originally in “ ſemine marium, and not in that of the female; but that “ they can never come forward, nor be formed into animals, “ without the ova in the female.”

The 1ſt of theſe points he argues from the three following obſervations.—

1°, That ſomething has often been obſerved by Malpighi, in the cicatricula of an egg before incubation, like the rudiments of an animal, in form a tadpole.

2°, From the ſudden appearance and diſplaying of all the parts, after incubation, it ſeems probable, that they are not then actually formed out of a fluid; but that the ſtamina of them have been formerly there exiſtent, and are now expanded.—The firſt part of the chick, which is diſcovered with the naked eye, is the punctum ſaliens, and that not till three days and nights of incubation are paſt; on the fifth day the rudiments of the head and body appear. This made Dr. Harvey conclude, that the blood had a being before any other part of the body, and that from it all the organs of the fœtus were both formed and nouriſhed: but by Malpighi's obſervations it appears, that the parts are then only ſo far extended, as to be made viſible to the naked eye; and that they were actually exiſtent before, and diſcernible by glaſſes. After a further incubation of thirty hours, we ſee the head, the eyes, and the carina, with the vertebræ, diſtinct, and alſo the heart. After forty hours, its pulſe is viſible, and all the other parts more diſtinct, which cannot be diſcerned by the naked eye, before the beginning of the fifth day: from whence it ſeems very probable, that even the ſo early diſcovery of thoſe parts of the fœtus by the microſcope, is not the diſcerning of parts newly formed; but only parts more dilated and extended by receiving of nutriment from the colliquamentum; ſo that they ſeem all to have been actually exiſtent before the incubation of the hen. And what Swammerdam has diſcovered in the tranſmutation of inſects, gives no ſmall light to this; ſince he makes it appear, that in thoſe large eruca's which feed upon cabbage, if they be taken about the time they retire to be transformed into aurelia's, and plunged often in warm water, to make a rupture of the outer ſkin; you will diſcern, thro' the tranſparency of their ſecond membrane, all the parts of the butterfly, the trunk, wing, feelers, &c. folded up: but that, after the eruca is changed into an aurelia, none of theſe parts can be diſcerned; being ſo much drenched with moiſture; though they be there actually formed.

3°, From the analogy between plants and animals. All vegetables, we ſee, do proceed ex plantula; the ſeeds of vegetables being no other but little plants of the ſame kind, folded up in coats and membranes: whence we may infer, that ſo curiouſly an organized creature, as an animal, is not the ſudden product of a fluid, or colliquamentum, but does much rather proceed from an animalcule of the ſame kind, and has all its little members folded up according to their ſeveral joints and plicatures, which are afterwards enlarged and diſtended, as we ſee in plants.

The ſecond point, which our late diſcoveries have made probable, is, that theſe animalcules are originally in the ſeed of the male, and not in the female.—For,

1°, There are obſerved innumerable animalcula in ſemine maſculino, of all animals. Leewenhoeck has made this ſo evident, that there ſeems little room to doubt of it.

2°, We obſerve the rudiments of a fœtus in eggs which have been fecundated by the male; though no ſuch thing is viſible in thoſe not yet fecundated. Malpighi, in his obſervations, makes it very probable, that theſe rudiments proceed originally from the male; and not from the female.

3°, The reſemblance between the rudiments of the fœtus in ova, both before and after incubation, with the animalcule, makes it very probable, that they are one and the ſame. The ſame ſhape and figure, which Mr. Leewenhoeck gives us of the animalcule, Malpighi gives of the rudiments of the fœtus, both before and after incubation; yea, and even the fœtus's of viviparous animals appear ſo at firſt to the naked eye; whence Dr. Harvey acknowleges, that all animals, even the moſt perfect, are formed of a worm.

4°, This gives a rational account of many fœtus's at one birth, eſpecially that of the counteſs of Holland: and how, at leaſt, a whole cluſter of eggs in a hen are fecundated by one coition of the male.

5°, This gives a new light, as it were, to the firſt prophecy concerning the Meſſiah, that “ the ſeed of the woman ſhall bruiſe the head of the ſerpent,” all the reſt of mankind being thus moſt properly and truly the ſeed of the man.

6°, The analogy already mentioned, which we may rationally ſuppoſe between the manner of the propagation of plants and animals, does likewiſe make this probable. Every herb and tree bears its ſeed after its proper kind; which ſeed is nothing elſe but a little plant of that kind; which, being thrown into the earth, as into its uterus, ſpreads forth its roots, and receives thence its nouriſhment; but has its form within itſelf: and we may rationally conjecture ſome ſuch analogy in the propagation of animals.

The 3d thing, which our diſcoveries make probable, is, that animals cannot be formed of theſe animalcula, without the ova in feminis, which are neceſſary for ſupplying them with proper nutriment; and this is evinced from the following conſiderations.

1°, It appears, that an animalcule cannot come forward, if it do not fall into a proper nidus: this we ſee in the cicatriculæ in eggs; and though a million of them ſhould fall into one egg, none of them would come forward, but what were in the centre of the cicatricula; and perhaps the nidus, neceſſary for their formation, is ſo proportioned to their bulk, that it can hardly contain more than one animalcule; which may be the reaſon why there are ſo few monſters. This, we ſee, is abſolutely neceſſary in the oviparous kinds; and the only difference which lies between them and the viviparous, ſeems to be this, that in the latter the ova are properly nothing but the cicatricula, with its colliquamentum, ſo that the fœtus muſt ſpread forth its roots into the uterus, to receive its nouriſhment; but the egg in oviparous animals may be properly termed an uterus, in relation to the fœtus; as it contains not only the cicatricula, with its amnion and colliquamentum, which is the immediate nouriſhment of the fœtus, but alſo the materials which are to be converted into that colliquamentum; ſo that the fœtus ſpreads forth its roots no farther than into the white and yolk of the egg, from whence it derives all its nouriſhment. Now, that an animalcule cannot come forward without ſome ſuch proper nidus, will not be denied; for, if there were nothing needful but their being thrown into the uterus, we do not ſee why many hundreds of them ſhould not come forward at once, at leaſt while ſcattered in ſo large a field.

2°, That this cicatricula is not originally in utero, ſeems evident from the frequent conceptions which have been found extra uterum: ſuch as the child which continued twenty-ſix years in the woman of Thoulouſe's belly; and the little fœtus found in the abdomen of Mad. de St. Mere, together with the teſticle torn, and full of clotted blood: ſuch alſo ſeem to be the fœtus in the abdomen of the woman of Copenhagen, mentioned in the *Nouv. de la Rep. des Lett.* for Sept. 1685. all the members of which were eaſily to be felt through the ſkin of the belly, and which ſhe had carried in her belly for four years; the ſeven years gravidation related by Dr. Cole; and many other the like inſtances. Now, granting once the neceſſity of a proper nidus for the formation of an animalcule into an animal, theſe obſervations make it probable, that the teſtes are the ovaria appropriated for this uſe: for though the animalcule's coming thither in ſuch caſes, may ſeem to be extraordinary, and that uſually the impregnation is in utero; yet it may be collected from hence, that the cicatriculæ or ova to be impregnated are in teſtibus femineis; for if they were not ſo, the accidental coming of animalcules thither could not make them come forward more than in any other part of the body; ſince they cannot be formed and nouriſhed without a proper nidus.

3°, It is acknowleged, that the fœtus in utero, for ſome conſiderable time after conception, has no connexion with the womb; that it ſits wholly looſe in it, and is no other than a little round egg, with the fœtus in the midſt; which ſends forth its umbilical veſſels by degrees, and at laſt lays hold of the uterus. Now, from hence it ſeems evident, that the cicatricula, which is the fountain of the animalcule's nouriſhment, does not ſpout from the uterus, but has its origin elſewhere; and falls in thither as into a fit ſoil, from whence it may draw nutriment for the growth of the fœtus: elſe it cannot be eaſily imagined how it ſhould not have an immediate connexion with the uterus, from the time of conception.

It is indeed difficult to conceive, how theſe eggs ſhould be impregnated per ſemen maris, both becauſe there is no connexion between the fallopian tubes, and the ovary for its tranſmiſſion; and for that Dr. Harvey could never diſcover any thing of it in utero: but as to the laſt, M. Leewenhoeck has cleared that difficulty by the diſcovery of innumerable animalcula in the tubæ, or cornua uteri, and thoſe living a conſiderable time after coition. And as to the former, we may either ſuppoſe, that there is ſuch an inflation of the tubæ, at the time of coition, as makes them embrace the ovaries; and ſuch an approach of the uterus and its cornua, as that it may eaſily tranſmit the ſeed into the ovary; or elſe, that the ova are impregnated by the animalcules after they deſcend into the uterus, and not in the ovary. The former ſeems probable for this reaſon, that at leaſt a whole cluſter of eggs in a hen will be fecundated by one tread of the cock: now this fecundation ſeems to be in the vitellary, and not in the uterus, as the eggs paſs along from day to day: for it can hardly be ſuppoſed, that the animalcules ſhould ſubſiſt ſo long, being ſcattered looſely in the uterus, as to wait there for many days, for the fecundation of the eggs as they paſs along. The latter conjecture has this to ſtrengthen it; that the animalcules are found to live a conſiderable time in the uterus; and that, if they ſhould impregnate the ova in the ovary itſelf, the fœtus would increaſe ſo faſt, that the ova could not paſs through the tubæ uteri; but would either burſt the ovary, or fall down into the abdomen, from the orifices of the tuba; and from hence probably proceed thoſe extraordinary conceptions in the abdomen, out of the uterus. Thus much is urged for the ſyſtem *ab animalculo*.

The retainers to the ſyſtem of *generation ab ovo* contend, that the rudiments of the fœtus are laid in the ovary, and that the female furniſhes the whole matter of the body; which they chiefly ſupport from the conformation in rabbets, ſheep, cows, *&c.* where the vagina of the womb is ſo long, and ſinuous, that it is ſcarce poſſible the male ſeed ſhould ever arrive within the body of the uterus; eſpecially in cows, whoſe vagina is filled with a thick, viſcid ichor, and the inner orifice of the womb is exactly cloſed: beſide, that the thickneſs of the membranes of the ova ſhould ſeem impenetrable to ſo craſs a matter as the male ſeed. Add, that if animalcula be found in the male ſeed, which, however, will admit of ſome diſpute (that inteſtine motion and agitation of the groſſer particles thereof, which gave riſe to the opinion, being accountable for, from the common laws of warm fluids); yet are the ſame obſerved in vinegar, pepper, water, *&c.* Add, that it is highly improbable, that thoſe animalcules ſhould contain the rudiments of a future body; ſince their large numbers would produce too plentiful an offspring; inſomuch that it would be neceſſary for 9999 parts of them to be in vain, and periſh: which is contrary to the œconomy of nature in other things.

Analogy is likewiſe urged in favour of this ſyſtem: thus all plants are maintained to ariſe from eggs; ſeeds being no other than eggs under another denomination. All oviparous animals do unexceptionably ariſe from eggs; which the females caſt forth; and it is highly probable, that the viviparous only differ from the oviparous, in that the females lay and hatch their eggs within themſelves.

Againſt this hypotheſis it is urged, that what are uſually called *ova*, or *eggs*, in women, are no other than little cells, or bladders, full of a certain liquor: and how can a drop of liquor paſs for an egg? Add, that theſe imaginary eggs have no proper membrane belonging to them, nor any covering but that of the cell; which ſeems ſo inſeparable therefrom, that, when they are diſcharged, it is hard to conceive how they ſhould take it with them. And beſide, how ſhould they make themſelves a paſſage through the common membrane wherewith the ovary is inveſted, which is of ſo cloſe a texture, that it muſt ſeem abſolutely impenetrable by a round body of ſo ſoft a conſiſtence as one of theſe veſicles? Laſtly, veſiculæ, in all reſpects perfectly like ova, have been found in other parts of the body, where it is apparent they could not ſerve for any purpoſes of *generation*. *Mem. de l'Acad. Royal. des Scien.* an. 1708. 1709.

To this it is anſwered, that ova or veſiculæ have been actually found, in diſſections, detached and ſeparated from the ovary, and the ruptures in the membrane of the ovary, thro' which they had paſſed, remaining ſtill viſible. M. Littre even obſerved ſome of theſe ſeparated ova ſpread with blood-veſſels, like thoſe in the yolks of birds eggs. Nay, more; the ſame author is poſitive, that he ſaw an embryo in one of the ova not yet ſeparated; and could diſcern its head, mouth, noſe, trunk, and funiculus umbilicalis, whereby it adhered to the membranes of the ovary. But this will come to be further conſidered under GENERATION *of man*.

Sir John Floyer ſtarts a difficulty, which ſeems to preſs equally againſt each ſyſtem, taken ſingly: it is fetched from monſters. In a mule, for inſtance, which is the production of a venereal copula between an aſs and a mare, the bulk of the body partakes of the form of the dam, and the feet, tail, and ears, of that of the ſire. Hence it is argued, that the rudiments of the greater part of the fœtus are laid in the ovum; and that the impregnation either conveys or changes the extremities. If the male ſupplied the animalcula, the fœtus ſhould always be of the ſame ſpecies as the male: if the female ſupply it, it ſhould be of her kind; whereas monſters are of both.

GENERATION *of man.*—As it is in human ſubjects that the gradual proceſs of *generation* has been principally inquired into, and the ſtructure and office of the organs ſubſervient thereto, chiefly examined; what the lateſt naturaliſts and anatomiſts have ſettled with regard thereto, is reſerved for this head.

The parts of *generation*, then, are different in the different ſexes.—Thoſe proper to the male, are the penis, the teſticles, the veſiculæ ſeminales, the vaſa deferentia, the paraſtatæ, and the vaſa præparantia; which ſee deſcribed each under its proper article, PENIS, TESTICLE, *&c.*

The parts of *generation* proper to the female are the pudendum, the clitoris, nymphæ, hymen, uterus, fallopian tubes, and ovaries, or teſtes. See GENITAL, CLITORIS, NYMPHÆ, HYMEN, MATRIX, FALLOPIAN *tubes*, and OVARIES.

The proceſs of *generation*, ſo far as the male contributes to it, is as follows.—The penis being erected by an affuſion of blood; as ſhewn under ERECTION; the glans at the ſame time tumefied; and the nervous papillæ in the glans much rubbed, and highly excited, in coitu; an ejaculatory contraction follows, by which the ſeed is preſſed out of the ſeminal veſicles, and expelled with ſome conſiderable force.

The proceſs of *generation* on the part of the female is thus: the clitoris being erected, after the like manner as the penis in man; and the neighbouring parts all diſtended with blood; they more adequately embrace the penis in coitu: and, by their intumeſcence, preſs out a liquor from the glands about the neck of the womb, to facilitate the paſſage of the penis.

At the ſame time, the fibres of the womb, contracting, open its mouth (which at other times is extremely cloſe) for the reception of the finer part of the ſeed.

Thus the ſeed, pregnant with animalcules, is conveyed, with ſome impetus, into the uterus; where being retained by the convulſive conſtriction of the inner membrane thereof, and further heated and agitated therein, it is prepared to impregnate the ovum.

During the act of coition, the fallopian tubes, growing ſtiff, embrace the ovaries with their ſtrong muſculous edges, like fingers; and compreſs them; till their mouths, being dilated and expanded by this embrace, force the egg, now ripened, into their cavities, and gradually drive it forwards, by their vermicular motion, till at laſt they protrude it into the cavity of the womb, to meet the ſeed, ſome of the animalcules whereof, entering the dilated pores of the glandulous membrane of the egg, are there retained, nouriſhed, grow to its navel, and ſuffocate the reſt of the leſs lively animalcula. And thus is conception performed.

Others rather ſuppoſe the ſeed conveyed from the uterus, through the fallopian tubes, to the ova; and thus take the impregnation to be firſt performed in the ovaries; or even in the tubæ themſelves, the ova and ſeed meeting by the way.

Others, conſidering the cloſeneſs of the mouth of the womb, and the thickneſs of the membranes of the ovaries, judge it impoſſible for the ſeed to paſs that way; and therefore ſuppoſe it taken up by the veins which open into the cavity of the vagina, or even womb; where circulating, it ferments with the maſs of blood; and hence all the ſymptoms which appear in conception. At length it enters and impregnates the egg by the ſmall twigs of arteries which are upon its membranes. This fermentation ſwelling the membranes of the tubæ, they open their cavity, and make room for the ova to paſs into the womb.

The egg impregnated, and cloſe ſhut up in the womb, ſwims in the humours thereof; which, growing more and more ſubtil, enter the patent pores found on one ſide the ovum, and ſoon diſtend, fill, and augment it; and there being further attenuated, nouriſh the embryo; thicken and expand the membranes of the ovum, eſpecially in that part by which it grew to the ovary; and thus form the rudiments of a placenta.

The ſame cauſes ſtill continuing, and the pores both of the placenta and the membranes being enlarged; the egg begins to fill the capacity of the womb; and at length its ſtem or calyx grows to the concave ſurface thereof: and thus is the navel-ſtring, or funiculus, formed. See *Funiculus* UMBILICALIS, *&c.* See alſo FOETUS.

This ſyſtem is founded on the ſuppoſition of animalcula in the male ſeed.—They who ſet them aſide as unconcerned in *generation*, account for it thus: the ſeed, containing volatile, oily, and ſaline parts, as appears from its fetid ſmell, oleaginous ſubſtance, *&c.* being lodged in the womb, and there further digeſted and exalted, grows yet more volatile, fetid, pungent, and ſtimulating; and thus, adding to the heat occaſioned by coition, vellicates the nervous fibres of that part, and occaſions a fermentation, and gentle inflammation; and by that means an extraordinary flux of humours to that, and the adjacent parts.

By this means the tubæ become rigid, and fit to graſp the ovaries, which are alſo heated by the effluvia of the ſemen, and the warmth of the parts ſurrounding. Upon this, there is a greater flux into the ovaries; till at length, the ova, ſome of them at leaſt, by ſuch greater ſupply of nouriſhment, increaſe in bulk; and as thoſe graſped by the edges of the tubæ will be kept warmeſt, and the greateſt flux be made thereto, they will ſooneſt be ripened, fall off, and be received by the tubæ, and conveyed to the womb: where growing, after the manner of the ſeeds of plants, the placenta at length takes hold of, and adheres to, the uterus; from which time the embryo begins to be nouriſhed after a different manner. See GESTATION; ſee alſo NUTRITION, and CIRCULATION.

GENERATION *of inſects*. See the article INSECT.

GENERATION *of plants* bears an admirable analogy to that of animals.—See the proceſs delivered at large under the article *Generation of* PLANTS.

The parts of *generation* of plants, are the flowers; and particularly the ſtamina, apices, farina fœcundans, and piſtils thereof. See FLOWER; ſee alſo STAMINA, FARINA, and PISTIL.

GENERATION *of minerals*, or foſſils. See MINERAL, and FOSSIL.

GENERATION *of muſhrooms*. See the article MUSHROOM.

GENERATION *of ſhells*. See the article SHELL.

GENERATION *of ſtones*. See STONE, SPAR, TROCHITES, and CRYSTAL.

GENERATION, in theology. The Father is ſaid to have produced his Word, or Son, from all eternity, by way of *generation*; on which occaſion the word *generation* raiſes a peculiar idea: that proceſſion, which is really effected in the way of underſtanding, is called *generation*, by reaſon the Word, in virtue thereof, becomes like to him from whom he takes his original; or, as St. Paul expreſſes it, is the figure, or image, of his ſubſtance, *i. e.* of his being and nature. See TRINITY, and PERSON.

And hence it is, that the ſecond Perſon in the Trinity is called the *Son*.

GENERATION is alſo uſed, though ſomewhat improperly, for genealogy; or the ſeries of children, iſſued from the ſame ſtock.—Thus, the goſpel of St. Matthew commences with *the book of the* generation *of Jeſus Chriſt*, &c.

The later, and more accurate tranſlators, inſtead of *generation*, uſe the word *genealogy*.

GENERATION is alſo uſed to ſignify a people, race, or nation; eſpecially in the literal tranſlations of the ſcripture: where the word generally occurs, where-ever the Latin has *generatio*; and the Greek, γενεα, or γενεσις.

Thus, "A wicked and perverſe *generation* ſeeketh a ſign, "&c. One generation paſſes away, and another cometh," &c.

GENERATION is alſo uſed in the ſenſe of an age, or the ordinary period of man's life.

Thus, we ſay, to the third, and fourth *generation*.—In this ſenſe, hiſtorians uſually reckon a *generation* the ſpace of thirty-three years, or thereabouts. See SECULUM.

Herodotus makes three *generations* in an hundred years; which computation appears, from the later authors of political arithmetic, to be pretty juſt. See ANNUITY, and POLITICAL *arithmetic*.

GENERIS *ſecundi*. See the article SECUNDI.

GENEROSA, a gentlewoman. See GENTLEMAN.

Generoſa is a good addition; and if a gentlewoman be named *ſpinſter*, in any original writ, appeal, or indictment, ſhe may abate and quaſh the ſame. 2 *Inſt*. fol. 668. See ADDITION.

GENESIS, the firſt book of the Old Teſtament; containing the hiſtory of the creation, and the lives of the firſt patriarchs.

The book of *Geneſis* ſtands at the head of the Pentateuch. Its author is held to be Moſes: it contains the relation of 2367 years; *viz.* from the beginning of the world, to the death of Joſeph.—The Jews are forbid to read the beginning of Geneſis, and the beginning of Ezekiel, before thirty years of age.

The Hebrews call this book *Bereſchith*, in regard it begins with that word, which in their language ſignifies *in principio*, or, in the beginning. It was the Greeks who gave it the name *Geneſis*, Γενεσις, *q. d.* production, generation; by reaſon it begins with the hiſtory of the production, or *generation*, of all beings.

Cedrenus makes mention of an apocryphal book, intituled the *little Geneſis*, *Geneſis parva*, containing ſeveral incidents, not in the other; ſome of which he has preſerved: particularly, that Cain was buried under the ruins of a houſe: that an angel taught Abraham the Hebrew tongue: that Maſtiphat, prince of the devils, adviſed God to order Abraham to ſacrifice his ſon, for a trial of his obedience: that the children of the Iſraelites were only caſt into the Nile for ten months, &c.

GENESIS, in geometry, denotes the formation of a line, plane, or ſolid, by the motion, or flux, of a point, line, or ſurface. See LINE, and SURFACE; ſee alſo POINT, FLUXION, and CURVE.

The *geneſis*, or formation, *e. gr.* of a globe, or ſphere, is conceived by ſuppoſing a ſemicircle to revolve upon a right line, drawn from one extreme thereof to the other; called its *axis*, or axis of circumvolution: the motion or revolution of that ſemicircle is the *geneſis* of the ſphere, &c. See AXIS, SPHERE, and GLOBE.

In the *geneſis* of figures, &c. the line, or ſurface, that moves, is called the *deſcribent*; and the line around which, or according to which, the revolution or motion is made, the *dirigent*.

GENET, or *Jennet*, in the manage, &c. a ſmall-ſized, well proportioned Spaniſh horſe.

Some alſo give the term *geneta* to well-made Italian horſes.

To *ride à la* GENETTA, is to ride in the Spaniſh faſhion, *i. e.* with the ſtirrups ſo ſhort, that the ſpurs bear upon the flanks of the horſe.—This is deemed a piece of gallantry in Spain, but not among us.

GENETHLIACI *, in aſtrology, perſons who erect horoſcopes; or pretend to foretel what ſhall befal a man, by means of the ſtars which preſided at his nativity.

* The word is formed of the Greek γενεθλη, origin, generation, nativity.

The antients called them *Chaldæi*, and, by the general name, *mathematici*: accordingly, the ſeveral civil and canon laws, which we find made againſt the mathematicians, only reſpect the *genethliaci*, or aſtrologers.

They were expelled Rome, by a formal decree of the ſenate; and yet found ſo much protection from the credulity of the people, that they remained therein unmoleſted.—Hence an antient author ſpeaks of them as *hominum genus, quod in civitate noſtra ſemper & vetabitur, & retinebitur*.

Antipater and Achinapolus have ſhewn, that genethliology ſhould rather be founded on the time of the conception, than on that of the birth. Vitruvius.

GENETHLIACUM, GENETHLIAC *poem*, is a compoſition in verſe, on the birth of ſome prince, or other illuſtrious perſon: wherein the poet promiſes him great honours, advantages, ſucceſſes, victories, &c. by a kind of prophecy or prediction.

Such is the eclogue of Virgil to Pollio, beginning,

Sicelides Muſæ, paulo majora canamus.

There are alſo *genethliac* ſpeeches, or orations; made to celebrate a perſon's birth-day.

GENEVA, a popular name for a compound water; which is or ought to be, procured from the berries of the juniper-tree, diſtilled with brandy, or malt-ſpirits.

* The word is formed from *genevre*, the French name of the juniper-berry.

GENEVIEVE, St. GENEVIEVE, or St. GENEVIEFVE,—fathers or religious of St. *Genevieve*, the name of a congregation of regular canons of the order of St. Auguſtine; eſtabliſhed in France.

The congregation of St. *Genevieve* is a reform of the Auguſtine canons. It was begun by St. Charles Faure, in the abbey of St. Vincent de Senlis, whereof he was a member, in the year 1618. The reform ſoon ſpread into other houſes; particularly that of Nôtre Dame d'Eu, and the abbey of St. *Genevieve* at Paris, chiefly by the intereſt of the cardinal de la Rochefoucaut, who was choſen abbot thereof in 1619. and in 1621. propoſed the reform to the religious of his abbey.

In the year 1634. the abbey was made elective; and a general chapter, compoſed of the ſuperiors of fifteen houſes who had now received the reform, choſe F. Faure coadjutor of the abbey of St. *Genevieve*, and general of the whole congregation. Such were its beginnings.

It has ſince increaſed very much, and it now conſiſts of above an hundred monaſteries; in ſome whereof the religious are employed in the adminiſtration of the pariſhes and hoſpitals; and in others, in the celebration of divine ſervice, and the inſtruction of eccleſiaſtics in ſeminaries for the purpoſe.

The congregation takes its name from the abbey of St. *Genevieve*, which is the chief of the order; and whoſe abbot is the general thereof.—The abbey itſelf took its name from St. *Genevieve*, the patroneſs of the city of Paris; who died in the year 512. Five years after her death, Clovis erected the church of St. *Genevieve* under the name and invocation of St. Peter; where her relics are ſtill preſerved, her ſhrine viſited, and her image carried with great proceſſions and ceremonies, upon extraordinary occaſions, as when ſome great favour is to be intreated of heaven.

GENIAL *, GENIALIS, an epithet, applied by the antients to certain deities, whom they ſuppoſed to preſide over the affair of generation.

* They were thus called *a gerendo*, from bearing; or, according to the correction of Scaliger and Voſſius, *a genendo*; to yean, produce. Yet Feſtus ſays, that they were alſo called *geruli*, which ſeems to require the former reading. M. Dacier, in a note, ſhews that *gerere* has the ſenſe of πραττειν.

Among the *genial* gods, *dii geniales*, ſays Feſtus, were water, earth, fire, and air, which the Greeks called *elements*.—The twelve ſigns were ſometimes alſo ranked in the number: as alſo the ſun, and moon.

GENICULI, in botany, the joints or knots, which appear in the ſhoots of plants. Whence botaniſts call thoſe marked therewith *geniculate plants*.

GENIOGLOSSI *, in anatomy, the name of a pair of muſcles, proceeding inwardly from the fore part of the lower jaw, under another called *geniohyoidæus*; and which, enlarging themſelves, are faſtened into the baſis of the tongue.—They ſerve to pull the tongue forward; and to thruſt it out of the mouth.

* The word is formed from γενυς, *mentem*, the chin; and γλωσσα, *lingua*, the tongue.

GENIOHYOIDÆUS *, in anatomy, a muſcle of the os hyoides, which, with its partner, is ſhort, thick, and fleſhy, ariſing from the internal parts of the lower jaw-bone, called the chin; and dilating themſelves, are ſoon leſſened again, and inſerted into the ſuperior part of the fore-bone of the os hyoides.—Theſe pull upwards and forwards the os hyoides, and aſſiſt the genioglоſſi in thruſting the tongue out of the mouth.

* The word is formed from γενυς, *mentum*, the chin; and ὑοειδες, *hyoides*.

GENITAL, Genitalis, in medicine, ſomething that relates to generation.

Genital parts, denote the parts in both ſexes employed in the affair of generation, otherwiſe called αιδοια, *pudenda* or *pudendum*. See *Tab. Anat.* (*Splanch.*) *Fig.* 8, 9, 10, 11, 13, 15, *&c.* See alſo Penis, Testicle, Clitoris, Hymen, *&c.*

Genital *gods*, *dii genitales*, are ſometimes uſed in the antient Roman poets for thoſe we otherwiſe call *indigetes*. See Indigetes.

Auſonius, in the argument of the fourth book of the *Æneid*, takes the word in a different manner: the *dii genitales*, he obſerves, were not ſuch as were born of human parents, were not thus called *quaſi geniti ex hominibus*, but rather becauſe they themſelves had begot human children.

GENITALIA, or Genitories, in anatomy, a name ſometimes given the teſtes, or teſticles of man; on account of their office in generation. See Testicle.

GENITED, in geometry. See Generated.

GENITES, γενητης, or Genetei, among the Hebrews, thoſe deſcended from Abraham, without any mixture of foreign blood.

The Greeks diſtinguiſhed by the name of *genites* ſuch of the Jews, as were iſſued from parents who, during the Babyloniſh captivity, had not allied with any gentile family.

GENITIVE, in grammar, the ſecond caſe of the declenſions of nouns.

The relation of one thing, conſidered as belonging in ſome manner to another, has occaſioned a peculiar termination of nouns, called the *genitive* caſe.

In Engliſh, the *genitive* caſe is made by prefixing the particle *of*; in French, *de*, or *du*, &c. though, in ſtrictneſs, there are no caſes at all in either of thoſe languages, inaſmuch as they do not expreſs the different relation of things by different terminations, but only by additional prepoſitions.

In the Latin, this relation is expreſſed in divers manners: thus we ſay, *caput hominis*, the head of a man; *color roſæ*, the colour of a roſe; *opus Dei*, the work of God, *&c.*

As the *genitive* caſe ſerves to expreſs very different, and even oppoſite relations, there ſometimes ariſes an ambiguity therefrom: thus in the phraſe *vulnus Achillis*, the wound of Achilles, the *genitive*, *Achillis* may either ſignify the relation of ſubject, in which ſenſe it is taken paſſively for the wound Achilles has received; or the relation of a cauſe, in which ſenſe it is taken actively for the wound Achilles has given: thus in that paſſage of St. Paul, *Certus ſum quod neque mors*, *neque vita*, *&c. nos poterit ſeparare a charitate Dei in Chriſto*, *&c.* The *genitive*, *Dei*, has been taken by interpreters in two different ſenſes; ſome giving it the relation of object, and underſtanding the paſſage of the love which the elect bear to God in Jeſus Chriſt; whereas others give it the relation of ſubject, and explain it of the love which God bears the elect in Jeſus Chriſt.

In the Hebrew tongue, the *genitive* caſe is marked after a manner very different from that of the Greek and Latin: for whereas in thoſe languages the noun governed is varied; in the Hebrew the noun governing undergoes the alteration.

GENITURA, Geniture, a name, which ſome authors give to the ſeed; both that of the male, and female. See Seed.

GENIUS, a good, or evil ſpirit, or demon, whom the antients ſuppoſed ſet over each perſon, to direct his birth, accompany him in life, and to be his guard.

Among the Romans, Feſtus obſerves, the name *genius* was given to the god who had the power of doing all things, *deum qui vim obtineret rerum omnium gerendarum*; which Voſſius, *de Idolol.* rather chooſes to read *genendarum*, who has the power of producing all things; by reaſon Cenſorinus frequently uſes *gerere* for *gignere*. Accordingly, St. Auguſtine, *de civitat. Dei*, relates, from Varro, that the *genius* was a god who had the power of generating all things; and preſided over them when they were produced.

Feſtus adds, that Auſuſtius ſpake of the *genius* as the Son of God, and the Father of men, who gave them life; others, however, repreſented the *genius* as the peculiar or tutelary god of each place: and it is certain, this laſt is the moſt uſual meaning of the word.

The antients had their *genii* of nations, of cities, of provinces, *&c.* Nothing is more common than the following inſcription on medals, GENIUS POPULI ROM. the *genius* of the Roman people: or, GENIO POP. ROM. to the *genius* of the Roman people.

In this ſenſe, *genius* and *lar* were the ſame thing; as, in effect, Cenſorinus and Apuleius affirm they were.

The Platoniſts, and other eaſtern philoſophers, ſuppoſed the *genii* to inhabit the vaſt region, or extent of air between earth and heaven. They were a ſort of intermediate powers, who did the office of mediators between gods and men. They were the interpreters and agents of the gods; communicated the wills of the deities to men; and the prayers and vows of men to the gods. As it was unbecoming the majeſty of the gods to enter into ſuch trifling concerns; this became the lot of the *genii*, whoſe nature was of a middle kind between the two; who derived immortality from the one, and paſſions from the other; and who had a body framed of an aereal matter. Moſt of the philoſophers, however, held that the *genii* of particular men were born with them, and died: thus Plutarch attributes the ceaſing of oracles partly to the death of the *genii*.

The heathens, who conſidered the *genii* as the guardian ſpirits of particular perſons, believed that they rejoiced and were afflicted at all the good and ill fortune that befel their wards. They never or very rarely appeared to them; and then only in favour of ſome perſon of extraordinary virtue or dignity. They likewiſe held a great difference between the *genii* of different men; and that ſome were much more powerful than others; on which principle it was, that a wizard in Appian bids Antony keep at a diſtance from Octavius, by reaſon Antony's *genius* was inferior to, and ſtood in awe of, that of Octavius.

There were alſo evil *genii*, who took a pleaſure in perſecuting men, and bringing them evil tidings: ſuch was that in Paterculus, *&c.* which appeared to Brutus the night before the battle of Phillippi. Theſe were alſo called *larvæ*, and *lemures*.

Genius is more frequently uſed for the force or faculty of the ſoul, conſidered as it thinks or judges.

Thus we ſay, a happy *genius*, a ſuperior *genius*, an elevated *genius*, a narrow confined *genius*, &c.—In the like ſenſe we alſo ſay, a work of *genius*, a want of *genius*, &c.

Genius is alſo uſed, in a more reſtrained ſenſe, for a natural talent, or diſpoſition to one thing more than another.

In which ſenſe we ſay, a *genius* for verſe; for the ſciences, *&c.*

GENSD'ARMERIE. See Gendarmery.

GENSD'ARMES. See the article Gendarmes.

GENTIAN, a medicinal root, the product of a plant of the ſame name; which the antients, to render it the more conſiderable, denominated from Gentius, king of Illyria, who is ſuppoſed to have been the firſt that diſcovered the admirable virtues thereof.

The root *gentian* is of a yellowiſh colour, and intolerably bitter: it is ſometimes as thick as the arm, but more commonly divided into branches no bigger than the thumb: its ſtem grows ſeveral feet high, being very ſmooth and gloſſy, though divided by knots from ſpace to ſpace, out of which ariſe the leaves, which ſomewhat reſemble thoſe of plantain. Its flowers, which likewiſe accompany the knots, are yellow: and its ſeed is flat, round, ſmooth, and light.

This root is held excellent againſt poiſons, and even againſt the plague. It ſtands at the head of ſtomachics, warming and ſtrengthening the ſtomach, and helping digeſtion. It is alſo ſudorific, and uſed with ſucceſs in intermitting fevers; whence ſome call it the *European quinquina*; and it is alſo an ingredient in Venice treacle. Externally it is uſed for wounds.

The plant affects moiſt places, and is found commonly enough in Burgundy, the Alps, and Pyreneans. It is called by botaniſts, *gentiana vulgaris major*, *ellebori albi folio*: the little *gentians* growing in England are called *gentianellæ*.

The root is to be choſen dry, new, of a moderate thickneſs, free from earth, and furniſhed with little branches or fibres; and, if poſſible, that which is dried by the air, which is diſtinguiſhable by the colour, it being blackiſh within ſide, when dried in the oven; and of a golden yellow, when in the air.

Gentian-*water*. See the article Water.

GENTILE, Gentilis, a pagan, or perſon who adores falſe gods.

The Hebrews applied the name גוים *gentes*, nations, to all the people of the earth, who were not Iſraelites or Hebrews.—Some will have it, that the *gentiles* were thus called in contradiſtinction to the Jews, by reaſon theſe latter have a poſitive law to obſerve in matters of religion, whereas the *gentiles* have only the natural law: hence they are called *gentiles*, *quia ſunt uti geniti fuerunt*, becauſe they remain as in a ſtate of nature.

The Jews apply the denomination *gentiles* much as the Chriſtians do that of infidels.—St. Paul is called the *doctor*, or *apoſtle of the gentiles*, which appellation he firſt gave himſelf, Rom. xi. 13. "As I am the apoſtle of the *gentiles*, I magnify "mine office."

The calling of the *gentiles* to Chriſtianity had been predicted in the Old Teſtament, as it was accompliſhed in the New.

See Pſal. ii. 8. Iſa. ii. 2. Joel ii. 29. Matth. viii. 11. xii. 18. Actsxi. 18. xiii. 47, 48. xxviii. 28. Rom. i. 5. iii. 29. xi. 12, 13, 25. Eph. ii. 11. Rev. xi. 2. xxii. 2.

GENTILE, GENTILIS, in the Roman law and hiſtory, a name which ſometimes expreſſes thoſe whom the Romans otherwiſe called *Barbarians*; whether they were allies of Rome, or not. In which ſenſe the word occurs in Ammianus, Auſonius, and the Notitia Imperii.

GENTILIS was alſo uſed, in a more peculiar ſenſe, for all ſtrangers, or foreigners, not ſubject to the Roman empire; as we ſee in the *Theodoſian code*, in the title *De nuptiis gentilium*; where the word *gentiles* ſtands oppoſed to *provinciales*, or the inhabitants of the provinces of the empire.

The word is likewiſe uſed, in this ſenſe, in the Greek; but it was not introduced either into that, or the Latin tongue, till after Chriſtianity was eſtabliſhed; it being taken from Scripture.

GENTLEMAN *, a perſon of noble birth, or deſcended of a family which has long borne arms.

* The word is formed of the French *gentilhomme*, or rather of *gentil*, fine, faſhionable, or becoming; and the Saxon *man*, q. d. *honeſtus*, or *honeſto loco natus*—The ſame ſignification has the Italian *gentilhuomo*, and the Spaniſh *hidalgo*, or *hijo dalgo*, that is, the ſon of ſomebody, or of a perſon of note.—If we go farther back, we ſhall find *gentleman* originally derived from the Latin *gentilis homo*, which was uſed among the Romans for a race of noble perſons, of the ſame name, born of free or ingenuous parents, and whoſe anceſtors had never been ſlaves, or put to death by law.—Thus Cicero, in his *Topics*, Gentiles *ſunt, qui inter ſe eodem ſunt nomine ab ingenuis oriundi, quorum majorum nemo ſervitutem ſervivit, qui capite non ſunt deminuti*, &c. Some hold, that it was formed from *gentile*, i. e. pagan; and that the antient Franks, who conquered Gaul, which was then converted to Chriſtianity, were called *Gentiles* by the natives, as being yet Heathens.—Others relate, that towards the declenſion of the Roman empire, as recorded by Ammianus Marcellinus, there were two companies of brave ſoldiers; the one called *gentilium*, and the other *ſcutariorum*: and that it was hence we derived the names *gentleman* and *eſquire*. See ESQUIRE.—This ſentiment is confirmed by Paſquier, who ſuppoſes the appellation *gentiles* and *ecuyers* to have been tranſmitted to us from the Roman ſoldiery; it being to the *gentiles* and *ſcutarii*, who were the braveſt of the ſoldiery, that the principal benefices, and portions of lands, were aſſigned. See BENEFICE—The Gauls obſerving, that, during the empire of the Romans, the *ſcutarii* and *gentiles* had the beſt tenements, or appointments, of all the ſoldiers on the frontiers of the provinces, became inſenſibly accuſtomed to apply the ſame names, *gentilhommes*, and *ecuyers*, to ſuch as they found their kings gave the beſt proviſions or appointments to. *Paſq, Rech.* l. ii. c. 15.

In ſtrictneſs, Chamberlayne obſerves, a *gentleman* is one whoſe anceſtors have been freemen, and have owed obedience to none but their prince: on which footing, no man can be a *gentleman* who is not born ſo.

Among us, the term *gentleman* is applicable to all above yeomen: ſo that noblemen may be properly called *gentlemen*.

In our ſtatutes, *gentilis homo* was adjudged a good addition for a *gentleman*, 27 Edw. III. The addition of knight is very antient; but that of eſquire, or *gentleman*, was rare, before 1 Hen. V.

GENTLEMAN *uſher of the black rod*. See BLACK.

GENTLEMAN *of the bed-chamber*. See BED-CHAMBER.

GENTLEMEN *of the chapel* are officers whoſe duty and attendance is in the royal chapel; being in number thirty-two: twelve whereof are prieſts, and the other twenty called *clerks of the chapel*, who aſſiſt in the performance of Divine ſervice.

One of the firſt twelve is choſen for confeſſor of the houſhold, whoſe office it is to read prayers every morning to the houſehold-ſervants; to viſit the ſick; examine and prepare communicants, and adminiſter the ſacrament.

Another, well verſed in muſic, is choſen firſt organiſt; who is maſter of the children, to inſtruct them in muſic, and what is neceſſary for the ſervice of the chapel: a ſecond is likewiſe an organiſt; a third a lutaniſt; and a fourth a violiſt.

There are likewiſe three *vergers*, ſo called from the ſilver rods they uſually carry in their hands; being a ſerjeant, yeoman, and groom of the veſtry: the firſt attends the dean, and ſubdean; finds ſurplices, and other neceſſaries, for the chapel: the ſecond has the whole care of the chapel; keeps the pews, and ſeats the nobility and gentry: the groom has his attendance within the chapel-door, and looks after it.

GENTLEMEN *of honour*. } See { HONOUR.
GENTLEMEN *penſioners*. } { PENSIONER.

GENUFLEXION, the act of bowing, or bending, the knee; or rather, of kneeling down.

The jeſuit Roſweyd, in his *Onomaſticon*, ſhews, that *genuflexion*, or kneeling, has been a very antient cuſtom in the church; and even under the Old Teſtament diſpenſation: and that this practice was obſerved throughout all the year, excepting on Sundays, and during the time from Eaſter to Whitſuntide, when kneeling was forbid by the council of Nice.

Others have ſhewn, that the cuſtom of not kneeling on Sundays had obtained from the time of the apoſtles; as appears from St. Irenæus, and Tertullian: and the Æthiopic church, ſcrupulouſly attached to the antient ceremonies, ſtill retains that of not kneeling at Divine ſervice. The Ruſſians eſteem it an indecent poſture, to worſhip God on the knees. Add, that the Jews uſually prayed ſtanding.—Roſweyd gives the reaſons of the prohibition of *genuflexion* on Sundays, &c. from St. Baſil, Anaſtaſius, St. Juſtin, &c.

Baronius is of opinion, that *genuflexion* was not eſtabliſhed in the year of Chriſt 58. from that paſſage in *Acts* xx. 36. where St. Paul is expreſly mentioned to kneel down at prayer: but Saurin ſhews, that nothing can be thence concluded.

The ſame author remarks, alſo, that the primitive Chriſtians carried the practice of *genuflexion* ſo far, that ſome of them had worn cavities in the floor where they prayed: and St. Jerome relates of St. James, that he had contracted a hardneſs on his knees equal to that of camels.

GENUS, *kind*, in logics and metaphyſics, is that which has ſeveral ſpecies under it; or, it is the origin and radix of divers ſpecies, joined together by ſome affinity, or common relation, between them.

Genus is a nature, or idea, ſo common and univerſal, that it extends to other general ideas, and includes them under it.

Thus, animal is ſaid to be a *genus*, in reſpect of man, and brute; in regard man and brute agree in the common nature and character of animal: ſo a right-lined figure, of four ſides, is a *genus*, in reſpect of a parallelogram, and a trapezium; and ſo, likewiſe, is ſubſtance, in reſpect of ſubſtance extended, which is body; and thinking ſubſtance, which is mind.

A good definition, ſay the ſchoolmen, conſiſts of *genus*, and difference.

In the general, *genus* may be ſaid to be a claſs of a greater extent than ſpecies; and which is not convertible therewith. For though we may ſay, that all body is ſubſtance; yet it cannot be ſaid all ſubſtance is body.

Add, that whatever may be ſaid of the *genus*, may likewiſe be ſaid of the ſpecies under it: *e. gr.* whatever is ſaid of *ens*, being, will equally hold of the body.

The ſchoolmen define the *genus logicum* to be, an univerſal which is predicable of ſeveral things of different ſpecies; and divide it into two kinds: the one, the *ſummum*, which is the higheſt, or moſt general; and has nothing above it to reſpect as a *genus*: the other the *ſubaltern*, which they likewiſe call *medium*.

GENUS *ſummum* is that which holds the uppermoſt place in its claſs, or predicament; or that which may be divided into ſeveral ſpecies, each whereof is a *genus* in reſpect of other ſpecies placed below it.

Thus, in the predicament of things ſubſiſting of themſelves, *ſubſtance* has the place and effect of *genus ſummum*, and is predicated of all the things contained in that claſs: for both Plato, and man, and animal, and even ſpirit, are properly called ſubſtance.

Accordingly, there are as many *ſumma genera*, as there are claſſes of predicaments, or categories.

Subaltern **GENUS** is that which, being a medium between the higheſt *genus*, and the loweſt ſpecies, is ſometimes conſidered as a *genus*, and ſometimes as a ſpecies.

Thus, bird, when compared with animal, is a ſpecies; when to a crow, and eagle, or the like, it is a *genus*.

Genus, again, is divided into *remotum*, remote, where between it and its ſpecies there is another *genus*; and *proximum*, or next, where the ſpecies is immediately under it; as man, under animal.

GENUS is alſo uſed for a character, or manner, applicable to every thing of a certain nature, or condition.—In which ſenſe it ſerves to make capital diviſions in divers ſciences; as muſic, rhetoric, botany, anatomy, &c. *E. gr.*

GENUS, GENDER, in botany, denotes a ſyſtem, or aſſemblage, of ſeveral plants, agreeing in ſome one or more common characters in reſpect of the ſtructure of certain parts; whereby they are diſtinguiſhed from all other plants.

The diſtribution of plants into *genera*, and ſpecies, is abſolutely neceſſary to eaſe the memory, and prevent its being oppreſſed, and overburdened with an infinity of different names.

The knowlege of a *genus* comprehends, in a kind of miniature, that of all the plants belonging thereto; each being denominated from ſome circumſtance, common to the whole kind, to ſave the embarraſs of ſo many particular names.

Something like this, even the common people do, eſpecially in the inſtance of ranunculus's, &c. but in many other plants the difficulty is infinitely greater, as it is hard to find any thing in common among them, whereon to found their *genus*.

Hence botaniſts differ as to the manner of regulating theſe *genera*, and the characters whereon they are to be eſtabliſhed. Mr. Ray's diſtribution, ſee under the article PLANT.

One of the later writers, Monſ. Tournefort, after a long and accurate diſcuſſion, has choſe, in imitation of Geſner and Columna, to regulate them by the flowers and fruit, conſidered together; ſo that all plants, which bear a reſemblance in thoſe two reſpects, are of the ſame *genus*: after which the reſpective differences, as to root, ſtem, or leaves, make the different ſpecies, or ſubdiviſions.

Mr. Ray made ſome objections to this diſtribution, which grew into a conſiderable controverſy between the two authors. The queſtion was, Whether the flowers and fruits were ſufficient to eſtabliſh *genera*; and to determine whether a plant was of this *genus*, or that?

The ſame M. Tournefort introduces another higher kind of *genus*, or claſs, which is only regulated by the flowers. He obſerves, that he has never hitherto met with above fourteen different figures of flowers; which, therefore, are all that are to be retained in the memory: ſo that a perſon who has a plant in flower, whoſe name he does not know, will immediately ſee what claſs it belongs to, in his *Elements of botany:* and the fruit appearing ſome days afterwards, determines its *genus* in the ſame book; and the other parts give its ſpecies.

It is a wonderful eaſe to the memory, to have only fourteen figures of flowers to retain, and, by means hereof, to be enabled to deſcend to ſix hundred and ſeventy-three *genera*, which comprehend eight thouſand eight hundred and forty-ſix ſpecies of plants; which was the number of thoſe then known by land and ſea.

GENUS, in muſic, by the antients called *genus melodiæ*, denotes a certain manner of ſubdividing the principles of melody, *i. e.* the conſonant intervals, into their concinnous parts.

The moderns, conſidering the octave as the moſt perfect interval, and that whereon all the other concords depend in the preſent theory of muſic; the diviſion of that interval is conſidered as containing the true diviſion of the whole ſcale.

But the antients went to work ſomewhat differently: the diateſſaron, or fourth, was the leaſt interval which they admitted as concord; and therefore they ſought, firſt, how that might be moſt concinnouſly divided; from which they conſtituted the diapente, or fifth; and diapaſon, or octave.

The diateſſaron being thus, as it were, the root, or foundation, of the ſcale; what they call the *genera*, kinds, aroſe from its various diviſions; and hence they defined the *genus modulandi*, the manner of dividing the tetrachord, and diſpoſing its four ſounds as to ſucceſſion.

The *genera* of muſic were three; *viz.* the *enharmonic*, *chromatic*, and *diatonic*: the two laſt whereof were variouſly ſubdivided; and even the firſt, though it is commonly reckoned to be without any ſpecies, yet different authors have propoſed different diviſions under that name, though without giving particular names to the ſpecies, as was done to the other two. For the character, *&c.* of the ſeveral *genera*, ſee ENHARMONIC, CHROMATIC, and DIATONIC.

The parts, or diviſions, of a diateſſaron, they called the *diaſtems* of the ſeveral *genera*, upon which their differences depend; and which, in the enharmonic, are particularly called the *dieſis* and *ditonum*; in the chromatic, the *hemitonium*, and *triemitonium*; and in the diatonic, the *hemitonium*, or *limma*, and the *tonus*.

But under theſe general names, which diſtinguiſhed the *genera*, there are ſeveral other different intervals, or ratio's, which conſtitute the *colores generum*, or ſpecies of enharmonic, chromatic, and diatonic: add, that what is a diaſtem in one *genus*, is a ſyſtem in another.

GENUS, in rhetoric.—Authors diſtinguiſh the art of rhetoric, as alſo orations, or diſcourſes, produced thereby, into three *genera*, or kinds; *demonſtrative*, *deliberative*, and *judiciary*.

To the *demonſtrative* kind belong panegyricks, genethliacons, epithalamiums, funeral harangues, *&c.* See each under its head; PANEGYRIC, EPITHALAMIUM, *&c.*—To the *deliberative* kind belong perſuaſions, diſſuaſions, commendations, *&c.*—To the *judiciary* kind belong defences, and accuſations. See RHETORIC, ORATION, *&c.*

GENUS, in algebra.—The antient algebraiſts diſtributed that art into two *genera*, or kinds; the *logiſtic*, and *ſpecious*. See LOGISTIC, and SPECIOUS.

GENUS, in anatomy.—The *genus nervoſum*, or nervous kind, or, as others ſay, the *nervous ſyſtem*, is an expreſſion pretty frequent among authors; ſignifying the nerves, conſidered as an aſſemblage, or ſyſtem, of ſimilar parts, diſtributed throughout the body.

Tobacco contains a deal of ſharp, cauſtic ſalt, proper to cauſe irritations in the nervous kind; vinegar, taken in too great quantity, incommodes the nervous kind.

GEOCENTRIC, in aſtronomy, is applied to a planet, or its orbit, to denote it concentric with the earth; or, as having the earth for its centre, or the ſame centre with the earth.

All the planets are not *geocentric*: the moon, alone, is properly *geocentric*.

GEOCENTRIC *latitude* of a planet is its latitude ſeen from the earth; or the inclination of a line connecting the planet and the earth, to the plane of the earth's (or true) ecliptic.

Or it is the angle which the aforeſaid line (connecting the planet and the earth) makes with a line drawn perpendicular to the plane of the ecliptic. See LATITUDE.

Thus, in Tab. *Aſtronomy*, *fig.* 40. the angle ♀ *T e* is the meaſure of that planet's *geocentric* latitude, when the earth is in *T*; and the angle *e t* ♀ the meaſure of it when the earth is in *t*.

GEOCENTRIC *place* of a planet is the place wherein it appears to us, from the earth; ſuppoſing the eye there fixed: or, it is a point in the ecliptic, to which a planet, ſeen from the earth, is referred.

GEODÆSIA*, that part of practical geometry which teaches how to divide, or lay out, lands, or fields, between ſeveral owners.

* The word is Greek, γεωδαισια; formed of γη, *terra*, earth; and δαιω, *divido*, I divide.

GEODÆSIA is alſo applied, by ſome, to all the operations of geometry which are performed in the field.

This is more uſually called *ſurveying*, when employed in meaſuring of lands, grounds, roads, countries, provinces, *&c.* See SURVEYING.

Vitalis defines *geodæſia*, the art of meaſuring ſurfaces, and ſolids, not by imaginary right lines, as is done in geometry; but by ſenſible and viſible things; as by the ſun's rays, *&c.*

GEOGRAPHICAL *mile* is the minute, or ſixtieth part of a degree of a great circle. See MILE, and DEGREE.

GEOGRAPHICAL *table*. See the article MAP.

GEOGRAPHY*, the doctrine, or knowlege, of the earth, both as in itſelf, and as to its affections; or a deſcription of the terreſtrial globe; and, particularly, of the known inhabitable part thereof, with all its parts.

* The word is Greek, γεωγραφια; formed of γη, *terra*, earth; and γραφω, *ſcribo*, I write, I deſcribe.

Geography makes a branch of mathematics, of the mixed kind; in that it conſiders the earth, and its affections, as depending on quantity; and, conſequently, as meaſurable; *viz.* its figure, place, magnitude, motion, celeſtial appearances, *&c.* with the ſeveral circles imagined on its ſurface.

Geography is diſtinguiſhed from coſmography, as a part from the whole; this latter conſidering the whole viſible world, both heaven and earth.

From topography, and chorography, it is diſtinguiſhed, as the whole from a part. See TOPOGRAPHY, and CHOROGRAPHY.

Golnitz conſiders *geography* as either *exterior*, or *interior*: but Varenius more juſtly divides it into *general*, and *ſpecial*; or *univerſal*, and *particular*.

General, or *univerſal*, **GEOGRAPHY**, is that which conſiders the earth in general, without any regard to particular countries; or the affections common to the whole globe; as its figure, magnitude, motion, land, ſea, *&c.*

Special, or *particular*, **GEOGRAPHY**, is that which conſiders the conſtitution of the ſeveral particular regions, or countries; their bounds, figure, *&c.* with the mountains, foreſts, mines, waters, plants, animals, *&c.* therein; as, alſo, their climates, ſeaſons, heat, weather, diſtance from the equator, *&c.* and their inhabitants, arts, foods, commodities, cuſtoms, language, religion, policy, cities, *&c.*

Geography is very antient; at leaſt the ſpecial part thereof: for the antient writers ſcarce went beyond the deſcription of countries.

It was a conſtant cuſtom among the Romans, after they had conquered and ſubdued any province, to have a map, or painted repreſentation thereof, carried in triumph, and expoſed to the view of the ſpectators.

Hiſtorians relate, that the Roman ſenate, about an hundred years before Chriſt, ſent *geographers*, into divers parts, to make an accurate ſurvey and menſuration of the whole globe; but they ſcarce ever ſaw the twentieth part thereof.

Before them, Neco, king of Egypt, ordered the Phœnicians to make a ſurvey of the whole coaſt of Africa; which they accompliſhed in three years: Darius procured the Ethiopic ſea, and the mouth of the Indus, to be ſurveyed; and Pliny relates, that Alexander, in his expedition into Aſia, took two geographers, Diognetus and Bæton, to meaſure and deſcribe the roads; and that, from their itineraries, the writers of the following ages took many particulars. Indeed, this may be obſerved, that whereas moſt other arts are ſufferers by war, *geography* and fortification, alone, have been improved thereby.

The art, however, muſt needs have been exceedingly defective; as a great part of the globe was then unknown: particularly, all America, the northern parts of Europe and Aſia, with the Terra Auſtralis, and Magellanica; and as they were ignorant of the earth's being capable of being ſailed round, and of the torrid zone's being habitable, *&c.*

The principal writings on this art, among the antients, are, Ptolemy's eight books: among the moderns are, Johannes De Sacroboſco *De Sphæra*, with Clavius's comment: Ricciolus's *Geographia*, and *Hydrographia Reformata*: Weigelius's *Speculum Terræ*; De Chales's *Geography*, in his *Mundus Mathematicus*; and, above all, Varenius's *Geographia generalis*, with Jurin's additions: to which may be added, Leibnecht's *Elementa*

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TAB. GEOGRAPHY & HYDROGRAPHY.

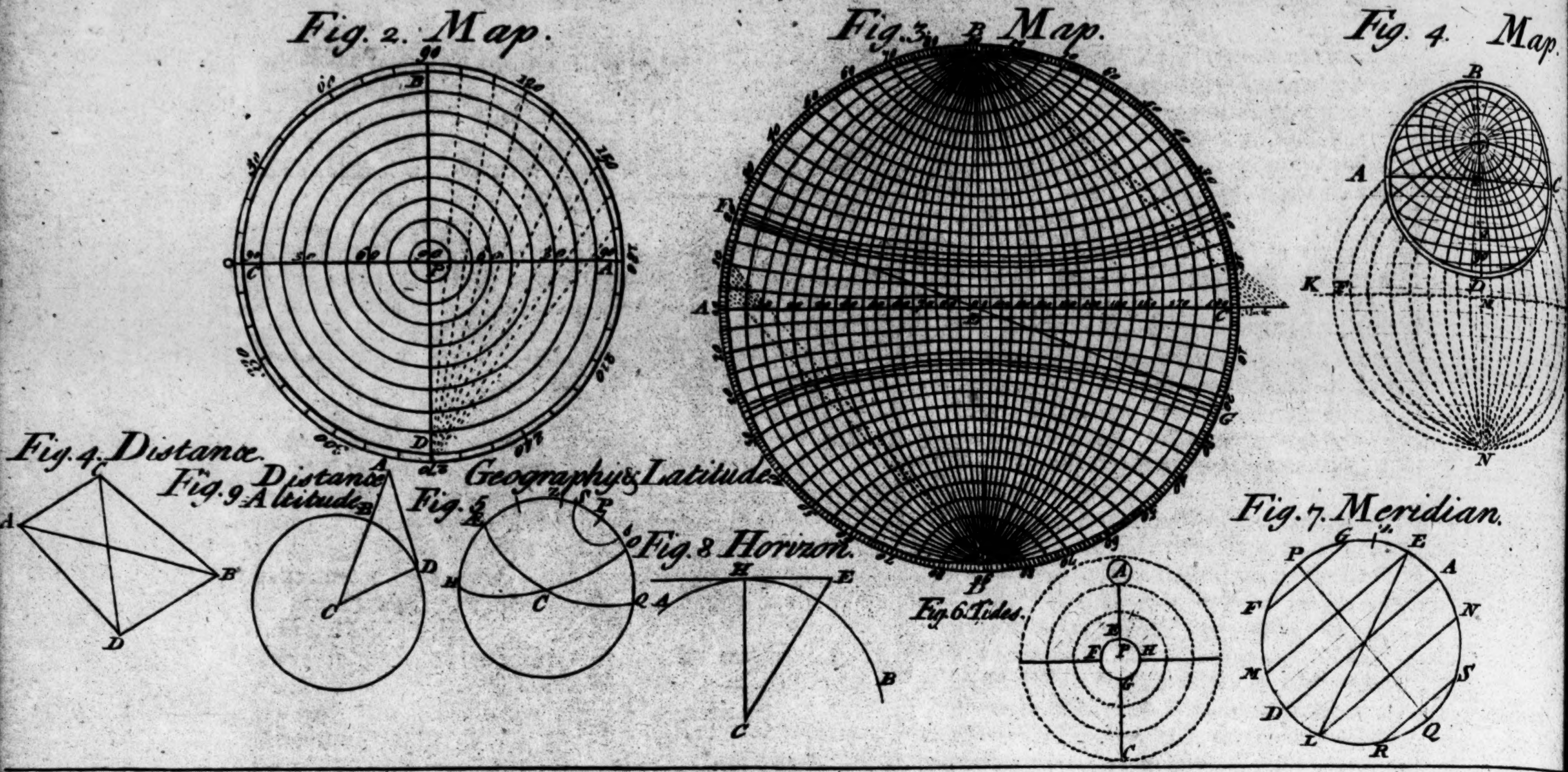

Fig. 2. Map.
Fig. 3. Map.
Fig. 4. Map.
Fig. 4. Distance.
Fig. 9. Distance Altitude.
Fig. 5. Geography & Latitude.
Fig. 8. Horizon.
Fig. 6. Tides.
Fig. 7. Meridian.

NAVIGATION.

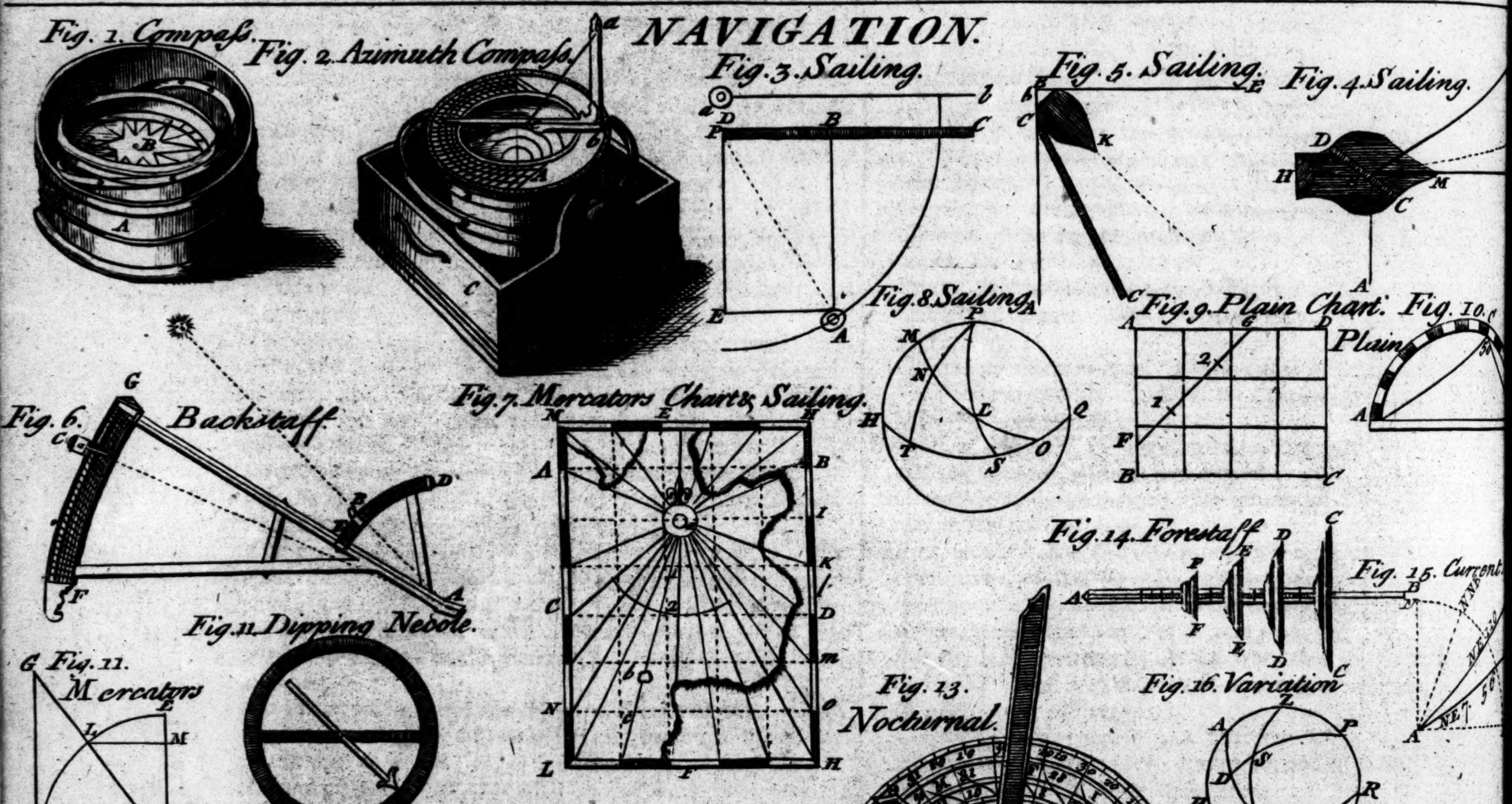

Fig. 1. Compass.
Fig. 2. Azimuth Compass.
Fig. 3. Sailing.
Fig. 5. Sailing.
Fig. 4. Sailing.
Fig. 8. Sailing.
Fig. 9. Plain Chart.
Fig. 10. Plain
Fig. 6. Backstaff.
Fig. 7. Mercators Chart & Sailing.
Fig. 14. Forestaff.
Fig. 15. Currents
Fig. 11. Dipping Needle.
Fig. 11. Mercators
Fig. 13. Nocturnal.
Fig. 16. Variation
Fig. 17. Traverse
No 2. Fig. 17. Traverse
Fig. 18. Sinical Quad
Rhumb Line. Fig. 20.
Fig. 19. Rhumb Line.
Fig. 22. Astrolabe
Fig. 21. Rhumb
No 2. Fig. 21. Rhumb

menta Geographiæ generalis: Sturmius's *Compendium Geographicum*, and Wolfius's *Geographia*, in his *Elementa Matheſeos.*

GEOMANCY *, Geomantia, a kind of divination, performed by means of a number of little points, or dots, made on paper at random; and conſidering the various lines and figures, which thoſe points preſent; and thence forming a pretended judgment of futurity, and deciding any queſtion propoſed.

> * The word is formed of the Greek γε, *terra*, earth; and μαντεια, divination; it being the antient cuſtom to caſt little pebbles on the ground, and thence to form their conjectures; inſtead of the points now made uſe of.

Polydore Virgil defines *geomancy* a kind of divination performed by means of clefts, or chinks, made in the ground; and takes the Perſian magi to have been the inventors thereof. *De Invent. Rer.* lib. i. c. 23.

GEOMETRICAL, ſomething that has a relation to *geometry.*

Thus we ſay, a *geometrical* method, a *geometrical* genius, *geometrical* ſtrictneſs, a *geometrical* conſtruction, *geometrical* demonſtration, *&c.*

Geometry itſelf ſeems to lead us into errors: after once reducing a thing to *geometrical* conſideration, and finding that it anſwers pretty exactly, we purſue the view, are pleaſed with the certainty and agreeableneſs of the demonſtrations, and apply the *geometry* further and further, till we often out-run nature.

Hence it is, that all machines do not ſucceed: that all compoſitions of muſic, wherein the concords are the moſt rigidly obſerved, are not agreeable: that the moſt exact aſtronomical computations do not always foretel the preciſe time and quantity of an eclipſe, *&c.*

The reaſon is, that nature is not a mere abſtract; mechanical levers and wheels are not *geometrical* lines and circles; as they are often ſuppoſed to be: the taſte for tunes is not the ſame in all men; nor at all times in the ſame man: and as to aſtronomy, as there is no perfect regularity in the motions of the planets; their orbits hardly ſeem reducible to any fixed, known figure.

The errors, therefore, we fall into in aſtronomy, muſic, mechanics, and the other ſciences to which *geometry* is applied, do not properly ariſe from *geometry*, which is an infallible ſcience; but from the falſe uſe, or the miſapplication, of it. Malebr. *Recher. de la Ver.*

Geometrical *conſtruction* of an equation, is the contriving and drawing of lines and figures, whereby to demonſtrate the equation, theorem, or canon, to be geometrically true. See Construction *of equations.*

Geometrical *line*, or *curve*, called alſo *algebraic line*, or *curve*, is that wherein the relations of the abſciſſes to the ſemiordinates may be expreſſed by an algebraic equation.

Thus, ſuppoſe in a circle, *Tab. Geometry, fig.* 52. $AB=a$ $AP=x$ $PM=y$; then will $PB=a-x$; and conſequently, ſince $PM^2=AP, PB, y=ax-x^2$.—Again, ſuppoſing $PC=x$, $AC=a$, $PM=y$; then will $MC^2-PC^2=PM^2$, that is, $a^2-x^2=y^2$. *Tab. Anal. fig.* 8. See Equation.

Geometrical lines are diſtinguiſhed into claſſes, orders, or genera, according to the number of the dimenſions of the equation that expreſſes the relation between the ordinates and the abſciſſes: or, which amounts to the ſame, according to the number of points in which they may be cut by a right line.

Thus, a line of the firſt order will be only a right line: thoſe of the ſecond, or quadratic order, will be the circle, and the conic ſections; and thoſe of the third, or cubic order, will be the cubical and Neilian parabola's, the ciſſoid of the antients, *&c.*

But a curve of the firſt gender (becauſe a right line cannot be reckoned among the curves) is the ſame with a line of the ſecond order; and a curve of the ſecond gender, the ſame with a line of the third order; and a line of an infiniteſimal order is that, which a right line may cut in infinite points; as the ſpiral, cycloid, the quadratrix, and every line generated by the infinite revolutions of a radius.

However, it is not the equation, but the deſcription, that makes the curve a *geometrical* one: the circle is a *geometrical* line, not becauſe it may be expreſſed by an equation, but becauſe its deſcription is a poſtulate: and it is not the ſimplicity of the equation, but the eaſineſs of the deſcription, which is to determine the choice of the lines for the conſtruction of a problem. The equation that expreſſes a parabola, is more ſimple than that which expreſſes a circle; and yet the circle, by reaſon of its more ſimple conſtruction, is admitted before it.

The circle and the conic ſections, if you regard the dimenſions of the equations, are of the ſame order; and yet the circle is not numbered with them in the conſtruction of problems; but by reaſon of its ſimple deſcription is depreſſed to a lower order; *viz.* that of a right line; ſo that it is not improper to expreſs that by a circle, which may be expreſſed by a right line: but it is a fault to conſtruct that by the conic ſections, which may be conſtructed by a circle.

Either, therefore, the law muſt be taken from the dimenſions of equations, as obſerved in a circle, and ſo the diſtinction be taken away between plane and ſolid problems: or the law muſt be allowed not to be ſtrictly obſerved in lines of ſuperior kinds; but that ſome, by reaſon of their more ſimple deſcription, may be preferred to others of the ſame order, and be numbered with lines of inferior orders.

In conſtructions that are equally *geometrical*, the moſt ſimple are always to be preferred: this law is ſo univerſal as to be without exception. But algebraic expreſſions add nothing to the ſimplicity of the conſtruction; the bare deſcriptions of the lines here are only to be conſidered; and theſe alone were conſidered by thoſe geometricians, who joined a circle with a right line. And as theſe are eaſy or hard, the conſtruction becomes eaſy, or hard: and therefore it is foreign to the nature of the thing, from any thing elſe to eſtabliſh laws about conſtructions.

Either, therefore, with the antients, we muſt exclude all lines beſides the circle, and perhaps the conic ſections, out of geometry; or admit all according to the ſimplicity of the deſcription: if the trochoid were admitted into geometry, we might, by its means, divide an angle in any given ratio: would you therefore blame thoſe, who would make uſe of this line to divide an angle in the ratio of one number to another; and contend, that this line was not defined by an equation, but that you muſt make uſe of ſuch lines as are defined by equations?

If, when an angle were to be divided, for inſtance, into 1001 parts, we ſhould be obliged to bring a curve defined by an equation of above an hundred dimentions to do the buſineſs; which nobody could deſcribe, much leſs underſtand; and ſhould prefer this to the trochoid, which is a line well known, and deſcribed ealſiy by the motion of a wheel, or circle; who would not ſee the abſurdity?

Either, therefore, the trochoid is not to be admitted at all in geometry; or elſe, in the conſtruction of problems, it is to be preferred to all lines of a more difficult deſcription: and the reaſon is the ſame for other curves.

Hence, the triſections of an angle by a conchoid, which Archimedes in his *Lemma's*, and Pappus in his *Collections*, have preferred to the invention of all others in this caſe, muſt be allowed to be good, ſince we muſt either exclude all lines, beſide the circle, and right line, out of geometry, or admit them according to the ſimplicity of their deſcriptions; in which caſe, the conchoid yields to none, except the circle.

Equations are expreſſions of arithmetical computation, and properly have no place in geometry, except ſo far as quantities truly geometrical (that is, lines, ſurfaces, ſolids, and proportions) may be ſaid to be ſome equal to others: multiplications, diviſions, and ſuch ſort of computations, are newly received into geometry, and that apparently contrary to the firſt deſign of this ſcience; for whoever conſiders the conſtruction of problems by a right line and a circle, found by the firſt geometricians, will eaſily perceive, that geometry was introduced, that we might expeditiouſly avoid, by drawing lines, the tedíouſneſs of computation.

It ſhould ſeem, therefore, that the two ſciences ought not to be confounded together: the antients ſo induſtriouſly diſtinguiſhed them, that they never introduced arithmetical terms into geometry; and the moderns, by confounding both, have loſt a great deal of that ſimplicity, in which the elegancy of geometry principally conſiſts. Upon the whole, that is arithmetically more ſimple, which is determined by more ſimple equations; but that is geometrically more ſimple, which is determined by the more ſimple drawing of lines; and in geometry, that ought to be reckoned beſt, which is geometrically moſt ſimple.

Geometrical *locus*, or *place*, called alſo ſimply *locus.* See Locus.

Geometrical *medium.* See the article Medium.

Geometrical *oſculum.* See Evoluta, and Osculum.

Geometrical *pace*, is a meaſure conſiſting of five feet. See Pace, and Foot.

Geometrical *plan*, in architecture. See Plan.

Geometrical *plane.* See the article Plane.

Geometrical *progreſſion*, is a ſeries of quantities, in continued *geometrical* proportion; *i. e.* increaſing or decreaſing in the ſame ratio.

Thus, *e. gr.* 1, 2, 4, 8, 16, 32, 64, and 128: 729, 243, 81, 27, 9, 3, 1, are *geometrical* progreſſions. See *Geometrical* Progression.

Geometrical *proportion*, called alſo abſolutely, and ſimply, *proportion*, is a ſimilitude or identity of ratio's. See Ratio.

Thus, if A be to B, as C to D, they are in *geometrical* proportion: ſo 8, 4, 30, and 15, are *geometrical* proportionals. See Proportion.

Geometrical *ſcale.* See Diagonal *ſcale.*

Geometrical *ſolution* of a problem, is when the problem is directly ſolved according to the ſtrict principles and rules of geometry, and by lines that are truly *geometrical.*

In this ſenſe we ſay, *geometrical* ſolution, in contradiſtinction to a mechanical, or inſtrumental ſolution, where the problem is only ſolved by ruler and compaſſes.

The ſame term is likewiſe uſed in oppoſition to all indirect and inadequate kinds of ſolutions, as by infinite ſeries's, *&c.*

We have no *geometrical* way of finding the quadrature of the circle, the duplicature of the cube, or two mean proportionals: mechanical ways, and others, by infinite ſeries's, we have.

The antients, Pappus informs us, in vain endeavoured at the triſection of an angle, and the finding out of two mean proportionals by a right line, and a circle. Afterwards they began to conſider the properties of ſeveral other lines; as the conchoid, the ciſſoid, and the conic ſections; and by ſome of theſe endeavoured to ſolve thoſe problems. At length, having more thoroughly examined the matter, and the conic ſections being received into geometry, they diſtinguiſhed *geometrical* problems into three kinds; *viz.*

1°, *Plane* ones, which, deriving their original from lines on a plane, may be regularly ſolved by a right line, and a circle.

2°, *Solid* ones, which are ſolved by lines deriving their original from the conſideration of a ſolid; that is, of a cone.

3°, *Linear* ones, to the ſolution of which are required lines more compounded.

According to this diſtinction, we are not to ſolve ſolid problems by other lines than the conic ſections; eſpecially if no other lines but right ones, a circle, and the conic ſections, muſt be received into geometry.

But the moderns, advancing much farther, have received into geometry all lines that can be expreſſed by equations; and have diſtinguiſhed, according to the dimenſions of the equations, thoſe lines into kinds; and have made it a law, not to conſtruct a problem by a line of ſuperior kind, that may be conſtructed by one of an inferior kind.

Geometrical *ſquare.* See the article Square.

Geometrical *table.* See the article Plain *table.*

GEOMETRICALLY *proportionals*, are quantities in continual proportion; or which proceed in the ſame conſtant ratio; as 6, 12, 24, 48, 96, 192, *&c.*

They are thus called, in contradiſtinction to equidifferent quantities; which are called, though ſomewhat improperly, *arithmetically proportionals.* See *Arithmetically* Proportional.

GEOMETRY *, the ſcience, or doctrine of extenſion, or extended things; that is, of lines, ſurfaces, or ſolids.

* The word is Greek, γεωμετρια, formed of γε, *terra*, earth, and μετρεια, *metiri*, to meaſure; it being the neceſſity of meaſuring the earth, and the parts and places thereof, that gave the firſt occaſion to the invention of the principles and rules of this art; which has ſince been extended and applied to numerous other things; inſomuch that *geometry*, with arithmetic, is now the general foundation of all mathematics.

Geometry is commonly divided into four parts, or branches; planimetry, altimetry, longimetry, and ſtereometry. See each under its proper article, Planimetry, Altimetry, Longimetry, and Stereometry.

Geometry, again, is diſtinguiſhed into *theoretical*, or *ſpeculative*, and *practical.*

The firſt contemplates the properties of continuity; and demonſtrates the truth of general propoſitions, called *theorems.*

The ſecond applies thoſe ſpeculations and theorems to particular uſes in the ſolution of problems. See Problem.

Speculative Geometry, again, may be diſtinguiſhed into *elementary*, and *ſublime.*

Elementary, or *common* Geometry, is that employed in the conſideration of right lines, and plain ſurfaces, and ſolids generated therefrom.

Higher, or *ſublime* Geometry, is that employed in the conſideration of curve lines, conic ſections, and bodies formed thereof.

Herodotus, lib. ii. and Strabo, lib. xvii. aſſert the Egyptians to have been the firſt inventors of *geometry*; and the annual inundations of the Nile to have been the occaſion of it; for that river bearing away all the bounds and land-marks of mens eſtates, and covering the whole face of the country, the people, ſay they, were obliged to diſtinguiſh their lands by the conſideration of their figure and quantity; and thus, by experience and habit, formed themſelves a method, or art, which was the origin of *geometry.*—A farther contemplation of the draughts or figures of fields thus laid down, and plotted in proportion, might naturally enough lead them to the diſcovery of ſome of their excellent and wonderful properties; which ſpeculation continually improving, the art became gradually improved, as it continues to do to this day. Joſephus, however, ſeems to attribute the invention to the Hebrews: and others, among the antients, make Mercury the inventor. Polyd. Virgil, *de Invent. Rer.* l. i. c. 18.

The province of *geometry* is almoſt infinite: few of our ideas, but may be repreſented to the imagination by lines; upon which they ſtrait become of *geometrical* conſideration; it being *geometry* alone that makes compariſons, and finds the relations of lines.

Aſtronomy, muſic, mechanics, and, in a word, all the ſciences which conſider things ſuſceptible of more and leſs, *i. e.* all the preciſe and accurate ſciences, may be referred to *geometry:* for all ſpeculative truths conſiſting only in the relations of things, and in the relations between thoſe relations, they may be all referred to lines. Conſequences may be drawn from them; and theſe conſequences, again, being rendered ſenſible by lines, they become permanent objects, which may be conſtantly expoſed to a rigorous attention and examination: and thus we have infinite opportunities both of inquiring into their certainty, and purſuing them farther.

The reaſon, for inſtance, why we know ſo diſtinctly, and mark ſo preciſely, the concords called *octave*, *fifth*, *fourth*, &c. is, that we have learnt to expreſs ſounds by lines, *i. e.* by chords accurately divided; and that we know, that the chord, which ſounds octave, is double of that which it makes octave withal; that the fifth is in the ſeſquialterate ratio, or as three to two; and ſo of the reſt.

The ear itſelf cannot judge of ſounds with ſuch a nice preciſion; its judgments are too faint, vague, and variable, to form a ſcience. The fineſt, beſt tuned ear, cannot diſtinguiſh many of the differences of ſounds; whence many muſicians deny any ſuch differences; as making their ſenſe their judge. Some, for inſtance, admit no difference between an octave and three ditones: and others, none between the greater and leſſer tone; the comma, which is the real difference, is inſenſible to them; and much more the ſciſma, which is only half the comma.

It is only by reaſon, then, that we learn, that the length of the chord which makes the difference between certain ſounds, being diviſible into ſeveral parts, there may be a great number of different ſounds contained therein, uſeful in muſic, which yet the ear cannot diſtinguiſh. Whence it follows, that had it not been for arithmetic and *geometry*, we had had no ſuch thing as regular, fixed muſic; and that we could only have ſucceeded in that art by good luck, or force of imagination; *i. e.* muſic would not have been any ſcience founded on inconteſtable demonſtrations: though we allow, that the tunes compoſed by force of genius and imagination, are uſually more agreeable to the ear, than thoſe compoſed by rule.

So, in mechanics, the heavineſs of a weight, and the diſtance of the centre of that weight from the fulcrum, or point it is ſuſtained by, being ſuſceptible of plus and minus, they may both be expreſſed by lines: whence *geometry* becomes applicable hereto; in virtue whereof, infinite diſcoveries have been made, of the utmoſt uſe in life.

Geometrical lines and figures are not only proper to repreſent to the imagination the relations between magnitudes, or between things ſuſceptible of more and leſs; as ſpaces, times, weights, motions, *&c.* but they may even repreſent things which the mind can no otherwiſe conceive, *e. gr.* the relations of incommenſurable magnitudes.

We do not, however, pretend, that all ſubjects men may have occaſion to inquire into, can be expreſſed by lines. There are many not reducible to any ſuch rule: thus, the knowlege of an infinitely powerful, infinitely juſt God, on whom all things depend, and who would have all his creatures execute his orders, to become capable of being happy, is the principle of all morality, from which a thouſand undeniable conſequences may be drawn; and yet neither the principle, nor the conſequences, can be expreſſed by lines, or figures. Malebr. *Recher. de la Ver. T.* ii.

Indeed, the antient Egyptians, we read, uſed to expreſs all their philoſophical and theological notions by *geometrical* lines. In their reſearches into the reaſon of things, they obſerved, that God and nature affect perpendiculars, parallels, circles, triangles, ſquares, and harmonical proportions; which engaged the prieſts and philoſophers to repreſent the divine and natural operations by ſuch figures: in which they were followed by Pythagoras, Plato, *&c.* Whence that ſaying of Boethius, *nullum divinorum ſcientiam* αγεωμετρικον *attingere poſſe.*

But it muſt be obſerved, that this uſe of *geometry* among the antients was not ſtrictly ſcientifical, as among us; but rather ſymbolical: they did not argue, or reduce things and properties unknown from lines; but repreſented or delineated by them things that were known. In effect, they were not uſed as means or inſtruments of diſcovering, but as images or characters, to preſerve, or communicate, the diſcoveries that were already made.

‘ The Egyptians, Gale obſerves, uſed *geometrical* figures,
‘ not only to expreſs the generations, mutations, and deſtruc-
‘ tions of bodies; but the manner, attributes, *&c.* of the
‘ Spirit of the univerſe, who, diffuſing himſelf from the cen-
‘ tre of his unity, through infinite concentric circles, per-
‘ vades all bodies, and fills all ſpace. But of all other figures
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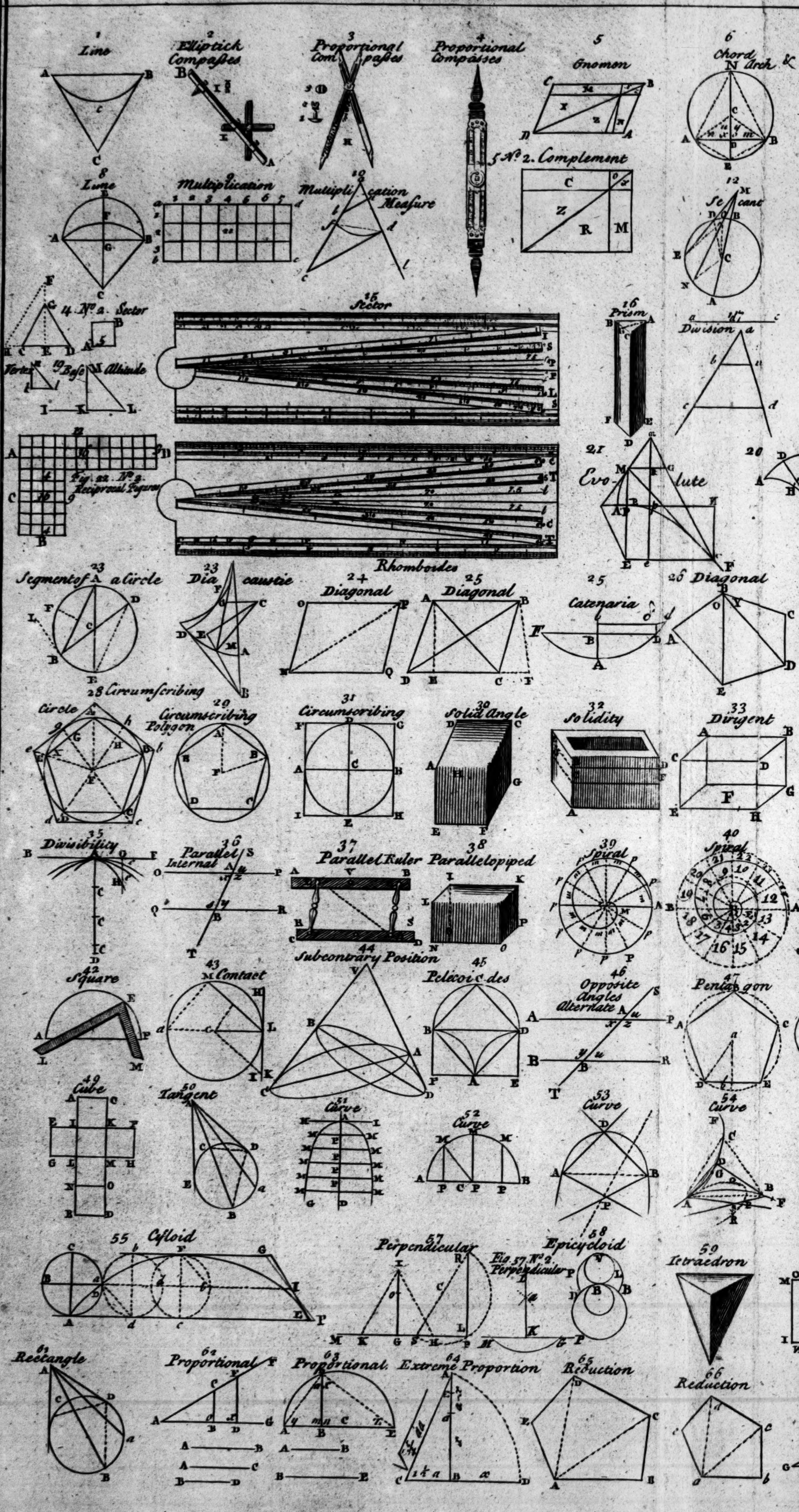
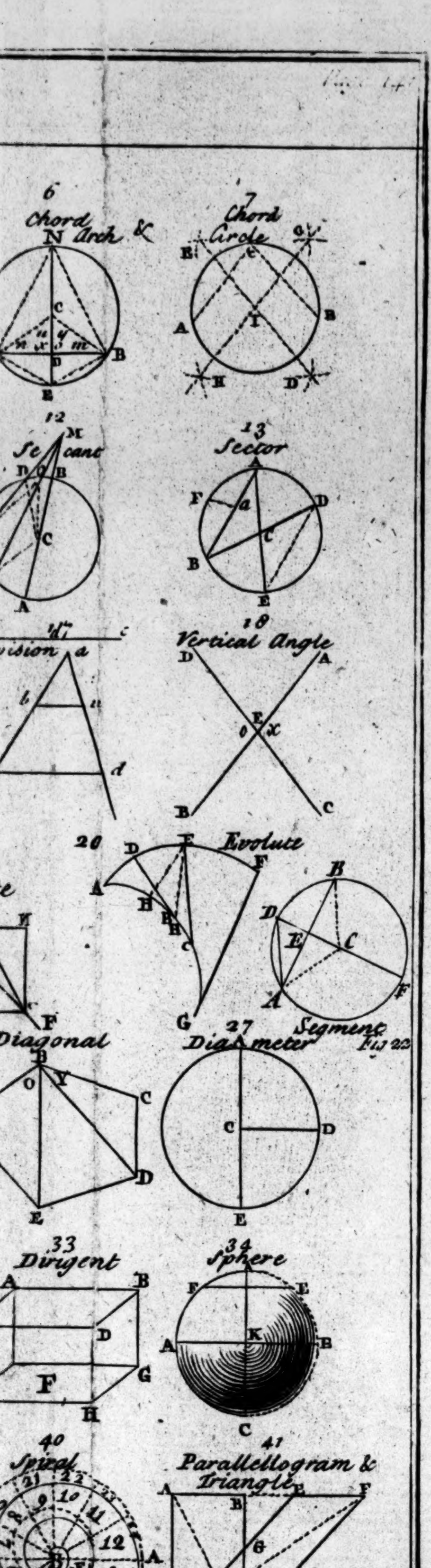
TAB. GEOMETRY.


1 Line
2 Elliptick Compasses
3 Proportional Compasses
4 Proportional Compasses
5 Gnomon
6 Chord Arch
8 Line
9 Multiplication
10 Multiplication Measure
5 No. 2. Complement
12 Secant
4 No. a. Sector
Vertex
Base
Altitude
15 Sector
16 Prism
17 Division
Fig. 22. No. 3. Reciprocal Figures
21 Evolute
20
Rhomboides
23 Segment of a Circle
23 Diacaustic
24 Diagonal
25 Diagonal
25 Catenaria
26 Diagonal
28 Circumscribing Circle
29 Circumscribing Polygon
31 Circumscribing
30 Solid Angle
32 Solidity
33 Dirigent
35 Divisibility
36 Parallel Internal
37 Parallel Ruler
38 Parallelopiped
39 Spiral
40 Spiral
42 Square
43 Contact
44 Subcontrary Position
45 Pelecoides
46 Opposite Angles Alternate
47 Pentagon
49 Cube
50 Tangent
51 Curve
52 Curve
53 Curve
54 Curve
55 Cissoid
57 Perpendicular
Fig. 57 No. 2. Perpendicular
58 Epicycloid
59 Tetraedron
61 Rectangle
62 Proportional
63 Proportional
64 Extreme Proportion
65 Reduction
66 Reduction

Pitcher. sculp.


6 Chord Arch
7 Chord Circle
12 Secant
13 Sector
18 Vertical Angle
20 Evolute
Segment Fig 22
Diagonal
27 Diameter
33 Dirigent
34 Sphere
40 Spiral
41 Parallellogram & Triangle
47 Pentagon
48 Oval
54 Curve
56 Cylinder
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60 Rectangle
66 …duction
67 Reduction

Nº. IX.

Geometry.

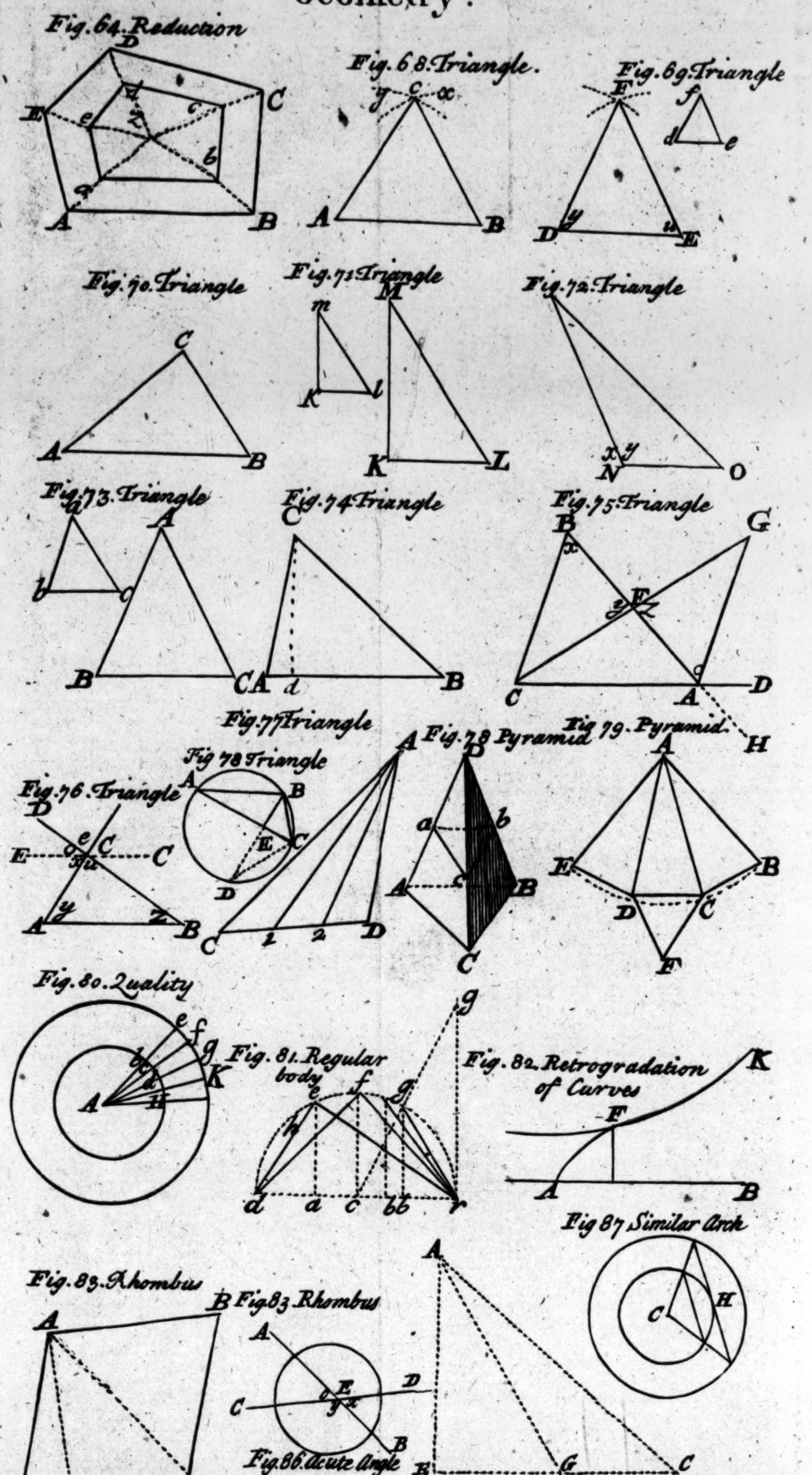
Fig. 64. Reduction
Fig. 68. Triangle.
Fig. 69 Triangle
Fig. 70. Triangle
Fig. 71 Triangle
Fig. 72. Triangle
Fig. 73. Triangle
Fig. 74 Triangle
Fig. 75. Triangle
Fig. 76. Triangle
Fig 78 Triangle
Fig. 77 Triangle
Fig. 78 Pyramid
Fig 79. Pyramid.
Fig. 80. Quality
Fig. 81. Regular body
Fig. 82. Retrogradation of Curves
Fig 87 Similar Arch
Fig. 83. Rhombus
Fig 83 Rhombus
Fig. 86. Acute Angle
Fig. 90. Altitude
Fig. 84. Hexagon
Fig. 88. Altitude
Fig. 89. Altitude
Fig. 91. Angle
Fig. 92. Angle
Fig. 93. Angle
Fig. 97 Angle
Fig. 96 Angle
Fig. 94. Angle
Fig. 95. Angle
Fig. 97. Angle
Fig. 98. Inclination of Planes
Fig. 99. Indivisibles
Fig. 100 Inflection point.

IX

" they moſt affected the circle, and triangle; the firſt, as " being the moſt perfect, ſimple, capacious, &c. of all " figures: whence Hermes borrowed it to repreſent the divine nature; defining God to be an intellectual circle or " ſphere, whoſe centre is every-where, and circumference " no-where." See Kirch. *Oedip. Ægyptiac.* and Gale *Phil. General.* lib. i. c. 2.

The antient *geometry* was confined to very narrow bounds, in compariſon of the modern. It only extended to right lines and curves of the firſt order, or conic ſections; whereas into the modern *geometry* new lines of infinitely more and higher orders are introduced.

The writers who have cultivated and improved *geometry* may be diſtinguiſhed into elementary, practical, and thoſe of the ſublimer *geometry*.

The principal writers of elements, ſee enumerated under the article ELEMENTS.

Thoſe of the higher *geometry* are Archimedes, in his books *de Sphæra*, *Cylindro*, and *Circuli Dimenſione*; as alſo *de Spiralibus*, *Conoidibus*, *Sphæroidibus*, *de Quadratura Parabolæ*, and *Arenarius*: Kepler, in his *Stereometria Nova*; Cavelarius, in his *Geometria Indiviſibilium*; and Torricellius, *de Solidis Sphæralibus*; Pappus Alexandrinus, in *Collectionibus Mathematicis*; Paulus Guldinus, in his *Mechanics and Statics*; Barrow, in his *Lectiones Geometricæ*; Huygens, *de Circuli magnitudine*; Bullialdus, *de Lineis ſpiralibus*; Schooten, in his *Exercitationes Mathematicæ*; de Billy, *de Proportione Harmonica*; Lalovera, de *Cycloide*; Fer. Erneſt. Com. ab Herbenſtein, in *Diatome Circulorum*; Viviani, in *Exercit. Mathemat. de Formatione & Menſura Fornicum*; Bap. Palma, in *Geomet. Exercitation.* and Apoll. Pergæus, *de Sectione Rationis*.

For practical *geometry*, the fulleſt and completeſt treatiſes are thoſe of Mallet, written in French, but without the demonſtrations: and thoſe of Schwenter, and Cantzlerus, both in High-Dutch. In this claſs are likewiſe to be ranked Clavius's, Tacquet's, and Ozanam's *Practical Geometries*; De la Hire's *Ecole des Arpenteurs*; Reinholdus's *Geodæſia*; Hartman Beyers's *Stereometria*; Voigtel's *Geometria Subterranea*; all in High-Dutch; Hulſius, Galileus, Goldmannus, Scheffelt, and Ozanam, on the ſector, &c.

Characters in GEOMETRY.	See	CHARACTER.
Spherical GEOMETRY.		SPHERICAL.

GEOPONIC, ſomething deſcribing or relating to agriculture. See AGRICULTURE. Cato, Varro, Columella, Palladius, and Pliny, are ſometimes called *geoponic* writers.

St. GEORGE, a name whereby ſeveral orders, both military and religious, are denominated. It took its riſe from a ſaint, famous throughout all the eaſt; called by the Greeks Μεγαλομαρτυς, q. d. *great martyr*.

On ſome medals of the emperors John and Manuel Comneni, we have the figure of St. *George* armed, holding a ſword, or javelin, in one hand, and in the other a buckler, with this inſcription, an O, and therein a little A, and ΓΕ$\overset{\text{P}}{\underset{\text{O}}{—}}$ΓΙΟϹ, making Ο ΑΓΙΟΣ ΓΕΟΡΓΙΟΣ, *O Holy George*. He is generally repreſented on horſeback, as being ſuppoſed to have frequently engaged in combats in that manner.

He is highly venerated throughout Armenia, Muſcovy, and all the countries which adhere to the Greek rite: from the Greek, his worſhip has long ago been received into the Latin church; and England and Portugal have both choſen him for their patron-ſaint.

St. GEORGE is particularly uſed for an Engliſh order of knights; more commonly now called the *order of the garter*. See GARTER.

Our king Edward VI. out of a ſpirit of reformation, made ſame alterations in the ceremonial, laws, and habit, of the order, that the Romiſh ſaint might have leſs ſhare therein. It was he firſt commanded, that the order ſhould no longer be called the *order of St. George*, but that of the *garter*.

Knights of *St.* GEORGE.—There have been various orders under this denomination, moſt of which are now extinct; particularly one founded by the emperor Frederic III. in the year 1470. to guard the frontiers of Bohemia and Hungary againſt the Turks.—Another, called *St. George* of Alfama, founded by the kings of Arragon.—Another in Auſtria and Carinthia.—And another in the republic of Genoa, ſtill ſubſiſting, &c.

Religious of the order of St. GEORGE. Of theſe there are divers orders, and congregations; particularly canons regular of St. *George* in Alga, at Venice, eſtabliſhed by two noble Venetians, in the year 1404.—Another congregation of the ſame inſtitute in Sicily, &c.

St. GEORGE'*s croſs*. See the article CROSS.

GEORGIC *, ſomething that relates to the culture or tilling of the ground.

* The word is borrowed from the Latin *georgicus*, and that of the Greek γεωργικος, of γη, *terra*, earth; and εργαζομαι, *opero*, I work, labour; of εργον, *opus*, work.

The *georgics* of Virgil are four books compoſed by that poet on the ſubject of agriculture.

GEOSCOPY *, a kind of knowlege of the nature and qualities of the ground, or ſoil; gained by viewing and conſidering it.

* The word is formed of the Greek γη, earth; and σκοπεω, I ſee, view.

Geoſcopy is only conjectural; but its conjectures are very well grounded.

GERESOL, in muſic, one of the clefs. See CLEF.

GERFALCON, or GYRFALCON, a bird of prey, of a ſize between a vultur and a hawk; and of the greateſt ſtrength next the eagle. See FALCON, and HAWK.

GERM. See the article GERMEN.

GERMAN, in matters of genealogy, ſignifies whole, intire, or own.

Germani, quaſi eadem ſtirpe geniti. Feſt. Hence,

Brother GERMAN denotes a brother both by the father's and mother's ſide, in contradiſtinction to uterine brothers, &c. who are only ſo by the mother's ſide.

Couſins GERMAN are thoſe in the firſt or neareſt degree; being the children of brothers or ſiſters.

Among the Romans we have no inſtance of marriage between couſins *german* before the time of the emperor Claudius; when they were very frequent.

Theodoſius prohibited them under very ſevere penalties, even fine and proſcription. See CONSANGUINITY.

GERMAN *acacia*.	See	ACACIA.
GERMAN *bezoar*.		BEZOAR.
GERMAN *black*.		BLACK.
GGRMAN *coins*.		COIN.
GERMAN *compaſſes*.		COMPASSES.
GERMAN *empire*.		EMPIRE.
GERMAN *flute*.		FLUTE.
GERMAN *language*.		TEUTONIC, and LANGUAGE.
GERMAN *meaſures*.		MEASURE.
GERMAN *moneys*.		MONEY.

GERMEN, or GERM, that part of a ſeed which germinates, *i. e.* ſprouts or ſhoots out the firſt, for the production of a new plant. See SEED.

Botaniſts call it the *plume*. See PLUME; ſee alſo PLANT, SEED, and GERMINATION.

GERMINATION, the act of germinating; that is, of a plant's ſprouting, or ſhooting in the ground.

Some uſe the word in a more extenſive ſenſe; ſo as likewiſe to include the firſt ſhooting out of leaves, bloſſoms, branches, flowers, fruits, and ſeeds.

The modern philoſophers have been very attentive to the *germination* of plants, as well as the formation of the chick in the egg.

The progreſs of *germination* has been very accurately obſerved by the curious Malpighi, in the ſeed of a gourd. The day after it was committed to the ground, he found the outer coat or integument a little tumid; and in its tip there appeared a ſmall cleft or aperture, through which the plume or germ was ſeen.

The ſecond day the outward coat, or ſecundine, appeared much ſofter, the inner torn and corrupted, the plume, or plantule, ſomewhat longer, and more tumid; and the beginning of the roots ſhewed themſelves.

The third day the outward ſecundine was become duſky, and the leaves of the plantule inflated; and the root or radicle had made itſelf a paſſage through the ſecundines near the former aperture; the plume, or ſtem, as alſo the ſeed-leaves, being now grown much bigger.

On the ſixth day more of the ſeed-leaves had broken through the ſecundines, and they were found thicker and harder; the root having now emitted a great number of fibres, and the ſtem grown a finger's length.

The following days the root ſtill ſhot farther, other roots ariſing from them, and others from theſe; and the ſtem, in its progreſs, grew hollow or fiſtulous, and the ſeed-leaves broader and greener.

About the twenty-firſt day, the plant ſeemed complete; from which time the ſeed-leaves began to droop, and at length died away. See SEMINAL *leaves*.

GERONTES *, in antiquity, a kind of judges, or magiſtrates, in antient Sparta, anſwering to what the Areopagites were at Athens. See AREOPAGITE.

* The word is formed of the Greek γερων, which ſignifies old man. Whence alſo the words *gerontic*, ſomething belonging to an old man; and *geronticon*, a famous book among the modern Greeks, containing the lives of the antient monks. The ſenate of *gerontes* was called *geruſia*, that is, aſſembly or council of old men.

The *gerontes* were originally inſtituted by Lycurgus: their number, according to ſome, was twenty-eight; and, according to others, thirty-two. They governed in conjunction with the king, whoſe authority they were intended to balance, and to watch over the intereſts of the people.

None were to be admitted into this office under ſixty years of age, and they held it for life.—They were ſucceeded by the ephori.

GERUND *, in grammar, a ſort of tenſe, or time, of the infinitive mood; very like to the participle, but indeclinable.

* The word is formed of the Latin *gerundivus*; and that from the verb *gerere*, to bear.

The *gerund* expreſſes not only the time, but alſo the manner, of an action; as, he fell in running poſt.

It differs from the participle, in that it expreſſes the time, which the participle does not.

And from the tenſe properly ſo called, in that it expreſſes the manner, which the tenſe does not.

Grammarians are much embarraſſed to ſettle the nature and character of the *gerunds*: it is certain they are no verbs, nor diſtinct moods of verbs, in regard they do not mark any judgment or affirmation of the mind, which is the eſſence of a verb.—And beſide, they have their ſeveral caſes, which verbs have not.

Some therefore will have them to be adjectives paſſive, whoſe ſubſtantive is the infinitive of the verb: on this footing they denominate them *verbal nouns*, or names formed of verbs, and retaining the ordinary regimen thereof. See Noun.

Thus, ſay they, *tempus eſt legendi libros*, or *librorum*, is as much as to ſay, *tempus eſt τȣ legere libros, vel librorum.* But others ſtand up againſt this deciſion.

GESSERIT—*quamdiu.* See Quamdiu *ſe bene geſſerit.*

GESSES, is the furniture belonging to an hawk. See Jesses.

GESTATION, the time of a woman's going with child; or the interval between conception and delivery. See Delivery; ſee alſo Foetus, and Conception.

Gestation is alſo a term in the antient medicine, uſed for a ſort of exerciſe, by us called carriage.

It conſiſted in making the patient ride on horſeback, or in a chariot, or a boat; or even in rocking him in his bed, if he could not endure a more violent agitation.

Aſclepiades firſt brought frictions and *geſtation* into practice.—The deſign of *geſtation* was to recover ſtrength after a fever, &c. was gone.

GESTICULATION, the making of affected, indecent, or unſuitable geſtures, or even of proper ones in too great number. *Geſticulation* is a grievous fault in an orator.

GESTURE, a motion of the body, intended to ſignify ſome idea, or paſſion of the mind.

Quintilian defines *geſture*, *totius corporis motus & conformatio. Geſtures* are a kind of natural language, which ſupplies the uſe of ſpeech in thoſe naturally dumb. The mimes and pantomimes were very great proficients in the ſtile of *geſture*.

Geſture conſiſts principally in the action of the hands and face.

GHEMARA. See the article Gemara.

GIAGH, or Jehagh, a cycle of twelve years, in uſe among the Turks and Cathayans.

Each year of the *giagh* bears the name of ſome animal: the firſt, that of a mouſe; the ſecond, that of a bullock; the third, of a lynx, or leopard; the fourth, of a hare; the fifth, of a crocodile; the ſixth, of a ſerpent; the ſeventh, of a horſe; the eighth, of a ſheep; the ninth, of a monkey; the tenth, of a hen; the eleventh, of a dog; and the twelfth, of a hog.

They alſo divide the day into twelve parts, which they call *giaghs*; and diſtinguiſh them by the names of the ſame animals.—Each *giagh* contains two of our hours, and is divided into eight *keb*, as many as there are quarters of hours in our day.

GIANT, γιγας, a man of extraordinary, enormous ſtature and bulk.

The reality of *giants*, and of nations of *giants*, is much controverted among the learned. Travellers, hiſtorians, and relations, both ſacred and profane, furniſh various inſtances thereof; a great part of which, naturaliſts and antiquaries ſet aſide.

Thoſe among the antients who ſpeak of *giants*, as hiſtorians, and affirm there were ſuch things, are Cæſar, *de Bello Gallico*, l. i. Tacitus, *de Morib. Germanor.* and *Annal.* l. ii. Florus, l. iii. c. 3. St. Auguſtine, *de Civit. Dei*, l. xv. c. 9. and Saxo Grammaticus, at the end of his preface: among the moderns, Hieron. Magius, *Miſcellan. de Gigantibus*, Chaſſagnonus *de Gigantibus*, Kercher *Mund. Subterran.* l. viii. ſect. ii. c. 4. and ſo many others, that Stephanus, in his notes on Saxo Grammaticus, affirms nothing can be more extravagant than to deny or allegorize the authorities we have thereof.

Mr. Derham obſerves, that though we read of *giants* before the flood, Gen. vi. 4. and more plainly after it, Numb. xiii. 33. yet it is highly probable the ſize of man has always been the ſame from the creation; for as to the Nephilim, Gen. vi. the antients vary about them; ſome taking them for monſters of impiety, atheiſm, rapine, tyranny; and as to thoſe, Numb. xiii. which were evidently ſpoken of as men of a *gigantic* ſize, it is probable the fears of the ſpies might add thereto.

Be this as it will, it is manifeſt, that in both theſe places *giants* are ſpoken of as rarities and wonders of the age, not of the common ſtature: and ſuch inſtances we have had in all ages. There are many fabulous relations; ſuch as we take to be that of Theutobocchus, who is ſaid to have been dug up anno 1613. and to have been higher than the trophies, and twenty-ſix feet long: and no better we ſuppoſe the *giants* to have been, which Ol. Magnus gives an account of, in his fifth book, ſuch as Harthen and Starchater among the men; and among the women, *reperta eſt* (ſaith he) *puella—in capite vulnerata, mortua, induta chlamyde purpurea, longitudinis cubitorum* 50, *latitudinis inter humeros quatuor.* Ol. Mag. *Hiſt.* l. v. c. 2.

But, as for the more credible relations of Goliath (whoſe height was ſix cubits and a ſpan, 1 Sam. xvii. 4. which, according to biſhop Cumberland, is ſomewhat above eleven feet Engliſh), of Maximinus the emperor (who was nine feet high), and others in Auguſtus's and other reigns, of about the ſame height; to which might be added the dimenſions of a ſkeleton, dug up lately in the place of a Roman camp, near St. Albans, by an urn inſcribed Marcus Antoninus; of which an account is given by Mr. Cheſelden, who judged, by the dimenſions of the bones, that the perſon was eight feet high, *Philoſ. Tranſact.* N° 333. for theſe antique examples and relations, we ſay, they may be matched, nay, outdone, with modern ones; of which we have divers in J. Ludolph. *Comment. in Hiſt. Æthiop.* l. ii. c. 2. ſect. 22. Magius, Conringius, D. Hakewel, and others; which laſt ſpeaks from Nannez, of porters and archers belonging to the emperor of China, fifteen feet high; and others from Purchas, of ten and twelve feet high, and more. See that learned author's *Apol.* p. 208.

GIBBOUS, in medicine, is uſed to denote a perſon bunched or hump-backed.

That part of the liver, out of which the vena cava ariſes, is alſo called the *gibbous* part.

Gibbous is alſo uſed in reference to the enlightened parts of the moon, while ſhe is moving from full to the firſt quarter, and from the laſt quarter to full again; for all that time the dark part appears horned, or falcated, and the light one bunched out, convex, or *gibbous*.

GIBELINS, Gibellins, or Gibelling, a famous faction in Italy, oppoſite to another called the *Guelphs*.

The Guelphs and *Gibelins* ravaged and laid waſte Italy for a long ſeries of years; ſo that the hiſtory of that country, for the ſpace of two centuries, is only a detail of their mutual violencies, and mortal wars.

We have but a very obſcure account of their origin, and the reaſon of their names: the generality of authors affirm, that they aroſe about the year 1240. upon the emperor Frederic the IId's being excommunicated by pope Gregory IX.

That prince, ſay they, making a tour among the cities of Italy, gave the name *Gibelins* to ſuch as he found well affected to him; and that of Guelphs to thoſe who adhered to the pope. But as to the reaſon and ſignification of thoſe words, there is a deep ſilence: *Gibelin* might poſſibly be formed of *gebieter, imperator*; whence *gebieteriſch, imperioſe.* Of *gebieter*, the Italians might make, by corruption, *Gibelin*; ſo that *Gibelins*, in this light, ſhould be the ſame with *Imperialiſts*, or ſuch as followed the emperor's party.

By the way, ſome writers maintain, that the two factions aroſe ten years before; though ſtill under the ſame pope and emperor.

Other hiſtorians relate, that Conrad III. marching into Italy, in the year 1139. againſt the Neapolitans, Roger, count of Naples and Sicily, in order to defend his ſtates, called to his aſſiſtance Guelph, duke of Bavaria; and that one day, when the two armies were ready to join battle, the Bavarians cried out in High Dutch, *hie, Guelph!* or, as others ſay, in Flemiſh, *hier, Guelph!* that is, *here, Guelph!* and that the Imperialiſts anſwered, on their ſide, with the words *hie*, or *hier, Gibelin! here, Gibelin!* calling the emperor by the name of the place where he had been bred.

Hornius refers the names to the war in 1140. between Henry the Proud, duke of Bavaria and Saxony, and Conrad III. duke of Suabia; the two princes preparing to engage near the town of Winſberg, the Bavarians began to cry out, *Guelph!* which was the name of duke Henry's brother; and the partiſans of the emperor, *Weibelingen*, which was the name of the place where that prince was born and bred, in the duchy of Wirtemberg, whoſe ſurname he bore: from which *Weibelingen* the Italians at length formed *Gibelin*.

This account is confirmed by Martin Cruſius: *Initium* Gibelinæ *(Wibelinæ à patria Conradi regis) & Welficæ concertationis.* Conrad being of Weibelingen, that word, ſays Cruſius, gave riſe to *gibellingue*, and that to *gibelling, Gibelins, Gibellini.*

Platina, on the other hand, aſſures us, that the name *Gibelins* aroſe from that of a German at Piſtoya; whoſe brother, named Guelph, gave likewiſe his name to the oppoſite faction; the two brethren, it ſeems, bearing an irreconcileable hatred. Others maintain, that the emperor gave the appellation *Gibelins* to thoſe of his party, from the German word *gipffel*, ſignifying ridge, or top; by reaſon the empire reſted on them, as the rafters of a houſe lean on the ridge, which joins them atop.

Karus, a learned canon of Straſbourg, in the lives of the emperors of the houſe of Brunſwick, is of the ſecond opinion above-related: In a battle, ſays he, between Welff, or Guelff, and Frederic, the army of the firſt crying out, *hie, Welff, hie, Welff!* the ſecond commanded his to cry out, *hie, Gibeling! hie, Gibeling!* the name of his birth-place; and the French and Lombards aſking the ſignification of thoſe words, they were anſwered, that by *Welff* was meant the pope's party; and, by *Gibeling*, the emperor's.

Yet others contend, that the word *Gibelin* is only a ſoftening of the word *gibertin*, or *guibertin*; and that it aroſe from Guibert, an antipope, ſet up by the emperor Henry III. in the year 1080. *Acta Sanct. Propyl. Maii*, p. 198.

Maimbourg, in his *Hiſt. de la Decad. de l'Emp.* advances another opinion: the two factions, and their names, ſays he, aroſe from a quarrel between two very antient and illuſtrious houſes on the confines of Germany, that of the Henrys of *Gibeling*, and that of the Guelphs of Adorf: which account appears the moſt probable of them all.

GIBET*, a machine in manner of a gallows, whereon notorious criminals, after execution, are hung in irons, or chains: as ſpectacles, in terrorem.

* The word in French, *gibet*, properly denotes what we call *gallows*: it is ſuppoſed to come originally from the Arabic *gibel*, mount, elevation of ground; by reaſon *gibets* are uſually placed on hills, or eminences.

GIBLETS*, the offals, or entrails of a gooſe; including the heart and liver, with the feet, gizzard, &c.

* The word is ſuppoſed to be formed of *goblets*, from the French *gobeau*, mouthful.

Giblets make a conſiderable article in cookery: they boil *giblets*, ſtew *giblets*, make ragous of *giblets*, *giblet*-pies, &c.

GIGANTIC. See the article Giant.

F. Bouhours relates, that one of the artifices of the Indian bramins conſiſts in perſuading the ſimple people, that the gods eat like us; and, that they might bring them ſtore of victuals, they repreſent thoſe gods as of a *gigantic* ſize, and, above all, give them a huge tun belly.

GIGANTOMACHIA*, the battle of the giants againſt the fabulous gods of the antient heathens.

* The word is Greek, γιγαντομαχια, formed of γιγας, γιγαντος, giant; and μαχη, combat, of μαχομαι, *pugno*, I fight.

Several of the poets have compoſed *gigantomachia's*: that of Scarron is the fineſt of all his pieces.

GIGG*, Giga, or Jig, in muſic and dancing, a gay, briſk, ſprightly compoſition, and yet in full meaſure, as well as the allemand, which is more ſerious.

* Menage takes the word to ariſe from the Italian *giga*, a muſical inſtrument mentioned by Dante.

GILBERTINES, an order of religious, thus called from St. Gilbert, of Sempringham, in the county of Lincoln, who founded the ſame about the year 1148.

Antiently none were received into it but married people: the monks obſerved the rule of St. Auguſtine; and were accounted canons; and the nuns that of St. Benedict.

The founder of this order erected a double monaſtery, or rather two different ones, contiguous to each other, the one for men, the other for women, but parted by a very high wall.

The order, afterwards, conſiſted of ten ſuch monaſteries: all which were ſuppreſſed at the general diſſolution of monaſtic orders under king Henry VIII.

GILD*, or Guild, originally ſignifies a fraternity, or company.

* The word is formed from the Saxon *gildan*, to pay, becauſe every man was *gildare*, i. e. to pay ſomething towards the charge and ſupport of the company. Hence alſo our Guildhall, *q. d.* the hall of the ſociety or fraternity, where they meet, and make orders and laws among themſelves.

The original of *gilds*, or *guilds*, is thus related: It being a law among the Saxons, that every freeman of fourteen years old ſhould find ſureties to keep the peace, or be committed; certain neighbours entered into an aſſociation, and became bound for each other, either to produce him who committed an offence, or to make ſatisfaction to the injured party: this that they might the better do, they raiſed a ſum of money among themſelves, which they put into a common ſtock; and when one of their pledges had committed an offence, and was fled, then the other nine made ſatisfaction out of this ſtock, by payment of money, according to the offence.

Becauſe this aſſociation conſiſted of ten families, it was called a *decennary*: and from hence came our later kinds of fraternities.

But, as to the direct time when theſe *gilds* had their origin in England, there is nothing of certainty to be found; ſince they were in uſe long before any formal licence was granted to them for ſuch meetings.

Edward the third, in the fourteenth year of his reign, granted licence to the men of Coventry, to erect a merchant's *gild* and fraternity, of brethren and ſiſters, with a maſter, or warden; and that they might found chantries, beſtow alms, do other works of piety, and conſtitute ordinances touching the ſame, &c.

So Henry the fourth, in his reign, granted a licence to found a *gild* of the holy croſs, at Stratford upon Avon.

Gild, in the royal boroughs of Scotland, is ſtill uſed for a company of merchants, who are freemen of the borough.

Every royal borough has a dean of *gild*, who is the next magiſtrate below the bailiff. He judges of controverſies among men concerning trade; diſputes between inhabitants touching buildings, lights, watercourſes, and other nuiſances; calls courts, at which his brethren of the *gild* are bound to attend: manages the common ſtock of the *gild*; and amerces, and collects fines.

Gild, or Geld, according to Camden, alſo ſignifies a tribute, or tax. See Geld.

Gild, according to Crompton, alſo ſignifies an amercement. As in foot-*geld*, which he interprets a preſtation within the foreſt.

Hence, to be quit of all manner of *gild*, is to be diſcharged of all manner of preſtations to be made for gathering ſheaves of corn, lamb, and wool, to the uſe of foreſters.

Gild, or Geld, is alſo uſed among our antient writers for a compenſation, or mulct, for a fault committed. See Ungeld.

Hence, *weregeld* is the price of a man; *orfgeld* is the price of cattle: *angeld*, the ſingle value of a thing; *twigeld* the double value, &c.

There are divers other words which end with *geld*, and ſhew the ſeveral kinds of payments; as *danegeld*, *vadegeld*, *ſenegeld*, *horngeld*, *fotgeld*, *penigeld*, &c. which ſee.

Gild, or Guild *rents*, are rents payable to the crown by any *gild*, or fraternity; or ſuch rents as formerly belonged to religious *gilds*, and came to the crown at the general diſſolution: being ordered for ſale by the ſtat. 22 Car. II.

GILDABLE, or Geldable, denotes a perſon tributary, that is, liable to pay tax, or tribute.

Camden, dividing Suffolk into three parts, calls the firſt *gildable*, becauſe liable to tax; from which the other two parts were exempt, becauſe eccleſiæ donatæ.

Gildable is alſo explained in an antient MS. to be that land or lordſhip which is *ſub diſtrictione curiæ vicecom.*

GILDHALDA *Teutonicorum* was uſed for the fraternity of Eaſterling merchants in London; called alſo the *ſtillyard*. See Stillyard.

GILD-HALL, q. d. *Gildæ aula*, the chief hall in the city of London. See Guild-*hall*.

GILD-MERCHANT, *gilda mercatoria*, was a certain privilege, or liberty, granted to merchants, whereby they were enabled, among other things, to hold certain pleas of land within their own precincts.

King John granted *gildam mercatoriam* to the burgeſſes of Nottingham.

GILDING, or Guilding, the art, or act, of ſpreading or covering a thing over with gold, either in leaf, or in amalgam with quickſilver.

The art of *gilding* was not unknown among the antients, tho' it never arrived among them at the perfection to which the moderns have carried it.

Pliny aſſures us, that the firſt *gilding* ſeen at Rome, was after the deſtruction of Carthage, under the cenſorſhip of Lucius Mummius, when they began to *gild* the cielings of their temples and palaces; the capitol being the firſt place on which this enrichment was beſtowed. But he adds, that luxury advanced on them ſo haſtily, that in a little time you might ſee all, even private and poor perſons, *gild* the very walls, vaults, &c. of their houſes.

We need not doubt but they had the ſame method with us, of beating gold, and reducing it into leaves; though, it ſhould ſeem, they did not carry it to the ſame height; if it be true, which Pliny relates, that they only made ſeven hundred and fifty leaves four fingers ſquare of a whole ounce. Indeed he adds, that they could make more; that the thickeſt were called *bracteæ Prænеſtinæ*, by reaſon of a ſtatue of the goddeſs Fortune at Præneſte, gilt with ſuch leaves; and that the thinner ſort were called *bracteæ quæſtoriæ*.

The modern gilders do alſo make uſe of gold leaves of divers thickneſſes: but there are ſome ſo fine, that a thouſand don't weigh above four or five drachms. The thickeſt leaves are uſed for *gilding* on iron, and other metals: and the thinneſt on wood. But we have another advantage over the antients, in the manner of uſing or applying the gold: the ſecret of painting in oil, diſcovered of late ages, furniſhes us with means of *gilding* works that ſhall endure all the injuries of time and weather, which to the antients was impracticable. They had no way to lay the gold on bodies that would not endure the fire but with whites of eggs, or ſize; neither of which will endure the water: ſo that they could only *gild* ſuch places as were ſheltered from the moiſture of the weather.

The Greeks called the compoſition on which they applied their *gilding* on wood, *leucophæum*, or *leucophorum*; which is deſcribed as a ſort of glutinous, compound earth, ſerving, in all probability, to make the gold ſtick, and bear poliſhing. But the particulars of this earth, its colour, ingredients, &c. the antiquaries and naturaliſts are not agreed upon.

There are ſeveral methods of *gilding* in uſe among us; *viz.* *gilding on an oily ſize*; *gilding on a water ſize*; *gilding by the fire*, which is peculiar to metals; *gilding of books*, &c.

Method of Gilding *in oil, or an oily ſize.*—The baſis, or matter, whereon the gold is applied, in this method, according to M. Felibien, is the remains of colours found ſettled to the bottom of the pots wherein the painters waſh their pencils. This matter, which is very viſcid, they firſt grind; then paſs it thro' a linen cloth; and thus lay it with a pencil on the matter to be gilt, after having firſt waſhed it once or twice over with ſize; and, if it be wood, with ſome white paint.

But however this method may obtain in France, the Engliſh *gilders*, in lieu hereof, generally make uſe of a gold ſize, made of yellow oker, ground fine with water, and laid to dry, on a chalk-ſtone; and then ground up with a due proportion of fat drying oil, to give it the body or degree of ſtiffneſs required.

With this ſize they waſh over the thing to be *gilt*, by means of a bruſh, or a large pencil.—And, when almoſt dry, but while yet unctuous enough to catch and retain the gold, they ſpread their gold leaves thereon, either whole, or cut in pieces.

To take up and apply the leaves, they make uſe of a piece of fine, ſoft, well-carded cotton; or of a pallet for the purpoſe; or barely the knife, wherewith the leaves were cut, according to the parts of the work they are to *gild*, or the breadth of the gold to be applied.

In proportion as the gold is laid, they preſs it down ſmooth with a bunch of cotton, or a hare's foot, to make it ſtick, and, as it were, incorporate with the ground: and with the ſame hare's foot, or a camel's hair pencil, they mend any cracks that may happen therein, after the ſame manner as will be hereafter ſhewn in *Water*-Gilding.

This ſort of *gilding* is chiefly uſed for domes, and the roofs of churches, courts, banqueting-houſes, &c. and for figures of plaſter, lead, &c. that are to ſtand expoſed to the weather.

Method of Gilding *on a water ſize.*—Water *gilding* is not performed without more apparatus; nor is it uſed ſo frequently, nor on ſuch large works, as the former: wooden works, and thoſe of ſtucco, are almoſt the only ones gilt in this way: which, beſide, muſt be ſheltered from the weather. The ſize made uſe of for *gilding*, is to be made of ſhreds, &c. of parchment, or gloves, boiled in water to the conſiſtence of a jelly.

If it be wood that is to be *gilt*, they firſt give it a waſh of this ſize, boiling-hot; and when this is dry, another of whiting, mixed up with the ſame ſize. For this whiting, ſome uſe plaſter of Paris, well beaten, and ſifted; others Spaniſh white, or ceruſs, &c. It is laid on with a ſtiff bruſh, and oftener or ſeldomer repeated, according to the nature of the work: for pieces of ſculpture, ſeven or eight lays ſuffice; for flat, or ſmooth works, they uſe ten or twelve. In the latter caſe they are applied by drawing the bruſh or pencil over the work; in the former, by dabbing it ſmartly on, that the ſize may enter all the dents of the carving.

When the whole is dry, they moiſten it with fair water, and rub it over with ſeveral pieces of coarſe linen, if it be a flat; otherwiſe they beat or ſwitch it with ſeveral ſlips of the ſame linen tied to little ſticks, to make it follow and enter all the cavities and depreſſures thereof.

The white thus finiſhed, they proceed to yellow it; obſerving, that, if it be a piece of ſculpture in relievo, they always firſt touch up and repair the ſeveral parts, which the white ground may have disfigured, with little iron inſtruments, as gravers, chiſſels, gouges, &c.

The yellow, which they uſe, is only common oker well ground and ſifted, and thus mixed up with the ſize uſed for the white, only weaker by one half. This colour is laid on hot; and in works of ſculpture it ſerves to ſupply the place of gold, which frequently cannot be carried into all the cavities and dentings of foliages, and other ornaments.

Over this yellow is applied a lay, which is to ſerve for the ground whereon the gold is to be immediately laid: it is uſually compoſed of the Armenian bole, blood-ſtone, black-lead, and a little fat, to which ſome add ſope and olive-oil; others, burnt bread, biſtre, antimony, tin-glaſs, butter, and ſugar-candy. Theſe ingredients being all ground together, with hot ſize, they apply three lays of the compoſition upon the yellow, each after the other is dried; taking care not to put any in the ſmall cavities of the work, to hide the yellow. The bruſh uſed in this application is to be ſoft; and when the matter is well dried, they go over it with a ſtronger bruſh, to rub it down, and take off the little prominent grains, and thus facilitate the burniſhing of the gold.

In order to proceed to *gild*, they muſt have three ſorts of pencils; one to wet; another to touch up, and amend; and a third to flatten: there is alſo required a cuſhion, to ſpread the gold leaves on, when taken out of the book; a knife to cut them; and a hare's foot, or ſquirrel's tail, fitted with a handle, or elſe a piece of cotton, to take them up, direct, and apply them.

They begin with the wetting pencils, by which they moiſten the layer laſt laid on with water, that it may the better receive and retain the gold: the leaves are then laid on the cuſhion; and taken up, if whole, with the ſquirrel's tail; if in pieces, with the other inſtrument, or even the knife they are cut withal, and laid and ſpread gently on the parts of the work before moiſtened.

When the leaves happen to crack or break in laying on, they make up the breaches with little pieces of leaf taken up on the repairing pencil; and with the ſame pencil, or another ſomewhat bigger, they ſmooth the whole; preſſing the gold into the dents, where it could not ſo well be carried with the ſquirrel's tail.

The work being thus far *gilt*, when dry, remains either to be burniſhed, or matted.

To burniſh it, is to ſmooth and poliſh it with a burniſher, which is uſually a dog's or wolf's tooth, or a blood-ſtone, an agat, or a pebble, or ſomething elſe very ſmooth, fitted in a handle for the purpoſe.

To mat, is to give it a light lick in the places not burniſhed, with a pencil dipt in ſize, wherein a little vermilion ſometimes has been mixed. This helps to preſerve it, and prevent its flawing, when handled.

The laſt thing is to apply a vermeil, or lacker, in all the little lines and cavities; and to ſtop and amend any little faults with ſhell-gold.

The compoſition here called *vermeil*, is made of gum gutta, vermilion, and a little of ſome ruddy, brown colour, ground together, with Venice varniſh, and oil of turpentine. Some *gilders*, in lieu hereof, content themſelves with fine lacca, or dragons blood, with gum-water.

Sometimes, inſtead of burniſhing the gold, they burniſh the ground or compoſition laid on laſt before it; and content themſelves afterwards to waſh the part over with ſize. This method is chiefly practiſed for the hands, face, and other nudities in relievo; which, by this means, do not appear ſo very brilliant as the parts burniſhed; though much more ſo than the parts perfectly flat, or matted.

To *gild* a work, and yet preſerve white grounds; they uſe to apply a layer of Spaniſh white mixed with a weak fiſh-glue, on all the parts of the ground whereon the yellow, or the layer next under the gold, might run.

Method of Gilding *metals, or of* gilding *by the fire.*—There are two ways of *gilding* by fire; *viz.* that with liquid gold, and that with leaf gold.

The firſt is performed with gold amalgamated with mercury, in the proportion of about an ounce of mercury to a drachm of gold.

In order to this operation, they heat a crucible red-hot, then put the gold and mercury in it, and ſtir them gently about, till the gold be found melted and incorporated into a maſs with the mercury. This done, they caſt them into water, to waſh and purify; and thence into other waters, repeating the lotion, in order to take away the blackneſs. From the maſs they ſeparate the mercury not united therewith, by ſqueezing it between the fingers through a piece of ſhamoy ſkin, or a linen cloth.

To prepare the metal to receive this amalgama, they ſcrub it with a wire-bruſh, and wet it with water or beer; continuing to rub and wet it till all the foulneſs which might hinder the cloſe union of the metals be removed: which done, to quicken the work further, they rub a mixture of quickſilver and aqua fortis over it.

They proceed now to apply the gold, in order to which they uſe a little knife, or a bruſh made of braſs wire for the purpoſe; with which they ſpread or overlay the whole work, as evenly as may be, being careful to miſs no part. Then giving the work a gentle heat before the fire, with a hair-bruſh they dab and ſpread the amalgama further and evener thereon.

Thus far advanced, the metal is ſet over the fire, upon a grate, or in a ſort of cage, under which is a pan of coals; by which means the mercury is raiſed in fumes, and leaves the gold alone adhering to the work: in proportion as the mercury, evaporating and flying off, diſcovers places where gold is wanting, they take care to ſupply them, by adding new pieces of amalgama with the knife or bruſh.

The work is then rubbed over, with the wire bruſh dipt in beer, or vinegar: this leaves it in a condition to be healed, or helled, *i. e.* to have its colour and luſtre heightened, which is the laſt part of the proceſs, and which the gilders keep to themſelves as a mighty ſecret; though we apprehend it cannot differ much from what we have elſewhere ſhewn of the manner of giving gold ſpecies their colour, under the article Coining.

The method given by Parker, is to dip the work in a decoction of argal, ſulphur, ſalt, and as much water as will cover it, holding it therein till it have acquired the colour that pleaſes: then dipping it in cold water.

To have the *gilding* more rich and laſting, they ſometimes quicken the work over again with quickſilver and aqua fortis, and then gild it a ſecond time, after the ſame manner; proceeding, if occaſion be, even to a third or fourth time, till the gold lies the thickneſs of a nail on the metal.

Gilding *by the fire with gold leaves.*—To prepare the metal for this *gilding*, it muſt be firſt well ſcratched, or raked; then poliſhed with a poliſher: and thus ſet to the fire to *blue*, *i. e.* to heat, till it appear of a blue colour. This done, the firſt lay of gold is clapped thereon, and lightly rubbed down with a poliſher; and thus expoſed to a gentle fire.

They uſually only give it three ſuch lays, or four at moſt; each lay conſiſting of a ſingle leaf for the common works, and of two for the extraordinary ones; after each lay they ſet it a freſh to the fire. After the laſt day, the gold is in a condition to be burniſhed.

GILDING *of books*. See the article *Book*-BINDING.

GILEAD — *Balm of* GILEAD. See the article BALSAM.

GILGUL *hammethin*, a Hebrew phraſe, literally ſignifying the *rolling of the dead*.—To conceive the uſe of this expreſſion it is to be obſerved, that the Jews have a tradition that, at the coming of the Meſſiah, no Iſraelite ſhall riſe any-where but in the Holy Land. What, then, ſhall become of all the faithful interred in other parts? ſhall they periſh, and remain in the ſtate of death?

No, ſay the Jewiſh doctors; but God will dig them ſubterraneous canals, or cavities, through which they ſhall roll from their tombs to the Holy Land; and, when they are arrived there, God will blow on them, and raiſe them again.

This imaginary paſſage of the carcaſes, or aſhes, of the Jews, from their tombs to the Holy Land, by rolling under-ground, is what they call *gilgul hammethin*, the rolling of the dead.

GILL, *ground-ivy*, a medicinal plant; which gives the denomination to a ſort of medicated ale, or drink, commonly called *Gill*, or *Gill-ale*; made by infuſing the dried leaves of the plant therein.

Gill is abſterſive, and vulnerary; and preſcribed in diſorders of the lungs, and breaſt; and alſo eſteemed in obſtructions of the viſcera; whence it paſſes for hepatic, diuretic, ſplenetic, and nephretic. It is ſaid to do wonders in tubercles, and tartarous indurations of the lungs. Willis commends its powder in obſtinate coughs: and Etmuller gives the hiſtory of a ſcorbutic conſumption, cured by a ſtrong decoction of this herb, after a vomit.

GILLA, in chemiſtry, and pharmacy, is an Arabic term for ſalt; peculiarly uſed among us for the emetic ſalt of vitriol.

This ſalt is prepared from that mineral, by three or four repeated operations; *viz.* diſſolution, in May-dew; filtration, and cryſtallization. In defect of May-dew, rain-water may ſerve.

Gilla is uſed in tertians, and all fevers ariſing from a corruption of humours in the firſt paſſages. It deſtroys worms, and prevents putrefaction. The doſe is from twenty grains to half a drachm, taken in broth, or in cordial waters.

GILLS, *Branchiæ*, in natural hiſtory, thoſe membranous, cartilaginous, parts in fiſhes, whereby they reſpire.

What we call *gills*, in fiſhes, ſerve the purpoſes of lungs: reſpiration of air is as neceſſary to fiſhes as to terreſtrial animals: there is always a deal of air incloſed among water; and it is this air that fiſhes reſpire. The whole mechaniſm of their *gills* is contrived with this view; *viz.* to ſeparate, and imbibe, this air, from the water, and preſent it to the blood, after the ſame manner as it is preſented to the lungs of other animals.

M. du Verney has unravelled this infinitely complicated piece of mechaniſm, in the *gills* of a carp: the firſt thing that offers is a fabric, conſiſting of a great number of bony laminæ, each ſubdivided into an infinity of bony fibres, whoſe office is, to ſuſtain the innumerable ramifications of an artery diſpatched thither from the heart: the uſe of theſe ramifications is, to preſent the blood, extremely ſubdivided, and, as it were, each globule of blood by itſelf, to the water. Between theſe laminæ, and throughout the whole contexture of the *gills*, are an infinite number of very narrow paſſages, deſtined to receive and ſubdivide the water which the fiſh takes in by the mouth, into little parcels. In this ſtate the air, its priſon-doors being now in ſome meaſure opened, makes its eſcape, and joins itſelf to the blood of all the little arteries.

The *gills* have neceſſarily an alternate motion of dilatation and compreſſion, which is effected by another very curious piece of mechaniſm; when they dilate, the water is taken in; and when they contract, it is expelled again. Hence it is probable, that it is in the very inſtant of contraction that the air expreſſed from the water is forced to enter the pores of the little blood-veſſels, by reaſon the force is then greater than at any other time; and this action requires a conſiderable force. The ſame reaſon holds with reſpect to the lungs of men: accordingly, M. du Verney maintains, that though the air enter the lungs in the time of inſpiration, it is only received into the blood in that of expiration, when the ſuperfluous air is carried off by the trachea; ſo that the real inſpiration, *i. e.* the entrance of the air into the blood, ſhould be the expiration.

The water is taken in by the mouth, and carried off again, ſtripped of its air, by the *gills*; and the air gained from it, is diſtributed, firſt to the arteriolæ of the *gills*; and thence, by the law of circulation, to all the little veins inoſculated therewith. See Supplement, article BRANCHIÆ.

GILT *varniſh*. See the article VARNISH.

GINGER, GINGIBER, or *Zinziber*, an aromatic root, of conſiderable uſe, both as a ſpice, and a medicine.

It is chiefly brought from Calicut, in the Eaſt-Indies; though of late it has been cultivated, with good ſucceſs, in the Caribbee iſlands.

The plant which affords it ſomewhat reſembles our reed, both in reſpect of ſtem, and leaves. The root goes no great depth under-ground, but ſpreads itſelf near the ſurface; in form not unlike a man's hand, but very knotty.

When arrived at maturity, they dig it up, and dry it on hurdles, either in the ſun, or an oven: the beſt is that which is new, dry, well filled, hard to break, of a browniſh colour without, reſinous within, and of a hot, pungent taſte.

They uſe to candy the root, when green, with ſugar, and honey; having firſt ſteeped it ſome time in water, to take away part of its acrimony, and to diſpoſe it to let go the outer ſkin. They alſo make a marmelade of it, and dry cakes.

The northern people make great uſe of this confection, as holding it ſovereign againſt the ſcurvy. The Indians eat the root, when green, by way of ſallad, firſt chopping it ſmall, mixing it with other herbs, and ſeaſoning it with oil and vinegar.

As to its medicinal uſe, it is hot, and penetrating; it is alſo held good to ſtrengthen the ſtomach, and promotes appetite: it promotes alſo digeſtion, prevents putrefaction, *&c.*

GINGERBREAD, a richer kind of bread; the flavour and taſte whereof are heightened and improved with ſpices; and particularly *ginger*; whence the name.

There are various forms and preparations of *gingerbread*: we ſhall content ourſelves with the following receipt, which is well recommended.

Into a pound of almonds grate a peny white loaf; ſift and beat them together; to the mixture add an ounce of *ginger*, ſcraped fine; and liquorice, and aniſeed in powder, of each a quarter of an ounce: pour in two or three ſpoonfuls of roſe-water, and make the whole into a paſte, with half a pound of ſugar; mould and roll it, print it, and dry it in a ſtove.

Others make it of treacle, citron, lemon, and orange-peel; with candied *ginger*, coriander, and caraway-ſeeds, mixed up with as much flour as will make it into a paſte.

GINGIVA, in anatomy, the *gum*; a hard ſort of fleſh, inveſting the alveoli, or ſockets, of the teeth.

The *gingivæ* are formed by the union of two membranes; one of which is a production of the perioſteum, and the other of the internal membrane of the mouth.

GINGLYMUS Γιγγλυμος, in anatomy, one of the ſpecies of articulation.

The *ginglymus* is that jointure of the bones where each bone mutually receives the other: ſo that each both receives, and is received.

There are three ſpecies of *ginglymus*: the firſt, when the ſame bone, at the ſame extremity, receives, and is reciprocally received by, another bone, after the manner of a hinge; ſuch is that of the cubitus and humerus.

The ſecond, when a bone receives another at one of its extremes; and is received into another, at the other; as the vertebræ do.

The third is that where a bone is received into another, after the manner of a wheel, or the axis of a wheel, in a box; ſuch is that of the ſecond vertebra of the neck in the firſt.

GING-SENG, or GIN-SEM, or GIN-ZENG, in natural hiſtory, a very extraordinary and wonderful plant, principally found in Tartary.

The *ging-ſeng* is one of the principal medicines of the Chineſe and Tartars; and their moſt eminent phyſicians have written many a volume of its virtues.

It is known among them by divers other names, expreſſing the only *ſpirit*, or the *pure ſpirit of the earth*; the *plant that gives immortality*, &c. It makes, in effect, the whole materia medica for the people of condition; but is too precious for the populace.

All the writers of the Chineſe affairs make mention of the *ging-ſeng*: as Martinius, in his *Atlas*; F. Kercher, in his *China Illuſtrata*; F. Tachard, in his *Voyages*; and F. le Comte, in his *Memoirs*.

And yet we know but very little of this plant before F. Jartoux, a Jeſuit, and miſſionary in China: who, being employed, by order of the emperor, in making a map of Tartary, in the year 1709. had an opportunity of ſeeing it growing, in a village about four leagues from the kingdom of Corea, inhabited by Tartars, called *Calca-Tatze*.

That father took this opportunity to make a draught of the plant, and give an accurate deſcription thereof, with its virtues, and the manner of preparing it; which, being a great curioſity, we ſhall here gratify the reader with.

The *ging-ſeng*, repreſented *Tab. Nat. Hiſtory, fig.* 10. has a white root, ſomewhat knotty, about thrice the thickneſs of the ſtem, and which goes tapering to the end; at a few inches from the head it frequently parts into two branches; which gives it ſome reſemblance of a man, whoſe thighs the branches repreſent; and it is hence it takes the denomination *ging-ſeng*; which ſignifies a figure of a man.

From the root riſes a perfectly ſmooth and tolerably round ſtem: its colour is uſually a pretty deep red, except toward the foot, where, by the neighbourhood of the earth, it is turned ſomewhat whiter: at the top of the ſtem is a ſort of joint, or knot, formed by the ſhooting out of four branches, which ſpread as from a centre: the under-ſide of each branch is green, mixed with white; and the upper part, much like the ſtalk, of a deep red; the two colours gradually decreaſe, and, at length, unite on the ſides.

Each branch has five leaves, well enough repreſented in the figure; and it is obſervable, that the branches divide equally from each other, both in reſpect of themſelves, and of the horizon; and, with the leaves, make a circular figure, nearly parallel to the ſurface of the ground.

The fibres of the leaves are very diſtinguiſhable; and, on the upper ſide, are beſet with ſmall whitiſh hairs: the membrane, or pellicle, between the fibres, riſes a little in the middle, above the level of the fibres.

The colour of the leaf is a dark green above, and a ſhining whitiſh green underneath; and all the leaves are finely jagged, or indented, on the edges.

From the centre of the branches ariſes a ſecond ſtalk, D E, very ſtrait, ſmooth, and whitiſh, from bottom to top, bearing a bunch of round fruit, of a beautiful red colour; this bunch, in the plant viewed by our miſſionary, was compoſed of twenty-four berries; two of which are here repreſented, 9, 9.

The red ſkin that covers the berry is very thin, and ſmooth; and contains within it a white pulp: as theſe berries were double, each had two rough ſtones, of the ſize and figure of our lentils. The pedicles, whereon the berries were ſupported, all aroſe from the ſame centre; and ſpreading exactly like the radii of a ſphere, made the bunch of berries of a circular form. The fruit is not good to eat; and the ſtone includes a kernel: it has alſo a ſmall beard at the top, diametrically oppoſite to the pedicle.

The plant dies away every year: the number of its years may be known by the number of ſtalks it has ſhot forth, of which there always remains ſome mark, as is ſhewn in the figure, by the letters *b b b*, &c. from whence it appears, that the root A was ſeven years old.

As to the flower, F. Jartoux owns he had never ſeen it, and therefore could not deſcribe it: ſome have aſſured him, that it is white, and very ſmall; others, that there is no flower at all, and that nobody had ever ſeen it. He rather inclines to think it ſo ſmall as to have eſcaped notice; and what confirms him in the opinion is, that thoſe who ſeek the *ging-ſeng*, having nothing in view but its root, overlook and deſpiſe the reſt of the plant, as uſeleſs.

As they have ſowed the ſeed in vain, without any plant ever ariſing therefrom, it is probable this might give occaſion to the fable which is current among the Tartars.—They ſay, that a bird eats it as ſoon as in the earth; and not being able to digeſt it, it putrifies in its ſtomach, and afterwards ſprings up in the place where it was caſt by the bird with its dung.—The miſſionary rather believes, that the ſtone remains a long time in the ground before it takes root; which opinion appears the more probable, as there are ſome roots no longer, or bigger, than one's little finger, which yet have ſhot forth at leaſt ten ſtalks.

Though the plant here deſcribed had but four branches; yet there are ſome which have but two, others three, and others five, ſix, or ſeven; but each branch has always five leaves.

The height of the plant is proportionable to its bigneſs, and the number of branches the root has, the larger, and more uniform, it is; and the fewer ſmall ſtrings, or fibres, it has, the better it is accounted.

It is hard to ſay why the Chineſe ſhould call it *ging-ſeng*; a word which ſignifies figure, or repreſentation of a man: neither that father, nor any he inquired of, could ever find, that it bore more reſemblance to the figure of a man than is ordinarily ſeen among other roots. The Tartars, with more reaſon, call it *orhota*; that is, the firſt of plants.

Thoſe who gather the *ging-ſeng* preſerve only the root; and all they can get of it in ten or fifteen days time they bury together, in ſome place under-ground; then they take care to waſh it well, and ſcour it with a bruſh; then dip it in ſcalding water; and prepare it in the fumes of a ſort of yellow millet, which gives it part of its colour.

The millet is put in a veſſel, with a little water, and boiled over a gentle fire; the roots are laid over the veſſel, upon ſmall, tranſverſe pieces of wood, being firſt covered with a linen cloth, or ſome other veſſel, placed over them.

They may alſo be dried in the ſun, or by the fire; but then, though they retain their virtue well enough, they have not that yellow colour which the Chineſe ſo much admire. When the roots are dried, they muſt be kept cloſe in ſome very dry place; otherwiſe they are in danger of corrupting, or of being eaten by worms.

As to the place where this root grows, it is between the thirty-ninth and forty-ſeventh degree of north latitude, and between the tenth and twentieth degree of eaſt longitude, reckoning from the meridian of Peking. Here is found a long tract of mountains, which the thick foreſts that cover and encompaſs them render almoſt impaſſable: it is upon the declivities of theſe mountains, and in theſe thick foreſts, upon the banks of torrents, or about the roots of trees, and amidſt a thouſand other different ſorts of plants, that the *ging-ſeng* is found; it is not to be met with in plains, valleys, marſhes, the bottoms of rivulets, or in places too much expoſed, and open.

If the foreſt takes fire, and be conſumed, this plant does not appear till two or three years after; it alſo lies hid from the ſun as much as poſſible; which ſhews that heat is an enemy to it.

The places where the *ging-ſeng* grows are, on every ſide, ſeparated from the province of Quang-tong, by a barrier of wooden ſtakes, which encompaſſes this whole province; and about which guards continually patrol, to hinder the Chineſe from going out and looking after this root.

Yet, how vigilant ſoever they are, greedineſs after gain incites the Chineſe to lurk about privately in theſe deſerts, ſometimes to the number of two or three thouſand, at the hazard of loſing their liberty, and all the fruit of their labour, if they are taken, either as they go out of or come into the province.

The emperor, having a mind that the Tartars ſhould reap all the advantage that is to be made of this plant, rather than the Chineſe, gave orders, in 1709. to ten thouſand Tartars, to go and gather all that they could of the *ging-ſeng*; upon condition that each perſon ſhould give him two ounces of the beſt, and that the reſt ſhould be paid for, weight for weight, in pure ſilver.

It was computed, that, by this means, the emperor would get this year about twenty thouſand Chineſe pounds of it, which would not coſt him above one fourth part of its value.

We met, by chance, ſays F. Jartoux, with ſome of thoſe Tartars, in the midſt of thoſe frightful deſerts; and their mandarins, who were not far out of the way, came, one after another, and offered us oxen for our ſubſiſtence, according to the commands they had received from the emperor.

This army of herbariſts obſerved the following order: after they had divided a certain tract of land among their ſeveral companies, each company, to the number of an hundred perſons, ſpread itſelf out in a right line, to a certain fixed place; every ten of them keeping at a diſtance from the reſt.

Then they ſearched carefully for the plant, going on leiſurely in the ſame order; and in this manner, in a certain number of days, they run over the whole ſpace of ground appointed them.

When the time was expired, the mandarins, who were encamped in their tents in ſuch places as were proper for the ſubſiſtence of their horſes, ſent to view each troop, to give them freſh orders, and to inform themſelves if their number was complete.

If any one of them was wanting, as it often happened, either by wandering out of the way, or being attacked by wild beaſts, they always looked for him a day or two; and then returned again to their labour, as before.

The *ging-ſeng*, we have obſerved, is an ingredient in moſt of the medicines which the Chineſe phyſicians preſcribe to the better ſort of patients: they affirm, that it is a ſovereign remedy for all weakneſſes occaſioned by exceſſive fatigues, either of body or mind; that it attenuates, and carries off, pituitous humours; cures weakneſs of the lungs, and the pleuriſy; ſtops vomitings; ſtrengthens the ſtomach, and helps the appetite; diſperſes fumes, or vapours; fortifies the breaſt; is a remedy for ſhort and weak breathing; ſtrengthens the vital ſpirits; and is good againſt dizzineſs of the head, and dimneſs of ſight; and that it prolongs life to extreme old age. Nobody can imagine, that the Chineſe and Tartars would ſet ſo high a value upon this root, if it did not conſtantly produce a good effect: thoſe that are in health often make uſe of it to render themſelves more vigorous and ſtrong. And I am perſuaded, adds the father juſt mentioned, it would prove an excellent medicine in the hands of any European who underſtands pharmacy, if he had but a ſufficient quantity of it to make ſuch trials as are neceſſary to examine the nature of it chymically; and to apply it in a proper quantity, according to the nature of the diſeaſe for which it may be beneficial.

It is certain, that it ſubtilizes, increaſes the motion of and warms the blood; that it helps digeſtion, and invigorates in a very ſenſible manner.

After I had deſigned the root, he goes on, I obſerved the ſtate of my pulſe, and then took half of a root, raw as it was, and unprepared; in an hour after I found my pulſe much fuller, and quicker; I had an appetite, and perceived myſelf much more vigorous, and could bear labour better, and eaſier, than before. Four days after, finding myſelf ſo fatigued and weary, that I could ſcarce ſit on horſeback, a mandarin, who was in company with us, perceiving it, gave me one of theſe roots; I took half of it immediately, and an hour after I was not in the leaſt ſenſible of any wearineſs. I have often made uſe of it ſince, and always with the ſame ſucceſs. I have obſerved alſo, that the green leaves, and eſpecially the fibrous part of them, chewed, would produce nearly the ſame effect. The Tartars often bring people the leaves of *ging-ſeng* inſtead of tea; and I always find myſelf ſo well afterwards, that I ſhould readily prefer them before the beſt tea: their decoction is of a grateful colour; and, when one has taken it twice or thrice, its taſte and ſmell become very agreeable.

As for the root, it is neceſſary to boil it a little more than tea, to allow time for extracting its virtue, as is practiſed by the Chineſe, when they give it to ſick perſons; on which occaſion they ſeldom uſe more than the fifth part of an ounce of the dried root.

To prepare the root for exhibition they cut it into thin ſlices, and put it into an earthen pot well glazed, with about half a pint of water: the pot is to be well covered, and ſet to boil over a gentle fire; and, when the water is conſumed to the quantity of a cup full, a little ſugar to be mixed with it, and to be drank: immediately after this, as much more water to be put on the remainder, and to be boiled as before, to extract all the juice, and what remains of the ſpirituous part of the root.

Theſe two doſes to be taken, the one in the morning, and the other in the evening. See Supplement, article GIN-SENG.

GIRDERS, in architecture, the largeſt pieces of timber in a floor.—Their ends are uſually faſtened into the ſummers, or breſt-ſummers; and the joiſts are framed in at one end to the *girders.*

By the ſtatute for rebuilding London, no *girder* is to lie leſs than ten inches into the wall; and their ends to be always laid in loam, *&c.*

Girders and Summers in length.	*From*		*to*		*muſt be in*	
	F.	*In.*	*F.*	*In.*	*Breadth, Inches.*	*Depth, Inches.*
	10	0	15	0	11	8
	15	0	18	0	13	9
	18	0	21	0	14	10
	21	0	24	0	16	12
	24	0	26	0	17	14

GIRDING-*beams*, in building, the ſame as girders. See GIRDER.

GIRDLE, *Cingulus*, or *Zona*, a belt, or band, of leather, or other matter, tied about the reins; to keep that part more firm and tight.

It was antiently the cuſtom for bankrupts, and other inſolvent debtors, to put off, and ſurrender, their *girdle*, in open court. —The reaſon hereof was, that our anceſtors uſed to carry all their neceſſary utenſils, as purſe, keys, *&c.* tied to the *girdle*; whence the *girdle* became a ſymbol of the eſtate. Hiſtory relates, that the widow of Philip I. duke of Burgundy, renounced her right of ſucceſſion by putting off her *girdle* upon the duke's tomb.

The Romans always wore a *girdle*, to tuck up the tunica when they had occaſion to do any thing; this cuſtom was ſo general, that ſuch as went without *girdles*, and let their gowns hang looſe, were reputed idle, diſſolute perſons.

Maidens, or *Virgins* GIRDLE.—It was the cuſtom among the Greeks and Romans for the huſband to untie his wife's *girdle*. Homer, *lib.* xi. of his *Odyſſee*, calls this *girdle* ϖαρθενιην ζωνην, *maids girdle*. Feſtus relates, that it was made of ſheeps wool, and that the huſband untied it in bed: he adds, that it was tied in the Herculean knot; and that the huſband untied it as a happy preſage of his having as many children as Hercules; who, at his death, left ſeventy behind him.

The poets attribute to Venus a particular kind of *girdle*, called *ceſtus*; to which they annex a faculty of inſpiring the paſſion of love.

Quickſilver GIRDLE, in medicine, is a ſort of *girdle* ſmeered over with mercury, or having mercury incloſed within it.

It is made of leather, linen, cloth, cotton, ſtuff, or the like; and the mercury is prepared, or killed, various ways; as with faſting-ſpittle, fat, or the like.

It is applied as a topical medicine about the waiſt, ſometimes with good effect; but, frequently, it proves dangerous, principally in weak conſtitutions, and thoſe ſubject to convulſions. —Its intention is, the cure of the itch, driving away vermin, killing lice, *&c.*

Queen's GIRDLE, is an antient duty, or tax, raiſed at Paris every three years, at the rate of three deniers upon each muid of wine, and ſix for each queue: it was intended for the maintenance of the queen's houſhold; afterwards they augmented and extended it to other commodities, as coals, *&c.*

Vigenere ſuppoſes it to have been originally thus called, by reaſon the *girdle* antiently ſerved for a purſe; but he adds, that a like tax had been raiſed in Perſia, and under the ſame name, above two thouſand years ago; as appears from Plato, in his *Alcibiades*; Cicero, Athenæus, *&c.*

Chriſtians of the GIRDLE. Motavackkel, tenth caliph of the family of the Abaſſides, injoined the Chriſtians, and Jews, in the year of the Hegira 235. of Jeſus Chriſt 856. to wear a large leathern *girdle*, as a badge of their profeſſion; which they bear to this day throughout the eaſt: from which time the Chriſtians of Aſia, and particularly thoſe of Syria and Meſopotamia, who are almoſt all Neſtorians, or Jacobites, have been called *Chriſtians of the girdle.*

Order of the GIRDLE, the order of Cordeliers. See CORD, and CORDELIER.

GIRDLE, in architecture. See CINCTURE.

GIRLE, among hunters, is a roe-buck of two years.

GIRON *, or GUIRON, in heraldry, denotes a triangular figure, having a long, ſharp point, not unlike a wedge, terminating in the centre of the eſcutcheon.

* The word is French, and literally ſignifies the *gremium*, or lap; by reaſon, in ſitting, the knees being ſuppoſed ſomewhat aſunder, the two thighs, together with a line imagined to paſs from one knee to the other, form a figure ſomewhat ſimilar hereto.

When a coat has ſix, eight, or ten of theſe *girons*, meeting, or centring, in the middle of the coat, it is ſaid to be *gironné*, or *gironny.*

GIRONNE', GIRONNY, in heraldry, is when a ſhield, or coat, is divided into ſeveral girons, which are alternately colour and metal. See *Tab. Herald. fig.* 63. which is blazoned *gironné* of ſix argent and ſable.

When there are eight pieces, or girons, it is abſolutely ſaid to be *gironné*; when there are more, or fewer, the number is to be expreſſed—*gironné* of four, of fourteen, *&c.*

Some, inſtead of *gironné*, ſay, *parti*, *couppé*, *tranché*, and *taillé*; by reaſon the girons are formed by ſuch diviſions of the field.—Four girons form a ſalteer, and eight a croſs. See SALTEER, *&c.*

GIVEN, *datum*, a term very frequently uſed in mathematics; ſignifying a thing which is ſuppoſed to be known.

Thus, if a magnitude be known, or we can find another equal to it, we ſay, it is a *given* magnitude, or that ſuch a thing is *given* in magnitude.

If the poſition of any thing be ſuppoſed as known, we ſay, *given* in poſition.

Thus, if a circle be actually deſcribed on a plain, its centre is *given* in poſition; its circumference *given* in magnitude; and the circle is *given* both in poſition and magnitude.

A circle may be *given* in magnitude only; as when only its diameter is *given*, and the circle not actually deſcribed.

If the kind, or ſpecies, of any figure be *given*, they ſay *given* in ſpecie.—If the ratio between any two quantities is known, they are ſaid to be *given* in proportion.

GLACIALIS *, *icy*, ſomething relating to ice; and particularly a place that abounds in ice.

* The word is formed of the Latin *glacies*, ice.

Thus we ſay the *mare glaciale*, or *congelatum*, that is, the icy, or frozen ſea; called alſo the Chronian, or Sarmatian-ſea.

GLACIS, in building, an eaſy, inſenſible ſlope, or declivity.

The deſcent, or inclination, of the *glacis*, is leſs ſteep than that of the talut.—In gardening, a deſcent ſometimes begins in talut, and ends in *glacis*.

The *glacis* of the cornich is an eaſy imperceptible ſlope in the cymatium of the cornich, to promote the deſcent and draining off of the rain-water.

GLACIS, in fortification, is particularly uſed for that of the counterſcarp; being a ſloping bank, which reaches from the parapet of the counterſcarp, or covert-way, to the level ſide of the field.—See *Tab. Fortif. fig.* 21. *lit. a a a* and *c.*

The *glacis*, otherwiſe called *eſplanade*, is about ſix feet high; and loſes itſelf, by an inſenſible diminution, in the ſpace of ten fathoms.

GLADE, in agriculture, gardening, *&c.* a viſta, or open and light paſſage, made through a thick wood, grove, or the like, by lopping off the branches of trees along the way.

GLADIATORS, in antiquity, perſons who were retained to fight, ordinarily in the arena, for the entertainment of the people. See COMBAT.

The *gladiators* were uſually ſlaves, and fought out of neceſſity; though, ſometimes, freemen made profeſſion thereof, like our prize-fighters, for a livelihood.—After a ſlave had ſerved on the arena three years, he was diſmiſſed. See SLAVE.

The Romans borrowed this cruel diverſion from the Aſiatics: ſome ſuppoſe that there was policy herein, the frequent combats of *gladiators* tending to accuſtom the people to deſpiſe dangers and death.

The origin of ſuch combats ſeems to be as follows: from the earlieſt times we have any acquaintance withal in profane hiſtory, it had been the cuſtom to ſacrifice captives, or priſoners of war, to the manes of the great men who had died in the engagement: thus Achilles, in the *Iliad*, *lib.* xxiii. ſacrifices twelve young Trojans to the manes of Patroclus; and in Virgil, *lib.* xi. *ver.* 81. Æneas ſends captives to Evander, to be ſacrificed at the funeral of his ſon Pallas.

In courſe of time they came alſo to ſacrifice ſlaves at the funerals of all perſons of condition; this was even eſteemed a neceſſary part of the ceremony; but, as it would have appeared barbarous to have maſſacred them like beaſts, they were appointed to fight with each other, and do their beſt to ſave their own lives by killing their adverſary. This ſeemed ſomewhat leſs inhuman, by reaſon there was a poſſibility of avoiding death; and it only lay on themſelves, if they did not do it.

This occaſioned the profeſſion of *gladiator* to become an art: hence aroſe maſters of arms; and men learned to fight, and exerciſe, therein.

Theſe maſters, whom the Latins called *laniſtæ*, bought them ſlaves to train up to this cruel trade; whom they afterwards ſold to ſuch as had occaſion to preſent the people with ſo horrible a ſhew.

Junius Brutus, who expelled the kings, is ſaid to have been the firſt who honoured the funeral of his father with theſe inhuman diverſions.—They were at firſt performed near the ſepulchre of the deceaſed, or about the funeral pile; but were afterwards removed to the circus and amphitheatres; and became ordinary amuſements.

The emperor Claudius reſtrained them to certain occaſions; but he, ſoon afterwards annulled what he decreed, and private perſons began to exhibit them at pleaſure, as uſual; and ſome carried the brutal ſatisfaction ſo far as to have them at their ordinary feaſts.

And not ſlaves only, but other perſons, would hire themſelves to this infamous office.

The maſter of the *gladiators* made them all firſt ſwear, that they would fight to death; and if they failed therein, they were put to death, either by fire, or ſwords, clubs, whips, or the like.

It was a crime for the wretches to complain when they were wounded, or to aſk for death, or ſeek to avoid it, when overcome; but it was uſual for the emperor, or the people, to grant them life, when they gave no ſigns of fear, but waited the fatal ſtroke with courage and intrepidity: Auguſtus even decreed, that it ſhould always be granted them.

From ſlaves, and freedmen, the wanton ſport at length ſpread to people of rank and condition; and Nero is related to have brought upwards of four hundred ſenators, and ſix hundred Roman knights, upon the arena; though Lipſius takes both thoſe numbers to be falſified; and, not without reaſon, reduces them to forty ſenators, and ſixty knights: yet Domitian, that other monſter of cruelty, refined upon Nero, exhibiting combats of women in the night-time.

Conſtantine the Great is ſaid to have firſt prohibited the combats of *gladiators* in the eaſt; at leaſt, he forbad thoſe who were condemned to death for their crimes, to be employed herein; there being an order ſtill extant to the præfectus prætorii, rather to ſend them to work in the mines, in lieu thereof: it is dated at Berytus, in Phœnicia, the firſt of October 325.

The emperor Honorius firſt forbad them at Rome, on occaſion of the death of St. Telemachus; who, coming out of the eaſt into Rome, at the time of one of theſe ſpectacles, went down into the arena, and uſed all his endeavours to prevent the *gladiators* from continuing the ſport; upon which the ſpectators of that carnage, fired with anger, ſtoned him to death. Theodoret. *Hiſt. Eccleſ. lib.* v. *c.* 26.

It muſt be obſerved, however, that the practice was not intirely aboliſhed in the weſt before Theodoric, king of the Oſtrogoths. Honorius, on the occaſion firſt mentioned, had prohibited them; but the prohibition does not ſeem to have been executed. Theodoric, in the year 500. aboliſhed them finally.

Some time before the day of battle, the perſon who preſented the people with the ſhews, gave them notice thereof, by programma's, or bills, containing the names of the *gladiators*, and the marks whereby they were to be diſtinguiſhed; for each had his ſeveral badge, which was, moſt commonly, a peacock's feather; as appears from the ſcholiaſt of Juvenal, on the 158th verſe of the third ſatire; and Turnebus *Adverſ. l.* ii. *c.* 8.

They alſo gave notice what time the ſhews would laſt, and how many couples of *gladiators* there were: and it even appears, from the 52d verſe of the ſeventh ſatire of the ſecond book of Horace, that they ſometimes made repreſentations of theſe things in painting; as is practiſed among us, by thoſe who have any thing to ſhew at fairs.

The day being come, they began the entertainment by bringing two kinds of weapons; the firſt were ſtaves, or wooden files, called *rudes*; and the ſecond were effective weapons, as ſwords, poniards, *&c.*

The firſt were called *arma luſoria*, or *exercitoria*; the ſecond *decretoria*, as being given by decree, or ſentence, of the prætor, or of him at whoſe expence the ſpectacle was exhibited.

They began to fence, or ſkirmiſh, with the firſt, which was to be the prelude to the battle; and from theſe, when well warmed, they advanced to the ſecond, with which they fought naked.

The firſt part of the engagement was called *ventilare, præludere*; and the ſecond, *dimicare ad certum*, or *verſis armis pugnare*: and ſome authors think, with much probability, that it is to theſe two kinds of combat that St. Paul alludes, in the paſſage 1 *Cor.* ix. 26, 27. ‘I fight, not as one that beateth the air; but I keep under my body, and bring it into ſubjection.’

If the vanquiſhed ſurrendered his arms, it was not in the victor's power to grant him life; it was the people, during the time of the republic, and the prince, or people, during the time of the empire, that were alone impowered to grant the boon.

The reward of the conqueror was a branch of palm-tree, and a ſum of money: ſometimes they gave him his congé, or diſmiſſed him, by putting one of the wooden files, or rudes, in his hand; and ſometimes they even gave him his freedom.

The ſign, or indication, whereby the ſpectators ſhewed, that they granted the favour, was, to fall the thumb, or clench it between the other fingers; and, when they would have the combat finiſhed, and the vanquiſhed ſlain, they raiſed the thumb, and directed it towards the combatants; which we learn from Juvenal, *ſat.* iii. *v.* 36.

The *gladiators* challenged, or defied, each other, by ſhewing the little finger; and, by extending this, or ſome other, during the combat, they owned themſelves vanquiſhed, and begged mercy from the people: Victi oſtenſam digiti veniam a populo poſtulabant, ſays the old ſcholiaſt on Perſius.—Vid. Plin. *l.* xxviii. *c.* 2. Prudentius, *l.* ii. contra Symm. *v.* 1098. Horace, *l.* iv. 18. v. 66. Politian. *Miſcell. c.* 42. Turneb. *Adverſ. l.* xi. *c.* 6. Lipſ. *Saturn. l.* ii. *c.* 22.

There were divers kinds of *gladiators*, diſtinguiſhed by their weapons, manner, and time of fighting, *&c.* as,

The *andabatæ*; of whom we have already given an account, under the article ANDABATÆ.

The *catervarii*, who always fought in troops, or companies, number againſt number; or, according to others, who fought promiſcuouſly, without any certain order. Lipſ. *lib.* ii. *c.* 16.

The *conſummati*, whom authors mention as a ſpecies of *gladiators*, the ſame with the rudiarii, and veterani; founding the opinion on a paſſage in Pliny, *l.* viii. *c.* 7. But Lipſius ſhews, that they have miſtaken Pliny; *Saturn. lib.* ii. *c.* 16. and Turneb. *Adverſ. l.* xxx. *c.* 36.

The *cubicularii*, which are a little precarious, being chiefly founded on a paſſage in Lampridius, in the life of the emperor Commodus: *Inter hæc, habitu victimarii, victimas immolavit, in arena rudibus, inter cubicularios* gladiatores *pugnavit lucentibus aliquando mucronibus.*

Turnebus reads *rudiarios* in lieu of *cubicularios*; and underſtands it of thoſe who had been diſmiſſed, and could no longer be obliged to fight, except with files.

Salmaſius reads *gladiator*; and refers it to the emperor, who fought not only on the arena, and with files, or blunted inſtruments, but at home, with his ſervants, and valets de chambre, and with ſharps.

Lipſius will have nothing altered in the text: the *gladiatores cubicularii*, he obſerves, were thoſe who fought at private houſes, during feaſts, *&c.* Accordingly, Dion ſays expreſly, that Commodus ſometimes fought at home, and even killed ſome perſons in ſuch rencounters; but that, in public, he only fought with blunted weapons.

The *dimachæ*, who fought armed with two poniards, or ſwords; or with ſword and dagger. Lipſ. *Saturn. l.* ii. *c.* 13.

The *eſſedarii*, who fought in cars; called alſo, in an inſcription lately diſcovered at Lyons, *aſſedarii*. Saturn. ſerm. *l.* ii. *c.* 13.

The *fiſcales*, or *Cæſariani*, who belonged to the emperor's company; and who, being more robuſt and dextrous than the reſt, were frequently called for; and therefore named alſo *poſtulatitii*. Saturn. *l.* ii. *c.* 16.

The other kinds were, the *hoplomachi, meridiani, myrmillones, ordinarii provocatores, retiarii, rudiarii, ſecutores, ſpectatores*, and *Thraces*: which ſee deſcribed under their ſeveral articles MERIDIANI, RETIARII, SECUTOR, *&c.*

Some authors, and particularly Vigenere on Livy, rank the *obſequentes*, mentioned by Spartian, in his life of Marcus Aurelius, among the number of *gladiators*. Lipſius laughs at him, Saturn. *l.* ii. *c.* 16. and with ſome reaſon: the obſequentes properly were the troops which that emperor raiſed among the *gladiators*; or whom of *gladiators* he made ſoldiers.

GLADIATORS *war*, *bellum* GLADIATORIUM, or *Spartacium*, called alſo the *ſervile war*, was a war which the Romans ſuſtained about the year of their city 680.—Spartacus, Crinus, and Oenomaus, having eſcaped, with other *gladiators*, to the number of 74, out of the place where they had been kept at Capua, gathered together a body of ſlaves, put themſelves at their head, rendered themſelves maſters of all Campania, and gained ſeveral victories over the Roman prætors.—At length they were defeated, in the year 682. at the extremity of Italy; having, in vain, attempted to paſs over into Sicily.

This war proved very formidable to the Romans. Craſſus was not able to finiſh it: the great Pompey was forced to be ſent as general.

GLADIUS*, *ſword.* *Jus* GLADII, or *right of the ſword*, is uſed, in our antient Latin authors, and in the Norman laws, for ſupreme juriſdiction.

* Camden, in *Britannia*, writes; *Comitatus Flint pertinet ad* gladium *Ceſtriæ:* and Selden, *Tit. of Honour*, p. 640. *Curiam ſuam liberam de omnibus placitis*, &c. *exceptis ad* gladium *ejus pertinentibus.*

And it is probably from hence, that, at the creation of an earl, he is *gladio ſuccinctus*; to ſignify, that he had a juriſdiction over the county.

GLAND, GLANDULA, in anatomy, a ſoft, ſpongy, lax kind of body; ſerving to ſeparate ſome particular humour from the maſs of blood. See BLOOD, and HUMOUR.

The antients took the *glands* to be nothing more than a kind of pillows, or cuſhions, for the neighbouring parts to reſt on.—Some of them, at length, began to fanſy them ſponges; deſtined to receive and imbibe the ſuperfluous moiſture of the other parts.

Later phyſicians thought proper to aſſign them nobler and more important uſes.—They conſidered them as ciſterns, which contained proper ferments, whereby the blood, upon its mixing therewith, was put into a fermentation; in the progreſs whereof it worked, or threw off certain of its parts, and ſent them away by excretory ducts.

The moderns, who allowed the *glands* to be the organs whereby the vital fluids are ſeparated for the uſes of the body, conſidered them as filtres, the pores whereof, being all of different figures, would only admit of ſimilarly figured particles to paſs through them.

But the lateſt authors rather conceive the *glands* as ſieves, whoſe perforations, being of different ſizes, though of the ſame figure, only ſeparate ſuch particles whoſe diameters are leſs than their own.

The *glands*, to the eye, appear a ſort of whitiſh, membranous maſſes, compoſed of an outer cover, or integument; within which a vaſcular plexus is contained.—They are denominated from their reſemblance, in form, to acorns, which the Latins call *glandes*.

By diſſection, and the microſcope, they are found to be real plexus's, or pelotoons, of veſſels, variouſly wound, and implicated, among themſelves: but the modern anatomiſts, Malpighi, Bellini, Wharton, Nuck, Peyer, &c. have gone farther; and diſcovered them to be more than continued convolutions of the capillary arteries.

Their formation appears to be thus.—An artery, arriving at a certain part, is divided into an infinite number of exceedingly fine branches, or ramifications: theſe capillary branches are laid in various bends, and circumvolutions; and from the returns thereof ariſe new branches, or veſicles for veins; which, a little further, unite, or terminate, in ſome larger branch.

All theſe ramifications, both veins and arteries, are rolled up in a bundle; making numerous gyres, and circumvolutions: and from the various bends and angles, formed by both kinds, ariſe numerous other minute veſſels, which make the principal and moſt eſſential part of the *gland*.

The blood brought from the heart-ward, by the artery, into the glandular plexus, purſues all the turns and meanders in the arterial part thereof, till, arriving at the venous part, it is by it brought back again to the heart: in the mean time, during its progreſs through the arterial and venous folds, ſome part of it is abſorbed, or drained off, at the orifices of the tubules ariſing from the flexures thereof.

What is thus received into theſe, which we may call the *ſecretory ducts*, is commonly taken up by other tubules, ſpringing out of them: theſe, joining together, form a ſingle canal, which is called the *excretory duct*; which, paſſing out of the body of the *gland*, carries off the ſecreted matter into ſome proper receptacle deſtined to retain or receive it.

Though, ſometimes, the ſecretory veſſels themſelves terminate in a baſon, or reſervoir; and depoſit their contents therein.—Such is the general ſtructure, and office, of the *glands*; which we ſhall further illuſtrate, under the article SECRETION.

A *gland*, then, is a compoſition of divers kinds of veſſels; *viz.* an artery, and a vein; ſecretory and excretory ducts: to which may be added, a nerve, which is found in every *gland*, diffuſed through the whole ſubſtance thereof, to furniſh ſpirits for promoting the ſecretion; and a membrane, which ſupports the convolutions of the vein and artery, accompanying them through all their minuteſt diviſions; to which add, lymphatics, which have been diſcovered in ſeveral *glands*.

The ſecretory tubes, however, are what we principally conſider as the organ of the *gland*: theſe, alone, do ſometimes form the greateſt part of what is called a *gland*, or *glandulous body*.

M. Winſlow has diſcovered a kind of tomentum, or down, within their cavity; which he ſuppoſes to do the office of a filtre, and to be that whereby ſuch a certain humour is ſeparated from the common maſs of blood.—His ſyſtem will be explained, when we come to treat of SECRETION.

The down-veſſel being the grand organ of ſecretion, its ſtructure and application are diverſified, according to the different purpoſes nature has in view. Sometimes the liquor, filtrated through it, trickles out, drop by drop, upon a membrane, to which one extremity of the veſſel is faſtened; as where the filtration is only intended for moiſtening and lubricating the part with that liquor: in which caſe, the down-veſſel is both ſecretory, and excretory; which is the moſt ſimple caſe. Such are thoſe innumerable *glands* ſpread through the greater part of the viſcera.

Sometimes a great number of theſe down-veſſels are ſpread over the inner ſurface of a little membranous cell, into which they all pour their liquor, which is diſcharged hence at a little aperture in the cell.—Such are the ſolitary *glands* of the inteſtines, which appear like ſo many little ſeparate grains.

Sometimes a veſſel is bent, and has only down in the firſt part thereof, which alone is ſecretory, and the reſt excretory; pouring the liquor into ſome other common cavity.—Such are the *glands* that compoſe a calf's kidney.

The ſecretory veſſels are ſometimes of a very great length, notwithſtanding that they take up but little room; being wound over themſelves, again and again, ſometimes in a ſingle pelotoon, or knot; and ſometimes in ſeveral, incloſed in a common membrane.—Whence the diſtinction of *glands* into conglobate, and conglomerate.

The *glands* are of ſeveral kinds, in reſpect of their form, ſtructure, office, and uſe: authors uſually divide them into *conglobate*, and *conglomerate*.

Conglobate, or *ſimple*, GLANDS, are thoſe conſiſting of one continuous maſs, with an uniform ſurface.—Such are the ſubcutaneous *glands*.

A conglobate *gland* is, more ſtrictly, a little ſmooth body, wrapped up in a fine double ſkin, by which it is ſeparated from all the other parts; only admitting an artery and nerve to paſs in, and a vein and excretory duct to go out.

Theſe *glands* either diſcharge their ſecreted humour into the chyle, or venous blood; or elſe it tranſpires through the pores of the ſkin, or the coats of the looſer membranes found in moſt parts of the body.

Of the conglobate kind are the *glands* in the cortical part of the brain, in which the animal ſpirits are ſuppoſed to be ſecreted: ſuch, alſo, are the labial *glands*, and the teſtes.

Conglomerate, or *compound*, GLAND, is an irregular aſſemblage of ſeveral ſimple *glands* tied together, and wrapped up under one common membrane.—Such are the maxillary *glands*, &c.

The humours ſecreted in theſe *glands* are ſometimes diſcharged at a common excretory duct, formed of an union of the excretory ducts of all the particular ones: this is the caſe in the pancreas, and carotides.

Sometimes the ducts, uniting, form ſeveral tubes, only communicating with each other by croſs canals; as in thoſe of the breaſts.

Some, again, have ſeveral excretory tubes, without any communication together: as the *glandulæ* lacrymales, and proſtatæ.

Others have their ſeveral excretory ducts inſerted into a common canal, which opens, at laſt, into ſome of the greater cavities: as the ſalival *glands*, inteſtinal *glands*, &c.

Laſtly, In others, each *gland* has its own excretory duct, through which it tranſmits its liquor to a common baſon: ſuch are thoſe of the kidneys.

The *glands* are again divided into *vaſcular*, and *veſicular*.

Vaſcular GLANDS are only cluſters of little veſſels, which, uniting together, form the canal, or excretory duct, through which their ſecreted juice is diſcharged.

Veſicular GLANDS are aſſemblages of veſiculæ communicating with each other, and all terminating in two or three larger veſſels; by a prolongation whereof, the excretory duct is formed.

The *glands*, again, are divided into the *adventitious*, and the *perpetual*, or *natural*.

Adventitious GLANDS are thoſe kernels ariſing occaſionally under the arm-pits, on the neck, &c.—Such are the ſtrumæ, and the tumours found on the larynx, and middle of the trachea.

Perpetual, or *natural*, GLANDS, are of two kinds; conglobate, and conglomerate, as above deſcribed.

Buccal GLANDS. See the article BUCCALES.

Lacbrymal GLANDS. See the article LACHRYMAL.

Lumbal GLANDS, *Glandulæ lumbares*, are three *glands* thus called by Bartholine, as lying on the loins.

The two largeſt lie upon one another, betwixt the deſcending cava and aorta, in the angle made by the emulgents with the cava; the third, and ſmalleſt, ſtands over the former, under the appendices of the diaphragm: they communicate

cate, and are connected together by ſmall lacteal veſſels. Bartholine concluded them to ſerve as a common receptacle of the chyle; but Dr. Wharton's opinion is more probable; *viz.* that they ſupply the place of thoſe larger *glands* found in the meſenteries of brutes.

Miliary GLANDS, *Glandulæ miliares.* See MILIARY *glands.*

Mucilaginous GLANDS are a kind of *glands* firſt deſcribed by Dr. Havers. See MUCILAGINOUS *glands.*

Mucous GLANDS, *Glandulæ mucoſæ.* See MUCOUS *glands.*

Myrtiform GLANDS are contractions of the hymen, broke by the firſt act of venery. See MYRTIFORMES *glandulæ*; ſee, alſo, HYMEN.

Nuckian GLANDS. See the article NUCKIANÆ.

Odoriferous GLANDS, *Glandulæ odoriferæ*, are certain ſmall *glands*, diſcovered by Dr. Tyſon, in that part of the penis where the prepuce is contiguous to the balanus.

He gave them this name from the briſk ſcent which their ſeparated liquor emits. In ſuch perſons as have the prepuce longer than ordinary, theſe are not only more in number, but larger, and ſeparate a greater quantity of juice; which, lodging there, often grows rancid, and corrupts the *glands*. Theſe *glands* are very conſpicuous in moſt quadrupeds, eſpecially in dogs, and boars.

Pineal GLAND, *Glandula pinealis.* See PINEAL *gland*, and CONARIUM.

Pituitary GLAND, *Glandula pituitaria.* See PITUITARY *gland.*

Renal GLANDS, *Glandulæ renales*, called alſo *capſulæ atrabilares*, are two *glands*, firſt diſcovered by Euſtachius, between the aorta and the kidneys, a little above the emulgent veſſels; though their ſituation and figure is varied: in ſome they are round; in others ſquare, triangular, &c. The right is uſually bigger than the left, and each about the ſize of a nux vomica: they are incloſed in fat.

Their uſe is not certainly known: it is ſuppoſed to be to ſeparate a liquor from the arterial blood, before it goes to the kidneys.

Sebaceous GLANDS. See the article GLANDULA.

Sublingual GLANDS. See the article SUBLINGUAL.

Thyroid GLANDS. See the article THYROIDEÆ.

GLANDERS, a filthy diſeaſe in a horſe; conſiſting in a running, corrupt, ſlimy matter, from the noſe, of a different colour, according to the degree of the malignity, or as the infection has been of a ſhorter or longer continuance; being white, yellow, green, or black.

Authors aſcribe it to various cauſes: ſome to infection; ſome to a diſorder of the lungs; others, to the ſpleen; ſome to the liver; and others, to the brain.—After it has been of ſo long ſtanding, that the matter is become of a blackiſh colour, which is uſually in its laſt ſtage, they ſuppoſe it to come from the ſpine; and hence they call it the *mourning of the chine.*

Kernels and knots are uſually felt under the caul, in this diſorder; and as theſe grow bigger, and more inflamed, ſo the *glanders* increaſe more.

A late author is of opinion, that the chief ſeat of this diſtemper is in a little, ſoft, ſpungy fleſh, which is eaſily dilated by the leaſt influx of the blood; and thence it is, that ſome horſes have a running at the noſe from a very ſlight cold: but that when this ſpungy ſubſtance happens to be very much relaxed, the running is increaſed in proportion.

GLANDULA*, in anatomy, the ſame as *gland.* See GLAND.

* The word is a diminutive of the Latin *glans*, acorn; and is here uſed on account of ſome external reſemblance between the glands of the body, and the fruit of the oak.

GLANDULÆ *buccales.* See the article BUCCALES.

GLANDULÆ *nuckianæ.* See the article NUCKIANÆ.

GLANDULÆ *ſebaceæ* are a number of *glands* placed under the ſkin of the auricle of the ear, firſt diſcovered by Valſalva, and thus denominated, by reaſon they ſeparate a greaſy matter, like ſebum, or tallow.

This ſebum, he aſſerts, being carried to the ſurface of the ſkin, turns into a ſcaly ſubſtance, not unlike bran.

GLANDULÆ *thyroideæ.* See the article THYROIDEÆ.

GLANDULE, in Engliſh, ſignifies a little gland.—Thus, the amygdalæ, or almonds of the ears, are by ſome called *glandules.*

GLANDULA *guidonis*, among ſurgeons, is a tumor reſembling a *gland*; ſoft, ſingle, moveable, without roots, and ſeparate from the adjacent parts.

GLANDULOUS, or **GLANDULAR**, ſomething compoſed of glands, or that abounds with glands.

The breaſts are *glandulous* bodies. See BREASTS.—The cortical ſubſtance of the brain is commonly reputed to be *glandulous*; though Ruyſch, from the diſcoveries made by his admirable injections, holds, that there is no ſuch thing as a gland therein.

The antients diſtinguiſhed a particular kind of fleſh, which they called *caro glanduloſa*, or *glandulous fleſh.* See FLESH.

GLANDULOUS *body*, *Glanduloſum corpus*, more particularly denotes the proſtata.

GLANS, *acorn*, in natural hiſtory, a fruit contained within a ſmooth, but hard bark, including a ſingle ſeed; its hind-part being covered with a kind of cup, and the fore-part bare.

GLANS, in anatomy, the tip, or button, of the penis; or that part covered with the prepuce; called, alſo, *balanus.*—See Tab. *Anat.* (Splanch.) *fig.* 10. *lit. d. fig.* 15. *lit. o.*

The *glans* is only a dilatation of the extremity of the ſpongeous ſubſtance of the urethra, which is here bunched, and turned back, on the two conical tips of the corpora cavernoſa, which terminate therein.

The extremity of the prepuce is apt to grow ſo ſtreight in old men, that they cannot bare the *glans*; perhaps through the defect of frequent erections.

GLANS is alſo uſed to denote the tip, or extremity, of the clitoris; from its reſemblance, both in form and uſe, to that of the penis.—See Tab. *Anat.* (Splanch.) *fig.* 13. *lit. c.*

The principal difference conſiſts in this; that it is not perforated. This *glans* is alſo covered with a preputium, formed of the inner membrane of the labia.

GLASS*, *vitrum*, a tranſparent, brittle, factitious body, produced of a ſalt, and ſand, or ſtone, by the action of fire.

* The word is formed of the Latin *glaſtum*, a plant called, by the Greeks, *iſatis*; by the Romans, *vitrum*; by the antient Britons, *guadum*; and by the Engliſh, *woad.* We find frequent mention of this plant in antient writers, particularly Cæſar, Vitruvius, Pliny, &c. who relate, that the antient Britons painted, or dyed, their bodies with glaſtum, guadum, vitrum, &c. *i. e.* with the blue colour procured from this plant. And hence the factitious matter, we are ſpeaking of, came to be called *glaſs*; as having always ſomewhat of this bluiſhneſs in it. See WOAD.

The chemiſts hold, that there is no body but may be vitrified, *i. e.* converted into *glaſs.*—By intenſe heat, even gold itſelf gives way to the ſun's rays collected in a burning-glaſs, and becomes *glaſs.* See GOLD, and BURNING-*glaſs.*

Add, that as *glaſs* is the effect, or fruit, of fire; ſo it is the laſt effect of that element: all the chemiſt's art, and all the force of fire, not being able to carry the change of any natural body beyond its vitrification. Whence Dr. Merret mentions it as a merry ſaying, of a very great artiſt in the buſineſs of *glaſs*, that their profeſſion would be the laſt in the world: for that when God ſhould conſume the univerſe with fire, all things therein ſhould be turned to *glaſs.*

Nature and characters of GLASS.—Naturaliſts are divided, in what claſs of bodies to rank *glaſs.*—Agricola conſiders it as a concrete juice; Bellovacenſis, as a ſtone: Fallopius ranks it among the *media mineralia*; and the workmen, when in fuſion, call it metal: but Dr. Merret, with reaſon, ſets aſide all theſe opinions, from this conſideration, that all the fore-mentioned bodies are natural concretes; whereas *glaſs* is a compound made by art, and is never found in the earth, as the others are.

Fallopius, indeed, contends, that *glaſs* is no more artificial than a metal; and that they are both equally extracted, or educed, from other bodies; the one from ſand, the other from its ore.—He adds, that though ſalts, or aſhes, be added to ſand, for the making of *glaſs*; yet it is falſe, that they contribute to the compoſition of *glaſs*; their uſe, according to him, being only for the better extracting of the *glaſs* from the mineral ſtone.

This Dr. Merret eaſily confutes: for if *glaſs* were extracted from the ſtones, or ſand, only, the weight of the metal muſt be much leſs than that of the ſtones alone; whereas it is, in reality, much greater; an hundred weight of ſand ſufficing for one hundred and fifty of *glaſs.*

In effect, the aſhes contribute a deal of ſalt to the compoſition of *glaſs.*—Accordingly, in pieces of old *glaſs*, one may ſometimes pick out grains of ſalt, eaſily diſcoverable to the taſte; beſide that the fineſt *glaſs*, ſtanding long in a ſubterraneous place, will moulder, or reſolve into its firſt ingredients, ſalt and ſand, by the decay of the union thereof: whence it appears, that the ſalt remains in the *glaſs*, in ſpecie. To which may be added, that experiment of Van Helmont: "Melt *glaſs*-duſt with ſandever, and ſet "them in a moiſt place; and the *glaſs* will reſolve into "water: pour on aqua regia, enough to ſaturate the ſandever, and the ſand will precipitate to the bottom, in the "ſame quantity, and weight, as was firſt uſed." Helm. cap. *de Terra.*

Here, then, is a true analyſis of *glaſs*, or a ſolution into its firſt principles, or ingredients; the ſalt being imbibed by the ſandever and aqua regia. Merret. *Not.* in Ant. Neri *De Art. vitrar.*

The learned and curious author juſt mentioned gives us the following characters, or properties of *glaſs*; whereby it is diſtinguiſhed from all other bodies; *viz.* 1°, That it is an artificial concrete of ſalt, and ſand, or ſtones. 2°, Fuſible by a ſtrong fire. 3°, When fuſed, tenacious and coherent. 4°, It does not waſte, or conſume in the fire. 5°, When melted, it cleaves to iron. 6°, Ductile, when red hot, and faſhionable into any form; but not malleable: and capable of being blown into a hollowneſs; which no mineral is. 7°, Frangible, when thin, without annealing. 8°, Friable, when cold. 9°, Always diaphanous, whether hot, or cold. 10°, Flexible, and elaſtic. 11°, Diſſoluble by cold and moiſture. 12°, Only capable of being graven, or cut with a diamond, or other hard ſtones, and emery. 13°, Receives any colour, or dye, both externally, and internally. 14°, Not diſſoluble by aqua fortis, aqua regia, or mercury. 15°, Neither acid juices, nor any other matter, extract either colour, taſte, or any other quality, from it. 16°, It admits of poliſhing. 17°, Neither loſes of weight, nor ſubſtance, by the longeſt, and moſt frequent uſe. 18°, Gives fuſion to other metals, and ſoftens them. 19°, The moſt pliable thing in the world, and that which beſt retains the faſhion given it. 20°, Not capable of being calcined. 21°, An open *glaſs*, filled with water in the ſummer-time, will gather drops of water on the outſide juſt ſo far as the water on the inſide reaches; and a man's breath blown upon it will manifeſtly moiſten it. 22°, Little glaſs balls filled with water, mercury, or other liquor, and thrown into the fire; as alſo drops of green *glaſs* broken, fly aſunder with a loud noiſe. 23°, Neither wine, beer, nor any other liquor, will make it muſty, nor change its colour, nor ruſt it. 24°, It may be cemented as ſtones, and metals. 25°, A drinking *glaſs*, partly filled with water, and rubbed on the brim with a wet finger, yields muſical notes, higher or lower, as the *glaſs* is more or leſs full; and this makes the liquor friſk and leap.—

For the flexibility of Glass, ſee further under Flexibility *of Glaſs*.

For the malleability of Glass, Malleable, *&c.*

Origin and hiſtory of Glass.—De Neri will have *glaſs* as antient as Job: for that writer, chap. xxviii. ver. 17. ſpeaking of wiſdom, ſays, Gold and *glaſs* ſhall not be equalled to it.

This, we are to obſerve, is the reading of the ſeptuagint, vulgate Latin, St. Jerom, Pineda, *&c.* For in the Engliſh verſion, inſtead of *glaſs*, we read *cryſtal*; and the ſame is done in the Chaldee, Arias Montanus, and the king of Spain's edition. In other verſions, *&c.* it is read *ſtone*; in others, *beryl*: in the Italian, Spaniſh, French, high and low Dutch, *&c.* *diamond*; in others, *carbuncle*; and in the Targum, *looking-glaſs*.

In effect, the original word is *zechuchib*, which is derived from the root *zacac*, to purify, cleanſe, ſhine, be white, tranſparent: and the ſame word, Exod. xxx. 34. is applied to frankincenſe; and rendered in the ſeptuagint, pellucid.—Hence, the reaſon of ſo many different renderings: for the word ſignifying beautiful, and tranſparent, in the general, the tranſlators were at liberty to apply it to whatever was valuable, and tranſparent.

Moſt authors will have Ariſtophanes to be the firſt author who mentions *glaſs*: that poet, in his comedy called *the Clouds*, ſcen. 1. act 2. uſes the word *hyalus*, ὕαλος, which is now ordinarily rendered *glaſs*. He there introduces Strepſiades, teaching Socrates a new way to pay old debts; *viz.* 'by placing a fair tranſparent ſtone, ſold by the druggiſts, from which the fire is ſtruck, between the ſun and the writing; and ſo melting away the letters thereof.' This ſtone Socrates calls ὕαλος; which the ſcholiaſt on Ariſtophanes derives from ὕειν, to rain, from the likeneſs it bears to ice, which is rain, or water congealed; though, it muſt be owned, the word ὕαλος is ambiguous, and ſignifies cryſtal as well as *glaſs*: and Gorræus obſerves, that the antients had a kind of yellow amber, tranſparent as *glaſs*, called by ſome, ὕαλος.

Ariſtotle has two problems upon *glaſs*; the firſt, Why we ſee through it? The ſecond, Why it is not malleable? If theſe problems be Ariſtotle's, which the learned doubt very much, this would properly be the earlieſt piece of antiquity of *glaſs*: but the firſt author, who makes unqueſtionable mention of this matter, is Alexander Aphrodiſæus, who uſes it in a ſimile: 'As the floridneſs of a colour is ſeen through *glaſs*,' *&c.*

After him the word occurs commonly enough: Lucian mentions large drinking-glaſſes; and Plutarch, in his *Sympoſiacon*, ſays, that the fire of tamariſk-wood is the fitteſt for the making of *glaſs*.

Among the Latin writers, Lucretius is the firſt that takes notice of *glaſs*. *Niſi recta foramina tranant, Qualia ſunt vitri.* Dr. Merret, however, adds, that *glaſs* could not be unknown to the antients; but that it muſt needs be as antient as pottery itſelf, or the art of making bricks: for ſcarcely can a kiln of bricks be burnt, or a batch of pottery ware be made, but ſome of the bricks, and ware, will be at leaſt ſuperficially turned to *glaſs*: and therefore, without doubt, it was known at the building of Babel.

Hence, Ferrant Imperatus, lib. xxv. c. 7. '*Glaſs*, like the common kind, is found under-ground, in places where great fires have been.—Other *glaſſes* are found in round clods, like fire-ſtone, ſome brittle, others firm, *&c.* This foſſil *glaſs* is wrought by the Americans, and uſed inſtead of iron.'

And no doubt but vitrifications were more common in the antient bricks than they are in ours: as they tempered their earth two years together, and burnt them better.

Pliny relates the manner of the diſcovery of *glaſs*. It was found, according to that author, by accident, in Syria, at the mouth of the river Belus, by certain merchants driven thither by the fortune of the ſea. Being obliged to live there, and dreſs their victuals, by making a fire on the ground; and there being ſtore of the plant kali upon the ſpot; this herb being burnt to aſhes, and the ſand or ſtones of the place accidentally mixed with it, a vitrification was undeſignedly made: from whence the hint was taken, and eaſily improved.

Indeed, how old ſoever *glaſs* may be, the art of making and working it, appears of no great antiquity. The firſt place mentioned for the making hereof, is Sidon in Syria; which was famous for *glaſs* and glaſs-houſes, as obſerved by Pliny, l. xxxvi. c. 26. The firſt time we hear of *glaſs* made among the Romans, was in the time of Tiberius; when Pliny relates, that an artiſt had his houſe demoliſhed for making *glaſs* malleable, or rather flexible: though Petronius Arbiter, and ſome others, aſſure us, that the emperor ordered the artiſt to be beheaded for his invention. Venice, for many years, excelled all Europe in the fineneſs of its *glaſſes*. The great glaſs-works were at Muran, or Mouran, a village near the city; which furniſhed all Europe with the fineſt and largeſt *glaſſes*. But within theſe fifty years the French and Engliſh have not only come up to, but even ſurpaſſed the Venetians; ſo that we are now no longer ſupplied from abroad.

The French made a conſiderable improvement in the art of *glaſs*, by the invention of a method to caſt very large plates; till then unknown; and ſcarce practiſed yet, by any but themſelves and the Engliſh.

That court applied itſelf with a laudable induſtry to cultivate and improve the *glaſs* manufacture. A company of glaſs-men was eſtabliſhed by letters patent; and it was provided by an arret, not only that the working in *glaſs* ſhould not derogate any thing from nobility, but even, that none but nobles ſhould be allowed to work therein.

Ingredients of Glass. The materials uſed in the compoſition of *glaſs*, we have obſerved, are ſalt, and ſand, or elſe ſome kind of ſtone.

The ſalt is of the fixt kind; ſuch as will not evaporate with the moſt intenſe heat. The ſand, or ſtone, muſt be ſuch as will melt eaſily: this is what gives firmneſs and conſiſtence to the *glaſs*.

1°, This ſalt is procured chiefly from a kind of aſhes, called *polverine*, or *rochetta*, brought from the Levant, and particularly from Alexandria and Tripoli. The aſhes are thoſe of a vegetable, frequent in the country, commonly called *kali*: ſometimes *kalli*; *kallu*; *cali*; by Geſner, *alkali*; by Lobel, *ſoda*; by Dodonæus, *ſalſola*; and by Camer, Gordoſus, Fuchſius, *&c.* *anthyllis*. Dr. Merret calls it *Engliſh ſalt-wort*, from its ſaline taſte; and *glaſs-weed*, from the uſe made of its aſhes in making of *glaſs*.

Bauhin mentions ten ſpecies of this plant; whereof there are four uſed by the Alexandrians, *&c.* for the making of polverine, and ſoap; viz. *kali geniculatum*, *kali ſecunda ſpecies*, *kali Ægyptiacum*, and *kali ſpinoſum*.

The firſt, and laſt, our own coaſts afford, where they are called, by the people, *frog-graſs*, and *ſea-graſs*; but they are of no uſe for making of *glaſs*: being laid on a hot iron, they fly off almoſt wholly in fumes, leaving almoſt no aſhes at all: whereas the kali's brought from the Levant, applied on the ſame iron, are ſoon converted almoſt wholly into polverine; *i. e.* very ſaline aſhes of a dark colour.

To get the ſalt from this polverine, they pulverize, and ſift it very fine; then boil it in a braſs copper, with fair water and tartar, till a third part of the water is conſumed; taking care to ſtir it from time to time. Then, filling up the copper with freſh water, they boil it a ſecond time, till half be conſumed: this done, they have a lee impregnated with ſalt. To get the ſalt from the lees, they boil them till the ſalt ſhoots at the top; which they ſcum off as it riſes. An hundred pounds of good aſhes, this way, uſually yield eighty or ninety of ſalt.

When the ſalt is dry, they beat it groſly, and put it into a furnace, to dry it further with a gentle heat. When it is made ſufficiently dry, they pound and ſift it very fine, and lay it by to make frit. See Frit.

Note, Inſtead of the aſhes of the plant kali, thoſe of fern will alſo yield a ſalt, which makes excellent *glaſs*; nothing inferior to that of polverine. The method of preparation is the ſame. Add, that the aſhes of the cods, and ſtalks of beans; as alſo thoſe of coleworts, bramble-buſh, millet-ſtalks, ruſhes, cyperus's, and many other plants, may be uſed for the like purpoſe, and after the ſame manner.

2°, For ſtone, the ſecond ingredient in *glaſs*.—The beſt, we have obſerved, is that which will melt, is white, and tranſparent. This is found principally in Italy, being a ſort of marble, called *tarſo:* the next is puocoli, or cuogolo, a ſort of pebbles found at the bottoms of rivers.

Indeed, nothing makes finer and clearer *glaſs* than common flint; but the charge of preparing it deters the glaſs-men from uſing it. The preparation neceſſary for ſtone is to calcine, powder, and ſierce it.

Ant. Neri obſerves, that all white, tranſparent ſtones, which will not burn to lime, are fit to make *glaſs*; and that all ſtones which will ſtrike fire with ſteel, are capable of being employed in making of *glaſs*. But this latter rule, Dr. Merret obſerves, does not hold univerſally.

Where proper ſtone cannot be had, ſand is uſed. The beſt for the purpoſe is that which is white and ſmall; for green *glaſs*, that which is harder, and more gritty: it is to be well waſhed; which is all the preparation it needs.—Our glaſs-houſes are furniſhed with white ſand for their cryſtal *glaſſes* from Maidſtone; and with the coarſer, for green *glaſs*, from Woolwich.

Some mention a third ingredient in *glaſs*; *viz.* mangapeſe, or ſyderea, a kind of pſeudo loadſtone, dug up in Germany, Italy, and even in Mendip hills in Somerſetſhire. But the proportion hereof to the reſt is very inconſiderable; beſide, that it is not uſed in all *glaſs*. Its office is to purge off the natural greeniſh colour, and give it ſome other tincture required.

Method of making white and cryſtal GLASS.—There are three ſorts of furnaces uſed in the glaſs-works: one to prepare the frit, called the *calcar:* a ſecond, to work the *glaſs:* and a third, called the *leer*, to anneal it. See them all deſcribed under the article FURNACE.

To make cryſtal-*glaſs*, take of the whiteſt tarſo, pounded ſmall, and ſierced as fine as flour, two hundred pounds; of the ſalt of polverine, an hundred and thirty pounds. Mix them together, and put them into the furnace, called the *calcar*, firſt heating it. For an hour keep a moderate fire, and keep ſtirring the materials, that they may incorporate, and calcine together. Then increaſe the fire for five hours: after which take out the matter; which, being now ſufficiently calcined, is called *frit*.—From the calcar put the frit in a dry place, and cover it up from the duſt, for three or four months. See FRIT.

Now, to make the *glaſs*, or cryſtal: Take of this cryſtal frit, called alſo *bollito*; ſet it in pots in the furnace, adding to it a due quantity of manganeſe: when the two are fuſed, caſt the fluor into fair water, to clear it of the ſalt, called *ſandever*; which would otherwiſe make the cryſtal obſcure and cloudy. This lotion muſt be repeated again and again, as often as needful, till the cryſtal be fully purged. Then ſet it to boil four, five, or ſix days; which done, ſee whether it have manganeſe enough; and if it be yet greeniſh, add more manganeſe, at diſcretion, by little and little at a time, taking care not to overdoſe it, by reaſon the manganeſe inclines it to a blackiſh hue. Then let the metal clarify, till it becomes of a clear and ſhining colour: which done, it is fit to be blown, or formed into veſſels at pleaſure.

There are three principal kinds of *glaſſes*, diſtinguiſhed by the form or manner of working them; *viz. round glaſs*, as thoſe of our veſſels, phials, drinking *glaſſes*, &c. *table* or *window glaſs*, of which there are divers kinds; *viz. crown glaſs*, *jealous glaſs*, &c. and *plate glaſs*, or *looking-glaſs*.

Working or blowing round GLASS.—The working furnace, we have obſerved, is round, and has ſix boccas, or apertures: at one of theſe, called the *great bocca*, the furnace is heated, and the pots of frit are at this ſet in the furnace: two other, ſmaller holes, called *boccarellas*, ſerve to lade or take out the melted metal, at the end of an iron, to work the *glaſs*. At the other holes they put in pots of fuſible ingredients, to be prepared, and at laſt emptied into the lading pot.

There are ſix pots in each furnace, all made of tobacco-pipe clay, proper to ſuſtain not only the heat of the fire, but alſo the effect of the polverine, which penetrates every thing elſe. There are only two of theſe pots that work: the reſt ſerve to prepare the matter for them. The fire of the furnace is made and kept up with dry hard wood, caſt in, without intermiſſion, at ſix apertures. This they never omit, not even on the moſt ſolemn feſtivals.

When the matter, contained in the two pots, is ſufficiently vitrified, they proceed to blow or faſhion it: the proceſs whereof we ſhall here deliver from Agricola, Dr. Merret, the French *Diction. de Commerce*, &c.

The operator, or ſervitor (the veſſel being now ſufficiently refined), takes his blowing iron, which is a hollow tube, about two feet and a half long; and dipping it in the melting pot, there turns it about: the metal ſticks to the iron, like ſome glutinous, or clammy juice; much like, but more firmly than, turpentine, or honey.

For each *glaſs* he dips four times, and at each dip rolls the end of his inſtrument, with the *glaſs* thereon, on a piece of iron, over which is a veſſel of water: the coolneſs whereof helps to conſolidate the *glaſs* more readily, and diſpoſes it the better to bind with the next to be taken out of the pot.

After they have dipped a fourth time, and when there is now matter enough on the inſtrument, the operator begins to blow gently through the iron; by which he raiſes or lengthens it nearly a foot; much as we do by blowing in a bladder, or globe: and to give it a poliſh, he rolls it to and fro on a ſtone, or marble.

This done, he blows a ſecond time, and thus forms the bunch, or belly of the *glaſs*. The matter, by this ſecond blaſt, aſſumes the figure of a gourd, or calebaſs, eighteen or twenty inches in diameter. As often as the operator blows into the iron (which muſt be very often), he removes it haſtily from his mouth to his cheek, leſt he ſhould draw the flame into his mouth, when he re-applies it to the iron.

The operator whirls his iron many times round his head, to lengthen and cool the *glaſs*; ſometimes the *glaſs*, thus blown round, is returned to the fire, where it flattens a little of itſelf: when flatted, it is again taken out, and cooled; and, if needful for the deſign, the workman flats its bottom, by preſſing it on the marble; or moulds it in the ſtamp-irons; and thus delivers it to the maſter workman, to break off the collet.

The collet, or neck, is the narrow part which clove to the iron: to ſet the *glaſs* at liberty, they lay a drop of cold water on the collet; which, by its coldneſs, cuts or cracks about a quarter of an inch: after which, giving it a ſlight blow, the fracture is communicated all around the collet. The waſte piece to be thrown by to make green *glaſs*.

This done, they dip an iron rod, or ponteglo, in the melting-pots; and with the matter that ſticks thereto, they apply and faſten it to the bottom of the veſſel, oppoſite to the collet.—The veſſel, thus ſuſtained by the iron rod, is carried to the great bocca to be heated, and ſcalded; and while another perſon takes care thereof, the former operator reſts, and prepares himſelf for the branching.

To branch, or make the bowl, they thruſt in an iron inſtrument, called the *paſſago*; and the aperture, opened thereby, they further augment, and widen with the *procello:* in turning this inſtrument about, to form the bowl, the edge becomes thickened; the *glaſs* being, as it were, doubled in that part: whence the hem obſerved on the circumference of our *glaſſes*.—What is ſuperfluous, they cut off with the ſhears.

The veſſel, thus opened, is returned to the great bocca; where being ſufficiently heated a ſecond time, the workman gives the bowl its finiſhing, by turning it about with a circular motion; which it increaſes, in proportion as the bowl opens, and enlarges by means of the heat and agitation.

The *glaſs* thus finiſhed, they carry it from the bocca, ſtill turning it round, to a kind of earthen bench, covered with brands, or coals extinguiſhed: here they let it cool a little, and come to its conſiſtence, having firſt detached it from the iron rod, by a ſtroke or two with the hand.

Thus, with blowing, preſſing, ſcalding, amplifying, and cutting, the *glaſs* is framed into the ſhape preconceived in the workman's mind. If need be, he proceeds to put on a foot and handle; and with the ſpiei puts on rigarines, and marblings.

When the maſter has finiſhed a number of theſe, another ſervitor takes them with an iron fork, and ſpeedily places them in the tower, or leer, to anneal and harden.

What has been here ſaid of white, or cryſtal *glaſs*, holds equally of common, or green *glaſs*; the working being the ſame in all; and the difference only in the ſalt, or polverine, made uſe of.

So many maſters as there are, ſo many pots, at the leaſt, and ſo many boccas there muſt be; each man having his proper ſtation: where, ſays Dr. Merret, they receive thoſe ſcorching heats ſallying directly into their faces, mouths, and lungs; whence they are forced always to work in their ſhirts, like the Cyclopes, and nudimembra Pyracmones, with a ſtraw broad-brimmed hat on their heads, to defend their eyes from the exceſſive heat and light.—They ſet in large, wide, wooden chairs, with two long elbows, to which their inſtruments are hung. They work ſix hours at a time, meaſured by a ſingle-glaſs; after which they are relieved by others, for the like time: ſo that the furnaces are never idle.

Working, or blowing WINDOW, *or* TABLE-GLASS.—The method of making crown window-*glaſs*, now practiſed in England, is ſaid to have been borrowed from the French.—An Engliſh glaſs-maker went over to work in France, on purpoſe to get into the ſecret; which when he had attained to, he returned, and ſet up a glaſs-work, wherein he far outdid the French, his teachers.

This *glaſs* is blown much after the manner of looking-*glaſs*. Some writers, from wrong intelligence, have ſaid that it was run, or caſt in ſand: but the real proceſs is as follows:

The furnace, melting-pots, materials, and fire, are the ſame for window, or table-*glaſs*, as they are for round *glaſs*; and the difference in the operation only commences after the ſervitor has dipped his blowing-iron the fourth time in the melted metal.

The *glaſs*, then, being in this condition, they blow it; but inſtead of rounding, or forming it into a bunch, the particular motion the workman gives it in the directing and managing the wind, and the way of rolling it on the iron, make it extend in length two or three feet, and form a cylinder, which at firſt is but two inches in diameter; but which, by being recommitted to the fire, and blown afreſh when taken out, becomes of the extent required for the table of *glaſs* to be formed; with this circumſtance, however, that the ſide which is faſtened to the iron, goes gradually diminiſhing, and ends in a kind of cone, or pyramid.

To render the two ends nearly of the ſame diameter, after adding a little *glaſs* to that oppoſite to the iron, they draw it out with a pair of iron pinchers. Then they incide, or cut off the ſame end with a little water; and carrying the cylinder back to the bocca, they incide it likewiſe with water in two other places; one, eight or ten inches from the iron; and the other, the whole length.

The *glaſs* cylinder, thus abridged of both its extremities, is next heated on a kind of earthen table, ſomewhat raiſed in the middle, in order to promote its opening at the place incided longitudinally. The workman here makes uſe of an iron, wherewith he alternately lowers and raiſes the two ſides, or halves of the cylinder, which now begin to open, and unfold like a ſheet of paper, and at length grow perfectly flat. —The table of *glaſs* is now in its laſt perfection, and needs nothing farther but to be heated over again. When taken out, they lay it on a table of copper; whence, after it has cooled, and come to its conſiſtence, they carry it on forks to the tower of the furnace, where they leave it to anneal for twenty-four hours.

The number of tables annealed at a time, which ſometimes amount to an hundred, or more, with the perpendicular ſituation they are ſet in, occaſioned, antiently, that thoſe ſet in firſt, ſuſtaining in ſome meaſure the preſſure of all the laſt, were bent; and thus rendered inconvenient for uſe: but this inconvenience is now remedied, by ſeparating them into tens, with an iron ſhiver; which, diminiſhing the weight, by dividing it, keeps the tables as flat and even, as they were put in.

Kinds of table or window Glass.—There are divers ſorts of this *glaſs* made in divers places, for the uſe of building: thoſe moſt known among us, are given us by the author of the *builder's dictionary*, as follows:

Crown Glass, of which, ſays Neve, there are two kinds; diſtinguiſhed by the places where they are wrought; *viz.* 1°, *Ratcliff crown glaſs*, which is the beſt and cleareſt; and was firſt made at the bear-garden, on the bank-ſide, Southwark; but ſince at Ratcliff: of this there are 24 tables to the caſe, the tables being of a circular form, about three feet ſix inches in diameter. See Table, and Case.

2°, *Lambeth crown glaſs*, which is of a darker colour than the former, and more inclining to green.

French Glass, alſo called *Normandy glaſs*, and formerly *Lorrain glaſs*, becauſe made in thoſe provinces: at preſent it is made wholly in the nine *glaſs* works; five whereof are in the foreſt of Lyons, four in the county of Eu; the laſt, at Beaumont, near Rouen.—It is of a thinner kind than our crown *glaſs*; and when laid on a piece of white paper, appears of a dirtyiſh green colour. There are but twenty-five tables of this to the caſe.

German Glass is of two kinds, the *white*, and the *green*: the firſt is of a whitiſh colour, but is ſubject to thoſe ſmall, curved ſtreaks, obſerved in our *Newcaſtle* glaſs; though free from the ſpots and blemiſhes thereof. The *green*, beſide its colour, is liable to the ſame ſtreaks as the white: but both of them are ſtraiter, and leſs warped, than our Newcaſtle *glaſs*.

Dutch Glass is not much unlike our Newcaſtle *glaſs*, either in colour or price. It is frequently much warped, like that; and the tables are but ſmall.

Newcaſtle Glass is that moſt uſed in England. It is of an aſh colour, and much ſubject to ſpecks, ſtreaks, and other blemiſhes; and beſide is frequently warped. Leybourn ſays, there are forty-five tables to the caſe, each containing five ſuperficial feet: ſome ſay there are but thirty-five tables, and ſix feet in each table.

Working of Plate, *or* Looking-Glass.—The materials whereof *looking-glaſs* is made, are much the ſame as thoſe of other works of *glaſs*, *viz.* an alkali ſalt, and ſand.

The ſalt, however, it is to be obſerved, ſhould not be that extracted from polverine, or the aſhes of the Syrian kali; but that from barillia, or the aſhes of a plant of that name, of the genus of kalis, but growing about Alicant in Spain.—It is very rare, that we can have the barillia pure: the Spaniards, in burning the herb, make a practice of mixing another herb along with it, which alters its quality; or of adding ſand to it, to increaſe the weight: which is eaſily diſcovered, if the addition be only made after the boiling of the aſhes; but next to impoſſible, if made in the boiling. It is from this adulteration that thoſe threads and other defects in *plate-glaſs* ariſe.—To prepare the ſalt, they clean it well of all foreign matters; pound or grind it with a kind of mill, and finally ſift it pretty fine.

As to the ſand, it is to be ſifted and waſhed, till ſuch time as the water come off very clear; and when it is well dried again, they mix it with the ſalt, paſſing the mixture through another ſieve. This done, they lay them in the annealing furnace for about two hours; in which time the matter becomes very light, and white: in this ſtate they are called *frit*, or *fritta*; and are to be laid up in a dry clean place, to give them time to incorporate: they lie here for at leaſt a year.

When they would employ this frit, they lay it for ſome hours in the furnace, adding to ſome, the fragments or ſhards of old and ill-made *glaſſes*; taking care firſt to calcine the ſhards, by heating them red hot in the furnace, and thus caſting them into cold water. To the mixture muſt likewiſe be added mangancſe, to promote the fuſion and purification.

The matter, thus far prepared, is equally fit for *plate-glaſs*, to be formed by blowing, or by caſting.

Blowing Looking-Glass Plates.—The workhouſes, furnaces, *&c.* uſed in the making of this kind of *plate-glaſs*, are the ſame as thoſe in the following article, to which the reader is referred.

The melting-pots, wherein the materials to be blown are fuſed, are thirty-eight inches in diameter, and thirty-five inches high. After thoſe materials are vitrified by the heat of the fire; and the *glaſs* is ſufficiently refined; the maſter workman dips in his blowing iron, once and again, till he has got matter enough thereon.

This done, he mounts on a kind of block, or ſtool, five feet high, to be more at liberty to balance it, as it lengthens in the blowing. If the work be too heavy for the workman to ſuſtain on his blowing iron, two or more attendants aſſiſt him, by holding pieces of wood under the *glaſs*, in proportion as it ſtretches, for fear it ſhould fall off the iron by its own weight.

When, after ſeveral repeated heatings, and blowings, the *glaſs* is at length brought to the compaſs proper for its thickneſs, and the quantity of metal taken out; they cut it off with forceps, at the extremity oppoſite to the iron, in order to point it with the pointil.

The pointil is a long, firm piece of iron, having a piece going acroſs one of its ends, in manner of a T: to point the *glaſs*, they plunge the head of the T into the melting-pot; and with the liquid *glaſs* ſticking thereto, they faſten it to the extremity of the *glaſs* before cut off. When this is ſufficiently faſtened, they ſeparate the other extremity of the *glaſs* from the blowing-iron; and inſtead thereof make uſe of the pointil to carry it to the furnaces appointed for that end: where, by ſeveral repeated heatings, they continue to inlarge it, till it be equally thick in every part.

This done, they cut it open with the forceps; not only on the ſide by which it ſtuck to the blowing-iron, but likewiſe the whole length of the cylinder: after which, giving it a ſufficient heating, it is in a condition to be intirely opened, extended, and flattened. The manner of doing which is much the ſame as for table *glaſs*, and need not be here repeated.

Laſtly, the *glaſs*, being ſufficiently flatted, is laid to anneal, for ten, or fifteen days, according to the ſize and thickneſs.

It may be obſerved, that *looking-glaſſes*, thus blown, ſhould never be above forty-five, or at moſt fifty inches long, and of a breadth proportionable. Thoſe exceeding theſe dimenſions, as we frequently find among the Venice *glaſſes*, cannot have the thickneſs ſufficient to bear the grinding; and beſide are ſubject to warp, which prevents them from regularly reflecting objects.

Caſting, or running large Looking-Glass Plates.—This art is of French invention; and not above fifty years old. It is owing to the Sieur Abraham Thevart, who firſt propoſed it to the court of France, in 1688.

It is performed much like the caſting of ſheet lead, among the plumbers; and by means hereof we are not only enabled to make *glaſſes*, of more than double the dimenſions of any made the Venetian way of blowing; but alſo to caſt all kinds of borders, mouldings, *&c.*

The furnaces for melting the materials of this manufacture are of enormous ſize; and thoſe for annealing the *glaſſes*, when formed, are much more ſo. Round a melting-furnace, there are at leaſt twenty-four annealing furnaces or ovens; each from twenty to twenty-five feet long; they are called *carquaſſes*: each carquaſſe has two tiſſarts, or apertures, to put in wood, and two chimneys. Add, that beſide the annealing furnaces, *&c.* there are others for the making of frit, and calcining old pieces of *glaſs*.

All theſe furnaces are covered over with a large ſhed; under which are likewiſe forges, and workhouſes for ſmiths, carpenters,

penters, *&c.* continually employed in repairing and keeping up the machines, furnaces, *&c.* As alſo lodges, and apartments for theſe, and the other workmen employed about the *glaſs*; and in keeping up a perpetual fire in the great furnace: ſo that the glaſs-houſe, as that in the caſtle of St. Gobin, in the foreſt of Fere, in the Soiſſonois, appears more like a little city, than a manufactory.

The inſide of the furnaces is formed of a ſort of earth, proper to ſuſtain the action of fire; and the ſame earth ſerves alſo for melting-pots, ciſterns, *&c.* The furnaces ſeldom laſt above three years; after which they are to be rebuilt, from bottom to top: and to keep them good, even for that time, the inſide muſt be refitted every ſix months. The melting-pots are as big as hogſheads, and contain above two thouſand weight of metal. The ciſterns are much ſmaller, and ſerve for the conveyance of liquid *glaſs*, which is drawn out of the pots, to the caſting-tables.

When the furnace is in a condition to receive the pots, and ciſterns, they heat it red-hot: this done, they fill the pots with materials; which is done at three times, to facilitate the fuſion. When the matter is ſufficiently vitrified, refined, and ſettled, which uſually happens in twenty-four hours; they fill the ciſterns, which are in the ſame furnace, and which are left there about ſix hours longer, till ſuch time as they appear all white, through the exceſſive heat.

To get the ciſterns with the metal out of the furnace; they make uſe of a large iron chain, which opens and ſhuts with hooks and eyes. From the middle hereof, on each ſide, ariſe two maſſive iron pins, whereby, with the aſſiſtance of pulleys, the ciſterns are raiſed upon a kind of carriage of a proper height; and thus conducted to the table where the *glaſs* is to be run. Here, ſlipping off the bottom of the ciſtern, there ruſhes out a torrent of matter, all on fire, wherewith the table, prepared for that purpoſe, is preſently covered.

The table, whereon the *glaſs* is to be run, is of pot-meal, about nine feet long, and broad in proportion. It is ſupported on a wooden frame, with truckles, for the convenience of removing from one carquaſſe, or annealing-furnace, to another, in proportion as they are filled.—

To form the thickneſs of a *glaſs*, there are two iron rulers or rims, placed around the edge of the table; and on theſe, reſt the two extremes of a kind of roller, which ſerves to drive the liquid matter before it to the end of the table, or mould. The iron rulers, being moveable, and capable of being ſet cloſer, or farther apart, at pleaſure, determine the width of the *glaſſes*, and retain the matter, that it does not run off at the edges.

As ſoon as the matter is arrived at the end of the table, and the *glaſs* is come to a conſiſtence, which is in about a minute; they ſhove it off into the annealing-furnace, where it ſlides with eaſe enough, by reaſon of the ſand ſtrewed thereon.

What is moſt ſurpriſing throughout the whole of this operation, is, the quickneſs and addreſs, wherewith ſuch maſſy ciſterns, filled with ſo flaming a matter, are taken out of the furnace, conveyed to the table, poured therein, the *glaſs* ſpread, *&c.* The whole is inconceivable to ſuch as have not been eye-witneſſes of that ſurpriſing manufacture.

As faſt as the ciſterns are emptied, they carry them back to the furnace, and take freſh ones, which they empty as before. This they continue to do, ſo long as there are any full ciſterns; laying as many plates in each carquaſſe as it will hold, and ſtopping them up as ſoon as they are full; to let them anneal, and cool again, which requires at leaſt ten days.

The firſt running being diſpatched, they prepare another, by filling the ciſterns anew, from the matter in the pots: and after the ſecond, a third; and even a fourth time, till the melting-pots are quite empty.

The ciſterns, at each running, ſhould remain at leaſt ſix hours in the furnace, to whiten; and when the firſt annealing furnace is full, the caſting-table is to be carried to another. It need not here be obſerved, that the carquaſſes, or annealing-furnaces, muſt firſt have been heated to the degree proper for them. When the pots are emptied, they take them out, as well as the ciſterns, to ſcrape off what *glaſs* remains, which otherwiſe would grow green by continuance of fire, and ſpoil the *glaſſes*.

The manner of heating the large furnaces, is ſingular enough: the tiſor, or perſon employed for that purpoſe, quite naked to his ſhirt, runs round the furnace without making the leaſt ſtop, with a ſpeed ſcarce inferior to that of the lighteſt courier: as he goes along, he takes two billets, or pieces of wood, which are cut for the purpoſe; theſe he throws into the firſt tiſſart; and continuing his courſe, does the ſame for the ſecond. This he holds on without interruption for ſix hours, ſucceſſively; after which he is relieved by another, *&c.* It is ſurpriſing that two ſuch ſmall pieces of wood, and which are conſumed in an inſtant, ſhould keep the furnace to the proper degree of heat; which is ſuch, that a large bar of iron, laid at one of the mouths of the furnace, becomes red-hot in leſs than half a minute.

It is computed, that a furnace, before it be fit to run *glaſs*, coſts above three thouſand five hundred pounds: that at leaſt ſix months are required for the building it anew; and three months for the refitting it: and that when a pot of matter burſts in the furnace, the loſs of matter and time amounts to above two hundred and fifty pounds.

The *glaſs*, when taken out of the melting-furnace, needs nothing further but to be ground, poliſhed, and foliated.—*For the grinding of* GLASS, ſee GRINDING.—*For the poliſhing of* GLASS, ſee POLISHING.—*For the foliating of* GLASS, ſee FOLIATING.

Axungia of GLASS. See the article AXUNGIA.

Painting in GLASS.—The primitive manner of painting in *glaſs* was very ſimple, and of conſequence very eaſy: it conſiſted in the mere arrangement of pieces of *glaſs* of different colours, in ſome ſort of ſymmetry; and conſtituted a kind of what we call *moſaic work.* See PAINTING, and MOSAIC.

Afterwards, when they came to attempt more regular deſigns, and even to repreſent figures raiſed with all their ſhades, their whole addreſs went no farther than to the drawing the contours of the figures in black, with water-colours, and hatching the draperies, after the ſame manner, on *glaſſes* of the colour of the object intended to be painted. For the carnations, they choſe *glaſs* of a bright red; upon which they deſigned the principal lineaments of the face, *&c.* with black.

At laſt, the taſte for this ſort of painting being conſiderably improved, and the art being found applicable to the adorning of churches, baſilica's, *&c.* they found means of incorporating the colours with the *glaſs* itſelf, by expoſing them to a proper degree of fire, after the colours had been laid on.

A French painter of Marſeilles is ſaid to have given the firſt notion hereof, upon going to Rome, under the pontificate of Julius II. But Albert Durer, and Lucas of Leyden, were the firſt that carried it to any height.

The colours uſed in painting on *glaſs* are very different from thoſe uſed either in painting in oil, or water. See COLOUR. —The *black* is made of two thirds of flakes, or ſcales of iron, beaten up, and mixed with another third of rocaille, or little glaſs beads.—*White*, with ſand, or little white pebbles, calcined, pounded in a mortar, and afterwards ground on marble; with one fourth part of ſaltpetre added thereto, and the mixture calcined and pulverized over again: to which, when they are ready to uſe it, is added a little gypſum, or plaſter of Paris well ground, *&c.*—For *yellow*, they uſe leaf-ſilver ground, mixed up in a crucible with ſulphur, or ſaltpetre; then, well beaten and ground on a porphyry ſtone; and, at length, ground over again with nine times as much red oker. *Red* is made of litharge of ſilver, and ſcales of iron, gum Arabic, ferretta, glaſs-beads, and blood-ſtone, nearly in equal quantities. This is one of the moſt difficult colours; and the preparation only to be learned by experience. — *Green* is made of æs uſtum, one ounce; as much black lead, and four ounces of white ſand, incorporated by the fire. After calcination, they add a fourth part of ſaltpetre; after a ſecond calcination, a ſixth part more: after which they make a third coction before it is uſed.—*Azure*, *purple*, and *violet*, are prepared like green, only leaving out the æs uſtum, and in lieu thereof uſing ſulphur, for azure; perigueux, for purple; and both thoſe drugs for violet.—*Carnations* are made of ferretta and rocaille.—And laſtly, colours for the hair, trunks of trees, *&c.* are made of ferretta, rocaille, *&c.*

This account of the colours we have from M. Felibien's excellent work *des principes d'architecture*, &c. though it muſt be owned, that all the painters on *glaſs* do not uſe them; there being few artiſts of that kind but have invented their own particular ones, whereof they uſually make great ſecrets. But this is certain, that theſe above deſcribed are ſufficient for the beſt paintings of all ſorts; provided the perſon has but the ſkill to manage them,

In the windows of divers antient churches, chapels, colleges, *&c.* we meet with the moſt beautiful and lively colours imaginable; ſuch as far exceed any uſed among us: but it is not that the ſecret of making thoſe colours is loſt; but that the moderns would not go to the expence of them; nor take all the neceſſary pains; by reaſon this ſort of painting is not now ſo much eſteemed as formerly.

Thoſe beautiful works, which were made in the glaſs-houſes, were of two kinds: in ſome, the colour was diffuſed through the whole body of *glaſs*; in others, which were the more common, the colour was only on one ſide, ſcarce penetrating within the ſubſtance above one third of a line; though this was more, or leſs, according to the nature of the colour; the yellow being always found to enter the deepeſt.

Theſe laſt, though not ſo ſtrong and beautiful as the former, were of more advantage to the workmen; by reaſon, on the ſame *glaſs*, though already coloured, they could ſhew other kind of colours, where there was occaſion to embroider draperies, enrich them with foliages, or repreſent other ornaments of gold, ſilver, *&c.*

In order to this, they made uſe of emery; grinding, or weari down the ſurface of the *glaſs*, till ſuch time as they were g through the colour, to the clear *glaſs*: this done, they appli the proper colours on the other ſide of the *glaſs*.—By th means the new colours were prevented from running, a mixing among the former, when the *glaſſes* came to be expo to the fire, as will be hereafter ſhewn.

Wh

When the intended ornaments were to appear white, or ſilvered, they contented themſelves to bare the *glaſs* of its colour with emery, without applying any new colour at all; and it was in this manner, that they wrought the lights and heightenings on all kinds of colours.

The firſt thing to be done, in order to paint on glaſs, in the modern way, is to deſign, and even colour, the whole ſubject on paper. Then they make choice of pieces of *glaſs* proper to receive the ſeveral parts, and proceed to divide or diſtribute the deſign itſelf, or the paper it is drawn on, into pieces ſuitable to thoſe of *glaſs*: having always a view that the *glaſſes* may join in the contours of the figures, and the folds of the draperies; that the carnations, and other finer parts, may not be damaged by the lead wherewith the pieces are to joined together.

The diſtribution being made, they mark all the *glaſſes*, as well as papers, with letters, or numbers; that they may be known again: which done, applying each part of the deſign on the *glaſs* intended for it, they copy or transfer the deſign upon this *glaſs*, with the black colour, diluted in gum-water; by tracing and following all the lines and ſtrokes, as they appear through the *glaſs*, with the point of a pencil.

When theſe firſt ſtrokes are well dried, which happens in about two days, the work being only in black and white, they give it a ſlight waſh over, with urine, gum Arabic, and a little black; and this ſeveral times repeated, according as the ſhades are deſired to be heightened: with this precaution, never to apply a new waſh, till the former is ſufficiently dried. This done, the lights and riſings are given, by rubbing off the colour in the reſpective places, with a wooden point, or the handle of the pencil.

As to the other colours above-mentioned, they are uſed with gum-water, much as in painting in miniature; taking care to apply them lightly, for fear of effacing the outlines of the deſign; or even, for the greater ſecurity, to apply them on the other ſide, eſpecially yellow, which is very pernicious to the other colours, by blending therewith.

And here, too, as in pieces of black and white, particular regard muſt always be had, not to lay colour on colour, or lay on a new lay, till ſuch time as the former are well dried. It may be added, that the yellow is the only colour that penetrates through the *glaſs*, and incorporates therewith by the fire; the reſt, and particularly the blue, which is very difficult to uſe, remaining on the ſurface, or at leaſt entering very little. When the painting of all the pieces is finiſhed, they are carried to the furnace, or oven, to anneal, or bake the colours. The furnace here uſed is ſmall, built of brick, from eighteen to thirty inches ſquare: at ſix inches from the bottom is an aperture, to put in the fuel, and maintain the fire. Over this aperture is a grate, made of three ſquare bars of iron, which traverſe the furnace, and divide it into two parts. Two inches above this partition is another little aperture, through which they take out pieces, to examine how the coction goes forward.

On the grate is placed a ſquare earthen pan, ſix or ſeven inches deep; and five or ſix inches leſs, each way, than the perimeter of the furnace. On one ſide hereof is a little aperture, thro' which to make the trials, placed directly oppoſite to that of the furnaces deſtined for the ſame end.

In this pan are the pieces of *glaſs* to be placed in the following manner: firſt, the bottom of the pan is covered with three ſtrata, or layers of quicklime, pulverized; thoſe ſtrata being ſeparated by two others, of old, broken *glaſs*: the deſign whereof is to ſecure the painted *glaſs* from the too intenſe heat of the fire. This done, the *glaſſes* are laid horizontally on the laſt, or uppermoſt, layer of lime.

The firſt row of *glaſs* they cover over with a layer of the ſame powder, an inch deep; and over this they lay another range of *glaſſes*: and thus alternately, till the pan is quite full; taking care that the whole heap always end with a layer of the lime-powder.

The pan thus prepared, they cover up the furnace with tiles, on a ſquare table of earthen-ware, cloſely luted all round; only having five little apertures, one at each corner, and another in the middle, to ſerve as chimneys.

Things thus diſpoſed, there remains nothing but to give the fire to the work.—The fire for the two firſt hours muſt be very moderate; and muſt be increaſed, in proportion as the coction advances, for the ſpace of ten or twelve hours; in which time it is uſually completed. At laſt, the fire, which at firſt was only of charcoal, is to be of dry wood: ſo that the flame covers the whole pan, and even iſſues out at the chimneys.

During the laſt hours, they make eſſays from time to time; by taking out pieces laid for the purpoſe, through the little aperture of the furnace, and pan, to ſee whether the yellow be perfect, and the other colours in good order. When the annealing is thought ſufficient, they proceed with great haſte to extinguiſh the fire, which otherwiſe would ſoon burn the colours, and break the *glaſſes*. See FIRE.

Glaſſes are diſtinguiſhed, with regard to their form, uſe, &c. into various kinds; as *drinking-glaſſes*, *optic-glaſſes*, *looking-glaſſes*, *burning-glaſſes*, &c.

Drinking GLASSES are ſimple veſſels of common *glaſs* or cryſtal, uſually made in form of an inverted cone.

Each *glaſs* conſiſts of three parts, *viz.* the calyx, or bowl; the bottom; and the foot; which are all wrought or blown ſeparately.

Nothing can be more dextrous and expeditious than the manner wherein theſe parts are all blown; two of them opened, and all three joined together. An idea is only to be had thereof, by ſeeing them actually at work.

The *glaſſes* chiefly uſed in England are made of the aſhes of fern; cryſtal *glaſſes* being leſs frequent in uſe. The exceeding brittleneſs of this commodity, notwithſtanding the eaſy rate of each *glaſs*, renders the conſumption hereof very conſiderable.

Optic GLASSES are thoſe made uſe of to ſtrengthen, improve, or preſerve the ſight. See OPTIC *glaſs*.

Convex GLASSES	See	CONVEX.
Concave GLASSES		CONCAVE.
Lenticular GLASSES		LENS.
Meniſcus GLASSES		MENISCUS, &c.
Plain GLASSES		PLAIN *glaſs*.
Planoconcave GLASSES		PLANOCONCAVE.
Planoconvex GLASSES		PLANOCONVEX.
Teleſcope GLASSES		TELESCOPE.
Object GLASS		OBJECT *glaſs*.
Eye GLASSES		EYE *glaſs*.
Magnifying GLASS		MAGNIFYING.
Multiplying GLASS		MULTIPLYING.
Perſpective GLASS		PERSPECTIVE.
Looking GLASS		LOOKING *glaſs*; ſee alſo MIRROUR, and FOLIATING.
Burning GLASS		BURNING *glaſs*; ſee alſo MIRROUR.
Weather GLASS		WEATHER *glaſs*.
Cupping GLASS		CUPPING *glaſs*.
GLASS *window*		WINDOW.
GLASS *drop*		DROP.
GLASS *body*		BODY.
Axis of a GLASS		AXIS.
Pole of a GLASS		POLE.
Hour GLASS		HOUR *glaſs*.
Tin GLASS		BISMUTH.
Watch GLASS		WATCH.
GLASS *of antimony*		ANTIMONY.

GLASSY *humour*. See the article HUMOUR.

GLAUCOMA *, γλαυκωμα, in medicine, the name of a diſeaſe of the eye, wherein the cryſtalline humour is turned of a bluiſh or greeniſh colour, and its tranſparency hereby diminiſhed.

* The word comes from the Greek γλαυκ☉, *glaucus*, *cæſius*, ſea-green, ſky-coloured, or greyiſh.

Thoſe in whom this diſorder is forming, diſcover it hence, that all objects appear to them as through a cloud or miſt: when intirely formed, the viſual rays are all intercepted, and they ſee nothing at all.

It is reckoned incurable, when inveterate, and in aged perſons: and even under other circumſtances, is very difficult of cure; externals proving of little ſervice.

The internals beſt ſuited to it, are thoſe uſed in the gutta ſerena.—Jul. Cæſar Claudinus, *Conſult.* 74. gives a remedy for the *glaucoma*.

The *glaucoma* is uſually diſtinguiſhed from the cataract or ſuffuſion, in this, that in the cataract the whiteneſs appears in the pupil, very near the cornea; but it ſhews deeper in the *glaucoma*.

Some late French authors, however, maintain the cataract and *glaucoma* to be one and the ſame diſeaſe.—According to them, the cataract is not a film, or pellicle, formed before the pupil, as had always been imagined; but an inſpiſſation or induration, or the humour itſelf, whereby its tranſparency is prevented; which brings the cataract to the *glaucoma*. See CATARACT.

GLEAM is popularly uſed for a ray or beam of light. See RAY.

Among falconers, a hawk is ſaid to *gleam*, when ſhe caſts or throws up filth from the gorge.

GLEANING, the act of gathering, or picking up, the ears of corn, left behind after the field has been reaped, and the crop carried home.

By the cuſtoms of ſome countries, particularly thoſe of Melun and Eſtampes, all farmers, and others, are forbidden, either by themſelves or ſervants, to put any cattle into the fields, or prevent the *gleaning* in any manner whatever, for the ſpace of twenty-four hours after the carrying off the corn; on penalty of confiſcation, &c.

GLEBE, GLEBA, in natural hiſtory, chemiſtry, &c. a clod or piece of ſtone or earth, frequently containing ſome metal, or mineral.

The *glebes* are carried to the forges to be waſhed, purified, melted, &c.

GLEBE, or GLEBE-land, is properly uſed for church-land. *Dos vel terra ad eccleſiam pertinens.*

Glebe-land is moſt commonly uſed for land belonging to a pariſh-church, beſide the tithes *.

* Thus, Lindwood: Glebe *eſt terra in qua conſiſtit dos eccleſiæ; generaliter tamen ſumitur pro ſolo, vel pro terra culta.*

Though in the more general, and extenſive uſe of the word, *glebe* is applicable to any land or ground belonging to any benefice, fee, manor, inheritance, or the like.

Addicti GLEBÆ. In the civil law, ſlaves were ſaid to be annexed to the *glebe*, *i. e.* they went with it, were ſold with it, *&c.*

The right of patronage ſhould be annexed to a *glebe*. See PATRONAGE.

GLEET, in medicine, a flux of thin humour from the urethra.

A gleet, or a gonorrhœa ſimplex, often ſucceeds the cure of a gonorrhœa virulenta; and ſometimes remains obſtinate, even after the uſe of a ſalivation.

The *gleet* may happen either from a too great relaxation of the glands of the urethra, or from a corroſion or exulceration of them. It appears moſt frequently after a gonorrhœa has been of long ſtanding, or ill managed in the cure; as by the uſe of acrid or corroding injections, and the like.

The glands may here alſo happen to be ulcerated by the matter of the running, which is often ſharp and corroſive enough for that purpoſe.

A *gleet* is diſtinguiſhed from a gonorrhœa ſimplex, not only by the colour and conſiſtence of the matter evacuated, but alſo by the manner wherein it comes away: the matter of a *gleet* comes away as well at one time as at another; but that of a gonorrhœa ſimplex chiefly in erections, and when the patient goes to ſtool. The matter of a *gleet* is commonly browniſh, but that of a gonorrhœa ſimplex is white. Add that the continuance of a true *gleet* is unattended with weakneſs, or other ill conſequences, and dangerous ſymptoms; nor does it unfit men for procreation, as a gonorrhœa ſimplex will.

An aſtringent regimen is the moſt ſuitable in both; coffee and claret are ſuppoſed proper liquors in theſe caſes: ſo are all thoſe made acid with juice of lemons, vinegar, *&c.*

GLENE, Γληνη, properly ſignifies the cavity or ſocket of the eye. See EYE.

GLENE is more frequently uſed by anatomiſts for the ſhallower cavities of bones, into which ſome other bone is received, and articulated.

By which it ſtands diſtinguiſhed from *cotyle* or *acetabulum*, which is a deeper cavity, intended by nature for the like purpoſe.

GLENOIDES *, an appellation given to the two cavities in the lower part of the firſt vertebra of the neck.

* The word is Greek, compoſed of γληνη, and εἶδος, form.

GLICYRRHIZA, or GLYCYRRHIZA, *liquorice.* See LIQUORICE.

GLOBE, in geometry, a round or ſpherical body; more uſually called a *ſphere*.

The earth, and water, together, are ſuppoſed to form a *globe*; hence called the *terraqueous globe*.

The planets, both primary, and ſecondary, are ſuppoſed, as well as our earth, to be ſolid *globes*.

The earth is, in a peculiar ſenſe, called *the globe*, or *globe of earth*.

Reſiſtance of a GLOBE. See the article RESISTANCE.

GLOBE is more particularly uſed for an artificial ſphere of metal, plaſter, paper, or ſome other matter; on whoſe convex ſurface is drawn a map, or repreſentation, either of the earth, or heavens, with the ſeveral circles conceived thereon.

Globes are of two kinds, *terreſtrial*, and *celeſtial*; each of very conſiderable uſe, the one in aſtronomy, and the other in geography, to perform many of the operations thereof, in an eaſy, ſenſible manner, ſo as to be conceived without any knowlege of the mathematical grounds of thoſe arts.

The fundamental parts, common to both *globes*, are an axis, repreſenting that of the world; and a ſpherical ſhell, or cover, which makes the body of the *globe*, on whoſe external ſurface the repreſentation is drawn.

Globes, we have obſerved, are made of divers materials; *viz.* ſilver, braſs, paper, plaſter, *&c.* Thoſe commonly uſed, are of plaſter, and paper: the conſtruction whereof is as follows:

Conſtruction of GLOBES.—A wooden axis is provided ſomewhat leſs than the intended diameter of the *globe*; and into the extremes hereof two iron wires are driven, for poles: this axis is to be the beam, or baſis, of the whole ſtructure.

On the axis are applied two ſpherical, or rather hemiſpherical caps, formed on a kind of wooden mould, or block.—Theſe caps conſiſt of paſteboard, or paper, laid, one lay after another, on the mould, to the thickneſs of a crown piece; after which, having ſtood to dry, and embody; making an inciſion along the middle, the two caps, thus parted, are ſlipped off the mould.

They remain now to be applied on the poles of the axis, as before they were on thoſe of the mould: and to fix them in their new place, the two edges are ſown together with packthread, *&c.*

The rudiments of the *globe* thus laid, they proceed to ſtrengthen, and make it ſmooth and regular. In order to this, the two poles are haſped in a metalline ſemicircle, of the ſize intended; and a kind of plaſter, made of whiting, water, and glue heated, melted, and incorporated together, is daubed all over the paper-ſurface. In proportion as the plaſter is applied, the ball is turned round in the ſemicircle, the edge whereof pares off whatever is ſuperfluous, and beyond the due dimenſion; leaving the reſt adhering in places that are ſhort of it.

After ſuch application of plaſter, the ball ſtands to dry; which done, it is put again in the ſemicircle, and freſh matter applied: thus they continue alternately to apply the compoſition, and dry it, till ſuch time as the ball every-where accurately touches the ſemicircle; in which ſtate it is perfectly ſmooth, regular, firm, *&c.*

The ball thus finiſhed, it remains to paſte the map, or deſcription, thereon: in order to this, the map is projected in ſeveral gores, or guſſets; all which join accurately on the ſpherical ſurface, and together cover the whole ball. To direct the application of theſe gores, lines are drawn by a ſemicircle on the ſurface of the ball, dividing it into a number of equal parts correſponding to thoſe of the gores; and ſubdividing thoſe again anſwerably to the lines and diviſions of the gores.

The papers thus paſted on, there remains nothing but to colour and illuminate the *globe*; and to varniſh it, the better to reſiſt duſt, moiſture, *&c.*

The *globe* itſelf thus finiſhed, they hang it in a braſs meridian, with an hour-circle, and quadrant of altitude; and thus fit it into a wooden horizon.

Deſcription of the GLOBES.—The things common to both *globes* are either delineated on the ſurface; or added as appendages, without it.

Without the ſurface, are 1°, The two poles, whereon the *globe* is turned, repreſenting thoſe of the world: See POLE. 2°, The brazen meridian, which is divided into degrees, and paſſes through the poles.—3°, The wooden horizon, whoſe upper ſide repreſents the horizon; and is divided into ſeveral circles: the innermoſt whereof contains the twelve ſigns of the zodiac, ſubdivided into their degrees; the next the Julian; and the third, the Gregorian calendar: withoutſide of all theſe, are drawn the points of the winds.—4°, A braſs quadrant of altitude, divided into 90 degrees, to be faſtened on the meridian at the diſtance of 90 degrees from the horizon.—5°, The hour-circles, divided into twice twelve hours, and fitted on the meridian, round the poles, which carry an index pointing to the hour.—A mariner's compaſs is ſometimes added on the bottom of the frame; and ſometimes, a ſemicircle of poſition.

On the ſurface are delineated, 1°, The equinoctial line, divided into 360 degrees; commencing from the vernal interſection.—2°, The ecliptic, divided into twelve ſigns, and theſe ſubdivided into degrees.—3°, The zodiac.—4°, The two tropics.—And 5°, The polar circles, all which ſee under their proper articles.

What elſe belongs to *globes*, either as to conſtruction, or deſcription, is different, as the *globe* is either celeſtial, or terreſtrial. See *Celeſtial* and *Terreſtrial* GLOBE.

Celeſtial GLOBE is an artificial ſphere, on whoſe convex ſurface the fixed ſtars are laid down, at proportionable diſtances, together with the principal circles of the ſphere.

The uſe of theſe *globes* is to exhibit the phænomena of the motions of the ſun and ſtars, in an eaſy and obvious manner; which, though ſomewhat unaccurate, is yet exact enough for the common uſes of life, and may ſave the trouble of trigonometrical calculation.

To exhibit the ſtars, circles, &c. *on the ſurface of a given ſphere, or ball, and fit it for the uſes of aſtronomy.*—1°, Aſſume any two points diametrically oppoſite to each other, as P, and Q (*Tab. Aſtronomy, Fig.* 58.); and in theſe, fix up axes, PA, and QC, for the ball to turn round on. The points P and Q, or A and C, will exhibit the poles of the world.

2°, Divide a brazen circle ABCD into four quadrants, AE, EC, CF, and FD; and ſubdivide each quadrant into 90 degrees, numbered from the points E, and F, towards the poles A, and C.

3°, Incloſe the *globe* in this circle, as in a meridian, at the points A, and C, ſo as it may freely turn therein.

4°, Apply a ſtile, or pin, to the ſurface of the *globe*, in the firſt degree of the meridian, and turn the ball round; by this means will a circle be deſcribed on the ſurface, repreſenting the equator to be divided into degrees.

5°, From the pole of the world P, towards M; and from the other pole C, toward N; number $23\frac{1}{2}$ degrees; the points M and N will be the poles of the ecliptic.

6°, Apply a ſtyle to the meridian, in the point M, and turn the *globe* round; by this rotation will the arctic polar circle be deſcribed: and after the ſame manner is the antarctic polar to be deſcribed about the point O.

7°, Number 23½ deg. from the equator towards the poles P, and Q; and note the points H, and I: then, applying a ſtyle to the meridian, as before, two circles will be deſcribed parallel to the equator; whereof that drawn through H, will be the tropic of cancer; and the other through I, the tropic of capricorn.

8°, Hang the *globe* within the meridian, in the poles of the ecliptic, as before in the poles of the world; and applying a ſtyle to E, turn it round: by this means will the ecliptic be delineated, which remains to be divided into 12 ſigns; and each of theſe, again, divided into 30 degrees.

9°, While the *globe* remains thus ſuſpended, bring the degree of longitude of any ſtar under the meridian; and in the meridian, number as many degrees towards the pole as is the degree of latitude of the place: the point of interſection is the place of that ſtar on the ſurface of the *globe*. After the like manner may the place of the ſtar be determined from the right aſcenſion and declination given; the *globe* being ſuppoſed ſuſpended from the poles of the world, or the equator.

10°, All the ſtars of a conſtellation thus laid down, the figure of the conſtellation is to be deſigned; after which, it may either be coloured, or engraven.

11°, Place the *globe* with the meridian, in a wooden frame, or horizon, D B L, ſupported on four feet, in ſuch manner, as to be divided thereby into two hemiſpheres; and that the pole A may be raiſed, or depreſſed, at pleaſure.

12°, On the limb, or edge, of the horizon, deſcribe a circle, which divide into 360 degrees, and inſert the calendars, and winds.

13°, Laſtly, To the pole A, fit a brazen circle, divided into 24 horary parts, and numbered twice twelve, ſo that the line or diviſion of XII. may be in the plane of the meridian, on either ſide the pole; and on the pole itſelf apply an index, to turn round with the *globe*.—Thus is the *globe* complete.

It may be here obſerved, that as the longitude of the ſtars is continually growing, a *globe* does not remain of perpetual uſe: but the increaſe in ſeventy-two years only amounting to a degree, the whole will make no conſiderable error in an hundred years; the deſign of a *globe* being only to repreſent things ſomething near the truth.

To make a celeſtial Globe.—This method is that the moſt frequently uſed; and we only premiſed the former as being the moſt eaſily conceived, and leading more naturally to this.

1°, From the given diameter of the *globe*, find a right line AB, *fig.* 59. *n.* 2. equal to the circumference of a great circle; and divide it into twelve equal parts.

2°, Through the ſeveral points of diviſion, 1, 2, 3, 4, &c. with the interval of 10 of them, deſcribe arches, mutually interſecting each other in D and E: theſe figures, or pieces, duly paſted or joined together, will make the whole ſurface of the *globe*.

3°, Divide each part of the right line A B into 30 equal parts, ſo that the whole line A B, repreſenting the periphery of the equator, may be divided into 360 degrees.

4°, From the poles D and E, *fig.* 60. with the interval of 23½ deg. deſcribe arches *a b*; theſe will be twelfth parts of the polar circles.

5°, After the like manner, from the ſame poles D and E, with the interval of 66½ deg. reckoned from the equator, deſcribe arches *c d*; theſe will be twelfth parts of the tropics.

6°, Through the degree of the equator *e*, correſponding to the right aſcenſion of any given ſtar, and the poles D and E, draw an arch of a circle; and taking in the compaſſes the complement of the declination from the pole D, deſcribe an arch, interſecting it in *i*; this point *i* will be the place of that ſtar.

7°, All the ſtars of a conſtellation being thus laid down, the figure of the conſtellation is to be drawn according to Bayer, Hevelius, or Flamſteed.

8°, Laſtly, After the ſame manner are the declinations and right aſcenſions of each degree of the ecliptic *d g* to be determined.

9°, The ſurface of the *globe* thus projected on a plane is to be engraven on copper, to ſave the trouble of doing this over again for each *globe*.

10°, A ball, in the mean time, is to be prepared of paper, plaſter, &c. after the manner above directed, and of the intended diameter of the *globe*: on this, by means of a ſemicircle, and ſtyle, is the equator to be drawn; and through every 30th degree, a meridian. The ball thus divided into twelve parts, correſponding to the ſegments before projected; they are to be cut from the printed paper, and paſted on the ball.

11°, Nothing now remains but to hang the *globe*, as before, in a brazen meridian, and wooden horizon: to which may be added, a quadrant of altitude HI, *fig.* 61. made of braſs, and divided in the ſame manner as the ecliptic and equator.

If the declinations and right aſcenſions of the ſtars be not given; but their longitudes and latitudes, in lieu thereof; the ſurface of the *globe* is to be projected after the ſame manner as before; except that, in this caſe, D and E, *fig.* 59. are the poles of the ecliptic, and *f h* the ecliptic itſelf; and that the polar circles, and tropics, with the equator *g d*, and the parallels thereof, are to be determined from their declinations.

One of the fulleſt catalogues of the ſtars is that of Mr. Flamſteed; wherein the right aſcenſions and declinations, as well as the longitudes, latitudes, &c. are every-where expreſſed.

Uſe of the celeſtial Globe.—The uſe of this inſtrument is very extenſive: ſcarce any thing in the ſpherical aſtronomy, but may be exhibited thereby.

The principal points are contained in the following problems, with their ſolutions; which will let the reader enough into the nature and reaſon of this noble inſtrument, to apply it, of his own accord, in any other caſes.

To find the right aſcenſion and declination of a ſtar, repreſented on the ſurface of the globe.—Bring the ſtar to the graduated ſide of the brazen meridian: then the number of degrees intercepted between the equator, and the point of the meridian cut by the ſtar, gives its declination; and the degree of the equator which comes under the meridian together with the ſtar, is its right aſcenſion.

To find the longitude and latitude of a ſtar.—Apply the centre of the quadrant of altitude over the pole of the ecliptic in the ſame hemiſphere with the ſtar, and bring its graduated edge to the ſtar; the degree on the quadrant cut by the ſtar is its latitude, reckoned from the ecliptic; and the degree of the ecliptic cut by the quadrant, its longitude.

To find the ſun's place in the ecliptic.—Seek the day of the month in the proper calendar on the horizon; and againſt the day in the circle of ſigns is the ſign and degree the ſun is in for that day: this done, find the ſame ſign upon the ecliptic, on the ſurface of the *globe*; this is the ſun's place for tha day.

To find the declination of the ſun.—The ſun's place for the day given being brought to the meridian; the degrees of the meridian intercepted between the equinoctial and that place, are the ſun's declination for that day, at noon.

To find the place of a planet, with its right aſcenſion and declination; its longitude and latitude, for the time, being given.—Apply the centre of the quadrant of altitude on the pole of the ecliptic (the pole, we mean, of the ſame denomination with the latitude), and bring it to the given longitude in the ecliptic: this point is the planet's place: and bringing it to the meridian, its right aſcenſion and declination will be found as already ſhewn of a ſtar.

To rectify the globe, *or adjuſt it to the place*, &c. *ſo as it may repreſent the preſent ſtate, or ſituation, of the heavens.*—1°, If the place be in north latitude, raiſe the north pole above the horizon; if in ſouth, raiſe the ſouth pole; till the arch intercepted between the pole and horizon be equal to the given elevation of the pole. 2°, Fix the quadrant of altitude on the zenith, *i. e.* on the latitude of the place. 3°, By means of a compaſs or meridian line place the *globe* in ſuch manner as that the brazen meridian may be in the plane of the terreſtrial meridian. 4°, Bring the degree of the ecliptic the ſun is in, to the meridian, and ſet the horary index to 12: thus will the *globe* exhibit the face of the heavens for the noon of that day. 5°, Turn the *globe* till the index come to any other given hour: thus will it ſhew the face of the heavens for that time.

To know all the ſtars and planets by means of the globe.—1°, Adjuſt the *globe* to the ſtate of the heavens for that time. 2°, Look on the *globe* for ſome one ſtar, which you know; *e. gr.* the middlemoſt ſtar in the tail of the great bear. 3°, Obſerve the poſitions of the other more conſpicuous ſtars in the ſame conſtellation; and, by transferring the eye from the *globe* to the heavens, you will eaſily note the ſame there. 4°, After the ſame manner may you proceed from this to the neighbouring conſtellations, till you have learned them all.

If the planets be repreſented on the *globe*, after the manner above deſcribed; by comparing them with neighbouring ſtars, you will likewiſe know the planets.

To find the ſun's oblique aſcenſion, his eaſtern amplitude and azimuth, with the time of riſing.—1°, Rectify the *globe* for the hour of 12, and bring the ſun's place to the eaſtern ſide of the horizon: then the number of degrees intercepted between that degree of the equator now come to the horizon and the beginning of Aries, is the ſun's oblique aſcenſion. 2°, The degrees on the horizon intercepted between the eaſt point thereof and the point wherein the ſun is, is the ortive, or riſing amplitude. 3°, The hour pointed to by the index, is the time of the ſun's riſing. 4°, Turning the *globe* till the index points to the preſent hour, lay the quadrant to the ſun's place; the degree cut by the quadrant, in the horizon, is the ſun's azimuth.

To find the ſun's oblique deſcenſion, weſtern amplitude, and azimuth; with the time of ſetting.—The ſolution of this problem is the ſame as that of the former; excepting that the ſun's place muſt be here brought to the weſtern ſide of the horizon, as in the former it was to the eaſtern.

To find the length of day and night. 1°, Find the time of the ſun's riſing; which being numbered from midnight, the double thereof gives the length of the night. 2°, Subtract the length of the night from the whole day, or 24 hours; and the remainder is the length of the day.

To find the riſing, ſetting, and culminating, of a ſtar; its continuance above the horizon, for any place and day; together with its oblique aſcenſion, and deſcenſion; and its eaſtern and weſtern amplitude and azimuth. 1°, Adjuſt the *globe* to the ſtate of the heavens, at 12 o-clock, that day. 2°, Bring the ſtar to the eaſtern ſide of the horizon: thus will its eaſtern amplitude, and azimuth, and the time of riſing, be found; as already taught of the ſun. 3°, Bring the ſame ſtar to the weſtern ſide of the horizon: thus will the weſtern amplitude, and azimuth, and the time of ſetting, be found. 4°, The time of riſing ſubtracted from that of ſetting, leaves the continuance of the ſtar above the horizon. 5°, This continuance above the horizon ſubtracted from 24 hours, leaves the time of its continuance below the horizon. 6°, Laſtly, the hour to which the index points, when the ſtar is brought to the meridian, gives the time of its culmination.

To find the altitude of the ſun, or a ſtar, for any given hour of the day, or night. 1°, Adjuſt the *globe* to the poſition of the heavens, and turn it till the index point at the given hour. 2°, Fix on the quadrant of altitude, at 90 degrees from the horizon, and bring it to the ſun's or ſtar's place: the degrees of the quadrant intercepted between the horizon, and the ſun or ſtar, is the altitude required.

The altitude of the ſun by day, or of a ſtar by night, being given; to find the time of that day, or night. 1°, Rectify the *globe* as in the preceding problem. 2°, Turn the *globe*, and quadrant, till ſuch time as the ſtar, or degree of the ecliptic the ſun is in, cut the quadrant in the given degree of altitude; then does the index point at the hour ſought. See TIME, HOUR, *&c.*

The azimuth of the ſun, or a ſtar, given; to find the time of day, or night. Rectify the *globe*, and bring the quadrant to the given azimuth in the horizon; turn the *globe*, till the ſtar come to the ſame: then will the index ſhew the time.

To find the interval of time between the riſings of two ſtars; or their culminations. 1°, Raiſe the pole of the *globe* ſo many degrees above the horizon, as is the elevation of the pole of the place. 2°, Bring the firſt ſtar to the horizon, and obſerve the time the index points to. 3°, The ſame do by the other ſtar: then ſubtracting the former time from the latter, the remainder is the interval between the riſings.

After the like manner is the interval between two culminations found, by bringing both ſtars to the meridian.

To find the beginning and ending of the crepuſculum, or twilight. 1°, Rectify the *globe*, and ſet the index to the twelfth hour, the ſun's place being in the meridian. 2°, Note the ſun's place, and turn the *globe* weſtward, as alſo the quadrant of altitude, till the point oppoſite to the ſun's place cut the quadrant of altitude in the eighteenth degree above the horizon: the index will then ſhew the time when the twilight commences in the morning. 3°, Taking the point oppoſite to the ſun, bring it to the eaſtern hemiſphere, and turn it, till it meet with the quadrant of altitude in the eighteenth degree: then will the index ſhew the time when the twilight ends.

Terreſtrial GLOBE is an artificial ſphere, on whoſe ſurface are delineated the principal places of the earth, in their proper ſituations, diſtances, *&c.* together with the circles imagined on the ſurface of the terreſtrial ſphere.

The uſe of the terreſtrial *globe* is, to exhibit the ſeveral affections, and phænomena, of the different places of the earth, depending on magnitude, *&c.* in an eaſy, obvious manner, without the trouble of trigonometrical calculation.

To conſtruct a terreſtrial GLOBE.—The conſtruction of a terreſtrial *globe*, whether of metal, plaſter, paper, *&c.* is the ſame as that of a celeſtial. The ſame circles are delineated on both: and as for the places, *viz.* cities, towns, *&c.* they are laid down from the longitudes, and latitudes given; as the ſtars are from their right aſcenſions, and declinations.

Hence all problems, depending on the circles, may be equally wrought on either *globe*; as the aſcenſions, deſcenſions, amplitudes, azimuths, riſings, ſettings, altitudes, *&c.* of the ſun; the lengths of day and night; hours of the day and night; crepuſcula, *&c.*

We ſhall here, therefore, only give what is peculiar to the terreſtrial *globe.*

Uſe of the terreſtrial GLOBE.—*To find the longitude and latitude of any place delineated on the* globe.—Bring the place to the graduated ſide of the braſs meridian: the degree of the meridian it cuts, is the latitude required; and the degree of the æquator at the ſame time under the meridian, is the longitude required.

The longitude and latitude given, to find the place on the globe. Seek, in the æquator, the given degree of longitude, and bring it to the meridian; then count from the æquator on the meridian the degree of latitude given, towards this or that pole, as the latitude is either north, or ſouth: the point under this is the place required.

To find the antiœci, periœci, and antipodes, of any place. 1°, The given place being brought to the meridian, count as many degrees on the meridian from the æquator towards the other pole: the point which is thus arrived at, is the place of the antiœci. 2°, Note the degrees of the meridian over the given place and its antiœci, and turn the *globe* till the oppoſite degree of the æquator come under the meridian; or, which amounts to the ſame, till the index, which before ſtood at twelve, come to the other twelve: then will the place, correſponding to the former degree, be the periœci; and the latter, that of the antipodes.

To find what place of the earth the ſun is vertical to at any time aſſigned. 1°, Bring the ſun's place found in the ecliptic to the meridian, and the index to the hour of twelve; noting what point of the meridian correſponds thereto. 2°, If the given hour be before noon, ſubtract it from twelve hours, and turn the *globe* towards the weſt, till the index point at the hours remaining: thus will the place required be under the point of the meridian before noted. 3°, If the hour be after noon, turn the *globe* in the ſame manner towards the weſt, till the index point at the given hour: thus, again, will the place required be found under the point of the meridian before noted.

If, at the ſame time, you note all the places which are under the ſame half of the meridian with the place found, you will have all the places to which the ſun is then in the meridian; and the oppoſite half of the meridian will ſhew all the places in which it is then midnight.

A place being given in the torrid zone, to find the two days in the year wherein the ſun is vertical to the ſame. 1°, Bring the given place to the meridian, and note the degree of the meridian correſponding thereto. 2°, Turn the *globe* about, and note the two points of the ecliptic paſſing through that degree. 3°, Find on what days the ſun is in thoſe points of the ecliptic: for on thoſe days he is vertical to the given place.

To find thoſe places in the torrid zone to which the ſun is vertical on a given day.—Bring the ſun's place in the ecliptic to the meridian; then turning the *globe* round, note all the places which paſs through that point of the meridian: thoſe are the places required.

After the ſame manner may be found what people are *aſcii*, for any given day. See ASCII.

A place being given in the frigid zone, to find on what days of the year the ſun does not riſe; and on what days he does not ſet, to the ſame.—1°, Count as many degrees in the meridian from the æquator towards the pole, as is the diſtance of the given place from the pole. 2°, Turning the *globe* round, note all the points of the ecliptic paſſing through each point noted in the ecliptic: by this means you will have the arches which the ſun deſcribes while he neither riſes, nor ſets; and the points themſelves give the places of the ſun, when he neither riſes, nor ſets, at the beginning and ending. 3°, Find what days of the year the ſun is in thoſe places: theſe are the anſwer to the queſtion.

To find the latitude of the places wherein any given day is of any given length.—1°, Bring the ſun's place for the given day to the ecliptic, and ſet the index to the hour of twelve. 2°, Turn the *globe*, till the index point at the hour of riſing, or ſetting. 3°, Raiſe and depreſs the pole till the ſun's place appear in the eaſtern or weſtern ſide of the horizon: then will the pole be duly elevated, and, conſequently, the latitude given.

To find the latitude of thoſe places in the frigid zone where the ſun does not ſet for a given number of days. 1°, Count ſo many degrees from the next tropic, towards the equinoctial point, as there are units in half the number of the given days; by reaſon the ſun, in its proper motion, goes nearly a degree every day. 2°, Bring the point of the ecliptic, thus found, to the meridian: and its diſtance from the pole will be equal to the elevation of the pole, or latitude of the places required.

Any hour of the day or night being given, to ſhew all thoſe places to which the ſun riſes, and ſets; where it is noon, or midnight; and where day, or night. 1°, Find what place the ſun is at that time vertical to, as already taught. 2°, Let this place be brought to the zenith of the wooden horizon, *i. e.* elevate the pole as the latitude of that place requires: then will the places on the eaſtern ſide of the horizon be thoſe the ſun is ſetting to; and on the weſtern ſide, thoſe he riſes to; thoſe under the upper ſemicircle of the meridian have it noon; and thoſe under the lower, midnight. Laſtly, To thoſe in the upper hemiſphere it is day; and to thoſe in the lower, night.

Hence, as, in the middle of an eclipſe, the moon is in that degree of the ecliptic oppoſite to the ſun's place; by the preſent problem it may be ſhewn what places of the earth then ſee the middle of the eclipſe; and what the beginning, or ending.

To find what places of the earth a planet, e. gr. *the moon, is vertical to, any day of the year.*—1°, Mark the planet's place on the *globe*, as above taught. 2°, Bring this place to the meridian; and note the degree over it. 3°, Turn the *globe* round; and the places which paſs under the point, are thoſe required.

The declination of a ſtar, or any other phænomenon, given; to find what parts of the earth the ſame is vertical to.—Count as many degrees in the meridian, from the æquator towards one pole, as are equal to the given declination; *viz.* towards the north, if the declination be northward; and towards the ſouth, if the declination be ſouth. Then, turning it round, the places that paſs through the extremity of this arch in the meridian, are the places required.

To determine the place of the earth where any ſtar, or other celeſtial phænomenon, will be vertical at a given hour. 1°, Elevate the pole according to the latitude of the place, from whoſe noon, or midnight, the hours are numbered. 2°, Bring the ſun's place for that day to the meridian, and ſet the index at twelve o'clock. 3°, Determine the place of the ſtar on the ſurface of the *globe*, and bring it to the meridian: the index will ſhew the difference of time between the appulſe of the ſun and ſtar to the meridian of the place: note the point of the meridian over the place of the ſtar. 4°, Find in what places of the earth it is then noon, and ſet the index to twelve o'clock. 5°, Turn the *globe* towards the weſt, till the index have paſſed over the interval of time between the culmination of the ſun and ſtar. Then, under the point of the meridian, before obſerved, will the place required be found. And hence may always be found what place a ſtar, or other phænomenon, riſes or ſets to, at any given time.

To place the GLOBE *in ſuch manner, under any given latitude, as that the ſun ſhall illuminate all thoſe regions, which he actually illumines on earth.*—1°, Rectify the *globe*; i. e. elevate the pole according to the latitude of the place; bring the place to the meridian; and ſet the *globe* north and ſouth by the compaſſes: thus, the *globe* having the ſame ſituation with regard to the ſun, as the earth has, that part thereof will be illumined, which is illumined on earth.—Hence alſo the *globe* being ſituate in the ſame manner, when the moon ſhines, it will ſhew what parts are then illumined by the moon.

And, in the like manner, may we find where the ſun and moon riſe and ſet, at any given time.

To find the diſtance of two places on the GLOBE.—Take the given places in the compaſſes, and apply them to the æquator. The degrees which they there ſubtend, being reduced into miles, leagues, or the like, give the diſtances required.

The ſame may be done, and that more commodiouſly, by laying the graduated edge of the quadrant of altitude over the two places, and noting the degrees intercepted.

Dialling GLOBE. See the article DIALLING.

GLOBULAR *Chart*, a repreſentation of the ſurface, or ſome part of the ſurface, of the terraqueous globe, upon a plane; wherein the parallels of latitude are circles nearly concentric; the meridians, curves bending towards the poles; and the rhumb-lines alſo curves.

The merits of this *chart* conſiſt in this, that the diſtances between places upon the ſame rhumb, are all meaſured by the ſame ſcale of equal parts; and the diſtance of any two places in the arch of a great circle, is nearly repreſented in this chart by a ſtrait line.—Hence, land maps, made according to this projection, would indiſputably have great advantages above thoſe made any other way. See MAP.

But for ſea charts, and the uſes of navigation, it is yet controverted, whether the *globular chart* be preferable to Mercator's; where the meridians, parallels, and particularly the rhumb-lines, are all ſtrait lines; inaſmuch as ſtrait lines are found more eaſy to draw, and manage, than curves; eſpecially ſuch as rhumb-lines on the *globular chart* are.—This projection is not new, though not much taken notice of till of late. It is mentioned by Ptolemy, in his *Geography*; as alſo by Blundeville, in his *Exerciſes*.

GLOBULAR *ſailing*. See *Great circle* SAILING.

GLOBULE, GLOBULUS, a little globe; otherwiſe called a *ſpherule*. See GLOBE.

Thus the red particles of the blood are called *globules* of the blood, on account of their redneſs, and ſmallneſs.

The microſcope diſcovers the blood to conſiſt of red globular particles, ſwimming in a limpid, tranſparent water, or ſerum; and theſe, when at a due diſtance, may be diſcerned to attract each other, and unite into larger *globules*, like the ſpheres of quick-ſilver.

The Carteſians call the particles broken off the matter of their firſt element, *globules of the ſecond element*. See ELEMENT, CARTESIAN, &c.

GLOBULUS *Naſi*, is uſed for the lower flexible, cartilaginous part of the noſe.

GLORIA *Patri*, in the liturgy, a formula of words repeated at the end of each pſalm, and on other occaſions, to give glory to the Holy Trinity; called alſo the *doxology*. See DOXOLOGY. It is thus denominated, becauſe beginning in the Latin office with theſe words, *gloria Patri*, q. d. *glory be to the Father*, &c.

Pope Damaſcus is commonly held to have firſt ordered the rehearſal, or rather ſinging the *gloria Patri* at the ends of pſalms. Baronius, indeed, will have it to have been uſed in the times of the apoſtles: but its uſe, then, he allows to have been more obſcure; and that it did not become popular till after the riſe of arianiſm, when it was made a kind of ſymbol of orthodoxy.

The fifth canon of the council of Vaiſon, held in 529. decrees, 'that the name of the pope ſhall always be rehearſed 'in the churches of France, and after the *gloria Patri*, ſhall 'be added *ſicut erat in principio*, as is done at Rome, in 'Africa, &c. on account of the heretics, who ſay, that the 'Son of God had his beginning in time.' Fleury.

GLORIA *in excelſis*, is alſo a kind of hymn rehearſed in divine ſervice, beginning with the words *gloria in excelſis Deo, & in terra pax hominibus*, &c. Glory be to God on high, on earth peace, &c.

GLOSS*, GLOSSA, a comment on the text of any author, to explain his ſenſe more fully, and at large; whether in the ſame language, or in any other.

* The word, according to ſome, comes from the Greek γλωσσα, tongue; the office of a *glos* being to explain the text; as that of the tongue is to diſcover the mind. Others derive it from the Latin *gloſs*, a ſiſter-in-law; which among the lawyers ſometimes ſtands for ſiſter; the *gloſs* being, as it were, ſiſter to the text.——

Nic. de Lyra compoſed a poſtil, or *gloſs*, on the bible in ſix volumes, folio.—The French ſay, proverbially, of an ill comment, that it is *gloſe d'Orleans, plus obſcure que le texte.*

GLOSS is alſo uſed for a literal tranſlation, or an interpretaion of an author in another language, word for word.

Young ſcholars need an interlineary *gloſs* for the underſtanding of Juvenal, Horace, Salluſt, Perſius, &c.

GLOSS is alſo uſed in matters of commerce, &c. for the luſtre of a ſilk, ſtuff, or the like.

GLOSSARY, GLOSSARIUM, a kind of dictionary for explaining the obſcure, antient, and barbarous words, and phraſes of an altered, corrupted, or refined language.

Spelman's *gloſſary*, intituled *Archaiologicum*, is an excellent work; though that author did not begin to ſtudy in this way till fifty years of age.—M. du Cange's Latin *gloſſary* in three volumes, and his Greek *gloſſary* in two volumes folio, are excellent performances, full of uncommon erudition.—Lindenbroek has a *gloſſary* on the laws of Charlemaign, &c.

GLOSSOCOMON*, Γλωσσοκομον, a ſurgeon's inſtrument, antiently uſed in ſetting broken, and diſlocated thighs and legs; as alſo in extending thoſe which remained too ſhort after ſetting.

* The word is formed of the Greek Γλωσσα, tongue, and κομειν, to have care; and was properly and primarily given by the antients to a little box, wherein they kept the reeds of their hautbois, &c.

The *gloſſocomon* is deſcribed as conſiſting of an hollow trunk, wherein the thigh or leg is laid: at the bottom hereof is a kind of wheel; and towards the top are two pullies on each ſide. Several thongs of leather are tied both above and below the fractured place. Thoſe below are faſtened to the axis of the wheel, which they are near: thoſe above go over the pullies to come to the axis, which they are likewiſe faſtened to; ſo that the ſame turning of the wheel, both draws the part of the leg, or thigh, which is above the fracture, upwards; and that below, downwards.

GLOSSOCOMON, in mechanics, is a name given by Hiero to a machine compoſed of divers dented wheels, with pinions ſerving to raiſe huge burdens.

GLOSSOPETRA, or GLOTTOPETRA, in natural hiſtory, a kind of extraneous foſſil ſomewhat in form of a ſerpent's tongue; frequently found in the iſland of Malta, and divers other parts.

Naturaliſts have been much divided as to the nature, and origin of theſe bodies.—Steno, *de corpore ſolido intra ſolidum contento*; Ol. Wormius, *diſſert. de gloſſopetra*; and Reyſchius *de gloſſopetris Lunebergenſibus*, treat of them at large.

The vulgar notion is, that they are the tongues of ſerpents petrified; and hence their name, which is a compound of Γλωσα, tongue, and πετρα, ſtone.—Hence, alſo, their traditionary virtue in curing the bites of ſerpents.

The people relate, that ſince the viper which bit St. Paul, without doing him any harm, all the ſerpents of the iſland of Malta have had the ſame virtue; and that the *gloſſopetræ* are the tongues of thoſe formerly dead.—But this is palpable fable, which the ſole figure of the *gloſſopetræ* refutes; they having very little of the ſhape of a ſerpent's tongue; beſide that they are too big.

The general opinion of naturaliſts is, that they are the teeth of fiſhes, left at land by the waters of the deluge; and ſince petrified.

They even ſpecify the very kind of fiſh; and take it to be that which Theophraſtus, and the Greek writers, call καρχαριας; and the moderns, the *ſhark*, or *ſea-dog*.

Camerarius cannot perſuade himſelf that the *gloſſopetræ*, found in England, Malta, and around Montpelier, were ever the teeth of a ſea-dog, or any other fiſh. The chief difficulty, he ſuggeſts, is, the ſmall quantity of volatile ſalt and oil which they afford by diſtillation. To which Dr. Woodward anſwers, in defence of the common ſyſtem, that, having lain ſo long buried under-ground, it is no wonder they ſhould have loſt the beſt part of their volatile principles. It is certain, that human bones and ſkulls, long interred, do not afford near the quantity of thoſe principles that they would have done immediately after the perſon's death.

Another ſcruple, propoſed by Camerarius, is, that the *gloſſopetræ*, when expoſed to the naked fire, turn to a coal, and not to a calx; contrary to what is aſſerted by Fabius Columna. Dr. Woodward anſwers, that it is likely enough the *gloſſopetræ*, in burning, may aſſume the form of coal, before it arrive at that of a calx. See Supplement, article Lamiodontes.

GLOTTIS, in anatomy, a cleft, or chink, in the larynx, ſerving for the formation of the voice.

The *glottis* is in form of a little tongue, whence its name; from γλωττα, tongue. For the ſame reaſon, the Latins call it *lingula*, *i. e.* little tongue.

Through this chink the air deſcends and aſcends, in reſpiring, ſpeaking, ſinging, &c. It has an apparatus of muſcles, whereby we contract and enlarge it; and hence all the variety of tones of the voice.

The *glottis* is covered and defended with a thin, ſoft cartilage, called the *epiglottis*.

GLOTTOPETRA. See the article Glossopetra.

GLOVE, *chirotheca*, a habit, or covering, for the hand, and wriſt; uſed both for warmth, decency, and as a ſhelter from the weather.

Gloves are diſtinguiſhed, with reſpect to commerce, into leathern *gloves*, ſilk *gloves*, thread *gloves*, cotton *gloves*, worſted *gloves*, &c.

There are, alſo, *gloves* of velvet, ſattin, taffaty, &c. Leather *gloves* are made of ſhamoy, kid, lamb, doe, elk, buff, &c. There are, alſo, perfumed *gloves*; waſhed, glazed, waxed *gloves*; and white, black, ſnuff-colour, &c. *gloves*; ſingle, lined, topped, laced, fringed with gold, ſilver, ſilk, fur, &c.

It is a proverb, that for a *glove* to be good, and well made, three kingdoms muſt contribute to it: Spain, to dreſs the leather; France, to cut it; and England, to ſew it. But, of late, the French ſeem to have appropriated the functions of the other two; the *gloves* of the French manufacture being now ſaid to have the advantage, in point of dreſſing and ſewing, as much as of cutting.

To throw the Glove was a practice, or ceremony, very uſual among our forefathers; being the challenge, whereby another was defied to ſingle combat. It is ſtill retained at the coronation of our kings; when the king's champion caſts his *glove* in Weſtminſter-hall.

Favyn ſuppoſes the cuſtom to have aroſe from the eaſtern nations; who, in all their ſales, and deliveries of lands, goods, &c. uſed to give the purchaſer their *glove* by way of livery, or inveſtiture. To this effect he quotes Ruth iv. 7. where the Chaldee paraphraſe calls *glove* what the common verſion renders by *ſhoe*. He adds, that the rabbins interpret, by *glove*, that paſſage in the cviiith pſalm, *In Idumæam extendam calceamentum meum*; Over Edom will I caſt out my ſhoe. Accordingly, among us, he who took up the *glove*, declared thereby his acceptance of the challenge; and as a part of the ceremony, continues Favyn, took the *glove* off his own right-hand, and caſt it upon the ground, to be taken up by the challenger. This had the force of a mutual engagement, on each ſide, to meet at the time and place which ſhould be appointed by the king, parliament, or judges.

The ſame author aſſerts, that the cuſtom which ſtill obtains of bleſſing *gloves*, in the coronation of the kings of France, is a remain of the eaſtern practice of giving poſſeſſion with the *glove*, l. xvi. p. 1017, &c.

Antiently it was prohibited the judges to wear *gloves* on the bench; and at preſent, in the ſtables of moſt princes, it is not ſafe going in without pulling off the *gloves*.

GLUE, Gluten, a viſcid, tenacious matter, ſerving as a cement to bind, or connect, divers things together.

There are divers kinds of *glues* made uſe of in the divers arts: as the *common glue*; *glove glue*; *parchment glue*: but the two laſt are more properly called *ſize*.

The *common* or *ſtrong* Glue is a commodity uſed by numerous kinds of artificers; as joiners, cabinet-makers, caſe-makers, hatters, bookbinders, &c. and the conſumption thereof is very conſiderable. The beſt is that made in England, in ſquare pieces, of a ruddy, brown colour: Flanders *glue* is held the next after the Engliſh.

Glue is made of the ſkins of all kinds of beaſts; as oxen, cows, calves, ſheep, &c. The older the beaſt is, the better is the *glue* that is made of its hide. Indeed, it is rare they uſe whole ſkins for this purpoſe; thoſe being capable of being applied to better purpoſe: but they make uſe of the ſhavings, parings, or ſcraps, thereof; and ſometimes they make it of the feet, ſinews, nerves, &c. of beaſts.

That made of whole ſkins is the beſt; and that of ſinews, &c. the worſt: and hence, chiefly, ariſes the difference of *glues*; and the advantage of the Engliſh and Flemiſh *glues*: for, as our tanners generally make the *glue* themſelves; they are not ſparing of the parings of the ſkins, which they never ſell: whereas in France, &c. the *glue*-makers, being a peculiar kind of manufacturers, and having no parings but what they buy, make uſe, chiefly, of ſinews, feet, &c.

Method of making Glue.—To make *glue* of parings, they firſt ſteep them two or three days in water; then waſhing them well out, they boil them to the conſiſtence of a thick jelly; this done, they paſs the jelly, while yet hot, through oſier baſkets, to ſeparate from it any impurities; and, in order to purify it ſtill farther, they let it reſt ſome time. When the ordures, or foreign matters, are precipitated to the bottom of the veſſel, they melt and boil it a ſecond time.

This done, they pour it into flat frames, or moulds; whence it is taken out, when pretty hard and ſolid, and then cut into ſquare pieces, or cakes. Nothing now remains but to dry it, in the wind, on a ſort of coarſe net, and afterwards to ſtring it, to finiſh the drying.

The *glue* made of feet, ſinews, &c. is managed after the ſame manner; with this only difference, that they bone and ſcour the feet, and do not lay them to ſteep.

The beſt *glue* is that which is oldeſt. The ſureſt teſt of its goodneſs is, to lay a piece to ſteep three or four days in water: if it ſwell conſiderably without melting, and when taken out reſume its former drineſs, it is excellent.

Fiſh Glue is a ſort of *glue*-made of the nervous and mucilaginous parts of a large fiſh, found chiefly in the Ruſſian ſeas.

Theſe parts, being boiled, bear a near reſemblance to that viſcid matter found on the ſkins of codfiſh. When boiled to the conſiſtence of a jelly, they ſpread it on a leaf of paper, and form it into cakes; in which ſtate it is ſent to us.

Fiſh glue is of conſiderable uſe in medicine, and divers other arts; where it is better known under the names of *iſing-glaſs*, and *ichthyocolla*.

GLUTÆUS, in anatomy, is a name common to three muſcles, whoſe office is to extend the thigh.—The firſt,

Glutæus *major*, or the *greater*, ariſes ſemicircularly from the os coccygis, the ſpines of the ſacrum, the ſpine of the ilium, and a ſtrong ligament which runs between the ſacrum and tubercle of the iſchium; and deſcending, is inſerted into the linea aſpera, four fingers breadth below the great trochanter. See Tab. *Anat.* (Myol.) *fig.* 1. *n.* 51. *fig.* 6. *n.* 33.

Glutæus *medius*, or the *middle* one, called *minor*, or *leſs*, ariſes from the ſpine of the ilium, under the former, and is inſerted into the ſuperior and external part of the great trochanter. See Tab. *Anat.* (Myol.) *fig.* 1. *n.* 50. *fig.* 2. *n.* 33. *fig.* 6. *fig.* 7. *n.* 13.

Glutæus *minimus*, or *leaſt*, ariſes from the lower-part of the external ſide of the ilium, under the former, and is inſerted at the ſuperior part of the great trochanter. See Tab. *Anat.* (Myol.) *fig.* 7. *n.* 2.

GLUTINATIVE, Agglutinative, or Conglutinative, in medicine, and pharmacy. See Conglutinative.

GLYCONIAN, Glyconius, in the Greek and Latin poetry.

A *glyconian* verſe is that conſiſting of two feet and a ſyllable; at leaſt this is Scaliger's opinion: who adds, that the *glyconian* verſe was alſo called the *Euripidean* verſe. See Verse.

Others hold, that the *glyconian* verſe conſiſted of three feet; a ſpondee, and two dactyls; or rather, a ſpondee, choriambus, and an iambus, or a pyrrhic: which opinion is the moſt followed.

Sic te diva potens Cypri, is a *glyconian* verſe.

GLYCYRRHIZA, in medicine, *liquorice*. See Liquorice.

GLYPHE*, or Glyphis, in ſculpture and architecture, a general name for any cavity, or canal, whether round, or terminating in an angle; uſed as an ornament, in any part. See Tab. *Archit.* *fig.* 28. *lit.* *x x*.

* The Greek word is γλυφη, which literally ſignifies graving, nitching.

Γλυφις is properly a nitch, or indenture, made in graving; or, more properly, it is the notch in the end of an arrow, in which the ſtring goes.

GLYSTER. See the article Clyster.

GNOMES, Gnomi, a name which the cabbaliſts give to certain inviſible people, whom they ſuppoſe to inhabit the inner parts of the earth, and to fill it to the centre.

They are repreſented as very ſmall of ſtature, tractable, and friendly to men; and are made the guardians of mines, quarries, hidden treaſures, &c. Vigenere calls them *gnomons*. The females of this ſpecies are called *gnomides*.

Vigneul de Marville, in his *Melange de Hiſtoire & de Literature*, t. i. p. 100. gives a relation of a conference with a philoſopher, of this claſs, who held, that an infinity of ſpirits inhabited each of the four elements, fire, air, water, and earth, under the denomination of *ſalamanders*, *ſylphs*, *oudins*, and *gnomes*;

gnomes; that the *gnomes* are employed in working, or actuateing the machines of brutes upon earth.

He added, that ſome philoſophers of that ſect held, that theſe ſpirits were of two ſexes, for the two ſexes of beaſts, or moving machines; that they were even more or leſs perfect as the brutes were; and that there was an infinite number of exceedingly ſmall ones, to actuate the infinite number of inſects, and animalcula, both thoſe that are viſible, and thoſe which are too ſmall to come under our ſenſes; that all theſe ſpirits, in general, govern their reſpective machines according to the diſpoſition of the parts, or organs, the humours, temperaments, *&c.* that they do not lay hold of all machines indifferently, but of thoſe ſuited to their own character, element, *&c.* that a haughty one, for inſtance, ſeizes a Spaniſh gennet; a cruel one, a tyger, *&c.*

Gnome, Γνωμη, or *chria*, is alſo uſed for a ſhort, pithy, and ſententious obſervation, reflection, or the like: which is worthy to be treaſured up, and remembred.

Such is that of Juvenal,—*Orandum eſt, ut ſit mens ſana in corpore ſano.*—The writers of rhetorics diſtinguiſh ſeveral kinds of *gnomes*, according as they turn on words, on actions, or both; denominating them *verbal*, *active*, and *mixed gnomes*, or *chriæ*.

GNOMON *, in dialling, is the ſtyle, pin, or cock of a dial; the ſhadow whereof pointeth out the hours.

* The word is Greek γνωμων, which literally imports ſomewhat that makes a thing known; by reaſon the ſtyle, or pin, indicates or makes the hour, *&c.* known.

The *gnomon* of every dial is ſuppoſed to repreſent the axis of the world; and therefore the two ends, or extremities thereof, muſt directly anſwer to the north and ſouth poles.

Gnomon, in geometry. If a parallelogram be divided into four leſſer ones, by two lines interſecting each other; and one of theſe parallelograms be retrenched, or taken away; the other three will make a *gnomon*, ordinarily called a *ſquare*.

Or, a *gnomon*, in a parallelogram, may be ſaid to be a figure formed of the two complements, together with either of the parallelograms about the diameter. Thus, in the parallelogram AB, *Tab. Geometry*, *fig.* 5. the *gnomon* is $M+x+z+N$; or $M+N+X+Z$.

Gnomon, in aſtronomy, denotes an inſtrument, or apparatus for meaſuring the meridian altitudes and declinations of the ſun and ſtars.

Thoſe converſant in obſervations prefer the *gnomon*, by ſome called the *aſtronomical gnomon*, to the ſmaller quadrants, both as more accurate, eaſier made, and more eaſily applied.

Accordingly, both antients and moderns have made uſe of *gnomons*, for the making of their more conſiderable obſervations: Ulugh Beigh, king of Parthia, *&c.* uſed a *gnomon*, in the year 1437. which was one hundred and eighty Roman feet high: that erected by Ignatius Dantes, in the church of St. Petronius, at Bologna, in the year 1576. was ſixty-ſeven feet high: M. Caſſini erected another twenty feet high, in the ſame church, in the year 1655.

To erect an aſtronomical **Gnomon**, *and obſerve the meridian altitude of the ſun by the ſame.*—Erect a perpendicular ſtyle, of a conſiderable height, on the meridian line: note the point where the ſhadow of the *gnomon* terminates when projected along the meridian line: meaſure the diſtance of that extreme from the *gnomon*, *i. e.* the length of the ſhadow. Thus having the height of the *gnomon*, and the length of the ſhadow; the meridian altitude of the ſun is eaſily found.

Suppoſe, *e. gr.* T S (*Tab. Optics*, *fig.* 13.) the *gnomon*, and T V the length of the ſhadow. Here, on the rectangled triangle S T V, having the two ſides T V and T S, the angle V, which is the quantity of the ſun's altitude, is found out by this analogy: as the length of the ſhadow T V: is to the altitude of the *gnomon* T S: : ſo is the whole ſine: to the tangent of the ſun's altitude above the horizon.

Or, more accurately, thus—Make a circular perforation in a braſs plate, to tranſmit enough of the ſun's rays to exhibit his image on the floor: fix it parallel to the horizon in a high place, proper for obſervation: then let fall a line and plumbet, wherewith to meaſure the height of the perforation from the floor. Take care the floor be perfectly level, and exactly horizontal; and let it be whitened over, to exhibit the ſun more diſtinctly. Draw a meridian line thereon, paſſing through the foot of the *gnomon*. *i, e.* through the point the plumbet points out: note the extreme points of the ſun's diameter on the meridian line K and I, and from each ſubtract a right line equal to the ſemidiater of the aperture; *viz.* K H (*Tab. Aſtron. fig.* 57.) on one ſide, and L I on the other. Then will H L be the image of the ſun's diameter, which, biſected in B, gives the point on which the rays fall from the centre of the ſun.

Now having given the right line A B, and the altitude of the *gnomon*, with the angle A, which is right; the angle A B G, or the apparent altitude of the ſun's centre, is eaſily found: for, aſſuming one of the given ſides A B for radius; AG will be the tangent of the oppoſite angle B. Then ſay, as one leg, A B: is to the other A G; : ſo is the whole ſine: to the tangent of the angle B.

GNOMONIC *column*. See the article **Column**.

Gnomonic *polyhedron*. See the article **Polyhedron**.

GNOMONICA, Γνωμονικη, or **Gnomonics**, the art of dialling; or of drawing ſun and moon-dials, *&c.* on any given plane.

It is thus called, as it ſhews how to find the hour of the day, *&c.* by the ſhadow of a *gnomon*, or ſtyle.

GNOSIMACHI *, an antient ſect in religion, whoſe diſtinguiſhing character was, that they were profeſſed enemies of all ſtudied knowlege in divinity.

* The word is Greek, γνωσιμαχος, *q. d.* an enemy of wiſdom, or knowlege.

Damaſcenus ſays, that they were perfectly averſe to all the gnoſes of chriſtianity, *i. e.* to all the ſcience, or technical knowlege thereof. They held it an uſeleſs labour to ſeek for gnoſes in the holy Scriptures; and ſaid, that God requires nothing of men but good works; that it were, therefore, much better to walk with more ſimplicity, and not to be ſo ſolicitous about the dogmata of the gnoſtic life.

Some authors take the word gnoſis to have a further meaning; and think that, in the firſt ages of Chriſtianity, it ſignified much the ſame with what we call *ſpirituality*, and the *gnoſtic life*, Γνωϛικη πραγματεια.—In which ſenſe the *gnoſimachi* muſt have been ſuch as were enemies of the ſpiritual life; who contended for the doing of good works in all ſimplicity; and blamed ſuch as aimed to render themſelves more perfect by meditation, a deeper knowlege and inſight into the doctrines and myſteries of religion, and the ſublimer, and more abſtracted exerciſes.

GNOSTICS *, antient heretics, famous from the firſt riſe of Chriſtianity; principally in the eaſt.

* The word is formed of the Latin *gnoſticus*, and that of the Greek γνωϛικος, knowing, learned, witty, enlightend, ſpiritual; of γινωσκω, I know.

The name *gnoſtic* was adopted by thoſe of this ſect, as if they were the only perſons who had the true knowlege of Chriſtianity. Accordingly, they looked on all other Chriſtians as ſimple, ignorant, and barbarous perſons, who explained and interpreted the ſacred writings in a too low, literal, and unedifying ſignification.

At firſt, the *gnoſtics* were only the philoſophers and wits of thoſe times; who formed themſelves a peculiar ſyſtem of theology, agreeable to the philoſophy of Pythagoras and Plato; to which they accommodated all their interpretations of Scripture. But

Gnostics afterwards became a generical name, comprehending divers ſects, and parties of heretics, who roſe in the firſt centuries; and who, though they differed among themſelves as to circumſtances, yet all agreed in ſome common principles.—Such were the Valentinians, Simonians, Carpocratians, Nicolaitans, *&c.*

Gnosticks was ſometimes alſo more peculiarly attributed to the ſucceſſors of the firſt Nicolaitans, and Carpocratians, in the ſecond century, upon their laying aſide the names of the firſt authors. Such as would be thoroughly acquainted with all their doctrines, reveries, and viſions, may conſult St. Irenæus, Tertullian, Clemens Alexandrinus, Origen, and St. Epiphanius; particularly the firſt of theſe writers, who relates their ſentiments at large, and confutes them at the ſame time: indeed, he dwells more expreſly on the Valentinians, than on any other ſort of *gnoſtics*; but he ſhews the general principles whereon all their miſtaken opinions were founded, and the method they followed, in explaining Scripture.

He accuſes them with introducing into religion certain vain and ridiculous genealogies, *i. e.* a kind of divine proceſſions, or emanations; which had no other foundation, but in their own wild imagination.

In effect, the *gnoſtics* confeſſed, that theſe æons, or emanations, were no-where expreſly delivered in the ſacred writeings; but inſiſted at the ſame time, that Jeſus Chriſt had intimated them in parables, to ſuch as could underſtand him.

They built their theology not only on the goſpels, and the epiſtles of St. Paul, but alſo on the law of Moſes, and the prophets.

Theſe laſt laws were peculiarly ſerviceable to them, on account of the allegories and alluſions which they abound withal; which are capable of different interpetrations.

They ſet a great value on the beginning of the goſpel of St. John; where they fanſied they ſaw a great deal of their æons, or emanations, under the *word*, the *life*, the *light*, &c. They divided all nature into three kinds of beings; *viz. hylic*, or material; *pſychic*, or animal; and *pneumatic*, or ſpiritual.

On the like principle they alſo diſtinguiſhed three ſorts of men; *material*, *animal*, and *ſpiritual*.—The firſt, who were material, and incapable of knowlege, inevitably periſhed both ſoul and body: the third, ſuch as the *gnoſtics* themſelves pretended to be, were all certainly ſaved: the pſychic, or animal, who were the middle between the other two, were capable either of being ſaved, or damned, according to their good, or evil actions.

The appellation Gnostic ſometimes alſo occurs in a good ſenſe, in the antient eccleſiaſtical writers, and particularly Clemens Alexandrinus, who, in the perſon of his *gnoſtic*, deſcribes the characters and qualities of a perfect Chriſtian.—This point he labours in the ſeventh book of his *Stromata*, where he ſhews, that none but the *gnoſtic*, or learned perſon, has any true religion. He affirms, that were it poſſible for the knowlege of God to be ſeparated from eternal ſalvation; the *gnoſtic* would make no ſcruple to chooſe the knowlege: and that if God ſhould promiſe him impunity in doing of any thing he has once ſpoken againſt, or offer him heaven on thoſe terms, he would never alter a whit of his meaſures.

In this ſenſe that father uſes *gnoſtics*, in oppoſition to the heretics of the ſame name; affirming, that the true *gnoſtic* is grown old in the ſtudy of the holy Scripture; and that he preſerves the orthodox doctrine of the apoſtles, and af the church: whereas the falſe *gnoſtic* abandons all the apoſtolical traditions, as imagining himſelf wiſer than the apoſtles.

At length the name *gnoſtic*, which originally was the moſt glorious, became infamous, by the idle opinions, and diſſolute lives, of the perſons who bore it; much as, in the preſent age, has fared with the name *quietiſt*, *pietiſt*, &c.

GO, is ſometimes uſed in law, in a ſpecial ſignification.—Thus to *go without day*, and, to *go to God*, denote as much as to be diſmiſſed the court, and to be acquitted.

GOAD, *Stimulus*, a ſtick armed at one end with a pointed iron, to prick, and urge on a horſe, ox, or the like.

In ſpeaking of horſes, we more commonly uſe the French name *valet*; reſerving *goad* for oxen.

GOAL, or rather Gaol. See the article Gaol.

GOATS-EYE. See the article Eye.

GOBELINS, a celebrated manufactory, eſtabliſhed at Paris, in the Fauxbourg St. Marcel; for the making of tapeſtry, and other furniture, for the uſe of the crown.

The houſe where this manufactory is carried on, was built by two brothers, Giles and John *Gobelins*, both excellent dyers; and the firſt who brought to Paris the ſecret of dying that beautiful ſcarlet colour, ſtill known by their name; as well as the little river Bievre, on whoſe banks they fixed their dye-houſe; and which is now known by no other name than that of the river of the *Gobelins*.

It was in the year 1667. that this place, till then called *Gobelins folly*, changed its name into that of *hôtel royal des Gobelins*, in conſequence of an edict of Louis XIV.

Monſ. Colbert, having re-eſtabliſhed, and with new magnificence enriched and completed, the king's palaces, particularly the Louvre and Tuilleries, began to think of making furniture ſuitable to the grandeur of thoſe buildings: with this view he called together all the ableſt workmen in the divers arts and manufactures throughout the kingdom; particularly painters, tapeſtry-makers, ſculptors, goldſmiths, eboniſts, &c. and by ſplendid offers, penſions, privileges, &c. called others from foreign nations.

And to render the intended eſtabliſhment more firm and laſting, he brought the king to purchaſe the *Gobelins*, for them to work in; and drew up a ſyſtem of laws, or policy, in ſeventeen articles.

By theſe it is provided, that the new manufactory ſhall be under the adminiſtration of the ſuperintendant of the king's buildings, arts, &c. that the ordinary maſters thereof ſhall take cognizance of all actions or proceſſes brought againſt any of the perſons in the ſaid manufactory, their ſervants and dependants: that no other tapeſtry-work ſhall be imported from any other country, &c.

The *Gobelins* has ever ſince remained the firſt manufactory of this kind in the world. The quantity of the fineſt and nobleſt works that have been produced by it, and the number of the beſt workmen bred up therein, are incredible. In effect, the preſent flouriſhing condition of the arts and manufactures of France is, in a great meaſure, owing thereto.

Tapeſtry-work, in particular, is their glory. During the ſuperintendance of M. Colbert, and his ſucceſſor, M. de Louvois, the making of tapeſtry is ſaid to have been practiſed to a degree of perfection, ſcarce inferior to what was before done by the Engliſh and Flemiſh.

The battles of Alexander, the four ſeaſons, the four elements, the king's palaces, and a ſeries of the principal actions of the life of Louis XIV. from the time of his marriage to the firſt conqueſt of Franche Comté, done from the deſigns of M. le Brun, director of the manufactory of the *Gobelins*, are maſterpieces in their kind.

GOBLET, or Gobelet, a kind of drinking-cup, or bowl, ordinarily of a round figure, and without either foot, or handle.

* The word is French, *gobelet*; which Salmaſius, and others, derive from the barbarous Latin, *cupa*: Budeus deduces it from the Greek, κυπελλον, a ſort of cup.

Goblets, made of the wood tamariſc, are ranked among medicinal-drugs; in regard the liquors infuſed a-while therein, are ſuppoſed to acquire a quality which renders them good in diſeaſes of the ſpleen.

GOBONE, or Gobony, in heraldry, the ſame as *componé*.

GOD *, an immaterial, intelligent, and free being; of perfect goodneſs, wiſdom, and power; who made the univerſe, and continues to ſupport it, as well as to govern and direct it by his providence.

* The Rabbins, and Hebraiſts, particularly St. Jerom, and the interpreters, reckon up ten different names of *God* in Scripture; which are אל, *El*, בלהים, *Elohim*, אלהי, *Elohi*, or in the ſingular, אלה, *Eloah*, צבאות, *Tſebaoth*, עליון, *Elion*, אהיה, *Ehjeh*, ארוני, *Adonai*, יה, *Jah*, תדי, *Shaddai*, יהוה, *Jehovah*: but it is wrong to divide אלהי from צבאות; they ſhould be but one name אלהיצבאות, *Elohetſebaoth*, i. e. *God of hoſts*.—Of theſe names there are three which expreſs the eſſence of *God*, and are proper names; *viz.* אהיה, *Ehjeh*, יה, *Jah*, and יהוה, *Jehovah*: the others are only names of attributes. St. Jerom gives a particular explanation of theſe ten names, in his epiſtle to Marcella: and Buxtorf the younger has an expreſs diſſertation on the ſame; *Diſſertatio de nominibus Dei*. The Jeſuit Souciet has three ſeveral diſcourſes on the three names, *El*, *Shaddai*, and *Jehovah*, printed at Paris, 1715.—The Hebrews call the name of *God* בן ארנע,אותיוה, and the Greeks, after this example, Τετραγραμματον; as conſiſting of four letters, which it is obſerved to do in moſt languages: thus, in the Hebrew, *God* is called יהוה, *Jehovah*; in Greek, Θεὸς; in Latin, *Deus*; in Spaniſh, *Dios*; in Italian, *Idio*; in French, *Dieu*; in the antient Gauliſh, *Diex*; in antient German, *Diet*; in the Sclavonic, *Buch*; in Arabic, *Alla*; in the Poliſh, *Bung*; in the Pannonian, *Iſtu*; in the Egyptian, *Tenu*; in the Perſian, *Sire*; in the language of the Magi, *Orſi*. But a diſtinction ought here to be made, between the name *God*, and the name of *God*; it being the latter, not the former, that in the Hebrew conſiſts of four letters. The name or word *God*, in the Hebrew, is אלה, *Eloah*, which conſiſts but of three letters; or in the plural אלהים, *El:him*, which conſiſts of five. The name of *God* is יהוה, *Jehovah*; which is the true τετραγραμματον, or name of four letters, among the Hebrews and Greeks. But it is not this name that anſwers to the Greek Θεὸς, Latin *Deus*, Engliſh *God*, &c. In reality none of theſe languages have any proper name of *God*, as יהוה, *Jehovah*, is in the Hebrew.

By his immateriality, intelligence, and freedom, *God* is diſtinguiſhed from *fate*, *nature*, *deſtiny*, *neceſſity*, *chance*, *anima mundi*, and from all the other fictitious beings, acknowleged by the Stoics, Pantheiſts, Spinoſiſts, and other ſorts of atheiſts.

The knowlege of God, his nature, attributes, word, and works, with the relations between him and his creatures, make the ſubject of the extenſive ſcience called *theology*.

In Scripture, *God* is defined by, I am that I am; Alpha and Omega; the Beginning and End of all things.

Among philoſophers, he is defined a being of infinite perfection; or in whom there is no defect of any thing which we conceive might raiſe, improve, or exalt his nature.

Among men, he is chiefly conſidered as the firſt cauſe, the firſt being, who has exiſted from the beginning, has created the world, or who ſubſiſts neceſſarily, or of himſelf.

Sir Iſaac Newton chooſes to conſider and define *God*, not as is uſually done, from his perfection, his nature, exiſtence, or the like; but from his dominion.—‘ The word *God*, according to him, is a relative term, and has a regard to ſervants: it is true, it denotes a being eternal, infinite, and abſolutely perfect; but a being, however eternal, infinite, and abſolutely perfect, without dominion, would not be *God*.

“ The word *God*, the ſame author obſerves, frequently ſignifies *Lord*: but every lord is not *God*: it is the dominion of a ſpiritual being or lord, that conſtitutes *God*; true dominion, true *God*; ſupreme, the ſupreme; feigned, the falſe god.

“ From ſuch true dominion it follows, that the true *God* is living, intelligent, and powerful; and from his other perfections, that he is ſupreme, or ſupremely perfect: he is eternal, and infinite; omnipotent, and omniſcient: that is, he endures from eternity to eternity, and is preſent from infinity to infinity.

“ He governs all things that exiſt, and knows all things that are to be known: he is not eternity, or infinity, but eternal and infinite: he is not duration, or ſpace, but he endures, and is preſent: he endures always, and is preſent every-where; and by exiſting always, and every-where, he conſtitutes the very things duration and ſpace, eternity and infinity.

“ Since every particle of ſpace is always, and every indiviſible moment of duration every-where, the Creator and Lord of all things can never be *nunquam*, or *nuſquam*.

“ He is omnipreſent, not only virtually, but alſo ſubſtantially;
“ for power without ſubſtance cannot ſubſiſt.
“ All things are contained, and move, in him; but without
“ any mutual paſſion: he ſuffers nothing from the motions of
“ bodies; nor do they undergo any reſiſtance from his omni-
“ preſence.
“ It is confeſſed, that *God* exiſts neceſſarily; and by the ſame
“ neceſſity he exiſts always, and every-where.—Hence, alſo,
“ he muſt be perfectly ſimilar; all eye, all ear, all brain,
“ all arm, all the power of perceiving, underſtanding, and
“ acting; but after a manner not at all corporeal, after a man-
“ ner not like that of men, after a manner wholly to us un-
“ known.
“ He is deſtitute of all body, and all bodily ſhape; and there-
“ fore cannot be ſeen, heard, nor touched; nor ought to
“ be worſhiped under the repreſentation of any thing corpo-
“ real.
“ We have ideas of the attributes of *God*, but do not know
“ the ſubſtance even of any thing: we ſee only the figures
“ and colours of bodies, hear only ſounds, touch only the
“ outward ſurfaces, ſmell only odours, and taſte taſtes; and
“ do not, cannot, by any ſenſe, or any reflex act, know
“ their inward ſubſtances; and much leſs can we have any
“ notion of the ſubſtance of *God*.
“ We know him by his properties, and attributes; by the
“ moſt wiſe and excellent ſtructure of things, and by final
“ cauſes; but we adore and worſhip him only on account of
“ his dominion: for *God*, ſetting aſide dominion, providence,
“ and final cauſes, is nothing elſe but fate, and nature.”
Newt. Philoſ. Nat. Princip. Math. in calce.

An ingenious divine has wrought theſe thoughts of that admirable philoſopher into form, and ripened them into a more expreſs ſyſtem, in a diſcourſe on this ſubject.—“ The great
“ principle or propoſition he lays down, is, that *God* is not
“ rightly defined a being abſolutely perfect, but a ſpiritual
“ being endued with abſolute dominion.—Not that he denies
“ the ſelf-exiſtent being to be infinitely perfect; but only he
“ holds, that it is his dominion, not his perfection, that is
“ intended by the word *God*.”

The ſelf-exiſtent being, he obſerves, may be conſidered either *abſolutely*, or *relatively*: abſolutely, as he is in his own nature, and as he is conſidered by the metaphyſician: relatively, as he ſtands related to his creatures, and as he is conſidered by the religioniſt, his worſhiper. Now, in treating of the definition of *God*, we intend a nominal, not a real, definition; not what the nature of that ſelf-exiſtent being is, which we call *God*; but what it is that we mean by the word *God*: which, on this ſyſtem, is that ſelf-exiſtent being, conſidered not abſolutely, but relatively; not as he is abſtractedly in his own nature, but as he ſtands related to the univerſe, whoſe ſovereign lord he is.

It is added, that the names given this being, in moſt languages, denote, not his abſtract, metaphyſical, and abſolute idea; but his religious, popular, and relative one.

Indeed, every worſhiper of *God* will allow, that he worſhips that ſelf-exiſtent being for no other reaſon, but becauſe he is *God*; that is, becauſe he is the proper lord and ſovereign: for one would be under no obligation to worſhip a being, though abſolutely perfect, that had no dominion over him. A perfect being, without dominion, would be only an object of contemplation, and admiration; not of worſhip: for worſhip is only a payment of homage, an acknowlegement of ſubjection; which, where there is no dominion, cannot be due, and is therefore always due in proportion to the degree of dominion.

The word *God*, then, ſignifies *Lord*, and not a being abſolutely perfect: thus when I ſay, my *God*, the *God* of the univerſe; it ſeems plain, that the notion of *God* is relative, not abſolute; that is, includes dominion, not abſolute perfection: and if I were to expreſs the ſame in any other words, could I do otherwiſe than thus; my Lord, the Lord of the univerſe? and not thus; my perfect being, the perfect being of the univerſe.

Indeed, it ſeems impoſſible to prove the exiſtence of a *God*, in the ſenſe affixed to that name, *à priori*, or any otherwiſe than from his dominion; that is, by arguing from the effect to the cauſe. The following propoſitions, it is true, are undeniably demonſtrable *à priori*. 1°, That there is a ſelf-exiſtent, *i.e.* neceſſarily exiſtent being; becauſe the univerſe could not produce itſelf. 2°, That a neceſſarily exiſtent being muſt be eternal, and omnipreſent, that is, co-extended with infinite duration, and infinite ſpace; becauſe whatever exiſts by an abſolute neceſſity of nature, has no relation to difference of time, place, &c. and, conſequently, muſt exiſt always, and every-where. 3°, This being muſt be perfectly ſimilar, ſimple, and uncompounded, without the leaſt variety, or difference, imaginable, or poſſible; becauſe abſolute neceſſity is every-where, and always the ſame. From which propoſition it alſo follows, as a corollary, that this being is immutable.

It is apparent, therefore, *à priori*, that there is a ſelf-exiſtent being, which is not matter; and that this being is eternal, omnipreſent, ſimilar, and unchangeable, by neceſſary connection between ſelf-exiſtence, and theſe attributes: but it is impoſſible to ſhew any neceſſary connexion between ſelf-exiſtence and underſtanding; and if ſo, it is impoſſible to prove, that the ſelf-exiſtent being is intelligent, *à priori*, or any otherwiſe than by arguing from the effect to the cauſe; that is, from the conſideration of the frame of the univerſe, the laws of nature, and final cauſes. Maxwel. *Diſc. concern.* GOD.—

Cicero, in his treatiſe *De natura Deorum*, puts this ridiculous argument, againſt the exiſtence of a *God*, in the mouth of Cotta. “ How ſhall we conceive any thing of a *God*, when
“ we cannot poſſibly attribute any virtue to him? Shall we
“ ſay, he has prudence? No: for prudence conſiſting in
“ making a choice between good and evil; what need has
“ *God* of ſuch choice, when he is, by his own nature, inca-
“ pable of any evil? Shall we ſay, he has underſtanding and
“ reaſon? No: for underſtanding and reaſon only ſerve to
“ diſcover things unknown to us, by things that are known;
“ but there can be nothing unknown to *God*. Nor can we at-
“ tribute juſtice to *God*; that being a thing which only relates
“ to human ſociety: nor temperance; ſince he has no plea-
“ ſure to reſtrain: nor courage; in regard he is not ſuſcept-
“ ible of any pain, labour, or fatigue; nor expoſed to any
“ danger. How, then, can a thing be *God*, which has nei-
“ ther virtue, nor underſtanding?”

GOD is alſo uſed in ſpeaking of the falſe deities of the heathens, many of which were only creatures to which divine honours and worſhip were ſuperſtitiouſly paid.

The Greeks and Latins, it is obſervable, did not mean, by the name *god*, an all-perfect being, whereof eternity, infinity, omnipreſence, &c. were eſſential attributes: with them, the word only implied an excellent and ſuperior nature: and, accordingly, they give the appellation *gods* to all beings of a rank, or claſs, higher and more perfect than that of men.

Thus, men themſelves, according to their ſyſtem, might become *gods*, after death; inaſmuch as their ſouls might attain to a degree of excellence ſuperior to what they were capable of in life.

The firſt divines, father Boſſu obſerves, were the poets: the two functions, though now ſeparated, were originally combined; or, rather, were one and the ſame thing.

Now the great variety of attributes in *god*, that is, the number of relations, capacities, and circumſtances, wherein they had occaſion to conſider him, put theſe poets, &c. under a neceſſity of making a partition, and to ſeparate the divine attributes into ſeveral perſons; by reaſon the weakneſs of the human mind could not conceive ſo much power and action in the ſimplicity of one ſingle divine nature.

Thus the omnipotence of *god* came to be repreſented under the perſon and appellation of Jupiter; the wiſdom of *god*, under that of Minerva; the juſtice of *god*, under that of Juno.

The firſt idols, or falſe *gods*, that are ſaid to have been adored, were, the ſtars, ſun, moon, &c. in regard of the light, heat, and other benefits, we derive from them.

Afterwards, the earth came to be deified, for furniſhing fruits neceſſary for the ſubſiſtence of men and animals; then fire and water became objects of divine worſhip, for their uſefulneſs to human life. See FIRE, and WATER.

When things were thus got in the train, *gods*, by degrees, became multiplied to infinity; and there was ſcarce any thing but the weakneſs, or caprice, of ſome devotee or other, elevated into the rank; things uſeleſs, or even deſtructive, not excepted.

To authorize their own crimes, and juſtify their vices and debaucheries, men conſtituted criminal, vicious, and licentious, *gods*; unjuſt, rapacious, and tyrannical, *gods*; covetous and thieviſh *gods*; drunken *gods*; impudent *gods*; cruel and bloody *gods*.—

The principal of the antient *gods*, whom the Romans called *dii majorum gentium*, and which Cicero calls *celeſtial gods*, Varro *ſelect gods*, Ovid *nobiles deos*, others *conſentes deos*, were, Jupiter, Juno, Veſta, Minerva, Ceres, Diana, Venus, Mars, Mercury, Neptune, Vulcan, and Apollo.

Jupiter is conſidered as the *god* of heaven; Neptune as *god* of the ſea; Mars as the *god* of war; Apollo of eloquence, poetry, and phyſic; Mercury of thieves; Bacchus of wine; Cupid of love, &c.

A ſecond ſort of *gods*, called *demi-gods*, *ſemi-dii*, *dii minorum gentium*, *indigetes*, or *gods* adopted; were men canonized, and deified.—As the greater *gods* had poſſeſſion of heaven by their own right; theſe ſecondary deities had it by right, and donation; being tranſlated into heaven for that they had lived as *gods* upon earth.

The heathen *gods* may be all reduced to the following claſſes.

1°, Created ſpirits, angels, or dæmons: whence good an evil *gods*; Genii, Lares, Lemures, Typhones, guard in *gods*, infernal *gods*, &c.

2°, Heavenly bodies; as the ſun, moon, and other planets: alſo, the fixed ſtars, conſtellations, *&c.*

3°, Elements; as air, earth, ocean, Ops, Veſta: the rivers, fountains, *&c.*

4°, Meteors. Thus the Perſians adored the wind; thunder and lightning were honoured under the name of Geryon; and ſeveral nations, of India and America, have made themſelves *gods* of the ſame. Caſtor, Pollux, Helena, and Iris, have alſo been preferred, from meteors, to be *gods*; and the like has been practiſed in regard to comets: witneſs that which appeared at the murder of Cæſar. Socrates deified the clouds, if we may give credit to Ariſtophanes; and the primitive Chriſtians, Tertullian aſſures us, were reproached with the ſame thing.

5°, They erected minerals, or foſſils, into deities. Such was the bætylus; the Finlanders adored ſtones; the Scythians iron; and many nations, ſilver and gold.

6°, Plants have been made *gods*. Thus leeks and onions were deities in Egypt; the Sclavi, Lithuanians, Celtæ, Vandals, and Peruvians, adored trees, and foreſts; the antient Gauls, Britons, Druids, bore a particular devotion to the oak; and it was no other than wheat, corn, ſeed, *&c.* that the antients adored under the names of Ceres, and Proſerpina.

7°, They took themſelves *gods* from among the waters. The Syrians and Egyptians adored fiſhes; the Oxyrhinchites, Latopolitani, Siennitæ, and inhabitants of Elephantis, had each a fiſh for their *god*; and the Tritons, Nereids, Syrens, *&c.* what were they but fiſhes? Several nations have adored ſerpents; particularly the Egyptians, Pruſſians, Lithuanians, Samogitians, *&c.*

8°, Inſects, as flies, and ants, had their prieſts, and votaries: theſe among the Theſſalians, and thoſe in Acarnania, where bullocks were offered to them.

9°, Among birds, the ſtork, raven, ſparhawk, ibis, eagle, griffon, and lapwing, have had divine honours; the laſt in Mexico, the reſt in Egypt, and at Thebes.

10°, Four-footed beaſts have had their altars; as the bull, dog, cat, wolf, baboon, lion, and crocodile, in Egypt, and elſewhere; the hog in the iſland of Crete; rats and mice in the Troas, and at Tenedos; weaſels at Thebes, and the porcupine throughout all Zoroaſter's ſchool.

11°, Nothing was more common than to place men among the number of deities: and from Belus, or Baal, to the Roman emperors before Conſtantine, the inſtances of this kind are innumerable: frequently they did not wait ſo long as their deaths for the apotheoſis. Nebuchadnezzar procured his ſtatue to be worſhiped while living; and Virgil ſhews, that Auguſtus had altars and ſacrifices offered to him, Eclog. i. ver. 6, 7. As we learn, from other hands, that he had prieſts called *Auguſtales*; and temples, at Lyons, Narbona, and ſeveral other places: and he muſt be allowed the firſt of the Romans, in whoſe behalf idolatry was carried to ſuch a pitch. The Ethiopians deemed all their kings *gods*: the Velleda of the Germans; the Janus of the Hungarians; and the Thaut, Woden, and Aſſa, of the northern nations; were, indiſputably, men.

12°, Not men only, but every thing that relates to man, has alſo been deified: as labour, reſt, ſleep, youth, age, death, virtues, vices, occaſion, time, place, numbers, among the Pythagoreans; the generative power, under the name of Priapus. Infancy, alone, had a cloud of deities; as Vagetanus, Levana, Rumina, Eduſa, Potina, Cuba, Cumina, Carna, Oſſilago, Statulinus, Fabulinus, *&c.*

They alſo adored the *gods* health, fever, fear, love, pain, indignation, ſhame, impudence, opinion, renown, prudence, ſcience, art, fidelity, felicity, calumny, liberty, money, war, peace, victory, triumph, *&c.*

Laſtly, nature, the univerſe, or *το παν*, was reputed a great *god*.

Heſiod has a poem under the title of Θεογονια, *i. e.* the generation of the *gods*; wherein he explains their genealogy and deſcent; ſets forth who was the firſt, and principal; who next deſcended from him, and what iſſue each had: the whole making a ſort of ſyſtem of heathen theology.

Beſide this popular theology, each philoſopher had his ſeparate ſyſtem; as may be ſeen from the *Timæus* of Plato, and Cicero *De natura deorum.*

Juſtin Martyr, Tertullian in his *Apologetics*, and in his book *Contra gentes*; Arnobius, Minutius Felix, Lactantius, Euſebius, *Præpar. & Demonſt. Evangel.* St. Auguſtine *De Civit. Dei*, and Theodoret *Adverſ. Gentes*, ſhew the vanity of the heathen *gods*.

It is very difficult to diſcover the real ſentiments of the heathens, with reſpect to their *gods*: they are exceedingly intricate and confuſed, and even frequently contradictory. They admitted ſo many ſuperior and inferior *gods*, who ſhared the empire, that all was full of *gods*. Varro reckons up no leſs than thirty thouſand adored within a ſmall extent of ground, and yet their number was every day growing. The way to heaven was ſo eaſy for the great men of thoſe days, that Juvenal brings in Atlas complaining he was ready to ſink under the load of ſuch a number of new *gods* as were daily placed in the heavens: yet father Mourgues ſeems to have proved, that all the philoſophers, of antiquity, have acknowleged that there was but one *god*. *Plan. Theol. des Sect. Sçavant. de la Grece.*

Act of GOD.	See	DISABILITY.
Peace of GOD.	See	PEACE.
Son of GOD.	See	SON.
Truce of GOD.	See	TRUCE.
Worſhip of GOD.	See	WORSHIP.

GOD-BOTE, in our antient Saxon cuſtoms, an eccleſiaſtical or church fine; for crimes and offences committed againſt God.

GODDESS, *dea*, *diva*, a Heathen deity, to whom they attributed the female ſex.

The antients had almoſt as many *goddeſſes* as gods. Such were Juno, the *goddeſs* of air; Diana, the *goddeſs* of woods, and chaſtity; Proſerpina, the *goddeſs* of hell; Venus, of beauty; Thetis, of the ſea: ſuch, alſo, were Victory, Fortune, *&c.*

Nay, they were not contented to make women gods, and admit both ſexes into the roll; but they had, alſo, hermaphrodite gods. Thus Minerva, according to ſeveral of the learned, was both man and woman, and worſhiped both under the appellation of Lunus, and Luna. Mithras, the Perſian deity, was both god and *goddeſs*; and the ſexes of Venus and Vulcan are very dubious: whence, in the invocations of thoſe deities, they uſed this formula; *Be thou god, or goddeſs*: as we learn from A. Gellius.

It was a privilege peculiar to *goddeſſes*, that they might be repreſented, on medals, naked. The imagination, it was ſuppoſed, muſt be awed, and kept from taking liberties, by the conſideration of the divine character.

GOD-FATHERS, and GOD-MOTHERS, perſons who direct, and attend at the baptiſm of infants, or other perſons; and who give the name.

The number of *god-fathers*, and *god-mothers*, is now reduced to three in the church of England, and two in that of Rome; antiently, they had as many as they pleaſed.

The Romaniſts have, alſo, *god-fathers*, and *god-mothers*, at their confirmation. They even give *god-fathers*, &c. to bells, at their baptiſm.

Among the antients it was the cuſtom for perſons of quality to have others of like quality cut their childrens hair, the firſt time; by which they became reputed a ſort of *god-fathers*: and the like was practiſed with regard to the hair of the beard.

GOD-FATHER was alſo a name antiently given to a kind of ſeconds, who attended and aſſiſted the knights in tournaments, or ſingle combats.

The *god-fathers* of duels were a kind of advocates, who were choſen, by the two parties, to repreſent the reaſons of their combat to the judges.

Something of this kind was long retained at ſolemn carrouſals. There were two, or more, in each quadrille. See QUADRILLE.

The inſtitution of *god-fathers* and *god-mothers*, *patrimi* and *matrimi*, is originally Roman. They are ſaid to have been people who, in the games of the Circus, attended the chariots, ſhews, and images, of the gods. Cicero makes mention of them, in his oration *De haruſpicum reſponſis.*—Their office was much like that of the children in ſome Romiſh ceremonies, who are dreſſed in the habit of angels, to ſtrew flowers, bear incenſe-pots, lights, *&c.* and accompany the relicks and images of ſaints.

GOD-GILD, in our antient cuſtoms, that which is offered to God, or for his ſervice.

GOLD, *aurum*, a yellow metal; the heavieſt, pureſt, moſt ductile, and ſhining; and, on thoſe accounts, the moſt valuable of all metals.

The chemiſts call *gold*, *ſol*, the ſun; to denote its pre-eminence over the other metals, which are called by the names of the planets. Its ſymbol, or character, is ☉; which, in their hieroglyphical way of writing, denotes perfection, ſimplicity, ſolidity, *&c.*

The weight of *gold* is to that of water, as 19636 to 1000.—A cubic inch of pure *gold* weighs twelve ounces, two drachms, fifty-two grains; and the cubic inch of ſilver, ſix ounces, five drachms, twenty-eight grains. The pound weight, or twelve ounces, Troy, of *gold*, is divided into twenty-four caracts.

The value of *gold* is to that of ſilver, as fourteen to one; antiently it was only as twelve to one. Indeed, this proportion varies as *gold* is more or leſs plentiful: for Suetonius relates, that Cæſar brought ſuch a quantity of *gold* from Italy, that the pound of *gold* was only worth ſeven pounds and a half of ſilver. Standard *gold* is worth 44*l.* 10*s.* ſterling the pound weight; ſtandard ſilver is worth 3*l.* the pound, or 5*s.* the ounce. See STANDARD; ſee, alſo, SILVER, and MONEY.

The firſt characteriſtic or property of *gold* is, that it is the heavieſt of all bodies. So that whoever would make *gold*, muſt be able to add to the weight of other matters, and make them equiponderate with *gold*.

In every maſs of matter, therefore, heavier than mercury, there muſt of neceſſity be a ſhare of *gold*; there being no body in nature of intermediate gravity; *i. e.* no body whoſe gravity is to that of *gold*, more than as fourteen to nineteen.

Its ſecond character is, that of all known bodies it is the moſt ductile and malleable, and of all bodies its parts have the greateſt degree of attraction, *i. e.* they cohere with the greateſt force. Our goldbeaters and wiredrawers furniſh us with proof of this property. They every day reduce *gold* into leaves, or lamellæ, inconceivably thin; yet without leaving the leaſt aperture, or chaſm, viſible to the beſt microſcope, or even pervious to the light. See this property conſidered more at large under the article DUCTILITY.

This tenacity, or coheſive force, of *gold* depends altogether on its being free from ſulphur: for mix but a ſingle grain of common ſulphur with one thouſand times the weight of *gold*, and the maſs ceaſes to be malleable.

The third character of *gold* is its fixedneſs in the fire: in which it exceeds all other bodies. This property ſeems to reſult from the homogeneity and equality of its parts, which equally aid and ſupport each other, and have equal pores, or interſtices, through which the fiery corpuſcles find an eaſy paſſage. The prince of Mirandola, Mr. Boyle, and moſt other chemiſts, furniſh divers experiments to illuſtrate this wonderful fixity. After laying a quantity of *gold* two months in the intenſeſt heat imaginable, it is taken out without any ſenſible diminution of weight.

It muſt be added, however, that in the foci of the large burning-glaſſes of Meſſ. Tſchirnhauſen, and Vilette, even *gold* itſelf volatilizes and evaporates. After this manner, we are told from the royal academy at Paris, a quantity of pure *gold* was vitrified; being firſt fuſed into a ſort of calx, which emitted fumes, and loſt of its weight. But the ſame calx, fuſed again with a quantity of greaſe, was reſtored into *gold*.

Its fourth character is, not to be diſſoluble by any known menſtruum in nature, except aqua regia, and mercury.

The baſis of aqua regia is ſea ſalt, which is the only ſalt we know of that has any effect on *gold*. But this ſalt has its effect in what form or manner ſoever applied, whether as a fluid, or a ſolid; in ſubſtance, or in ſpirit.

Mr. Boyle made a menſtruum of butter of antimony, which diſſolved *gold* with great facility; and hence concluded, that *gold* might be diſſolved without ſea ſalt; but by miſtake, the effective part even of this menſtruum being ſtill ſea ſalt; which is an ingredient in ſublimate of mercury, wherewith butter of antimony is made.

The ſeventh character is, that it readily and ſpontaneouſly, as by ſome magnetic virtue, attracts and abſorbs mercury; though what my lord Bacon writes, *viz.* that *gold*, in imbibing mercury, increaſes in ſpecific gravity, we doubt, is but ill warranted. It is more than probable it muſt be increaſed in bulk, more than in weight; and conſequently muſt be ſpecifically lighter.

It may be added, that as ſoon as the mercury enters the *gold*, the metal becomes ſoft, like a paſte.

The eighth character is, that it withſtands the violence both of lead and antimony; *i. e.* being fuſed in the coppel along with either of thoſe matters, it does not diſſipate and fly off with them in fume, but remains fixed and unchanged.

All other metals, except *gold* and ſilver, melted with lead, periſh with it, and evaporate by fire; and in antimony, all other metals, except *gold*, even ſilver itſelf, undergo the ſame fate. Thus, if a maſs conſiſting of *gold*, ſilver, ſtones, copper, *&c.* be fuſed together with antimony, the ſeveral matters become ſeparated, and all but the *gold* riſes to the ſurface in form of a ſcoria, and is blown off with bellows: but the *gold* remains behind, much purified, as having loſt all its heterogeneous parts along with the other metals. And hence antimony is uſed as the teſt of *gold*.

The ninth character is, that of all bodies it is the ſimpleſt (the primary elements being here excepted). By ſimple we here mean that whoſe minuteſt part has all the phyſical properties of the whole maſs. Thus, if a grain of *gold* be diſſolved in aqua regia, and a ſingle drop of the ſolution be taken, a quantity of *gold* may be ſeparated therefrom, which ſhall only be the millionth part of the grain, and yet ſhall have all the characters of *gold*. Or, if you fuſe a grain of *gold* with a large maſs of ſilver, and mix the two together, ſo that the *gold* becomes equally diffuſed through the whole maſs; you will have in every particle of the maſs a particle of perfect *gold*. Accordingly, diſſolve any part of the mixture in aqua fortis, and a quantity of *gold* will precipitate to the bottom, bearing the ſame proportion to the grain that the part diſſolved did to the whole maſs. On which principle depends the art of eſſaying. See ESSAY.

All the known parts of the earth afford this precious metal; though with a deal of difference, in point of purity and abundance: Europe, ſo fertile in other reſpects, comes ſhort of all other quarters in *gold*. America furniſhes the moſt; and particularly the mines of Peru and Chili. That of Aſia is eſteemed the fineſt, particularly that of Menaticabo in the Eaſt-Indies: though the Spaniards aſſure us, that they get *gold* out of ſome of their Peruvian mines, twenty-three carats fine before it be purified. Add, that the *gold* of Axima, on the coaſt of Africa, is found from twenty-two to twenty-three carats.

Glauber, an eminent chemiſt, aſſerts that there is not any ſand, or ſtone, but *gold* may be procured from; limeſtone only excepted: the misfortune is, that the expence of ſeparating it much ſurmounts the profits.

Gold is chiefly found in mines: though there is ſome alſo found in the ſand and mud of rivers and torrents; particularly in Guinea. This laſt is in form of a fine duſt, and is called *αμμοχρυσος*, *gold-duſt*. Glauber tells us, that there is a third ſort of *gold*, ſcarce found any-where but in the drains of the mountains of Chili, which they ſeparate from the earth by waſhing; whence the places where it is found, or ſeparated, are called *lavadero's*.

This earth is uſually rediſh, and very fine: at about ſix feet deep it is mixed with grains of large duſt; and from hence commences the ſtratum, or bed of *gold*. Between are banks of ſoft bluiſh ſtone, mixed with yellow threads, which yet are not *gold*, but only pyrites, or marcaſite of *gold*.

When they have diſcovered any of this earth, they endeavour to bring rivulets to it (which in thoſe mountains are very frequent), in order, by force thereof, to tear off the upper earth, and lay the golden ſtratum bare. This they forward by looſening it, and digging with ſpades, *&c.* As ſoon as the golden earth is uncovered, they turn off the water; and dig up the ſoil by force of arm; and loading it on mules, carry it to the lavadero's, *i. e.* a ſort of baſons of water, where the earth undergoing divers repeated lotions, in different waters, the earthy and impure part is all ſeparated and carried off by the ſtream, and the *gold* left at bottom. This method of getting *gold* is immenſely gainful; the expences being but trifling, compared with thoſe accruing in the common way by machines, fire, and quickſilver: the richeſt of theſe lavadero's is that de l'Eſtancia del Rey, twelve leagues from the Conception, a port of the South Sea. —Thuringia, and ſome other places along the Rhine, are the only places in Europe, where *gold* is got in this manner.

The *gold* of mines is of two kinds; the one in ſmall pieces, or grains, of various forms and weights. Of this ſort, among the ſpecimens ſent by Columbus into Spain, to let them ſee the richneſs of his diſcovery, there were ſome of eighteen ounces weight; and the relations of thoſe days aſſure us, that in 1502. there were others found of thirty-two pounds weight.

The other kind of *gold* is dug up in ſtony glebes, which is what they call the *mineral*, or *ore of gold*: theſe glebes are of various colours, and lie uſually one hundred and fifty, or one hundred and ſixty fathom deep. Along with the *gold* they uſually contain ſome other mineral matter, as antimony, vitriol, ſulphur, copper, or ſilver; particularly the laſt; without ſome ſhare of which it is ſcarce ever found.

Manner of ſeparating GOLD.—They firſt break the metalline ſtone with iron mallets, pretty ſmall; then carry it to the mills, where it is ground into a very fine powder; and laſtly paſs it through ſeveral braſs-wire ſieves one after another, the laſt as fine as any of our ſilk ſieves.

The powder thus prepared is laid in wooden troughs with a proper quantity of mercury and water, and there left to knead and ſaturate in the ſun and air for twice twenty-four hours. After this the water, with the recrementitious earth, is driven out of the tubs by means of other hot waters, poured thereon. This done, there remains nothing but a maſs of mercury with all the *gold* that was in the ore. The mercury they ſeparate from it by diſtillation in large alembics. The *gold*, in this ſtate, is called *virgin gold*; as well as that found in the ſand of rivers, or that in grains in the mines; in regard none of them have paſſed the fire. After this, they uſually fuſe it in crucibles, and caſt it into plates, or ingots.

Manner of refining GOLD.—There are three principal manners of refining *gold*; the firſt with antimony; the ſecond with ſublimate; and the third with aqua fortis. This laſt, which is called *departing*, or *parting*, is already deſcribed under the article DEPART; and the two former ſee under REFINING.

Beſide theſe three, there are other methods of refining *gold*; particularly that called *cupellation*, which is performed with lead and aſhes; and that called *cæmentation*, by means of a compoſition of brickduſt, common ſalt, ſal ammoniac, ſal gemma, and urine. See Coppel, Cæment, and Cæmentation.

The eſſaying of Gold is performed with the touchſtone, but more ſecurely by fire. See Touch-*ſtone*, and Eſſaying.

For the making of Gold, ſee Philosophers-*ſtone*, and Transmutation.

Gold Wire is a cylindrical ingot of ſilver, ſuperficially gilt, or covered with *gold*, at the fire; and afterwards drawn ſucceſſively through a great number of little round holes of a wiredrawing iron, each leſs than the other, till it be ſometimes no bigger than a hair of the head. See Wire.

It may be obſerved, that before the wire be reduced to this exceſſive fineneſs, it is drawn through above an hundred and forty different holes; and that each time they draw it, it is rubbed freſh over with new wax, both to facilitate its paſſage, and to prevent the ſilver's appearing through.

It is amazing to what degree of fineneſs the *gold* is here drawn; and yet it ſtill keeps firm together, and never ſhews the leaſt ſigns of the ſilver underneath it. The reader may ſee a computation hereof, as alſo a more particular account of the manner of proceeding, under the article Ductility *of gold*.

Gold Wire *flatted* is the former wire flatted between two rollers of poliſhed ſteel, to fit it to be ſpun on ſilk, or to be uſed flat as it is, without ſpinning, in certain ſtuffs, laces, embroideries, &c.

Gold Thread, or *ſpun* Gold, is a flatted *gold* wrapped, or laid over a thread of ſilk, by twiſting it with a wheel, and iron bobins.

The methods of managing and drawing *gold* and ſilver both real and ſeeming in all theſe kinds, are very curious, and of great uſe in commerce.

Manner of forming Gold Wire, *and* Gold Thread, *both round and flat.*—Firſt, an ingot of ſilver of twenty-four pound is forged into a cylinder of about an inch in diameter: then it is drawn through eight or ten holes of a large, coarſe, wire-drawing iron, both to finiſh the roundneſs, and to reduce it to about three fourths of its former diameter. This done, they file it very carefully all over, to take off any filth remaining of the forge: then they cut it in the middle, and thus make two equal ingots thereof; each about twenty-ſix inches long; which they draw through ſeveral new holes to take off any inequalities the file may have left, and to render it as ſmooth and equable as poſſible.

The ingot thus far prepared they heat it in a charcoal fire: then, taking ſome gold leaves, each of about four inches ſquare, and weighing twelve grains; they join four, eight, twelve, or ſixteen of theſe together, as the wire is intended to be more or leſs gilt; and when they are ſo joined as only to form a ſingle leaf, they rub the ingots, reeking hot, with a burniſher.

Theſe leaves being thus prepared, they apply over the whole ſurface of the ingot to the number of ſix, over each other; burniſhing or rubbing them well down with the bloodſtone, to cloſe and ſmoothen them.

When gilt, the ingots are laid anew in a coal fire; and when raiſed to a certain degree of heat, they go over them a ſecond time with the bloodſtone, both to ſolder the *gold* more perfectly, and to finiſh the poliſhing.

The gilding finiſhed, it remains to draw the ingot into wire. In order to this, they paſs it through twenty holes of a moderate drawing iron, by which it is brought to the thickneſs of the tag of a lace: from this time, the ingot loſes its name, and commences *gold wire*. Twenty holes more of a leſſer iron leave it ſmall enough for the leaſt iron; the fineſt holes of which laſt, ſcarce exceeding the hair of the head, finiſh the work.

To diſpoſe the wire to be ſpun on ſilk, they paſs it between two rollers of a little mill: theſe rollers are of nicely poliſhed ſteel, and about three inches in diameter. They are ſet very cloſe to each other, and turned by means of a handle faſtened to one of them, which gives motion to the other. The *gold* wire, in paſſing between the two, is rendered quite flat; but without loſing any thing of its gilding; and is rendered ſo exceedingly thin, and flexible, that it is eaſily ſpun on ſilk thread, by means of a hand-wheel; and ſo wound on a ſpool, or bobin.

Gold Leaf, or *beaten* Gold, is *gold* beaten with a hammer, into exceedingly thin leaves.

It is prodigious to conſider the fineneſs they will thus reduce a body of *gold* to: it is computed, that an ounce may be beaten into ſixteen hundred leaves, each three inches ſquare; in which ſtate it takes up more than 159092 times its former ſpace.

This *gold* they beat on a block of marble, commonly black marble, about a foot ſquare, and uſually raiſed three feet high: they make uſe of three ſorts of hammers, formed like mallets, of poliſhed iron. The firſt, which weighs three or four pounds, ſerves to chaſe, or drive; the ſecond, of eleven or twelve pounds, to cloſe; and the third, which weighs fourteen or fifteen pounds, to ſtretch and finiſh.

They alſo make uſe of four moulds, of different ſizes; *viz.* two of vellom, the ſmalleſt whereof conſiſts of forty or fifty leaves, and the larger, of two hundred: the other two, conſiſting each of five hundred leaves, are made of bullocks guts, well ſcoured and prepared. See Mould.

The method of preparing, and beating Gold.—They firſt melt a quantity of pure *gold*, and form it into an ingot: this they reduce, by forging, into a plate about the thickneſs of a ſheet of paper: which done, they cut the plate into little pieces about an inch ſquare, and lay them in the firſt, or ſmalleſt mould, to begin to ſtretch them. After they have been hammered here a while with the ſmalleſt hammer, they cut each of them into four; and put them in the ſecond mould to be extended further.

Upon taking them hence, they cut them again into four, and put them into the third mould; out of which they are taken, divided into four, as before, and laid in the laſt, or finiſhing mould; where they are beaten to the degree of thinneſs required.

The leaves thus finiſhed, they take them out of the mould, and diſpoſe them in little paper books prepared with a little red bole, for the *gold* to ſtick to: each book ordinarily contains twenty-five gold leaves.

There are two ſizes of theſe books: twenty-five leaves of the ſmalleſt only weigh five or ſix grains; and the ſame number of the largeſt nine, or ten grains.

It muſt be obſerved, that *gold* is beaten more, or leſs, according to the kind or quality of the work it is intended for: that for the *gold*-wire-drawers to gild their ingots withal, is left much thicker, than that for gilding the frames of pictures, &c. withal.

Shell Gold is that uſed by the illuminers; and wherewithal we write *gold* letters.—It is made of the parings of leaf *gold*, and even of the leaves themſelves, reduced into an impalpable powder, by grinding on a marble, with honey. After leaving it to infuſe ſome time in aqua fortis, they put it in ſhells, where it ſticks. To uſe it, they dilute it with gum-water, or ſope-water.

Burniſhed Gold is that ſmoothened or poliſhed with a ſteel inſtrument called a *burniſher*, if it be wrought *gold*, or gilding on metal; or with a wolf's tooth, if it be gilding in water.

Million of Gold is a phraſe often uſed to ſignify a million of crowns. See Crown.

Tun of Gold is a kind of money of account, uſed by the Dutch, and in ſome other countries; containing an hundred thouſand florins.

An hundred pounds of, or in, *gold* is found to weigh two pounds ten ounces: the ſame ſum in ſilver, weighs twenty-ſix pounds, four ounces. Twenty-two pence, in copper farthings and halfpence, weigh one pound avoirdupois.

A tun of *gold*, at 4 *l.* the ounce, amounts to 96000 *l.* a tun of ſilver, at 5 *s.* 2 *d.* the ounce, to 6200 *l.* A pound ſterling of *gold*, to 48 *l.* An ounce is worth 4 *l.* The peny-weight 4 *s.* One grain, 2 *d.* A pound of ſterling ſilver amounts to 3 *l.* 2 *s.* An ounce is worth 5 *s.* 2 *d.* The peny-weight, 3 *d.* and ſomething more; one grain, a halfpeny. A pound of ſilver avoirdupois comes to 3 *l.* 5 *s.* 3 *d.* halfpeny.

Gold *coin*, or *ſpecies of* Gold. See Coin.

Moſaic Gold, is *gold* applied in panels on a proper ground, diſtributed into ſquares, lozenges, and other compartments; part whereof is ſhadowed to raiſe or heighten the reſt. See Mosaic.

Virgin Gold, is pure *gold*, juſt as it is taken out of the mines, before it has undergone any action, or preparation of fire: whence the Greeks call it *απυρος*. See Virgin. Such is the *αμμοχρυσος*, or *gold* duſt, and that got by lotion in the lavadero's in Chili: it is added, that there are maſſes or lumps of pure *gold* found in the mines, particularly thoſe of Hungary. Accordingly, in the emperor's collection are ſtill preſerved ſeveral plates of *gold*, ſaid to have been thus found.

Virgin *gold* is ſometimes very pale, and ſo ſoft, that it may be moulded into any figure with the hand: it even takes an impreſſion from a ſeal, like the ſofteſt wax. To harden it, as alſo to heighten its colour, they mix emery with it.

Fine, or *pure* Gold, is that purged by fire of all its impurities, and all alloy.—The Latins call it *aurum purum*, *aurum primum*, *aurum obrizum*, and *aurum coctum*.

The moderns frequently call it *gold of twenty-four carats*; but, in reality, there is no ſuch thing as *gold* ſo very pure; and there is always wanting at leaſt a quarter of a carat. *Gold* of twenty-two carats has one part of ſilver, and another of copper: that of twenty-three carats has half a part, *i. e.* half a twenty-fourth of each.

Bouteroue maintains, that the electrum of the antients was *gold* of nineteen carats; or four parts *gold*, and a fifth ſilver.—From an ordinance of king John of France, it appears that the *gold* then ſtruck at Paris was of nineteen carats $\frac{1}{5}$; and yet it is added that it was the beſt and fineſt *gold* then known on earth.

In England, at this time, the ſtandard of crown *gold* is twenty-two carats.

Gold *chain*. See the article Chain.

Cloth of Gold. } See { Cloth *of gold*.
Gold *money*. } See { Money.

Queen GOLD. See the article QUEEN.

Potable GOLD, *aurum potabile.* See POTABLE *gold.*

Fulminating GOLD, *aurum fulminans.* See AURUM.

GOLD, in medicine, and chemiſtry.—The chemiſts make ſeveral preparations of *gold* for medicinal uſes; as ſalts, mercuries, and tinctures of *gold*; but it is a point not yet well agreed on, whether *gold* have any real property whereby it may be of uſe in medicine.

The moſt antient writers among phyſicians are all ſilent on the matter; the Arabs are the firſt who mention it in this quality.—Avicenna attributes extraordinary virtues to it; but he ſpeaks on conjecture more than experiment. And yet it is pretty certain *gold* muſt have an effect: a quantity of *gold* filings being taken by a perſon in a bolus, he was very well purged thereby: but this might be owing to the great weight of its particles, which, impinging violently againſt the glands of the inteſtines, promoted their vibrations, and thus expreſſed the humour ſecreted therein. Borrhi, in a letter to Bartholin, relates, that having heated an ingot of fine *gold* ſeveral times red-hot, and extinguiſhed it as often in water, he found the weight of the ingot conſiderably diminiſhed; upon which, proceeding to evaporate the water, he drew a little quantity of *gold* from it. Hence it appears, that the ſubtile parts of the *gold* paſs into the liquors it is extinguiſhed in; and hence, it is argued, it may have conſiderable effects on the body.

Notwithſtanding the ſmall number of experiments whereon the medicinal efficacy of *gold* is founded; the alchemiſts will have it, that this metal contains the radical balm of life, for the retrieving of health and youth, and the removal of all diſeaſes. *Gold*, according to them, contains a ſulphur friendly to nature, like that of the ſun, which animates the whole univerſe: and on this principle they have formed a thouſand airy projects for an univerſal remedy.

In effect, it is probable the Arabs and alchemiſts were only brought to attribute all theſe virtues to *gold*, from their perceiving certain qualities therein, which they ſuppoſed it muſt communicate to other bodies. Thus, *e. gr. gold* being commonly ſaid to be incapable of being deſtroyed; it is hence concluded to be proper to preſerve animal matters, and defend them from putrefaction: which is juſt as reaſonable as ſome phyſicians preſcribing the blood of an aſs's ear as an appeaſing remedy, by reaſon the aſs is a very peaceable animal. See AURUM *potabile.*

GOLD, in heraldry, is one of the metals; more uſually called by the French name, *or.* See METAL, and OR.

GOLDEN, ſomething that has a relation to gold, or conſiſts of gold, is valuable like gold, or the like. See GOLD.

GOLDEN BULL, *bulla aurea.* See the article BULL.

GOLDEN CALF, was a figure of a calf, which the Iſraelites caſt in that metal, and ſet up in the wilderneſs, to worſhip, during Moſes's abſence in the mount; and which that legiſlator, at his return, burnt, ground to powder, and mixed with the water the people were to drink of; as related Exod. xxxii. The commentators have been greatly divided on this article: the pulverizing of *gold*, and rendering it potable, is an operation in chemiſtry, of the laſt difficulty; and it is hard to conceive how it ſhould be done at that time, before chemiſtry was ever heard of, and in a wilderneſs too! many therefore, ſuppoſe it done by a miracle: and the reſt, who allow of nothing ſupernatural in it, advance nothing but conjectures, as to the manner of the proceſs.

Moſes could not have done it by ſimple calcination, nor amalgamation, nor antimony, nor calcination; nor is there one of thoſe operations, that quadrates with the text.

M. Stahl has endeavoured to remove this difficulty. The method Moſes made uſe of, in making his aurum potabile, according to this author, was the ſame with that which now obtains; only inſtead of tartar, he made uſe of the Egyptian natron, which is common enough throughout the Eaſt.

GOLDEN FLEECE, in the antient mythology, was the ſkin, or fleece of the ram, upon which Phryxus and Hella are ſuppoſed to have ſwam over the ſea to Colchis; and which, being ſacrificed to Jupiter, was hung upon a tree in the grove of Mars, guarded by two brazen-hooſed bulls, and a monſtrous dragon that never ſlept; but at laſt taken and carried off by Jaſon, and the Argonauts.

Many authors have endeavoured to ſhew, that this fable is an allegorical repreſentation of ſome real hiſtory, particularly of the philoſophers-ſtone.

Order of the GOLDEN FLEECE is a military order inſtituted by Philip the Good, duke of Burgundy, in 1429. See ORDER.

It took its denomination from a repreſentation of the *golden* fleece, borne by the knights on their collars, which conſiſted of flints and ſteels. The king of Spain is now grand maſter of the order, in quality of duke of Burgundy: the number of knights is fixed to thirty-one.

It is uſually ſaid to have been inſtituted on occaſion of an immenſe profit which that prince made by wool; though others will have a chemical myſtery couched under it, as under that famous one of the antients, which the adepti contend to be no other than the ſecret of the elixir, written on the fleece of a ſheep.

Oliver de la Marche writes, that he had ſuggeſted to Philip I. archduke of Auſtria, that the order was inſtituted by his grandfather Philip the Good, duke of Burgundy, with a view to that of Jaſon; and that John Germain, biſhop of Chalons, chancellor of the order, upon this occaſion made him change his opinion, and aſſured the young prince, that the order had been inſtituted with a view to the fleece of Gideon. William biſhop of Tournay, chancellor likewiſe of the order, pretends that the duke of Burgundy had in view both the golden fleece of Jaſon, and Jacob's fleece, *i. e.* the ſpeckled ſheep belonging to this patriarch, according to agreement made with his father-in-law Laban. Which ſentiment gave birth to a great work of this prelate in two parts: in the firſt, under the ſymbol of the fleece of Jaſon, is repreſented the virtue of magnanimity, which a knight ought to poſſeſs; and under the ſymbol of the fleece of Jacob, he repreſents the virtue of juſtice.

Paradin is of the ſame mind, and tells us that the duke deſigned to inſinuate, that the fabulous conqueſt which Jaſon is ſaid to have made of the *golden fleece* in Colchis, was nothing elſe but the conqueſt of virtue, which gains a noble victory over thoſe horrible monſters, vice, and our evil inclinations.

GOLDEN NUMBER, in chronology, a number ſhewing what year of the moon's cycle, any given year is. See CYCLE *of the moon*, and NUMBER.

To find the GOLDEN NUMBER *of any year ſince Chriſt.*—Since the lunar cycle commences with the year before our Saviour's birth; to the year of our Lord add 1: then dividing the ſum by 19; the ſum remaining after the diviſion is the *golden number* required: if there be nothing remaining, the *golden number* is 19. Suppoſe, *e. gr.* the *golden number* of the year 1725. were required; $1725.+1=1726$. And 1726, divided by nineteen, gives a quotient of nine, and leaves a remainder of ſixteen, which is the *golden number* of that year.

The *golden number* is uſed in the Julian calendar, to ſhew on what days the new moons fall. In ſucceſſion of time, however, it muſt be obſerved, that the *golden numbers*, through the defect of the lunar cycle, recede, and do no longer ſhew the true time of new moons, *&c.*

Hence, in the Gregorian reformation of the calendar, the *golden number* is thrown out; and the epact introduced in lieu thereof.

GOLDEN *prebendary of Hereford.* See PREBENDARY.

GOLDEN RULE, in arithmetic, a rule or praxis, of great uſe, and extent in the art of numbers; whereby we find a fourth proportional to three quantities given.

The *golden rule* is alſo called the *rule of three*, and *rule of proportion.* See its nature and uſe under the article RULE OF THREE.

GOLDEN *ſulphur of antimony.* } See { ANTIMONY.
Order of the GOLDEN *Stole.* } See { STOLE.

GOLPS, in heraldry, are roundles, or torteaux, of a purple colour.

GOMPHOSIS *, in anatomy, a kind of articulation of the bones, wherein one is chaſed, or fitted immoveably into another, after the manner of a peg, or nail. See ARTICULATION.

* The word is Greek, γομφωσις, formed of γομφος, *clavus*, a nail, or peg.

The teeth are ſet in the jaws by *gomphoſis.* See TOOTH, and MAXILLA.

GONAGRA *, in medicine, the gout in the knee. See GOUT.

* The word is compoſed of γονυ, knee; and αγρα, *captura*, ſeizing.

GONARCHA, a term in the antient dialling—Mr. Perrault, in his notes on Vitruvius, lib. ix. c. 9. takes the *gonarcha* to have been a dial drawn on divers ſurfaces, or planes; ſome of which being horizontal, others vertical, others oblique, *&c.* formed divers angles *.

* Whence the appellation; from γονυ, knee, or γωνια, angle.

GONDOLA *, a little, flat boat, very long and narrow; chiefly uſed at Venice, to row on the canals. See BOAT.

* The word is Italian, *gondola*: Du Cange derives it from the vulgar Greek κουντελας, a bark, or little ſhip; Lancelot deduces it from γονδυ, a term in Athenæus for a ſort of vaſe.

The middle-ſized *gondola's* are upwards of thirty feet long, and four broad: they always terminate at each end in a very ſharp point, which is raiſed perpendicularly the full height of a man.

The addreſs of the Venetian *gondoliers*, in paſſing along their narrow canals, is very remarkable: there are uſually two to each *gondola*; and they row by puſhing before them. The fore-man reſts his oar on the left ſide of the *gondola*: the hind-man is placed on the ſtern, that he may ſee the head over the tilt, or covering of the *gondola*; and reſts his oar, which is very long, on the right ſide of the *gondola.*

GONFALON, or GONFANON, a kind of round tent, borne as a *canopy*, at the head of the proceſſions of the principal churches at Rome, in caſe of rain; its verge, or banner, ſerving for a ſhelter, where there is not a great deal of attendance.

GONORRHŒA *, γονοῤῥοια, in medicine, an involuntary flux or dripping of ſeed, or other humour, by the penis; without erection, or titillation.

* The word is formed of the Greek γονος, *genitura*, ſeed; and ῥεω, *fluo*, I flow.

The *gonorrhœa* is of two kinds; the one *ſimple*, the other *virulent*.

Simple Gonorrhoea, or that without virus, or malignity, takes its riſe from violent exerciſes, and ſtrainings; the immoderate uſe of hot foods, and particularly fermented liquors, as wine, beer, cyder, *&c.* It is cured by indulging reſt, nouriſhing foods, broths, *&c.*

This ſpecies is again divided into two; the one *true*, the *gonorrhœa vera*, wherein the humour diſcharged is real ſeed: the other *ſpurious*, the *gonorrhœa notha*, wherein the dripping humour is not ſeed, but a matter from the glands about the proſtates. See Prostates.

This latter kind bears ſome reſemblance to the fluor albus, or whites, in women; and frequently remains a long time, without much diminution of the patient's ſtrength. Some call it a *catarrhal gonorrhœa*. Its ſeat is in the glands of the proſtates, which are either too much relaxed, or ulcerated.

Virulent Gonorrhoea, *gonorrhœa virulenta*, ariſes from ſome impure commerce, and is the firſt ſtage of the venereal diſeaſe; being what we popularly call a *clap*.

The parts here primarily affected, are the proſtates in men, and lacunæ in women, which, being ulcerated by ſome contagious matter received in coition, emit, firſt, a whitiſh, watery liquor, with an acute pain: this afterwards grows yellowiſh, then ſharper, and at length greeniſh or bluiſh, and frequently fetid.

It is attended with a tenſion and inflammation of the yard, and an ardor urinæ, or ſharpneſs of urine, which gives a painful ſenſation in the emiſſion; the urinary paſſage being torn and excoriated by the acrimony of the humour.

Hence ariſe tumours of the prepuce and glans, with ulcers on the ſame; and ſometimes in the urethra.

The cauſe of the virulent *gonorrhœa*, according to M. Littre, is ſome ſharp or acid humour, heated, rarefied, and raiſed at the time of coition, from the internal parts of the pudendum of a woman infected, and lodged in the urethra of the man. It has different ſeats in the body: ſometimes it only fixes on Cowper's mucous glands; ſometimes on the proſtates; and ſometimes on the veſiculæ ſeminales: ſometimes it poſſeſſes two; and ſometimes all three of theſe places at once.

From this diverſity of ſeats of the *gonorrhœa virulenta*, M. Littre makes two ſorts; *ſimple*, which only affects one of the three parts; and *compound*, or complicated, where ſeveral are affected.

That ſeated in the mucous glands, he obſerves, may remain ſimple, through the whole courſe of the diſeaſe, by reaſon the mouths of thoſe glands open into the urethra an inch and half on this ſide the proſtates, and alſo look down towards the glans; ſo that their liquor is eaſily diſcharged. The other two ſorts mutually produce each other; by reaſon the ducts of the veſiculæ ſeminales terminate in the urethra in the middle of thoſe of the proſtates; ſo that there is an eaſy communication between them.

That ſeated in the mucous glands is much the rareſt caſe, and is the eaſieſt cured. The cure is effected by emollient cataplaſms, and fomentations upon the part, and a half-bath. *Mem. de l'Acad.* ann. 1711.

For the other ſpecies, more powerful means are to be uſed.—The principal remedies are mercurial purges, an emulſion of green hempſeed, cuttle-fiſh-bone, turpentine, ſacch. ſaturni, *&c.* We have likewiſe great commendations of green precipitate of mercury, and mercur. dulcis. Balſ. ſaturni terebinthinatum, prepared with a gentle fire, of ſacch. ſaturni, and oil of turpentine, is much applauded where the heat is great about the reins and genitals; as alſo camphor. An infuſion of cantharides in wine is the noſtrum of a noted Dutch phyſician. Reſin of the wood guaiacum is alſo recommended; and balſam of cupaiba is held a ſort of ſpecific: to which muſt be added antimonium diaphoreticum, bezoardicum minerale, water wherein mercury has been boiled, injections of lime-water, mercurius dulcis, ſaccharum ſaturni, *&c.*

Pitcairn's method of curing the *gonorrhœa* virulenta is as follows: in the beginning of the diſeaſe, he purges with a laxative ptiſan of ſenna, ſalt of tartar, and melilot-flowers; and gives the patient whey for his drink. After three or four days ſpent in this purging, if the ſcalding of the urine, and the flux, be abated, and the colour and conſiſtence of the matter improved; he adminiſters bolus's of turpentine, and rhaponticum, for ſix or ſeven days; and if they keep the body looſe, ſo much the better. By all means, aſtringents to be avoided; the *gonorrhœa* being ſcarce ever known to degenerate into a pox, unleſs too haſtily ſtopped. Pitcairn in MS.

Du Blegny directs the cure of the *gonorrhœa* to begin with a gentle cathartic of caſſia, ſenna, cryſtal mineral, tamarinds, althæa, and rhubarb, adminiſtred every other day: then diuretics, particularly thoſe of turpentine; and laſtly, gentle aſtringents; as mineral waters, crocus martis aſtringens, tincture of roſes, tincture of coral in cochineel, *&c.*

A ptyaliſm, or ſalivation, never cures a *gonorrhœa*.

GOOD, or Goodness, denotes whatever tends or conduces to preſerve or improve human nature, or ſociety; in oppoſition to *evil*, which tends to deſtroy, injure, or impair the ſame.

Hence *good* is divided by the philoſophers into, 1°, *Bonum ſui*, private *good*; which is that whereby a thing tends to preſerve, *&c.* itſelf; under which comes that popular diviſion of *goods* of body, mind, and fortune.

2°, *Bonum communionis*, whatever promotes the intereſt and welfare of ſociety; as all the civil offices, *&c.*

Good, in metaphyſics, or *metaphyſical* Good, called alſo *abſolute*, or *real* Good, and Good *per ſe*, is the eſſential perfection or integrity of a thing, whereby it has every thing that belongs to its nature.

In this ſenſe all things that are, are *good*; inaſmuch as they have the perfections naturally belonging to things of their kind. Thus, a thinking ſubſtance is *good*, or perfect, as it has all the eſſential attributes of thought: ſo an extended ſubſtance is *good*, as it poſſeſſes all the parts neceſſary to conſtitute it ſuch.

In effect, as it is abſurd to imagine a being without its eſſence; ſo is it, to imagine a being without the requiſites of its eſſence: ſo that it appears an error in ſome philoſophers, who divide beings into good or perfect, and evil or imperfect. See Essence.

Others define metaphyſical, or tranſcendental *goodneſs*, by congruency with the divine will; as making that the meaſure of all real *goodneſs*.

Phyſical, or *natural* Good, is that whereby a thing poſſeſſes all things neceſſary to its *bene eſſe*, *i. e.* its well being, or ſecond perfection; and to the performance of its functions and uſes.

In this ſenſe, phyſical *goodneſs* coincides with phyſical perfection.

To this are required the ſeveral powers and faculties, in their proper degree; a due ſituation, figure, and proportion, of parts, *&c.*

Note, beſide abſolute phyſical *goodneſs*, there may be a *relative* one; as in foods, which to one man are ſalutary, to another poiſon, *&c.* To this head alſo belong the things *good pro tempore*, or according to circumſtances; as the amputation of a mortified limb, *&c.*

Moral, or *ethical* Good, is the agreement of a thinking, reaſonable being, and of the habits, acts, and inclinations thereof, with the dictates of right reaſon, and the will of the Creator, as diſcovered by natural light. See Virtue.

In order to this, it is not enough that a thing done, ſaid, thought, deſired, be juſt and *good*; but it muſt be done, thought, *&c.* well, *i. e.* from *good* principles, and to *good* ends.

Others define moral *good* more largely. *Moral*, which they alſo call *relative good*, according to them, is ſomething that is good to another, or that tends ſome way to the perfection thereof.—In this ſenſe they divide it into three kinds, *honeſtum*, *jucundum*, and *utile*.

The firſt, *bonum honeſtum*, is what agrees with right reaſon; and is deſirable for itſelf; as all things virtuous; *e. gr.* to love God, reſpect our parents, *&c.* It is conſidered without any regard to pleaſure; not but that there is a ſincere pleaſure annexed to it. Zeno, and the Stoics, allow of no other *goods*; thoſe of the body, *&c.* they call *commoda*, conveniencies, not *goods*.

Bonum jucundum is that which is good, as it tends to give us pleaſure, and is deſired on that account; but without any repugnancy to virtue, or right reaſon: as muſic, to the ears; painting, to the eyes, *&c.*

Bonum utile, or *commodum*, is that which is good on account of ſomething elſe for which it is deſired; as money, riches, *&c.*

Chief, or *ſupreme* Good, *Summum Bonum*. See Summum Bonum.

Philoſophers are divided as to what the *chief good* of man conſiſts in; whether in the *goods* of fortune, of body, or of mind. Some hold riches and honours the ſupreme *good*; others, as Ariſtippus, and the Cyrenaic ſchool, bodily pleaſures; and others, as Zeno, and the Stoics, virtue.

Good *will*. } See { Common *place*.
Good *works*. } { Merit, and Supererogation.

Good *abearing*, *bonus geſtus*, in a law-ſenſe, is particularly uſed for an exact carriage, or behaviour, of a ſubject towards the king, and his liege people; to which ſome men, upon their miſbehaviour, are bound.

He that is bound to this, Lambard ſays, is more ſtrictly bound than to the peace; becauſe, whereas the peace is not broken without an affray, battery, or ſuch-like, this ſurety *de bono geſtu* may be forfeited by the number of a man's company, or by his or their weapons, or arms.

Good *aller*. See Aller.
Good *behaviour*. See Good *abearing*, and Peace.
Good *taſte*. See Taste.

GOODS, *bona*, in law, and particularly the civil law, include all kinds of effects, riches, lands, poſſeſſions, &c.

There are two kinds of *goods: moveable*, *res moventes*, or *mobiles*; and *immoveable*, called *res non moventes*, or *immobiles*.

It is a maxim in the civil juriſprudence, that he who confiſcates the body, confiſcates the *goods*: meaning, that all the effects of a perſon condemned to a capital puniſhment, or perpetual baniſhment, are forfeited to the king.

A man is ſaid to bind himſelf body and *goods*: meaning, that beſides his *goods*, he obliges his perſon, and ſubmits to remain in priſon, provided he do not execute his promiſe.

Goods, again, are divided into, 1°, *proper*, *paternal*, *patrimonial*, *hereditary*; 2°, *acquired*, or *acqueſts*, *alio quam hæreditatis jure acquiſita*; and, 3°, *conqueſts*; *viro & uxori ſtante ſocietate acquiſita*.

Goods, again, are divided into *real*, and *perſonal*. See Real, and Personal.—And, laſtly, into *noble*, or *free*; and *ſervile*, or *baſe*. See Free, Base, &c.

Goods belonging to the domain of the crown, *ad fiſcum ſpectantia*, cannot be alienated for ever; unleſs it be done by way of exchange: they may be ſold under the faculty of perpetual redemption.

Adventitious Goods, *adventitia*, are thoſe which ariſe otherwiſe than by ſucceſſion from father, or mother; or from direct anceſtor to deſcendant.

Dotal Goods, *dotalia*, thoſe accruing from a dowry, and which the huſband is not allowed to alienate. See Dowry.

Fugitives Goods. See the article Fugitive.

Paraphernal Goods, *paraphernalia*, are thoſe which the wife gives her huſband to enjoy, on condition of withdrawing them when ſhe pleaſes.

Prohibited Goods. See the article Prohibited.

Profectitious Goods, *profectitia*, are thoſe ariſing by direct ſucceſſion.

Receptitious Goods were thoſe which the wife might reſerve the full property of to herſelf, and enjoy them independently of her huſband: ſo called, in diſtinction from *dotal*, and *paraphernal goods*.

Vacant Goods, *vacantia*, are thoſe abandoned, or left at large, either by reaſon the heir renounces them, or that the defunct has no heir.

Allotting of Goods. See Allotting.
Conſignment of Goods. See Consignment.
Running of Goods. See Running.

GORDIAN, a term in hiſtory.—Gordian *knot* was a knot made in the leathers, or harneſs, of the chariot of Gordius, king of Phrygia, and father of Midas; ſo very intricate, that there was no finding where it began, or ended.

The inhabitants had a tradition, that the oracle had declared, that he ſhould be maſter of Aſia who could untie this knot. Alexander, having undertaken it, and fearing that, if he ſhould not be able to effect it, it would be deemed an ill augury, and prove a check in the way of his conqueſts; cut it aſunder with his ſword: and thus, ſays Quintus Curtius, either accompliſhed the oracle, or eluded it.

Some will have the phraſe derived from Gordius, who tied the fatal knot; others, from Gordium, a city in Phrygia where the knot was made.

GORE, in heraldry, denotes one of the regular abatements, uſed, according to Guillim, to denote a coward. See Abatement.

It conſiſts of two arches, or curve lines, drawn, one from the ſiniſter chief, the other from the ſiniſter baſe, and meeting in an acute angle in the middle of the feſſe-point; as repreſented in Tab. *Heraldry*, *fig*. 64.

GOREL, a name, or title, given to the prince of Georgia.—The *Gorel* is always a Mahometan. The ſophi of Perſia obliges him to obſerve the religion of the alcoran, in order to preſerve the dignity of *Gorel* in his family.

GORGE, in falconry, is the uppermoſt bag, or ſtomach, of a hawk, or falcon; being that which receives the ſood the firſt.

The *gorge*, *ingluvies*, is the ſame, in birds of prey, with what we call the *craw*, or *crop*.—When the bird is fed, he is ſaid to be *gorged*.

Gorge, in architecture, denotes a ſort of concave moulding, wider, but not ſo deep as a ſcotia; uſed chiefly in frames, chambranles, &c. See Tab. *Archit*. *fig*. 6. and 8. See, alſo, Scotia.

Gorge *of a chimney* is the part between the chambranle and the crowning of the mantle.—Of this there are divers forms; ſtrait, perpendicular, in form of a bell, &c.

Gorge is ſometimes alſo uſed for a moulding that is concave in the upper-part, and convex at bottom; more properly called *gula*, and *cymatium*. See Gula, and Cymatium.

Gorge is alſo uſed for the neck of a column; more properly called *collarino*, and *gorgerin*. See Gorgerin, &c.

Gorge, in fortification, the entrance of a baſtion; or of a ravelin, or other out-work. See Bastion, Ravelin, &c.

The Gorge *of a baſtion* is what remains of the ſides of the polygon of a place, after retrenching the curtins: in which caſe it makes an angle in the centre of the baſtion.—Such is A H D, Tab. *Fortif. fig*. 1.

In flat baſtions, the *gorge* is a right line on the curtin, reaching between the two flanks.

Gorge *of a halfmoon*, or *ravelin*, is the ſpace between the two ends of their faces next the place.

Gorge of the other out-works is the interval betwixt their ſides next the ditch.

All the *gorges* are to be made deſtitute of parapets; otherwiſe the beſiegers, having taken poſſeſſion of a work, might make uſe thereof to defend themſelves from the ſhot of the place: ſo that they are only fortified with paliſadoes, to prevent a ſurprize.

Half the Gorge, *demi* Gorge, that part of the polygon between the flank and the centre of the baſtion; as A H. See Demi-*gorge*.

GORGED, in heraldry, is when a crown, coronet, or the like thing, is borne about the neck of a lion, a ſwan, &c. In that caſe they ſay, the lion, or cygnet, is *gorged* with a ducal coronet, &c.

Gorged is alſo uſed when the gorge, or neck, of a peacock, ſwan, or the like bird, is of a different colour, or metal, from the reſt.

Gorged, among farriers, &c. ſignifies as much as ſwelled.—In which ſenſe they ſay, the legs of a horſe are *gorged*; the paſtern joint is *gorged*; you muſt walk him out, to *diſgorge* his ſhoulder.

GORGERIN, a part of the antient armour; being that which covered the throat, or neck, of a perſon armed at all points.

Gorgerin, or Gorge, in architecture, the little freeze, in the Doric capital, between the aſtragal, at the top of the ſhaft of the column, and the annulets.—See Tab. *Archit. fig*. 24. *lit. o. fig*. 28.

Some call it *collarino*. Vitruvius gives it the name *hypotrachelium*.

GOTHIC, or Gothick, ſomething that has a relation to the Goths, an antient people, originally inhabiting that part of Sweden called *Gothland*; whence they ſpread themſelves over Greece, Dalmatia, Bulgaria, Italy, Spain, &c.

We ſay, the *Gothic* manner; *Gothic* ignorance; the tyrant Maximian was of *Gothic* race.

Gothic *bibles*. See the article Bible.

Gothic *character*, or *writing*, is a character, or manner of writing, which, in the main, is the ſame with the Roman, only that it is very full of angles, turns, and bendings; eſpecially at the beginning and ending of each letter.

The manuſcripts in *Gothic* characters are not very antient.—Ulphilas, biſhop of the Goths, was the firſt inventor of the *Gothic* characters; and the firſt that tranſlated the bible into the *Gothic* tongue.

The Runic characters are alſo frequently called *Gothic* characters. See Mabillon, *De re Diplomat*. l. i. c. 2.—But they who take the *Gothic* characters to be the ſame with the Runic, are miſtaken; as is ſhewn by Ol. Wormius, Junius in his preface to the goſpels wrote in *Gothic* letters, and Dr. Hicks on the Runic tongue.

Gothic *architecture* is that which deviates from the proportions, characters, &c. of the antique.

The *Gothic* architecture is frequently very ſolid, heavy, and maſſive; and ſometimes, on the contrary, exceedingly light, delicate, and rich. An abundance of little, whimſical, impertinent ornaments, are its moſt uſual character.

Authors diſtinguiſh two kinds of *Gothic* architecture; the one *antient*, the other *modern*.—The *antient* is that which the Goths brought with them from the North, in the fifth century: the edifices built in this manner were exceedingly maſſive, heavy, and coarſe.

Thoſe of the *modern Gothic* run into the other extreme; being light, delicate, and rich to a fault: witneſs Weſtminſter abby, the cathedral of Litchfield, the croſs of Coventry, &c.

The laſt kind continued long in uſe, eſpecially in Italy; *viz*. from the thirteenth century, to the reſtauration of the antique building in the ſixteenth. All the antient cathedrals are in this kind.

The inventors of the *Gothic* architecture thought, no doubt, they had far ſurpaſſed the Greek architects: a Greek building has not a ſingle ornament but what adds a beauty to the whole. The parts neceſſary to ſuſtain or ſhelter it, as the columns, corniches, &c. derive all their beauty from their proportions: every thing is ſimple, meaſured, and reſtrained to the uſe it is intended for. No daring, out of the way ſtrokes; nothing quaint to impoſe on the eye: the proportions are ſo juſt, that nothing appears very grand of itſelf, though the whole be grand. On the contrary, in the *Gothic* architecture, we ſee huge vaults raiſed on ſlender pillars, which one would expect every minute to tumble down, though they will ſtand for many ages. Every thing is crammed with windows, roſes, croſſes, figures, *&c.*

Gothick *column* is any round pillar, in a *gothic* building, either too thick, or too ſmall, for its height.

There are ſome found even twenty diameters high, without either diminution, or ſwelling.

Gothic *medals*. See the article Medal.

GOUD, or Gaud. See the article Weld.

GOVERNMENT, a quality, or office, which gives a man power, or right, to command, or rule, over a place, a city, a province, a kingdom, or the like; either ſupremely, or by deputation.

Government is either *general*, and ſupreme; as that of a whole kingdom, empire, ſovereign ſtate, *&c.* or *particular*, and ſubordinate; which, again, is ſubdivided into *civil*, *military*, and *eccleſiaſtical*.

The *government* of the king's houſhold belongs to the lord ſteward.

Our cities, corporations, and boroughs, are uſually governed by mayors, with aldermen, and common-council-men.

The king was called to the *government* of England, by the free voices of the parliament, and the people: ſuch a lord bought the *government* of ſuch a province, iſland, *&c.* the East-India company nominate to the *government* of Fort St. George, *&c.*

Government is alſo uſed for the country, city, or place, to which the power of governing, or commanding, is extended.

Sanſon has given us maps of France, divided into its ſeveral *governments*: there are thirty-eight *governments*, or provinces, in that kingdom, independent of each other. Beſide theſe, there is another diviſion into *governments*, called *grand governments*, whereof there are twelve; *viz.* thoſe of the iſle of France, Burgundy, Normandy, Britanny, Picardy, Dauphiny, *&c.* which are not proper provinces, commanded each by its ſeveral governor; but rather ſo many claſſes of governors, or *governments*, contrived for the better and eaſier regulating the ſeats, *&c.* of ſo many governors, bailiffs, prevoſts, *&c.* as were obliged to aſſiſt at the holding of the general eſtates.

Government, again, is uſed for the manner, or form, of *governing*; *i. e.* for the policy of a country, ſtate, *&c.*

In this ſenſe, *governments* are divided into *monarchies*, *ariſtocracies*, and *democracies*.

The *government* of France is *monarchic*; that of Venice, *ariſtocratic*; and that of the United Provinces, *democratic*: the *government* of England is *mixt*; being monarchical, ariſtocratic, and democratic, all in one.

Government, in grammar, is underſtood of that conſtruction of nouns, and verbs, wherein they require ſome alteration to be made in others, joined, or conſtructed, with them.

Conſtruction is divided into two parts: that of *concord*; and that of *government*; called, alſo, *regimen*. See Concord.—The rules, or meaſures, of *government*, or *regimen*, ſee under the article Regimen.

GOVERNOUR, an officer veſted by a king, or ſovereign prince, with the command and adminiſtration of a province, place, *&c.*

Such a *governour* being charged with mal-adminiſtration, was recalled, and brought to his trial.—A *governour* repreſents the king; and not only commands the garriſon, troops, *&c.* but the citizens, *&c.*—A *governour* of a fortified place was antiently required to hold out three attacks, before he ſurrendered.

Governour is alſo frequently uſed for a preſident, or ſuperintendant.

Thus we ſay, the *governour* of the bank; the *governour* and directors of the South-Sea company; the *governour* of an hoſpital, *&c.*

GOUGE, an inſtrument uſed by divers artificers; being a ſort of round, hollow chiſſel; ſerving to cut holes, chanels, grooves, *&c.* in wood, ſtone, *&c.*

GOUST, Goût, a French term, for what the Italians call *guſto*, and we, *taſte*. See Taste.

GOUT, *arthritis*, in medicine, a painful diſeaſe, occaſioned by a flux of ſharp humour, upon the joints of the body.

Some phyſicians define the *gout*, an inflammation, ſwelling, and painfulneſs of the joints.—Its origin is uſually attributed to wine, venery, gluttony, and idleneſs.

The *gout* is ſuppoſed to ariſe from two cauſes: a redundancy of humours, and a weakneſs of the joints. Its proper ſeat is in the limbs; not in the trunk of the body: in the latter caſe it frequently proves mortal; not in the former.

Muſgrave makes the apoplexy a *gout*, becauſe ariſing from the abundance of pituita, or phlegm. According as this redundant pituita throws itſelf on the lungs, the liver, or any other part, it makes, according to him, an apoplectic *gout*, a *gout* of the liver, of the lungs, of the ſpleen, *&c.*

The *gout* may be conſidered as a painful, periodical, and critical paroxyſm, tending to free the body of an offenſive or corroſive matter, by throwing it upon the extremities, breathing it out inſenſibly, or comminuting it ſo as to render it harmleſs, or capable of circulating freely along with the juices; till, by collecting again, gradually increaſing, or ſeparating from the blood, it cauſes another paroxyſm.

The *gout* is either *regular*, or *irregular*.—*Regular*, when it appears to be ſeated in the extremities of the body, returns at ſtated periods, and with a gradual increaſe and decline of the ſymptoms.—*Irregular*, when the paroxyſms are frequent, and uncertain; when the ſymptoms vary, or happen promiſcuouſly, and the diſeaſe appears to be ſeated in the internal parts of the body; as the ſtomach, brain, *&c.* leaving the extreme parts, as the hands, feet, *&c.* free from pain. According as different parts are affected by this diſtemper, it goes by ſeveral different names: when it ſeizes the feet, it is called *podagra*; when the knees, *gonagra*; when the hands, *chiragra*; and when the hip-joint, *ſciatica*, &c. See Podagra, Chiragra, Sciatica, *&c.*

Sometimes it attacks the whole body at the ſame time, and then it is called the *general*, or *univerſal gout*.

The *gout* may be hereditary, or natural to the conſtitution, proceeding from a too great conſtriction of the capillary veſſels, whence the gouty humour is more eaſily lodged, or detained, in them: it may, alſo, proceed from high living, crapula's, and eating ſuch things as are hard of digeſtion; a ſedentary life, drinking too freely of tartarous wines, irregular living, exceſs in venery, an obſtructed perſpiration, and a ſuppreſſion of the natural evacuations.

The immediate cauſe of the *gout* appears to be an alkaline, or acrimonious, matter in the blood; which, being ſeparated from it at particular times, falls upon the joints, but moſt frequently upon the feet, and hands; which, if it be repelled, or if the blood be overcharged therewith, ſo that a criſis cannot be procured in the extremities (as generally happens in old age), it falls upon the nobler parts, and then produces the irregular *gout*.

The regular *gout* chiefly and immediately affects the tendons, nerves, membranes, and ligaments, of the body, about the joints.—Sometimes a cold, ſhivering fit precedes it; and generally a fever accompanies its firſt appearance, which ſoon goes off, and returns by intervals: a ſlight pain is felt in the joints, where the criſis is performed, which increaſes gradually, and in the podagra generally fixes firſt on the great toe; thence proceeding to the tarſus, and metatarſus; ſometimes, eſpecially in old age, it attacks the knees and hands; and where-ever it is, by diſtending and irritating the parts, it cauſes a violent pain, not unlike to that of a diſlocated bone. When the pain is at its ſtate, there appears an inflammation and ſwelling; both which increaſe as the pain increaſes, and, upon their remiſſion, the paroxyſm is ended: though the tenderneſs and ſwelling, in ſevere fits, will ſometimes remain a longer time, and cauſe an uneaſineſs, upon motion.

It is obſerved, that women, children, and young men, are ſeldom troubled with the *gout*, unleſs it be hereditary; and that it rarely attacks before the patient is thirty-five, or forty, years old, and ſometimes not till the decline of life; that the corpulent are more ſubject to it than thoſe who are ſpare, and lean; that the pain increaſes towards night, and decreaſes towards the morning; that the longer the intervals between the paroxyſms, the more ſevere they prove, and the longer they generally continue.

The diſeaſe uſually returns twice a year; *viz.* in the ſpring, and autumn; and, in the latter, the paroxyſm is ſometimes two or three months before it comes to a period; though its duration is, at other times, not above three or four weeks.

Theſe are called *cardinal paroxyſms*, to diſtinguiſh them from others of leſs duration, which happen between the ſpring and autumn. The more high-coloured the urine, and the leſs ſediment it depoſits, the farther is the diſeaſe from the ſtate of *concoction*, as it is termed: according to the violence and continuance of the fever, the paroxyſm proves more or leſs ſevere.

In conſtitutions much broken, or ſhattered, with the *gout*, there are uſually ſtony, or chalky, concretions formed in the joints of the fingers, or toes, and thence tranſlated to the viſcera; which caſe is often attended with irregular, frequent, and ſhort paroxyſms, in the extremities: in the decline of life, when the uſual fits do not happen; or if the gouty matter be ſuddenly repelled from the extremities by an improper regimen, or medicines; it uſually ſeizes the internal parts, and frequently the ſtomach, head, inteſtines, *&c.* cauſing want of appetite, reaching to vomit, indigeſtion, a cachexia, the jaundice, aſthma, diarrhœa; and, at laſt, ſo obſtructs the fine capillary, nervous tubes (eſpecially thoſe of the ſtomach and brain), as, poſſibly, to hinder the flux of the animal ſpirits; upon which, death ſuddenly enſues.

Sydenham gives us an accurate hiſtory of a regular fit of the *gout* in the feet: it begins towards the cloſe of January, or beginning of February, without the leaſt previous notice; except, perhaps, a crudity, or apepſy, for ſome weeks before-hand; with a ſort of windy intumeſcence, and a heavineſs of the body, which continually increaſes, till, at laſt, a paroxyſm breaks out; being preceded, ſome days, with a ſort of torpor, and a ſenſible deſcent of the flatulencies through the fleſh of the thighs, with ſome ſpaſmodic ſymptoms. The day before the paroxyſm, the patient's appetite is very greedy; an hour or two after midnight he is waked by a pain, commonly in his great toe, ſometimes in the heel, ancle, or the calf of the leg, not unlike the pain felt upon a diſlocation of the ſaid bones; with a ſenſe as if water were ſprinkled on the part affected. This is ſucceeded by a chillineſs, and ſome approach to a fever: the pain in the mean time, which at firſt was more remiſs, gradually increaſes; and in proportion to this the chillineſs abates. By night, it is arrived at its height, and ſettled about the ligaments of the bones of the tarſus, and metatarſus; where it ſometimes reſembles a violent tenſion; and ſometimes a laceration of theſe ligaments; ſometimes the biting or gnawing of a dog; or a ſqueezing, or coarctation. Thus far the part affected has ſuch an exquiſite ſenſe, that it cannot bear the weight of the linen, nor even the ſhaking of the room occaſioned by a perſon's ſtepping. Hence, a thouſand vain endeavours to get eaſe, by changing the poſture of the body, the poſition of the foot, *&c.* till about two or three o'clock in the morning (the ſpace of a nychthemeron from its acceſs) when a remiſſion is firſt perceived; the morbid matter being by this time tolerably digeſted, or even diſſipated. The patient hereupon drops aſleep, and at his waking finds his pains much abated, but the part newly ſwelled. A few days after this the other foot undergoes the ſame fate: ſometimes both are attacked from the firſt. From the time it has ſeized on both legs, the ſymptoms become more irregular, and precarious, both as to the time of invaſion, and the duration thereof. But this ſtill holds, that the pain recruits in the night, and remits again in the morning.—A ſeries of theſe little, alternate acceſſes, *&c.* conſtitutes a fit, or paroxyſm, of the *gout*, which holds longer, or leſs, according to the age, *&c.* of the patient. In ſtrong people, and thoſe who have had it often, fourteen days is a moderate paroxyſm: in old people, and thoſe long uſed to it, it will hold two months.

For the firſt fourteen days the patient is uſually coſtive: a loſs of appetite, a chillineſs towards evening, and a heavineſs, and uneaſineſs even of the parts not affected, attend the whole paroxyſm. As it goes off, he is ſeized with an intolerable itching, eſpecially between the fingers; a furfur falls off, and his toes ſcale, as if he had drank poiſon.

Such is the courſe of a regular *gout*; but when through improper treatment it is diſturbed, or prolonged, it ſeizes the hands, wriſts, elbows, knees, and ſeveral other parts: ſometimes diſtorting the fingers, and taking away their uſe; ſometimes degenerating tophaceous concretions, or knots about the ligaments of the joints, reſembling chalk, or crabs-eyes: ſometimes raiſing a whitiſh, inflammable tumor, almoſt as big as an egg, about the elbows, *&c.* See NODE, TOPHUS, *&c.*

It may be added, that where a perſon has laboured under the *gout* for many years, the pain is ſenſibly leſſened each paroxyſm, till at length it becomes rather an uneaſineſs than a pain: hence, that reflection of the great Sydenham, *Dolor in hoc morbo amariſſimum eſt naturæ pharmacum.*

The *gout* is ranked among the number of incurable diſeaſes: in effect, we have no thorough and aſſured remedy yet diſcovered for it; thoſe that now obtain are little more than palliatives: they tend to aſſwage the pain, to diminiſh it for a time; but not to extirpate it.

Bleeding, and purging, are found abſolutely prejudicial; and diaphoretics are of no ſervice. Emetics, according to Pitcairn, and Etmuller, may do good in the beginning of the diſeaſe. But, upon the whole, nothing, in Sydenham's opinion, proves of more ſervice than digeſtives, or medicines which ſtrengthen the ſtomach, and promote digeſtion: as, angelic. root, enul. campan. the theriac. Andromach. the Jeſuit's bark, and antiſcorbutics: theſe are chiefly to be adminiſtred in the intervals between the paroxyſms. Muſgrave, however, recommends, internally, repellents, and principally cardiacs; externally, emplaſters of gum. caran. or oxycroc. or cephalic. with Burgundy pitch; or the green ſear-cloth, commonly called *hat-caſe*, &c. Yet Dolæus affirms, that repellents do more harm than good; and gives us the following recipe, as more than equal to all others.—℞ *Confect. Hamech.* ℥j. *Pulv. Jalap.* ℥ſs. *extract. Trifol. fibrin.* ʒij. *Litharg. aur.* ℥vj. *Sapæ Antimon.* ʒſs. *Sacchar. Canth.* ℥vj. *Ol. Olivar.* q. ſ. *Ceræ et Picis parum.* F. ſ. a. An emplaſter to be laid on the joint affected, till the pain, and the morbid matter, be driven away.—See Supplement, article ARTHRITIS.

GOUVERNMENT. } See { GOVERNMENT
GOUVERNOUR. } See { GOVERNOR.

GOWN, *robe*, a long upper garment, worn by lawyers, divines, and other graduates; who are hence called *men of the gown*, or *gown men*.

The *gown* is an ample ſort of garment, worn over the ordinary cloaths, hanging down to the feet.—It is faſhioned differently for eccleſiaſtics, and for laymen.

At Rome, they gave the name *virile gown*, *toga virilis*, to a plain kind of *gown*, which their youth aſſumed when arrived at puberty. This they particularly denominated, *prætexta*.

In ſome univerſities, phyſicians wear the ſcarlet *gown*.—In the Sorbonne the doctors are always in *gowns* and caps. Beadles, *&c.* wear *gowns* of two colours.

Among the French officers, *&c.* they diſtinguiſh thoſe of the *ſhort gown*, or robe; which are ſuch as have not been regularly examined.—They have alſo barbers of the *ſhort gown*, who are ſuch as are obliged to practiſe in an inferior way to ſurgeons, or thoſe of the long robe.

GOWN is alſo taken, in the general, for the civil magiſtrature, or the profeſſion oppoſite to that of arms.

In this ſenſe it was that Cicero ſaid, *Cedant arma togæ.*

GRABATARII *, or GRABBATARII, in church-antiquity, ſuch perſons as deferred the receiving of baptiſm, till the hour of death; or who did not receive it till they were dangerouſly ill, and out of hopes of life: from an opinion, that baptiſm abſolutely waſhed away all former ſins.

* The word is formed of the Latin *grabatum*, bed; and that from the Greek γραϐατος, a hanging bed, of κρεμαω, I ſuſpend: ſuch as was the bed of ſlaves, poor people, Cynic philoſophers, *&c.* who were enemies of luxury and eaſe.

GRACE, GRATIA, in theology, any gift which God confers on men, of his own free liberality, and without their having deſerved it at his hands; whether ſuch gift regard the preſent, or a future life.

Grace is uſually divided into *natural*, and *ſupernatural*.

Natural GRACES include the gifts of being, of life, of ſuch and ſuch faculties, of preſervation, *&c.*—St. Jerom. *Epiſt.* 139. allows it a *grace* of God, that man was created: *Gratia Dei eſt, quod homo creatus eſt.* So alſo it is by the *grace* of God, that angels and human ſouls are immortal; that man has free-will, *&c.*

Supernatural GRACE is a gift from above, conferred on intelligent beings, in order to their ſalvation.

It is theſe only, that are called *graces* in the rigour of theology; and it is for the conveyance, improvement, and ſtrengthening of theſe, that the ſacraments are conferred, the miniſtry of the word inſtituted, *&c.*

Divines diſtinguiſh ſupernatural *grace* into *habitual*, and *actual*; *juſtifying*, and *ſanctifying*.

Habitual GRACE is that which reſides ſtatedly in us, is fixed in the ſoul, and remains till ſome grievous, wilful ſin expunge it.

This is alſo called *juſtifying grace*, as it makes us appear righteous and innocent before God: and *ſanctifying grace*, as it makes us holy and devoted to God.

Actual GRACE is that which God gives us for the ſpecial performance of ſome particular good thing; as to convert us, enable us to reſiſt a temptation, *&c.*

This the divines ſubdivide into divers kinds; *preventing*, *concomitant*, and *ſubſequent grace*.

It is an article of faith. 1°, That actual *grace* is neceſſary for the beginning, carrying on, and finiſhing, every good work. 2°, That the will is able to reſiſt this *grace*, and reject it.

And hence *grace* becomes further divided into *efficacious*, and *ſufficient*.—It is *efficacious*, or efficient, when it produces the effect; and *ſufficient* when it does not, though it might have produced it.

Some of the more rigid Calviniſts, *&c.* admit a neceſſitating *grace*.

We alſo ſay, *the law of grace*; the *covenant of grace*, in oppoſition to the Moſaic law, *&c.* See LAW; ſee alſo REVELATION, *&c.*

Days of GRACE, or *reſpite*, are a certain number of days, allowed for the payment of a note, or bill of exchange, after the ſame becomes due. See DAY *of Grace*.

Act of GRACE, properly denotes an act of amneſty, or oblivion; for the pardon of all offenders who are qualified, or come within the conditions of it.

The term is alſo ſometimes extended to an act made for relief of inſolvent debtors in the ſeveral priſons; by ſetting thoſe who are qualified, at liberty from their debts, and confinement.

GRACES, GRATIÆ, in the canon law, are the ſame with what we otherwiſe call *proviſions*.

Expectative GRACES, *gratiæ expectativæ*, are a ſort of reverſionary benefices, diſpoſed of before the time, or before they become vacant. See EXPECTATIVE.

GRACE is alſo a term in the formula of all patents, *&c.* which begin, 'George, by the *grace* of God king of Great Britain,' *&c.*—The Romiſh biſhops frequently begin their mandates in the like manner: ſuch-a-one, by the *grace* of God, and the holy ſee, biſhop of, *&c.*

The Engliſh archbiſhops ſay, by divine *grace*, or divine providence. See ARCHBISHOP, *&c.*

All ſovereigns uſe the phraſe *grace* of God; as emperors, kings, princes, &c. Antiently dukes, counts, and even lords, talked in the ſame ſtile. In the new collection of Fath. Martene we meet with a mere ſeigneur, or lord, qualified by the *grace* of God ſeigneur de Comborn. Louis XI. forbad the duke of Britanny to ſtile himſelf by the *grace* of God.

Grace is alſo a title of dignity, attributed to princes of inferior rank, and who are not qualified for that of highneſs.

Till the time of king James I. the kings of England were addreſſed under the title of *grace*, as they now are under that of majeſty.

Our Engliſh dukes and archbiſhops are ſtill addreſſed to under the title of *grace*. But that title is moſt frequent in Upper Germany, and particularly Auſtria; where it is borne by the barons, as being inferior to that of excellence.

GRACES, **Gratiæ**, *Charites*, in the heathen theology, were a ſet of fabulous deities, three in number, who attended on Venus. See God.

Their names are Aglaia, Thalia, and Euphroſyne; and they were ſuppoſed to be the daughters of Jupiter. Voſſius *de Idol.* l. xiii. c. 15.

Some will have the *Graces* to have been four, and make them the ſame with the *Horæ*, hours, or rather with the four ſeaſons of the year. See Hours.

A marble in the king of Pruſſia's cabinet repreſents the three *Graces* in the uſual manner, with a fourth, ſeated, and covered with a large veil, with the words underneath, Ad Sorores IIII. Yet Monſ. Beger will by no means allow the *Graces* to have been four: the company there preſent, he underſtands to be the three *Graces*, and Venus, who was their ſiſter, as being daughter of Jupiter, and Dione.

They were always ſuppoſed to have hold of each other's hands, and never parted. They were painted naked, to ſhew that the *Graces* borrow nothing from art, and that they have no other beauties but what are natural.

Yet, in the firſt ages, they were not repreſented naked, as appears from Pauſanias, l. vi. and l. ix. who deſcribes their temple and ſtatues. They were of wood, all but their head, feet, and hands, which were white marble. Their robe, or gown, was gilt; one of them held in her hand a roſe, another a dye, and the third a ſprig of myrtle.

The poets feign the *Graces* to have been very ſmall of ſtature; to intimate, that the things which charm and delight us, are frequently little matters; as, a geſture, a laugh, a careleſs air, or the like.

GRACILIS, in anatomy, a muſcle of the leg, thus called from its ſlender ſhape.—See *Tab. Anat.* (Myol.) *fig.* 1. *n.* 54. *fig.* 2. *n.* 37. *fig.* 6. *n.* 37.

It ariſes partly tendinous, and partly fleſhy, from the os pubis internally, between the firſt and ſecond heads of the triceps; and in its deſcent on the inſide of the thigh, grows narrow, and becomes tendinous a little below the ſartorius, and is thus inſerted into the tibia. It aſſiſts in bringing the thigh and leg inwards.

GRADATION, the act of aſcending ſtep by ſtep, to any pitch or eminence: from the Latin *gradus*, degree, ſtep.

Gradation, in rhetoric, is when a ſeries of conſiderations or proofs is brought, riſing by degrees, and improving each on the other.

Such is that in Cicero to Herennius: *Africano induſtria virtutem, virtus gloriam, gloria æmulos comparavit.*

Gradation, in logic, is an argumentation, conſiſting of four or more propoſitions, ſo diſpoſed, as that the attribute of the firſt is the ſubject of the ſecond; and the attribute of the ſecond, the ſubject of the third; and ſo on, till the laſt attribute come to be predicated of the ſubject of the firſt propoſition. As in Porphyry's tree: man is an animal; an animal is a living thing; a living thing is a body; a body is a ſubſtance: therefore man is a ſubſtance.

An argument of this kind is liable to a world of fallacies; both from the ambiguity of words, and things; *e. gr.* Peter is a man; man is an animal; animal is a genus; genus is an univerſal: therefore Peter is an univerſal.

Gradation, in chemiſtry, is a kind of proceſs belonging to metals.—It conſiſts in gradually raiſing, or exalting them to a digher degree of purity, and goodneſs, ſo as both to increaſe their weight, colour, conſiſtence, &c.

Gradation, in architecture, ſignifies an artful diſpoſition of parts, riſing, as it were, by ſteps, or degrees, after the manner of an amphitheatre; ſo that thoſe placed before do no diſſervice, but rather ſervice, to thoſe behind.

The painters alſo uſe the word *gradation* for an inſenſible change of colour, by the diminution of the teints and ſhades.

GRADUAL *, **Graduale**, was antiently a church-book, containing divers prayers, rehearſed, or ſung, after the epiſtle.

* In ſome of our antient writers it is read *gradile, graduale*, &c.

After reading the epiſtle, the chantor aſcended the ambo with his *gradual*, and rehearſed the prayers, &c. therein; being anſwered by the choir: whence the name *gradual*, on account of the ſteps, or degrees of the ambo. See Ambo.

In the Romiſh church, *gradual* is an appellation ſtill given to a verſe which they ſing after the epiſtle, and which was antiently rehearſed on the ſteps of the altar: though Ugutio gives us another account, and ſays it took its denomination *gradual*, becauſe ſung in a *gradual* aſcent from note to note. Magri ſpeaks differently ſtill, and will have it to have taken its name, becauſe ſung while the deacon went up the ſteps to the pulpit, to ſing the goſpel.

Gradual, **Gradualis**, is alſo applied to the fifteen pſalms, ſung, among the Hebrews, on the fifteen ſteps of the temple.—Others are rather of opinion, that they were thus denominated, becauſe the ſingers raiſed their voice by degrees, from the firſt to the laſt.

Cardinal Bona, in his treatiſe of divine pſalmody, ſays, the fifteen *gradual* pſalms are intended to repreſent to the mind, that we only arrive at the perfection of goodneſs, or holineſs, by degrees: he goes on to lay down the fifteen degrees of virtue, correſponding to the fifteen pſalms; five of them are for beginners; five for proficients; and the reſt for the perfect.

GRADUATE, a perſon who has the degrees in any faculty.

A *graduate* in phyſic, in divinity, &c. See Faculty, Doctor, &c.—In France, one-third of the benefices of the kingdom are appropriated to *graduates*; *viz.* all that become vacant in the months of January, and July, April, and October.

This privilege of *graduates* is no older than the fifteenth century: it being obſerved, that men of learning were much neglected by the collators, and patrons of churches, complaint therefore was made to the council of Baſil, where this decree was made; which was afterwards confirmed by the Pragmatic ſanction, and again by the concordat.

GRADUATION is uſed, in mathematics, for the act of *graduating*, or dividing any thing into degrees.

The *graduation* of this quadrant, theodolite, or the like, is juſt and clean.

GRADUS *gemonii*. See the article Gemonii.

GRÆCUM—*album* Græcum. See Album.

GRAFT *, or **Graff**, in agriculture and gardening, a little ſhoot, cion, bud, or eye of a tree, inſerted into another tree, to make it yield fruit of the ſame nature and kind, as thoſe of the tree whence the *graft* is taken.

* The word is formed of the French *greffe*, which ſignifies the ſame thing; and *greffe*, in this ſenſe, is ſuppoſed to have been derived from the reſemblance the ſhoot bears to the point of a penknife, which was antiently called *greffe*. Du Cange goes farther, and derives the antient *greffe* from *graphiolum*; Menage, from *graphium*, a Latin word, ſignifying a little ſtyle, or iron bodkin, one end whereof was pointed, and ſerved to write withal on waxen tablets; and the other flat, ſerving to efface, or rub out what was written.

A *graft* is a little portion of a tree, incloſed in a cleft, or inciſion made in another, in order to correct, qualify, or improve the taſte of its fruit; or even to make it bear a different ſort of fruit.

GRAFTING, or **Graffing**, or **Ingrafting**, in agriculture, and gardening. See Encrafting.

Grafting *wax*. See the article Wax, &c.

GRAIN, **Granum**, primarily denotes a fruit, or ſeed, growing in a ſpica, or ear.

In this ſenſe, *grain* comprehends all ſorts of corn; as wheat, rye, barley, oats, &c.

Grain is alſo applied to the fruits or ſeeds of divers plants; as a *grain* of millet, of pepper, &c.

The kingdom of heaven is compared to a *grain* of muſtard ſeed.

Grain is alſo extended to a minute body, or parcel of a body pulverized.—In which ſenſe we ſay, a *grain* of ſand, a *grain* of ſalt, a *grain* of gunpowder, &c.

Grain denotes alſo a ſmall weight, uſed in eſtimating divers ſubſtances.

The *grain* is the ſmalleſt of all the weights known in England.—It is taken from the weight of a *grain* of wheat, gathered out of the middle of the ear, and well dried. Twenty-four grains make a peny-weight, and twenty peny-weights an ounce.

The *grain* is troy-weight, and uſed in the weighing of gold, ſilver, jewels, bread, and liquors.

Among the antients, the *grain* was the fourth part of the ſiliqua, or twelfth of the obolus, and the ſeventy-ſecond of the drachma. It coincided with lens.

Fernelius, l. iv. c. 6. *Method. Medend.* affirms it as a thing known and certain, that the *grain* is of the ſame weight, every-where; but he is miſtaken. Mr. Greaves, in his treatiſe of the Roman foot, has ſhewn, that 179 Dutch *grains*, which Snellius had found to be the weight of a Philip of gold, only amount to 134½ Engliſh *grains*. Add, that Monſ. Perrault has computed the French *grain* to be leſs than the

Engliſh; and yet bigger than the Dutch: to the Engliſh, it is as 158 to 134½; and to that of Holland, as 158 to 179.

The *grain* uſed by the apothecaries, is the ſame with that of the goldſmiths; though they make a difference in the weights raiſed therefrom. Thus, 20 grains, with them, make a ſcruple, ℈; 3 ſcruples, a drachm, ʒ; 8 drachms, an ounce, ℥, *&c.*

The carat uſed in eſtimating the fineſt of gold, as well as in weighing diamonds and precious ſtones, is alſo divided into four *grains*.

GRAIN is alſo uſed for the figure or repreſentation of *grains* on ſtones, ſtuffs, leathers, *&c.*—Thus we ſay, morocco has a bolder and richer, that is, a larger *grain*, than ſhagreen.

In ſome marbles, the *grain* is very fine; in others coarſer. Steel is known by its *grain*, which is much finer than that of iron.

Cochineal GRAIN. } See { COCHINEAL.
Scarlet GRAIN. } See { SCARLET.
GRAINED *medals*. } See { MEDAL.
Croſs GRAINED *ſtuff*. } See { CROSS *grained*.

GRAINING *board* is a board uſed by the curriers, to give the grain to their leather.

It is made with teeth, or notches, running quite acroſs; into which, the ſoft, moiſtened, ſuppled leather being preſſed, its ſurface readily takes the impreſſion.

GRAMINEA, in antiquity, is applied to a crown formed of graſs, *gramen*, beſtowed by the Romans on certain of their generals, in conſideration of their having ſaved or reſcued an army.

The *graſſy* crown, *corona graminea*, was but rarely conferred; and for ſome ſignal exploit; when, through the courage or dexterity of a general, an army reduced to the laſt extremities had been ſaved, or delivered, and the enemy put to flight.

GRAMINEOUS *herbs*, among botaniſts, are ſuch as have a long, narrow leaf, with no foot-ſtalk.

GRAMMAR, the art of ſpeaking properly; that is, of expreſſing one's thoughts, by ſigns mutually agreed on for that purpoſe.

The ſigns, here found moſt convenient, are articulate ſounds; but, as theſe are tranſient, others have been invented more permanent, *viz. grammata*, γραμματα, letters, whence the name *grammar*.

Grammar is more accurately defined, after Mr. Johnſon, the art of expreſſing the relations of things in conſtruction, with due quantity in ſpeaking, and orthography in writing, according to the cuſtom of thoſe whoſe language we learn. See LANGUAGE.

Grammar is divided by ſome authors into four parts, *orthography*, *proſody*, *etymology*, and *ſyntax*.

Others chooſe to divide *grammar* ſomewhat more obviouſly into the doctrine of *letters*, or *ſounds*, which coincides with orthography and orthoepy; that of *ſyllables*, their accent, time, *&c.* which falls in with proſody; that of *words*, their kinds, derivations, changes, analogy, *&c.* which amounts to etymology; and that of *ſentences*, which conſiders the placing, or joining of words together, called *ſyntax*.

The chief buſineſs of *grammar* is, to decline, conjugate, conſtruct, and ſpell nouns, verbs, and other parts of ſpeech.—It teaches the propriety, and natural force, of each part of diſcourſe; and the reaſon of all expreſſions uſed therein.

Some have called *grammar* the door, or gate, of the arts and ſciences; by reaſon none of theſe are attainable, but by means hereof.—*Grammar*, according to Quintilian, is that to eloquence, which the foundation is to the building: they who deſpiſe it, as only dealing in low, trivial things, are exceedingly miſtaken: it has really more ſolidity than ſhew.

The authors of the *Art of thinking* conſider *grammar*, as not leſs neceſſary to try and exerciſe the abilities of the moſt knowing, than to form the minds of beginners: the advantages of *grammar* are well ſet forth by Perizonius, in the preface to his edition of Sanctius's *Minerva*, Amſterd. 1714.

Diogenes Laertius relates, after one Hermippus, that Epicurus was the firſt who gave the rules of *grammar* for the Greek tongue; but that Plato was the firſt who had taken the thing into conſideration, and that he had even made ſome diſcoveries on that ſubject.

At Rome, Crates, ſurnamed Mallotes, cotemporary with Ariſtarchus, gave the firſt lectures on *grammar* to the Romans, during the time of his being embaſſador for king Attalus, to the commonwealth, between the ſecond and third Punic wars, ſoon after Ennius's death. Before him, it was not known at Rome what *grammar* meant. Polydore Virgil *de Invent. rer.* l. i. c. 7.

Grammar is the ſame in all languages, as to its general principles, and notions, which it borrows from philoſophy to explain the order and manner wherein we expreſs our ideas by words: but, as each language has its particular turns, its ſeveral character, and genius, different from the genius and character of other languages; hence ariſe as many *grammars* as languages.—An example will ſuffice to ſhew this: we ſay in Engliſh, *draw a ſtrait line*, not, *a line ſtrait*: in French, they ſay, *tirer ligne droite*, a line ſtrait, not *droite ligne*, a ſtrait line: and in Latin there is a liberty to ſay it either the one way, or the other, *rectam lineam*, or *lineam rectam*, *ducere*. And if there be a language which in the phraſe above-mentioned follows the ſame analogy as the Engliſh, it differs from it on a hundred other occaſions.

Hence Dr. Wallis very juſtly finds fault with our Engliſh grammarians, where he ſays, that all of them, forcing our Engliſh tongue too much to the Latin method, have delivered many uſeleſs things concerning caſes, genders, and declenſions, of nouns; tenſes, moods, and conjugations, of verbs; as alſo the government of nouns and verbs; which our language has nothing to do with.

GRAMMAR is alſo uſed for a book containing the rules of *grammar*, which obtain in any language. See LANGUAGE.

The antient *grammars* are; for the *Hebrew*, that of rabbi Juda Chiug, which is commonly held the firſt Hebrew *grammar* that appeared; though it is certain, rabbi Saadias Haggaon, who lived before rabbi Juda, compoſed two works in the ſame kind: one, expreſly of *grammar*; and the other of the elegancies of the Hebrew tongue.

For the *Greek*, the oldeſt *grammar* is that of Gaza: the Latin ones are the works of Martianus Capella, Priſcian, and Aſconius Pedianus.

The beſt of the modern *grammars* are; 1°, For the Hebrew, that of Pagninus, the edition of Hen. Stephens, or le Preux; at Geneva, in 1592. that of Petrus Martinius at Rochel 1592. that of Buxtorf; that of Ludovicus Deus, in three languages; that of Sixtinus Amama, which is a collection from Martinius and Buxtorf; that of Bellarmine with the notes of Muis; that of F. Sglanther is uſeful for beginners—2°, For the *Chaldee*, the beſt are thoſe of Martinius, Buxtorf, and Lud. Deus, in three languages.—3°, For the *Syriac*, thoſe of Amira, Myricæus, Waſerus, and Beveridge; with the Chaldee and Syriac ones of Buxtorf, of Lud. Deus in three languages, and that of Lembden.—4°, For the *Coptic*, the *Prodromus Coptus*, and *Lingua Ægyptiaca Reſtituta* of Kircher.—5°, For the *Arabic*, that of Erpenius, and that of Golius, which is only Erpenius's a little augmented.—6°, For the *Ethiopic*, that of J. Ludolphus.—7°, For the *Perſian*, that of Lud. Deus.—8°, For the *Armenian*, thoſe of Schroder, and Galanus.—9°, For the *Greek*, thoſe of Mart. Rulandus, Sylburgius, F. Mocquet, Voſſius, Buſby, and Port Royal.—10°, For the *Latin*, thoſe of Deſpauter, the *Minerva* of Sanctius, thoſe of Voſſius, and Sprat; that of Port Royal, which is only a collection from the reſt; and that of Lowe, the moſt exact of all.—11°, For the *Italian*, thoſe of Berger, Lanfredini, Port Royal, and Veneroni.—12°, For the *Spaniſh*, thoſe of Salazar, Port Royal, the abbot de Vairac, *&c.*—13°, For the *Portugueſe*, that of Pereira.—14°, For the *French*, thoſe of the abbé Regnier, and F. Buffier.—15°, For the *High Dutch*, thoſe of Claius, Hertſburgenſis, Schottelius, Boedicher, and Steinbach.—16°, For the *Engliſh*, thoſe of Wallis, Brightland, and Greenwood.

Characters in GRAMMAR. See the article CHARACTER.

GRAMMARIAN, GRAMMATICUS, a perſon well verſed in grammar; or who teaches grammar.

The denomination *grammarian* is, like that of critic, now frequently uſed as a term of reproach; a mere *grammarian*; a dry, plodding *grammarian*, &c.—The *grammarian* is conceived as a perſon wholly attentive to the minutiæ of language; induſtriouſly employed about words, and phraſes; and incapable of perceiving the beauties, the delicacy, fineſſe, extent, *&c.* of a ſentiment.

Scaliger, however, conſidered *grammarians* in another light. *Utinam eſſem*, ſays he, *bonus* grammaticus! *Sufficit enim ei, qui omnes auctores probe vult intelligere, eſſe* grammaticum.

The title *grammarian*, it is certain, was antiently a title of honour; being given not only to ſuch as applied themſelves to grammar, or excelled in philology; but to all who were reputed learned in any art or faculty whatever, as is ſhewn by Ger. Voſſius, in his book of grammar.

The word was properly a title of literature and erudition, and was frequently given to perſons who excelled in all, or many arts, called alſo *polyhiſtores*.

Thus, Philoponus, a famous philoſopher in Juſtinian's time, remarkable for the extent and variety of his knowlege, was ſurnamed *grammaticus*, as appears from Photius's *Bibliothec.* So Saxo, the Daniſh hiſtorian, in the thirteenth century, got the appellation *grammaticus*: and as late as the year 1580. Thomas d'Averſa, a celebrated Neapolitan lawyer, was ſurnamed the *grammarian*.

The title *grammarian* was antiently beſtowed on thoſe we now call *critics*, men of learning, erudition, letters, *&c.* and particularly ſuch as wrote well, and politely, in every kind.

It is in this ſenſe that Suetonius intitles his book which he wrote on the beſt Latin authors, *Of the celebrated grammarians*; and that Cornelius Nepos calls the commentators on the orators, and poets, *grammarians*; and laſtly, it is in this ſenſe the appellation is attributed by the antients to Apion, Philoponus, and Solinus.

The moſt celebrated *grammarians* of the ſecond century were Aper, Pollio, Eutychius, Proculus, Athenæus, Julius Pollux, Macrobius, and Aulus Gellius: the works of theſe laſt authors are an aſſemblage of abundance of very different things, and ſubjects, relating to the criticiſm of the antient writers, and the polite literature.

If the name have loſt its antient honour, it is through the fault of thoſe who have aſſumed it; by their treating of grammar in a low, pedantic, dogmatic manner; reducing it to words and ſyllables; and dwelling altogether on trifling, puerile remarks, and cenſures: whereas its antient office was to make an accurate and thorough examen of an author; to enter into all his views; to point out the beauties, and the defects thereof; to diſtinguiſh the true beauties from the falſe; and the genuine productions of an author, from the ſuppoſititious; that is, a *grammarian* was then, what we call a *critic* now.

Thoſe who only taught to read, underſtand, and explain authors, were called *grammatiſts*, *grammatiſtæ*; in contradiſtinction from *grammatici*: though, in courſe of time, the *grammatiſtæ* have riſen into the place of *grammatici*; who are now preferred to that of *critici*.

GRAMMATICAL, ſomething relating to grammar. See GRAMMAR.

We ſay, *grammatical* conſtruction; *grammatical* ſignification, *&c.* Idioms, as angliciſms, latiniſms, greciſms, galliciſms, *&c.* deviate from *grammatical* ſtrictneſs. Such a phraſe is not *grammatically* juſt; it is an idiom.

GRAMMATICAL *criticiſm*. See the article CRITICISM.

GRANADIER, GRENADIER, or GRANADEER, a ſoldier who is armed with a ſword, a firelock ſlung, and a pouch full of hand-granado's to be thrown among the enemy.

There are companies of *foot granadiers*, and *horſe granadiers*, or *granadiers* of horſe, by the French called *granadiers volans*, or *flying granadiers*, who are mounted on horſeback, but fight on foot.

Every battalion of foot, of late years, has generally a company of *granadiers* belonging to it; or elſe four or five *granadiers* belong to each company of the battalion; which, on occaſion, are drawn out, and form a company of themſelves. Theſe always take the right of the battalion; and are the firſt in attacks.

To each troop of horſe-guards, Chamberlayn tells us, there is added, by eſtabliſhment, a troop of *granadiers*, conſiſting of ſixty-four men, beſide officers, commanded by the captain of the troop of guard.

One diviſion of *granadiers* mounts with a diviſion of the troop; they alſo go out on ſmall parties from the guard; perform centinels duty, *&c.*

GRANADO*, or GRANADA, in the military art, a hollow ball or ſhell, of iron, braſs, or even glaſs, or potters earth, filled with gunpowder, and fitted with a fuze to give it fire.

* The name *granado* takes its riſe hence, that it is filled with grains of powder, as a pomgranate is with kernels.

Of theſe there are two kinds; the one large, the other ſmall: the firſt are to be thrown at the enemy by a mortar, properly called *bombs*; ſee BOMB.—The latter to be caſt with the hand; and thence denominated *hand-granado's*.

Caſimir, indeed, makes another diſtinction; where the ball or ſhell is round, whatever the ſize be, he calls it a *granado*; and where oval, or cylindrical, a *bomb*: but cuſtom allows only the former diviſion.

The beſt way, Caſimir obſerves, to ſecure a man's ſelf from the effect of a *granado*, is, to lie flat down on the ground, before it burſt.

Hiſtorians relate, that at the ſiege of Oſtend there were above fifty thouſand *granado's* thrown in one month into the city: and that the citizens threw above twenty thouſand into the works of the beſiegers.

The common, or hand *granado*, is a little, hollow ball of iron, tin, wood, paſteboard, or other matter, filled with ſtrong powder, lighted with a fuzee, and thus thrown by hand into places where men ſtand thick; and particularly into trenches and lodgments.

Their compoſition is the ſame with that of BOMBS; which ſee.—For ſize, they are uſually about the bigneſs of an iron bullet, and weigh about three pounds: as to dimenſions, they are commonly in thickneſs one eighth, one ninth, or one tenth of their diameter; their aperture, or orifice about $\frac{3}{19}$ wide, as preſcribed by Caſimir.

Thuanus obſerves, that the firſt time *granado's* were uſed, was at the ſiege of Wachtendonck, a town near Gueldres; and that the inventor was an inhabitant of Venlo; who, in making an experiment of the effect thereof, occaſioned two-thirds of that city to be burnt; the fire being kindled by the fall of a *granado*.

Bombs were known long before the invention of *granado's*.—The antients had a ſort of ollæ, or firepots, ſomewhat of the ſame nature with our *granado's*, but they were much leſs perfect.

Caſimir mentions a ſort of *blind granado's*, without any aperture, or fuzee, as not needing to be lighted; but being thrown with a mortar, take fire of themſelves whenever they fall on any hard, ſolid object.

GRANARY, a place to lay or ſtore corn in, particularly for keeping.

Sir Henry Wotton adviſes, to make it look towards the north, as much as may be; becauſe that quarter is moſt cool and temperate.

Mr. Worlidge obſerves, that the beſt *granaries* are built of brick, with quarters of timber wrought in the inſide, whereto to nail the boards, with which the inſide of the *granary* muſt be lined ſo cloſe to the bricks, that there be no room for vermin to ſhelter themſelves. There may be many ſtories one above another, and let them be near the one to the other; for the ſhallower corn lieth, the better, and it is the eaſier turned.

Some have had two *granaries*, the one above the other, and filled the upper with wheat, or other corn: this upper one had a ſmall hole in the floor, by which the corn deſcended into the lower one, like the ſand in an hour-glaſs; and when it was all come down into the lower *granary*, it was then carried up again into the upper one; and ſo it was kept continually in motion: which is a great preſervation to the corn.—A large *granary*, full of ſquare wooden pipes, may alſo keep corn from heating. See Supplement, article GRANARY.

GRANATE, popularly called GARNET, a gem, or precious ſtone, of a high red colour; thus called from the reſemblance it bears to that of the kernel of a pomgranate.

Granates are either *oriental*, or *occidental*: the firſt are brought from divers parts of the Eaſt Indies; the ſecond from Spain, Bohemia, and Sileſia.

Thoſe from the *Eaſt*, are diſtinguiſhed by their colour into three kinds: the firſt, of a deep browniſh red, like black clotted blood; of which kind there are ſome as big as an hen's egg: the ſecond are nearly of the colour of a hyacinth, with which it were eaſy to confound them, but for their ſuperior redneſs. The laſt, having a mixture of violet with their red, are called by the Italians, *rubini della rocha*.

The *occidental granates* are of divers reds, according to the places they are found in. Thoſe of Spain imitate the colour of the kernel of a pomegranate: thoſe of Bohemia have a golden caſt with their red, glittering like a live coal: thoſe of Sileſia are the darkeſt of all, and ſeldom thoroughly tranſparent.

Of the occidental *granates*, thoſe of Bohemia are the moſt valued: ſome even give them the preference to the oriental kind. They are found near Prague; not in any particular mines, but picked up by peaſants in the fields, from among the ſands and pebbles.

The *granate* is of ſome uſe in medicine: its powder is ſometimes an ingredient in the cordial electuaries. The antients held it excellent againſt heavineſs and melancholy. See Supplement, article GARNET.

GRAND, a term rather French than Engliſh, though uſed on many occaſions in our language. It has the ſame import with *great*; being formed of the Latin *grandis*.

In this ſenſe, we ſay, the *grand* maſter of an order; the *grand* maſter of Malta; of the free maſons, *&c.*

So alſo, the *grand* ſignor, the *grand* viſier, *&c.* *Grand* father, *Grand* mother, *&c.*

In the French polity and cuſtoms, there are divers officers thus denominated, which we frequently retain in Engliſh; as *grand* almoner, *grand* ecuyer, *grand* chambellan, *grand* voyer, *&c.*

GRAND *aſſiſe*. See the article ASSISE.

GRAND *cape*. See the articles CAPE, and ATTACHMENT.

GRAND *diſtreſs*, *diſtrictio magna*, a writ of diſtreſs ſo called on account of its extent, which reaches to all the goods and chattels of the party within the county.

This writ lies in two caſes: either when the tenant, or defendant, is attached, and appears not, but makes default; or where the tenant, or defendant, hath once appeared, and after makes default.—On ſuch occaſions, this writ lies by common law, in lieu of a petit cape.

GRAND *guſto* is a term uſed by painters, to expreſs, that there is ſomething in the picture very great and extraordinary, calculated to ſurpriſe, pleaſe, and inſtruct.

Where this is found, they ſay, the painter was a man of the *grand guſto*: and they uſe the words ſublime, and marvellous, when they ſpeak of a picture, in much the ſame ſenſe.

Grand *elixir*.	See	Elixir.
Grand *guard*.		Guard.
Grand *jury*.		Jury.
Grand *prior*.		Prior.
Grand *provoſt of France*.		Provost.
Grand *ſergeanty*.		Chivalry, Serjeanty.

GRANDEE is underſtood of a lord of the firſt rank, or prime quality.

In Spain, the term *grandees* is uſed abſolutely to denote the prime lords of the court, to whom the king has once given leave to be covered in his preſence: there are ſome *grandees* for life only; made by the king's ſaying, ſimply, Be covered. Others are *grandees* by deſcent; made by the king's ſaying, Be covered for thyſelf, and heirs. Theſe laſt are reputed far above the former.

There are ſome who have three or four *grandeeſhips* in their family.

GRANGE *, an antient term for a barn; or place wherein to lay up and threſh corn.

* The word is formed of the Latin *granea*; or of *granum*, grain, corn, &c. Hence alſo *granger*, or *grangier*, a *grange-keeper*, or farmer.

Grange is alſo uſed, in a more extenſive ſenſe, for a whole farm; with all the appendages of ſtables for horſes, ſtalls for cattle, &c. and for an inn.

GRANI *, in our antient writers, muſtachoes, or whiſkers of a beard.

* The word ſeems formed from the antient Britiſh, or Iriſh, *greann*, a beard.

It is given for a reaſon why the cup is refuſed to the laity, *Quia barbati, & prolixos habent* granos, *dum poculum inter epulas ſumunt, prius liquore pilos inficiunt, quam ori infundunt*.

GRANITE, **Granita**, or **Granites**, a ſort of marble, extremely hard, rough, and difficultly wrought and poliſhed: thus called, as being ſprinkled over with a great number of little ſtains, reſembling grains of ſand.

There are three ſorts of *granite*; that of Egypt; that of Italy; and that of Dauphiny.—The firſt rediſh, variegated with white and black. It is found in very large pieces; and is that chiefly uſed by the Egyptians, in their obeliſks and pyramids, on the tombs of their great men. There are columns of this ſtone above forty feet high. The *granite* of Italy is ſofter than that of Egypt; eſpecially in the quarry, where it cuts with much more eaſe. There is alſo a ſort of green *granite*, which is a ſpecies of ſerpentine, ſpotted with green and white ſpots.

The *granite* of Dauphiny, a quarry whereof has of late years been found, is only a very hard ſort of flint. See Supplement, article Granita.

GRANIVOROUS, an epithet or denomination given to ſuch animals as feed upon corn, or any other grain or ſeeds.

Granivorous animals are chiefly of the bird kind. See Bird. Theſe have a peculiar proviſion for the digeſting of ſo dry and hard a food.

GRANT, in law, a gift in writing, of ſomething incorporeal, not lying in livery, and which cannot aptly be paſſed or conveyed by word only; as rents, reverſions, ſervices, advowſons in groſs, tythes, &c.

Or, it is a gift made by ſuch perſons as cannot give but by deed; as the king, and all bodies politick. See Donation.

This difference is often, in ſpeech, neglected; and the word *grant* taken generally for any gift whatſoever, made of any thing, by any perſon.

In this ſenſe he that granteth is named *granter*, and he to whom it is made, the *grantee*.

A thing is ſaid to *lie in grant*, which cannot be aſſigned without deed.

GRANULATED *oil*. See the article Oil.

GRANULATION, in chemiſtry, an operation performed on metals, whereby they are reduced into ſmall grains, or globules.

It is done by melting them; and, when in fuſion, caſting them into cold water; in which they congeal into granules, as required; and are hereby rendered more eaſy to be diſſolved.—The beſt way is to pour the fluid metal through a colander, or a new birchen broom.

We alſo ſay, the *granulation* of gunpowder. See Gun-*powder*.

GRAPE. See the articles Vine, Raisin, and Wine.

GRAPHOIDES, or **Graphioides**, γραφιοειδης, in anatomy, an appendage of the bones of the temples, long, ſmall, ſharp, and a little crooked, like a cock's ſpur: called alſo *ſtyloides*.

The ſame name is ſometimes alſo applied to the muſculus digaſtricus.

Likewiſe, to an extenſion of the brain, reſembling a writing-pen.

GRAPHOMETER, a name which ſome authors, particularly the French, give to a ſurveying inſtrument, by us commonly called a *ſemicircle*.

GRAPPLE, in the manage.—A horſe is ſaid to *grapple* with one, or both legs, when he catches, or raiſes them more haſtily, and higher than ordinary; as if he were curvetting.

GRASS *plots*, and *walks*, make a conſiderable article in gardening, &c.

Graſs, or *green-plots*, are had either by ſowing of hay-ſeed, or laying of turf: for the firſt, which is the cheapeſt way, the ſeed of the fineſt upland paſtures is to be choſen, well-ſifted and cleanſed.

For the ſecond, the turf ſhould be cut on a down, or green, or common, or ſheep-walk, where the *graſs* is ſhort and fine: if there be any knobs, or roughneſſes, the place muſt be cleanſed and rolled after a ſhower, before it be cut up. The turf is cut in ſquares, marked out with lines, raiſed with a knife, and rolled up, about three inches thick. The quarters, or verges, are to be prepared with a fine coat of poor earth, to lay the turf on; and, after laying, the turf muſt be well watered, rolled, &c.

Small pieces of *graſs* work, as knots, ſhell-work, and volutes of parterres, cut-work, verges about baſons, &c. muſt always be laid with turf.

To ſow *graſs* for plots, &c. the ground ought to be firſt dug or broken with a ſpade, then dreſſed, laid even, raked fine, and covered an inch thick with good mould, to facilitate the growth of the ſeed. Then the ſeed is to be ſown pretty thick, that it may come up cloſe and ſhort; and laſtly, to be raked up, and covered. The beſt ſeaſon is the latter-end of Auguſt: when it is well come up, it muſt be mowed, and this often repeated; ſince the oftener it is mowed, the thicker and handſomer it grows. It muſt be alſo rolled from time to time.

Five-leaved **Grass**, in heraldry. See the article Five-*leaved*.

GRATICULATION, a term ſome writers uſe for the divideing a draught or deſign into ſquares, in order to the reduceing it thereby.

GRATIOLA, a medicinal plant, reſembling hyſſop; of conſiderable virtues; though little known in the ordinary practice, as being ſuppoſed dangerous of application. In Engliſh it is called *hedge-hyſſop*, and *God's-grace*.

Its moſt noted effects are to evacuate hydropic waters, both upwards and downwards, taken either in infuſion, or decoction; to cleanſe wounds, and to kill worms.—Its bark, taken in powder, is ſaid to be ſcarce inferior in virtue to ipecacuanha for dyſenteries.

It is of a very bitter taſte; whence, probably, its vermifugous power; and its root is aſtringent, whence its uſe in the dyſentery.

M. Boulduc made an extract of this plant, which purged gently, and was very diuretic: another extract made of the fæces, or refuſe, proved much more efficacious. *Hiſt. de l'Acad. an.* 1705.

GRAVE, in muſic, is applied to a ſound which is in a low or deep tune.

The thicker the chord, or ſtring, the more *grave* the tone, or note; and the ſmaller, the acuter.

Notes are ſuppoſed to be the more *grave*, in proportion as the vibrations of the chord are leſs quick.

Grave, in grammar, a ſpecies of accent oppoſite to acute.

The *grave* accent is expreſſed thus (`): and ſhews, that the voice is to be depreſſed, and the ſyllable over which it is placed, pronounced in a low, deep tone.

Grave is alſo an ingredient in the compoſition of divers terms in hiſtory, and policy *. Thus we ſay, Landgrave, Burgrave, Margrave, Palſgrave, &c. See Pals-*grave*, &c.

* The word, in this ſenſe, is formed of the German *graf*, ſignifying *comes*, count; called in the barbarous Latin *gravio*, and *graphio*.

Grave is alſo uſed for a tomb, wherein a perſon defunct is interred.

GRAVEDO, a heavineſs, or liſtleſſneſs, which accompanies a leſſened tranſpiration, or taking cold, as it is commonly called. Hence alſo, the caſe being frequently accompanied with a running of the noſe and eyes, *gravedo* and *coryza* are ſometimes uſed promiſcuouſly.

GRAVEL *, in natural hiſtory, coarſer ſand, found at the bottom and the ſides of rivers.

* The word is formed of the French *gravier*; which Du Cange derives from the barbarous Latin *graveria*, ſignifying the ſame.

Monſ. Perrault and Dr. Woodward lay down the difference between ſand and *gravel*.—The firſt is ſmall, and conſiſts of finer, evener grains: the latter is bigger, and conſiſts of little pebbles and flints of various kinds, and mixed with the ſand and the finer fragments of other ſtones.

Gravel is chiefly uſed in laying yards, courts, and walks, in gardens.

Gravel, in medicine, a diſeaſe of the bladder, and kidneys, occaſioned by a ſandy or gritty matter gathered therein, which, cohering into a ſtony maſs, prevents the due ſecretion and excretion of the urine.

The *gravel* is generally conſidered as the ſame diſeaſe with the calculus, or ſtone.

Gravel *ſoil*. See the article Soil.

GRAVEL, *walk*, in gardening.—To lay or form a walk with *gravel*, all the good ſoil is to be pared away, below the roots of any graſs, or weeds; then the place to be filled two or three inches with coarſe *gravel* unſierced, laying it higheſt in the middle; then rolling it; a new ſtratum of finer *gravel* to be thrown on, two or three inches thick: and the rolling to be repeated again and again.

Note, the ſides next the beds ſhould be laid a foot and an half, or two feet, with turf, from whence the heat of the ſun cannot be reflected as it is from *gravel*, to the prejudice of the neighbouring flowers.

GRAVELLING, among farriers, a diſorder incident to travelling horſes, occaſioned by little gravel-ſtones getting in between the hoof and the ſhoe; which, ſettling to the quick, frets and feſters the part.

It is cured by pulling off the ſhoe, drawing the place to the quick, picking out all the gravel, and ſtopping up the foot with horſe-greaſe and turpentine poured in hot.

GRAVER, a ſteel inſtrument, ſerving to engrave on metals.

The *graver* conſiſts of four ſides, or faces; and the point uſually terminates in a lozenge. The other end is fitted into a wooden handle.

Beſide engravers, the ſeal-cutters, lockſmiths, gunſmiths, goldſmiths, armourers, ſpurriers, &c. likewiſe make uſe of *gravers*.

GRAVING, the act, or art, of cutting lines, figures, and other deſigns, on metals; more properly called *engraving*. See ENGRAVING.

GRAVITATION, the exerciſe of gravity, or the preſſure a body exerts on another body underneath it by the power of gravity.

It is one of the laws of nature, diſcovered by Sir Iſaac Newton, and now received by moſt philoſophers, that every particle of matter in nature gravitates towards every other particle; which law is the hinge whereon the whole Newtonian philoſophy turns. See NEWTONIAN *philoſophy*.

What we call *gravitation*, with reſpect to the *gravitating* body, is properly called *attraction* with reſpect to the body *gravitated* to.

The planets, both primary and ſecondary, as alſo the comets, do all *gravitate* toward the ſun, and toward each other; and the ſun toward them; and that in proportion to the quantity of matter in each.

The peripatetics, &c. hold, that bodies only *gravitate* when out of their natural places; and that *gravitation* ceaſes when they are reſtored to the ſame; the intention of nature being then fulfilled. The final cauſe of this faculty, they hold, is only to bring elementary bodies to their proper places, where they may reſt.—But the moderns ſhew, that bodies exerciſe *gravity* even when at reſt, and in their proper places.

This is particularly ſhewn of fluids; and it is one of the laws of hydroſtatics, demonſtrated by Mr. Boyle, and others, that fluids gravitate *in proprio loco*, the upper parts preſſing on the lower, &c.

For the laws of *gravitation* of bodies in fluids ſpecifically lighter or heavier than themſelves; ſee SPECIFIC *gravity*, FLUID, &c.

Center of GRAVITATION.		CENTER.
Line of GRAVITATION.	See	LINE.
Plane of GRAVITATION.		PLANE.

GRAVITY, in phyſics, the natural tendency or inclination of bodies towards a centre.

In this ſenſe *gravity* coincides with *centripetal force*. See CENTRIPETAL *force*.

Gravity is defined by others, more generally, to be the natural tendency of one body towards another; and by others more generally ſtill, the mutual tendency of each body, and each particle of a body, towards all others: in which ſenſe the word coincides with what we more uſually call *attraction*.

The terms *gravity*, centripetal force, weight, and attraction, do, in effect, all denote the ſame thing; only in different views and relations: which different relations, however, authors are apt to confound; and accordingly, the four are frequently uſed promiſcuouſly.

In propriety, when we conſider a body as tending towards the earth, the force wherewith it tends we call *gravity*, *force of gravity*, or *gravitating force*: the ſame force, when we conſider it as immediately tending to the centre of the earth, we call *centripetal force*: the ſame, when we conſider the earth, or body toward which it tends, we call *attraction*, or *attractive force*; and when we conſider it, in reſpect of an obſtacle, or a body in the way of its tendency, upon which it acts, we call it *weight*.

Philoſophers conceive very differently of *gravity*: its nature, uſe, phænomena, cauſes, effects, and extent, have afforded various ſpeculations in all ages.

Some conſider it as an active property, or innate vis, in bodies, whereby they endeavour to join their centre. Others hold *gravity* in this ſenſe to be an occult quality, and as ſuch to be exploded out of all ſound philoſophy.

Sir Iſaac Newton, though he frequently calls it a *vis*, power, or property, in bodies; yet explains himſelf, that all he intends by the word, is the effect, or the phænomenon. He does not conſider the principle, the cauſe whereby bodies tend downwards, but the tendency itſelf, which is no occult quality, but a ſenſible phænomenon; be its cauſe what it will, whether a property eſſential to body, as ſome make it; or ſuperadded to it, as others; or even an impulſe of ſome body from without, as others.

It is a law of nature long obſerved, that all bodies near the earth have a *gravity*, or a tendency towards the centre of the earth; which law the moderns, and particularly the immortal Sir Iſaac Newton, have found, from certain obſervation, to be much more extenſive, and to hold univerſally with reſpect to all the known bodies in nature.

It is now, therefore, acknowleged a principle or law of nature, that all bodies, and all the particles of all bodies, *gravitate* towards each other mutually: from which ſingle principle Sir Iſaac Newton has happily deduced all the great phænomena of nature. See NEWTONIAN *philoſophy*.

Hence *gravity* may be diſtinguiſhed into *particular*, and *general*.

Particular GRAVITY is that whereby heavy bodies deſcend towards the centre of the earth. See EARTH.

Phænomena, or properties of particular GRAVITY.—1°, All circumterreſtrial bodies do hereby tend towards a point, which is either accurately, or very nearly, the centre of magnitude of the terraqueous globe.

2°, This point or centre is fixed within the earth; or at leaſt hath been ſo ever ſince we have had any authentic hiſtory.—For a conſequence of its ſhifting, though ever ſo little, would be the overflowing of the low lands, on that ſide of the globe towards which it approached. Dr. Halley ſuggeſts, it would well account for the univerſal deluge, to have the centre of gravitation removed for a time towards the middle of the then inhabited world: for the change of place but the 2000th part of the radius of our earth would be ſufficient to lay the tops of the higheſt hills under water. See DELUGE.

3°, In all places which are equidiſtant from the centre of the earth, the force of *gravity* is nearly equal.—Indeed all places of the earth's ſurface are not at equal diſtances from the centre; becauſe the equatorial parts are ſomething higher than the polar parts: the difference between the earth's diameter and axis being about thirty-four Engliſh miles, which hath been proved by the neceſſity of making the pendulum ſhorter in thoſe places, before it will ſwing ſeconds.

4°, *Gravity* equally affects all bodies, without regard either to their bulk, figure, or matter: ſo that, abſtracting from the reſiſtance of the medium, the moſt compact and looſe, the greateſt and ſmalleſt bodies would deſcend equal ſpaces in equal times; as appears from the quick deſcent of very light bodies in the exhauſted receiver.

Hence, a very great difference may be obſerved between *gravity* and magnetiſm; the latter affecting only iron, and that towards its poles; the former, all bodies alike, and that in every part.

Hence it follows, that *gravity*, in all bodies, is proportionable to their quantity of matter; ſo that all bodies conſiſt of matter equally heavy.

Hence alſo may be concluded, that there is no ſuch thing as poſitive levity; thoſe things which appear light being only comparatively ſo.

If ſeveral things aſcend, and ſwim in fluids, it is only becauſe they are not, bulk for bulk, ſo heavy as thoſe fluids; nor is there any reaſon why cork, for inſtance, ſhould be ſaid to be light, becauſe it ſwims on water, any more than iron, becauſe it will ſwim on mercury.

5°, This power increaſes as we deſcend, and decreaſes as we aſcend from the centre of the earth, and that in the proportion of the ſquares of the diſtances therefrom reciprocally; ſo as, for inſtance, at a double diſtance, to have but a quarter of the force, &c.

6°, As all bodies *gravitate* towards the earth; ſo does the earth equally *gravitate* towards all bodies; *i. e.* the action of *gravity* is mutual on each ſide, and equal. See REACTION.

Hence alſo the attractive powers of bodies, at equal diſtances from the centre, are as the quantities of matter in the bodies.

Hence alſo it appears, that the attractive force of the intire bodies conſiſt of the attractive force of the parts: for, by the adding or taking away any part of the matter of a body, its *gravity* is increaſed or diminiſhed in the proportion of the quantity of ſuch particle to the intire maſs.

General, or univerſal GRAVITY.—The exiſtence of the ſame principle of *gravity* in the great regions of the heavens, as well as on earth, is eaſily proved.

That all motion is naturally rectilinear, is allowed by all: thoſe bodies, therefore, which move in curves, muſt be retained therein by ſome power continually acting on them. Hence, the planets being found to revolve in curvilinear orbits, we infer that there is ſome power, by whoſe conſtant influence, they are prevented from flying off in tangents.

Again, it is proved by mathematicians, that all bodies moving in any curve line deſcribed in a plane, and which, by radii drawn to any certain point, deſcribe areas about the point proportionable to the times, are impelled, or acted on, by ſome power tending towards that point: now it is ſhewn by the aſtronomers, that the primary planets round the ſun, and the ſecondary planets round the primary ones, do deſcribe areas proportionable to the times. Conſequently, the power whereby they are retained in their orbits, is directed towards the bodies placed in the centres thereof.

Laſtly, it is demonſtrated, that if ſeveral bodies revolve with an equable motion in ſeveral concentrical circles, and the ſquares of their periodical times be as the cubes of the diſtances from the common centre; the centripetal forces of the revolving bodies will be reciprocally as the ſquares of the diſtances. Or, if bodies revolve in orbits approaching to circles, and the apſides of thoſe orbits be at reſt; the centripetal forces of the revolving bodies will be reciprocally as the ſquares of the diſtances.

Now, the aſtronomers all agree, that both theſe caſes obtain in all the planets: whence it follows, that the centripetal powers of all the planets are reciprocally as the ſquares of the diſtances from the centres of the orbits. See PLANET.

Upon the whole, it appears, that the planets are retained in their orbits by ſome power which is continually acting on them: that this power is directed toward the centre of their orbits: that the intenſion or efficacy of this power increaſes upon an approach toward the centre, and diminiſhes at its receſs from the ſame; and that it increaſes in the ſame proportion as the diſtance diminiſhes; and diminiſhes in the ſame as the diſtance increaſes.—Now, by comparing this centripetal force of the planets with the force of *gravity* on earth, they will be found perfectly alike.

This we ſhall illuſtrate in the caſe of the moon, the neareſt to us of all the planets.—The rectilinear ſpaces deſcribed in any given time by a falling body, urged by any powers, reckoning from the beginning of its deſcent, are proportionable to thoſe powers. Conſequently, the centripetal force of the moon revolving in its orbit, will be to the force of *gravity* on the ſurface of the earth, as the ſpace which the moon would deſcribe in falling, any little time, by her centripetal force towards the earth, had ſhe no circular motion at all, to the ſpace a body near the earth would deſcribe in falling, by its gravity towards the ſame.

Now, by an actual calculus of thoſe two ſpaces, it appears, that the firſt of them is to the ſecond, *i. e.* the centripetal force of the moon revolving in her orbit, is to the force of *gravity* on the ſurface of the earth, as the ſquare of the earth's ſemidiameter, to the ſquare of the ſemidiameter of her orbit: which is the ſame ratio as that of the moon's centripetal force in her orbit, to the ſame force near the ſurface of the earth.

The moon's centripetal force, therefore, is equal to the force of *gravity*. Theſe forces, conſequently, are not different, but they are one and the ſame: for, were they different, bodies acted on by the two powers conjointly, would fall towards the earth, with a velocity double to that ariſing from the ſole power of *gravity*.

It is evident, therefore, that the moon's centripetal force, whereby ſhe is retained in her orbit, and prevented from running off in tangents, is the very power of *gravity* of the earth, extended thither.

The moon, therefore, gravitates towards the earth; and the earth reciprocally towards the moon: which is further confirmed by the phænomena of the tides. See TIDES.

The like reaſoning might be applied to the other planets.—For, as the revolutions of the primary planets round the ſun, and thoſe of the ſatellites of Jupiter and Saturn round their primaries, are phænomena of the ſame kind as the revolution of the moon round the earth; as the centripetal powers of the primary are directed towards the centre of the ſun, and thoſe of the ſatellites towards the centre of their primaries; and, laſtly, as all theſe powers are reciprocally as the ſquares of the diſtances from the centres; it may ſafely be concluded, that the power and cauſe is the ſame in all.

Therefore, as the moon gravitates towards the earth, and the earth towards the moon; ſo do all the ſecondaries to their primary ones; the primaries to their ſecondary ones; ſo, alſo, do the primary ones to the ſun, and the ſun to the primary ones.

Phænomena, or properties of univerſal GRAVITY.—1. All the ſeveral particles of all bodies in nature *gravitate* to all the particles of all other bodies.

To what has been urged in proof hereof, from the analogy between the motions of the ſeveral bodies in our ſyſtem; it may be added, that Saturn is actually obſerved by aſtronomers to change its courſe when neareſt to Jupiter; and Jupiter, alſo, is found to diſturb the motion of the ſatellites of Saturn. So that the gravitation of thoſe bodies is matter of actual obſervation.

2. The quantity of this *gravity*, at equal diſtances, is always proportional to the quantity of matter in the gravitating bodies.—For the powers of *gravity* are as the quantities of motion they generate; which quantities, in unequal bodies, equally ſwift, are to each other as the quantities of matter. Conſequently, ſince unequal bodies, which are equally ſwift, are to each other as the quantities of matter; therefore, in regard unequal bodies at the ſame diſtance from the attracting body are found to move equally ſwift, by *gravity*, it is evident, the forces of *gravity* are proportionable to the quantities of matter.

3. The proportion of the increaſe, or decreaſe, of *gravity* in the approach, or removal of bodies from each other, is this; that the force is reciprocally in a duplicate ratio, *i. e.* it is as the ſquares of the diſtance.—Thus, ſuppoſe a body of an hundred pounds, at the diſtance of ten diameters from the earth; the ſame body, if its diſtance were but half ſo great, would have quadruple the weight: if its diſtance were but one third of the former, its weight would be nine times as great, &c. Hence we gather the following corollaries. 1°, That at equal diſtances from the centre of homogeneal bodies, the *gravity* is directly as the quantity of matter, and inverſly as the ſquare of the diameter. 2°, That on the ſurfaces of equal, ſpherical, and homogeneous bodies, the *gravities* are as the denſities. 3°, That on the ſurfaces of ſpherical, homogeneous, equally denſe, but unequal bodies, the *gravities* are inverſly as the ſquares of the diameters. 4°, That if both the denſities and diameters differ, the *gravities* on the ſurfaces will be in a ratio compounded of the denſities and the diameters. Laſtly, that a body placed any-where, within a hollow ſphere, which is homogeneous, and every-where of the ſame thickneſs, will have no *gravity* whereſoever it be placed; the oppoſite *gravities* always preciſely deſtroying each other. For the particular laws of the deſcent of bodies, by the force of *gravity*, ſee DESCENT *of bodies*, and CENTRIPETAL *force*.

Cauſe of GRAVITY.—We have various theories advanced by the philoſophers of various ages to account for this grand principle of gravitation. The antients, who were only acquainted with particular *gravity*, or the tendency of ſublunar bodies towards the earth, aimed no further than at a ſyſtem which might anſwer the more obvious phænomena of the ſame; but the moderns, as their principle is higher, and more extenſive, ſo ſhould their theory be.

Ariſtotle, and the peripatetics, content themſelves to refer *gravity* or weight to a native inclination in heavy bodies to be in their proper place or ſphere, the centre of the earth.

Copernicus aſcribes it to an innate principle in all parts of matter, whereby, when ſeparated from their wholes, they endeavour to return to them again the neareſt way.

But neither of theſe ſyſtems aſſigns any phyſical cauſe of this great effect: they only amount to this, that bodies deſcend, becauſe they are inclined to deſcend.

Gaſſendus, Kepler, Gilbert, and others, aſcribe *gravity* to a certain magnetic attraction of the earth.—Theſe authors conceive the earth to be one great magnet continually emitting effluvia, which lay hold on all bodies, and draw them toward the earth. But this, we have obſerved, is inconſiſtent with the ſeveral phænomena.

Deſcartes, and his followers, Rohault, &c. attribute *gravity* to an external impulſe, or truſion of ſome ſubtle matter.—By the rotation of the earth, ſay they, all the parts and appendages thereof neceſſarily endeavour to recede from the centre of rotation: but they cannot, all, actually recede, as there is no vacuum or ſpace to receive them.

If now we ſuppoſe the earth ABCD, *Tab. Mechanic. Fig.* 8. and L a terreſtrial body placed in the pyramidal ſpace, AEB; it follows, that the matter in this pyramid will have ſo much leſs endeavour to recede from the centre, as the body L has a leſs endeavour than the fluid matter whoſe place it poſſeſſes. Hence it will follow, that the matter of adjacent pyramids receding with more force; that in the pyramid AEB, and particularly the body L, will be thereby driven toward the centre for the ſame reaſons as cork, though a heavy body, aſcends in water.

This hypotheſis, though ingenious enough, yet, as it is founded on the ſuppoſition of a plenum, it is overthrown by what has been ſince proved of the exiſtence of a vacuum.

Dr. Hook inclines to an opinion much like that of Deſcartes: *gravity*, he thinks, deducible from the action of a moſt ſubtle medium, which eaſily pervades and penetrates the moſt ſolid bodies; and which, by ſome motion it has, detrudes all earthly bodies from it, toward the centre of the earth.

Voſſius, and many others, give partly into the Carteſian notion, and ſuppoſe *gravity* to ariſe from the diurnal rotation of the earth round its axis.

Dr. Halley, deſpairing of any ſatisfactory theory, chooſes to have immediate recourſe to the agency of the Almighty.—So Dr. Clarke, from a view of ſeveral properties of *gravity*, concludes, that it is no adventitious effect of any motion, or ſubtle matter, but an original and general law impreſſed by the Almighty on all matter, and preſerved therein by ſome efficient power penetrating the very ſolid and intimate ſubſtance thereof; as being found always proportionable, not to the ſurfaces of bodies or corpuſcles, but to their ſolid quantity and contents.—It ſhould, therefore, be no more inquired, why bodies gravitate, than how they came to be firſt put in motion. *Annot. in* Rohault. *Phyſ.* P. I. c. xi. § 16.

Dr. 'Sgraveſande, in his *Introduct. ad Philoſoph. Newton.* contends, that the cauſe of *gravity* is utterly unknown; and that we are to look on it no otherwiſe than as a law of nature, originally and immediately impreſſed by the Creator, without any dependence on any ſecond law or cauſe at all. Of this he thinks the three following conſiderations ſufficient proof.

1°, That *gravity* requires the preſence of the gravitating or attracting body: ſo the ſatellites of Jupiter, *e. gr.* gravitate towards Jupiter, where-ever he be.

2°, That the diſtance being ſuppoſed the ſame, the velocity wherewith bodies are moved, by the force of *gravity*, depends on the quantity of matter in the attracting body: and that the velocity is not changed, let the maſs of the gravitating body be what it will.

3°, That if *gravity* do depend on any known law of motion, it muſt be ſome impulſe from an extraneous body; whence, as *gravity* is continual, a continual ſtroke muſt alſo be required.

Now, if there be any ſuch matter continually ſtriking on bodies, it muſt be fluid, and ſubtle enough to penetrate the ſubſtance of all bodies: but how ſhall a body ſubtle enough to penetrate the ſubſtance of the hardeſt bodies, and ſo rare as not ſenſibly to hinder the motion of bodies, be able to impel vaſt bodies towards each other with ſuch force? how does this force increaſe in the ratio of the maſs of the body toward which the other body is moved? whence is it that all bodies, ſuppoſing the ſame diſtance, and the ſame body gravitated to, move with the ſame velocity? can a fluid, which only acts on the ſurface either of the bodies themſelves, or of their internal particles, communicate ſuch a quantity of motion to bodies, which in all bodies ſhall exactly follow the proportion of the quantity of matter in them?

Mr. Cotes goes yet farther; giving a view of Sir Iſaac Newton's philoſophy, he aſſerts that *gravity* is to be ranked among the primary qualities of all bodies; and deemed as eſſential to matter, as extenſion, mobility, or impenetrability. *Præfat. ad* Newton. *Princip.*

But this author may ſeem to have overſhot the mark. His great maſter, Sir Iſaac Newton himſelf, diſclaims the notion; and to ſhew that he does not take *gravity* to be eſſential to bodies, he gives us his opinion about the cauſe; chooſing to propoſe it by way of query, as not being yet ſufficiently ſatisfied about it by experiments.

This query we ſhall ſubjoin at large.—After having ſhewn, that there is a medium in nature vaſtly more ſubtle than air, by whoſe vibrations light communicates heat to bodies, and is itſelf put into alternate fits of eaſy reflexion, and eaſy tranſmiſſion, and ſound propagated; and by the different denſities whereof the refraction and reflexion of light are performed;

—He proceeds to inquire:

“ Is not this medium much rarer within the denſe bodies of
“ the ſun, ſtars, planets, and comets, than in the empty
“ celeſtial ſpaces between them? and in paſſing from them to
“ great diſtances, doth it not grow denſer and denſer perpe-
“ tually, and thereby cauſe the *gravity* of thoſe great bodies
“ towards one another, and of their parts towards the bodies;
“ every body endeavouring to recede from the denſer parts of
“ the medium towards the rarer?

“ For if this medium be ſuppoſed rarer within the ſun's body,
“ than at its ſurface, and rarer there than at the hundredth
“ part of an inch from his body, and rarer there than at the
“ fiſtieth part of an inch from his body, and rarer there
“ than at the orb of Saturn; I ſee no reaſon why the in-
“ creaſe of denſity ſhould ſtop any-where, and not rather be
“ continued through all diſtances from the Sun to ſaturn, and
“ beyond.

“ And though this increaſe of denſity may at great diſtances
“ be exceeding ſlow; yet if the elaſtic force of this medium be
“ exceeding great, it may ſuffice to impel bodies from the
“ denſer parts of the medium towards the rarer with all that
“ power which we call *gravity*.

“ And that the elaſtic force of this medium is exceeding great,
“ may be gathered from the ſwiftneſs of its vibrations. Sounds
“ move about 1140 Engliſh feet in a ſecond of time, and in
“ ſeven or eight minutes of time, they move about one hun-
“ dred Engliſh miles: light moves from the ſun to us in about
“ ſeven or eight minutes of time, which diſtance is about
“ 70000000 Engliſh miles, ſuppoſing the horizontal parallax
“ of the ſun to be about twelve ſeconds; and the vibrations,
“ or pulſes of this medium, that they may cauſe the alternate
“ fits of eaſy tranſmiſſion, and eaſy reflexion, muſt be ſwifter
“ than light, and by conſequence, above 700000 ſwifter than
“ ſounds; and therefore the elaſtic force of this medium, in
“ proportion to its denſity, muſt be above 700000 × 700000
“ (that is, above 490000000000) times greater than the ela-
“ ſtic force of the air is in proportion to its denſity: for the
“ velocities of the pulſes of elaſtic mediums are in a ſubdu-
“ plicate ratio of the elaſticities and the rarities of the me-
“ diums taken together.

“ As magnetiſm is ſtronger in ſmall loadſtones than in great
“ ones, in proportion to their bulk; and *gravity* is ſtronger
“ on the ſurface of ſmall planets, than thoſe of great ones, in
“ proportion to their bulk; and ſmall bodies are agitated much
“ more by electric attraction than great ones: ſo the ſmalneſs
“ of the rays of light may contribute very much to the power
“ of the agent by which they are refracted; and if any one
“ ſhould ſuppoſe, that æther (like our air) may contain par-
“ ticles which endeavour to recede from one another (for I
“ do not know what this æther is), and that its particles are
“ exceedingly ſmaller than thoſe of air, or even than thoſe of
“ light; the exceeding ſmalneſs of ſuch particles may con-
“ tribute to the greatneſs of the force by which they recede
“ from one another, and thereby make that medium exceed-
“ ingly more rare and elaſtic than air, and of conſequence
“ exceedingly leſs able to reſiſt the motions of projectiles, and
“ exceedingly more able to preſs upon groſs bodies by en-
“ deavouring to expand itſelf.” *Optics*, p. 325, *&c.*

GRAVITY, in mechanics, denotes the conatus or tendency of bodies toward the centre of the earth.

That part of mechanics which conſiders the motion of bodies ariſing from *gravity*, is peculiarly called *ſtatics.* See STATICS.

Gravity, in this view, is diſtinguiſhed into *abſolute*, and *relative.*

Abſolute GRAVITY is that wherewith a body deſcends freely through an unreſiſting medium.

The laws of abſolute *gravity* ſee under the article DESCENT *of bodies.*

Relative GRAVITY is that wherewith a body deſcends after having ſpent part of its weight in overcoming ſome reſiſtance.

Such is that wherewith a body deſcends along an inclined plane, where ſome part is employed in overcoming the reſiſtance, or friction of the plane.

The laws of relative *gravity*, ſee under the articles *inclined* PLANE, DESCENT, FLUID, RESISTANCE, &c.

Centre of GRAVITY. See CENTRE *of gravity.*

Diameter of GRAVITY. See DIAMETER *of gravity.*

Paracentric ſolicitation of GRAVITY. See PARACENTRIC.

Plane of GRAVITY. See PLANE *of gravity.*

Retardation from GRAVITY. See RETARDATION.

GRAVITY, in hydroſtatics.—The laws of bodies *gravitating* in fluids, make the buſineſs of hydroſtatics. See HYDROSTATICS.

Gravity is here divided into *abſolute* and *ſpecific.*

Abſolute, or *true* GRAVITY, is the whole force wherewith the body tends downward.

Specific GRAVITY, called alſo *relative*, *comparative*, and *apparent* GRAVITY, is the exceſs of *gravity* in any body, above that of an equal quantity or bulk of another.

For the laws of ſpecific *gravity*, with the methods of determining it both in ſolids and fluids; ſee SPECIFIC *gravity*, and HYDROSTATICAL *balance.*

GRAVITY *of the air.* See WEIGHT *of the air*: ſee alſo AIR, and PRESSURE.

GRAVITY, in muſic, is an affection of ſound, whereby it becomes denominated *grave*, *low*, or *flat.*

Gravity ſtands in oppoſition to *acuteneſs*, which is that affection of ſound, whereby it is denominated *acute*, *ſharp*, or *high.*

The relation of *gravity* and acuteneſs, is the principal thing concerned in muſic; the diſtinctneſs, and determinateneſs of which relation, gives ſound the denomination of *harmonical*, or *muſical.*

The degrees of *gravity*, &c. depend on the nature of the ſonorous body itſelf, and the particular figure and quantity thereof: though, in ſome caſes, they likewiſe depend on the part of the body where it is ſtruck. Thus, *e. gr.* the ſounds of two bells of different metals, and the ſame ſhape and dimenſions, being ſtruck in the ſame place, will differ as to acuteneſs and *gravity*; and two bells of the ſame metal will differ in acuteneſs, if they differ in ſhape or magnitude, or be ſtruck in different parts.

So in chords, all other things being equal, if they differ either in matter, or dimenſions, or tenſion, they will alſo differ in *gravity.*

Thus again, the ſound of a piece of gold is much graver than that of a piece of ſilver of the ſame ſhape and dimenſions; and, in this caſe the tones are, *cæteris paribus*, proportional to the ſpecific *gravities*: ſo a ſolid ſphere of braſs, two feet in diameter, will ſound graver than another of one foot diameter; and here the tones are proportional to the quantities of matter, or the abſolute weights.

But it muſt be obſerved, that acuteneſs and *gravity*, as alſo loudneſs and lowneſs, are but relative things. We commonly call a ſound *acute* and loud, in reſpect to another which is *grave*, or low with reſpect to the former: ſo that the ſame ſound may be both *grave* and acute, and alſo loud and low, in different compariſons.

The degrees of acuteneſs, and *gravity*, make the different tones, or tunes, of a voice, or ſound: ſo we ſay one ſound is in tune with another, when they are in the ſame degree of *gravity*.

The immediate cauſe or means of this diverſity of tone lies very deep. The modern muſicians fix it on the different velocity of the vibrations of the ſonorous body: in which ſenſe *gravity* may be defined, a relative property of ſound, which, with reſpect to ſome other, is the effect of a leſſer number of vibrations accompliſhed in the ſame time, or of vibrations of a longer duration.—In which ſenſe alſo, acuteneſs is the effect of a greater number of vibrations, or vibrations of a ſhorter duration.

If two or more ſounds be compared in the relation of *gravity*, &c. they are either *equal*, or *unequal*, in the degree of tune.—Such as are *equal*, are called *uniſons*. See UNISON.

The *unequal* including, as it were, a diſtance between each other, conſtitute what we call an *interval* in muſic; which is properly the difference, in point of *gravity*, between two ſounds.

Upon this inequality, or difference, does the whole effect depend; and in reſpect hereof it is, that theſe intervals are divided into *concords*, and *diſcords*.

GRAVY, in cookery, &c. the juices of fleſh, or fiſh, obtained therefrom by coction, elixation, frixion, or the like.

The procuring of *gravies* is no inconſiderable part of cookery, inaſmuch as theſe are required to heighten the guſto and reliſh of moſt diſhes. There are divers proceſſes for *beef gravy*: one of the ſhorteſt and ſimpleſt is, to cut a pound or two of lean beef ſteaks into ſlices, beat them well, fry them till brown, and then add a pint of ſtrong broth, and an onion; letting the whole boil a little, and then ſtraining it for uſe.

To make *mutton gravy*, they roaſt a ſhoulder of mutton a little more than half, cut it with a knife, ſqueeze out the *gravy* with a preſs; then moiſten the meat again with broth, and preſs it a ſecond time: adding a little ſalt, they then keep it for uſe.

Veal-gravy is chiefly had by cutting ſteaks off a fillet, beating them, and ſtewing them with ſliced onions, carrots, and parſneps; and at laſt adding ſtrong broth, parſley, &c. letting them ſtew afreſh, and ſtraining them for uſe.

To make *fiſh gravy*, carps and tenches are ſlit length-ways, and ſtewed with butter, onions, carrots, &c. till brown; then a little flour is put in, and ſtewed till brown. Laſtly, ſome fiſh-broth is ſtrained in through a cloth, and the whole ſeaſoned with ſalt, lemon, cloves, and ſavoury herbs.

GRAY, or GREY, a mixed colour, partaking of the two extremes, black and white.

In the manage they make ſeveral ſorts of *grays*: as, the *branded* or *blackened gray*, which has ſpots quite black, diſperſed here and there.—The *dappled gray*, which has ſpots of a darker colour than the reſt of the body.—The *light* or *ſilver gray*, wherein there is but a ſmall mixture of black hairs.—The *ſad* or *iron gray*, which has but a ſmall mixture of white.—And the *browniſh* or *ſandy-coloured gray*, where there are bay-coloured hairs mixed with the black.

GRAY-*hound*.	See	HOUND.
GRAY *order*.		ORDER.

GREASE, among farriers, &c. a ſwelling and gourdineſs of the legs of a horſe, very frequently happening after a journey.

If the *greaſe* be an attendant of ſome other diſeaſe, it will be in vain to attempt the cure before the diſeaſe be removed that is the original cauſe of it: and therefore, if it be a hectic, the yellows, or the farcin, &c. the directions given for thoſe diſeaſes are to be followed, and in the mean time proper applications are to be uſed outwardly for the *greaſe*.

If the *greaſe* proceed from common and ordinary accidents, and the horſe has no other diſtemper upon him; then applications that are peculiar to that diſtemper are to be followed:—If the horſe has been well fed and pampered, begin the cure with bleeding and purging, ſo as to diminiſh the redundance of the humours; but theſe ought to be uſed with moderation, and it may be better to effect it with ſpare diet, and daily labour. After moderate evacuations, it may be proper to make a rowel on the inſide of the thigh, or in the belly; and to keep it open for a month, or longer, as there ſhall be occaſion; and in the mean time to give the horſe the cinnabar or antimonial balls.

GREAT, a term of compariſon, denoting a thing to have more extenſion than ſome other to which it is referred. See COMPARISON.

Thus we ſay, a *great* ſpace: a *great* diſtance: a *great* figure: a *great* body, &c.

GREAT is likewiſe uſed figuratively, in matters of morality, &c. to ſignify ample, noble, elevated, extraordinary, important, &c.

Thus we ſay, Shakeſpear was a *great* genius: queen Elizabeth had a *great* ſoul: Cromwell was a man of *great* deſigns: Da Vinci, a *great* painter: Galileo a *great* philoſopher: Boſſu a *great* critic, &c.

GREAT is alſo a title or quality appropriated to certain princes, and other illuſtrious perſonages.

Thus we ſay the *great* Turk: the *great* Mogul: the *great* cham of Tartary: the *great* duke of Florence, &c.

GREAT is alſo a ſurname beſtowed on ſeveral kings and emperors.

Thus we ſay, Alexander the *great*: Cyrus the *great*: Charles the *great*, or Charlemaign: Henry the *great* of France, &c. So the Engliſh frequently ſay, Edward the *great*, or the *great* Edward: William the *great*, meaning king William III. or the *great* William. The French ſay, Louis the *great*, *le grand*, ſpeaking of the late Louis XIV. Giles of Paris ſays, Charlemaign firſt got the ſurname *great* from the talneſs and eminence of his ſtature. Helgaud adds, that Hugh the *great* of France was thus denominated on account of his great piety, goodneſs, &c.

GREAT is alſo applied to ſeveral officers, who have pre-eminence over others.

Thus we ſay, the lord *great* chamberlain: the *great* marſhal of Poland, &c.

GREAT *circles* of the ſphere, are ſuch as divide the ſphere into two equal parts or hemiſpheres; or whoſe planes paſs through the centre of the ſphere: in contradiſtinction from the leſſer circles, which cut the ſphere into unequal parts, &c.

The equator, meridian, ecliptic, verticals, &c. are *great* or *greater* circles of the ſphere; and the parallels, tropics, &c. leſſer circles. See EQUATOR, MERIDIAN, &c.

GREAT *apparatus*.	See	APPARATUS.
GREAT *artery*.		ARTERY.
GREAT *bairam*.		BAIRAM.
GREAT *bear*.		URSA *major*.
GREAT *diachylon*.		DIACHYLON.
GREAT *gun*.		CANNON, and GUN.
GREAT *letters*.		CAPITAL.
GREAT *maſs*.		MASS.
GREAT *officers*.		OFFICER.
GREAT *repeat*.		REPEAT.
GREAT *ſeal*.		SEAL.
GREAT *tythes*.		TYTHE.
GREAT *wardrobe*.		WARDROBE.

GREATER *barons*.	See	BARON.
GREATER *enharmonical dieſis*.		DIESIS.
GREATER *excommunication*.		EXCOMMUNICATION.
GREATER *faſti*.		FASTI.
GREATER *hexachord*.		HEXACHORD.

GRECIAN *coins*. See the article COINS.

GREE *, in our law-books, ſignifies agreement, contentment, or good liking.—Thus, to make *gree* to the parties, is to ſatisfy them for an offence done. "Judgment ſhall be put in "ſuſpenſe, till *gree* be made to the king of his debt." *Stat.* 25 Edward III.

* The word is formed from the French *gré*, good will, good liking, or allowance.

GREEK, GRECIAN, ſomething belonging to the people of Greece.

GREEK, abſolutely ſo called, or the GREEK *language*, or *antient* GREEK, is the language ſpoken by the antient Grecians, and ſtill preſerved in the works of their authors, as Plato, Ariſtotle, Iſocrates, Demoſthenes, Thucydides, Xenophon, Homer, Heſiod, Sophocles, Euripides, &c.

The *Greek* has been preſerved intire longer than any other language known, notwithſtanding all the revolutions that have happened in the country where it was ſpoken. See ENGLISH.

Yet, from the time of the removal of the ſeat of empire to Conſtantinople, in the fourth century, it has been gradually altering: the alterations at firſt did not affect the analogy of the tongue, the conſtruction, inflexions, &c. There were only new words, new riches acquired, by taking in the names of new dignities and offices, and the terms of art it was before unacquainted with: but, at length, the incurſions of the Barbarians, and eſpecially the invaſion of the Turks, wrought much more conſiderable alterations. See *modern* GREEK.

The *Greek* has a great copia or ſtock of words: its inflexions are as remarkable for their variety, as thoſe of moſt of the other European tongues, for their ſimplicity.

It has three numbers, ſingular, dual, and plural, and abundance of tenſes in its verbs, which makes a variety in diſcourſe, prevents a certain drineſs which always accompanies a too great uniformity, and renders the language peculiarly fit for all kinds of verſe.

The uſe of the participles of the aoriſtus, and preterit, together with the compound words, wherein it abounds, give it a peculiar force and brevity, without taking any thing from its perſpicuity.

The proper names in the *Greek* language are ſignificative, as in the oriental, as well as in moſt of the modern languages, where the learned ſtill find ſome, though remote, character of their origin.

The *Greek* was the language of a polite people, who had a great taſte for arts and ſciences, which they cultivated with ſucceſs. In the living tongues, are ſtill preſerved a vaſt number of *Greek* terms of art: ſome deſcended to us from the Grecians, and others formed anew. When a new invention, machine, rite, order, inſtrument, &c. has been diſcovered, recourſe has commonly been had to the *Greek* for a name; the facility wherewith words are there compounded, readily affording us names expreſſive of the uſe, effect, &c. of ſuch inſtruments. Hence *areometer*, *thermometer*, *barometer*, *micrometer*, *logarithm*, *teleſcope*, *microſcope*, *loxodromy*, &c.

Modern or *vulgar* **GREEK**, is the language now ſpoken in Greece.

There have been few books written in this language, from the taking of Conſtantinople by the Turks; ſcarce any thing but ſome catechiſms, and the like pieces, compoſed or tranſlated into the vulgar *Greek*, by the Latin miſſionaries.

The native *Greeks* are contented to ſpeak the language without cultivating it. The miſery they are reduced to under the dominion of the Turks, renders them ignorant of neceſſity; the Turkiſh politics not allowing any of the ſubjects of their eſtates to apply themſelves to the arts and ſciences.

Whether it be out of a principle of religion, or politics, or barbariſm, they have induſtriouſly deſtroyed all the monuments of antient Rome; deſpiſing the ſtudy of a language which might have rendered them polite, their empire happy and flouriſhing, and have made the people forget their former maſters, and even their antient liberty.

In this, widely different from the Romans, thoſe antient conquerors of Greece, who, after they had ſubdued the country, applied themſelves to learn the language; in order to imbibe their politeneſs, delicacy, and taſte for arts and ſciences.

It is not eaſy to aſſign the preciſe difference between the *vulgar* and the *antient Greek*. It conſiſts in the terminations of nouns, pronouns, verbs, and other parts of ſpeech, which make a difference between thoſe two languages much like that obſerved between ſome of the dialects of the Italian or Spaniſh: we inſtance in thoſe languages, as being the moſt known; but we might have ſaid the ſame of the Hebrew, Sclavonic, &c. dialects.

Beſide, the modern *Greek* has divers new words not in the antient; particularly ſeveral particles which appear as expletives, and which were introduced to characterize certain tenſes of verbs, and other expreſſions, which would have had the ſame meaning without ſuch particles, had cuſtom diſpenſed with them; divers names of dignities and offices, unknown to the antient *Greeks*; and abundance of words borrowed from the vulgar tongues of the neighbouring nations.

Accordingly one may diſtinguiſh three ages of the *Greek* tongue: the firſt ends at the time when Conſtantinople became the capital of the Roman empire; not but there were ſeveral books, eſpecially of the fathers of the church, written with great purity after that time; but as religion, law, and policy, both civil and military, began then to introduce new words into the language, it ſeems neceſſary to begin the ſecond age of the *Greek* tongue from that epocha; which laſted to the taking of Conſtantinople by the Turks, where the laſt age commences.

GREEK *accents.* See ACCENT.
GREEK *bible.* See BIBLE.

GREEK *church* is that part of the Chriſtian church which is eſtabliſhed in Greece; extending likewiſe to ſome other parts of Turky.

It is thus called in Europe, Aſia, and Africa, in contradiſtinction from the *Latin*, or *Romiſh* church; as alſo the *Eaſtern* church, in diſtinction from the *Weſtern*.

The Romaniſts call the *Greek* church, the *Greek ſchiſm*, becauſe the Greeks do not allow the authority of the pope, but depend wholly, as to matters of religion, on their own patriarchs. They have treated them as ſchiſmatics ever ſince the revolt, as they call it, of the patriarch Photius.

The learned are divided as to the peculiar doctrines and ſentiments of the *Greek* church. It is certain many errors are uſually charged on them, which they are free of. The point has been warmly conteſted between Caucus, archbiſhop of Corfu, and the Sieur de Moni, on the one ſide: and Lucas Holſtatius, and Leo Allatius, a *Greek*, on the other; the two firſt accuſing, the laſt excuſing them. Caucus, &c. will have them agree with the proteſtants, in rejecting abundance of the rules and obſervances eſtabliſhed in the Romiſh church; while Allatius, &c. endeavours to find the ſame obſervances among the *Greeks*, as among the Latins, only under other forms, and with other circumſtances.

Of the ſeven Latin ſacraments, ſays Caucus, the *Greeks* only admit of five: confirmation and extreme unction, they ſet aſide. Allatius, on the contrary, inſiſts, that they do not properly ſet them aſide, but only differ as to the manner of adminiſtring them. Inſtead of confirming long after baptiſm, they always join baptiſm and confirmation together: beſide that confirmation among them is conferred by the ordinary prieſts. The like error is charged on Caucus, with regard to extreme unction.

But it is to be here added, that from the anſwer of Jeremy, patriarch of Conſtantinople, to the divines of Wirtemberg, it appears, that the *Greeks*, like the reformed, do really own no more than two ſacraments inſtituted by Chriſt, *viz.* baptiſm, and the euchariſt.

The *Greeks*, ſays the ſame Caucus, offer no worſhip to the euchariſt: Allatius replies, it is true, they do not adore it, as the Romaniſts do, immediately after the ſpeaking thoſe words, *This is my body*: yet do they really adore it after the words wherein conſecration conſiſts; *viz.* after the prayer called *the invocation of the Holy Spirit*.

As to confeſſion, Caucus is certainly in the right, that they do not hold it to be of divine appointment, but only of poſitive, or eccleſiaſtical right; which they likewiſe affirm of all the other ſacraments, except the two above-mentioned: yet have they the uſe of auricular confeſſion.

As to marriage, Caucus is juſt to them, in ſaying, that they do not eſteem it an indiſſoluble band; they maintain, with great zeal, the neceſſity and validity of divorce.

As to the primacy of the pope, Caucus does them juſtice in ſaying they deny it. It is certain the *Greeks*, Melchites, and other orientals, do not allow the primacy of the pope over the other patriarchs, in the ſenſe it is allowed of among the Latins.

Nor do they allow of more than ſeven general councils. All thoſe held by the Latins, ſince Photius, they ſet aſide.

GREEK *croſs.* See CHURCH.
GREEK *grammar.* See GRAMMAR.
GREEK *lexicon.* See LEXICON, &c.
GREEK *maſonry.* See MASONRY.
GREEK *maſs.* See MASS.

GREEK *orders*, in architecture, are the Doric, Ionic, and Corinthian; in contradiſtinction to the two Latin orders, the Tuſcan and Compoſite. See ORDER.

GREEK *pitch.* See the article PITCH.

GREEK *rite*, or *ritual*, is diſtinguiſhed from the Latin. See RITE, and RITUAL.

GREEK *ſtatue.* See STATUE.
GREEK *teſtament.* See BIBLE.
GREEK *wine.* See WINE.
GREEK *year.* See YEAR.

GREEN, one of the original colours of the rays of light.

If urine, citron-juice, or ſpirit of vitriol, be caſt on a *green* ribband, it becomes blue; by reaſon the yellow of the greening-weed is thereby exhaled and conſumed; ſo that nothing but blue remains behind.

Graſs and herbs, and even all vegetables in places expoſed to the open air, are *green*; and thoſe in ſubterraneous places, or places inacceſſible to the air, white and yellow. Thus, when wheat, or the like, germinates under-ground, it is white or yellow; and what is in the open air *green*: though this too is yellow before it be *green*.

Artificial **GREENS** are very rarely ſimple colours, but produced by the mixture of yellow and blue.

Two powders, the one blue, and the other yellow, well mixed, appear perfectly *green*; though, when viewed with a microſcope, we obſerve a chequer of blue and yellow.

The dyers make divers ſhades, or caſts of *green*, as *light green*, *yellow green*, *graſs green*, *laurel green*, *ſea green*, *dark green*, *parrot green*, and *celadon green*.

All the *greens* are firſt dyed in blue, then taken down with woad, verdegris, &c. and then *greened* with the weed, there being no one ingredient that will give *green* alone.

Mountain **GREEN**, or *Hungary* **GREEN**, is a ſort of *greeniſh* powder found in little grains, like ſand, among the mountains of Kernauſent in Hungary, and thoſe of Moldavia.

Though ſome hold, that this mountain *green* is factitious, and the ſame with what the antients called *flos æris*, prepared by caſting water, or rather wine, on copper red-hot from the furnace, and catching the fumes thereof on copper plates laid over for that purpoſe; or by diſſolving copper plates in wine, much as in making verdegris. The painters make uſe of this colour for a *graſs green*. It is ſometimes counterfeited by grinding verdegris with cerus.

Calcined **GREEN**, and *diſtilled* **GREEN**. See VERDEGRIS.

GREEN *cap.* See CAP.
GREEN *copperas.* See COPPERAS.
Earth **GREEN**. See VERDITER.
GREEN *fiſh.* See FISH.
GREEN *glaſs.* See GLASS.

GREEN *hide*, is that not yet tanned, or dreſſed, but ſuch as taken off from the carcaſe. See HIDE, and CURRYING.

GREEN *plots*, *walks*, &c.	See	GRASS *plots*, &c.
GREEN *ſoap*.		SOAP.
GREEN *vitriol*.		VITRIOL.

GREENCLOTH, a board, or court of juſtice, held in the compting-houſe of the king's houſhold, for the taking cognizance of all matters of government and juſtice within the king's court royal; and for correcting all the ſervants therein, that ſhall any way offend.

To this court, alſo, belongs the authority of maintaining the peace for twelve miles round the king's court, where-ever it ſhall be, excepting at London.

The judge of this court is the lord ſteward, aſſiſted by the treaſurer, comptroller, cofferer, clerks of the *greencloth*, &c.

It takes its name, *greencloth*, from a green cloth ſpread over the board where they ſit, whereon are the arms of the compting-houſe.

Clerks of the GREENCLOTH are two officers of the board of *greencloth*, who attend there, and have buſineſs aſſigned them by the board.—All bills of comptrolments, relating to the office, are ſummed up, and allowed by the clerks-comptrollers, and audited by the clerks of the *greencloth*.

They alſo appoint the king's, queen's, and houſhold's diet, and keep all records, leigers, and papers relating thereto; make up bills, parcels, and debentures for ſalaries, *&c.* and proviſions and neceſſaries for the officers of the pantry, buttery, cellar, *&c.*

GREENHOUSE, or *conſervatory*, a houſe of ſhelter in a garden; contrived for preſerving the more tender and curious exotic plants, which will not bear the winter's cold abroad in our climate.

Greenhouſes, as now built, ſerve not only as conſervatories, but, likewiſe, as ornaments of gardens; being uſually large and beautiful ſtructures, in form of galleries, wherein the plants are handſomely ranged in caſes for the purpoſe.

The *greenhouſe* Mr. Mortimer directs to be open to the ſouth, or very little declining therefrom; the height and breadth to be about twelve feet, and length according to the number of plants intended to be kept therein. It ſhould be ſituate on the drieſt ground, and ſo contrived, as that nothing may obſtruct the ſun's rays in winter. In the building it, care muſt be taken, not to plaſter it on the inſide with lime and hair; dampneſs being obſerved to continue longer on ſuch plaſter, than on bricks, or wainſcot. To preſerve it the more from moiſture, and colds, an artificial heat is to be uſed: in order to this, ſome hang up fires, and others place pans of coals in holes in the ground. The better way is, to have a ſtove behind the *greenhouſe*, and to convey the heat thereof through trills, made under the floor for that purpoſe. The beſt method of all, according to Bradley, is the new ſtove invented by M. Gauger, and publiſhed in Engliſh by Dr. Deſaguliers.

Some have ſaſhes, caſements, and doors of glaſs; others prefer moveable canvas doors, to be taken off, and put on, at pleaſure.

The pots and caſes with plants in them, are to be ranged in the *greenhouſe* ſo, as not to incommode one another, or hinder any from readily receiving both ſun, air, *&c.* As to the management of the plants herein, Mortimer recommends the opening of the mould about them, from time to time, and ſprinkling a little freſh mould in them, and a little warm dung on that; as, alſo, to water them when the leaves begin to wither and curl, and not oftener; which would make them fade, and be ſickly; and to take off ſuch leaves as wither, and grow dry.

Bradley adviſes, that, in the colder parts of England, the front of the *greenhouſe* be built in a ſweep, or ſemicircle, to receive the ſun's rays, one part or other of it, all day: that all the windows, *&c.* in the front, have cloſe, thick, wooden ſhutters, to be ſhut every night in winter, for fear of froſt, nipping winds, *&c.*—Dutch tiles he thinks the beſt lining for the walls, as being dry, and reflecting a great deal of heat; and ſquare tiles for the pavement, which readily imbibe the wet, and never ſweat, as marble and the harder ſtones do.—The plants in the *greenhouſe* are not to fill above a quarter-part of the ſpace thereof; the reſt being left vacant for the air to circulate about the plants. If the houſe be crouded with plants, the effluvia they are continually emitting by perſpiration, and the vapours from the mould, will condenſe the air, and cauſe dampneſs. The plants are to be diſpoſed, as much as poſſible, about the middle parts of the *greenhouſe*, where they will be ſafer from the cold, which is uſually greateſt near the glaſſes, and walls: the tendereſt plants to be diſpoſed neareſt to where the heat comes in.

It is a general rule, among gardeners, to ſet exotic plants into the *greenhouſe*, about the ſecond week in September, and to take them out again about the middle of May; though there ſhould be ſome diſtinction made herein; the tendereſt ſorts from places near the line, as the aloes, *&c.* being to be confined longer to the *greenhouſe*, than oranges, myrtles, *&c.*

GREENLAND *fiſhery*. See the article *Whale* FISHERY.

GREENWICH *hoſpital*. See the article HOSPITAL.

GREGORIAN *calendar* is that which ſhews the new and full moon, with the time of Eaſter, and the moveable feaſts depending thereon, by means of epacts diſpoſed through the ſeveral months of the *Gregorian* year.

The *Gregorian* calendar, therefore, differs from the Julian, both in the form of the year, and in that it uſes epacts, inſtead of golden numbers.

This reformation of the calendar was made in 1582. by order of pope Gregory XIII. and with the advice of Aloyſius Lilius, and other mathematicians: at the ſame time, ten days were cut off from that year, and caſt away, to bring the equinoxes to their antient ſeat; *viz.* the 21ſt of March: and, to keep them conſtantly there, the ſame pope introduced a new form of the year.

GREGORIAN *chant*. See the article CHANT.

GREGORIAN *epocha* is the epocha, or time, whence the *Gregorian* calendar, or computation, took place.

The year 1726. is the 144th year of the *Gregorian* epocha.

GREGORIAN *year* is the Julian year corrected, or modelled, in ſuch manner, as that three ſecular years, which in the Julian account are biſſextile, are here common years, and only every fourth ſecular year is made a biſſextile year.

The *Gregorian* year, though it comes nearer to nature and truth, than the Julian, is not ſtrictly juſt: in four hundred years it gets one hour and twenty minutes; and, conſequently, in ſeven thouſand two hundred, a whole day.

The *Gregorian* year is that now uſed in moſt countries of Europe; moſt of the United Provinces, Sweden, and Denmark, excepted; where the Julian year ſtill obtains.

From this difference ariſes the diſtinction of the *old*, or *Julian*, and *new*, or *Gregorian* ſtyle.

The old ſtyle is now eleven days behind the new: ſo that the ſame day which in the *Gregorian* account is the eleventh day of any month, in the Julian is only the firſt.

GRENADA.	See	GRANADO.
GRENADIER.		GRANADIER.
GRENATE.		GRANATE.

GRESHAM-*college*. See the article COLLEGE.

GREVE*, GEREFA, among our antient writers, is a denomination of power and authority; ſignifying as much as *comes*, or *vicecomes*. See the articles COUNT, and VICOUNT.

* The word is formed from the Anglo-Saxon *grith*, peace. Thus Hoveden; Greve *dicitur, ideo quod jure debeat* grith, i. e. *pacem ex illis facere, qui patriæ inferunt væ*, i. e, *miſeriam vel malum*.

Lambard makes *greve* the ſame with *reve*.

Hence, alſo, the words *ſhireve*, *portgreve*, &c. which were antiently written *ſciregerefa*, *portgerefa*, &c.

GREY.	See	GRAY.
GREYHOUND.		GRAYHOUND.

GRIFFON, GRYPHUS, γρυψ, in natural hiſtory, the name of an imaginary bird of prey, of the eagle kind.

The antients ſpeak fabulouſly of the *griffon*: they repreſent it with four legs, wings, and a beak; the upper-part repreſenting an eagle, and the lower a lion: they ſuppoſed it to watch over gold mines, hidden treaſures, *&c.*

The animal was conſecrated to the ſun; and the antient painters repreſented the chariot of the ſun as drawn by *griffons*.—M. Spanheim obſerves the ſame of thoſe of Jupiter and Nemeſis.

We find mention of the *griffon* in holy Scripture; but are not to underſtand the text of that chimerical animal juſt deſcribed, which no-body ever ſaw but in painting and armories, notwithſtanding what Servius, in his comment on the eighth eclogue of Virgil, and Iſidore, ſay of it.—The *griffon*, in Scripture, is that ſpecies of eagle called, in Latin, *oſſifraga*, the oſprey; and פרס, *peres*; of the verb פרס, *paras*, to break.

God prohibited the Jews to eat divers kinds of birds of prey; as the kite, vulture, *&c.* and the divers ſpecies of eagles, which are diſtinguiſhed, in Latin, by the names of *aquila*, *gryps*, *halietus*.—Pauſanias, in *Arcadicis*, ſays, the *griffon* has his ſkin ſpotted like a leopard.

The *griffon*, we mean the fabulous one, is frequently ſeen on antient medals; and is ſtill borne in coat-armour. Or, a *griffon* rampant, with wings diſplayed, ſable; is borne by the family of Morgan in Monmouthſhire, *&c.*

Guillim blazons it *rampant*; alledging, that any very fierce animal may be ſo blazoned, as well as a lion.—Sylveſter, Morgan, and others, uſe the term *ſegreiant* inſtead of rampant.

GRILLADE, in cookery, meat broiled on the gridiron; thus called from the French *griller*, to broil.

The word is alſo uſed for the browning of any diſh, by rubbing a hot iron over it.—To *grill* oyſters, is to put them into ſcallop-ſhells, ſeaſon them with ſalt, pepper, and parſley ſhred, and pour their own liquor to them; covering them with grated bread; ſtewing them half an hour on the fire, and browning them with a red-hot iron.—Shrimps are *grilled* after the ſame manner.

GRINDING, *trituration*, the act of breaking, or comminuting, a ſolid body, and reducing it into powder, duſt, flour, farina, or the like.

Grinding is one of the ſpecies of diſſolution.—The painters colours are ground on a marble, or porphyry, either with oil, or gum-water.

Some late phyſicians contend, that digeſtion is performed by *grinding* the food in the ſtomach.—It is alleged, that every part in the body is a veſſel, or veſſels; that all the veſſels have a motion of ſyſtole and diaſtole; and that all the operations of the body conſiſt in the attrition, or *grinding*, of the humours, or matters, contained in ſuch veſſels.

Grinding is alſo uſed for the rubbing, or wearing off, the irregular or otherwiſe redundant parts of the ſurface of a body, and reducing it to the deſtined figure, whether that be flat, concave, or the like.

The *grinding of glaſſes* is a conſiderable art, and, as ſuch, neceſſarily requires to be here inſiſted on; eſpecially that of optic glaſſes.

Method of **Grinding** *optic glaſſes.*—For convex glaſſes, the firſt ſtep is, to provide a diſh, or baſon, within whoſe cavity the glaſs is to be formed.

In order to this, they take a piece of braſs, copper, iron, or wood, and form it into a ſegment of a circle, having the radius of the baſon, or diſh, intended: this done, a baſon is forged, by a ſmith, either of iron, or copper, having its cavity exactly fitting, or correſponding, to the ſegment abovementioned, though ſometimes they chooſe to have the baſon caſt; in which caſe, the rules elſewhere delivered, for concave mirrors, are to be here obſerved.

The figure of the baſon, thus roughly formed, is to be finiſhed in the pewterers lathe, or on a ſtone mould A, *Tab. Miſcellany*, fig. 12. fixed to an iron axis, with a pinion B C, moveable by a wheel D E, and that by a winch, or handle, F. The baſon being ground on the mould, till it exactly fit in all parts, they take it off, and, cementing it to a wooden block (loaden, if need be, with lead), ſtrew it over with fine ſifted ſand, and thus grind it over again on the mould, till all the furrows, or ſcratches, be quite taken away.

Laſtly, they grind large pieces of glaſs in a baſon, with fine ſand between, till ſuch time as, its ſurface being well ſmoothed, there is no longer any oppoſition to the motion.

Note, the diſh is known to be perfectly finiſhed, when, a hair being ſtretched over it, its ſhadow projected in the cavity, eſpecially in a camera obſcura, does not appear any way diſtorted.

The baſon finiſhed, they proceed to chooſe glaſſes for the purpoſe: in order to this, lay them on clean paper, and obſerve what colours are projected thereon; for the ſame are the colours of the glaſſes. Always ſet aſide thoſe of the darker colours, and chooſe the brighter: but as the whiteſt and brighteſt have uſually veins; and beſide, in tract of time, by the humidity of the air, are apt to ruſt, and loſe their poliſh; for this reaſon Huygens recommends thoſe a little yellowiſh, rediſh, or greeniſh; Hevelius, the blueiſh. A glaſs is found to be free from bubbles, ſands, veins, knots, and ſpires, by holding it to the ſun, and receiving the rays through it on a white paper; for the flaws above-mentioned will each project a ſhadow thereon.

If, inſtead of lenticular, or at leaſt ſpherical glaſſes, you make uſe of plate-glaſs; it muſt be divided, and cut with a diamond, into ſquares: and if it be too thick to break otherwiſe, you may do it by laying it on a table covered with a cloth, in ſuch manner, as that the ſide, or part, to be ſevered, hang over the edge: for being ſtruck with an iron inſtrument, in this ſituation, it eaſily breaks in the direction of the line drawn by the diamond. Having thus got a ſquare piece, deſcribe two concentric circles thereon, with a pair of compaſſes, one of whoſe legs carries a diamond; the diameter of the inner circle to be equal to the breadth of the intended lens, and that of the outer ſomewhat more; and break off the corners, as above directed; and the leſſer inequalities take off on a grind-ſtone, or the like. Examine now whether the piece of glaſs be everywhere equally thick; if it be not, reduce it to ſuch equality by *grinding* it on an iron plate with ſand and water. Laſtly, glue or cement the glaſs, thus prepared, to a wooden handle N M O, fig. 13. with a cement made of pitch, and a fourth part of reſin; or one part of wax, and eleven of colophony: care to be taken that the baſe, or bottom, of the handle N O be equal to the glaſs; and that the centre of the glaſs and handle meet together. Smaller lenſes, as thoſe uſed for microſcopes, are fixed on with ſealing-wax.

Now, to grind the glaſs, and bring it to the convexity required; ſmear over the diſh equally with fine ſifted ſand moiſtened with water: then taking the handle with the glaſs thereon, work it on the baſon ſometimes this way, and ſometimes that, to prevent the form of the baſon from being diſturbed; never leaning too hard thereon. When the glaſs has got the figure of the baſon, clean it well of all the ſand, and filth adhering, and ſprinkle the baſon over with emery moiſtened in water, *grinding* the glaſs thereon till all the roughneſſes and inequalities are taken away: after this, the fine ſand uſed in hour-glaſſes may be of ſervice, applied and uſed as before; remembring to take out the ſand, when too much worn, and ſubſtitute new in its ſtead. Some, in lieu hereof, chooſe ſeveral ſorts of emery, each finer than other, or even the powder of flints calcined, and pounded. Laſtly, grind the ſame glaſs in another baſon, or diſh, which is a ſegment of a leſſer ſphere, making uſe of the like ſand as before, till it have got a pretty high rim, or margin, all around. In regard the preſſion is not here determined accurately enough upon the middle of the glaſs, by the mere guidance of the hand; ſome have choſen to make uſe of the following machine, eſpecially for *grinding* object-glaſſes.

Fix the diſh H I, fig. 14. on a horizontal table; exactly over its centre let the aperture D be, through which paſs an iron arm five or ſix inches long, faſtened to the ſtaff A B: let the other extreme of the ſtaff be fitted into a hole cut in the diſh, and faſtened therein. Now to grind the glaſs, inſtead of the diſh, take hold of the ſaid ſtaff, and work with ſand, &c. as before.

Huygens tells us, that he always firſt uſed coarſe emery, then a finer powder of the ſame, which would be fifty ſeconds in ſinking to the bottom of a veſſel of water, putting in freſh every half or quarter of an hour: ſometimes, too, he uſed emery of fifty ſeconds, for $\frac{3}{4}$ of an hour; then emery of four hundred ſeconds, for $\frac{4}{5}$ of an hour; and, laſtly, emery of forty-five minutes, for $\frac{1}{4}$ of an hour. The ſame effect is had from powder of flints, broken in an iron mortar, mixed with water, and ſtirred ſometimes with a wooden ſpatula, taking the powder as it precipitates in ſome certain time to the bottom of the veſſel, by decanting the water.—What remains is to poliſh the glaſs.

Grinding is alſo uſed for a coarſer, and leſs accurate, method of ſmoothing, or poliſhing, the ſurface of a body; particularly glaſs for looking-glaſſes, &c.

In the new method of working large plates of glaſs for looking-glaſſes, coach-glaſſes, &c. by moulding, and, as it were, caſting them, ſomewhat after the manner of metals, deſcribed under the article Glass; the ſurface being left uneven, it remains to be ground, and poliſhed.

In order to this, the plate of glaſs is laid horizontally on a ſtone, in manner of a table; and, to ſecure it the better, plaſtered down with mortar, or ſtucco, that the effort of the workman, or of the machine uſed therein, may not ſhake or diſplace it: to ſuſtain it, there is a ſtrong wooden frame that ſurrounds it an inch or two higher than the glaſs: the bottom, or baſe, of the *grinding* engine, is another rough glaſs, about half the dimenſions of the former; on this is a wooden plank, cemented thereto; and upon this are proper weights applied, to promote the triture; the plank, or table, being faſtened to a wheel, which gives it motion.—This wheel, which is, at leaſt, five or ſix inches diameter, is made of a very hard, but light, wood, and is wrought by two workmen placed againſt each other, who puſh and pull it alternately; and ſometimes, when the work requires it, they turn it round. By ſuch means, a conſtant mutual attrition is produced between the two glaſſes, which is favoured by water and ſands of ſeveral kinds beſtowed between; ſand ſtill finer and finer being applied, as the *grinding* is more advanced: at laſt emery is uſed. We need not add, that as the upper, or incumbent, glaſs poliſhes and grows ſmoother, it muſt be ſhifted from time to time, and others put in its place.

It is to be noted, that only the largeſt ſize glaſſes are thus ground with a mill; for the middling and ſmaller ſorts are wrought by the hand; to which end there are four wooden handles at the four corners of the upper ſtone, or carriage, for the workmen to take hold of, and give it motion.—What remains to the perfection of glaſs, comes under the denomination of poliſhing.

GRIP, or **Gripe**, in huſbandry, is a ſmall ditch cut acroſs a meadow, or ploughed land, in order to drain it.—It alſo ſignifies an handful; as, a *gripe* of corn.

Gripe of a ſhip is the compaſs, or ſharpneſs, of her ſtem under water; chiefly towards the bottom of her ſtem.

The deſign of ſhaping her ſo is, to make her *gripe* the more, or keep a good wind; for which purpoſe, ſometimes a falſe ſtem is put on upon the true one.

Gripe is alſo a ſea-phraſe for a ſhip's being apt to run her head, or noſe, too much into the wind: in ſuch caſe they ſay, ſhe *gripes*; of which there are two cauſes: 1°, Overloading her ahead, the weight of which preſſes her head ſo down, that it is not apt to fall off from the wind; 2°, The ſtaying, or ſetting, her maſts too much aft; which will always be a fault in a ſmall ſhip that draws much water, and will cauſe her to be continually running into the wind: though in floaty ſhips, if the maſts be not ſtayed far aft, they will never keep a good wind.

GRIPES,

GRIPES, *tormina ventris*, in medicine, a ſort of cholic, or painful diſorder of the lower belly, occaſioned by ſome ſharp pungent matters vellicating the parts, or by wind pent up in the inteſtines.

The *gripes* are a very common ſymptom in young children, and may be cauſed by the aliment they uſe, which is conſiderably different from what they had been accuſtomed to in the uterus.

The retention of a part of the meconium may alſo give occaſion hereto, as being ſomewhat acrimonious.

This diſorder ſometimes proves ſo violent, as to throw the child into univerſal convulſions, or to cauſe, what is vulgarly called, *convulſions of the bowels*.

GRIST denotes corn ground, or ready for grinding. See CORN, &c.

GROANING, in hunting, a term uſed for the cry or noiſe of a buck.

GROAT, an Engliſh money of account, equal to fourpence.

Other nations, as the Dutch, Polanders, Saxons, Bohemians, French, &c. have likewiſe their *groats*, groots, groches, gros, &c.

We had no ſilver money in the Saxon times bigger than a peny; nor after the conqueſt, till Edward III. who about the year 1351. coined groſſes, i. e. *groats*, or great pieces, which went for 4*d.* apiece; and ſo the matter ſtood till the reign of Henry VIII. who, in 1504. firſt coined ſhillings.

GROCERS, by the ſtat. 37 Edward II. cap. 5. is uſed for thoſe who engroſs merchandize. See ENGROSSING.

GROGRAM, in the manufactory, a ſort of ſtuff, all ſilk; being, in reality, no more than a taffety, coarſer and thicker than ordinary.

GROOM* denotes a ſervant in ſome inferior poſt.—In which ſenſe, it amounts to the ſame with the old word, *garcio*, and the French *garçon*.

> * The word is formed from the Flemiſh, *grom*, *puer*, a boy.

GROOM is the denomination of ſeveral officers and ſervants in the king's houſhold.

There are *grooms* of the almonry, *grooms* of the compting-houſe, *grooms* of the chamber, the privy-chamber, *grooms* of the robes, of the wardrobe, &c.

GROOM *of the ſtole*. See the article STOLE.

GROOM *porter* is an officer of the houſhold, whoſe buſineſs is to ſee the king's lodging furniſhed with tables, chairs, ſtools, and firing; as alſo to provide cards, dice, &c. and to decide diſputes ariſing at cards, dice, bowling, &c.

GROOM is more particularly uſed for a ſervant, appointed to attend on horſes in the ſtables. See EQUERY.

GROS, a foreign money, in divers countries, anſwering to our *groat*.

A pound *gros*, *livre de gros*. See POUND, and LIVRE.

GROSS, or GROSSUS, in our antient law-writers, denotes a thing abſolute, and not depending on another.—Thus, *villain in groſs*, villanus in groſſo, was a ſervant, who did not belong to the land, but immediately to the perſon of the lord; or a ſervile perſon not appendant, or annexed, to the land or manor, and to go along with the tenures as appurtenant to it; but like the other perſonal goods and chattels of his lord, at his lord's pleaſure and diſpoſal.

So an advowſon *in groſs* is a right of patronage not annexed to the fee or manor, but belonging to the patron himſelf, diſtinct from the manor.

Common in GROSS. See the article COMMON.

GROSS *weight*, is the weight of merchandizes, and goods, with their duſt and droſs, as alſo of the bag, caſk, cheſt, &c. wherein they are contained; out of which *groſs* weight, allowance is to be made for tare and tret.

GROSS *average*. See the article AVERAGE.

GROSS is alſo uſed for the quantity of twelve dozen.

GROSSA, a groat – *Conceſſa eſt regi una groſſa, quæ continet quatuor denarios, de quolibet viro et muliere.* Knighton, an. 1378.

GROSSE-*bois*, in our antient law books, ſignifies ſuch wood as hath been, or is, either by the common law, or cuſtom of the country, reputed timber.

GROTESQUE, GROTESC, or GROTTESQUE, a wild whimſical figure, or deſign of a painter, or engraver; haveing ſomething ridiculous, extravagant, and even monſtrous, in it.

The name ariſes hence, that figures of this kind were antiently much uſed to adorn the grotto's wherein the tombs of eminent perſons, or families, were incloſed. Such was that of Ovid, whoſe grotto was diſcovered near Rome about ſeventy years ago.

Calot, a celebrated engraver of Lorrain, had a wonderful genius for deſigning *groteſques*: the like is ſaid of Leonardo da Vinci.

We alſo extend the word *groteſque* to any thing whimſical, or wildly pleaſant, in a perſon's dreſs, diſcourſe, &c.—Maſquerade habits are the more valued, the more *groteſque* they are. Our theatres preſent us with entertainments in *groteſque* characters, *i. e.* perſons quaintly dreſſed; as harlequins, ſcaramouches, &c. Planudes has given us a very *groteſque* picture of Æſop. Arioſto and the Italian poets are full of *groteſque* deſcriptions.

GROTESQUE-*work*, GROTESK-*work*, or GROTTESCO, denotes a work, or compoſition, in painting, and ſculpture, in the *groteſque* manner, or taſte; conſiſting either of things which are merely imaginary, and have no exiſtence in nature, or of things turned and diſtorted out of the way of nature, ſo as to raiſe ſurprize and ridicule.

Groteſque-work is much the ſame with what we ſometimes alſo call *antique* and moriſco.

GROTESQUES, or GROTESKS, are particularly uſed for little fanciful ornaments, of animals, compounded with foliages, fruit, &c.

Such are thoſe painted by Raphael in the apartments of the Vatican, and thoſe carved by Michael Angelo in the cielings of the Portico of the capitol.—Vitruvius calls compartments of this kind *harpaginetuli*.

GROTTO*, or GROTTA, in natural hiſtory, a large deep cavern or den in a mountain or rock.

> * The word is Italian, *grotta*, formed, according to Menage, &c. from the Latin *crypta*: Du Cange obſerves, that *grotta* was uſed in the ſame ſenſe in the corrupt Latin.

The antient anachoretes retired into dens, and *grotto's*, to apply themſelves the more attentively to meditation.

Okey-hole, Elden-hole, Pool's-hole, and the Devil's A—ſe in the Peak, are famous among the natural caverns or *grotto's* of our country.

Elden-hole is a huge profound perpendicular chaſm, three miles from Buxton, ranked among the natural wonders of the Peak. Its depth is unknown, and is pretended to be unfathomable. Cotton tells us he ſounded 884 yards; yet the plumbet ſtill drew. But he might eaſily be deceived, unleſs his plumbet was very heavy; the weight of a rope of that length might well make the landing of the plumbet ſcarce perceivable. *Phil. Tranſ.* N° 407. p 24.

Peak's-hole, and Pool's-hole, called alſo the Devil's A—ſe, are two remarkable horizontal ſprings under mountains; the one near Caſtleton, the other juſt by Buxton.—They ſeem to have owed their origin to the ſprings which have their current through them: when the water had forced its way through the horizontal fiſſures of the ſtrata, and had carried the looſe earth away with it, the looſe ſtones muſt fall down of courſe: and where the ſtrata had few or no fiſſures, they remained intire; and ſo formed there very irregular arches, which are now ſo much wondered at.—The water which paſſes through Pool's-hole is impregnated with particles of limeſtone, and has incruſted the whole cave in ſuch a manner that it appears as one ſolid rock.—Martyn, in *Phil. Tranſ.* N° 407. p. 27, & ſeq.

In *grotto's* are frequently found cryſtals of the rock, ſtalactites, and other natural conglaciations, and thoſe often of an amazing beauty.

M. Homberg conjectures, from ſeveral circumſtances, that the marble pillars in the *grotto* of Antiparos vegetate, or grow.

That author looks on this *grotto* as a garden, whereof the pieces of marble are the plants; and endeavours to ſhew, that they could only be produced by ſome vegetative principle. *Mem. Acad. anno* 1702.

At Foligno in Italy, is another *grotto*, conſiſting of pillars and orders of architecture of marble, with their ornaments, &c. ſcarce inferior to thoſe of art; but they all grow downwards: ſo that if this too be a garden, the plants are turned upſide down. *Mem. de l' Acad. anno* 1711.

The Zirchnitzer-ſea, or lake, in Carniola, famous for being full of water, fiſh, &c. the beſt part of the year, and quite dry, and bearing graſs, corn, &c. the reſt, proceeds from ſome ſubterraneous *grotto*, or lake; as is made highly probable by Mr. Valvaſor. *Phil. Tranſ.* N° 191.

We have ſeveral *grotto's* famous in natural hiſtory; as,

GROTTA *del Cani*, a little cavern near Pozzuoli, four leagues from Naples, the ſteams whereof are of a mephitical or noxious quality; whence alſo it is called *bocca venenoſa*, the poiſonous mouth. See MEPHITES.

Two miles from Naples, ſays Dr. Mead, juſt by the Lago de Agnano, is a celebrated mofeta, commonly called *la Grotta del Cani*, equally deſtructive to all within the reach of its vapours.

It is a ſmall *grotto* about eight feet high, twelve long, and ſix broad; from the ground ariſes a thin, ſubtile, warm fume, viſible enough to a diſcerning eye, which does not ſpring up in little parcels here and there, but in one continued ſtream, covering the whole ſurface of the bottom of the cave; having this remarkable difference from common vapours, that it does not, like ſmoke, diſperſe itſelf into the air, but quickly after its riſe, falls back again, and returns to the earth; the colour of the ſides of the *grotto* being the meaſure of its aſcent: for ſo far it is of a darkiſh-green, but higher only common earth. And as I myſelf found no inconveniency by ſtanding in it, ſo no animal, if its head be above this mark, is the leaſt injured. But when, as the manner is, a dog, or any other creature, is forcibly kept below it; or, by reaſon of its ſmalneſs, cannot hold its head above it; it preſently loſes all motion, falls down as dead, or in a ſwoon; the limbs convulſed and trembling, till at laſt no more ſigns of life appear, than a very weak and almoſt inſenſible beating of the heart and arteries; which, if the animal be left a little longer, quickly ceaſes too, and then the caſe is irrecoverable; but if it be ſnatched out, and laid in the open air, ſoon comes to life again, and ſooner, if thrown into the adjacent lake.

The fumes of the *grotto*, the ſame author argues, are no real poiſon, but act chiefly by their gravity; elſe the creatures could not recover ſo ſoon; or, if they did, ſome ſymptoms, as faintneſs, *&c.* would be the conſequence of it. He adds, that in creatures killed therewith, when diſſected, no marks of infection appear; and that the attack proceeds from a want of air, by which the circulation tends to an intire ſtoppage; and this ſo much the more, as the animal inſpires a fluid of a quite different nature from the air, and ſo no-ways fit to ſupply its place.

Taking the animal out, while yet alive, and throwing it into the neighbouring lake, it recovers: this is owing to the coldneſs of the water, which promotes the contraction of the fibres, and ſo aſſiſts the retarded circulation; the ſmall portion of the air which remains in the veſiculæ, after every expiration, may be ſufficient to drive out the noxious fluid. After the ſame manner, cold water acts in a deliquium animi: the lake of Agnano has no greater virtue in it than others.

Grotta *del ſerpi* is a ſubterraneous cavern near the village of Saſſa, eight miles from the city of Braccano in Italy; deſcribed by Kircher thus:

The *grotta del ſerpi* is big enough to hold two perſons: it is perforated with ſeveral fiſtular apertures, ſomewhat in manner of a ſieve; out of which, at the beginning of the ſpring-ſeaſon, iſſues a numerous brood of young ſnakes, of divers colours, but all free of any particular poiſonous quality.

In this cave they expoſed their lepers, paralytics, arthritics, and elephantiac patients, quite naked; where, the warmth of the ſubterraneous ſteams reſolving them into ſweat, and the ſerpents clinging variouſly all around, licking and ſucking them, they become ſo thoroughly freed of all their vitious humours, that, upon repeating the operation for ſome time, they became perfectly reſtored.

This cave Kircher viſited himſelf, and found it warm, and every way agreeable to the deſcription given of it. He ſaw the holes, and heard a murmuring, hiſſing noiſe in them. Though he miſſed ſeeing the ſerpents, it not being the ſeaſon of their creeping out; yet he ſaw a great number of their exuviæ, or ſloughs, and an elm, growing hard by, laden with them.

The diſcovery of this cave was by the cure of a leper going from Rome to ſome baths near this place; who, loſing his way, and being benighted, happened upon this cave; and, finding it very warm, pulled off his cloaths; and, being weary and ſleepy, had the good fortune not to feel the ſerpents about him till they had wrought his cure. *Muſeum Wormian.*

Milky **Grotto**, *crypta lactea*, a mile diſtant from the antient village of Bethlehem, is ſaid to have been thus denominated on occaſion of the bleſſed virgin, who let fall ſome drops of milk in giving ſuck to the little Jeſus in this *grotto.*—And hence it has been commonly ſuppoſed, that the earth of this cavern has the virtue of reſtoring milk to women that are grown dry, and even of curing fevers.

Accordingly, they are always digging in it, and the earth is ſold at a good rate to ſuch as have faith enough to give credit to the fable.—An altar has been built on the place, and a church juſt by it. See Supplement, article Cavern.

Grotto is alſo uſed for a little artificial edifice made in a garden, in imitation of a natural *grotto*..

The outſides of theſe *grotto's* are uſually adorned with ruſtic architecture, and their inſide with ſhell-work, furniſhed likewiſe with various jets d'eaus, or fountains, *&c.*

The *grotto* at Verſailles is an excellent piece of building.—Solomon de Caux has an expreſs treatiſe of *grotto's* and fountains.

GROVE, in agriculture, *&c.* a little thick wood.

The antient Romans had a ſort of *groves* near ſeveral of their temples, which were conſecrated to ſome god, and called *luci*, by antiphraſis, *à non lucendo*, as being ſhady, and dark. In large and magnificent gardens a *grove* is uſually a plot of trees, incloſed with paliſades, conſiſting of tall trees, as elms, horſe-cheſtnuts, *&c.* the tops whereof make a tuft, or plump, and ſhade the ground below.

At the foot of the tall trees, which generally run all along the paliſades at equal diſtance, other leſſer trees are often planted, whoſe tufts form a reſemblance of a ſort of coppice within the former.

GROUND, in agriculture, a piece of land, or ſoil; or a portion of earth, whether fit, or unfit, to be tilled, and cultivated.

All ſorts of *ground* may be reduced to boggy, or marſhy, chalky, gravelly, and ſtony. See Marsh, Chalk, Sand, Gravel, *&c.*

Batable **Ground**.	See	Batable.
Breaking **Ground**.		Breaking.
Commanding **Ground**.		Commanding.
Manuring **Ground**.		Manuring.
Ground *niche*.		Niche.
Oazy **Ground**.	See	Oazy.
Ground *paſture*.		Pasture.
Ground *ſell*, or **Ground** *plate*.		Sell.

Ground, in painting, is the ſurface upon which the figures, and other objects, are raiſed, or repreſented. See Painting.

Ground is properly underſtood of ſuch parts of the piece as have nothing painted on them, but retain the original colour, upon which the other colours are applied to make the repreſentations.

A drapery, piece of building, or the like, are ſaid to ſerve as a *ground* to a figure, when the figure is painted on the drapery, or building.

In the like ſenſe, we alſo ſay, the *ground* of a piece of tapeſtry, of an embroidery, of a medal, coin, *&c.*

The **Ground** of a ſhield, or eſcutcheon, in heraldry, is properly called the *field.*

Ground, in etching, denotes a gummous compoſition, ſmeared over the ſurface of the metal to be etched, to prevent the aqua fortis from eating, or having effect, except in places where this *ground* is cut through, or pared off, with the points of needles.

Ground *tackle*, a ſea-term, denoting a ſhip's anchor, cables, *&c.* with whatever is neceſſary to make her ride ſafe at anchor in a proper *ground*.

Ground *work*, in building. See Foundation.

GROUNDING of a ſhip is the bringing her on *ground*, to be trimmed, made clean, or to have ſome leak ſtopped in her.

GROUP*, or **Grouppe**, in painting and ſculpture, an aſſemblage, or knot, of two or more figures of men, beaſts, fruits, or the like, which have ſome apparent relation to each other.

* The word is French; formed of the Italian *groppo*, a knot, or cluſter.

In a good painting, it is neceſſary that all the figures be divided into two or three *groups*, or ſeparate collections. Such and ſuch a thing make a *group*, with ſuch and ſuch others of different nature and kind. The antique Laomedon is a fine *group* of three beautiful figures.

A *group* has ſomewhat in it of the nature of a ſymphony, or concert of voices: as, in the one, the voices muſt ſuſtain each other, in order to fill the ear with an agreeable harmony from the whole; whence, if any part were to ceaſe, ſomething would neceſſarily be miſſed; ſo, in the other, if the parts, or figures, be not well balanced, ſomething will be found diſagreeable.

There are two ſorts of *groups*, or two manners of conſidering *groups*; with regard to the deſign, and to the clair-obſcure. The firſt is common both to works of painting, and thoſe of ſculpture; the latter is peculiar to painting.

Groups, with regard to the deſign, are combinations of divers figures, which have relation to each other, either on account of the action, or of their proximity, or of the effect they have. Theſe we conceive, in ſome meaſure, as repreſenting ſo many different ſubjects, or at leaſt ſo many diſtinct parts, or members, of one greater ſubject.

Groups, with regard to the clair-obſcure, are bodies of figures wherein the lights and ſhadows are diffuſed in ſuch manner, that they ſtrike the eye together, and naturally lead it to conſider them in one view.

In architecture we ſometimes ſay, a **Group** *of columns*, ſpeaking of three or four columns joined together on the ſame pedeſtal.—When there are but two together, we ſay, a *couple*, not a *group*, of columns.

In muſic, a **Group** is one of the kinds of diminutions of long notes, which in the writing forms a ſort of *group*, or cluſter.

The *group* uſually conſiſts of four crotchets, quavers, or ſemiquavers, tied together, at the diſcretion of the compoſer.

GROUPADES is corruptly uſed, in the manage, for *croupades.* See Croupade.

GROUPED *column.* See the article Column.

GROUPPE. See the article Group.

GRUBBING *a cock*, a term uſed, by cock-fighters, for the cutting off the feathers under the wings.—It is a thing not allowed by cockpit-law, nor to cut off his feathers in any handling-place.

GRUBBS, in medicine, a white unctuous kind of pimples, or little tumours, ariſing upon the face, chiefly the alæ of the noſe.

They are uſually owing to hard drinking, and an obſtructed perſpiration; though natural in ſome conſtitutions.—They begin with a ſmall black point, which gradually ſpreads; and ſometimes the matter tends to ſuppuration, upon which the heads of the eruptions grow white, or yellow.—They are uſually reputed ſalutary; whence, to check their growth ſuddenly, has proved of ill conſequence. They are cured by evacuation, and acrimonious lotions.

GRUME, Grumus, in medicine, &c. a little maſs, or lump, of blood, milk, or other fluid, which is coagulated, thickened, hardened, &c.

Phthiſical people frequently ſpit up *grumes*, i. e. clots of blood.

Grumes of milk are what we popularly call *curds*.

GRUMOUS *blood* denotes that ſtate, or conſiſtence, of the blood, wherein it is too viſcid, and thick, for a due, briſk circulation: the effects whereof are, that it ſtagnates in the capillary veſſels, and produces divers diſeaſes.

GRUS, in antiquity, a dance performed yearly, by the young Athenians, around the temple of Apollo, on the day of the Delia.

The motions and figures of this dance were very intricate, and variouſly interwoven; ſome of them being intended to expreſs the windings of the labyrinth wherein the minotaur was killed by Theſeus.

GRY, a meaſure containing one tenth of a line. See Line.

A line is one tenth of a digit, and a digit one tenth of a foot, and a philoſophical foot one third of a pendulum, whoſe diadromes, or vibrations, in the latitude of forty-five degrees, are each equal to one ſecond of time, or one ſixtieth of a minute.

GRYPHUS, a kind of enigma, or an artful obſcure deſcription of a thing. See Ænigma.

GUADUM, in natural hiſtory, an herb, by the antient Romans called *glaſtum*, and *vitrum*; by the Greeks *iſatis*; by the Britons *guadum*; and by us, now, *woad*. See Woad.

The antient Britons, Cæſar informs us, painted their faces with this herb, to appear the more terrible to their enemies: and Pliny relates, that the ſame was practiſed by the women, in divers ſacrifices.

GUAIAC, Guaiacum, a medicinal wood, brought from the Indies, and much uſed in venereal diſorders; called, alſo, *lignum vitæ*; and, by the Spaniards, *ligno ſanto*. See Wood.

Guaiac grows equally in the Eaſt and Weſt-Indies: that of the latter is brought in large pieces, ſome of them weighing four or five hundred pounds; by which it is, by the druggiſts, diſtinguiſhed from the former.

The *guaiac*-tree is of the height of our walnut tree, and is diſtinguiſhed into two kinds, male and female; only differing as their leaves are more or leſs round; being all equally green, the flowers blue, and of a ſtarry form; and having a little orange-colour fruit, about the ſize of a ſmall-nut, at the tip thereof.

The wood *guaiac* is extremely hard and heavy, and, on that account, is often uſed, as ebony, in moſaic work, &c. as alſo for the making of button-moulds.

But its principal uſe is in medicine; being found to warm, dry, rarefy, attenuate, attract, and promote, ſweats and urine. The uſual way of applying it is, in decoction.

The beſt is that in large pieces, of a duſky colour, freſh, gummy, heavy, of an agreeable ſmell, and a briſk pungent taſte; the bark ſticking cloſe to the wood.

The bark of *guaiac* is held of as much virtue as the wood itſelf; the rind is of no efficacy; ſo that, to make a ſudorific decoction, or ptiſan, of the wood, they firſt pare off all the white part, which, in reality, is the rind, and only chip or raſp the hard, ſolid part, which is black, heavy, and reſinous.—The chirurgeons frequently ſubſtitute box-wood inſtead of *guaiac*, and, it is ſaid, with equal ſucceſs.

The reſin drawn from *guaiac* is held much more effectual, in venereal caſes, than either the wood, or bark. It is brought us in large pieces, not unlike common reſin, but very different in reſpect of ſmell; the former, when caſt on the coals, yielding a very agreeable balſamic fume.

GUANNAGIUM. See the article Wannage.

GUARANTEE, or Warrantee, in law, a term relative to *warrant*, or *warranter*; properly ſignifying him whom the warranter undertakes to indemnify, or ſecure, from damage.

Guarantee is more frequently uſed for a warranter, or a perſon who undertakes and obliges himſelf to ſee a ſecond perſon perform what he has ſtipulated to the third.

Guarantee *of a treaty* is a prince, or power, pitched on, by the contracting parties, to ſee, or engage, that each ſide ſhall perform the articles.

The *guarantees* of the treaty of Oliva, of Weſtphalia, &c.

The antient lords were obliged to *guaranty* the lands of their vaſſals, *i. e.* to defend them againſt their enemies; otherwiſe they loſt their fee, and their vaſſals were no longer bound to do them homage and ſervice.—Kings alone did not forfeit their fiefs by not *guarantying* them; and yet we read, that Borel, count of Barcelona, threatened the king of France, Hugh Capet, to ſwear fealty to the Saracens, in caſe he did not *guaranty* him; and under Lewis the Young, the count of Champagne did homage to the emperor, on the like account. See Fee.

To *guaranty* a fee, had likewiſe another meaning; being uſed to denote, that where a fee was divided between the eldeſt ſon, and the younger, the eldeſt did homage to the lord, both for himſelf, and all the reſt; and by that homage *guarantied* the whole.

GUARD*, or Gard, in its general ſenſe, implies defence, cuſtody, or conſervation, of any thing; the act of obſerving what paſſes, to prevent ſurprize; or the care and precaution taken to hinder any thing's being done contrary to the intention and deſire of another.

Guard is alſo uſed, in a figurative ſenſe, for the act, or ſervice, of guarding, and the perſons appointed for that purpoſe.

Thus we ſay, to be upon *guard*, to ſet the *guard*, mount the *guard*: alſo, a ſtrong *guard*, an attempt on the *guard*; 2000 men are neceſſary for the *guard* of the city, &c.

So, again, thoſe to whom the king commits the ſafety of his perſon, are called his *guard*, *life-guard*, *body-guard*.

And ſo, thoſe who have the education and guardianſhip of infants, or idiots, are called their *guards*, or *wards*.

Guard, or Gard, is alſo applied to a writ relating to the office of ward; whereof there are three kinds: one called *droit de garde*; the ſecond, *ejectment de garde*; the third, *raviſhment de garde*. See Ward, and Guardian.

Guard, in the military ſenſe, is properly the duty, or ſervice, done by the ſoldiers, to ſecure the army, or place, from the attempts and ſurprizes of an enemy.—Of this there are divers kinds; as

Advanced Guard, a party of horſe, or foot, which marches before a corps, to give notice of approaching danger.

When an army is upon the march, the grand *guards*, which ſhould mount that day, ſerve as an advanced *guard* to the army.

That ſmall body, alſo, of fifteen or twenty horſe, commanded by a lieutenant, beyond, but within ſight of the main, or before the grand *guard* of a camp, are called the *advanced guard*.

Grand Guard: this conſiſts of three or four ſquadrons of horſe, commanded by a field officer, and poſted before the camp on the right and left wing, towards the enemy; for the ſecurity of the camp.

In a camp, every battalion poſts a ſmall *guard*, commanded by a ſubaltern officer, about one hundred yards before its front. This is called the *quarter guard*.

That ſmall *guard* of foot, which a regiment of horſe mounts in their front, under a corporal, is called the *ſtandard guard*.

Main Guard is that from whence all the other *guards* are detached.—Thoſe who are to mount the main *guard*, meet at the reſpective captains quarters, and from thence they go to the parade; where, after the whole *guard* is drawn up, the ſmall *guards* are detached for the poſts and magazines; and then the ſubaltern officers draw lots for their *guards*, and are commanded by the captain of the main *guard*.

Picquet Guard is a number of horſe and foot, who keep themſelves always in a readineſs in caſe of an alarm; the horſes being ſaddled, and the riders booted all the while. The foot draw up at the head of the battalion at the beating of the tattoo, but afterwards return to their tents, where they remain in a readineſs to march on any ſudden alarm.

This *guard* is to make reſiſtance, in caſe of an attack, till the army can get ready.

Rear Guard. } { Rear *guard*.
Safe Guard. } See { Safe *guard*.
Van Guard. } { Van *guard*.

Guard is more particularly underſtood of a ſoldier, as a muſquetteer, archer, or the like, detached from a company, or corps, to protect, detain, or ſecure, any perſon, or to ſurvey his actions.

A *guard* was ſet over each party, to prevent the duel's taking place.

Guards is alſo underſtood of the troops, or companies, kept up to guard the king; called, alſo, *royal guards*, *life guards*, *gardes du corps*, &c.

There are, alſo, uſually bodies of *guards* to wait on the princes of the blood, in the ſame capacity.

The *guards* are diſtinguiſhed into *horſe*, *foot*, *grenadiers*, and *yeomen*.

The Engliſh *horſe* Guards are diſtinguiſhed by troops: firſt, &c. troop of horſe *guards*.

The *foot* Guards are diſtinguiſhed by regiments: firſt regiment, Coldſtream regiment, royal regiment, of foot *guards*.

Guards, no doubt, are as antient as monarchy: the remoteſt antiquity affords inſtances hereof. The Scripture mentions thoſe of Saul, the firſt king of the people of God, 1 Sam. xiii. 2. and thoſe of Achiſh, king of the Philiſtines, 1 Sam.

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* The word is formed of the French *garde*, and that of the corrupt Latin *warda*, and that of the German *wahren*, to keep, to defend.

xxviii. The Grecian kings had, alſo, their *guards:* Juſtin mentions thoſe of Piſiſtratus, tyrant of Athens, lib. xi. c. 8. thoſe of the tyrants of the ſame city, eſtabliſhed by Lyſander, lib. v. c. 8. thoſe of Agis, king of Sparta, lib. xii. c. 1. thoſe of Alexander, lib. xxii. c. 8. thoſe of the Ptolemies, kings of Egypt, lib. xvi. c. 2, &c. Tarquin the Proud is ſaid to have been the firſt who took guards at Rome, Dionyſ. Halicarnaſſeus, lib. iv. and yet we find, that Romulus formed himſelf a *guard*, conſiſting at firſt of twelve lictors, and afterwards of three hundred ſoldiers, whom he called *celeres*.

The Roman emperors had, for their *guard*, the prætorian cohorts, eſtabliſhed by Auguſtus, as Dion and Suetonius relate: thoſe of the emperors of Conſtantinople were called *buccellarii*.

Captain of the *guards*, colonel of the *guards*, brigadier of the *guards*, exempt of the *guards*, &c. See CAPTAIN, COLONEL, BRIGADIER, &c.

Yeoman of the **GUARDS**. See YEOMAN *of the guards*.

The French *guards* are divided into thoſe *within*, and thoſe *without* the palace: the firſt conſiſts of the *gardes du corps*, or body guard; part whereof are *gardes de la manche*, q. d. of the ſleeve, of the hundred Swiſſes, and the *guards* of the gate.

The *guards without* are the *gens d'armes*, light horſe, muſqueteers, and two regiments of guards, the one French, the other Swiſs. See GENDARMES.

The *garde du corps*, or *life-guard*, conſiſts of four companies of horſe: the firſt was antiently Scotch, and ſtill retains the name, though it now conſiſts wholly of Frenchmen. Not only the name, but they alſo retain the antient phraſe, or formula, of anſwering, when called upon, *I am here*.

The *Scotch guard* was firſt eſtabliſhed in France by Charles VII. who choſe himſelf a *guard* out of ſuch Scots as were ſent by the earls of Buchan, Douglas, and other Scotch lords, to drive out the Engliſh.

Pretorian **GUARDS**. } See { PRETORIAN.
White **GUARDS**. } { SCHOLARES.

Counter **GUARD**, in fortification. See COUNTER *guard*.

GUARD, in fencing, an action, or poſture, proper to defend or ſcreen the body from the efforts, or attacks, of an enemy's ſword.

There are four general *guards* of the ſword; to conceive which, it will be neceſſary to imagine a circle drawn on an upright wall, and divided into four cardinal points; *viz.* top, bottom, right, and left.

Now, when the point of the ſword is directed to the bottom-point of the circle, and, conſequently, the head of the ſword tilted up to the top-point, with the body inclining forwards; this is called *prime*, or the *firſt guard*.—The *ſecond guard*, which ſome improperly call the *third*, is when the point of the ſword is directed to the right or ſecond point of the ſame circle, a quadrant diſtant from the firſt, with the fort of the ſword turned to the right, and the body raiſed proportionably. *Tierce*, or the *third guard*, is performed by directing the ſword's point to the uppermoſt point of the ſame circle diametrically oppoſite to that of prime; in which caſe the body, arm, and ſword, are in their natural diſpoſition, being the mean between the extremes of their motion.—*Quart*, or the *fourth guard*, is when the point of the ſword is directed to the fourth point of the circle, deſcending to the right as far as one fourth of tierce, with the external ſide of the arm and the flat of the ſword turned towards the ground; and the body out of the line to the right, and the fort of the ſword towards the line to the left.—There is alſo *quint*, or a kind of *fifth guard*, being the return of the point of the ſword on the right, after traverſing the circle, to the point of the prime whence it had departed; and yet with a different diſpoſition of the body, arm, and ſword.

Theſe *guards* are alſo called, by the maſters, *figures*, and *poſtures*; and the common centre of all their motions is to be in the ſhoulder.

In all theſe kinds of *guards*, there are high *advanced*, high *retired*, and high *intermediate guards*, when diſpoſed before the upper-part of the body, either with the arm quite extended, quite withdrawn, or in a mean ſtate.—*Mean advanced guard*, or, ſimply, *mean guard*, is when the ſword is diſpoſed before the middle-part of the body.—*Low advanced*, *retired*, or *intermediate guards*, are thoſe where the arm and ſword are advanced, withdrawn, or between the two extremes, before the lower-part of the body.

Some will have prime the principal *guard*; others, quint; others, with better reaſon, tierce; in regard it conſiſts of right lines, which are more eaſily defended than oblique ones; ſuch as thoſe of prime, ſecond, quart, and quint.

GUARDS, in aſtronomy, is a name ſometimes applied to the two ſtars neareſt the pole; being in the hind-part of the chariot, at the tail of the little bear.

Their longitude, latitude, &c. ſee among thoſe of the other ſtars in the conſtellation URSA *minor*.—One of them is the pole-ſtar.

GUARDANT, or **GARDANT**, in heraldry, a term applied to a beaſt when borne in a coat of arms full-faced, or with his face turned towards the ſpectator, and thus appearing in a poſture of guard, and defence.

Heralds ſay, a lion is never ſo repreſented; but a leopard always.

GUARDIAN, or **GARDIAN**, he to whom the charge, or cuſtody, of any perſon, or thing, is committed.

The notion of *guardian* angels is very antient in the eaſt. See ANGEL.

In the convents of Franciſcans, the officer is called *guardian*, who in the others is called *ſuperior*.

In the order of the Garter, the officer, who in other military orders is called *grand-maſter*, is called the *ſovereign guardian* of the order.

GUARDIAN, **GARDEYN**, in law, is a perſon intruſted with the education, tuition, &c. of ſuch as are not of ſufficient diſcretion to guide themſelves, and their own affairs; as children, and idiots.

The word *guardian*, with us, includes the offices both of the tutor, and curator, of the civilians: the tutor, for inſtance, had the government of a youth till he arrived at fourteen years of age; and the curator had the diſpoſition and ordering of his effects thenceforward, till twenty-five years of age; or the charge of a lunatic, during his lunacy: all which purpoſes our *guardian* alone anſwers.

We have three kinds of *guardians*: one appointed by the father, in his will; another by the judge, afterwards: and a third caſt upon a minor, by the cuſtom of the land: but the antient law relating to *guardians* is much altered by ſtat. 12
Car. II. which ordains, that "Where any perſon has a child
" under the age of twenty-one years, and unmarried at the
" time of his death, it ſhall be lawful for the father of the
" child, whether born at the time of his deceaſe, or yet in
" ventre de ſa mere, either by deed, or will, to diſpoſe of the
" cuſtody and tuition of ſuch child while under age, or for
" any leſſer time, to any perſon, popiſh recuſants excepted:
" which diſpoſition ſhall be good againſt all perſons claiming
" ſuch child as *guardian* in ſocage, or otherwiſe. And in caſe
" the father appoint no *guardian*, the ordinary may appoint
" one to look to his goods and chattels till the age of fourteen;
" at which time the child may chooſe a *guardian* himſelf:
" and for his lands, the next of kin on that ſide by which the
" lands deſcend may be *guardian*, as heretofore in caſe of a
" tenure in ſocage."

GUARDIAN *of the ſpiritualities* is he to whom the ſpiritual juriſdiction of a dioceſe is committed, during the time of the vacancy of the ſee.

This *guardian* may be either ſuch *in law*, i. e. *jure magiſtratus*, as the archbiſhop is of any dioceſe within his province; or by delegation, as he whom the archbiſhop, or vicar-general, does for the time depute.

The dean and chapter of Canterbury are *guardians* both for the dioceſe, and the whole province, during a vacancy of the archbiſhopric.

GUARDIAN, or *warden*, of the Cinqueports, is an officer who has the juriſdiction of the Cinqueports, with all the power that the admiral of England has in other places.

Camden relates, that the Romans, after they had ſettled themſelves and their empire in our iſland, appointed a magiſtrate, or governor, over the eaſt parts, where the Cinqueports lie, with the title of *comes litoris Saxonici per Britanniam*; having another, who bore the like title, on the oppoſite ſide of the ſea. Their buſineſs was, to ſtrengthen the ſea-coaſt with munition, againſt the outrages and robberies of the Barbarians. And that antiquary takes our warden of the Cinqueports to have been erected in imitation hereof. *Britannia*, p. 228.

GUARDIAN *of the peace*. See CONSERVATOR *of the peace*.

GUDGEON. See FISHING.

GUELPHS, or **GUELFS**, a celebrated faction in Italy, antagoniſts of the Gibelins.

The *Guelphs* and Gibelins filled Italy with blood and carnage for many years. The *Guelphs* ſtood for the pope, againſt the emperor. Their riſe is referred, by ſome, to the time of Conrad III. in the twelfth century; by others, to that of Frederic I. and by others, to that of his ſucceſſor, Frederic II. in the thirteenth century.

The name *Guelph* is commonly ſaid to have been formed from *Welfe*, *Welfo*, on the following occaſion: the emperor Conrad III. having taken the duchy of Bavaria from Welfe VI. brother of Henry duke of Bavaria; Welfe, aſſiſted by the forces of Roger king of Sicily, made war on Conrad, and thus gave birth to the faction of the *Guelphs*.

Others derive the name *Guelphs* from the German *Wolff*, on account of the grievous evils committed by that cruel faction; others deduce the denomination from that of a German called *Guelfe*, who lived at Piſtoye; adding, that his brother, named *Gibel*, gave his name to the *Gibelins*: under which head the reader will find a more ample account of the origin and hiſtory of thoſe celebrated factions.

GUERITE, in fortification, a centry-box; being a ſmall tower of wood, or ſtone, placed uſually on the point of a baſtion, or on the angles of the ſhoulder; to hold a centinel, who is to take care of the ditch, and watch out againſt a ſurprize.—

GUEST-TAKERS, or Gist-takers. See Agistors.

GUET. See the article Watch.

GUIDAGE, Guidagium, in antient law-writers, that paid for ſafe conduct through unknown ways, or a ſtrange country.

GUEULE, in architecture. See Gula.

GUIDON, a ſort of flag, or ſtandard, borne by the king's life-guard; being broad at one extreme, and almoſt pointed at the other, and ſlit, or divided, into two.

The *guidon* is the enſign, or flag, of a troop of horſe-guards. See Guard.

Guidon alſo denotes the officer who bears the *guidon*.—The *guidon* is that in the horſe-guards, which the enſign is in the foot. The *guidon* of a troop of horſe takes place next below the cornet.

Guidons, Guidones, or *ſchola guidonum*, was a company of prieſts eſtabliſhed by Charlemagne, at Rome, to conduct and guide pilgrims to Jeruſalem, to viſit the holy places: they were alſo to aſſiſt them in caſe they fell ſick, and to perform the laſt offices to them in caſe they died.

Guidonis *glandula*. See Glandula.

GUILD, Gild, or Geld. See Gild, and Geld.

GUILD-HALL, or Gild-hall, the great court of judicature for the city of London.

In it are kept the mayor's court, the ſheriffs court, the court of huſtings, court of conſcience, court of common council, chamberlain's court, *&c.*

Here, alſo, the judges ſit upon niſi prius, *&c.* See Husting.

GUILT *rents*. See the article Gild.

GUINEA, a gold coin, ſtruck, and current, in England.

The value, or rate, of *guineas*, has varied: it was firſt ſtruck on the footing of twenty ſhillings; by the ſcarcity of gold was afterwards advanced to twenty-one ſhillings and ſix-pence; but it is now ſunk to twenty-one ſhillings.

The pound weight Troy of gold is cut into forty-four parts and an half; each part makes a *guinea*. See Gold.

This coin took its denomination, *guinea*, by reaſon the gold, whereof the firſt were ſtruck, was brought from that part of Africa called *Guinea*; for which reaſon it likewiſe bore the impreſſion of an elephant.

Guinea *company*. See the article Company.

Guinea *pepper*. See the article Pepper.

GUIRON. See the article Giron.

GULA, in anatomy, the œſophagus, or gullet; that conduit by which animals take down food into the ſtomach.

Gulæ *vaginalis*. See the article Vaginalis.

Gula, Gueule, or Gola, in architecture, a wavy member, whoſe contour reſembles the letter S; called, by the Greeks, *cymatium*, q. d. a little wave; and, by our workmen, an *ogee*.—See Tab. *Archit.* *fig.* 8. and 26.

This member is of two kinds; *recta*, and *inverſa*.—The *firſt*, and principal, has its cavity above, and convexity below. This always makes the top of the corona of the cornice, jetting over the drip of the cornice like a wave ready to fall. It is called *gula recta*, and by the French *doucine*. Sometimes it is abſolutely called the *entablature*, as being the firſt, or uppermoſt, member thereof.

The *ſecond* is juſt the reverſe of the former, its cavity being at the bottom; ſo that it appears inverted, with regard to the former. This is uſed in the architrave, and ſometimes in the cornice, along with the former, only ſeparated by a reglet.

Some derive the word from the reſemblance theſe members bear to the *gula*, or throat, of a man; others, from the heralds term *gules*; as ſuppoſing the moulding formed from the antient manner of wearing their garments, which conſiſted of ſlips, or ſwaths, alternately furr and ſtuff of various colours; the intervals between which were called *gules*, or *guales*.

GULES *, in heraldry, ſignifies the colour red.

> * The word is French, *gueules*; which Fa. Monet derives from the Hebrew *gulud*, and *guludit*, a rediſh pellicle, or ſkin, appearing on a wound when it begins to heal: but F. Meneſtrier reproaches him, that there are no ſuch words in the Hebrew tongue. This, however, is not ſtrictly true: all the eaſtern languages, the Hebrew, Chaldee, Syriac, and Arabs, ſay, גלד, *gheld*, for *cutis*, *pellis*; whence the Arabic *gulud*: and, in the general, the word *gules* ſignifies red, among moſt of the oriental nations: the Arabs and Perſians give the name to the roſe.—Others, with Nicod, derive the name *gules* from *gula*, the throats of animals being generally red; or from the Latin *cuſculium*, which is the *κοκκος* of the Greeks, or ſcarlet grain.

The ſame colour, in the coats of noblemen, is, by ſome, called *ruby*; and in thoſe of ſovereign princes, *Mars*: but this is no ſtanding practice.

In engraving, *gules* is expreſſed by perpendicular ſtrokes drawn from the top of the eſcutcheon to the bottom; it is alſo marked with the letter G.

This colour is reputed a ſymbol of charity, valour, hardineſs, generoſity; and repreſents blood-colour, cinnabar, and true ſcarlet. It is the firſt of all colours uſed in armoury; and is of that account, that antiently it was prohibited any perſon to wear *gules* in his coat-armour, unleſs he were a prince, or had permiſſion from the prince.

Spelman, in his *Aſpilogia*, ſays, that this colour was particularly honoured by the Romans, as it had been before by the Trojans; and that they painted the bodies of their gods, and of their generals that triumphed, with vermilion. Under the conſuls, the Roman ſoldiers wore red; whence they were denominated *ruſſati*. Joan. de Bado aureo adds, that the red dye which the Greeks call *Phœnician*, and we *ſcarlet*, was firſt uſed by the Romans, to prevent ſeeing the blood iſſue from wounds in fight.

In effect, *gules* has always been eſteemed an imperial colour: the emperors were cloathed, ſhod, and had their apartments furniſhed, with red; their edicts, diſpatches, ſignatures, and ſeals, were of red ink, and red wax; whence the name *rubrics*.

GULF. See the article Gulph.

GULLET. See the article Oesophagus.

GULPH *, or Gulf, in geography, an arm, or part, of the ocean, running up within the land.

> * The word comes from the French *golfe*, and that from the Italian *golfo*, which ſignify the ſame. Some deduce theſe further, from the Greek *κολπος*; which Guichart again derives from the Hebrew גאב, *gob*: Du Cange derives them from the barbarous Latin *gulſum*, or *gulſus*, which ſignify the ſame thing.

Such is the *gulph* of Venice, called, alſo, the *Adriatic ſea*; the *gulph* of Lyons, the *gulph* of Mexico, of Florida, *&c.*

A *gulph* is ſtrictly diſtinguiſhed from a *ſea*, in that the latter is larger; ſee Sea. From a *bay*, or ſinus, it is again diſtinguiſhed, by its being greater than the ſame.

Some will have it eſſential to a *gulph*, to run into the land through a ſtreight or narrow paſſage.

The ſea is always moſt dangerous near *gulphs*, by reaſon of the current's being penned up by the ſhores.

GUM, Gummi, a vegetable juice exuding through the pores of certain plants, and there hardening into a tenacious, tranſparent maſs.

Gum is properly one of the juices of the bark: it is drawn thence, by the ſun's warmth, in form of a glutinous humour; and, by the ſame cauſe, is afterwards inſpiſſated, concocted, and rendered tenacious.

The chemical character of *gums*, whereby they are diſtinguiſhed from *reſins*, and other vegetable juices, is, that they are diſſoluble in water, and at the ſame time inflammable by fire. But this character, it is to be obſerved, excludes a great part of thoſe commonly called *gums*.

In the general, *gums* are more viſcid, and leſs friable, and are generally diſſoluble in any aqueous menſtruum; whereas reſins are more ſulphureous, and require a ſpiritous, or oily, diſſolvent. Boerhaave conſiders a *gum* as a ſort of ſaponaceous fat; which, beſide its oily principle in common with a reſin, has ſome other ingredient that renders it miſcible with water.

Gums are different, according to the different trees, roots, *&c.* which they ouſe from. Some authors diſtinguiſh them into *aqueous*, and *reſinous gums*: the firſt, thoſe diſſoluble in water, wine, and the like fluids; the ſecond, thoſe only diſſoluble in oil: to theſe two ſome add a third anomalous kind; *viz.* thoſe ſoluble with much difficulty, either in water, or oil.

Among the claſs of *gums* are uſually ranked, *gum* Arabic, gamboge, adraganth, ammoniac, aſſa fœtida, euphorbium, manna, myrrh, and tacamahacha. See each deſcribed under its proper article.

Theophraſtus ſpeaks of a way of multiplying plants, performed *per lachrymas*, by means of the *gum*, or reſin; but Agricola takes this to be only practicable where there are ſeeds accidentally fallen into the *gum*.

Gum-*anime* is a reſincus juice ouſing from a tree by the Portugueze called *courbari*, growing in divers parts of America. This *gum* is very hard and tranſparent, of an agreeable ſmell, not unlike amber: it does not diſſolve in water, and, conſequently, is not properly accounted a *gum*. In lieu of this, they frequently ſubſtitute copal.

Gum-*Arabic*, called alſo *Thebaic*, *Saracenaic*, *Babylonic*, and *Acanthine*, from the places, or the tree, which produce it, is the juice of a little tree growing in Egypt, of the acacia kind, called in Latin *acacia vera*: it is very tranſparent, glutinous upon the tongue, almoſt inſipid to the taſte, and often twiſted ſomewhat in manner of a worm.

It is eſteemed good to incraſſate, to ſtop the pores, blunt the points of too pungent medicines, and temper the acrimony of the trachea in coughs, &c.

Gum-*gutta*, or *gutta-gamba*, or *ghitta-gemou*, popularly *gambege*, is a reſinous gum brought from the kingdom of Siam, &c. in large pieces faſhioned not unlike ſauſages, hard, brittle, and very yellow.

It ouſes from inciſions made in a kind of prickly ſhrub, which climbs up the neighbouring trees. It purges violently, both upwards and downwards; and is particularly uſed in dropſies, the itch, &c. but it is dangerous. It ſerves, alſo, to make a yellow colour, for painting in miniature.

Gum-*ſenega*, or *ſeneca*, is the gum ordinarily ſold by the druggiſts for *gum*-Arabic, which it reſembles, very nearly, both as to form, and virtue. It is either white, bordering on yellow, or of a deep amber colour, tranſparent, &c. It ouſes out of a prickly ſhrub common enough in Africa. The gum is brought to us from Senegal, whence its name.

Gum, among gardeners, is a diſeaſe incident to fruit-trees of the ſtone kind: as peaches, plums, apricots, cherries, &c.

The *gum* is a kind of gangrene, ariſing from a corruption of the ſap, which extravaſates, and hardens. It uſually begins on ſome naked or broken part, and ſpreads itſelf to the reſt.

To avoid its ſpreading, M. Quintinie directs, to cut off the morbid branch two or three inches below the part affected.

This *gum* is no more than a thick, diſtempered, viſcid juice, which, not being able to make its way through the fibres of the body of the tree, to feed and ſupply them, is obliged, by the protruſion of other ſucceeding juice, to burſt its veſſels, which lie between the wood and bark, and to ouſe out upon the bark.

When the diſtemper ſurrounds the branch, it admits of no remedy; when it is only on one ſide of a bough, the *gum* muſt be taken off to the quick of it, and then ſome cow-dung clapped on the wound, and the part covered over with a linen cloth, and tied down.

Gum-*water*. See the article Water.

GUMMI *reſina*, Gummo-*reſina*, or Gum-*roſin*, is a hardened juice of a middle nature between a gum and a reſin, being both diſſoluble in aqueous menſtruums like a gum; and in oleaginous ones like a reſin.—Such are camphor, ſtorax, &c.

Some naturaliſts make a claſs of *irregular gummo-reſins*; being ſuch as diſſolve, though with difficulty, and not perfectly, both in aqueous and oleaginous liquors; as bdellium, myrrh, &c.

GUN, a fire-arm, or weapon of offence, which forcibly diſcharges a ball, ſhot, or other offenſive matter, through a cylindrical barrel, by means of gunpowder.

Gun is a general name, under which are included divers, or even moſt, ſpecies of fire-arms.—They may be divided into *great* and *ſmall*.

Great Guns, called by the general name *cannon*, make what we alſo call *ordnance*, or *artillery*; under which come the ſeveral ſorts of cannon; as cannon-royal, demi-cannon, &c. culverins, demi-culverins, ſakers, minions, falcons, &c. See Ordnance; ſee alſo Cannon, Culverin, &c.

Small Guns include muſquets, muſquetoons, carabines, blunderbuſſes, fowling-pieces, &c.

Piſtols and mortars are almoſt the only kinds of regular weapons, charged with gunpowder, that are excepted from the denomination of *guns*.

For the hiſtory and invention of *guns*, ſee Cannon, and Gunpowder.

For the uſe and application of *guns*, ſee Gunnery.

Bed of a Gun.	See	Bed.
Carriage of a Gun.		Carriage.
Chaſe Guns.		Chase *guns*.
Chaſe of a Gun.		Chase.

GUNNERS, officers of the tower, and other garriſons, whoſe buſineſs is, to manage and look after the ordnance mounted on the lines, and batteries, which are all fixed and ready with cartouches and ball, for ſervice, on the ſhorteſt warning.

One or more of them are on duty day and night. They carry a field-ſtaff, and a large powder-horn in a ſtring over the left ſhoulder; in which equipage they march by the guns.

Maſter Gunner *of England* is an officer appointed to teach and inſtruct all ſuch as deſire to learn the art of gunnery, and to adminiſter to every ſcholar an oath; which, beſide the duty of allegiance, obliges him not to ſerve any foreign prince, or ſtate, without leave; nor to teach the art of gunnery to any, but ſuch as have taken the ſaid oath; and to certify to the maſter of the ordnance, the ſufficiency of any perſon recommended to be one of his majeſty's *gunners*.

The *gunner*, Sir J. Moore obſerves, ſhould know his pieces, and their names, which are taken from the height of the bore, the names of the ſeveral parts of a piece of ordnance, how to tertiate his gun, and how to diſpart it, &c.

Gunners *level*. See the article Level.

GUNNERY, the art of ſhooting with guns and mortars, *i. e.* of charging, directing, and exploding, thoſe fire-arms to the beſt advantage.—See Tab. *Fortif. fig.* 16.

Gunnery is ſometimes conſidered as a part of the military art, and ſometimes as a part of pyrotechny.

To the art of *gunnery* belongs the knowlege of the force and effect of gunpowder, the dimenſions of pieces, and the proportions of the powder and ball they carry; with the methods of managing, charging, pointing, ſpunging, &c.

Some parts of *gunnery* are brought under mathematical conſideration, which, among mathematicians, are called abſolutely by the name *gunnery*; viz. the method of elevating or raiſing the piece to any given angle, and of computing its range; or of raiſing and directing it ſo, as it may hit a mark; or object, propoſed.

The inſtruments chiefly uſed in this part of *gnnnery* are, the callipers, or gunners compaſſes, quadrant, and level: the methods of applying which, ſee under the articles Caliper, Level, and Quadrant.

The line, or path, in which the bullet flies, whatever direction or elevation the piece is in, is found to be the ſame with that of all other projectiles; *viz.* a parabola.

Hence, the particular laws obſerved in the motion, or flight, of the ball, its velocity, extent, &c. with the rules for hitting objects, are delivered under the article Projectile.

Maltus, an Engliſh engineer, is mentioned as the perſon who firſt taught the regular uſe of mortars, in the year 1634. but all his knowlege was experimental and tentative; he knew nothing of the curve the ſhot deſcribes in its paſſage, nor of the difference of range at different elevations: and moſt of the gunners and engineers employed about batteries, &c. to this day go by no better rules: if the range does not hit right, they raiſe or lower the piece, till they bring it to a truth; and yet there are certain rules, founded on geometry, for all theſe things: moſt of which we owe to Galileo, engineer to the grand duke of Tuſcany, and his diſciple Torricellius.

A ball, or bomb, going out of a piece, we find, never proceeds in a ſtrait line towards the place it is levelled at, but it always begins to riſe from its line of direction the moment it is out of the mouth of the piece.—This ſome account for thus: the grains of powder nigheſt the breech, taking fire firſt, preſs forward, by their precipitated motion, not only the ball, but, likewiſe, thoſe grains which follow the ball along the bottom of the piece; where ſucceſſively taking fire, they ſtrike, as it were, the ball underneath, which, becauſe of a neceſſary vent, has not the ſame diameter as the diameter of the bore; and ſo inſenſibly raiſe the ball towards the upper edge of the mouth of the piece, againſt which it ſo rubs in going out, that pieces very much uſed, and whoſe metal is ſoft, are obſerved to have a conſiderable canal there, gradually dug by the friction of balls. Thus the ball going from the cannon, as from the point of the parabola E, Tab. *Fortif. fig.* 16. raiſes itſelf, in its progreſs, to the vertex G; after which it deſcends by a mixed motion.

Ranges made from the elevation of forty-five degrees are the greateſt; and thoſe made from elevations equally diſtant from forty-five degrees are equal; that is, a piece of cannon, or a mortar, levelled to the fortieth degree, will throw a ball, or bomb, the ſame diſtance, as when they are elevated to the fiftieth degree; and as many at thirty, as ſixty; and ſo of others.

It has been ſhewn, that, to find the different ranges of a piece of artillery in all elevations, we muſt, 1. Make a very exact experiment by firing off a piece of cannon, or mortar, at an angle well known, and meaſuring the range made, with all the exactneſs poſſible; for by one experiment, well made, we may come at the knowlege of all others, in the following manner.

To find the range of a piece, at any other elevation required, ſay, as the ſine of double the angle under which the experiment is made : is to the ſine of double the angle of any elevation propoſed : : ſo is the range known by the experiment : to the other required.

GUNPOWDER, a compoſition of ſaltpetre, ſulphur, and charcoal, mixed together, and uſually granulated; which eaſily takes fire, and, when fired, rarefies, or expands, with great vehemence, by means of its elaſtic force.

It is to this powder we owe all the action and effect of guns, ordnance, &c. ſo that the modern military art, fortification, &c. depend wholly thereon.

The invention of *gunpowder* is aſcribed, by Polydore Virgil, to a chemiſt; who, having accidentally put ſome of this compoſition in a mortar, and covered it with a ſtone, it happened to take fire, and blew up the ſtone.

Thevet ſays, the perſon here ſpoken of, was a monk of Fribourg, named Conſtantine Anelzen: but Belleforet, and other authors, with more probability, hold it to be Bartholdus Schwartz, or the black: at leaſt it is affirmed, that he firſt taught the uſe of it to the Venetians, in the year 1380. during the war with the Genoeſe; and that it was firſt employed in a place antiently called *Foſſa Clodia*, now *Chioggia*, againſt Laurence de Medicis; and that all Italy made complaints againſt it, as a manifeſt contravention of fair warfare.

But what contradicts this account, and ſhews *gunpowder* to be of an older æra, is, that Peter Mexia, in his *Various Readings*, mentions, that the Moors being beſieged in 1343. by Alphonſus XI. king of Caſtile, diſcharged a ſort of iron mortars upon them, which made a noiſe like thunder: which is ſeconded by what Don Pedro, biſhop of Leon, relates in his chronicle of king Alphonſus, who reduced Toledo; *viz.* that in a ſea-combat between the king of Tunis, and the Mooriſh king of Seville, above four hundred years ago, thoſe of Tunis had certain iron tubs or barrels, wherewith they threw thunder-bolts of fire.

Du Cange adds, that there is mention made of *gunpowder* in the regiſters of the chambers of accounts in France as early as the year 1338.

To ſay no more, it appears that our Roger Bacon knew of *gunpowder* one hundred and fifty years before Schwartz was born: that excellent frier mentions the compoſition in expreſs terms, in his treatiſe *de nullitate magiæ*, publiſhed at Oxford in 1216. "You may raiſe thunder and lightning at pleaſure, ſays he, by only taking ſulphur, nitre, and charcoal, which ſingly have no effect, but, mixed together, and confined in a cloſe place, cauſe a noiſe and exploſion greater than that a clap of thunder."

Preparation of Gunpowder.—There are divers compoſitions of *gunpowder*, with reſpect to the proportions of the three ingredients, to be met withal in pyrotechnical writers: but the proceſs of making it up is much the ſame in all.

The ſulphur and ſaltpetre, being purified, and reduced to powder, are put, with the charcoal duſt, in a mortar, moiſtened with water or ſpirit of wine, or the like, and pounded twenty-four hours together; taking care to wet the maſs from time to time, to prevent its taking fire: laſtly, ſqueezing it through a ſieve, it is formed into little grains, or globules; which being dried, the powder is complete; and the leaſt ſpark being ſtruck thereon from a ſteel and flint, the whole will be immediately inflamed, and burſt out with extreme violence.

The effect is not hard to account for: the charcoal part of the grain whereon the ſpark falls, catching fire like tinder, the ſulphur and nitre are readily melted, and the former alſo breaks into flame; and at the ſame time the contiguous grains undergo the ſame fate. Now it is known, that ſaltpetre, when ignited, rarefies to a prodigious degree.

Sir Iſaac Newton reaſons thus on the point: The charcoal and ſulphur in *gunpowder* eaſily take fire, and kindle the nitre; and the ſpirit of the nitre, being thereby rarefied into vapour, ruſhes out with an exploſion much after the manner that the vapour of water ruſhes out of an æolipile; the ſulphur alſo, being volatile, is converted into vapour, and augments the exploſion: add that the acid vapour of the ſulphur, namely, that which diſtils under a bell into oil of ſulphur, entering violently into the fixt body of the nitre, lets looſe the ſpirit of the nitre, and excites a greater fermentation, whereby the heat is farther augmented, and the fixt body of the nitre is alſo rarefied into fume; and the exploſion is thereby made more vehement and quick.

For if ſalt of tartar be mixed with *gunpowder*, and that mixture be warmed till it takes fire, the exploſion will be greatly more violent and quick than that of *gunpowder* alone, which cannot proceed from any other cauſe than the action of the vapour of the *gunpowder* upon the ſalt of tartar, whereby that ſalt is rarefied. See *Pulvis* Fulminans.

The exploſion of *gunpowder* ariſes, therefore, from the violent action whereby all the mixture being quickly and vehemently heated, is rarefied and converted into fume and vapour; which vapour, by the violence of that action, becoming ſo hot as to ſhine, appears in the form of flame.

M. de la Hire aſcribes all the force and effect of *gunpowder* to the ſpring or elaſticity of the air incloſed in the ſeveral grains thereof, and in the intervals or ſpaces between the grains: the powder being kindled, ſets the ſprings of ſo many little parcels of air a playing, and dilates them all at once; whence the effect; the powder itſelf only ſerving to light a fire which may put the air in action; after which the whole is done by the air alone.

Gunpowder is a commodity of ſuch conſequence, both in reſpect of ſpeculation, of war, and of commerce (the conſumption there of being incredible), that it will deſerve a more particular detail.—To make *gunpowder* duly, then, regard is to be had, that the ſaltpetre be pure, and in fine large cryſtals or ſhootings: otherwiſe, it is to be purified, by taking away its fixt or common ſalt, and earthy part, thus: diſſolve ten pounds of nitre in a ſufficient quantity of fair water; ſettle, filtrate, and evaporate it in a glazed veſſel, to the diminution of half, or till a pellicle appear on it: the veſſel may then be taken off from the fire, and ſet in a cellar: in twenty-four hours the cryſtals will ſhoot, which ſeparate from the liquor; and after the like manner may the liquor be cryſtallized ſeveral times, till all the ſalt be drawn forth: this done, put it into a kettle, and that on a furnace with a moderate fire, which gradually increaſe till it begins to ſmoke, evaporate, loſe its humidity, and grow very white: it muſt be kept continually ſtirring with a ladle, for fear it ſhould return to its former figure, whereby its greaſineſs will be taken away; after that, ſo much water is to be poured into the kettle as will cover the nitre; and when it is diſſolved and reduced to the conſiſtency of a thick liquor, it muſt be ſtirred with a ladle, without intermiſſion, till all the moiſture is again evaporated, and it be reduced to a dry and white meal.

The like regard is to be had to the ſulphur, chooſing that which is in large lumps, clear, and perfectly yellow; not very hard, nor compact, but porous; nor yet too much ſhining; and if, when ſet on the fire, it freely burns away all, leaving little or no reſident matter, it is a ſign of its goodneſs: ſo likewiſe, if it be preſſed between two iron plates that are hot enough to make it run, and in the running appear yellow, and that which remains of a rediſh colour, it may be concluded to be fit for the purpoſe.—But in caſe the ſame be foul and impure, it may be purified in this manner; melt the ſulphur in a large iron ladle, or pot, over a very gentle coal fire, well kindled, but not flaming; then ſcum off all that riſes on the top, and ſwims upon the ſulphur; take it preſently after from the fire, and ſtrain it through a double linen cloth, letting it paſs at leiſure; ſo will it be pure, the groſs filthy matter remaining behind in the cloth.

For the charcoal, the third ingredient, ſuch ſhould be choſen as is large, clear, and free from knots, well burnt, and cleaving.

There are three kinds of powder, *viz. cannon-powder*, *muſquet-powder*, and *piſtol-powder*; of each of theſe again there are two ſorts, a *ſtronger*, and a *weaker*; all which differences ariſe only from the various proportions.

The proportions are thus: in the ſtronger *cannon-powder*, to every hundred pounds of ſaltpetre, twenty-five pounds of ſulphur are generally allowed, with the ſame quantity of charcoal; and in the weaker *cannon-powder*, to every hundred pounds of ſaltpetre, twenty pounds of ſulphur, and twenty-four of charcoal. As for the ſtronger *muſquet-powder*, an hundred pounds of ſaltpetre require eighteen pounds of ſulphur, and twenty of charcoal; and in the weaker there go to an hundred pounds of ſaltpetre, fifteen of ſulphur, and eighteen of charcoal. In the ſtronger *piſtol-powder*, an hundred pounds of ſaltpetre require twelve of ſulphur, and fifteen of coal; whereas the weaker has an hundred pounds of ſaltpetre, only ten of ſulphur, but eighteen of charcoal.

Other authors preſcribe different proportions: Semienowitz, for mortars, directs an hundred pounds of ſaltpetre, twenty-five of ſulphur, and as many of charcoal; for great guns, an hundred pounds of ſaltpetre, fifteen of ſulphur, and eighteen of charcoal: for muſquets and piſtols, an hundred pounds of ſaltpetre, eight of ſulphur, and ten of charcoal.

Miethius extols the proportion of one pound of ſaltpetre to three ounces of charcoal; and two, or two and a quarter, of ſulphur: than which, he affirms, no *gunpowder* can poſſibly be ſtronger.

He adds, that the uſual practice of making the *gunpowder* weaker for mortars, than guns, as in the example above, is without any foundation, and renders the expence needleſly much greater: for, whereas, to load a large mortar twenty-four pounds of common powder is required, and conſequently to load it ten times, two hundred and forty pounds; he ſhews, by calculation, that the ſame effect would be had by one hundred and eighty pounds of the ſtrong powder.

As to the proceſs of making the Gunpowder.—All the ingredients are firſt to be finely powdered, then moiſtened with fair water, or vinegar, or ſpirit of wine, or with water and ſpirit of wine mixed together, or urine, which is uſual; afterwards all muſt be well beat for the ſpace of twenty-four hours at leaſt, and then granulated after the following manner: a ſieve is to be prepared with a bottom of thick parchment made full of round holes, and the former beaten maſs moiſtened before-hand with twenty ounces of ſpirit of wine, twelve of ſpirit of wine-vinegar, thirteen of ſpirit of nitre, two of ſpirit of ſal armoniac, and one ounce of camphire diſſolved in ſpirit of wine: and let all theſe be mingled together. Otherwiſe, take forty ounces of brandy, and one of camphire, and let them be mixed and diſſolved for the ſaid purpoſe: when the whole compound is made up into balls as big as eggs, put them into the ſieve, and with them a wooden ball; which move up and down about the ſieve, ſo that it may break the balls of powder, and make it paſs through the little holes in corns.

For greater quantities, mills are uſually provided, by means of which, more work may be performed in one day, than a man can do in an hundred. See Mill.

Gunpowder may alſo be made of ſeveral colours; but the *black* is the moſt ſerviceable of any.

To make white powder proceed thus:—Take ten pounds of ſaltpetre, one of ſulphur, and two of the ſaw-duſt of elder, or the like wood, powdered fine; mix them together, and uſe the former method. Or thus: with ten pounds of nitre, and a pound and a half of ſulphur dried, and finely powdered, mix two pounds of ſaw-duſt, *&c.* or, inſtead of that, rotten wood dried and powdered, with two pounds and three ounces of ſalt of tartar; whereof make powder to be kept cloſe from the air.

It is alſo to be noted, that in making of *piſtol-powder*, if you would have it ſtronger, it ſhould be ſtirred up ſeveral times while in the mortar, and moiſtened with water diſtilled from orange or lemon peels, or ſome other oily vegetable ſubſtance in an alembic, and then beaten for twenty hours, as aforeſaid.

Corn-powder is of ſo much greater force than when in duſt or meal, that it is generally concluded, the larger grains are ſtronger than the ſmaller: for which reaſon, *cannon-powder* is granulated larger than other powders; and therefore *powder* in loading ſhould not be beat home into the piece, ſo as to bruiſe the grains. There are three ways to prove the goodneſs of *gunpowder:* 1. By ſight; for if it be too black, it is too moiſt, or has too much charcoal in it; ſo alſo if rubbed upon white paper, it blackens it more than good *powder* does: but if it be of a kind of azure colour, ſomewhat inclining to red, it is a ſign of good *powder*. 2. By touching: for if, in cruſhing it with your fingers ends, the grains break eaſily, and turn into duſt, without feeling hard, it has too much coal in it; or if, in preſſing under your fingers upon a ſmooth hard board, ſome grains feel harder than the reſt, or, as it were, dent your fingers ends, the ſulphur is not well mixed with the nitre, and the *powder* is naught. 3. By burning, wherein little heaps of *powder* are laid upon white paper three inches or more aſunder, and one of them fired; which, if it only fires all away, and that ſuddenly, and almoſt imperceptibly, without firing the reſt, and make a ſmall thundering noiſe, and a white ſmoke riſes in the air almoſt like a circle, the *powder* is good; if it leaves black marks, it has too much coal, or is not well burnt: if it leaves a greaſineſs, the ſulphur or nitre are not well cleanſed or ordered. Again, if two or three corns be laid on paper an inch diſtant, and fire be put to one of them, and they all fire at once, leaving no ſign behind, but a white ſmoky colour in the place, and the paper not touched, the *powder* is good. So alſo if fired in a man's hand, and it burns not: but if black knots appear, which burn downwards in the place where proof was made, after firing, it is not ſtrong enough, but wants nitre. To recover damaged *powder*, the method of the *powder* merchants is this; they put part of the *powder* on a ſailcloth, to which they add an equal weight of what is really good; and with a ſhovel mingle it well together, dry it in the ſun, and barrel it up, keeping it in a dry and proper place.

Others again, if it be very bad, reſtore it by moiſtening it with vinegar, water, urine, or brandy; then they beat it fine, ſearce it, and to every pound of *powder*, add an ounce, an ounce and half, or two ounces (according as it is decayed), of melted ſaltpetre; afterwards theſe ingredients are to be moiſtened and mixed well, ſo that nothing can be diſcerned in the compoſition; which may be known by cutting the maſs, and then they granulate it as aforeſaid.

In caſe the *powder* be in a manner quite ſpoiled, the only way is, to extract the ſaltpetre with water, according to the uſual manner, by boiling, filtrating, evaporating, and cryſtallizing; and then, with freſh ſulphur and charcoal, to make it up anew again.

GUN-SHOT *wounds*. See the article WOUND.

GUNTER'S LINE, called alſo *line of lines*, and *line of numbers*, is a graduated line uſually placed on ſcales, rules, ſectors, *&c.*

This line is only the logarithms transferred upon a ruler, from the tables, ſo as to anſwer much the ſame purpoſes, inſtrumentally, as the logarithms themſelves do arithmetically. What the logarithms do by addition and ſubtraction, is done in this line by turning a pair of compaſſes this way and that.

This line has been contrived various ways, for the advantage of having it as long as poſſible. As, firſt, on the two-feet ruler, contrived by Edmund Gunter, and called *Gunter's ſcale*; whence alſo the line itſelf took its popular denomination *Gunter's line.*

After this, Wingate doubled the line, or laid it together, ſo as one might either work right on, or acroſs. Then it was projected in a circle, by Oughtred, and made to ſlide by the ſame author: and laſtly, it was projected in a kind of ſpiral, by Brown.

The method of uſing or applying it, is much the ſame in all; except that in Gunter's and Wingate's way, common compaſſes are uſed; in Oughtred's and Brown's, flat compaſſes, or an opening index; and in the ſliding rules, no compaſſes at all.

Deſcription of GUNTER'S *line.* The line is uſually divided into an hundred parts, whereof every tenth is numbered, beginning with 1, and ending with 10: ſo that if the firſt great diviſion, 1, ſignify one tenth of any whole number or integer, the next, 2, will ſignify two tenths; 3, 3 tenths, *&c.* and the intermediate diviſions ſo many 100th parts of the ſame integer, or tenths of one of the former tenths. For numbers greater than 10, the ſubdiviſions muſt ſignify integers, and the greater diviſions 10 integers, ſo that the whole line will expreſs 100 integers; and if you would have it ſtill more, then the ſubdiviſions to be each 10 integers, and each great diviſions 100, ſo that the whole be 1000; and after the ſame manner, may it be extended to 10000, by making each ſubdiviſion 100.

A whole number, under four figures, being given, to find the point on the line of numbers that repreſents the ſame. Look for the firſt figure of the number among the large figured diviſions; this leads you to the firſt figure of your number. For the ſecond, count ſo many tenths from that diviſion forwards, as that ſecond figure amounts to. For the third figure, count from the laſt tenth ſo many centeſms as the third figure contains: and ſo for the fourth figure, count from the laſt centeſm ſo many thouſands as the fourth figure has units, or is in value; that will be the point where the number propounded is, on the line of numbers.

For an example: To find the point repreſenting the number 1728, for 1000 take the firſt grand diviſion marked 1 on the line; then for 7 reckon ſeven tenths forwards; this is 700; for 2, reckon two centeſms from the ſeventh tenth, 20; and for 8, eſtimate the following centeſm to be divided into 10 parts, if it be not expreſſed, which in lines of ordinary length cannot be done; and 8 of that ſuppoſed 10 parts, is the preciſe point for 1728, the number propoſed to be found; and the like of any other number.

To find a fraction, conſider that the line properly only expreſſes decimal fractions, as thus, $\frac{1}{10}$, or $\frac{1}{100}$, or $\frac{1}{1000}$, and nearer the rule cannot well come than as one inch: one tenth, one hundredth, or one thouſandth part of an inch: ſo that for other fractions, as quarters, half quarters, *&c.* you muſt either eſtimate them as near as you can reaſonably, or elſe reduce them into decimals.

Uſe of GUNTER'S LINE. 1°, *Two numbers being given, to find a third geometrically proportional to them; and to three a fourth number, to four a fifth,* &c. Extend the compaſſes on the line from one number to another; then that extent applied upwards or downwards, as you would either increaſe or diminiſh the number from either of the numbers, the moveable point will fall on the third proportional number required. Again, the ſame extent, applied the ſame way from the third, will give a fourth; and from the fourth a fifth, *&c.*

For example: Let the two numbers 2 and 4 be propoſed to find a third proportional, *&c.* to them; extend the compaſſes on the firſt part of the line of numbers, from 2 to 4; which done, and the ſame extent being applied upwards from 4, the moveable point will fall on 8, the third proportional required; and from 8 it will reach to 16, the fourth proportional; and from 16 to 32, the fifth, *&c.* Contrariwiſe, if you would diminiſh, as from 4 to 2, the moveable point will fall on 1, and from 1 to $\frac{5}{10}$, or .5; and from .5 to .25, *&c.*

But, generally, in this, and in moſt other works, make uſe of the ſmall diviſions in the middle of the line; that you may the better eſtimate the fractions of the numbers you make uſe of; for how much you miſs in ſetting the compaſſes to the firſt and ſecond term, ſo much the more you will err in the fourth; therefore the middle part will be moſt uſeful. For example; as 8 to 11, ſo is 12 to 16, .50, if you imagine one integer to be divided but into 10 parts, as they are on the line on a two-feet rule.

2°, *One number being given to be multiplied by another, to find the product.* Extend the compaſſes from 1 to the multiplicator; and the ſame extent, applied the ſame way from the multiplicand, will make the moveable point fall on the product: thus, if 6 be given to be multiplied by 5; extending the compaſſes from 1 to 5, the ſame extent will reach from 6 to 30, the product ſought.

3°, *One number being given to be divided by another, to find the quotient.* Extend the compaſſes from the diviſor, *e. gr.* 25, to 1, and the ſame extent will reach from the dividend, *e. gr.* 750, to the quotient 30; or extend the compaſſes from the diviſor to the dividend, the ſame extent will reach the ſame way from 1 to the quotient.

4°, *Three numbers being given, to find a fourth in direct proportion.* Extend the compaſſes from the firſt number, ſuppoſe 7, to the ſecond, *v. g.* 14: that done, the ſame extent, applied the ſame way from the third, 22, will reach to the fourth proportional ſought, *viz.* 44.

5°, *Three numbers being given, to find a fourth in inverſe proportion.* Extend the compaſſes from the firſt of the given numbers, ſuppoſe 60, to the ſecond of the ſame denomination, *viz.* 30; if that diſtance be applied from the third number backwards, 5, it will reach to the fourth number ſought, 2.5.

6°, *Three numbers being given, to find a fourth in duplicate proportion.* If the denominations of the firſt and ſecond terms be lines, extend the compaſſes from the firſt term to the ſecond, of the ſame denomination: this done, that extent being applied twice the ſame way from the third term, the moveable point will fall on the fourth term required. *E. gr.* the area of a circle, whoſe diameter is 14, being 154, what will the content of a circle be, whoſe diameter is 28? Applying that extent the ſame way from 154 twice, the moveable point will fall on 616, the fourth proportional or area ſought.

7°, *To find a mean proportional between two given numbers.*—Biſect the diſtance between the given numbers, the point of biſection will fall on the mean proportional ſought. Thus the quotient of the two extremes divided by one another, extremes being 8 and 32, the middle point between them will be found 16.

8°, *To find two mean proportionals between two given lines.*—Triſect the ſpace between the two given extremes; the two points of triſection will give the two means required.—Thus if 8 and 27 be the two given extremes, the two means will be found 12 and 18.

9°, *To find the ſquare root of any number under* 1000000.—The ſquare root of a number is always a mean proportion between 1, and the number whoſe root is required; yet with this general caution, that if the figures of the number be even, that is 2, 4, 6, 8, 10, *&c.* then you muſt look for the unit at the beginning of the line, and the number in the ſecond part or radius, and the root in the firſt part; or rather, reckon 10 at the end to be unity; and then both root and ſquare will fall backwards towards the middle in the ſecond length or part of the line.—If they be odd, the middle 1 will be moſt convenient to be counted unity, and both root and ſquare will be found from thence forwards towards 10.—On this principle the ſquare root of 9 will be found to be 3; the ſquare root of 64, to be 8, *&c.*

10°, *To find the cube root of any number under* 1000000000.—The cube root is always the firſt of two mean proportionals between 1 and the number given, and therefore to be found by triſecting the ſpace between them. Thus the cube root of 1728 will be found 12; the root of 17280, nearly 26; the root of 172800 almoſt 56.

Though the point on the line repreſenting all the ſquare numbers is in one place, yet, by altering the unit, it produces various points and numbers for their reſpective roots.—The rule to find this is, to put dots, or to ſuppoſe them put, over the firſt figure to the left hand, the fourth figure, the ſeventh, and the tenth: if then the laſt dot on the left hand falls on the laſt figure, as it does in 1728, the unit muſt be placed at 1 in the middle of the line, and the root, the ſquare, and the cube, will all fall forwards towards the end of the line.

If it fall on the laſt but 1, as in 17280, the unit muſt be placed at 1 in the beginning of the line, and the cube in the ſecond length; or the unit may be placed at 10 at the end of the line; and then the root, the ſquare, and cube, will all fall backwards, and be found in the ſecond part between the middle and the end of the line.—Thus will the cube root of 8 be found 2; that of 27, 3; that of 64, 4; that of 125, 5; that of 216, 6, *&c.*

For the particular uſes of *Gunter's line* in the meaſuring of timber, gauging of veſſels, *&c.* See SLIDING-RULE.

For other uſes in geometry, trigonometry, *&c.* ſee SECTOR, and GUNTER'*s* SCALE.

GUNTER'*s* QUADRANT is a quadrant made of wood, braſs, or ſome other ſubſtance; being a kind of ſtereographic projection on the plane of the equinoctial, the eye ſuppoſed in one of the poles: ſo that the tropic, ecliptic, and horizon, are arches of circles, but the hour-circles all curves, drawn by means of ſeveral altitudes of the ſun, for ſome particular latitude every day in the year.

The uſe of this inſtrument is to find the hour of the day, the ſun's azimuth, *&c.* and other common problems of the globe; as alſo to take the altitude of an object in degrees.

See its deſcription and uſe more at large under the article *Gunter's* QUADRANT.

GUNTER'*s* SCALE, alſo called by navigators abſolutely *the Gunter*, is a large plane ſcale, with divers lines thereon; of great uſe in working queſtions in navigation, *&c.* See SCALE, and SAILING.

On one ſide the ſcale, repreſented *Tab. Trigonom. Fig.* 35. are the line of numbers, marked *numbers*; the line of artificial ſines, marked *ſines*; the line of artificial tangents, marked *tangents*; the line of artificial verſed ſines, marked *V. S.* the artificial ſines of the rhumbs, marked *S. R.* the artificial tangents of the rhumbs, marked *T. R.* the meridian line in Mercator's chart, marked *Merid.* and equal parts, marked *E. P.*

To which, on the ſhorter ſcales of a foot long, are uſually added lines of latitudes, hours, and inclinations of meridians. On the backſide of the ſcale are the lines uſually found on a plane ſcale.

The lines of artificial ſines, tangents, and numbers, are ſo fitted on this ſcale, that, by means of a pair of compaſſes, any problem, whether in right-lined or ſpherical trigonometry, may be ſolved very expeditiouſly, and with tolerable exactneſs; whence the inſtrument becomes extremely uſeful in all parts of mathematics where trigonometry is concerned, as navigation, dialling, aſtronomy. See TRIGONOMETRY, *&c.*

The ſame lines are alſo occaſionally laid down on rulers to ſlide by each other; hence called *ſliding Gunters*; ſo as to be uſed without compaſſes: but he that underſtands how to uſe them with, may, by what we have ſaid of Everard's and Coggeſhall's ſliding-rules, uſe them without. See SLIDING-*rule.*

Uſe of GUNTER'*s ſcale.*—1°, *The baſe of a right-lined right-angled triangle being given,* 30 *miles, and the oppoſite angle thereto* 26 *degrees; to find the length of the hypothenuſe.*—The trigonometrical canon or proportion is thus:—As the ſine of the angle, 26 degrees, is to the baſe, 30 miles, ſo is radius to the length of the hypothenuſe.—Set one foot of the compaſſes, therefore, on the 26th degree of the line of the ſines; and extend the other to 30 on the line of numbers; and the compaſſes remaining thus opened, ſet one foot on 90 degrees, or the end of the line of ſines, and extend the other on the line of numbers: this will give 68 miles and a half, for the length of the hypothenuſe ſought.

2°, *The baſe of a right-angled triangle being given,* 25 *miles, and the perpendicular* 15; *to find the angle oppoſite to the perpendicular.*—As the baſe 25 miles is to the perpendicular 15 miles, ſo is radius to the tangent of the angle ſought.—Extend the compaſſes, then, on the line of numbers, from 15 the perpendicular given, to 25 the baſe given; and the ſame extent will reach the contrary way, on the line of tangents, from 45 degrees, to 31 degrees, the angle ſought.

3°, *The baſe of a right-angled triangle being given, ſuppoſe* 20 *miles, and the angle oppoſite to the perpendicular* 50 *degrees, to find the perpendicular.*—As radius is to the tangent of the given angle 50 degrees, ſo is the baſe 20 miles to the perpendicular ſought.—Extend the compaſſes then on the line of tangents, from the tangent of 45 degrees to the tangent of 50 degrees; and the ſame extent will reach on the line of numbers the contrary way, from the given baſe 20 miles, to the required perpendicular 23 ¾ miles.

Note, the extent on the line of numbers is here taken from 20 to 23 ¾ forwards; that the tangent of 50 degrees may be as far beyond the tangent of 45 degrees, as its complement forty degrees wants of forty-five degrees.

4°, *The baſe of a right-angled triangle being given, ſuppoſe* 35 *miles, and the perpendicular* 48 *miles; to find the angle oppoſite to the perpendicular.*

As the baſe 35 miles is to the perpendicular 48 miles, ſo is radius to the tangent of the angle ſought.—Extend the compaſſes from 35 on the line of numbers, to 48; the ſame extent will reach the contrary way on the line of tangents, from the tangent of 45 deg. to the tangent of 36 deg. 5 min. or 53 deg. 55 min.—To know which of thoſe angles the angle ſought is equal to, conſider that the perpendicular of the triangle being greater than the baſe, and both the angles oppoſite to the perpendicular, and the baſe, making 90 deg. the angle oppoſite to the perpendicular, will be greater than the angle oppoſite to the baſe; and conſequently the angle 53 deg. 55 min. will be the angle ſought.

5°, *The hypothenuſe of a right-angled ſpherical triangle being given, ſuppoſe* 60 *degrees, and one of the ſides* 20 *degrees; to find the angle oppoſite to that ſide.*—As the ſine of the hypothenuſe 60 deg. is to radius, ſo is the ſine of the given ſide 20 deg. to the ſine of the angle ſought.—Extend the compaſſes on the line of ſines, from 60 deg. to the radius, or 90 deg. and the ſame extent will reach on the line of ſines the ſame way, from 20 deg. the given ſide to 23 deg. 10 min. the quantity of the angle ſought.

6°, *The courſe and diſtance of a ſhip being given, to find the difference of latitude and departure.*—Suppoſe a ſhip ſails from the latitude of 50 deg. 10 min. north, S. S. W. 48.5 miles: as radius is to the diſtance ſailed 48.5 miles, ſo is the ſine of the courſe, which is two points, or the ſecond rhumb, from the meridian, to the departure.—Extend the compaſſes from 8 on the artificial ſine rhumb-line, to 48.5 on the line of numbers; the ſame extent will reach the ſame way from the ſecond rhumb, on the line of artificial ſines of the rhumbs, to the departure weſting 18.6 miles.

Again, as radius is to the diſtance ſailed 48.5 miles, ſo is the coſine of the courſe 67 deg. 30 min. to the difference of latitude.—Extend your compaſſes from the radius, on the line of ſines, to 48.5 miles on the line of numbers; the ſame extent will reach the ſame way, from 67 deg. 30 min. on the line of ſines, to 44.8 on the line of numbers; which converted into degrees, by allowing 60 miles to a degree, and ſubtracted from the given north latitude 50 deg. 10 min. leaves the remainder 49 deg. 25 min. the preſent latitude.

7°, *The difference of latitude and departure from the meridian being given; to find the courſe and diſtance.*—A ſhip from the latitude 59 deg. north, ſails north-eaſtward till ſhe has altered her latitude 1 deg. 10 min. or 70 miles, and is departed from the meridian 57.5 miles, to find the courſe and diſtance.—As the difference of latitude 70 miles is to radius, ſo is the departure 57.5 miles to the tangent of the courſe 39 deg. 20 min. or three points and a half from the meridian.—Extend the compaſſes from the fourth rhumb, on the line of artificial tangents of the rhumbs, to 70 miles on the line of numbers, the ſame extent will reach from 57.5 on the line of numbers, to the third rhumb and a half on the line of artificial tangents of the rhumbs.

Again; as the ſine of the courſe 39 deg. 20 min. is to the departure 57. 5 miles, ſo is the radius to the diſtance 90. 6 miles.—Extend the compaſſes from the third rhumb and a half, on the artificial ſines of the rhumbs, to 57 .5 miles on the line of numbers; that extent will reach from the ſine of the eighth rhumb, on the ſines of the rhumbs, to 90 .6 miles on the line of numbers.

8°, *Three ſides of an oblique ſpherical triangle being given, to find the angle oppoſite to the greateſt.*—Suppoſe the ſide AB, *Fig*. 36. be 40 deg. the ſide BC 60 deg. and the ſide AC 96 deg. to find the angle ABC. Add the three ſides together, and from half the ſum ſubtract the greater ſide AC, and note the remainder: thus, *e. gr*. the ſum will be 196 deg. half of which is 98 deg. from which ſubtracting 96 deg. the remainder is two deg.

Then extend the compaſſes from the ſine of 90 deg. to that of the ſide AB 40 deg. and applying this extent to the ſine of the other ſide BC 60 deg. you will find it reach to a fourth ſine 34 deg.

Again; from this fourth ſine extend the compaſſes to the ſine of half the ſum, *i. e.* the ſine of 72 deg. the complement of 98 deg. to 180; this ſecond extent will reach from the ſine of the difference 2 deg. to the ſine of 3 deg. 24 min. againſt which, on the verſed ſines, ſtand 151 deg. 50 min. the quantity of the angle ſought.

GUSSET, in heraldry, denotes one of the abatements of honour; appropriated to laſcivious, effeminate, or wanton perſons.—It is formed of a line drawn from the dexter, or ſiniſter angle of the chief, and deſcending diagonally to the chief point; from whence another line falls perpendicularly upon the baſe: as repreſented *Tab. Herald. Fig*. 65.

GUST. See TASTE, and GOUST.

GUST *, is uſed by Bracton, and other antient writers, for ſtranger, or gueſt, who lodges with a perſon the ſecond night. See UNCUTH.

* In the laws of St. Edward, publiſhed by Lambard, the word is written *geſt*.

GUSTATION. See the article TASTING.

GUSTO *grand*. See the article GRAND.

GUTTA, a Latin term for what in Engliſh we call *drop*. See DROP.

GUTTÆ *Anglicanæ*, *Engliſh drops*, *volatile Engliſh drops*, or *Goddard's drops*, a name of a medicinal liquor prepared from divers ingredients; of ſovereign efficacy againſt coagulations of the blood, malignant fevers, and particularly the ſmall-pox, obſtructions, epilepſies, drouſy diſeaſes, vapours, *&c.*

The inventor of theſe celebrated drops was Dr. Goddard, a phyſician of London. The ſecret of their compoſition was purchaſed by king Charles II. at the price of 5000*l.* ſterl. whence they were denominated *guttæ Anglicanæ*.

This coſtly receipt we ſhall here gratify the reader withal, *à meilleur marché*: "Take five pounds of human cranium of "a perſon hanged, or dead of ſome violent death, two pounds "of dried vipers, two pounds of hart's-horn, and two of "ivory; mince the whole ſmall, put it in two or three re-"torts, and diſtil it in a reverbatory furnace, with the ſame "precautions as are ordinarily uſed in diſtilling hart's-horn "and vipers, to extract their volatile ſalt. When the veſſels "or receivers are cold, unlute them, and ſhake them well, "in order to looſen the volatile ſalt from the ſides of the "veſſels. Pour the whole into a large glaſs cucurbite, and "filtrate it through a brown paper, in order to ſeparate the "oil, which is here uſeleſs: put the filtrated liquor in a glaſs "retort, and place it in a ſand-heat, and fit another glaſs "retort thereto, as a recipient: take care all things be well "luted, and make a cohobation of the ſaid matters at three "times. But, by the way, add all the ſalt before ſeparated "from the receivers; and after the ſaid three cohobations, "unlute the retorts, and pour the whole into a matraſs with "a long neck, to which fit a ſuitable capital, and a receiver; "lute all the joinings on each ſide with a wet bladder, and "ſet the veſſel in a ſand-heat: by this means, the volatile "ſalt will be ſublimed, and ſtick to the capital, and upper "part of the matraſs. Continue the fire till ſpirit enough "hath riſen to fuſe and diſſolve the ſalt which aroſe firſt: "then take all the fire out of the furnace, that the diſtillation "may proceed no further; which is a circumſtance of the "laſt importance; without which the medicine would be "weakened by too much phlegm." Biet, in *Mem. de Trev.* an. 1713.

As to the doſe of this remedy, they begin with ſeven or eight drops, increaſing by degrees, to forty or fifty, on preſſing occaſions, as in apoplexies, lethargies, weakneſſes, *&c.*

The real compoſition of the *guttæ*, however, is ſomewhat controverted. Dr. Liſter aſſures us, that he had the ſecret communicated to him by king Charles II. and that it is no other than the volatile ſpirit of raw ſilk rectified with oil of cinnamon, or ſome other eſſential oil. See SILK.

The ſame author aſſures us, he had found by experience, that the *guttæ Anglicanæ* were not in any reſpect preferable to the common volatile ſpirits of hartſhorn and ſal ammoniac, except that the ſmell is more ſupportable.—*Mem. de l'Acad. des Scien.* an. 1700.

GUTTÆ, in architecture, are ornaments in form of little cones, uſed in the plafond of the Doric cornice, or on the architrave, underneath the triglyphs; repreſenting a ſort of drops, or bells; they are uſually ſix in number. See *Tab. Archit. Fig*. 28. lit. e and O.

They are ſometimes alſo called *lacrymæ*, tears; and *campanæ*, or *campanulæ*, bells. Leon Baptiſta Alberti calls them *nails.*

GUTTA-SERENA, is a diſeaſe of the eyes, being an intire privation of ſight, without any apparent fault or diſorder of the part, excepting that the pupil looks ſomewhat larger and blacker than before.

Its cauſe is ſuppoſed to be a compreſſion or obſtruction of the optic nerves, which prevents the due flux of the animal ſpirits into the retina. Pitcairn aſcribes it to an indiſpoſition of the retina, occaſioned by the veſſels thereof being too much diſtended with blood.

The *gutta-ſerena* is one of the moſt dangerous and untractable of all the diſeaſes of the eyes. The cure, according to Pitcairn, is to be attempted with mercurials, and ſometimes even with ſalivation, and with decoctions of guaiacum.

The muſcæ volitantes are a pathognomonic ſign of a growing *gutta-ſerena*. The Greeks call it *amauroſis*.

GUTTE. See the article GUTTY.

GUTTERS, in building, a kind of canals in the roofs of buildings, ſerving to drain, receive, and carry off, the rain-waters. See ROOF.

GUTTER *tyles*. See the article TYLE.

GUTTURAL *letters*, are thoſe pronounced, or formed, as it were, in the throat.

Dr. Wallis diſtinguiſhes the vowels in our language, into labial, palatine, and *guttural*; according to the three ſeveral degrees of opening of the mouth to pronounce them, larger, middle, and leſs. On this footing he makes three *guttural* vowels, and three labial, and as many palatines.

GUTTUS, a Latin term, uſed among antiquaries, for a ſort of vaſe uſed in the Roman ſacrifices, to take the wine, and ſprinkle it, *guttatim*, drop by drop, upon the victim.

Viginere on T. Livy gives the figure of the *guttus*, as repreſented on divers medals, and other antient monuments.

GUTTY, or GUTTE, in heraldry, is when a thing is repreſented as charged or ſprinkled with drops.

In blazon, the colour of the drops is to be named: thus, *gutty* of ſable, of gules, *&c.*

Some authors will have red drops called *gutty de ſang*, or drops of blood; back ones, *gutty de poix*, of pitch; white, *gutty d'eau*, of water, *&c.*

GUY'*s hoſpital*. See the article HOSPITAL.

GUZES, in heraldry, roundles of a ſanguine or murry colour.

GYMNASIARCH *, GYMNASIARCHA, in antiquity, the maſter, or director, of a gymnaſium.

* The word is Greek, γυμνασιαρχης, componnded of γυμνασιον, and αρχη, government.

The Greeks did not rank the *gymnaſiarcha* among the number of magiſtrates; though his office was of great conſideration, as having the care of all their youth, who were truſted to him to be formed to exerciſes of the body.

He had two principal officers under him, who were to aſſiſt him in the government of the gymnaſium: the firſt named *xyſtarch*, and the ſecond *gymnaſta*. The former was maſter of the athletæ, and preſided over the wreſtling. See XYSTARCH, ATHLETA, *&c.* The latter had the direction of all the other exerciſes; taking care they were performed in due time and manner; that they were not too ſevere; that the youth attempted nothing beyond their ſtrength; and that nothing were done that might be injurious to their health.

Theſe had ſeveral ſubaltern officers or ſervants under them, for the ſervice and inſtruction of the youth committed to them.

GYMNASIUM *, a place fitted for performing exerciſes of the body.

* The word is Greek, γυμνασιον, formed of γυμνος, naked; by reaſon they antiently put off their cloaths, to practiſe with the more freedom.

Among the antients, *gymnaſium* was a public edifice deſtined for exerciſe, and where people were taught, and regularly diſciplined therein, under proper maſters.

If we may credit Solon in Lucian's *Anacharſis*, and Cicero d *Orat*. lib. 2. the Greeks were the firſt who had *gymnaſia*; a among the Greeks the Lacedemonians: after them the Ath nians; from whom the Romans borrowed them.

There were three principal *gymnaſiums* at Athens; the *Ac demy*, where Plato taught; the *Lyceum*, noted for Ariſtotle lectures; and the *Cynoſarges*, allotted for the populace.

Vitruvius deſcribes the ſtructure and form of the antie *gymnaſiums*, lib. v. c. 11.—They were called *gymnaſia*, b cauſe the champions performed *naked*; and *palæſtræ*, fr *wreſtling*, which was one of the moſt uſual exerciſes there the Romans ſometimes, alſo, called them *thermæ*, becauſe the baths and bagnio's made a principal part thereof.

It appears, that they did not perform their exerciſes quite naked, ſo early as the time of Homer, but always in drawers; which they did not lay aſide before the thirty-ſecond olympiad. One Orſippus is ſaid to have been the firſt who introduced the practice: for having been worſted, by means of his drawers undoing, and entangling him, he threw them quite aſide; and the reſt afterwards imitated him.

The *gymnaſia* conſiſted of ſeveral members, or apartments. M. Burette, after Vitruvius, recites no leſs than twelve; *viz.* 1°, The exterior *portico's*, where the philoſophers, rhetoricians, mathematicians, phyſicians, and other virtuoſi, read public lectures, and where they alſo diſputed, and rehearſed their performances. 2°, The *ephebeum*, where the youth aſſembled very early, to learn their exerciſes in private, without any ſpectators. 3°, The *coryceum*, *apodyterion*, or *gymnaſterion*, a kind of wardrobe, where they ſtripped, either to bathe, or exerciſe. 4°, The *elæotheſium*, *alipterion*, or *unctuarium*, appointed for the unctions, which either preceded, or followed, the uſe of the bath, wreſtling, pancratia, *&c.* 5°, The *coniſterium*, or *coniſtra*, in which they covered themſelves with ſand, or duſt, to dry up the oil, or ſweat. 6°, The *palæſtra*, properly ſo called, where they practiſed wreſtling, the pugillate, pancratia, and divers other exerciſes. 7°, The *ſphæriſterium*, or tennis-court, reſerved for exerciſes wherein they uſed balls. 8°, Large unpaved alleys, which comprehended the ſpace between the portico's and the walls wherewith the edifice was ſurrounded. 9°, The *xyſti*, which were portico's for the wreſtlers in winter, or bad weather. 10°, Other *xyſti's*, or open alleys, allotted for ſummer, and fine weather; ſome of which were quite open, and others planted with trees. 11°, The *baths*, conſiſting of ſeveral different apartments. See Bath. 12°, The *ſtadium*, a large ſpace, of a ſemicircular form, covered with ſand, and ſurrounded with ſeats for the ſpectators. See Stadium.

For the adminiſtration of the *gymnaſia*, there were divers officers: the principal were, 1°, The *gymnaſiarcha*, who was the director and ſuperintendent of the whole. 2°, The *xyſtarcha*, who preſided in the xyſtus, or ſtadium. 3°, The *gymnaſta*, or maſter of the exerciſes, who underſtood their different effects, and could accommodate them to the different complexions of the athletæ. 4°, The *pædotriba*, whoſe buſineſs was, mechanically to teach the exerciſes, without underſtanding their theory, or uſe. Under theſe four officers were a number of ſubalterns, whoſe names diſtinguiſhed their different functions.

For the kinds of exerciſes practiſed in the *gymnaſia*, they may be reduced to two general claſſes, as they depend either on the action of the body alone, or as they require external agents, or inſtruments. The former are chiefly of two kinds; *orcheſtice*, and *palæſtrice*.

The *orcheſtice* comprehended, 1°, *Dancing.* 2°, *Cubiſtice*, or the art of tumbling. 3°, *Sphæriſtice*, or tennis, including all the exerciſes with pilæ, or balls.

The *palæſtrice* compriſed all exerciſes under the denomination *palæſtra*; as *wreſtling*, *boxing*, *pancratia*, *hoplomachia*, *running*, *leaping*, *throwing the diſcus*, the *exerciſe of the javelin*, and that of the *hoop*, denominated, by the Greeks, τροχος, which conſiſted in rolling an iron hoop, five or ſix feet in diameter, beſet with iron rings; the noiſe of which appriſing the people to give way, afforded them, alſo, an amuſement. Both ſtrength and ſkill were requiſite in directing this hoop, which was to be driven with an iron rod.

To theſe muſt, alſo, be added, the exerciſes belonging to the medicinal gymnaſtics: as, 1°, *Walking.* 2°, *Vociferation*, or ſhouting. 3°, *Holding one's breath.*

The bodily exerciſes, which depend on external agents, may be reduced to *mounting* the horſe, *riding* in a chaiſe, litter, or other wheeled vehicle; *rocking* in beds, or cradles, and ſometimes *ſwinging*; to which may be added, the art of *ſwimming.*—Hoffman enumerates no leſs than fifty-five ſorts of *gymnaſtic* exerciſes.

YMNASTICKS, Gymnastice, or the Gymnastic *art*, denotes the art of performing exerciſes of the body, whether for defence, health, or diverſion.

The *gymnaſtic* art is divided into three ſpecies, or branches; *military*, *medicinal*, and *athletic*, or *ſportive.*

Several modern writers have treated of this art: as Mercurialis, *De arte Gymnaſtica*; Faber, in *Agoniſtic.* Joubert, *De Gymnaſiis*; Cagnatus, *De Sanit. tuend.* Voſſius, *De Quatuor Artib. Popular.* Meurſius, *De Orcheſtra*; Fuller, in *Medicina Gymnaſtica*; and M. Burette, in ſeveral diſſertations on the *antient Dancing*, *Spheriſtics*, *Athletics*, *Wreſtling*, *Pugillate*, *Diſcus*, &c.

M. Burette has given the hiſtory of *gymnaſtics* in the *Memoirs of the Royal Academy of Inſcriptions.*—According to him, this art is coeval with the world. In reality, we can hardly ſuppoſe mankind to have ever been without ſome ſort of exerciſes of the ody; which the defence of their perſons, the preſervation of health, and even recreation, and mirth, would neceſſarily lead them to. See Exercise.

On the firſt eſtabliſhment of ſociety, men, being appriſed of the neceſſity of military exerciſes, for repelling the inſults of their neighbours, inſtituted games, and propoſed prizes, to animate their youth to combats of divers kinds. See Game. And as running, leaping, ſtrength and dexterity of arm in throwing the javelin, driving a ball, or toſſing a quoit, together with wreſtling, *&c.* were exerciſes ſuited to the manner of fighting in thoſe days; ſo the youth vied to excel in them, in the preſence of the aged, who ſat their judges, and diſpenſed prizes to the conquerors; till what was originally only amuſement, became, at length, a matter of ſuch importance, as to intereſt famous cities, and intire nations, in its practice.

Hence aroſe an emulation and eagerneſs to excel, in hopes, one day, of being proclaimed and crowned conquerors in the public games, which was the higheſt honour a mortal could arrive at: nay, they went ſo far, as to imagine, that even gods and demigods were not inſenſible of what men were ſo captivated withal; and, in conſequence hereof, to introduce the greateſt part of theſe exerciſes into their religious ceremonies, the worſhip of their gods, and the funeral honours done the manes of the dead.

Though it be hard to determine the preciſe epocha of the *gymnaſtic* art, yet it appears, from ſeveral paſſages in Homer, and, particularly, the xxiii^{d} book of the *Iliad*, where he deſcribes the games celebrated at the funeral of Patroclus, that it was not unknown at the time of the Trojan war.—From that deſcription, which is the earlieſt monument, now extant, of the Grecian *gymnaſtics*, it appears, that they had chariot-races, boxing, wreſtling, foot-races, gladiators, throwing the diſcus, drawing the bow, and hurling the javelin; and it ſhould ſeem, from the particular account Homer gives of theſe exerciſes, that even then the *gymnaſtic* art wanted little of perfection: ſo that, when Galen ſays, there was no *gymnaſtic* art in Homer's days, and that it began to appear no earlier than Plato; he is to be underſtood of the medicinal *gymnaſtics* only. This laſt, indeed, had its riſe later; becauſe, while men continued ſober and laborious, they had no occaſion for it: but when luxury and idleneſs had reduced them to the ſad neceſſity of applying to phyſicians; theſe, who had found that nothing contributed ſo much to the preſervation and re-eſtabliſhment of health, as exerciſes proportioned to the different complexions, ages, and ſexes, did not fail to remit them to the practice of *gymnaſtics.*

According to Plato, one Herodicus, prior a little time to Hippocrates, was the firſt who introduced this art into phyſic; and his ſucceſſors, convinced, by experience, of its uſefulneſs, applied themſelves, in earneſt, to improve it.

Hippocrates, in his book of *Regimen*, has given inſtances of it, where he treats of exerciſe in general, and of the particular effects of walking, with regard to health; alſo, of the different ſorts of races, either on foot, or horſeback; leaping, wreſtling, the exerciſe of the ſuſpended ball, called *corycus*, chironomy, unctions, frictions, rolling in the ſand, *&c.*

But as phyſicians did not adopt all the exerciſes of the *gymnaſtic* art into their practice, it became divided between them and the maſters of martial and athletic exerciſes, who kept ſchools, the number of which was greatly increaſed in Greece.

At length the Romans, alſo, caught the ſame taſte; and, adopting the military and athletic exerciſes of the Greeks, they improved and advanced them to the utmoſt pitch of magnificence, not to ſay extravagance. But the declenſion of the empire involved the arts in its ruin; and, among others, *gymnaſtics* and medicine; which laſt unhappily then relinquiſhed the title it had to the former, and has neglected to reſume it ever ſince.

GYMNIC, Gymnicus, ſomething belonging to the exerciſes of the body.

Gymnic games, *ludi gymnici*, are thoſe wherein the body is exerciſed: ſuch are wreſtling, running, dancing, the uſe of the lance, quoit-playing, *&c.*

Theſe made the chief diverſions of the Olympic, Nemæan, Pythian, and Iſthmian ſolemnities; being called by the Greeks, Πενταθλον; and the Latins, *Quinquertium.* See Olympic, Nemæan, Pythian, Isthmian, *&c.* ſee, alſo, Pentathlon.

GYMNOPÆDIA*, a kind of dance, in uſe among the antient Lacedemonians; performed, during their ſacrifices, by young perſons, who danced naked, ſinging, at the ſame time, an hymn in honour of Apollo.

* The word is alſo written *γymnopædice.* It is compounded of γυμνος, naked; and παις, child.

One Terpander is recorded as the inventor of the *gymnopædia.* Athenæus deſcribes it as a Bacchic dance, performed by youths ſtripped quite naked, with certain interrupted, though agreeable motions and geſtures of the body; the arms and legs being flouriſhed, and directed after a peculiar manner, repreſenting a ſort of real wreſtling.

GYMNOSOPHISTS*, a ſet of Indian philoſophers, famous in antiquity; ſo denominated from their going barefooted.

* The word is formed of the Greek γυμνοσοφιστης; *q. d.* a ſophiſt, or philoſopher, who goes naked.

This name was given to the Indian philoſophers, whom the exceſſive heat of the country obliged to go naked; as that of *Peripatetics* was given thoſe who philoſophized walking.

Laertius, Vives, *&c.* will not have *Gymnoſophiſt* to have been the name of any particular ſect, but a common name of all the philoſophers in the Indies; and hence they divide them into Brachmans, and Germani.

Among the Germani, called alſo, by Porphyry, *Samanæi*, and by Clemens Alexand. *Sermanæ*, ſome were called *Hylobii*, by Clemens Alexand. *Allobii*, as inhabiting the woods; which laſt ſeem to come neareſt to the notion of *Gymnoſophiſts*. Clemens relates, that theſe Allobii neither inhabit cities nor towns, are cloathed moſtly with the leaves of trees, eat acorns and berries, and drink water out of their hands; abſtaining from marriage and procreation.

Apuleius, *Florid.* lib. i. deſcribes the *Gymnoſophiſts* thus: " They are all devoted to the ſtudy of wiſdom, both the elder " maſters, and the younger pupils; and what to me appears " the moſt amiable thing in their character, is, that they have " an averſion to idleneſs and indolence: accordingly, as ſoon " as the table is ſpread, before a bit of victuals be brought, " the youths are all called together from their ſeveral places " and offices, and the maſters examine them what good they " have done ſince the ſun-riſe: here one relates ſomething " he has diſcovered by meditation; another has learned ſomething " by demonſtration; and as for thoſe who have nothing " to allege why they ſhould dine, they are turned out to work " faſting."

The great leader of the *Gymnoſophiſts*, according to Jerome, was one Buddas, called, by Clemens, *Butta*; who is ranked, by Suidas, among the Brachmans. That laſt author makes Buddas the præceptor of Manes the Perſian, the founder of the *Gymnoſophiſts*.

GYNÆCEUM*, Γυναικειον, among the antients, the apartment of the women; or a ſeparate place, in the inner-part of the houſe, where the women kept themſelves retired, employed in their ſpinning, out of the ſight of the men.

* The word is compounded of the Greek, γυνη, a woman; and οικος, an houſe.

Under the Roman emperors there was a particular eſtabliſhment of *gynæcea*; being a kind of manufactories managed chiefly by women, for the making of clothes, furniture, *&c.* for the emperor's houſhold. Mention is made of theſe *gynæcea*, in the Theodoſian and Juſtinian code, and by divers other authors.

In imitation hereof, divers of the modern manufactories, particularly thoſe of ſilk, where a number of women and maids are aſſociated, and formed into a body, are called *gynæcea*.

GYNÆCIARIUS, a workman employed in the gynæceum. In the antient gynæcea there were men to weave, and ſhape; the reſt, as ſpinning, *&c.* being performed by women.

Criminals were ſometimes condemned to ſerve in the gynæcea, much as now in the galleys: frequently, alſo, this was a kind of ſervice which princes exacted of their ſubjects, or vaſſals, both men and women, whom they made to work for them in their gynæcea.

GYNÆCOCRATUMENI*, an antient people of Sarmatia Europæa, inhabiting the eaſtern banks of the river Tanais, near its opening into the Palus Mæotis; thus called, as authors relate, becauſe they had no women among them: or, rather, becauſe under the dominion of women.

* The word is formed of γυνη, woman; and κρατουμενος, vanquiſhed: of κρατεω, I overcome; *q. d.* overcome by women.

Fa. Hardouin, in his notes on Pliny, ſays, they were thus called, by reaſon, after a battle which they loſt againſt the Amazons on the banks of the Thermodoon, they were obliged to have a venereal commerce with them, in order to get them children; *Et quod victricibus obſequantur ad procurandam eis ſobolem*.

Hardouin calls them the huſbands of the Amazons, *Amazonum connubia*: for, as that author obſerves, the word *unde* muſt be retrenched from Pliny; having been foiſted into the text by people who were not maſters of the author's meaning, *unde Amazonum connubia*.

They who take the Amazons for a fabulous people, will conclude the ſame of the *Gynæcocratumenians*. See AMAZON.

GYNÆCOCRACY*, GYNÆCOCRATIA, a petticoat-government; or a ſtate where women have, or may have, the ſupreme command.

* The word is formed of γυνη, γυναικος, woman; and κρατος, authority, power, government.

In this ſenſe, England and Spain are *gynæcocracies*: the French value themſelves, and think they are greatly happy, that their monarchy is not *gynæcocratic*.

GYNÆCONOMUS*, the name of a magiſtrate of Athens, who had the cenſure, and inſpection, of the women.

* The word is compounded of the Greek γυνη, γυναικος, woman; and νομος, law.

There were ten *gynæconomi*: their buſineſs was, to inform themſelves of the lives and manners of the ladies of that city, and to puniſh ſuch as miſbehaved themſelves, or tranſgreſſed the common bounds of modeſty and decency.

They had a liſt hanging out, of the names of all thoſe whom they had cenſured, or condemned to any mulct, forfeiture, penance, or other penalty.

GYNGLIMUS, in anatomy, *&c.* See GINGLYMUS.

GYPSUM, Γυψος, in natural hiſtory, a talcky ſort of ſtone, found in quarries; which being burnt, and diluted, or wrought up with water, ſerves to make what we call *parget*, or *plaſter of Paris*.

GYPSUM, or GYPSE, is alſo uſed for a coarſe ſort of talc; or a ſhining tranſparent ſtone chiefly found in the quarries of Montmartre, near Paris, among the plaſter ſtones.

The generality confound this with the former, on account of the conformity of its name with the Latin *gypſum*, but unhappily enough; as the French *gyp*, or *gypſe*, is not fit for the making of the common plaſter.

This ſtone, being calcined in a kiln, beaten in a mortar, and ſifted, and mixed up with gum, or ſize-water, and colours, ſerves to counterfeit marble; which it does to that perfection, that both the eye and touch may be deceived.

The method of preparing it will be ſhewn under the article MOSAIC.

GYROMANCY*, GYROMANTIA, a kind of divination, performed by walking round, or in, a circle. See DIVINATION.

* The word is compounded of the Greek γυρος, circle; and μαντεια, divination.

H.

H, Is the eighth letter of the alphabet, and the ſixth conſonant.

Varro, *De re ruſtica*, Lib. III. cap. 1. calls the *h*, *afflatus*; and Martianus Capella ſays it is pronounced by only a gentle contraction of the trachea.—Hence it has been diſputed, whether or no the *h* be a real letter.

Some will only have it an aſpiration, or ſpirit, in regard its ſound is ſo weak. And accordingly the Greeks, of later ages at leaſt, do not place it in the line with the other letters, but put it over the head of the letter which follows it: though it ſhould ſeem they antiently wrote it in the ſame line with the reſt.

The Latin grammarians, as they were religious imitators of the Greeks, have, on their authority, generally diſallowed the *h* as a letter; and the moderns have herein followed the Latins. But the *h*, like all the other aſpirates, from the time it is aſpirated, and for this very reaſon that it is aſpirated, is not only a letter, but a real conſonant; it being a motion, or effort of the larynx, to modify the ſound of the vowel that follows; as is evident in the words heaven, health, hero, *&c.* where the vowel *e* is differently modified from what it is in the words endive, eating, elect, *&c.* and ſuch modification is all that is eſſential to a conſonant.

Upon the whole, the *h* is either a letter, or ſ and z are none; thoſe being no more than hiſſing aſpirations: and they who exclude the *h* from among the letters, as conceiving it only a mark of aſpiration, might as well exclude the labial conſonants *b* and *p*, and ſay they are only marks of certain motions of the lips, *&c.*

The *h* then is a letter, and a conſonant of the guttural kind, *i. e.* a conſonant, to the pronunciation whereof, the throat concurs in a particular manner, more than any other of the organs of voice.

It is true, in many words beginning with *h*, the aſpiration is very weak, and almoſt inſenſible; the *h* in thoſe caſes not doing its office: but it does not ceaſe to be a conſonant on that ſcore, more than various other conſonants, which we write, but do not pronounce; as the *k* in quick, *&c.* and ſeveral other letters, particularly in the Hebrew, French, *&c.* Nor does it ceaſe to be a conſonant, becauſe it does not hinder the eliſion of the foregoing vowel, when another vowel follows in the ſubſequent word; for then *m* would undergo the ſame diſqualification.

M. Menage diſtinguiſhes two kinds of *h*; the one an aſpirate, which he allows a conſonant, the other a mute, which he conſiders as a vowel.—Now, it is certain, the aſpirated *h* is a conſonant; but the mute *h* is no vowel, as having no peculiar or proper ſound diſtinct from that of the vowel, or diphthong, immediately following it.

When the *h* is preceded by a *c*, the two letters together have frequently the ſound of the Hebrew שׁ, with a point over the right horn: as in charity, *&c.*

In moſt words derived from the Greek, and beginning in that language with the letter χ, the *ch*, which begins them in Engliſh, has generally the ſound of a *k*, as in echo, chorus, *&c.* though it is ſometimes ſoftened a little, as in Cherſoneſus, *&c.*

After a *p*, the *h* is always pronounced together with the *p*, like an *f*; as in phraſes, Philiſtines, phlegm, phlebotomy, philoſophy, Phoceans, *&c.*—Moſt words of this claſs are either proper names, or terms of art, borrowed from the Greek, or the Oriental languages; and written in Greek with a φ, and with a פ in the others.

In antient authors, we frequently meet with *h* put inſtead of *f*; as *haba* for *faba*; but this is principally obſervable in the Spaniſh tongue, where moſt of the words borrowed from the Latin beginning with an *f*, take the *h* in lieu of it: as *hablar*, for *fabulari*; *habo*, for *fabus*; *hado*, for *fatum*.—For the intercourſe which *h* has with the Æolic digamma, ſee the letter F.

The aſpirate or ſharp accent of the Greeks, which is the ſame with our *h*, is alſo frequently changed in the Latin for an *s*; as ἅλς, *ſal*; ἑπτα, *ſeptem*; ἑξ, *ſex*; ἑρπω, *ſerpo*; ἡμισυ, *ſemis*; ὑς, *ſus*, &c.—The *h* is alſo uſed for ſome other letters, enumerated at large by Paſſerat, *De literarum inter ſe cognatione & permutatione.*

Antiently the *h* was put for *ch*; thus of *Chlodovæus* was formed *Hludovicus*, as it is read on all the coins of the ninth and tenth centuries; and it was on this account, that they wrote *Hludovicus* with an *h*.—In courſe of time, the ſound of the *h* being much weakened, or intirely ſuppreſſed, the *h* was dropt, and the word was written *Ludovicus*. In like manner we read *Hlotaire*, *Hlovis*, &c.

F. Lobineau will have this difference to have ariſen from the differences in the pronunciation.—Such, ſays he, as could not pronounce the guttural, wherewith thoſe two words begin, ſubſtituted a *c* for it; and they who pronounced it ſo, wrote it after the ſame manner: but ſuch as were accuſtomed to pronounce the guttural, wrote it likewiſe.—He might have added, that ſuch as could not pronounce it, at length abſolutely rejected it, and both wrote and ſpoke *Louis*, *Lotaire*, &c.—Some learned men have conjectured, that the *h* ſhould have been detached from the name; and that it ſignified lord, from the Latin *herus*, or the German *herr*. Much as the D, which the Spaniards prefix to their proper names, as *D. Phelipe*, for Don Philip.—But as it is likewiſe found before the names of ſeveral cities, it is more probable the letter was there uſed to denote the rough, harſh pronunciation of the antient Franks.

In reality, the moſt antient way of writing the names of theſe French kings, was not by *h*, but by *ch*; where the *c* ſeems to have ſtood for *koning*, king, and the *h* was inſerted to give the *c* a guttural ſound.

The *h* is ſometimes alſo found prefixed to the *c*; as *Hcarolus*, *hcalendæ*, &c. for *Carolus*, *calendæ*, &c.

H, among the antients, was alſo a numeral letter ſignifying 200, according to the verſe:

> H *quoque ducentos per ſe deſignat habendos.*

When a daſh was drawn at the top of the $\overline{\text{H}}$, it ſignified two hundred thouſand. See what has been obſerved on this ſubject, under the letter A.

HABAKKUK*, Hhabakkuk, one of the twelve leſſer prophets, whoſe prophecies are taken into the canon of the Old Teſtament.

* The name is written in the Hebrew with ח *hheth*; and ſignifies a wreſtler, or grappler. The Greek tranſlators call him *Abbakoum.*

The preciſe time is not known when *Habakkuk* propheſied; but from his predicting the ruin of the Jews by the Chaldeans, it may be concluded he propheſied before Zedekiah, or about the time of Manaſſes.—His prophecy only conſiſts of three chapters.

HABDALA*, or Habhdalah, a Jewiſh ceremony, practiſed among that people every ſabbath-day evening.

* The word, is Hebrew, and literally ſignifies ſeparation: it is formed of בדל *badal*, to ſeparate, divide; the ceremony being looked upon as the diviſion or parting of the ſabbath from the reſt of the week. It was eſtabliſhed to prevent their being too haſty in ending the ſabbath.

Towards the cloſe of the ſabbath, when the ſtars begin to appear, every maſter of a family lights a torch, or flambeau, or at leaſt a lamp with two wicks.—A little box of ſpices is then prepared, and a glaſs of wine taken; then ſinging, or rehearſing a prayer, and bleſſing the wine and the ſpices, they all ſmell at them; and, after a few ceremonies performed about the torch, or lamp, they caſt a little of the conſecrated wine into the flame; every body taſtes; and thus they break up, wiſhing each other, not a good night, but a good week.

HABEAS *corpus*, in law, a writ, which a man indicted and impriſoned for any crime, or treſpaſs, before the juſtices of peace, or in a court of franchiſe; having offered ſufficient bail, which is refuſed, though the caſe be bailable; may have out of the king's bench, thereby to remove himſelf thither, at his own coſts, to anſwer the cauſe at the bar thereof.

The order, in this caſe, is firſt to procure a *certiorari* out of the chancery, directed to the ſaid juſtices, for removing the indictment into the king's bench; and upon that to procure this writ to the ſheriff, for cauſing his body to be brought at a certain day.

Habeas *corpora* is alſo a writ that lies for bringing in a jury, or ſo many of them as refuſe to come upon the *venire facias*, for the tryal of a cauſe brought to iſſue. See Jury.

HABENDUM, a word of courſe in a conveyance.—In every conveyance are two principal parts, the *premiſes*, and the *habendum*: the office of the firſt is to expreſs the name of the grantor, the grantee, and the thing granted.

The *habendum* is to limit the eſtate, ſo that the general implication, which, by conſtruction of law, paſſeth in the premiſes, is by the *habendum* controuled and qualified.

Thus, in a leaſe to two perſons; the *habendum* to one for life, alters the general implication of the joint-tenancy in freehold,

hold, which ſhould paſs by the premiſes, if the *habendum* were not.

HABERE *facias ſeiſinam*, a judicial writ, which lies where a man has recovered lands in the king's court; directed to the ſheriff, commanding him to give him the ſeiſin thereof.

This writ ſometimes alſo iſſues out of the records of a fine, directed to the ſheriff of the county where the lands lie; commanding him to give to the cognizee, or to his heirs, ſeiſin of the land whereof the fine is levied.

The writ lies within the year after the fine, or judgment, upon the *ſcire facias*; and may be made in divers forms.

There is alſo a writ called HABERE *facias ſeiſinam, ubi rex habuit annum, diem, & vaſtum*; which lies for the delivery of lands to the lord of the fee, after the king had taken his due of a perſon's lands, who was convict of felony.

HABERE *facias viſum* is a writ that lies in divers caſes, as in dower, formedon, *&c.* where a view is to be taken of the land or tenements in queſtion.

HABERGION *, or HAUBERGEON, HABERGETUM, a coat of mail; an antient piece of defenſive armour, in form of a coat, deſcending from the neck to the middle; and formed of little iron rings, or maſhes, linked into each other.

* The word is alſo written *haberge*, *hauberge*, *haubere*, *haubert*, *hautber*, *hautbert*, and *hauberk*. Spelman takes it to have been formed from the antient French *hault*, high, and *berg*, armour, covering; as ſerving to defend the upper part of the body. Du Cange and Skinner chooſe to derive it from the Belgic *hals*, or Teutonic *haltz*, neck, and *bergen*, to cover:—as if it were a peculiar defence for the neck. Others will have it formed of *al*, *alla*, q. d. all, and *bergen*, to cover; as importing it a cover for the whole body.

HABILIMENTS *of war*, in our antient ſtatutes, ſignify armour, harneſs, utenſils, or other proviſions for war; without which there is ſuppoſed no ability to maintain war.

HABIT, in philoſophy, an aptitude, or diſpoſition, either of mind or body, acquired by a frequent repetition of the ſame act.

Some of the ſchoolmen call this a *qualitative habit*, *habitus qualitativus*; and define it a quality adventitious to a thing, fitting and diſpoſing it either to act or ſuffer.

Others define *habit* an affection of mind or body, perſiſting by long uſe and continuance.—In which ſenſe ἕξις, a conſtant *habit*, is diſtinguiſhed from διαθεσις, a preſent diſpoſition, liable ſoon to alter.

Habits may be diſtinguiſhed into thoſe of the mind, and of the body.—Thus virtue is called an *habit* of the mind; ſtrength, an *habit* of the body.

All natural *habits*, whether of body or mind, are no other than the body and mind themſelves, conſidered as either acting or ſuffering; or they are modes of the body or mind, wherein either perſeveres, till effaced by ſome contrary mode.

Ariſtotle enumerates five *habits* of the mind; *viz.* underſtanding, knowlege, wiſdom, prudence, and art: which diviſion the later writers ſet aſide, and only admit of three intellectual *habits*; viz. ſcience, prudence, and art: agreeable to the three kinds of objects, about which the mind has occaſion to be facilitated; which are either theoretical, practical, or effective.

Virtues and vices are conſidered by philoſophers under the notion of good and bad *habits*.

The archbiſhop of Cambray defines *habits*, in the general, to be certain impreſſions left in the mind; by means whereof, we find a greater eaſe, readineſs, and inclination, to do any thing formerly done, by having the idea ready at hand to direct us how it was done before.—Thus, *e. g.* we form a *habit* of ſobriety, by having always before us the inconveniencies of exceſs; the reflections whereof, being often repeated, render the exerciſe of that virtue continually more and more eaſy.

F. Malebranche gives a more mechanical theory of the *habits*.—His principle is, that they conſiſt in a facility which the ſpirits have acquired, of paſſing eaſily from one part of the body to another. He argues thus: If the mind act on, and move the body, it is, in all probability, by means of a ſtock of animal ſpirits lodged in the brain, ready to be ſent at the motion of the will, by means of the nerves which open or terminate in the brain, into the muſcles of the body.

Now, an influx of ſpirits into a muſcle, occaſions a ſwelling, and, of courſe, a ſhortening of the muſcle; and conſequently a motion of the part that muſcle is faſtened to.

Farther, the ſpirits do not always find all the roads open and free, which they are to paſs through; whence that difficulty we perceive of moving the fingers with that quickneſs neceſſary to play on a muſical inſtrument; or of moving the muſcles neceſſary to pronounce the words of a foreign language. But, by degrees, the ſpirits, by their continual flux, ſmoothen the ways; ſo that at length they meet with no reſiſtance at all. Now it is in this facility the ſpirits find of paſſing, when directed into the members of the body, that *habits* conſiſt.

On this hypotheſis, it is eaſy to account for an infinity of phænomena relating to the *habits*.—Why, for inſtance, children acquire new *habits* with more eaſe than grown perſons? Why it is difficult to get rid of inveterate *habits*? Whence that incredible quickneſs in the pronunciation of words, even without thinking of them; as is particularly obſervable in thoſe long accuſtomed to formula's? *&c.*

On this footing, the faculty of memory appears to have very much the nature of a *habit*; inſomuch that in one ſenſe it may paſs for a *habit*.

HABIT, in medicine, is what we otherwiſe call the temperament or conſtitution of the body; whether obtained by birth, or occaſioned by the manner of living.

An ill, diſtempered *habit*, without any particular apparent diſeaſe, the phyſicians uſually call a *cachexia*, or *cacochymia*.

A thing is ſaid to *enter the habit*, when it becomes intimately diffuſed throughout the body, and is conveyed to the remoteſt ſtages of circulation.

HABIT is alſo uſed for a dreſs, or garb; or the compoſition of garments wherewith a perſon is covered.

In this ſenſe wo ſay, the *habit* of an eccleſiaſtic; of a religious, *&c.* the military *habit*, &c.

The eccleſiaſtical *habit* only commenced about the time of Gregory the Great, *i. e.* it only began at that time to be diſtinguiſhed from the lay *habit*; viz. in the ſixth century.—The eſtabliſhment of the barbarous nations was the occaſion thereof: for the laymen took the *habit* of the nations they had ſubmitted to, but the prieſts kept to the Roman dreſs.

The abbot Boileau has an expreſs treatiſe *On the eccleſiaſtical habit*; wherein he maintains, contrary to the common opinion and cuſtom, that the eccleſiaſtic *habit* ſhould be a ſhort one, and that a ſhort habit is more decent than a long one.

HABIT is particularly uſed for the uniform garments of the religious, conformable to the rule and order whereof they make profeſſion.

The *habit* of S. Benedict, of S. Auguſtine, *&c.*

In this ſenſe we ſay abſolutely, ſuch a perſon has taken the *habit*; meaning, he has entered upon a noviciate in a certain order.—So, he is ſaid to quit the *habit*, when he renounces the order. See NOVICIATE, VOWS, *&c.*

The *habits* of the ſeveral religious are not ſuppoſed to have been calculated for ſingularity or novelty: the founders of the orders, who were at firſt chiefly inhabitants of deſerts and ſolitudes, gave their monks the *habit* uſual among the country-people. Accordingly, the primitive *habits* of S. Anthony, S. Hilarion, S. Benedict, *&c.* are deſcribed by the antient writers, as conſiſting chiefly of ſheep-ſkins, the common dreſs of the peaſants, ſhepherds, and mountaineers, of that time: and the ſame they gave their diſciples.

The orders eſtabliſhed in and about cities, and inhabited places, took the *habit* worn by the other eccleſiaſtics at the time of their inſtitution.—Thus, S. Dominic gave his diſciples the *habit* of regular canons, which he himſelf had always worn to that time. And the like may be ſaid of the Jeſuits, Barnabites, Theatins, Oratorians, *&c.* who took the common *habit* of the eccleſiaſtics at the time of their foundation. And what makes them differ ſo much from each other, as well as from the eccleſiaſtical *habit* of the preſent times, is, that they have always kept invariably to the ſame form; whereas the eccleſiaſtics have been changing their mode on every occaſion.

HABITATION, a dwelling-place, or houſe. See HOUSE.

HABITATION is ſometimes alſo uſed for *cohabitation*. See COHABITATION.

HABITUAL, ſomething that is become, or turned into, an habit, or habitude.

Thus we ſay, an *habitual* or inveterate diſeaſe; *habitual* ſin, *&c.* An *habitual* diſpoſition is the ſame thing with an habitude itſelf.

HABITUAL *grace* is conveyed to us by baptiſm, and afterwards augmented and improved by the euchariſt, and other appointed means.

The Romiſh divines hold *habitual grace* only neceſſary in order to be ſaved; and actual grace to the doing any thing meritorious.

HABITUDE, HABITUDO, in the ſchools, ſignifies the reſpect or relation which one thing bears to another. See RELATION.

In this ſenſe, *habitude* is one of Ariſtotle's categories.

Some of the more preciſe and accurate ſchoolmen conſider *habitude* as a genus; and ſubdivide it into two ſpecies. Where it is conſidered as quieſcent, they call it *reſpect*; where as moved, *relation*: to which ſome add a third ſpecies, conſidered in reſpect of figure, which they call *mode*.

HABITUDE is alſo uſed, in philoſophy, for what we popularly call habit; *viz.* a certain diſpoſition, or aptitude, for the performing or ſuffering of certain things; contracted by reiterated acts of the ſame kind.

HACHES, and HACHING. See HATCHING.

HACKNEY. See the article HAQUENY.

HACKNEY *coach*. See the article *Hackney* COACH.

HADRIANEA, or HADRIANALIA, in antiquity, games inſtituted in honour of the emperor Hadrian, or Adrian.

There were two ſorts of *Hadrianalia*, the one held every year, and the other every five years.

HÆMATITES *, ʽAIMATITEΣ, in natural hiſtory, the *blood-ſtone*; a kind of ruddy mineral ſubſtance; thus called, either on account of its reſembling dry, curdled blood, or of the faculty it has of ſtanching blood.

* The word is formed from the Greek *ἁιμα*, *ſanguis*, blood.

Pliny reckons five kinds of blood-ſtone; *viz.* the *Ethiopic*, *androdamas*, the *Arabic*, the *elatites*, or *miltites*, and the *ſchiſtos*; beſides that commonly called in his time the *magnes hæmatites*, from the property it had of attracting iron.

The five ſorts differ chiefly in point of hardneſs: the beſt, according to Dioſcorides, is that which is friable, hard, black, and ſmooth, without either gritty parts, or veins.

That commonly uſed by the painters is factitious; being made of Armenian bole, and other drugs.

The common native, or foſſil kind, comes from Egypt, Bohemia, *&c.* It has divers uſes in medicine; being held cooling and aſtringent, and, in that quality, preſcribed in hæmorrhages.—It is given in ſubſtance, in form of a fine powder.

The gilders uſe it for burniſhers, to poliſh their gold withal. Bauſchius has an expreſs treatiſe on the *Lapis hæmatites.* See Supplement, article HÆMATITES. See there alſo ELATITES, and ANDRODAMAS.

HÆMATOSIS *, in medicine, the action whereby the chyle is converted into blood; called alſo *ſanguification.* See SANGUIFICATION.

* The word is formed of the Greek *ἁιμα*, *ſanguis*, blood.

The chief of the vital actions are the chyloſis, and *hæmatoſis.*

HÆMOPTYSIS *, ʽAIMOΠΤΥΣΙΣ, corruptly alſo called HÆMOPTOSIS, and HÆMOPTOE, in medicine, a ſpitting of blood; occaſioned by the rupture or eroſion of ſome veſſel of the lungs; and accompanied uſually with a cough, and a ſenſe of preſſure on the breaſt.

* The word comes from *ἁιμα*, *blood*; and *πτυειν*, *to ſpit.*

The *hæmoptyſis* differs from a vomiting of blood, in that in the *hæmoptyſis*, the blood comes from the lungs, and for that reaſon is florid and frothy; whereas in the vomiting of blood, it comes from the ſtomach, and is blackiſh.

The *hæmoptyſis* is uſually occaſioned by violent ſhouts, or cries; by ſtrains, falls, or vehement coughs; by the ſuppreſſion of ſome ordinary evacuation, or by the abundance of ſome ſharp corroſive humour.

The *hæmoptyſis* is either *accidental* or *habitual.*—The latter is a ſymptom of the phthiſis. It is beſt cured, according to Morton, by the cortex: it is ſtopped by aſtringents, as *Armen. bol. ſang. dracon. lapis hæmat.* &c. See Supplement, article HÆMOPTOE.

HÆMORRHAGE *, ʽAIMOPPAΓIA, in medicine, a flux of blood at any part of the body; ariſing either from a rupture of the veſſels, as when they are too full, or too much preſſed; or from an eroſion of the ſame, as when the blood is too ſharp and corroſive.

* The word is compounded of the Greek *ἁιμα*, *ſanguis*, blood; and *ῥηγνυμι*, *frango*, *rumpo*, *erumpo*, I break, burſt forth, *&c.*

The *hæmorrhage*, properly ſpeaking, as underſtood by the Greeks, was only a flux of blood at the noſe; but the moderns extend the name to any kind of flux of blood, whether by the noſe, mouth, lungs, ſtomach, inteſtines, fundament, matrix, or whatever part.

Hypochondriac, ſcorbutic, and cachectic perſons are liable to various and immoderate *hæmorrhages.*—The cure of *hæmorrhages* ariſing from a plethora, is by evacuants, and particularly phlebotomy, to cauſe a revulſion.—That which ariſes from an increaſed velocity of thin acrimonious blood, is to be attacked by coolers, and agglutinants.

The principal ſimple remedies in *hæmorrhages*, are album Græcum, ſpirit or oil of vitriol, chalcanthum rubified, colophony pulverized, oil of turpentine, decoction of catechu, and cortex Peruv.

A ligature on the limb has frequently a good effect: as have alſo the *elect. Boylean. pulvis Galeni*; *elect. ſtyptic. tinctur. roſar. epithem. de ſacchar. Saturn.* &c.

An *hæmorrhage* at the anus is more uſually called a *dyſentery.* See DYSENTERY.

HÆMORRHOIDAL, an epithet given to the veins and arteries of the inteſtinum rectum, and the fundament, as being the ſeat of the *hæmorrhoids*, or piles.

The *hæmorrhoidal arteries* are two; the one *internal*, the other *external.*

The *internal* is a branch of the lower meſenteric, which, running along the rectum, terminates at the fundament.—The *external* ſprings from the hypogaſtric artery.

The *hæmorrhoidal veins* are alſo *internal* and *external.*

The *internal* carries back the blood of the rectum and fundament, which it embraces regularly; and is inſerted ſometimes into the ſplenic branch of the porta, and ſometimes into the meſenteric. The *external* brings back the blood from the muſculous parts about the fundament, and terminates in the hypogaſtric vein.

HÆMORRHOIDS *, in medicine, a diſeaſe of the fundament, popularly called the *piles.*

* The word is formed of the Greek *ἁιμοῤῥοις*, *ſanguinis profluvium*, flux of blood; which is compounded of *ἁιμα*, blood; and *ῥεω*, I flow.

The *hæmorrhoids* are a painful, periodical tumour, in the lower part of the inteſtinum rectum; uſually appearing externally in the anus.—They may be conſidered as a ſort of varicous tumours in the hæmorrhoidal veins; ariſing from the too great abundance of morbid blood therein.

The diſeaſe is either *ſimple*, as when the veins alone are tumefied; or *compound*, as when the neighbouring parts become alſo infected, or an excreſcence ariſes therefrom, as a *ficus*, *criſta galli*, *condyloma*, or the like.

Hæmorrhoids again are either open, *fluentes*, that is, ſuch as yield blood; or blind, *cæcæ*, where the parts are only tumid.—In the firſt, the veſſels of the rectum are open; in the latter, there is ſome obſtruction, which occaſions them to ſwell.

The *hæmorrhoids* ſometimes are internal, and cauſe great pain in going to ſtool; eſpecially if the fæces be indurated: after which they often appear externally, and blood is ſeen upon the excrements.

Etmuller is careful in diſtinguiſhing the genuine hæmorrhoidal flux from a bloody diarrhœa, frequent in ſcorbutic caſes.—The *hæmorrhoids* are uſually opened by the attrition of the excrements in a ſtool, ſo that the blood flows at the ſame time with the excrements; but if it flows promiſcuouſly before as well as after the excrements, and without pain, it is a ſcorbutic flux.

Where the flux is exceſſive, phlebotomy and cupping are good, by way of revulſion; and internally, aſtringents and opiates.—Upon a ſuppreſſion of the uſual flux, without removing the cauſe, the open *hæmorrhoids* degenerate into the blind ones: in which caſe they muſt be opened again with aloetics, *&c.* Tamarinds are held excellent to aſſwage the flux: chalybeates ſtrike at the cauſe of the evil: ſcrophularia, onion, and leek, are much commended in it. See Supplement, article HÆMORRHOIDS.

HÆREDE *abducto* is a writ which antiently lay for the lord, who, having by right the wardſhip of his tenant under age, could not come by his body, as being conveyed away by another.

HÆREDE *deliberando alii qui habet cuſtodiam terræ*, a writ directed to the ſheriff, willing him to command one that had the body of him who was ward to another, to deliver him to the perſon whoſe ward he was on account of his land. See WARD.

HÆREDIPETA, in our antient law-books, the next heir. See HEIR.

Et nullus hæredipeta *ſuo propinquo vel extraneo periculoſa ſane cuſtodia committatur.* Leg. H. I. cap. 70.

HÆREDITAS. See the article ABEYANCE,

HÆRESIARCH, HÆRESIARCHA, of the Greek *ἁιρεσιαρχης*, an arch-heretic. See HERETIC.

HÆRESIS, *hereſy.* See the article HERESY.

HÆRETICO *comburendo*, a writ which antiently lay againſt an heretic, who, having once been convicted of hereſy by his biſhop, and having abjured it, afterwards falling into it again, or into ſome other, is thereupon committed to the ſecular power.

Sir Edward Coke was of opinion, that this writ did not lie in his time: but it is now formally taken away by ſtatute Car. II.

HÆRETICUS, *heretic.* See the article HERETIC.

HAGARD *, in falconry, a hawk, or falcon, not taken in the neſt; but after ſhe had been enured to liberty, and preying for herſelf.

* The word is French, and ſignifies *fierce*; ſome derive it from the Latin *agreſte*, wild: others from the German *hag*, incloſure, fortified place.—Whence M. Huet obſerves, the word *hagard* is ſometimes applied to a man who becomes hardy and proud, in confidence of the ſtrength of the place he is in.

Hagard hawks are hard to tame, and bring under diſcipline. See HAWK, and FALCON.

HAGIOGRAPHA *, a name given to part of the books of Scripture, called by the Jews *cetuvim.* See BIBLE.

* The word is compounded of *ἁγιος*, holy; and *γραφω*, I write.—The name is very antient: S. Jerom makes frequent mention of it:—before him, St. Epiphanius called theſe books ſimply Γραφεια.

The Jews divide the ſacred writings into three claſſes: the Law, which comprehends the five books of Moſes; the Prophets, which they call *neviim*; and the *cetuvim*, כתובים called by the Greeks, &c. *Hagiographa*; comprehending the book of Pſalms, Proverbs, Job, Daniel, Eſdras, Chronicles, Canticles, Ruth, the Lamentations, Eccleſiaſtes, and Eſther.

The Jews ſometimes call theſe books the Writings, by way of eminence, as being written by immediate inſpiration of the Holy Spirit.—Thus ſays Kimchi, in his preface to the Pſalms, Maimonides in *More Nevoch.* and Elias Levita in his *Thiſbi*, under the word כתב.

They diſtinguiſh the *Hagiographers*, however, from the Prophets; in that the authors of the former did not receive the matters contained in them by the way called Prophecy, which conſiſts in dreams, viſions, whiſpers, ecſtaſies, *&c.* but by mere inſpiration, and direction of the Spirit.

HAGIOSIDERON *, or **HAGIOSIDIRON**.—The Greeks who are under the dominion of the Turks, being prohibited the uſe of bells, make uſe of an iron wherewith to call people to church, called *hagioſideron*.

* The word is Greek, ἁγιοσιδηρον; compounded of ἁγιος, holy; and σιδηρος, iron.

Magius gives us the deſcription of an *hagioſideron* he had ſeen —It is a plate of iron, about three inches broad, and ſixteen long, faſtened by the middle to a chain, or cord, whereby it is ſuſpended at the church-door. On this they ſtrike with an iron hammer, with ſome meaſure and cadence, ſo as to make no diſagreeable noiſe.

They alſo carry an *hagioſideron* before the prieſt, in a proceſſion of the ſacrament to any ſick perſon, beating on it from time to time, to advertiſe the people to adore it; much as in the Romiſh church they do with a bell.

HAIL, *grando*, in phyſiology, an aqueous concretion, in form of white, or pellucid ſpherules, deſcending out of the atmoſphere.

Hail is conceived to be formed of drops of rain, frozen in their paſſage through the middle region.

Others take it for the fragments of a frozen cloud, half-melted, and thus precipitated, and congealed again.

Accordingly the Carteſians define *hail* to be a cloud, either wholly, or in part, liquefied; which tending downward by its own gravity, is, in its paſſage, frozen again by the action of ſome very cold wind; and thus precipitated, for the moſt part, in round tranſparent glebes.—They add, that if the cloud have been totally liquefied, the *hailſtones* are pellucid; otherwiſe they are only partly ſo.

Hail aſſumes various figures, according to the degrees of heat or cold of the air which it paſſes through in its deſcent: ſometimes it is round, ſometimes angular, triangular, pyramidal, *&c.* ſometimes thin and flat, ſtar-like, with ſix equal points, *&c.*

Hail is obſerved frequently to attend thunder and lightning; the nitre that contributes to the one, having likewiſe a large ſhare in the production of the other.

Natural hiſtories furniſh us with a great variety of inſtances of extraordinary ſhowers of *hail*.—In the Philoſophical Tranſactions, Dr. Halley, and others relate, that in Cheſhire, Lancaſhire, *&c.* April 29. 1697. a thick black cloud, coming from Carnarvonſhire, diſpoſed the vapours to congeal in ſuch a manner, that for about the breadth of two miles, which was the limit of the cloud, in its progreſs for the ſpace of ſixty miles, it did inconceivable damage: not only killing all ſorts of fowls, and other ſmall animals, but ſplitting trees, knocking down horſes and men, and even plowing up the earth: ſo that the *hailſtones* buried themſelves under-ground, an inch, or an inch and a half deep.—The *hailſtones*, many of which weighed five ounces, and ſome half a pound, and were five or ſix inches about, were of various figures, ſome round, others half round; ſome ſmooth, others emboſſed and crenulated: the icy ſubſtance of them was very tranſparent and hard; but there was a ſnowy kernel in the middle of every one of them.

In Hertfordſhire, May 4. the ſame year, after a ſevere ſtorm of thunder and lightning, a ſhower of *hail* ſucceeded, which far exceeded the former: ſome perſons were killed by it, their bodies beat all black and blue: vaſt oaks were ſplit, and fields of rye cut down as with a ſcythe. The ſtones were meaſured from ten to thirteen or fourteen inches about. Their figures were various, ſome oval, others peeked, ſome flat. *Philoſoph. Tranſact.* N° 229.

At Liſle in Flanders, in 1686. there fell *hailſtones* of a very large ſize; ſome of which contained in the middle a dark-brown matter, which thrown on the fire gave a very great report. *Philoſoph. Tranſact.* N° 203.

Mezeray, ſpeaking of the war of Louis XII. in Italy, in the year 1510. relates, that there was for ſome time an horrible darkneſs, thicker than that of night; after which the clouds broke into thunder and lightning, and there fell a ſhower of *hailſtones*, or rather (as he calls them) pebble-ſtones, which deſtroyed all the fiſh, birds, and beaſts, of the country.—It was attended with a ſtrong ſmell of ſulphur; and the ſtones were of a bluiſh colour; ſome of them weighing an hundred pounds. *Hiſt. de France*, Tom. II. p. 339.

HAILE, a ſea-term, ſignifying either to call to a ſhip, to know from whence ſhe comes, and whither ſhe is bound, or elſe to ſalute her, and wiſh her well.

HAIR, ſmall filaments, iſſuing out of the pores of the ſkins of animals; and ſerving moſt of them as a tegument, or covering.

In lieu of *hair*, the nakedneſs of ſome animals is covered with feathers, or wool.

Hair is found on all parts of the human body, except the ſoles of the feet, and the palms of the hands.—But it grows longeſt on the head, chin, breaſt, in the armpits, and about the privities.

Phyſicians diſtinguiſh the hair into ſeveral kinds, and give it divers denominations; but this only in Greek and Latin.—The hair of the head they call *capillus*: that of women particularly, *coma*, from κομειν, to dreſs and adjuſt: and that of men *cæſaries*, from *cædendo*, becauſe often cut: that of the back of the head, *juba*, and *crines*: that hanging behind the ears, *cincinni*; q. d. curled and buckled.

The antients held the *hair* a ſort of excrement, fed only with excrementitious matters, and no proper part of a living body.—They ſuppoſed it generated of the fuliginous parts of the blood, exhaled by the heat of the body to the ſurface, and there condenſed in paſſing through the pores.—Their chief reaſons were, that the *hair*, being cut, will grow again apace, even in extreme old age, and when life is very low: that in hectic and conſumptive people, where the reſt of the body is continually emaciating and attenuating, the *hair* ſhall thrive very well: nay, and that it will grow even on dead carcaſes.—They add, that *hair* does not feed and grow like the other parts, by introſuſception, *i. e.* by a juice circulating within it; but, like the nails, by juxtapoſition, each part next the root thruſting forward that immediately before it.

But the moderns are agreed, that every *hair* does properly and truly live, and receive nutriment to fill and diſtend it like the other parts: this they argue hence, that the roots do not turn grey in aged perſons ſooner than the extremities, but the whole changes colour at one. And the like is obſerved in boys, *&c.* which ſhews, that there is a direct communication; and that all the parts are affected alike.—We are told of inſtances of perſons, who, by intenſe grief, or fear, have grown grey in a night's time.

It may be obſerved, however, that, in propriety, the life or growth of *hairs* is of a different kind from that of the reſt of the body; and is not immediately derived therefrom, or reciprocated therewith.—It is rather of the nature of vegetation. They grow as plants do out of the earth; or as ſome plants ſhoot from the parts of others; from which though they draw their nouriſhment, yet each has, as it were, its ſeveral life, and a diſtinct œconomy.—They derive their food from ſome juices in the body, but not from the nutritious juices of it; whence they may live, though the body be ſtarved.

The *hairs*, examined by the microſcope, appear to be fiſtulous bodies like horns. Their tubulous ſtructure is alſo confirmed from the diſeaſe called *plica Polonica*, wherein the blood ouſes out at their extremities.

Each *hair* is found to conſiſt of five or ſix other leſſer ones, all wrapped up in one common tegument: they are knotted like ſome ſorts of graſs, and ſend out branches at the joints.—They have each a round bulbous root, which lies pretty deep in the ſkin, being implanted in the pyramidal papillæ; and by this they imbibe, or ſecrete, their proper food from the adjacent humours. Their extremities ſplit or divide into two or three branches, eſpecially when kept dry, and left to grow too long; ſo that what to the naked eye appears only a ſingle *hair*, to the microſcope ſeems a bruſh.

They turn grey on the fore-part of the head, and particularly about the temples, ſooner than behind; the back-part affording them the proper juice longer than the reſt.—For the like reaſon they alſo fall ſooneſt from the crown of the head.

Their ſize, or thickneſs, depends on the magnitude of the pores they iſſue from.—If thoſe be ſmall, theſe are fine: if the pores be ſtrait, the *hairs* are ſtrait: if thoſe be oblique or ſinuous, the *hair* is curled.

They ordinarily appear in general round, or cylindrical; but the microſcope alſo diſcovers triangular, and ſquare ones; which diverſity of figures ariſes from that of the pores; to which the *hairs* always accommodate themſelves. Their length depends on the quantity of the proper humour to feed them; and their colour on the quality of that humour: whence at different ſtages of life the colour uſually differs.

The *hair* of a mouſe, viewed by Mr. Derham with a microſcope, ſeemed to be one ſingle tranſparent tube, with a pith made up of fibrous ſubſtances, running in dark lines, in ſome *hairs* tranſverſly, in others ſpirally. The darker medullary parts, or lines, he obſerves, were no other than ſmall fibres convolved round, and lying cloſer together, than in the other parts of the *hair*. They run from the bottom to the top of the hair; and, he imagines, may ſerve to make a gentle evacuation of ſome humour out of the body (See *Tab. Nat. Hiſt. Fig.* 28.). Hence, the *hair* of hairy animals, this author ſuggeſts, may not only ſerve as a fence againſt cold, *&c.* but as an organ of inſenſible perſpiration.

It was eſteemed a notable honour among the antient Gauls, to have long *hair*; and hence came the appellation *Gallia comata*. For this reaſon Julius Cæſar, upon ſubduing the Gauls, made them cut off their *hair*, as a token of ſubmiſſion.—It was with a view to this, that ſuch as afterwards quitted the world, to go and live in cloiſters, procured their *hair* to be ſhaven off; to ſhew that they bid adieu to all earthly ornaments, and made a vow of perpetual ſubjection to their ſuperiors.

Greg. de Tours aſſures us, that, in the royal family of France, it was a long time the peculiar mark and privilege of kings and princes of the blood, to wear long *hair*, artfully dreſſed, and curled: every body elſe were obliged to be polled, or cut round, in ſign of inferiority, and obedience. Some writers aſſure us, that there were once different cuts of the *hair* for all the different qualities and conditions; from the prince, who wore it at full length, to the ſlave, or villain, who was quite cropt. Hottoman treats at large of this privilege of the kings of France, *Franco-Gallia*, c. 11.

To cut off the *hair* of a ſon of France, under the firſt race of kings, was to declare him excluded from the right of ſucceeding to the crown, and reduced to the condition of a ſubject. F. Daniel, *Hiſt. de France*, tom. i.

In the eighth century it was the cuſtom of people of quality, to have their childrens *hair* cut the firſt time by perſons they had a particular honour and eſteem for; who, in virtue of this ceremony, were reputed a ſort of ſpiritual parents, or godfathers to them: though this practice appears to have been more antient; inaſmuch as we read that Conſtantine ſent the pope the *hair* of his ſon Heraclius, as a token that he deſired him to be his adoptive father.

The parade of long *hair* became ſtill more and more obnoxious in the progreſs of Chriſtianity; as ſomething utterly inconſiſtent with the profeſſion of perſons who bore the croſs. Hence numerous injunctions and canons to the contrary.—Pope Anicetus is commonly ſuppoſed to have been the firſt who forbad the clergy to wear long *hair*; but the prohibition is of an older ſtanding in the churches of the eaſt; and the letter wherein that decree is wrote, is of a much later date than that pope.—The clerical tonſure is related, by Iſidore Hiſpalenſis, as of apoſtolical inſtitution.

Long *hair* was antiently held ſo odious, that there is a canon ſtill extant, of the year 1096. importing, that ſuch as wore long *hair* ſhould be excluded coming into church while living; and not be prayed for when dead.

We have a furious declamation of Luitprand againſt the emperor Phocas, for wearing long *hair*, after the manner of all the other emperors of the eaſt, except Theophilus; who, being bald, enjoined all his ſubjects to ſhave their heads.

The French hiſtorians and antiquaries have been very exact in recording the heads of *hair* of their ſeveral kings.—Charlemagne wore it very ſhort, his ſon ſhorter; Charles the Bald had none at all. Under Hugh Capet it began to appear again: this the eccleſiaſticks took in dudgeon, and excommunicated all who let their *hair* grow: Peter Lombard expoſtulated the matter ſo warmly with Charles the Young, that he cut off his own *hair*; and his ſucceſſors, for ſome generations, wore it very ſhort.—A profeſſor of Utrecht, in 1650. wrote expreſly on the queſtion, Whether it be lawful for men to wear long *hair*? and concluded for the negative.—Another divine, named Reves, who had wrote for the affirmative, replied to him.

The Greeks, and after their example the Romans, wore falſe *hair*. See PERRUKE.

Wulferus, in the *Philoſophical Collections*, gives an account of a woman, buried at Norimberg, whoſe grave being opened forty-three years after her death, there was *hair* found iſſuing forth plentifully through the clefts of the coffin; inſomuch that there was reaſon to imagine, the coffin had ſome time been covered all over with *hair*.—The cover being removed, the whole corpſe appeared in its perfect ſhape; but from the crown of the head to the ſoal of the foot covered over with a thick-ſet *hair*, long and curled.—The ſexton going to handle the upper part of the head with his fingers, the whole ſtructure fell at once, leaving nothing in his hand but an handful of *hair*: there was neither ſkull, nor any other bone, left; yet the *hair* was ſolid, and ſtrong enough.

Mr. Arnold, in the ſame collection, gives a relation of a man hanged for theft, who, in a little time, while he yet hung upon the gibbet, had his body ſtrangely covered over with *hair*.

Dr. Tyſon adds, that though the outward ſurface of the body be the uſual place where the *hair* grows; yet it has been ſometimes found on the tongue, in the heart, the breaſts, kidneys, &c. but that there is ſcarce any inward part more ſubject to it than the ovary, or teſticles, of females. Hooke, *Philoſoph. Collect.* N° 2.

HAIR makes a very conſiderable article in commerce; eſpecially ſince the mode of perrukes has obtained.

The *hair* of the growth of the northern countries, as England, &c. is valued much beyond that of the more ſouthern ones; as Italy, Spain, the ſouth parts of France, &c.

The merits of a good *hair* conſiſt in its being well fed, and neither too coarſe, nor too ſlender; the bigneſs rendering it leſs ſuſceptible of the artificial curl, and diſpoſing it rather to frizzle; and the ſmalneſs making its curl of too ſhort duration.—Its length ſhould be about twenty-five inches: the more it falls ſhort of this, the leſs value it bears.

There is no certain price for *hair*; but it is ſold from five ſhillings to five pounds an ounce, according to its quality.—The grey is the moſt coveted. The ſcarceneſs of grey and white *hair* has put the dealers in that commodity upon methods of reducing other colours thereto.—This is done by ſpreading the *hair* to bleach on the graſs, like linen; after firſt waſhing it out in a lixivious water.

This lye, with the force of the ſun and air, brings the *hair* to ſo perfect a whiteneſs, that the moſt experienced perſon may be deceived therein; there being ſcarce any way of detecting the artifice, but by boiling and drying it, which leaves the *hair* of the colour of a dead walnut-tree leaf.

There is alſo a method of dying *hair* with biſmuth; which renders ſuch white *hair* as borders too much upon the yellow, of a bright ſilver colour.—Boiling is the proof of this too; the biſmuth not being able to ſtand it.

Hair which does not curl, or buckle, naturally, is brought to it by art; by firſt boiling, and then baking, it in the following manner: after having picked and ſorted the *hair*, and diſpoſed it in parcels, according to the lengths, they roll them up, and tie them tight down, upon little cylindrical inſtruments, either of wood, or earthen ware, a quarter of an inch thick, and hollowed a little in the middle called pipes; in which ſtate they are put in a pot over the fire, there to boil for about two hours.—When taken out, they let them dry; and, when dried, they ſpread them on a ſheet of brown paper, cover them with another, and thus ſend them to the paſtry-cook; who, making a cruſt, or coffin, around them, of common paſte, ſets them in the oven, till the cruſt is about three-fourths baked.

The end by which an *hair* grew to the head, is called the *head of the hair*; and the other, with which they begin to give the buckle, the *point*.—Formerly the perruke-makers made no difference between the two ends, but curled and wove them by either indifferently; but this made them unable to give a fine buckle; *hair* woven by the point never taking the right curl.—Foreigners own themſelves obliged to the Engliſh for this diſcovery, which was firſt carried abroad by a perruke-maker of our country. Savar. *Dict. de Comm.*

HAIR is alſo uſed in divers arts and manufactures.

The *hair* of beavers, hares, coneys, &c. is the principal matter whereof hats are made.

Spread on the ground, and left to putrefy on corn-lands, *hair*, as all other animal ſubſtances, *viz.* horns, hoofs, blood, garbage, &c. proves a good manure.

Hair alſo makes an ingredient in the compoſition of plaſter. See PLASTER.

HAIR, in the manage, and among farriers, is popularly called the *coat*, and makes a point of principal conſideration in reſpect of horſes, &c.

If the *hair* of a horſe, eſpecially that about the neck, and parts uncovered, be ſleek and ſmooth, and cloſe, it is an indication of his being in health, and good caſe: if rough and ſtareing, or any way diſcoloured, it denotes a coldneſs, poverty, or ſome inward defect.—To make the *hair* ſmooth, ſleek, and ſoft, he muſt be kept warm, ſweated often, and when ſweated, the coat muſt be well ſcraped, and rubbed down.

The *hair* growing on the fetlock ſerves as a defence to the prominent part thereof, in travelling on ſtony ways, or in froſty weather.

If a place be bare, or thin of *hair*, or the *hair* be too ſhort; the antient farriers uſed to waſh it with the urine of a young boy; and after that with a lye of unſlaked lime, ceruſe, and litharge.—The moderns have various other ways: ſome waſh the parts with a decoction of the roots of althæa; others with goats milk, wherein agrimony has been pounded; others rub the part with nettle-ſeed, bruiſed with honey-water, and ſalt; others anoint it with the juice of an onion, or radiſh; others with a mixture of alum, honey, goats dung, and ſwines blood; others with the root of the white lily, boiled in oil; others with tar, oil of olives, and honey; and others with green walnut-ſhells powdered, and mixed with honey, oil, and wine.—To take off *hair* in any part, they apply a plaiſter made of unſlaked lime, boiled in water, with orpiment added.

HAIRS *breadth*. This is accounted the forty-eighth part of an inch.

HALBARD*, or HALBERT, an offenſive weapon, conſiſting of a ſhaft, or ſtaff, five feet long; with a ſteel head, partly in form of a creſcent.

* The word is formed of the German *hal*, hall; and *bard*, an hatchet. Voſſius derives it from the German *hellebaert*: of *hel*, *clarus*, *ſplendens*; and *baert*, ax.

The *halbard* was antiently a common weapon in the army; where there were companies of *halbardeers*. It is ſtill carried by the ſerjeants of foot, and dragoons.

It was called the *Daniſh ax*, becauſe firſt bore by the Danes: they carried it on the left ſhoulder. From the Danes it was derived to the Scots, and from the Scots to the Engliſh, and from them to the French.

HALBERT, among farriers, &c. is a piece of iron, an inch broad, and three or four inches long, ſoldered to the toe of an horſe's ſhoe, that jets out before; to hinder a lame horſe from reſting, or treading, upon his toe.

Halbert-ſhoes of neceſſity conſtrain a lame horſe to tread, or reſt, on his heel, when he goes a moderate pace; which lengthens and draws out the back-ſinew, that was ſomewhat ſhrunk before.

HALCYON-*days* *, *dies alcyonii*, a phraſe that frequently occurs, among writers, to denote a time of peace, and tranquillity.

* The expreſſion takes its riſe from a ſea-fowl, called, among naturaliſts, *halcyon*, or *alcyon*, which is ſaid to build its neſt about the winter ſolſtice, when the weather is uſually obſerved to be ſtill and calm.

Halcyon-days, according to the antient tradition, are the ſeven days before, and as many after, the brumal ſolſtice; called, alſo, *S. Martin's ſummer*: theſe are famous for the calmneſs of the weather, which emboldens the *halcyon* to build, and brood its eggs on the rocks, on the very brink of the ſea.

Columella alſo gives the denomination, *halcyonii dies*, to a number of days commencing on the eighth of the calends of March; on account of the great ſtilneſs of the Atlantic ocean, then uſually obſerved.

HALE, in the ſea-language, ſignifies *pull*: hence, to *hale* a ſhip, denotes, to pull her on ſhore.

HALF-*bloom*, a round maſs of metal, which comes out of the finery of an iron-work. See BLOOMERY, and IRON-*work*.

HALF-*mark* *, *dimidia mercæ*, is a noble.

* Fitzherbert ſays, that in caſe a writ be brought, and the ſeiſin of the demandant, or his anceſtor, alleged; the ſeiſin is not traverſable by the defendant, but he muſt tender the *half-mark* for the inquiry of the ſeiſin: which is, in plainer terms, that the defendant ſhall not be admitted to deny, that the poſſeſſor, or his anceſtor, was ſeiſed of the land in queſtion, and to prove his denial; but that he ſhall be admitted to tender *half a mark* in money, to have an inquiry made, whether the demandant, &c. were ſeiſed, or not.

HALF-MOON, *demi-lune*, in fortification, an outwork, conſiſting of two faces, forming together a ſaliant angle, whoſe gorge is turned like an *half-moon*.

Half-moons are ſometimes raiſed before the curtin, when the ditch is wider than it ought to be; in which caſe, it is much the ſame with a ravelin; only that the gorge of an *half moon* is made bending in like a bow, or creſcent, and is chiefly uſed to cover the point of the baſtion; whereas ravelins are always ſtrait before the curtin.—But they are both defective; as being ill flanked. See RAVELIN.

HALF-PENNY, a copper coin, whoſe value is expreſſed by its name.

HALF-*ſeal* is that uſed, in Chancery, for the ſealing of commiſſions to delegates appointed upon any appeal in eccleſiaſtical or marine cauſes.

HALF-*tongue*, *medietas linguæ*. See MEDIETAS *linguæ*.

HALIEUTICS, HALIEUTICA, ʽΑΛΙΕΥΤΙΚΑ, books treating of fiſhes, or the art of fiſhing.

We have ſtill extant the *Halieutics* of Oppian.

HALIGEMOTE. See the article HALYMOTE.

HALL, a word antiently uſed for a manſion-houſe, or habitation.

HALL, *ſalle*, in architecture, is a large room, at the entrance of a fine houſe, palace, or the like.

Vitruvius mentions three ſorts of *halls*: the *tetraſtyle*, which has four columns ſupporting the plafond, or cieling; the *Corinthian*, which has columns all around, let into the wall, and is vaulted over; and the *Egyptian*, which had a periſtyle of inſulated Corinthian columns, bearing a ſecond order with a cieling: theſe were called *œci*.

The *hall* is properly the firſt and fineſt partition, or member of an apartment; and, in the houſes of miniſters of ſtate, public magiſtrates, &c. is that wherein they diſpatch buſineſs, and give audience.

In very magnificent buildings, where the *hall* is larger and loftier than ordinary, and placed in the middle of the houſe, it is called a *ſaloon*.

A royal apartment is ſaid to conſiſt of an *hall*, or chamber of guards, *aula prætoriana*; an ante-chamber, *procamera*; a chamber, *camera*; a cabinet, *conclave*; and a gallery, *porticus*.

HALL is alſo a public building erected for the adminiſtration of the policy and juſtice of a city, or corporation.

In this ſenſe we ſay, the *town-hall*, a *company's hall*, &c.

Guild-hall is a ſtately building in the city of London, and the great court of judicature for that city. See GUILD-*hall*.

Here meetings of the citizens are held for the election of officers, ſolemn entertainments are given, &c.

HALL is alſo particularly uſed for a court of juſtice; or an edifice wherein there is one, or more, tribunals.

In Weſtminſter-*hall* are held the great courts of this kingdom; *viz.* the King's-Bench, Chancery, Common-Pleas, and Exchequer.

Above-ſtairs is likewiſe held the high court of Parliament.

Weſtminſter-*hall* was the royal palace, or place of reſidence, of our antient kings; who ordinarily held their parliaments, and courts of judicature, in their dwelling-houſes (as is ſtill done by the kings of Spain), and frequently ſat in perſon in the courts of judicature, as they ſtill do in parliament.

A great part of this palace was burnt under Henry VIII. what remains is ſtill reſerved for the ſaid judicatories.—The great *hall*, wherein the courts of King's-Bench, &c. are kept, is ſaid to have been built by William Rufus; others ſay, by Richard I. or II. It is reckoned ſuperior, in point of dimenſions, to any *hall* in Europe; being 300 feet long, and 100 broad.

HALLAGE, a fee due for cloth brought for ſale to Blackwell-hall in London.

The word is alſo uſed for toll paid to the lord of a fair, or market, for commodities ſold in the common hall of the place.

HALLELUJAH *, a term of rejoicing, ſometimes ſung, or rehearſed, at the end of verſes on ſuch occaſions.

* The word is Hebrew; or, rather, it is two Hebrew words joined together: one of them הללו *hallelu*, and the other יה *jah*; an abridgment of the name of God, יהוה *Jehovah*. The firſt ſignifies *laudate*, praiſe ye; and the other *Dominum*, the Lord.

St. Jerome firſt introduced the word *hallelujah* into the church-ſervice: for a conſiderable time it was only uſed once a year in the Latin church, *viz.* at Eaſter; but in the Greek church it was much more frequent. St. Jerome mentions its being ſung at the interments of the dead, which it ſtill continues to be in that church, as alſo, on ſome occaſions, in the time of Lent.

In the time of Gregory the Great it was appointed to be ſung, all the year round, in the Latin church, which raiſed ſome complaints againſt that pope; as giving too much into the Greek way, and introducing the ceremonies of the church of Conſtantinople into that of Rome.—But he excuſed himſelf, by alleging, that this had been the antient uſage at Rome; and that it had been brought from Conſtantinople at the time when the word *hallelujah* was firſt introduced under pope Damaſus.

HALLIARDS, or HALYARDS, in a ſhip, are ropes which ſerve for hoiſting up the yards, all but the croſs jack, and the ſprit-ſail yards, which are ſlung. See Tab. *Ship.* *fig.* 1. *n.* 18. 24. 64.

HALMOTE *, or HALIMOTE (from the Saxon heale, *hall*; and gemot, *meeting*), is the ſame with what we now call a *court-baron*; the word implying, a meeting of the tenants of the ſame hall, or manor.

* *Omnis cauſa terminetur, vel hundredo, vel comitatu, vel* halimote, *ſocam habentium, vel dominorum curia.* LL. Hen. I. c. 10.—*Halmote* and *halimote* are often confounded with *folkmote*, though originally they were diſtinct courts.—The *halmote* being properly the lord's court, or a court-baron held in the manor, in which differences between the tenants were determined. See MANOR, and COURT.

The name is ſtill retained at Luſton, and other places in Herefordſhire. See MOTE.

HALMOTE is ſometimes alſo taken for a convention of citizens in their public hall, more properly called *folkmote*. See FOLKMOTE.

HALO *, in phyſiology, a meteor, in form of a luminous ring, or circle, of various colours, appearing round the bodies of the ſun, moon, or ſtars.

* The word is formed of the Greek ἅλως, or ἅλων, *area*.

That around the moon is the moſt uſual, and is alſo called *corona*, crown.

Naturaliſts conceive the *halo* to ariſe from a refraction of the rays of light in their paſſing through the fine, rare veſiculæ of a thin nubecula, or vapour, toward the top of our atmoſphere: which account they confirm hence, that a quantity of water being thrown up againſt the ſun, as it breaks and diſperſes into drops, it forms a kind of *halo*, or iris, exhibiting the colours of the natural rainbow.

M. Huygens ſuppoſes *halo's*, or circles round the ſun, to be formed by ſmall round grains of a kind of hail, made up of two different parts, one of which is opake, and incloſed in the other, which is tranſparent; which is the general ſtructure actually obſerved in hail.

After the ſame manner he accounts for the parhelia; only that there he imagines the icy grains of an oblong figure, and rounding at the ends, like cylinders with round convex tops.—Where ſome of theſe cylinders are in an erect poſition, the circle they form will be white, by reaſon of the reflexion of the rays of the ſun on the ſurface of theſe cylinders. He proceeds to account for the coloured *halo's*, and parhelia, from the ſame hypotheſis; and produces an experiment of a glaſs cylinder, a foot long, having within it an opake kernel (which was a cylinder of wood), and the ambient ſpace filled with water: this cylinder, being expoſed to the ſun, and the eye diſpoſed in a proper place, the ſeveral ſucceſſive reflexions and refractions neceſſary to produce ſuch an effect did plainly appear.

The light which comes through drops of rain by two refractions, without any reflexion, Sir Iſaac Newton obſerves, ought to appear ſtrongeſt at the diſtance of about 26 degrees from the ſun, and to decay gradually both ways, as the diſtance from him increaſes and decreaſes: and the ſame is to be underſtood of light, tranſmitted through ſpherical hailſtones.—Add, that if the hail be a little flatted, as is often the caſe, the light tranſmitted may grow ſo ſtrong at a little leſs diſtance than that of 26 degrees, as to form a *halo* about the ſun or moon; which *halo*, as often as the hailſtones are duly figured, may be coloured; and then it muſt be made red within by the leaſt refrangible rays, and blue without by the moſt refrangible ones; eſpecially if the hailſtones have opake globules of ſnow in their centre, to intercept the light within the *halo*, as Huygens has obſerved, and make the inſide thereof more diſtinctly defined than it would otherwiſe be.

Such hailſtones, though ſpherical, by terminating the light by the ſnow, may make a *halo* red within, and colourleſs without, and darker in the red than without, as *halo*'s uſe to be: for of thoſe rays which paſs cloſe by the ſnow, the rubiform will be leaſt refracted, and ſo will come to the eye in the directeſt lines. *Optice.*

HALSFANG. See the articles HEALFANG, and PILLORY.

HALT *, in war, a pauſe, or ſtop, in the march of a military body.

> * Some derive the word from the Latin *halitus*, breath; it being a frequent occaſion of *halting*, to take breath: others from *alto*, by reaſon in *halts* they raiſe their pikes, *&c.* on end.

In places full of defiles, frequent *halts* muſt be made.—The army made a *halt* to reſt themſelves.

HALTERISTÆ, in antiquity, a ſort of players at diſcus; ſo denominated from a peculiar kind of diſcus by the Greeks called ἁλτης, and by the Latins *halter*.

Budæus, and others, take the *halter* to have been a leaden weight, or ball, which the vaulters bore in their hands, to ſecure and keep themſelves the more ſteady in their leaping.—Nor will theſe authors allow of any ſort of *halter* beſides this weight; nor other *halteriſts* but theſe vaulters.

Others, as Cornarius, Conſtantine, and Portus, will have the *halter* to be a lump, or maſs of lead, or ſtone, with an hold, or handle, fixed to it, by which it might be carried; and that the *halteriſtæ* were thoſe who exerciſed themſelves in removing theſe weights from place to place.—Theſe authors add, that the weight, or ball mentioned by Budæus, was not called ἁλτης, *halter*, but ἀλκτης, *alcter*, which ſignifies helper, defender.

Hier. Mercurialis, in his treatiſe *De arte gymnaſtica*, L. II. c. 12. diſtinguiſhes two kinds of *halteriſtæ*; for though there was but one *halter*, there were two ways of applying it.—The one was to throw or pitch it in a certain manner: the other only to hold it out at arm's end; and in this poſture to give themſelves divers motions, ſwinging the hands backwards and forwards, *&c.* according to the engraven figures thereof given us by Mercurialis.

The *halter* was of a cylindrical figure, ſmaller in the middle (where it was held) by one diameter, than at the two ends. It was above a foot long; and there was one for each hand: it was made either of iron, ſtone, or lead.

Galen, *De tuend. valetud.* Lib. I. Lib. V. and Lib. VI. ſpeaks of this exerciſe, and ſhews of what uſe it is in purgeing the body of peccant humours; making it equivalent both to purgation, and phlebotomy.

HALTING, among farriers, *&c.* an irregularity in the motion of an horſe, ariſing from a lameneſs, or other injury in the ſhoulder, leg, or foot; which leads him to ſpare the part, or uſe it too timorouſly.

An acquaintance with this diſorder, in its ſeveral circumſtances, is a thing of great extent in the affairs of the manage; for which reaſon we ſhall add the principal points relating thereto.—If an horſe *halts*, it is either *before*, in which caſe his complaint lies either in the ſhoulder, the legs, or feet; or *behind*, where it muſt lie in the hip, ham, or the like.

1°, The ſigns which indicate it in the *ſhoulder*, are his not lifting up his leg, but trailing it on the ground, or his caſting one leg more than the other, and with his knee, in a manner, unbent.—Add, that in turning ſhort he will viſibly favour the leg on the lame ſide. Again, if the ailment be found on the ſhoulder, it muſt either be in the top of the ſhoulder-blade, called the *withers*, which is known by his *halting* moſt when a perſon is on his back, his ſhrinking much, and offering to bite when griped, and handled about the top of the ſhoulder-blade, or in the bottom of the ſhoulder-blade, joining to the marrow-bone, which is the fore-pitch of the breaſt; which is known by his treading his ſteps thick, and ſhrinking, ready to fall down, when preſſed in that part: or in the elbow, which joins the marrow-bone to the leg; which is known by wincing, and taking up his foot, when pinched there.

2°, If the grievance be in the *legs*, it either lies in the knee, or paſtern joint, which he diſcovers by refuſing to bow the one or the other, and going ſtiffly on it: or in the *ſhank*, which is diſcovered by ſome ſplint, ſcrew, wind-gall, or other viſible malady thereon.

3°, If it be in the *foot*, it is either in the coronet, and owing to ſome ſtrain, to be diſtinguiſhed by ſome tumour or breaking thereon, or its appearing hot and burning to the touch; or in the *heel*, owing to an over-reach, or the like, and viſible to the eye; as alſo by his treading altogether on his toe: or in the *quarters*, between the middle of the hoof and the heel; which is known by his *halting* more when on the edge of a bank, than when on plain ground.—This is ſometimes occaſioned by being pricked with a nail in the ſhoeing; and the faulty nail is diſtinguiſhed by pinching the head of each nail, and the hoof together, with a pair of pinchers.

If an horſe *halt behind*, from a diſorder in the hip, or hucklebone, he will go ſide-long, and not follow ſo well with that leg as the others; nor will he turn on that ſide without favouring the leg: add, that he ſhews it ſtill moſt in walking on the ſide of a bank with the worſt leg higheſt.

If an horſe has any hidden infirmity, that will bring him to *halt* when he comes to travel, it may be diſcovered by running him in the hand on ſmooth way, at the length of the halter, and obſerving how he ſets down his legs: if he favour none of them, he is to be further proved, by riding him roundly till well heated; then letting him ſtand ſtill an hour, and after that running him in the hand at halter's length, as before.

HALYMOTE, properly ſignifies an holy, or eccleſiaſtical court. See HALMOTE.

There is a court held in London by this name, before the lord mayor and ſheriffs, for regulating the bakers.—It was antiently held on the Sunday next before St. Thomas's day, and for this reaſon called the *halymote*, or holy court.—The title thereof runs thus; *Curia ſancti motus tenta in Guilhalda civitatis Londin. coram major & vicecom.* &c.

HALYWERCFOLK, antiently ſignified ſuch perſons of the province of Durham, as held lands, on condition of defending the corps of S. Cuthbert; and who hereupon claimed the privilege, not to be forced to go out of the biſhoprick either by king or biſhop. *Hiſt. Dunelm.*

HAM, a Saxon word, properly ſignifying an houſe, or dwelling-place.

HAM is alſo uſed to denote a ſtreet or village.

Hence it is that the names of many of our towns end with it; as Notting*ham*, Bucking*ham*, Walſing*ham*, &c.

HAM is alſo a part of the leg of an animal; being the inner or hind part of the knee; or the ply, or angle, in which the leg and thigh, when bent, incline to each other.

HAM, in commerce, *&c.* is uſed for a leg and thigh of pork, dried, ſeaſoned, and prepared to make it keep, and to give it a briſk agreeable flavour.

Weſtphalia *hams*, ſo much in vogue, are prepared by ſalting them with ſalt-petre, preſſing them in a preſs eight or ten days, then ſteeping them in juniper-water, and drying them by the ſmoke of juniper-woods.

HAMADRYADES *, in antiquity, certain fabulous deities, revered among the antient heathens, and believed to preſide over woods and foreſts, and to be incloſed under the bark of oaks.

> * The word is compounded of ἅμα, *ſimul*, together; and δρυας, *dryad*, of δρυς, *oak*.

The *hamadryades*, ἁμαδρυαδες, were ſuppoſed to live and die with the trees they were attached to; as is obſerved by Servius on Virgil, *Eclog.* x. v. 62. after Mneſimachus, the ſcholiaſt of Apollonius, *&c.* who mentions other traditions relating thereto.

The poets, however, frequently confound the *hamadryades* with the naiads and napææ; witneſs Catullus, *Carm.* lxxiii. v. 23. Ovid, *Faſt.* iv. 229. Propertius, *Eleg.* xx. 32. See NAIADS.

Feſtus calls them *querquetulanæ*, as being iſſued or ſprung from oaks.

An antient poet, one Pherenicus, in *Athenæus*, Lib. iii. calls the vine, fig-tree, and other fruit-trees, *hamadryades*, from the name of their mother the oak.

HAMAXOBII *, HAMAXOBIANS, in the antient geography, a people who had no houſes, but lived in carriages.

> * The word is formed from ἅμαξα, a carriage, or chariot; and βιος, life.

The *Hamaxobii*, called alſo *Hamaxobitæ*, were an antient people of Sarmatia Europæa, inhabiting the ſouthern part of Muſcovy: who inſtead of houſes had a ſort of tents made of leather, and fixed on carriages, to be ready for ſhifting and travel.

HAMBOROUGH *Company*. See the article COMPANY.

HAMELING, or HAM-*ſtringing*, the act of cutting the great tendon, vulgarly called the *ham-ſtring*.

Hameling, or *hambling* of dogs, amounts to the ſame with expeditating, or lawing. See EXPEDITATING.

HAMLET *, a diminutive of *ham*, ſignifies a little village, or rather, a part of a village.

> * Spelman, upon theſe words, ſhewing the difference between *villa integra*, and *villa dimidia* & hamleta, ſays, Hamleta *vero, quæ medietatem friborgi non obtinuit, hoc eſt ubi quinque capitales plegii non deprehenſi ſint.*—The ſtatute of Exon, 14 Edw. I. mentions this word thus, *Les noſmes de toutes les villes* & hamlets *que ſont en ſon wapentake.*
>
> In an antient MS. *hamlet* is expounded, the ſeat of a freeholder.

HAMMER, an inſtrument of iron, with a handle of wood; uſed, in moſt mechanic arts, to beat, ſtretch, drive, &c.

Bodies capable of being ſtretched, or extended, under the *hammer*, are ſaid to be *malleable*.

The Latins call it *malleus*, antiently *martulus*, or *marculus*; by which name Pliny calls it, when he ſays, that Cynira, ſon of Agriopa, invented the *hammer* and pincers. *Hiſt. Nat.* L. VII. c. 56. Vid. Hardouin, *Not. ad loc.*

The *hammers* of our great forges are moved, or worked, by a water-mill. See FORGE.

HAMMER *hardening*. See the article HARDENING.

HAMMER *of a clock*. See CLOCK.

HAMMER, in anatomy. See the article MALLEUS.

HAMMERING, the act of beating, or extending, and faſhioning a body under the hammer.

When it is performed on iron heated for the purpoſe, the ſmiths uſually call it *forging*.

HAMMERING, in coining.—A piece of money, or a medal, is ſaid to be *hammered*, when ſtruck, and the impreſſion given with a hammer, and not with a mill.

For the method of coining with the HAMMER, ſee COINING.

HAMMOCK, or HAMAC, a kind of hanging-bed; ſuſpended between two trees, poſts, hooks, or the like; much uſed throughout the Weſt-Indies, as alſo on board of ſhips.

The Indians hang their *hammocks* to trees, and thus ſecure themſelves from wild beaſts and inſects; which render lying on the ground there very dangerous.

The people of the Caribbee iſlands are wonderfully ſuperſtitious in the point of their *hammocks*; and do not make them without a deal of ceremonies.—At each end of the room they put bags of aſhes, without which it is their opinion, that the *hammock* will not laſt. If they were to eat figs on a *hammock*, they believe it would rot: nor dare they eat any fiſh that has good teeth; as believing, that would make their *hammock* ſoon wear through.

According to F. Plumier, who has often made uſe of the *hammock* in the Indies, it conſiſts of a large, ſtrong coverlet, or ſheet of coarſe cotton, about ſix feet ſquare: on two oppoſite ſides are loops of the ſame ſtuff, through which a ſtring is run, and thereof other loops are formed, all which are tied together with a cord; and thus is the whole faſtened to two neighbouring trees, in the field; or two hooks, in houſes.

This kind of couch ſerves, at the ſame time, for bed, quilts, ſheets, pillow, &c.

HAMPER. See the article HANAPER.

HAMUS, or HAMULUS, an hook. See the article HOOK.

Surgeons alſo make uſe of an inſtrument thus called, to extract the child, in difficult labours.

HANAPER, or HAMPER, an office in Chancery; anſwering, in ſome meaſure, to the *fiſcus* among the Romans. See CHANCERY, and FISCUS.

Clerk of the HANAPER, ſometimes ſtyled *warden of the hanaper*, an officer who receives all money due to the king for ſeals of charters, patents, commiſſions, and writs; and attends the keeper of the ſeal daily in term-time, and at all times of ſealing; and takes into his cuſtody all ſealed charters, patents, and the like, which he receives into bags; but antiently, it is ſuppoſed, into *hampers*, which gave denomination to the office.

There is alſo an officer who is comptroller of the *hanaper*. See COMPTROLLER.

HANCES, in a ſhip, are falls, or deſcents, of the fiſe-rails, which are placed as baniſters in the poop, &c. and down to the gang-way.

HANCES, or HANSES, in architecture, are the ends of elliptical arches, which are arcs of ſmaller circles than the ſcheme, or middle-part of the arch.

HAND, *manus*, a part, or member, of the body of man; making the extremity of the arm.

The mechaniſm of the *hand* is very curious; excellently contrived to fit it for the various uſes and occaſions we have for it, and the great number of arts and manufactures it is to be employed in. It conſiſts of a compages of nerves, and little bones, joined into each other, which give it a great degree of ſtrength, and at the ſame rime an unuſual flexibility, to enable it to handle adjacent bodies, lay hold of them, and graſp them, in order either to draw them towards us, or thruſt them off.

Anaxagoras is repreſented, by antient authors, as maintaining, that man owes all his wiſdom, knowlege, and ſuperiority over other animals, to the uſe of his *hands*.—Galen puts the thing another way: man, according to him, is not the wiſeſt creature, becauſe he has *hands*; but he had *hands* given him becauſe he was the wiſeſt creature: for it was not our *hands* that taught us arts, but our reaſon. The *hands* are the organs of reaſon, &c. *De uſu part.* Lib. I. c. 3.

HAND, in medicine.—The *hand*, among anatomiſts, extends from the ſhoulder to the fingers ends: this is called alſo the *greater hand*.

It is divided into three parts.—The firſt reaching from the ſhoulder to the elbow; properly called the *arm*, *brachium*. The ſecond reaches from the elbow to the wriſt.—The third is the *hand*, *manus*, properly ſo called; called, alſo, the *leſſer hand*, or *extrema manus*.—This is ſubdivided into three other parts: the *carpus*, which is the wriſt; the *metacarpus*, which is the body of the *hand*, including the *dorſum*, and *vola*; and the fingers, *digiti*. See each deſcribed under its proper article; CARPUS, METACARPUS, and FINGERS.

The muſcles whereby the *hand* is moved and directed, are, the *palmares*; the *flexor* and *extenſor*, *carpi*, *ulnaris*, and *radialis*; *perforatus*; *perforans*; *lumbricales*; *interoſſei*; *extenſors*, *abductors*, and *flexors* of the fingers. See each in its place; PALMARIS, FLEXOR, EXTENSOR, &c.

The *hand* makes the ſubject of the art of palmiſtry, which is employed in conſidering the ſeveral lines and eminences of the palm of the *hand*, their ſignifications, &c.

Among the Egyptians, the *hand* was uſed as a ſymbol of ſtrength; among the Romans, it was held a ſymbol of fidelity; and, accordingly, was conſecrated to that goddeſs, by Numa, with great ſolemnity.

They ſometimes uſe an artificial *hand*, which is a kind of ſubſidiary *hand*, to be applied and fitted on the ſtump of an arm, after the *hand* has been cut off.

This has moſt of the motions of the natural *hand*; which are effected by means of ſprings, pulleys, pinions, buttons, &c. Amb. Paré gives us its ſtructure at large.

HAND, in falconry, is uſed for the foot of the hawk.—To have a clean, ſtrong, ſlender, glutinous *hand*, well clawed, are ſome of the good qualities of a hawk, or falcon.

HAND, in the manage, is a term variouſly uſed.—Sometimes it ſtands for the fore-feet of an horſe.

Hand is alſo uſed for a diviſion of the horſe into two parts, with reſpect to the rider's *hand*.—The *fore-hand* includes the head, neck, and fore-quarters.—The *hind-hand* is all the reſt of the horſe.

Spear-hand, or *ſword-hand*, is uſed for an horſeman's right *hand*.

Bridle-hand is the horſeman's left *hand*.

Your regular cavalier holds his *bridle-hand* two or three inches above the pommel of the ſaddle.

A horſeman is ſaid to have *no hand*, when he only makes uſe of the bridle unſeaſonably; not knowing how to give the aids, or helps, of the *hand* with diſcretion.

To keep a horſe *upon the hand*, ſignifies to feel him in the ſtay upon the *hand*, and to be always prepared to avoid any ſurprize from him.—When the horſe obeys and anſwers the effects of the *hand*, he is ſaid to *reſt well upon the hand*.

A horſeman ought to have a *light hand*, i. e. he ought only to feel the horſe upon his *hand*, ſo as to reſiſt him whenever he attempts to ſlip from it: and as ſoon as he has made his reſiſtance, he ought to lower the bridle, inſtead of cleaving to it.

If a horſe, by a too great eagerneſs to go forward, *preſſes* too much *upon the hand*; it ought to be ſlackened at certain times, and at other times to be kept hard, in order to diſappoint him from continually preſſing upon the bit. This facility, or liberty, of the horſeman, of ſlackening or ſtiffening the *hand*, makes what they call a *good hand*.

A horſe is ſaid to *force the hand*, when he does not fear the bridle, but runs away, in ſpite of the rider.

To *work a horſe upon the hand*, is to manage him by the effects of the bridle, without any other helps, except the calves of the legs.

To be *heavy upon the hand*, is underſtood of a horſe, which, by reaſon of the ſoftneſs of his neck, the weakneſs of his back, the largeneſs of his head, and the weight of his fore-quarters, or his wearineſs; throws himſelf upon the bridle, without making any reſiſtance, or effort, to force the horſeman's *hand*.

Harmonical **HAND**, in muſic, is uſed, by ſome writers, for the antient diagramma, or ſcale of muſic, upon which they learned to ſing.

The reaſon of the appellation was, that Guido Aretin, upon inventing the notes, *ut*, *re*, *mi*, *fa*, *ſol*, *la*, diſpoſed them on the fingers of the figure of a *hand* ſtretched out. He changed the letters of the alphabet, uſed till that time to expreſs the notes, for theſe ſix ſyllables, which he took out of the firſt ſtrophe of the hymn of S. John Baptiſt, compoſed by Paulus Diaconus.

Ut *queam laxis* re-*ſonare fibris*
Mi-*ra geſtorum* fa-*muli tuorum*,
Sol-*ve polluti* la-*bii reatum*,
Sancte Joannes.

HAND *of juſtice* is a ſceptre, or batoon, a cubit long, having an ivory *hand* at the extremity thereof; uſed as an attribute of certain kings, wherewith they are painted in their royal robes; as on the coronation-day.

Authors uſually call it *virga*.—Louis X. of France, firſt took the *hand* of juſtice for his device.

Impoſition of HANDS, or *laying on of* HANDS, ſignifies the conferring of holy orders; a ceremony wherein the *hands* are laid on the head of another, as a ſign of a miſſion, or of a power given him to exerciſe the functions of the miniſtry belonging to the order.

The apoſtles began to appoint miſſionaries by the impoſition of *hands*.

Waſhing one's **Hands** of a thing, ſignifies the witneſſing that a perſon has no part or concern in an affair; and that he will not be anſwerable for it: this Pilate did in reſpect of our Saviour's death.—In this ſenſe, a man is ſaid to have *clean hands*; and particularly a judge does this, to denote that he has not been corrupted by bribes or preſents.

Left **Hand**.—To marry with the *left hand*, is to eſpouſe a woman of inferior degree, whoſe children, in virtue of ſuch marriage, are not to ſucceed to the father, nor ſhare with the other children; but are to be contented with what fortune the huſband ſhall appoint them the next day after marriage.

This method of taking *left-handed wives* obtains at this time in Germany.

Hand is alſo uſed for the index of a clock, watch, or the like, ſerving to point the hour, &c. See Index.

Long **Hand**, *Longimanus*, a kind of title, or ſurname, aſſumed by certain princes. Artaxerxes, the ſon of Xerxes, and his ſucceſſor in the Perſian empire, was thus denominated; as having *hands* ſo long, that he could touch his knees with them when he ſtood upright.

Short **Hand** See the article Tachygraphy.

Bloody **Hand**. See the article Bloody *Hand*.

Hand is alſo figuratively uſed in painting, ſculpture, &c. for the manner, or ſtile, of this or that maſter.

Hands are borne in coat-armour, *dexter* and *ſiniſter*; that is, right and left; expanded or open; and after other manners.

Azure, a *dexter hand* couped at the wriſt, and extended in pale argent, is borne by the name of Brome.—Argent, three *ſiniſter hands*, couped at the wriſt, gules, by the name of Maynard.

Knights baronets are to bear in a canton, or in an eſcutcheon, which they pleaſe, the arms of Ulſter; *viz.* in a field argent, a *ſiniſter hand* couped at the wriſt, gules. See Baronet.

Hand-*borow* *, a pledge, or ſurety, of the lower rank.

* *Eſt quaſi vas, aut fidejuſſor manuenſis, hoc eſt, minor, ſeu inferior; nam head-borow, vas eſt capitalis, vel ſuperior.* Spelman. See Headborough.

Hand-*breadth*, is ſometimes uſed for a meaſure of three inches.

Hand, or **Handful**, is alſo a meaſure of four inches, by the ſtandard; according to the ſtatute, 33 H. VIII. cap. 5.

The *hand*, among jockeys, is four fingers breadth, and is the meaſure of a fiſt clenched; by this the height of horſes is meaſured.

A horſe for war, ſhould be ſixteen or eighteen *hands* high.

HAND-HABEND, in our antient cuſtoms, denotes a thief taken in the very fact.

Hand, or *Hond-habend*, from the Saxon, hond, hand, and habend, having; is a circumſtance of manifeſt theft, when the party is taken with the mainor, or mainover, *i. e.* the thing ſtolen in his *hand*.

Bracton alſo uſes *hand-berend* in the ſame ſenſe. *Sc. Latro manifeſtus.*

So in Fleta, *Furtum manifeſtum eſt ubi aliquis latro deprehenſus ſeiſitus de aliquo latrocinio* hand-habbinde, & back-berinde, & *inſecutus fuerit per aliquem cujus res illa fuerit, quæ dicitur Sacbergh, & tunc licet inſecutori rem ſuam petere criminaliter ut furatam.* L. I. c. 38. § 1.

Hand-habend alſo ſignifies the right which the lord has to judge and determine of this offence in his court.

HANDLING, a term uſed in reſpect of fighting cocks; ſignifying the meaſuring the girth of them, by griping one's hands and fingers round the cock's body.

HANGINGS, linings for rooms, made of arras, tapeſtry, or the like.

HANGWITE *, **Hangwita**, a mulct impoſed for the hanging a thief, or felon, without courſe of law; or even for ſuffering him to eſcape out of legal cuſtody.

* The word is alſo written, corruptly, *hangwith*, or *hankwite*: it is formed from the Saxon hanȝian, to hang, and ƿite, mulct, compenſation.

To be quit of **Hangwite**, *Quietus eſſe de hangwita*, in royal charters, denotes an immunity or freedom from the mulct or penalty above-mentioned. *Quit de Larron pendu ſans ſerjeants le roy.*

HANSE *, or **Hans**, an antient name for a ſociety, or company of merchants: particularly that of certain cities in Germany, &c. hence called *hanſe towns*.

* The word *hanſe* is obſolete High Dutch, or Teutonic; and ſignifies *alliance, confederacy, aſſociation*, &c. Some derive it from the two German words, *am-ſee*, that is, on the ſea; by reaſon the firſt *hanſe towns* were all ſituate on the ſea-coaſt: whence the ſociety is ſaid to have been firſt called, *am zee ſteden*, that is, cities on the ſea; and afterwards, by abbreviation, *hanſee*, and *hanſe*.

The **Hanse** *Towns* are certain free towns of Germany, and the North, united in ſtrict league, under laws and magiſtrates of their own appointing, for the better carrying on of commerce, and for their mutual ſafety and aſſiſtance.

This celebrated aſſociation, which makes ſo great a figure in the hiſtory of commerce, is commonly ſuppoſed to have commenced at Bremen on the Weſer, in the year 1164. others ſay in 1260. immediately after the incurſions and piracies of the Danes, Normans, &c. others ſay in 1206. and others in 920. but be its origin when it will, it was confirmed and re-eſtabliſhed in 1270.

At firſt it only conſiſted of towns ſituate on the coaſts of the Baltic ſea, or not far from it.—But its ſtrength and reputation increaſing, ſcarce any trading city in Europe but deſired to be admitted into it.

Under our king Henry III. the *hanſe* conſiſted of no leſs than ſixty-two cities; to which were afterwards added four more. *France* furniſhed to the confederacy, Rouen, S. Malo, Bourdeaux, Bayonne, and Marſeilles: *Spain*, Barcelona, Sevil, and Cadiz: *England*, London: *Portugal*, Liſbon:—the *Low Countries*, Antwerp, Dort, Amſterdam, Bruges, Rotterdam, Oſtend, and Dunkirk: and *Italy*, and *Sicily*, Meſſina, Leghorn, and Naples.

The *hanſe* was divided into four claſſes, or members, which were thoſe of Lubec, Cologn, Brunſwick, and Pruſſia, or Dantzick.—Thoſe four cities were the heads of the four members; and Lubec was the head of the whole *hanſe*.

Beſides this, the *hanſe* had four principal factories, or ſtaples: theſe were at London, Bruges, Novogrod, and Berg: that of Bruges was afterwards removed to Antwerp. But the firſt and principal was that of Lubec, which ſtill remains the head of the aſſociation. That of London was called *Guildhalla Teutonicorum*, or the *Stylliard*.

The government of the *hanſe* was at firſt ariſtocratical: then it came under the ſole direction of the grand maſter of the Teutonic order; and, at length, divers princes and lords made intereſt for it.

The end of the fourteenth century, and the beginning of the fifteenth, were the moſt flouriſhing times of this alliance.—Theſe towns were then in a condition to proclaim war againſt kings: Hiſtory is not ſilent, as to that they waged againſt Waldemar king of Denmark, about the year 1348. and againſt Eric, in 1428. particularly this laſt, when the *hanſeatic* fleet conſiſted of forty ſhips, containing about 12,000 regular troops, beſide the ſeamen.

But the ſeveral princes, whoſe principal cities were entered into the aſſociation, began to think it policy to put ſome bounds to a power, which, in time, might have proved formidable to themſelves.—The means were eaſy, and ſhort: each withdrew the merchants of his country from the aſſociation; by which, in a little time, from the great number of cities it had comprehended, the aſſociation found itſelf ſunk to thoſe few which had begun the confederacy; which henceforth was called the *Teutonick hanſe*. Though theſe are ſtill ſo conſiderable in point of commerce, that they are admitted to make treaties with the greateſt kings.

The diviſions that were got among them, contributed greatly to their fall: nor muſt it be forgot, that the eſtabliſhment of the republic, and commerce of Holland, had its ſhare therein.

The four cities which formed the league, were Lubec, Cologn, Brunſwick, and Dantzick, which were called *mother-towns*; as thoſe afterwards added thereto, were called *daughters* thereof.

A great number of towns in Germany ſtill retain the title of *hanſe towns*; but this is rather an empty title which they affect, than any argument of their continuing to trade under the laws and protection of the antient alliance; there being ſcarce any but Lubec, Hamburgh, Bremen, Roſtock, Brunſwick, and Cologn, that are truly *hanſeatic*, and that have deputies at the aſſemblies held on the common occaſions thereof.

The great trade the Dutch maintain with the *hanſe towns*, contributes not a little towards maintaining ſome part of them in their antient reputation; and it is principally to their alliance with that flouriſhing republic, that they owe the preſervation of their liberties; the ſuccours ſome of them have received from the Dutch, having ſaved them more than once from the enterprizes of the neighbouring princes.

HANSEATIC, ſomething belonging to the alliance, or company of the *hanſe*.

Thus we ſay, the *hanſeatic* body; the *hanſeatic* towns, &c. See Hanse.

HANSGRAVE *, the title of an officer in Germany.—The *hanſgrave* is the chief of a company, or ſociety.

* The word is a compound of the German *hanſe* and *graf*, count. See Grave.

HAP, or **Happ**, in law, ſignifies, to catch or ſnatch a thing. Thus we meet with, to *hap* the poſſeſſion of a deed-poll, *Littleton*, fol. 8. alſo, to *hap* the rent. If partition be made between two parceners, and more land be allowed the one than the other, ſhe that hath moſt of the land charges it to the other, and *happeth* the rent whereon aſſize is brought.

HAQUENY, **Hackney**, an old French word for an ambling horſe.

HAQUEBUT, a kind of fire-arm, otherwiſe called an *hagbut*, or *harquebuſs*. See Harquebuss.

HARANGUE *, a modern French name for a ſpeech, or oration, *i. e.* a diſcourſe made by an orator in public.

* Menage derives the word from the Italian *arenga*, which ſignifies the ſame; formed, according to Ferrari, from *arringo*, a juſt, or place of juſting. Others derive it from the Latin *ara*, altar; by reaſon the firſt *harangues* were made before altars: whence the verſe of Juvenal,

Aut Lugdunenſis rhetor dicturus ad aram.

The word is alſo frequently uſed in an ill ſenſe; *viz.* for a too pompous, prolix, or unſeaſonable ſpeech or declamation.—In Homer the heroes generally *harangue* ere they come to fight; as, in England, criminals *harangue* on the ſcaffold before they die. *S. Evrem.*

HARBINGER, an officer of the king's houſhold, having four yeomen under him, who ride a day's journey before the court when it travels, to provide lodgings, *&c.*

HARBOUR, a ſea-port, or a ſtation where ſhips may ride ſafe at anchor.

The word is chiefly applied to thoſe cloſed or ſecured with a boom, or chain; and that are furniſhed with a mole, *&c.*

To **Harbour**, popularly ſignifies to lodge, receive, or entertain; or to find a retiring-place.

Among hunters, a hart is ſaid to *harbour*, when he goes to reſt; whence, to *unharbour* a deer, is to diſlodge him.

HARDENING, the act of communicating a greater degree of *hardneſs* to a body than it had before.

The hardening and tempering of iron and ſteel makes a conſiderable article in the mechanical arts.

There are divers ways of effecting it: as by the hammer; quenching it, when hot, in cold water; caſe-hardening, *&c.*

To *harden* and temper Engliſh, Flemiſh, and Swediſh ſteel, they give it a pretty high heat, then ſuddenly quench it in water, to make it very *hard*: Spaniſh and Venice ſteel only need a blood-red heat, and then to be quenched.

The workmen ſometimes alſo grind indigo, and ſallad oil together, and rub the mixture upon it with a woollen rag, while it is heating, and let it cool of itſelf.

If the ſteel be too *hard* or brittle for an edge, ſpring, or pointed inſtrument, it may be let down, or made ſofter, thus: Take a piece of grindſtone, or whetſtone, and rub hard on the work, to take the black ſcurf off it, and brighten it; then let it heat in the fire, and, as it grows hotter, the colour will change by degrees, coming firſt to a light goldiſh colour, then to a darker goldiſh colour, and at laſt to a blue colour: chooſe it at which of theſe colours the work requires, and quench it ſuddenly in the water.

Hammer-**Hardening**, is moſtly uſed on iron and ſteel plates, for ſaws, ſprings, rules, *&c.*

Caſe-**Hardening** is thus performed:—Take cow-horn or hoof, dry it well in an oven, and beat it to powder; put as much bay-ſalt as of this powder into ſtale urine, or white-wine vinegar, and mix them well together; cover the iron, or ſteel, all over with this mixture, and wrap it up in loam, or plate-iron, ſo as the mixture touch every part of the work; then put it in the fire, and blow the coals to it, till the whole lump have a blood-red heat, but no higher; laſtly, take it out, and quench it.

HARDNESS, *Durities*, in philoſophy, that quality in bodies whereby their parts cohere firmly together, ſo as to reſiſt the touch.

In this ſenſe, *hardneſs* coincides with what, on other occaſions, we call *firmneſs*, and ſometimes *ſolidity*; in oppoſition to *fluidity*.

More ſtrictly ſpeaking, a body is ſaid to be *hard*, when its parts mutually cohere, ſo as not to yield inwards, or give way to an external impulſe; and therefore are not ſubject to any motion in reſpect of each other, without breaking the body.—In which ſenſe *hardneſs* ſtands oppoſed to *ſoftneſs*, where the parts do readily give way.

The Peripatetics make *hardneſs* a ſecondary quality; as ſuppoſing it to ariſe from *dryneſs*, which is a primary one, and to be in proportion thereto.

Its remote cauſes, according to them, are either heat or cold, according to the diverſity of the ſubject: heat producing dryneſs, and by that means *hardneſs* in clay; and cold doing the like in wax.

The Epicurean and corpuſcular philoſophers account for *hardneſs*, from the figure of the component parts, and their union together.—Accordingly, ſome aſcribe it to the atoms, or particles of the body being hooked, and thus mutually catching and hanging upon one another: but this is directly bringing that for an anſwer, which was the queſtion. For how do thoſe hooked parts cohere?

Again, the Carteſians will have the coheſion of hard bodies effected by reſt; that is, by nothing at all.

Sir Iſaac Newton ſhews, that the primary particles of all bodies, whether ſolid or fluid, are *hard*, perfectly *hard*; and not capable of being broken or divided by any power in nature.

Theſe particles he maintains to be connected together by an attractive power; and according to the circumſtances of this attraction, is the body either *hard*, or ſoft, or even fluid.

If the particles be ſo diſpoſed or fitted for each other, as to touch in large ſurfaces, ſuch body will be *hard*; and the more ſo, as thoſe ſurfaces are the larger. If, on the contrary, they only touch in ſmall ſurfaces, the body, by the weakneſs of the attraction, will remain ſoft.

HARDS, or **Hurds**, of flax, or hemp, denote the coarſer parts, ſeparated in the dreſſing of it, from the tear, or fine ſtuff. See Hemp.

HARE-*Hunting*. See the article *Hare*-Hunting.

HARIOT *, or **Heriot**, a due, or ſervice, belonging to the lord at the death of his tenant; conſiſting of the beſt beaſt the tenant had at the time of his deceaſe.

* Coke, on Littleton, obſerves, that *heriot* in Saxon is called heꞃeᵹeaꞇ, *q. d.* the *lord's beaſt*; heꞃe, ſignifying *lord*, and ᵹeaꞇ, *beaſt*; which others reject, urging that heꞃe, in Saxon, ſignifies an *army*, and ᵹeaꞇ. a *march*, or *expedition*: and that the Saxon heꞃeᵹeaꞇ, whence we derive our *hariot*, ſignified *proviſion* for war, or a tribute, or relief, given to the lord of a manor, for his better preparation towards war.—*Erat enim* heriotum *militaris ſupellectilis præſtatio, quam obeunte vaſſallo, dominus reportavit in ſui ipſius munitionem*, ſays Spelman. By the laws of Canutus, Tit. de *Heriotis*, it appears, that at the death of the great men of this nation, ſo many horſes and arms were to be paid, as they were in their reſpective life obliged to keep for the king's ſervice.

But *hariot* is now wholly taken for a beaſt, which the lord by cuſtom chooſes out of all the ſtore of his deceaſed tenant, be it horſe, ox, *&c.* and in ſome manors, the beſt piece of plate, jewel, or even the beſt moveable.

Hariot is of two ſorts; *viz.*—**Hariot** *Cuſtom*, where *hariots* have been paid time out of mind by cuſtom, after the death of a tenant for life.

Hariot *Service*, when a tenant holds by ſuch ſervice to pay *hariot* at the time of his death; which ſervice is expreſſed in the deed of feoffment.

For this latter the lord ſhall diſtrain; and for the other he ſhall ſeize, and not diſtrain.

If the lord purchaſe part of the tenancy, *hariot-ſervice* is extinguiſhed; but it is not ſo of *hariot-cuſtom*.

HARLEQUIN, in the Italian comedy, a buffoon, quaintly dreſſed; anſwering much the ſame purpoſe as a merry-andrew, or jack-pudding, in our drolls, on mountebanks ſtages, *&c.* We have alſo introduced the *harlequin* upon our theatres; and this is one of the ſtanding characters in the modern groteſque entertainments.

The term took its riſe from a famous Italian comedian, who came to Paris under Hen. III. and who frequenting the houſe of M. de Harlay, his companions uſed to call him *Harlequino*, q. d. *little Harlay*; a name which has deſcended to all thoſe of the ſame rank and profeſſion.

HARLOT *, a woman given to incontinency; or that makes a habit, or a trade, of proſtituting her body. See Courtezan.

* The word is ſuppoſed to be uſed for the diminutive *whorelet*, a little whore.—Others derive it from *Arlotta*, miſtreſs to Robert duke of Normandy, and mother to William the Conqueror: Camden derives it from one *Arlotha*, concubine to William the Conqueror.—Others from the Italian *Arlotta*, a proud whore.

HARMONIA, in muſic, *&c.* See the article Harmony.

Harmonia, ʽΑΡΜΟΝΙΑ, in anatomy, a ſort of juncture, or articulation of the bones.

Harmonia is a ſpecies of the ſymphyſis, or juncture intended for abſolute reſt.

Two bones are ſaid to be joined *per harmoniam*, by *harmonia*, when the juncture is in one uniform, right, or circular line; or when the bones meet with even margins: in contradiſtinction from *ſutura*, where they are indented.

The bones of the upper jaw, and moſt of the epiphyſes, are joined *per harmoniam*.

HARMONICA, **Harmonics**, a branch, or diviſion, of the antient muſic.

The *harmonica* is that part which conſiders the differences and proportions of ſounds, with reſpect to acute and grave: in contradiſtinction from *rhythmica*, and *metrica*. See Rhythmica, and Metrica.

The only part of their muſic, the antients have left us any tolerable account of, is the *harmonica*; which itſelf is but very general and theoretical.

Mr. Malcolm has made a very induſtrious and learned inquiry into the *harmonica*, or harmonic principles, of the antients.—They reduced their doctrine into ſeven parts; *viz.* of *ſounds*; of *intervals*; of *ſyſtems*; of the *genera*; of the *tones*, or *modes*; of *mutations*; and of the *melopœia*. See each conſidered under its proper article.

HARMONICAL *arithmetic* is ſo much of the theory and doctrine of numbers as relates to making the compariſons, reductions, &c. of muſical intervals, which are expreſſed by numbers, in order to our finding their mutual relations, compoſitions, and reſolutions.

HARMONICAL *compoſition*, in its general ſenſe, includes the compoſition both of harmony and melody; *i. e.* of muſic, or ſongs, both in a ſingle part, and in ſeveral parts.

In its more proper and limited ſenſe, *harmonical compoſition* is reſtrained to that of harmony.—In which ſenſe it may be defined, the art of diſpoſing and concerting ſeveral ſingle parts together, in ſuch manner as to make one agreeable whole.

The art of harmony has been long known under the name of *counterpoint*. See COUNTERPOINT.

At the time when parts were firſt introduced, muſic being then very ſimple, there were no different notes of time; and the parts were in every note made concord.

This they afterwards called *ſimple*, or *plain counterpoint*, to diſtinguiſh it from another kind, then introduced, wherein notes of different value were introduced, and diſcords brought in between the parts.

This they called *figurative counterpoint*. See FIGURATIVE COUNTERPOINT.

HARMONICAL *interval* is an interval, or difference, of two ſounds which are agreeable to the ear, whether in conſonance, or ſucceſſion. See INTERVAL.

Harmonical intervals, therefore, are the ſame with *concords*.

They are thus called, as being the only eſſential ingredients of harmony.

HARMONICAL *proportion* is a ſort of proportion between three quantities, wherein the difference of the firſt and ſecond is to the difference of the ſecond and third, as the firſt is to the third.

Thus, 2 : 3 : 6 are *harmonical*; becauſe 2 : 6 : : 1 : 3 are geometrical.

So four numbers are *harmonical*, when the firſt is to the fourth, as the difference of the firſt and ſecond, to the difference of the third and fourth.

Thus, 24 : 16 : 12 : 9 are *harmonical*; becauſe 24 : 2 : : 8 : 3 are geometrical.

For the laws and rules of harmonical *proportion, see Harmonical* PROPORTION.

HARMONICAL *ſeries* is a ſeries of many numbers in continual *harmonical* proportion.

If there be four or more numbers, whereof every three immediate terms are *harmonical*; the whole makes an *harmonical ſeries*, of continual *harmonical* proportionals; as, 30 : 20 : 15 : 12 : 10.

Or if every four immediately next each other are *harmonical*, it is alſo a continual *harmonical ſeries*, but of another ſpecies; as, 3, 4, 6, 9, 18, 36, &c.

HARMONICAL *ſound* is an appellation given by M. Sauveur to ſuch ſounds as always make a certain determinate number of vibrations, in the time that ſome other fundamental ſound, to which they are referred, makes one vibration.

Harmonical ſounds are produced by the parts of chords, &c. which vibrate a certain number of times while the whole chord vibrates once.

By this they are diſtinguiſhed from the third, fifth, &c. where the relations of the vibrations are four to five, or five to ſix, or two to three.

The relations of ſounds had only been conſidered in the ſeries of numbers, 1 : 2, 2 : 3, 3 : 4, 4 : 5, &c. which produced the intervals called *octave*, *fifth*, *fourth*, *third*, &c. M. Sauveur firſt conſidered them in the natural ſeries, 1, 2, 3, 4, &c. and examined the relations of the ſounds ariſing therefrom.—The reſult is, that the firſt interval, 1 : 2, is an octave; the ſecond, 1 : 3, a twelfth; the third, 1 : 4, a fifteenth, or double octave; the fourth, 1 : 5, a ſeventeenth; the fifth, 1 : 6, a nineteenth, &c.

This new conſideration of the relations of ſounds, is more natural than the old one: it does expreſs and repreſent the whole of muſic, and is, in effect, all the muſic that nature gives without the aſſiſtance of art.—The ſtring of an harpſichord, or a bell, beſides their general ſound, which is proportionate to their length, thickneſs, &c. do alſo, at the ſame time, yield other ſubordinate and acuter ſounds, which a nice ear, with a good attention, clearly diſtinguiſhes.

Theſe ſubordinate ſounds ariſe from the particular vibrations of ſome of the parts of the ſtring, or bell, which are, as it were, detached from the reſt, and make ſeparate vibrations: in effect, every half, every third, every fourth, &c. of the chord, performs its vibrations apart, while a general vibration is made of the whole chord.—Now all theſe ſubordinate ſounds are *harmonical* with regard to the whole ſound: the leaſt acute which we hear is octave with the whole ſound: the leaſt acute that follows, makes a twelfth with the whole ſound; the next a ſeventeenth, &c. till they grow too acute for the ear to perceive them. Now throughout the whole, we hear no ſuch thing as a ſound that makes a fifth, or a third, &c. with regard to the whole ſound; none, in ſhort, but what are comprized in the ſeries of *harmonical* ſounds.

Add, that if the breath, or bellows that blow a wind-inſtrument, be played ſtronger and ſtronger, the tone will be continually raiſed, but this only in the ratio of the *harmonical ſounds*.—So that it appears that nature, when ſhe makes, as it were, a ſyſtem of muſic herſelf, uſes no other but this kind of ſounds; and yet they had, till of late, remained unknown to the muſicians: not but that they frequently fell into them, but it was only inadvertently, and without knowing what they did.—M. Sauveur ſhews, that the ſtructure of the organ depends intirely on this ſo long unknown principle.

HARMONY*, ʽΑΡΜΟΝΙΑ, in muſic, the agreeable reſult of an union of ſeveral muſical ſounds, heard at one and the ſame time; or, the mixture of divers ſounds, which together have an effect agreeable to the ear.

* The word is Greek, ἁρμονια; formed of the verb ἁρμοζειν, *convenire*, *congruere*, to agree, quadrate, match, &c.

As a continued ſucceſſion of muſical ſounds produces melody; ſo does a continued combination of them produce *harmony*.

Among the antients, however, as ſometimes alſo among the moderns, *harmony* is uſed in the ſtrict ſenſe of *conſonance*; and ſo is equivalent to the *ſymphony*.

The words *concord*, and *harmony*, do really ſignify the ſame thing; though cuſtom has made a little difference between them. Concord is the agreeable effect of two ſounds in conſonance; and *harmony* the effect of any greater number of agreeable ſounds in conſonance.

Again, *harmony* always implies conſonance; but concord is alſo applied to ſounds in ſucceſſion; though never but where the terms can ſtand agreeably in conſonance.—The effect of an agreeable ſucceſſion of ſeveral ſounds, is called *melody*; as that of an agreeable conſonance is called *harmony*.

The antients ſeem to have been intirely unacquainted with *harmony*; the ſoul of the modern muſic.—In all their explications of the melopœia, they ſay not one word of the concert, or *harmony* of parts. We have inſtances, indeed, of their joining ſeveral voices, or inſtruments, in conſonance; but then thoſe voices, &c. were not ſo joined, as that each had a diſtinct and proper melody, ſo making a ſucceſſion of various concords; but they were either uniſons, or octaves, in every note; and ſo all performed the ſame individual melody, and conſtituted one ſong.

When the parts differ, not in the tenſion of the whole, but in the different relations of the ſucceſſive notes; it is this that conſtitutes the modern art of *harmony*.

Harmony is well defined, the ſum, or reſult, of the combination of two or more concords; *i. e.* of three or more ſimple ſounds ſtriking the ear all together; and different compoſitions of concords make different *harmony*.

To underſtand the nature, and determine the number, and preference, of *harmonies*; it is to be conſidered, that in every compound ſound, where there are no more than three ſimple ones, there are three kinds of relations; *viz.* the primary relation of every ſimple ſound to the fundamental, or graveſt, whereby they make different degrees of concord with it: the mutual relations of the acute ſounds each with other, whereby they mix either concord or diſcord into the compound; and the ſecondary relation of the whole, whereby all the terms unite their vibrations, or coincide more or leſs frequently.

Suppoſe, *e. gr.* four ſounds, A, B, C, and D, whereof A is the graveſt; B next; then C; and D the acuteſt.—Here, A is the fundamental; and the relations of B, C, and D, to A, are primary relations: ſo, if B be a third *g* above A, that primary relation is 4 to 5; and if C be fifth to A, that primary relation is 2 to 3; and if D be octave to A, that is 1 to 2. For the mutual relations of the acute terms B, C, D, they are had by taking their primary relations to the fundamental, and ſubtracting each leſſer from each greater: thus, B to C is 5 to 6, a third *l*; B to D is 5 to 8, a ſixth *l*, &c.—Laſtly, to find the ſecondary relation of the whole, ſeek the leaſt common dividend to all the leſſer terms or numbers of the primary relations; *i. e.* the leaſt number that will be divided by each of them exactly: this is the thing ſought; and ſhews, that all the ſimple ſounds coincide, after ſo many vibrations of the fundamental as the number expreſſes.

So, in the preceding example, the leſſer terms of the three primary relations are 4, 2, 1, whoſe leaſt common dividend is 4; conſequently, at every fourth vibration of the fundamental, the whole will coincide.

Now *harmony*, we have obſerved, is a compound ſound, conſiſting of three, or more, ſimple ſounds.—Its proper ingredients are concords; and all diſcords, at leaſt in the primary and mutual relations, are abſolutely forbidden.—It is true, diſcords are uſed in muſic; but not for themſelves ſimply, but to ſet off the concords by their contraſt and oppoſition.

Hence, any number of concords being propoſed to ſtand in primary relation with a common fundamental; we diſcover whether or no they conſtitute a perfect *harmony*, by finding their mutual relations.—Thus, ſuppoſe the following concords, or primary relations; *viz.* the greater third, fifth, and octave, given; their mutual relations are all concord, and therefore may ſtand in *harmony*. For the greater third and fifth are to one another as 5 : 6, a leſſer third; the greater third and octave are as 5 : 8, a leſſer ſixth; and the fifth and octave are as 3 : 4, a leſſer fourth. But if fourth, fifth, and octave, be propoſed; it is evident, they cannot ſtand in *harmony*; by reaſon, betwixt the fourth and fifth there is a diſcord; *viz.* the ratio 8 : 9. Again, ſuppoſing any number of ſounds which are concord each to the next, from the loweſt to the higheſt; to know if they can ſtand in *harmony*, we muſt find the primary, and all the mutual relations, which muſt be all concord. So let any number of ſounds be as 4 : 5 : 6 : 8; they may ſtand in *harmony*, by reaſon each to each is concord: but the following ones cannot; *viz.* 4, 6, 9; becauſe 4 : 9 is diſcord.

The neceſſary conditions of all *harmony*, then, are concords in the primary and mutual relations; on which footing, a table is eaſily formed of all the poſſible varieties: but to determine the preference of *harmonies*, the ſecondary relations are likewiſe to be conſidered.—The perfection of *harmonies* depends on all the three relations: it is not the beſt primary relations that make beſt *harmony*; for then a fourth and fifth muſt be better than a fourth and ſixth; whereas the firſt two cannot ſtand together, becauſe of the diſcord in the mutual relation. Nor does the beſt ſecondary relation carry it: for then would a fourth and fifth, whoſe ſecondary relation with a common fundamental is 6, be better than a leſſer third and fifth, whoſe ſecondary relation is 10: but here, alſo, the preference is due to the better mutual relation.—Indeed, the mutual relations depend on the primary; though not ſo as that the beſt primary ſhall always produce the beſt mutual relation: however, the primary relations are of the moſt importance; and, together with the ſecondary, they afford us the following rule for determining the preference of *harmonies*.

Viz. Comparing two *harmonies*, which have an equal number of terms; that which has the beſt primary and ſecondary relations, is ſure to be moſt perfect.—But in caſes where the advantage is in the primary relation of the one, and the ſecondary of the other, we have no certain rule: the primary are certainly the moſt conſiderable; but how the advantage in theſe ought to be proportioned to the diſadvantage in the other, or *vice verſa*, we know not. So that a well-tuned ear muſt be the laſt reſort, in theſe caſes.

Harmony is divided into *ſimple* and *compound*.

Simple HARMONY is that where there is no concord to the fundamental above an octave.

The ingredients of *ſimple harmony* are the ſeven ſimple original concords, of which there can be but eighteen different combinations, that are *harmony*; which we give in the following table, from Mr. Malcolm.

Table of ſimple HARMONIES.

	2dary rel.		2dary rel.	
fifth octave	2	third *g* fifth	4	third *g* fifth octave
fourth octave	3	third *l* fifth	10	third *l* fifth octave
ſixth *g* octave	3	fourth, ſixth *g*	3	fourth, ſixth *g* octave
third *g* octave	4	third *g* ſixth *g*	12	third *g* ſixth *g* octave
third *l* octave	5	third *l* ſixth *l*	5	third *l* ſixth *l* octave
ſixth *l* octave	5	fourth, ſixth *l*	15	fourth, ſixth *l* octave

Theſe are all the poſſible combinations of the concords that make *harmony*: for the octave is compounded of a fifth and fourth, or a ſixth and third, which have a variety of greater and leſſer; out of theſe are the firſt ſix *harmonies* compoſed: then, the fifth being compoſed of the greater third and leſſer third, and the ſixth of fourth and third; from theſe proceed the next ſix of the table: then an octave joined to each of theſe ſix, make the laſt ſix.

The perfection of the firſt twelve is according to the order of the table: of the firſt ſix each has an octave; and their preference is according to the perfection of the other leſſer concord joined to the octave.—For the next ſix, the preference is given to the two combinations with the fifth, whereof that which has the third *g* is beſt; then to theſe two combinations with the ſixth *g*, of which that which has the fourth is beſt.—For the laſt ſix, they are not placed laſt as being the leaſt perfect, but becauſe they are the moſt complex, and are the mixtures of the other twelve with each other. In point of perfection they are plainly preferable to the preceding ſix, as having the very ſame ingredients, and an octave more.

Compound HARMONY is that which to the ſimple *harmony* of one octave, adds that of another octave.

For the *compound harmonies*, their variety is eaſily found out of the combinations of the ſimple *harmonies* of ſeveral octaves.

HARMONY, again, may be divided into that of *concords*, and that of *diſcords*.

The *firſt* is that we have hitherto conſidered, and wherein nothing but concords are admitted.

The *ſecond* is that wherein diſcords are uſed, intermixed with the concords.

Compoſition of HARMONY. See HARMONICAL *compoſition*.

HARMONY is ſometimes alſo uſed, in a laxer ſenſe, to denote an agreement, ſuitableneſs, union, conformity, *&c.*

In muſic we ſometimes apply it to a ſingle voice, when ſonorous, clear, and ſoft; or to a ſingle inſtrument, when it yields a very agreeable ſound.—Thus, we ſay, the *harmony* of her voice, of his lute, *&c.*

In matters of learning, we uſe *harmony* for a certain agreement between the ſeveral parts of the diſcourſe, which renders the reading thereof agreeable.—In this ſenſe we ſay, *harmonious* periods, *&c.*

In architecture, *harmony* denotes an agreeable relation between the parts of a building. See SYMMETRY.

In painting, they ſpeak of an *harmony*, both in the ordonnance and compoſition, and in the colours of a picture.—In the ordonnance, it ſignifies the union, or connexion, between the figures, with reſpect to the ſubject of the piece.

In the colouring, it denotes the union, or agreeable mixture, of different colours. See COLOURING.

M. De la Chambre derives the *harmony* of colours from the ſame proportions as the *harmony* of ſounds.—This he inſiſts on at large, in his treatiſe *Of the colours of the rainbow.* On this principle, he lays down green as the moſt agreeable of colours, correſponding to the octave in muſic; red, to a fifth; yellow, to a fourth, *&c.*

HARMONY, or *Evangelical* HARMONY, is alſo a title of divers books, compoſed to ſhew the uniformity and agreement of the accounts given by the four evangeliſts.

The firſt attempt of this kind is attributed to Tatian, or Theophilus of Antioch, in the ſecond century.—After his example, divers other *harmonies* have been compoſed, by Ammonius of Alexandria, Euſebius of Cæſarea, Janſenius biſhop of Ghent, Mr. Toinard, Mr. Whiſton, *&c.*

HARMONY *of the ſpheres*, or *celeſtial* HARMONY, is a ſort of muſic much ſpoken of by many of the philoſophers and fathers; ſuppoſed to be produced by the regular, ſweetly-tuned motions of the ſtars and planets.

Plato, Philo Judæus, S. Auguſtine, S. Ambroſe, S. Iſidore, Boethius, and many others, are ſtrongly poſſeſſed with the opinion of this *harmony*, which they attribute to the various proportionate impreſſions of the heavenly globes upon one another; which, acting under proper intervals, form an *harmony*.—It is impoſſible, according to them, that ſuch ſpacious bodies, moving with ſo much rapidity, ſhould be ſilent: on the contrary, the atmoſphere, continually impelled by them, muſt yield a ſet of ſounds, proportionate to the impulſions it receives: conſequently, as they do not all run the ſame circuit, nor with one and the ſame velocity; the different tones ariſing from the diverſity of motions, directed by the hand of the Almighty, muſt form an admirable ſymphony, or concert. S. Irenæus, S. Baſil, and S. Epiphanius, *&c.* have appeared againſt the notion.

Pre-eſtabliſhed HARMONY, a celebrated ſyſtem of M. Leibnitz, by means whereof he accounts for the union, or communication, between the ſoul and body.

The philoſophers had univerſally held, that the ſoul and body act really and phyſically on each other.—Des Cartes firſt appeared, and ſhewed that the heterogeneity of their nature did not allow of ſuch real union; and that they could only have an apparent one, whereof God is the mediator.

M. Leibnitz, unſatisfied with either of theſe hypotheſes, eſtabliſhes a third.—A ſoul, or ſpirit, he obſerves, is to have a certain ſeries of thoughts, deſires, and wills: a body, which is only a machine, is to have a certain ſeries of motions, to be determined by the combination of its mechanical diſpoſition with the impreſſions of external objects.

If, now, there be found a ſoul and a body ſo framed, that the whole ſeries of wills of the ſoul, and the whole ſeries of motions of the body, exactly correſpond; and at the ſame time, for inſtance, when the ſoul deſires to go to any place, the two feet move mechanically that way; this ſoul and body will have a relation to one another, not by any actual union between them, but by the conſtant and perpetual correſpondence of the ſeveral actions of both.—Now, God puts together this ſoul and body, which had ſuch a correſpondence antecedent to their union; ſuch a *pre-eſtabliſhed harmony*.—And the ſame is to be underſtood of all the other ſouls and bodies that have been, or ever will be, joined.

In effect, the laws of motion in the body, ſucceeding in the order of efficient cauſes, do alſo agree and correſpond with the ideas of the ſoul; ſo that the body is determined to act at the time when the ſoul wills.

The ſame principle he extends further, and makes a *pre-eſtabliſhed harmony* between the kingdoms of nature and grace; to account for the apparent communication between them, and make phyſical and moral evil correſpond.

Such is the ſyſtem of *pre-eſtabliſhed harmony*, *harmony preétablie*. — The author's way of ſtating and enforcing it, may be ſeen in his *Eſſais de Theodicée*.

HARMONY, in anatomy. See the article HARMONIA.

HARMOSTES *, or HARMOSTA, in antiquity, a ſort of magiſtrate among the Spartans, whereof there were ſeveral; whoſe buſineſs was to look to the building of citadels, and repairing the forts, and the fortifications of the cities.

* The word is Greek, ἁρμοςης; formed of ἁρμοω, *apto, concinno*, I adapt, concert, &c.

HARNESS *, a complete armour; or the whole equipage and accoutrements of a cavalier, heavily armed; as caſque, cuiraſs, &c.

* The word is formed of the French, *harnois*; which ſome derive from the Greek ἀρνακις, a lamb's ſkin; by reaſon they antiently covered themſelves therewith. Du Cange obſerves, that the word *harneſium* is uſed in the corrupt Latin in the ſame ſenſe; and that it comes from the High Dutch, *harnas*, or *harniſch*. Others derive it from the Italian, *arneſe*; others from the Celtic, *harnes*, a cuiraſs.

Under king Richard II. it was expreſly forbidden all men to ride in *harneſs*, with launcegays, &c. *Vid. Stat.* 7 R. II. c. 13. In the ſtatute 2 H. VI. c. 14. *harneſs* ſeems to include all kind of furniture for offence, as well as defence, both of man and horſe: as ſwords, buckles for belts, girdles, &c.

HARNESS is alſo uſed for the furniture put on a horſe, to draw in a coach, waggon, or other carriage; ſuch as collars, leathers, traces, &c.

HARO *, HAROU, or HAROL, in the Norman cuſtoms.— *Clamor de* HARO, is a cry, or formula of invoking the aſſiſtance of juſtice, againſt the violence of ſome offender, who upon hearing the word *haro*, is obliged to deſiſt, on pain of being ſeverely puniſhed for his outrage, and to go with the party injured before the judge.

* The word is commonly derived of *ha* and *roul*, as being ſuppoſed an invocation of the ſovereign power, to aſſiſt the weak againſt the ſtrong, on occaſion of Raoul firſt duke of Normandy, about the year 912. who rendered himſelf venerable to his ſubjects by the ſeverity of his juſtice; ſo that they called on him even after his death, when they ſuffered any oppreſſion. —Guill. Guiart ſpeaks of the *ha rous*, or *ha roul*, as a military cry, firſt brought into Neuſtria by the Normans, under the conduct of Raoul. Others ſay, that during his life-time they uſed to cry *à Raoul*, I cite you to appear before Raoul; by reaſon he adminiſtred juſtice to his ſubjects in perſon. But others, as M. Caſeneuve, take all theſe etymologies to be falſe; and ſuppoſe the word *haro* to have been a cry long before duke Raoul. Some derive it from Harola king of Denmark, who in the year 826. was made grand conſervator of juſtice at Mentz: others, from the Daniſh *aa rau*, q. d. help me; a cry raiſed by the Normans in flying from a king of Denmark, named Roux, who made himſelf duke of Normandy.

The letters of the French chancery have uſually this clauſe, *Nonobſtant clameur* de haro, &c.

The *haro* had antiently ſuch vaſt power, that a poor man of the city of Caen, named Aſſelin, in virtue hereof, arreſted the corpſe of William the Conqueror, in the middle of the funeral proceſſion, till ſuch time as his ſon Henry had paid the value of the land in queſtion; which was that whereon the chapel was built, where he was interred.

HARP *, a muſical inſtrument, of the ſtring kind; being of a triangular figure, and placed on end between the legs to be played on.

* Papias, and Du Cange after him, will have the *harp* to have taken its name from the *Arpi*, a people of Italy, who were ſuppoſed the firſt that invented it; and from whom they ſay it was borrowed by other nations.—Menage, &c. derive the word from the Latin *harpa*; and that from the German *herp* or *harp*. Others bring it from the Latin *carpo*, becauſe touched or thrummed with the fingers. Dr. Hickes derives it from *harpa*, or *hearpa*, which ſignify the ſame thing; the firſt in the language of the Cimbri, the ſecond in that of the Anglo-Saxons. —The Engliſh prieſt who wrote the life of St. Dunſtan, and who lived with him in the tenth century, ſays, c. 2. n. 12. *Sumpſit ſetum ex more citharam ſuam, quam paterna lingua* hearpam *vocamus*; which intimates the word to be Anglo-Saxon.

There is ſome diverſity in the ſtructure of *harps*.—That called the *triple harp* has 78 ſtrings or chords, in three rows, 49 in each, which make four octaves: the firſt row is for the ſemi-tones; and the third is in uniſon with the firſt. There are two rows of pins, or ſcrews, on the right ſide, ſerving to keep the ſtrings tight in their holes, which are faſtened at the other end to three rows of pins on the upper ſide.

This inſtrument is ſtruck with the finger and thumb of both hands. Its muſic is much like that of the ſpinet; all its ſtrings going from ſemi-tone to ſemi tone: whence ſome call it an *inverted ſpinet*.

It is capable of a much greater degree of perfection than the lute. King David is uſually painted with a *harp* in his hands; but we have no teſtimony in all antiquity, that the Hebrew *harp*, which they call *chinnor*, was any thing like ours. On a Hebrew medal of Simon Maccabæus we ſee two ſorts of muſical inſtruments; but they are both of them very different from our *harp*; and only conſiſt of three or four ſtrings. — All authors agree, that our harp is very different from the lyra, cithara, or barbiton, uſed among the Romans.

Fortunatus, Lib. VII. *Carm.* 8. witneſſes, that it was an inſtrument of the barbarians.

Romanuſque lyra, plaudat tibi barbarus harpa,
Græcus Achilliaca, crotta Britanna canat.

HARPIES, 'ΑΡΠΥΙΑΙ, HARPYIÆ, in antiquity, a rapacious impure ſort of monſters, of the bird kind, mentioned among the poets.

They are repreſented with wings, ears like bears, bodies like vulturs, faces like women, and feet and hands hooked like the talons of birds of prey. See Virgil *Æneid.* Lib. III. who gives a deſcription of them.

The antients looked on the *harpies* as a ſort of genii, or demons. — Some make them the daughters of Tellus and Oceanus, the earth and ocean; whence, ſays Servius, it is, that they inhabit an iſland, half on land, and half in water. Valerius Flaccus makes them the daughters of Typhon.

There were three *harpies*, Aello, Ocypete, and Celæno; which laſt Homer calls *Podarge*.—Heſiod, in his *Theogony*, v. 267. only reckons two, Aello and Ocypete; and makes them the daughters of Thaumas and Electra, affirming, that they had wings, and went with the rapidity of the wind. Zephyrus begat of them Balius and Xanthus, Achilles's horſes. Pherecydes relates, that the Boreades expelled them from the Ægean and Sicilian ſeas, and purſued them as far as the iſlands, which he calls *Plotæ*, and Homer *Calynæ*; and which have ſince been called the *Strophades*.

Voſſius, *de idolol.* L. III. c. 99. p. 63. thinks, that what the antients have related of the *harpies*, agrees to no other birds ſo well as the bats found in the territories of Darien in South America.—Theſe animals kill not only birds, but dogs and cats; and prove very troubleſome to men by their peckings. But the antients, as the ſame Voſſius obſerves, knew nothing of theſe birds. By the *harpies*, therefore, he thinks they could mean nothing elſe but the winds; and that it was on this account they were made daughters of Electra, the daughter of Oceanus. Such is the opinion of the ſcholiaſts of Apollonius, Heſiod, and Euſtathius. — Their names, Aello, Ocypete, Celœno, are ſuppoſed to be a further argument of this.

HARPINEER, or HARPONEER, an engineer, or fiſherman, who manages and throws the harping-iron, in the whale-fiſhing.

The *harpineers* are the moſt robuſt and dextrous perſons in the crew of the ſhips ſent on whale-fiſhing.—Their place is at the end of the pinnace, and they direct the ſteerſman as well as the rowers. When they come within reach of the whale, they dart their iron with great vehemence into his head, ſo as to penetrate the ſkin and fat, and enter deep into the fleſh. Immediately upon this, the whale dives to the bottom, and when he returns to the air again to fetch breath, the *harpineer* takes occaſion to ſtrike him afreſh; though he would have died of the former wound: it being a circumſtance generally aſſerted, that blood never ſtanches, nor wounds ever heal, in the water. This done, the other fiſhers approach aſide of him, and run a long ſpear ſhod with iron under the fins, through the integuments, into his breaſt. The blood now ſpouts out, and the carcaſe welters in its own fat. It remains then only to tow him to ſhore, there to cut off the blubber, &c. See *Whale*-FISHERY.

In the ſturgeon-fiſhery, as ſoon as the *harpineer* perceives the ſturgeon's belly, which is frequently turning, now on this ſide, and then on that, he darts his iron into the ſame, as being deſtitute of ſcales. Denis *Hiſt. de l'Amerique*. See *Sturgeon*-FISHERY.

HARPING-*iron*, HARPAGO, HARPOON, a ſort of dart, or ſpear, faſtened to a line, wherewith they catch whales, and other large fiſh, as ſturgeons, &c.

This *harping-iron* is a large javelin of forged iron, five or ſix feet long, with a ſharp, cutting, triangular point, barbed like that of an arrow. At the upper end is engraven the *harpineer's* name, near a ring, to which the line is faſtened, which they let down as ſoon as the fiſh is ſtruck, to give him room to dive, &c. See *Whale*-FISHERY.

HARPINGS, in a ſhip, properly denote her breadth at the bow. Some alſo call the ends of the bends, which are faſtened into the ſtem, the *harpings*.

HARPOCRATIANS, a ſect of heretics mentioned by Celſus; the ſame with *Carpocratians*. See CARPOCRATIANS.

HARPSICHORD, or HARPSICHOL, a muſical inſtrument of the ſtring kind: played after the manner of an organ.

The Italians call it *clave cimbala*, and the French *clavecin*. In Latin it is uſually called *grave cymbalum*, q. d. a large or deep cymbal.

The *harpſichord* is furniſhed with a ſet of keys; ſometimes two ſets:—The touching or ſtriking of theſe keys, moves a kind of little jacks, which move a double row of chords, or ſtrings of braſs and iron, ſtretched on the table of the inſtrument over four bridges.

HARQUEBUSS *, in our antient ſtatutes, called alſo ARQUEBUSE, HAQUEBUT, or HAGBUT; is a *hand-gun*; or a fire-arm of a proper length, *&c.* to be borne in the arm.

* The word is formed of the French *arquebuſe:* and that from the Italian, *arcobuſio*, or *arco abuſo*, of *arco*, a bow, and *buſio*, a hole; on account of the touch-hole, at which the powder is put to prime it; and that it ſucceeded to the bows of the antients.

The *harquebuſs* is properly a fire-arm, of the ordinary length of a muſquet, or fowling-piece; cocked uſually, with a wheel. —Hanzelet preſcribes its legitimate length to be forty calibers; and the weight of its ball one ounce, ſeven eighths; its charge of powder as much.

There is alſo a larger kind, called *harquebuſs a croc*, much of the nature of our blunderbuſſes, uſed in war, for the defence of places; being uſually reſted on ſomething when diſcharged. —The firſt time theſe inſtruments were ſeen, was in the imperial army of Bourbon, who drove Bonnivet out of the ſtate of Milan.—They were ſo big and heavy, that there were two men to carry them. They are now little uſed except in ſome old caſtles, and by the French in ſome of their gariſons.

HARRIER, a kind of hound, called in Latin *ſagax*, from his tracing, or chaſing by foot;—being endowed with an admirable gift of ſmelling, and alſo very bold in the purſuit of his game.

There are ſeveral kinds, all differing in their ſervices; being for the hare, fox, wolf, hart, buck, badger, otter, polecat, weaſel, or coney; ſome, in fine, for one game, ſome for another, *&c.* See HUNTING.

HARROW, in huſbandry, a drag made in a ſquare form, to break the clods of earth after plowing.

It conſiſts of three parts: 1°, The *harrow*-bulls; which are the holes where the nails go in; 2°, The ſlots, which are the croſs pins; 3°, The *harrow*-tines, pins, or tuſhes, which are great iron nails.

Beſide theſe there are, 4°, The hook, being that which faſtens the horſe to them; 5°, The couples, when two *harrows* are tied together.

HART, in the foreſt law, a ſtag, or male deer of five years old complete.

If the king or queen hunt him, and he eſcape, he is called a *hart royal*.

And if by ſuch hunting he be chaſed out of the foreſt, proclamation is commonly made in the places adjacent, that in regard of the paſtime the beaſt has afforded the king or queen, none ſhall hurt, or hinder him from returning to the foreſt; upon which he is called an *hart royal proclaimed*.

HARTS-*horn*, *cornu cervi*. See the article *Harts*-HORN.

HART-*hunting*. See the article *Hart*-HUNTING.

HARTH-*peny*, or HARTH-*ſilver*. See CHIMNEY-*money*.

HARUSPEX, or ARUSPEX, in antiquity, a ſort of prieſt, or diviner, who inſpected and conſidered the entrails of beaſts, particularly thoſe of victims; to find ſigns or indications of ſomething he wanted to know.

Cicero, *de Divinat.* L. II. explains the difference between auſpex and *haruſpex*.

HASSOCK, denotes a baſs, or cuſhion made of ruſhes, to kneel or reſt the feet on in churches.

HASTA, or HASTA *pura*, among medalliſts, ſignifies a kind of ſpear, or javelin, not ſhod, or headed with iron; or rather, an antient ſceptre, ſomewhat longer than ordinary, occaſionally given to all the gods.

The *haſta* is ſuppoſed a ſymbol of the goodneſs of the gods, and of the conduct of providence, which is equally mild and forcible.

HASTA, in ſome countries, is a meaſure, or quantity of ground amounting to thirty paces; thus called, according to M. du Cange, from the *haſta*, or rod, wherewith it was meaſured.

HASTIVE, a French term, ſometimes uſed in Engliſh for *early*, *forward*, or ſomething that comes before the ordinary time, or ſeaſon.

The *haſtive* fruits are ſtrawberries and cherries.—We have alſo *haſtive* peas, *&c.*

HAT, a covering for the head, worn by the men throughout the weſtern part of Europe.

Hats are chiefly made of hair, wool, *&c.* worked, fulled, and faſhioned, to the figure of the head.

Hats are ſaid to have been firſt ſeen about the year 1400. at which time they became of uſe for country wear, riding, *&c.* —F. Daniel relates, that when Charles II. made his public entry into Rouen in 1449. he had on a *hat* lined with red velvet, and ſurmounted with a plume, or tuft of feathers. —He adds, that it is from this entry, or at leaſt under this reign, that the uſe of *hats* and caps is to be dated, which henceforward began to take place of the chaperoons and hoods, that had been worn before.

In progreſs of time, from the laity, the clergy likewiſe took this part of the habit; but it was looked on as a crying abuſe, and ſeveral regulations were publiſhed, forbidding any prieſt, or religious perſon, to appear abroad in a *hat* without cornets; and injoining them to keep to the uſe of chaperoons, made of black cloth, with decent cornets: if they were poor, they were at leaſt to have cornets faſtened to their *hats*, and this upon penalty of ſuſpenſion and excommunication.—Indeed the uſe of *hats* is ſaid to have been of a longer ſtanding among the eccleſiaſtics of Britany, by two hundred years; and eſpecially among the canons: but theſe were no other than a kind of caps; and it was from hence aroſe the ſquare caps worn in colleges, *&c.*

Lobineau obſerves, that a biſhop of Dol, in the twelfth century, zealous for good order, allowed the canons alone to wear ſuch *hats*; injoining, that if any other perſon ſhould come with them to church, divine ſervice ſhould immediately ſtand ſtill. *T.* I. p. 845.

Hats make a very conſiderable article in commerce.—The fineſt, and thoſe moſt valued, are made of the pure hair of an amphibious animal, called the *caſtor*, or *beaver*, frequent in Canada, and other provinces of North America. See CASTOR.

Method of making HATS.—*Hats*, we have obſerved, are made either of wool, or hair of divers animals, particularly of the caſtor, hare, rabbet, camel, *&c.* The proceſs is much the ſame in all; for which reaſon we ſhall content ourſelves to inſtance in that of caſtors.

The ſkin of this animal is covered with two kinds of hair; the one long, ſtiff, gloſſy, and pretty thin ſet; this is what renders the ſkin, or fur, of ſo much value. The other is ſhort, thick, and ſoft; which alone is uſed in *hats*.

To tear off one of theſe kinds of hair, and cut the other, the *hatters*, or rather the women employed for that purpoſe, make uſe of two knives, a large one like a ſhoemaker's knife, for the long hair; and a ſmaller, not unlike a vine-knife, wherewith they ſhave, or ſcrape off, the ſhorter hair.

When the hair is off, they mix the ſtuff; to one third of dry caſtor, putting two thirds of *old coat*, *i. e.* of hair which has been worn ſome time by the ſavages; and card the whole with cards, like thoſe uſed in the woollen manufactory, only finer. This done, they weigh it, and take more or leſs, according to the ſize or thickneſs of the *hat* intended.—The ſtuff is now laid on the *hurdle*, which is a ſquare table, parallel to the horizon, having longitudinal chinks cut through it. On this hurdle, with an inſtrument called a *bow*, much reſembling that of a violin, but larger; whoſe ſtring is worked with a little bow-ſtick, and thus made to play on the furs; they *fly* and mix them together, the duſt and filth at the ſame time paſſing through the chinks. This they reckon one of the moſt difficult operations in the whole; by reaſon of the juſtneſs required in the hand to make the ſtuff fall preciſely together, and that it may be every-where of the ſame thickneſs. In lieu of a bow, ſome *hatters* make uſe of a ſieve, or ſearce of hair, through which they paſs the ſtuff.

After this manner, they form gores, or two capades, of an oval form, ending in an acute angle atop.—And with what ſtuff remains, they ſupply and ſtrengthen them in places where they happen to be ſlenderer than ordinary.—Though it is to be remembered, that they deſignedly make them thicker in the brim, near the crown, than towards the circumference, or in the crown itſelf.

The capades thus finiſhed, they go on to harden them into cloſer, and more conſiſtent flakes, by preſſing down a *hardening ſkin*, or leather, thereon.—This done, they are carried to the *baſon*, which is a ſort of bench with an iron plate fitted therein, and a little fire underneath it; upon which laying one of the hardened capades, ſprinkled over with water, and a ſort of mould being applied thereon; the heat of the fire, with the water and preſſing, imbody the matter into a ſlight hairy ſort of ſtuff, or felt: after which, turning up the edges all around over the mould, they lay it by; and thus proceed to the other.—This finiſhed, the two are next joined together, ſo as to meet in an angle atop, and only form one conical cap, after the manner of a manica Hippocratis, or flannel bag.

The *hat* thus baſoned, they remove it to a large kind of receiver or trough, reſembling a mill-hopper, going ſloping or narrowing down from the edge, or rim, to the bottom, which is a copper kettle, filled with water and grounds, kep hot for the purpoſe.—On the deſcent, or ſloping ſide, calle the *plank*, the baſoned *hat*, being firſt dipt in the kettle, laid.—And here they proceed to work it, by rolling and un rolling it again and again, one part after another, firſt wi the hand, and then with a little wooden roller; taking ca to dip it from time to time: till at length by thus fullin and thickening it, four or five hours, it is reduced to the exte or dimenſions of the *hat* intended.—To ſecure the hand fro from being injured by this frequent rolling, &c. they uſually guard them with a ſort of thick gloves.

The *hat* thus wrought, they proceed to give it the proper form; which is done by laying the conical cap on a wooden *block*, of the intended ſize of the crown of the *hat*; and thus tying it round with a packthread, called a *commander:* after which, with a piece of iron, or copper, bent for that purpoſe, and called a *ſtamper*, they gradually beat or drive down the commander all around, till it has reached the bottom of the block: and thus is the crown formed; what remains at bottom below the ſtring, being the brim.

The *hat* being now ſet to dry; they proceed to *ſinge* it, by holding it over a flair of ſtraw, or the like; then it is *pounced*, or rubbed with pumice, to take off the coarſer knap; then rubbed over afreſh with ſeel-ſkin, to lay the knap ſtill finer; and laſtly, carded with a fine card, to raiſe the fine cotton, with which the hat is afterwards to appear.

Things thus far advanced, the *hat* is ſent, upon its block, and tied about with packthread as before, to be dyed.—The dyer's copper is uſually very large, holding ten or twelve dozen *hats*. The dye, or tincture, is made of logwood, verdegris, copperas, and alder-bark; to which ſome add galls and ſumac.

Here the *hat* is kept boiling for about three quarters of an hour; then taken out, and ſet to cool, and then returned to the dye; and this for ten or twelve times ſucceſſively.

The dye being complete, the *hat* is returned to the *hatter*, who proceeds to dry it, by hanging it in the top, or roof, of a ſtove or oven; at the bottom of which is a charcoal fire.—When dry, it is to be ſtiffened, which is done with melted glue, or gum ſeneca, applied thereon by firſt ſmearing it, and beating it over with a bruſh, and then rubbing it with the hand.—The next thing is to *ſteam* it on the *ſteaming baſon*, which is a little hearth, or fire-place, raiſed three feet high, with an iron plate laid over it, exactly covering the hearth. On this plate they firſt ſpread cloths, which being ſprinkled over with water to ſecure the *hat* from burning, the *hat* is placed, brim downwards, thereon. When moderately hot, the workman ſtrikes gently on the brim, with the flat of his hand, to make the jointings incorporate and bind, ſo as not to appear; turning it from time to time, this way and that way, and at laſt overturning and ſetting it on the crown.

When ſteamed ſufficiently, and dried, they put it again on the block, and bruſh and *iron* it on a table or bench for the purpoſe, called the *ſtall-board*. This they perform with a ſort of irons like thoſe commonly uſed in ironing linen, and heated like them; which being rubbed over and over each part of the *hat*, with the aſſiſtance of the bruſh, ſmoothens and gives it a gloſs, which is the laſt operation; nothing now remaining but to clip the edges even with ſciſſars, and ſew a lining into the crown.

Hats for women have been made, in various forms, of ſilk, ſtraw, ſhavings of wood, ivory, feathers, gold, and ſilver.

Hat is alſo figuratively uſed for the dignity of a cardinal, or a promotion to that dignity.

In this ſenſe they ſay, to expect the *hat*; to claim, or have pretenſions to the *hat*, &c.

Pope Innocent IV. firſt made the *hat* the ſymbol or cognizance of the cardinals; injoining them to wear a *red hat*, at all ceremonies and proceſſions, as a token of their being ready to ſpill their blood for Jeſus Chriſt.

Hat, in heraldry. See the article Chapeau.

HATCHES, in a ſhip, a ſort of trap-doors in the midſhip, or between the main-maſt and fore-maſt; through which goods of bulk are let down into the hold.—Hence, the

Hatch-*way* is that place where the *hatches* are.—See *Tab. Ship. Fig.* 2. n. 40.

To lay a thing into the *hatch-way*, is to put it ſo that the *hatches* cannot be come at, or opened.

Hatches are alſo flood-gates, ſet in a river, &c. to ſtop the current of the water.

The word is particularly uſed for certain dams, or mounds, made of rubbiſh, clay, or earth, to prevent the water that iſſues from the ſtream-works, and tin-waſhes in Cornwal, from running into the freſh rivers.

The tenants of Bulyſtoke, and other manors, are bound to do certain days works to the *hatches*.

HATCHET, a joiner's inſtrument wherewith to hew wood. The *hatchet* is a ſmaller, lighter ſort of ax, with a baſil edge on its left ſide; having a ſhort handle, as being to be uſed with one hand.

HATCHING, the act whereby fecundated eggs, after ſeaſonable incubation, exclude their young.

Hatching, with reſpect to the oviparous tribe, amounts to the ſame as parturition, or delivery, in the viviparous.

The oſtrich is ſaid to lay her eggs in the ſand; and that the heat of the ſun does the office of a parent animal, and *hatches* them. In Egypt, they *hatch* their chickens by the heat of an oven: the method whereof is given us by Mr. Greaves, in the *Philoſophical Tranſactions*, N° 117. They have houſes, it ſeems, built for the purpoſe; having a long entrance, on each ſide whereof are twelve or fourteen ovens, whoſe bottoms and ſides are formed of ſun-dried bricks, lined with mats, for the eggs to lie on; and the tops covered with ſticks, except two ſpaces, which are brick, and ſerve as hearths to build the fires on wherewith the eggs are to be heated.—Over theſe is another ſtory of ovens; having holes, which are either ſtopped with tow, or left open at pleaſure, to govern the heat of the ovens below.

They begin to heat the ovens in the middle of January; ſpending on them every morning about an hundred pound weight of camels or buffaloes dung, and the like quantity at night; till the middle of February; by which time the ovens are too hot for the hand to be held upon the walls.—After this they put in the eggs to *hatch*; which they continue ſucceſſively till the end of May.

The eggs are firſt put upon the mats in the lower ovens, upon the ground, 7 or 8000 eggs in number, and laid only double, one upon another; in the ovens over theſe, the fire is made in the little chanels, from whence the heat is conveyed into the lower: the eggs directly under theſe hearths lie threefold.

At night, when they new-make their fires in the hearths, they remove the eggs that were directly undermoſt, laying three one upon another, in the place of thoſe which lay on the ſides only double; and theſe being now removed, they lie treble under the hearth, becauſe the heat is greater there, than on the ſides.

Theſe eggs continue in the lower ovens fourteen days and nights; after which they remove them into the upper. And in theſe, there being now no more fire uſed, they turn the eggs four times every twenty-four hours.

The 21ſt, or 22d day, the chickens are *hatched*; which the firſt day eat not: the ſecond day they are fetched away by women, who give them corn, &c. The maſter of the ovens hath a third part of the eggs for his coſt and pains, out of which he is to make good to the owners (who have two thirds in chickens for their eggs), if any happen to be ſpoiled, or miſcarry.

The fire in the upper ovens, when the eggs are placed in the lower, is thus proportioned.—The firſt day there is the greateſt fire, the ſecond leſs than the firſt; the fourth more than the third, the fifth leſs; the ſixth more than the fifth, the ſeventh leſs; the eighth more, the ninth without fire; the tenth a little fire in the morning; the eleventh they ſhut all the holes with flax, &c. making no more fire; for if they ſhould, the eggs would break. They take care, that the eggs be no hotter than the eye of a man, when they are laid upon it, can well endure. When the chickens are *hatched*, they put them into the lower ovens.

Hatching, or **Haching**, in deſigning and engraving, ſignifies the making of lines with a pen, pencil, graver, or the like; and interſecting, or going acroſs thoſe lines, with others drawn over them another way.

The depths and ſhadows of draughts are uſually formed by *hatching*, or *hatch-work*.

What is ſurpriſing in the gravings of Mellan and Sadelers, is, that they expreſs the ſhadows exceeding well, without any *hatches*, or *hatchings*.

Hatchings are of great uſe in heraldry, to diſtinguiſh the ſeveral colours of an eſcutcheon, without its being illumined. See Colour.

The firſt kind of *hatching* in pale, or from top to bottom, ſignifies *gules*, or *red*.—The ſecond in feſs, acroſs the coat, *azure*, or *blue*.

Hatching in pale, counter-*hatched* in feſs, ſignifies *ſable*, or *black*.—*Hatching* in bend, proceeding from right to left, ſignifies *green:* and that in bars, from left to right, *purple*.

When the coat is only dotted, it is ſuppoſed to be *or*, or gold. And when quite bare, or void, *argent*, or *white*.

This invention is, commonly, aſcribed to F. Pietra Sancta.—Though the Sieur de la Columbiere has diſputed his title to it.

HATCHMENT, in heraldry, the marſhalling of ſeveral coats of arms in an eſcutcheon.

Hatchment is alſo a popular name for an atchievement. See Atchievement.

HATTOCK, a ſhock of corn, containing twelve ſheaves.—Others make it only three ſheaves laid together.

HAVEN *, a ſea-port, or harbour for ſhips. See Port, and Harbour.

* The word is derived from the Saxon hæfene, or the German *hafen*, or the French *havre*; which all ſignify the ſame thing.

HAUNCH, or **Hanch**, the hip; or that part of the body between the laſt ribs, and the thigh.

The *haunches* conſiſt of three bones, joined together by cartilages; which, in courſe of time, grow dry, hard, and bony; ſo that, in adults, the three only ſeem to conſtitute one continued bone.

HAUNCHES, or hips of an horſe, are thoſe parts of the hind-quarters which extend from the reins or back, to the hough or ham.

One of the moſt neceſſary leſſons in managing the great horſe, is that of *putting him upon his haunches*; which, in other terms, is called to *couple* him well, or to put him well together, or make him compact.

A horſe that does not *bend*, or lower his *haunches*, throws himſelf too much upon his ſhoulders, and is heavy upon the bridle.—To *drag the haunches*, is to change the leading foot in galloping.

HAUNT, among hunters, the walk of a deer, or the place of his ordinary paſſage. See HUNTING.

HAVRE, in geography, *&c.* a French term, ſignifying the ſame with *haven*, or *harbour*.

HAUTBOY *, or HOBOY, a ſort of muſical inſtrument, of the wind kind, with a reed to blow or play it withal.

The *hautboy* is ſhaped much like the flute, only that it ſpreads, or widens more towards the bottom. The treble is two feet long: the tenor goes a fifth lower, when blown, or ſounded open: it has only ſeven holes. The baſs is five feet long, and has eleven holes.

HAW, among farriers, *&c.* a griſtle growing between the nether eye-lid and the eye of a horſe, or other beaſt, and which will put the eye quite out, if not timely taken away.

It comes by groſs, tough, and phlegmatic humours, falling from the head, and knitting together, which in the end grow to this infirmity; the ſigns whereof are the watering of the eye, and involuntary opening of the nether ſide.

Every common farrier can cut it out:—The affected beaſt is to be held faſt by the head, and, with a ſtrong double thread, a needle is to be put in the midſt of the upper eye-lid, and tied, if it be a bullock, to his horn: then taking the needle again, with a long thread, and putting it through the griſtle of the *haw*, with a ſharp knife cut the ſkin finely round, and ſo pluck out the *haw*.—That done, they dreſs the eye, take out the blood, waſh it with beer or ale, and caſt in a good deal of ſalt; then waſh it again, afterwards ſtroaking it down with their hands, and ſo let him go.—To cure a ſheep of this malady, they drop into the eye the juice of chamomile, or crows-foot.

HAWK, *accipiter*, a bird of prey, of a bold and generous nature; whereof there are ſeveral ſpecies.

The *hawk* makes the ſubject of a particular art, called *hawking*, or *falconry*.

Naturaliſts diſagree about the number and diviſion of the *hawk* kind.—The moſt commodious diſtribution is that into *long-winged* and *ſhort-winged hawks*.

To the *long-winged*, which may be alſo called the *falcon* tribe, belong the falcon, haggard-falcon, ger-falcon, lanner, hobby, ſaker, merlin, and bawler: all which are reclaimed, manned, fed, and mewed, much after the ſame manner.—Of the *ſhort-winged* ſpecies, or *hawks* properly ſo called, are the *gos-hawk* and *ſparrow-hawk*.

The former are generally brought to the lure; and ſeize their prey with the foot; breaking the neck-bone with their beak, ere they proceed to plume or tire it: the latter are brought to the fiſt, and kill their game by ſtrength and force of wing, at random; and proceed immediately to plume them.

It is to be noted, that the female of all birds of prey is much larger, ſtronger, and more courageous, than the male; which is diſtinguiſhed therefrom by ſome diminutive name.—Thoſe of the *falcon* and *gos-hawk*, are called *tiercels*, or *tiercelets*; that of the ger-falcon, *jerkin*; that of the merlin, *jack*; that of the hobby, *robbin*; that of the *ſparrow-hawk*, *musket*; and that of the lanner, *lanneret*.

The *hawk* alſo has different names, according to their different ages.—The firſt year ſhe is called a *ſoarage*.—The ſecond, an *enterview*.—The third, a *white hawk*.—The fourth, a *hawk of the firſt coat*.

Add, that they have different denominations according to the different ſeaſons when they are taken.—Thoſe taken in the ayrie, are called *eyeſſes*, or *nyeſſes*.—Thoſe which had forſaken it, and were fed in ſome place not far off, by the old ones, *branchers*.—Thoſe which had begun to prey for themſelves, *ſoar-hawks*.—Thoſe which have changed their feathers once or more, *mewed hawks*.—And thoſe which lived at large, and preyed for themſelves about the woods, *haggards*.

We ſhall here, according to our method in other caſes, give the reader what relates to the ſeveral ſpecies of *hawks*; referring for what is common to them all, to the article HAWKING.

1°, Of the *falcon*, or *falcon-gentle*, her nature and qualities; with the manner of luring and reclaiming, and bringing her up to the ſport; we have elſewhere ſpoken under the article FALCON.

2°, The *haggard falcon*, called alſo *peregrine falcon*, *paſſenger*, and *traveller*, becauſe no native of our iſland; or rather, by reaſon of its roving, and wandering, more than any other ſort; is not inferior to the beſt of the tribe, for ſtrength, courage, hardineſs, and perſeverance. She is diſtinguiſhed from the common falcon, as being larger, longer, armed with a longer beak and talons, a higher neck, *&c.* She will lie longer on the wing, and is more deliberate and adviſed in her ſtooping, than the others.

The haggard falcon, when wild and unreclaimed, takes the greateſt liberty of all birds; living either by land or ſea: and is of ſuch abſolute power, that where-ever ſhe comes, all flying fowl ſtoop under her ſubjection; even the tiercelet, though her natural companion, dares not ſit by her, or approach her reſidence, except in cawking time; when, for procreation-ſake, ſhe admits him in a ſubmiſſive manner to come near and woo her.

When very young, ſhe is apt to attack birds too ſtrong for her; which ſhe perſiſts in, till a ſound beating has brought her to a better underſtanding.—She is an inceſſant pains-taker; no weather diſcouraging her from her game.—When, unreclaimed, as ſoon as ſhe has ſeized her prey, and broken the ink or neck, ſhe falls on the crop, and feeds firſt on what is contained there; then on the other parts. When ſhe has filled her gorge, ſhe flies to ſome ſolitary place, near the water, where ſhe ſits all day, and at night takes wing to ſome convenient place, where ſhe had before purpoſed, to perch till morning.

For the method of reclaiming, manning, entering, &c. *a haggard falcon, or other ſort of* hawk, *with the terms of art uſed in reſpect thereof.* See the article HAWKING.

3°, The *ger-falcon*, or *gyr-falcon*, is the largeſt bird of the falcon kind; coming next to the ſize of a vultur; and is of the greateſt ſtrength next an eagle: ſhe is ſtoutly armed, and in all reſpects a lovely bird to the eye.

Her head and eyes are like thoſe of the haggard; her beak great and bending, her nares large:—her ſails long and ſharp pointed, and her train and mail much like the lanner's, having a large marble-ſeared foot; and plumed black, brown, and ruſſet.—She may alſo be called a *paſſenger*, her ayrie or breeding-place being in Pruſſia, Muſcovy, and the mountains of Norway.

The ger-falcon is of a fierce and firy nature, and is very hardly managed and reclaimed; but being once overcome, ſhe proves an excellent *hawk*, ſcarce refuſing to ſtrike at any thing. She does not naturally fly the river; but always purſues the herons, ſhovelers, *&c.* In going up to their gate, they do not hold the courſe, or way, which others uſe to do; but climb up upon the train, when they find any fowl; and, as ſoon as they have reached her, pluck her down, if not at the firſt, yet at the ſecond or third encounter.

4°, The *ſaker*, or *ſacre*, is the third in eſteem, next the falcon and ger-falcon, but difficult to be managed, being a paſſenger, or peregrine *hawk*, whoſe ayrie has not yet been diſcovered; but the young are chiefly found in the iſlands of the Levant.

She is ſomewhat longer than the haggard falcon; her plume ruſty and ragged; the ſear of her foot and beak like the lanner; her pounces ſhort; and her train the longeſt of all birds of prey.

She is very ſtrong and hardy againſt all kind of fowl, being a great deal more diſpoſed to the field than the brook; and delighting to prey on great fowl, as the heron, gooſe, *&c.* but for the crane ſhe is not ſo free as the haggard falcon.—She alſo excels for the leſſer fowl, as pheaſants, partridges, *&c.* and is much leſs dainty in her diet, as long-winged *hawks* uſually are.

The ſaker makes excellent ſport with a kite; which, as ſoon as he ſees the ſaker caſt off, immediately betakes himſelf to, and truſts in the goodneſs of his wings, and gets to his pitch, as high as poſſibly he can, by making many tours and wrenches in the air; which, together with the variety of conteſts and bickerings between them, affords a curious ſpectacle.

5°, The *lanner*, or *lanar*, is a *hawk* common in moſt countries, eſpecially in France; making her ayrie on lofty trees in foreſts, or on high clifts near the ſea-ſide.

She is leſs than the falcon-gentle, fair-plumed, and of ſhorter talons than any other falcon.—Such as have the largeſt and beſt faſhioned heads, are eſteemed the beſt.

Mewed lanners are not eaſily known from *gos-hawks*, or ſakers: the chief marks and characteriſtics are, that they are blacker, have leſs beaks, and are leſs armed and pounced, than any other *hawks*.

Of the whole *hawk* tribe, there is none ſo fit for a young falconer as this, becauſe ſhe is not inclined to ſurfeits, and ſeldom melts greaſe by being overflown.

There is another ſort of *lanners*, whoſe ayrie is in the Alps, having their heads white, and flat aloft, large and black eyes, ſlender nares, ſhort and thick beaks; being leſs than the haggard, and falcon-gentle; though there are different ſizes of them: their tail is marble, or ruſſet; their breaſt-feathers white and full of ruſſet ſpots, and the points and extremities of their feathers full of white drops; their ſails and trains long; they are ſhort-legged, with a foot leſs than that of a falcon, and marble-ſeared.—This *hawk* never lies upon the wing, after ſhe has flown to a mark; but after once ſtooping, makes a point; and like the *gos-hawk*, waits the fowl.—She is more valued abroad than in England; we looking on her as ſlothful, and hard-mettled. The truth is, a very ſtrict hand muſt be kept over her; as being of an ungrateful diſpoſition.—She is flown at field or brook, and will maintain long flights; by which means much fowl is killed. To fly them, they muſt be kept very ſharp; and becauſe they keep their caſtings long, they muſt have hard caſtings, made of tow, and knots of hemp.

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* The word is French, *haut-bois*, q.d. high wood; and is given to this inſtrument, by reaſon its tone is higher than that of the violin.

6°, The *merlin* is the ſmalleſt of all birds of prey; and bears a reſemblance to a hagard falcon in plume, as alſo in the ſear of the foot, beak, and talons; and is not unlike her in conditions.

—When well manned, lured, and carefully looked after, ſhe proves an excellent *hawk*; eſpecially at partridge, thruſh, and lark.—But ſhe is very buſy and unruly, and ſpecial care muſt be had, leſt ſhe unnaturally eat off her own feet and talons, as ſhe has often been known to do.

She is very bold; and will fly at birds bigger than herſelf, with ſuch eagerneſs, as to purſue them even into a town or village.

Though the merlin be accounted a *hawk* of the fiſt, ſhe may be brought to take delight in the lure: when you have made her come to the lure, ſo as ſhe will patiently endure the hood, you ſhould make her a train with a partridge; if ſhe foot and kill it, reward her well: then fly her at the wild partridge, and if ſhe take or make it at firſt or ſecond flight, being retrieved by the ſpaniels, feed her upon it with a reaſonable gorge; chearing her in ſuch manner with the voice, that ſhe may know it another time: if ſhe do not prove hardy at the firſt or ſecond time, ſhe will always be good for nothing.

7°, The *hobby* is a ſort of *hawk* that naturally preys on doves, larks, and other ſmall game.

She has a blue beak, but the ſear thereof and legs are yellow; the crinels, or little feathers under the eye, very black; the top of the head between black and yellow.

She has alſo two white ſeams on her neck: the plumes under the gorge, and about the brows, are rediſh, without ſpot or drop; the breaſt-feathers, for the moſt part, are brown, yet interſperſed with white ſpots; her back, train, and wings, are black aloft, having no great ſcales upon the legs, unleſs a few behind: the three ſtretchers and pounces are very large, with reſpect to her ſhort legs; her brail-feathers are tinctured between red and black; the pendant ones, or thoſe behind the thigh, of a ruſty, ſmoky hue.

She is a *hawk* of the lure, and not of the fiſt; and is an high flyer, being in every reſpect like the ſaker, but that ſhe is of a much leſs ſize; for ſhe is not only nimble and light of wing, but dares encounter kites, buzzards, or crows, and will give ſouſe for ſouſe, and blow for blow, till ſometimes they ſiege, and come tumbling down to the ground both together.—But ſhe is chiefly for the lark, which poor little creature does ſo dread the ſight of her, ſoaring in the air over her, that ſhe will rather chooſe to commit herſelf to the mercy of men or dogs, or to be trampled on by horſes, than venture into the element, when ſhe ſees her mortal enemy there.

The hobby alſo makes excellent ſport with nets and ſpaniels; for when the dogs range the field, to ſpring the fowl, and the hobby ſoars aloft over them, the poor birds, apprehenſive of a conſpiracy between the *hawks* and dogs to their utter ruin, dare not commit themſelves to their wings, but think it ſafer to lie cloſe on the ground, and ſo are taken in the nets.—This ſport is called *daring*.

8°, The *gos-hawk*, or *goſs-hawk*, q. d. groſs *hawk*, is a large ſhort-winged *hawk*, of which there are ſeveral ſorts, differing in goodneſs, force, and hardineſs, according to the diverſity of their choice in cawking; at which time the ſeveral ſorts of birds of prey aſſemble themſelves with the *gos-hawk*, and gallant it together.

There are *gos-hawks* from moſt countries, but none better than thoſe bred in the north of Ireland.—This hawk ought to have a ſmall head, a long and ſtrait face, a large throat, great eyes deep ſet; the apple of the eye black; nares, ears, back, and feet, large and black; a black long beak, long neck, big breaſt, hard fleſh, long fleſhy thighs, the bone of the leg and knee ſhort, long large pounces and talons; and to grow round from the ſtern, or train, to the breaſt forward.—The feathers of the thighs, towards the train, ſhould be large, and the train-feathers ſhort and ſoft, ſomewhat tending to an iron mail.

The brail-feathers ought to be like thoſe of the breaſt; and the covert-feathers of the train, ſpotted, and full of black rundles; but the extremity of every train-feather, black ſtreaked.

To diſtinguiſh the ſtrength of the bird, tie divers of them in ſeveral places of one chamber, or mew; and that *hawk* that ſlices and mutes higheſt and fartheſt off, may be concluded to be ſtrongeſt.

The *gos-hawk* flies at the pheaſant, mallard, wild gooſe, hare, and coney; nay, ſhe will venture to ſeize a kid, or goat.—She is to be kept with care, as being very choice and dainty in eating, &c.

9°, *Sparrow-hawk* is alſo a kind of ſhort-winged *hawk*: whereof there are ſeveral ſorts, different in plumes: ſome ſmall-plumed and black; others of a larger feather; ſome plumed like the quail; ſome brown, or of a canvas-mail, &c. The *ſparrow-hawk*, ſo far as her ſtrength will give her leave, is a good *hawk*; and he that knows how to man, reclaim, and fly with a *ſparrow-hawk*, may eaſily attain to the keeping and managing of all others.—In this reſpect ſhe really excels, that ſhe ſerves both for winter and ſummer, with great pleaſure, and will fly at all kind of game, more than the falcon.

HAWKERS *, antiently, were fraudulent perſons, who went from place to place, buying and ſelling braſs, pewter, and other merchandize, which ought to be uttered in open market.—In this ſenſe the word is mentioned, *anno* 25 Hen. VIII. c. 6. and 33 ejuſdem, c. 4.

HAWKERS, is alſo now applied to thoſe who go up and down London-ſtreets, crying news-books, and ſelling them by retail.

The women who furniſh the *hawkers*, *i. e.* ſell the papers by wholeſale from the preſs, are called *mercuries*.

HAWKING, the art, or exerciſe, of chaſing and taking wild fowl, by means of *hawks*, or birds of prey.

Hawking is the ſame thing with what we otherwiſe call *falconry*.

The word *hawking*, in its latitude, does alſo include the taming and diſciplining of hawks, and fitting them for the ſport.

Hawking, though an exerciſe now much diſuſed among us, in compariſon of what it antiently was, does yet furniſh a great variety of ſignificant terms, which ſtill obtain in our language. Thus, the parts of a hawk have their proper names.—The legs, from the thigh to the foot, are called *arms*; the toes, the *petty-ſingles*; the claws, the *pounces*.—The wings are called the *ſails*; the long feathers thereof, the *beams*; the two longeſt, the *principal feathers*; thoſe next thereto, the *flags*.—The tail is called the *train*; the breaſt-feathers, the *mails*; thoſe behind the thigh, the *pendant feathers*.—When the feathers are not yet full-grown, ſhe is ſaid to be *unſummed*; when they are complete, ſhe is *ſummed*.—The craw, or crop, is called the *gorge*.—The pipe next the fundament, where the fæces are drawn down, is called the *panel*.—The ſlimy ſubſtance lying in the panel, is called the *glut*.—The upper and crooked part of the bill is called the *beak*; the nether part, the *clap*: the yellow part between the beak and the eyes, the *ſear*, or *ſere*: the two ſmall holes therein, the *nares*.

As to her furniture:—The leathers, with bells buttoned on her legs, are called *bewits*.—The leathern thong, whereby the falconer holds the hawk, is called the *leaſe*, or *leaſh*: the little ſtraps, by which the leaſe is faſtened to the legs, *jeſſes*; and a line or packthread faſtned to the leaſe, in diſciplining her, a *creance*.—A cover for her head, to keep her in the dark, is called a *hood*; a large wide hood, open behind, to be worn at firſt, is called a *rufter hood*: to draw the ſtrings, that the hood may be in readineſs to be pulled off, is called *unſtriking the hood*.—The blinding a hawk juſt taken, by running a thread through her eye-lids, and thus drawing them over the eyes, to prepare her for being hooded, is called *ſeeling*.—A figure, or reſemblance of a fowl, made of leather and feathers, is called a *lure*.—Her reſting-place, when off the falconer's fiſt, is called the *pearch*.—The place where her meat is laid, is called the *hack*.—And that wherein ſhe is ſet, while her feathers fall and come again, the *mew*.

Something given a hawk, to cleanſe and purge her gorge, is called *caſting*.—Small feathers given to make her caſt, are called *plumage*.—Gravel given her to help bring down her ſtomach, is called a *rangle*.—Her throwing up filth from the gorge after caſting, is called *gleaming*.—The purging of her greaſe, &c. *enſeaming*.—A being ſtuffed is called *gurgiting*.—The inſerting a feather in her wing, in lieu of a broken one, is called *imping*.—The giving her a leg, wing, or pinion of a fowl to pull at, is called *tiring*.—The neck of a bird the hawk preys on, is called the *inke*.—What the hawk leaves of her prey, is called the *pill*, or *pelf*.

There are alſo proper terms for her ſeveral actions.---When ſhe flutters with her wings, as if ſtriving to get away, either from pearch or fiſt, ſhe is ſaid to *bate*.—When, ſtanding too near, they fight with each other, it is called *crabbing*.—When the young ones quiver, and ſhake their wings in obedience to the elder, it is called *cowring*.—When ſhe wipes her beak after feeding, ſhe is ſaid to *feak*.—When ſhe ſleeps, ſhe is ſaid to *jouk*.—From the time of exchanging her coat, till ſhe turn white again, is called her *intermewing*.—Treading is called *cawking*.—When ſhe ſtretches one of her wings after her legs, and then the other, it is called *mantling*.—Her dung is called *muting*; when ſhe mutes a good way from her, ſhe is ſaid to *ſlice*; when ſhe does it directly down, inſtead of yerking backwards, ſhe is ſaid to *ſlime*; and if it be in drops, it is called *dropping*.—When ſhe, as it were, ſneezes, it is called *ſniting*.—When ſhe raiſes and ſhakes herſelf, ſhe is ſaid to *rouſe*.—When, after mantling, ſhe croſſes her wings together over her back, ſhe is ſaid to *warble*.

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* The appellation *hawkers*, ſeems to have grown from their uncertain wandering, like thoſe who, with *hawks*, ſeek their game where they can find it.

When a hawk ſeizes, ſhe is ſaid to *bind*.—When, after ſeizing, ſhe pulls off the feathers, ſhe is ſaid to *plume*.—When ſhe raiſes a fowl aloft, and at length deſcends with it to the ground, it is called *truſſing*.—When, being aloft, ſhe deſcends to ſtrike her prey, it is called *ſtooping*.—When ſhe flies out too far from the game, ſhe is ſaid to *rake*.—When, forſaking her proper game, ſhe flies at pyes, crows, &c. that chance to croſs her, it is called a *check*.—When, miſſing the fowl, ſhe betakes herſelf to the next check, ſhe is ſaid to *fly on head*.—The fowl or game ſhe flies at is called the *quarry*.—The dead body of a fowl, killed by the hawk, is called a *pelt*.—When ſhe flies away with the quarry, ſhe is ſaid to *carry*.—When, in ſtooping, ſhe turns two or three times on the wing, to recover herſelf ere ſhe ſeizes, it is called *canceliering*.—When ſhe hits the prey, yet does not truſs it, it is called *ruff*.—The making a hawk tame and gentle, is called *reclaiming*.—The bringing her to endure company, *manning* her.—An old ſtanch hawk, uſed to fly and ſet example to a young one, is called a *make-hawk*.

The reclaiming, manning, and bringing up, a hawk to the ſport, is not eaſy to be brought to any preciſe ſet of rules.—It conſiſts in a number of little practices, and obſervances, calculated to familiarize the falconer to his bird, to procure the love thereof, &c.—The principal hold and foundation which the falconer has to work upon is, the bird's ſtomach.—This great principle of appetite he is to make uſe of an hundred ways, to lead the bird obliquely to what he would have from her: all he can do is, to divert nature, and make her ſubſervient to his purpoſes, to make it the intereſt of the bird, either real or apparent, to do what the falconer requires of her.

The courſe, it is evident, will be different, according to the ſtate and condition of the bird to be managed.—An *eyeſs*, e. g. needs no reclaiming; ſhe is to be carefully nurſed, and brought up in her natural tameneſs.

A *branſher*, *ſoar-hawk*, or *ramage-hawk*, needs no nurſing; ſhe is to be brought down from her wildneſs, and habituated to another courſe of life; and, in purſuance of her own views and intereſts, ſhe is to be made ſubject to thoſe of her maſter.

To reclaim, *e. g.* a *haggard falcon*, they begin with ſhutting her up from the light, by pulling a hood over her eyes, and fixing her by a *creance*, which makes her more acceſſible.

The next thing is, to handle her frequently; taking her up, often ſtroking her, ſetting her on the hand, and carrying her about; unhooding, and preſently hooding her again; and this for eight or nine days, without ever ſuffering her to ſleep.

All the while ſhe is to be kept ſharp-ſet, but to be frequently fed, with a little at a time; unhooding her for the purpoſe, and, when unhooded, the voice is to be continually uſed to her, that ſhe may learn it; and that the hearing of the voice may naturally put her in hopes of being fed.—This done, ſhe is to be invited to come from the pearch to the fiſt, by unſtriking her hood, ſhewing her ſome meat, uſing the voice, and calling her till ſhe come to it, and feed thereon.—If ſhe ſtill refuſe, keep her ſharp ſet till ſhe will do it.—Proceed then to bring her to the lure, by giving her to ſome perſon to hold, and calling her with a lure, well garniſhed with meat on both ſides, and give her a bit: uſe her to this for ſix or ſeven days; after which, tempt her to come gradually farther and farther off to the lure, waving it, and caſting it round your head, &c. and if ſhe come to it roundly, reward her: in three or four days more call her to your lure, well garniſhed as above, as far as it is poſſible for her to ſee or hear you; and ſet her looſe from all her furniture.

The hawk thus manned, reclaimed, and lured, you may go with her into the fields, and whiſtle her off your fiſt, to ſee whether ſhe will rake out, or no: if ſhe mount and fly round you in circles, as a good hawk ought to do, after two or three turns call to her with your voice, and fling out the lure about your head, and upon her ſtooping or coming to it, give her a chicken, or pigeon, and let her kill and feed thereon.—Being thus far initiated, give her firſt ſtones every evening, to prepare her body for caſtings; and then caſtings, to cleanſe and ſcour her body, and make her eager.—This courſe continue, till ſhe have endewed and muted enough to enter upon buſineſs.

If the hawk be intended for ſome particular ſort of game, let her lure be a reſemblance of that ſort of game; and make a practice of frequently feeding and rewarding her thereon, or on a train of the ſame kind: calling her, when feeding, as if ſhe were called to the lure. Add, that it may be proper to feed her in ſuch ſort of places as thoſe her game is chiefly to be found in.

To *enter a hawk*, it may be convenient to take a well-quarried hawk, and let her ſtoop a fowl, on brook or plaſh; this done, reward, hood, and ſet her; and, taking the young hawk, go half a bow-ſhot up the wind, looſe her hood, and ſoftly whiſtle her off the fiſt, till ſhe have rouſed, or muted; then let her fly with her head into the wind, and when ſhe is at a proper height, let go a fowl for her to ſtoop and truſs. See further under the article FALCON.

HAWSER, or HALSER, belonging to a ſhip, is a rope conſiſting of three ſtrands; being a kind of little cable, ſerving for many uſes on board; as to faſten the main and fore-ſhrouds, to warp a ſhip over a bar, &c.

HAWSES, in a ſhip, are two round holes, under her head, through which the cables paſs when ſhe lies at anchor.—See Tab. *Ship. fig.* 2. *n.* 10. ſee alſo the articles CABLE, and ANCHOR.

Burning in the HAWSE is when the cable endures an extraordinary ſtreſs.

Clearing the HAWSE is the untwiſting of two cables, which, being let out at different *hawſes*, are entangled, or twiſted, about one another.

Bold HAWSE is when the holes are high above the water.

Freſh the HAWSE. When there is reaſon to ſuſpect the cable may be fretted in thoſe holes, they veer out a little, to let another part endure the ſtreſs.—This they call to *freſh the hawſe*.

Freſhing the hawſe is alſo uſed when new pieces are laid upon the cable in the *hawſe*.

Riding upon the HAWSE is when any weighty ſubſtance lies acroſs, or falls directly before the *hawſe*.

HAY, HAYA, or HAYE, a fence, or incloſure, formed of rails; wherewith ſome foreſts, parks, &c. were antiently ſurrounded.

HAY is ſometimes alſo uſed for the park itſelf; and ſometimes for an hedge, or a place hedged round.

HAYS alſo denote a particular kind of nets, for the taking of rabbets, hares, &c.

HAYBOTE *, HEDGEBOTE, in our antient cuſtoms, a mulct, or recompence, for hedge-breaking; or, rather, a right to take wood neceſſary for making hedges, either by a tenant for life, or for years, though not expreſſed in the grant, or leaſe.

* It is mentioned in the *Monaſt.* 2 tom. pag. 134. *Et concedo ei, ut de boſco meo* heybot, &c.—In the ſame place, *husbote* ſignifies a right to take timber to repair the houſe,

HAYWARD, or HAWARD, a keeper of the common herd of cattle of a town; who is to look that they neither break nor crop the hedges of incloſed grounds; and is ſworn in the lord's court, for the due performance of his office.

HAZARD. See the articles CHANCE, and GAMING.

HEAD, *caput*, the uppermoſt, or foremoſt, part of the body of an animal.

Pliny, and other of the antient naturaliſts, ſpeak of a nation of people without *heads*, called *Blemmyes*. See BLEMMYES.

We have accounts, in modern geographers and travellers, of people whoſe *heads* are as flat as the hand; it being the cuſtom, among them, to flatten their childrens *heads*, when new-born, by paſſing them through a preſs, or laying them between two planks with a conſiderable weight thereon.—Theſe are ſaid to be the inhabitants of the province Coſaquas, on the river Amazons, in South America.

Anatomiſts account the *head* of man the firſt, or uppermoſt, venter; being that which comes laſt in order of diſſection, by reaſon its contents are not ſo ſubject to corruption as thoſe of the others.

The *head* is divided into two parts: the firſt, the *calvaria*, or ſcalp; being that part covered with hair.

The ſecond ſmooth, or without hair, called the *face*, or viſage; by the Latins, *vultus*; and by the Greeks, *proſopon*; q. d. looking forward.

The former is ſubdivided into four: *viz.* the *front*, or forehead, which is reputed the moſt humid; called, by phyſicians, the *ſinciput*; q. d. *ſummum caput*.

The hind, or back-part, called *occiput*; by the Greeks, *inion*; by reaſon all the nerves, which among them are called *ines*, ariſe herefrom.

The middle, or top-part, called the *crown of the head*, and by anatomiſts *vertex*, *à vertendo*; by reaſon the hair turns round there.

Laſtly, The ſides are called the *temples*, *tempora*; as being the places where the hair firſt begins to turn grey, and diſcover the age.

The bone, or baſis, of the *head*, is called by one general name, *ſkull*, or *cranium*; conſiſting of ſeveral parts, or leſſer bones.

The bone of the forehead is called *os frontis*, or *puppis*, or *coronale*, or *verecundum*; whence impudent perſons are ſaid to be *frontleſs*.

The bone of the ſcalp is called *os ſincipitis*, or *bregma*.

The bone of the back of the *head*, *os occipitis*, or *prora*.

And thoſe of the temples, *temporalia*, or *oſſa temporis*.

Theſe bones are connected, or joined together, by *ſutures*.

In the head are ſeated the principal organs of ſenſe; *viz.* the *eye*, *ear*, &c. and in it is likewiſe the *brain*, inveſted with its *meninges*, the ſuppoſed ſeat of the ſoul.

The *head* is moved by ten pair of muſcles; *viz.* the *par ſplenium, complexum, rectum majus externum, rectum minus externum, obliquum ſuperius, obliquum inferius, maſtoideum, rectum internum majus, rectum internum minus,* and *rectum laterale.* See each deſcribed under its reſpective article.

The Orientals cover the *head* with a turban, or a cap.—The Occidentals with a hat, *&c.*

Kings, on ſolemn occaſions, wear the crown on their *head*; biſhops the mitre, *&c.*

The antient cavaliers wore helmets.—The ſoldiers, caſks.

Head is alſo uſed for the top of a tree, or other plant.

Head is alſo applied to the extremity of a bone.

When a bone has a round tip, or end, which advances, or projects forward, whether in the way of an apophyſis, or epiphyſis; it is called the *head* of the bone.

If its riſe, or origin, be ſlender, and it enlarge by degrees; it is called the *neck.*

If it terminate in a point, it is called *corone, corvus,* or *coracoides*; as reſembling a crow's bill.

When the *head* is flat, they call it *condylus,* or *double head*; as in the extremities of the bones of the fingers.

Head is alſo uſed for the extreme of a muſcle, which is faſtened or inſerted into the ſtable-bone, or the part not intended for motion.

The *head* of a muſcle is always a tendon.

Head, again, is applied, in the mechanic arts, to the parts of inanimate and artificial bodies.

In this ſenſe we ſay, that ſome nails have *heads*; others hooks; others, as brads, neither. See **Nail.**

So alſo we ſay, the *head* of a pin, *&c.*

Head is alſo uſed in painting, ſculpture, *&c.* for a picture, or repreſentation, of that part of the human body; whether in colours, draught, relievo, or creux.

Thoſe in painting, taken from the life, or ſuppoſed to bear a juſt reſemblance to the perſon, are more properly called *portraits.*

Head, in architecture, *&c.* an ornament, of ſculpture, or carved work, frequently ſerving as the key of an arch, or platband, and on other occaſions.

Theſe *heads* uſually repreſent ſome of the heathen divinities, virtues, ſeaſons, ages, *&c.* with their attributes.—As a trident for Neptune, a helmet for Mars, a crown of ears of corn for Ceres, a caduceus for Mercury, a diadem for Juno.

The *heads* of beaſts are alſo uſed in places ſuitable thereto: as a bullock's, or ſheep's *head,* for a ſhambles, or a market-houſe; a dog's, for a kennel; a deer's, or boar's, for a park, or foreſt; or a horſe's, for a ſtable, *&c.*

In the metopes of the friezes, and other parts, of certain antique Doric temples, we meet with repreſentations of bullocks or rams *heads* flayed; as a ſymbol of the ſacrifices offered there.

In heraldry, the *heads* of men, beaſts, birds, *&c.* are borne in armoury, either full-faced and in front, or ſide-faced and in *profile*; which muſt be diſtinguiſhed in blazoning.—Vert, a chevron gules, between three Turks *heads,* couped, ſide-faced, proper; by the name of Smith.

Among medalliſts, the different *heads* on antient coins are diſtinguiſhed by the different dreſſes thereof. See **Medal.**

In the Imperial medals, where the *head* is quite bare, it is uſually a ſign the perſon was not an emperor, but one of the children of one, or the preſumptive heir of the empire.

Though we have inſtances of thoſe who were only Cæſars, and never reigned, being crowned with laurel, or adorned with a diadem: as, on the contrary, we have ſome emperors *heads* intirely bare.

The *heads* which are covered, are either covered with a diadem, or a crown, or a ſimple caſk, or a veil, or with ſome other foreign covering; whereof the diadem is the moſt antient.—The ſenate firſt granted it to Julius Cæſar, to wear the laurel crown, which his ſucceſſors took after him.

The *heads* of deities are frequently diſtinguiſhed by ſome ſpecial ſymbol thereof.

Head is alſo applied to monſters, ſuppoſed moſt of them fabulouſly to have many *heads.* See **Monster,** *&c.*

The ſerpent amphiſbena is ſaid, by naturaliſts, to have two *heads.*—The poets attribute three *heads* to Hecate, Geryon, and Cerberus; and Typhon and hydra are ſaid to have an hundred *heads.*

The *head* of the gorgon Meduſa is ſaid to have ſtruck people dead with the very ſight.—It has been ſince, they tell us, tranſlated into heaven, and made a conſtellation; where it ſtill ſhines as a part, or appendage, of the conſtellation Perſeus; continuing ſtill to diſpenſe its malific influences, as the aſtrologers ſuppoſe, upon our earth.

The ſtars, *&c.* in Meduſa's *head,* which is alſo called, from the Arabs, *Ras Algol*; ſee among the reſt of **Perseus.**

Head is alſo uſed for the horns of a deer, as a hart, buck, *&c.*

Harts *mew,* or caſt their *heads,* every year; and get new ones.

The old hart, or buck, caſts his *head* ſooner than the young; and the time is about the months of February and March.—Having caſt their *heads,* they inſtantly withdraw into the thickets; hiding themſelves in convenient places near good water, *&c.* and far from the annoyance of flies.

After they have mewed, they begin to *button* again in March, or April, *i. e.* to ſhoot out new horns; which at firſt appear like little branches.

Note, If a hart be gelt before he have a *head,* he will never bear any; and if he be gelt when he has a *head,* he will never after mew, or caſt it.—If only one of his teſticles be taken out, it is ſaid, he will want the horn of that ſide; and that if one of the teſticles be only tied up, he will want the horn of the oppoſite ſide.

The age of a hart, or deer, is uſually reckoned by the number of *heads.*—A deer of the firſt *head,* the ſecond *head,* &c.

At one year they have nothing but bunches, called *ſignificators,* of horns to come. The ſecond year they appear more perfectly, but ſtrait and ſimple: this makes the firſt *head,* properly called *broches*; and, in a fallow deer, *pricks.* The third year they grow into two *ſpeers,* or four, ſix, or eight, ſmall branches. At the fourth, they bear eight or ten. At the fifth, ten or twelve. At the ſixth, fourteen or ſixteen. At the ſeventh year they bear their *heads* beamed, branched, and ſummed, as much as they will bear; never multiplying farther, but only growing in magnitude.

The names and diverſities of *heads,* in the hunting language, are as follow:

The part that bears the antlers, royals, and tops, is called the *beam*; and the little ſtreaks therein are *glitters.*—That which is about the cruſt of the beam, is termed *pearls*; and that which is about the bur itſelf, formed like little pearls, is called *pearls bigger than the reſt.*—The *bur* is next the *head*; and that which is about the bur, is called *pearls.*—The firſt branch is called *antler*; the ſecond, *ſur-antler*; all the reſt which grow afterwards, till you come to the crown, palm, or croche, are called *royals,* or *ſur-royals*; the little buds, or broches, about the tops, are called *croches.*

The *heads* alſo go by ſeveral names. The firſt *head* is called a *crown top,* becauſe the croches are ranged in form of a crown.—The ſecond is called a *palmed top,* becauſe the croches are formed like a man's hand.—In all *heads,* which bear not above three or four, the croches being placed aloft, all of one height, in form of a cluſter of nuts, are called *heads of ſo many croches.*—All *heads* which bear two on the top, or have their croches doubling, are called *forked heads.*—All *heads* which have double burs, or the antlers, royals, and croches, turned downwards, contrary to other *heads,* are called *ſimple heads.* See **Hunting.**

Head is ſometimes alſo uſed for the whole man.

In this ſenſe we ſay, to offer a reward for a man's *head.*—In proſcriptions, a price is ſet on a man's *head.*

Capitation is a tax laid upon each *head*; called alſo *poll* and *head-money.*

Head, again, is uſed figuratively in ſpeaking of communities, and bodies politic, for the principal or leading member thereof.

Thus we ſay, a preſident, or maſter, is at the *head* of his company.—A dean is the *head* of his chapter.—The miniſters are at the *head* of affairs.

The king of Great-Britain is at the *head* of the proteſtant world, *&c.*

Head is alſo uſed to denote the relation of priority, or that which comes firſt in any thing. See **Priority.**

In this ſenſe we ſay, the names of authors ſhould always appear at the *head* of their books.—Prefaces, and epiſtles dedicatory, come at the *head.*—The governor marches out at the *head* of the gariſon.

Head, in the military art.—**Head** *of the camp* is the front, or foremoſt part, of the ground an army is encamped on; or that which advances moſt towards the field, or enemy.—The *head* of the camp is always to be the beſt fortified.

In the like ſenſe we ſay, the *head of the trenches.*—The *head of the ſap.*—*Of the works,* &c. meaning the *fronts,* or thoſe parts next the enemy, and fartheſt from the body of the place.

Such a night the *head* of the trenches was carried farther by an hundred paces.—There are two *heads* of a trench; that is, two attacks. See **Trench,** and **Attack.**

The *head of a horn work* is that part contained between the flanked angles of the two demi-baſtions.

Head *of a ſhip,* or other veſſel, is the *prow,* or part that goes foremoſt. See Tab. *Ship. fig.* 2. *lit.* A. *fig.* 1. *lit.* L.

Head, in the manage.—The perfections required to the *head of a horſe,* are, that it be ſmall, narrow, lean, and dry.—Horſes with a big, groſs *head,* are apt, by their weight, to reſt and loll upon the bridle; and ſo to incommode the rider's hand.—A horſe with a large *head* can never look ſtately, unleſs he have a long and very well-turned neck, and place his *head* well.—Horſes with groſs, fat *heads*, much charged with fleſh, are too often ſubject to infirmities of the eyes.

But the chief thing in a horſe's *head* is, a good *onſet*, ſo as he may be able to bring his *head* into its natural ſituation; which is, that all the fore-part, from the brow to the noſe, be perpendicular to the ground; ſo that if a plummet were applied thereto, it would but juſt raze or ſhave it. See HORSE.

The *head* of a horſe is alſo uſed to import the action of his neck, and the effect of the bridle and wriſt.

Moors HEAD is underſtood of a horſe with a black *head* and feet; the body being uſually of a roan colour.

Moors HEAD is alſo uſed, by engineers, for a kind of bomb, or granado, ſhot out of a cannon.

Moors HEAD is alſo uſed, in heraldry, for a repreſentation, uſually in profile, of a *blackmoor's head*, ſwathed, or rolled about, with a bandage; frequently borne as a creſt.

Moors HEAD, in chemiſtry, is a cover, or capital, of an alembic; having a long neck, to convey the vapours, raiſed by the fire, into a veſſel, which ſerves as a refrigeratory.

In muſic, the HEAD of a lute, theorbo, or the like, is the place where the pins, or pegs, are ſcrewed, to ſtretch or ſlacken the ſtrings.

Dragon's HEAD, in aſtronomy, *&c.* is the aſcending node of the moon, or other planet. See NODE.

HEAD-ACH, a painful ſenſation in the muſcles, membranes, nerves, or other parts of the *head*. See CEPHALALGIA.

It is ſuppoſed to ariſe from an extraordinary diſtention of thoſe parts, either by the fluids therein being rarefied, or their quantity and motion increaſed.

When attended with a vomiting, deafneſs, and watching, it portends madneſs; with a noiſe in the ears, dulneſs of feeling in the hands, *&c.* an apoplexy, or epilepſy.

The cure is, by bleeding in the jugulars, cupping, or applying leeches to the temples, and behind the ears and neck.—Iſſues, emetics, and diaphoretics, are alſo occaſionally to be uſed; with anti-epileptics, and apoplectics.—A veſicatory applied to the whole ſcalp is the laſt remedy.

M. Homberg gives us an extraordinary inſtance of the cure of a moſt vehement and inveterate *head-ach* by an accidental burn of the *head*.

HEAD-BOROW ſignifies the perſon who is the chief of the frank-pledge; and had antiently the principal direction of thoſe within his own pledge. See FRANK-*pledge*.

He was alſo called *burrow-head*, *burſhoulder*, now *boſholder*, *third-borow*, *tything-man*, *chief-pledge*, and *borow elder*; according to the diverſity of ſpeech in divers places.

This officer is now uſually called a *high-conſtable*.

The *head-borow* was the chief of ten pledges; the other nine were called *hand-borows*, or *plegii manuales*, &c.

HEAD-FARCIN. See the article FARCIN.

HEAD-LAND, in huſbandry, is the upper-part of a ground left for turning the plough; or that part which is plowed acroſs, at the ends of other lands.

HEAD MOULD-SHOT, a diſeaſe in children, wherein the ſutures of the ſkull, generally the coronal, *ride*; that is, have their edges ſhot over one another; and are ſo cloſe locked together, as to compreſs the internal parts, the meninges, or even the brain itſelf.

The diſeaſe uſually occaſions convulſions; and is ſuppoſed to admit of no cure from medicine, unleſs room could be given by manual operation, or a divulſion of the ſutures.

The *head-mould-ſhot* is the diſorder oppoſite to the *horſe-ſhoe-head*. See HORSE-SHOE-HEAD.

HEAD-SEA is when a great wave, or billow, of the ſea, comes right ahead of the ſhip, as ſhe is in her courſe.

HEAD-STALL, in the manage. See the article CAVESON.

HEALFANG*, HEALSFANG, or HALSFANG, in our antient cuſtoms, ſignifies *colliſtrigium*, or the puniſhment of the pillory. See PILLORY.

> * The word is compounded of two Saxon words; halꝼ, neck; and ꝼangen, to contain; *pœna ſcilicet qua alicui collum ſtringatur*. See COLLISTRIGIUM. The *healſang*, however, cannot ſignify a pillory in the charter of Canutus, *De Foreſtis*, cap. xiv. *Et pro culpa ſolvat regi duos ſolidos, quos Dani vocant* halfehang.

HEALFANG * is alſo taken for a pecuniary puniſhment, or mulct, to commute for ſtanding in the pillory; and is to be paid either to the king, or to the chief lord.

> * *Qui falſum teſtimonium dedit, reddat regi, vel terræ domino*, healfang. *Leg. H. I.*

HEALING, in its general ſenſe, includes the whole proceſs of curing or removing a diſorder, and reſtoring health.

In this ſenſe, medicine is defined, the art of *healing*.

In its more reſtrained ſenſe, as uſed in chirurgery, *&c. healing* denotes the uniting, or conſolidating, the lips of a wound, or ulcer.

The medicines proper for this intention, are called *incarnatives*, *agglutinatives*, *vulneraries*, &c.

Dr. Beal has a diſcourſe of ſanative, or *healing* ſprings and waters, in the *Philoſophical Tranſactions*, N° 20.

HEALING, in architecture, denotes the covering the roof of a building.

The *healing* is various: as of lead, tiles, ſlate, Horſham-ſtone, ſhingles, or reed and ſtraw.

HEALTH, a due temperament, or conſtitution, of the ſeveral parts whereof an animal is compoſed, both in reſpect of quantity and quality.—Or it is that ſtate of the body wherein it is fitted to diſcharge the natural functions perfectly, eaſily, and durably.

Health is the ſtate, or condition, oppoſite to *diſeaſe*.

The preſervation and reſtoration of *health* make the objects of the art of medicine.

The continuance of *health* depends, principally, on the ſix non-naturals; *viz.* air, food, exerciſe, the paſſions, evacuation and retention, and ſleep and waking. See each in its place.

The antients perſonified, and even deified, *health*; or, rather, they erected a goddeſs to whom they ſuppoſed the care of *health* to belong.—The Greeks worſhiped her under the name Ὑγιεια, and the Latins under that of *Salus*.—The place of her worſhip, at Rome, was on the *Mons Quirinalis*; where ſhe had a temple, and a ſtatue crowned with medicinal herbs.

We frequently find the goddeſs *Health* on the reverſe of medals.—She is repreſented with a ſerpent ſtretched on her left arm, and holding a patera to it with the right. Sometimes ſhe has an altar before her, with a ſerpent twiſted round the ſame, and raiſing its head to take ſomething off from it.

The inſcription is, SAL. AUG.

Houſe of HEALTH, a kind of hoſpital, or public building, for the reception and entertainment of perſons infected with the plague, or coming from places infected therewith. See PEST-*houſe*, QUARANTINE, *&c.*

In the like ſenſe we ſay, officers of *health*, certificate of *health*, &c.

HEAM, in beaſts, denotes the ſame with *after-birth* in women.

Thyme, pennyroyal, winter ſavory, or common horehound, boiled in white wine, and given a mare, are eſteemed good to expel the *heam*.—Dittany applied in a peſſary, expels the *heam*, as well as the dead foal: ſo alſo do fennel, hops, ſavin, angelica, *&c.*

HEARING, *auditus*, the act, or faculty, of perceiving ſounds.

Hearing is reckoned among our external ſenſes.—Its organ is the *ear*, and particularly the auditory nerve diffuſed through the ſame; and its object, certain motions, or vibrations, of the air.

Hence, *hearing* may be more ſcientifically defined, a ſenſation, whereby, from a due motion impreſſed on the fibrillæ of the auditory nerve, and communicated thence to the ſenſory, the mind perceives, or gets the idea of, ſounds.

Philoſophers have differed as to the immediate organ of *hearing*.—Ariſtotle will have it to be the cochlea and tympanum; and takes the ſenſe of *hearing* to be ſeated therein. *Hiſt. Animal.* cap. 10. in which he is followed by Galen, lib. viii. *De uſu part.* See TYMPANUM.

The moderns ſpeak of the point on much better ground.—The ear, and the ſeveral parts thereof, membranes, canals, labyrinths, nerves, *&c.* they ſay, are only means, and vehicles, for the reception, modification, and tranſmiſſion, of the ſonorous matter to the brain; which is the ſeat of the ſenſe.

A ſound, in effect, is nothing but a certain refraction, or modulation, of the external air; which, being gathered by the external ear, paſſes through the meatus auditorius, and beats upon the membrana tympani, which moves the four little bones in the tympanum.

In like manner, as this is beat by the external air, theſe little bones move the internal air which is in the tympanum and veſtibulum; which internal air makes an impreſſion upon the auditory nerve in the labyrinth and cochlea, according as it is moved by the little bones in the tympanum: ſo that, according to the various refractions of the external air, the internal air makes various impreſſions upon the auditory nerve, the immediate organ of *hearing*; which different impreſſions repreſent different ſounds.

Sir Iſaac Newton carries the thing ſomewhat farther; and ſuppoſes *hearing*, like ſeeing, to be performed, not immediately by the vibrations of the air, but by thoſe of ſome other more ſubtil medium, excited in the auditory nerves by the tremors of the air, and propagated through the ſolid capillaments of the nerve to the place of ſenſation.

The curious ſtructure of the labyrinth and cochlea tend to make the weakeſt ſounds audible; for the whole organ of *hearing* being included in a ſmall ſpace, had the auditory nerve run in a ſtrait line, the impreſſion would only have been made on a very ſmall part of it; and the ſtrength of the impreſſion being, *cæteris paribus*, always as the number of parts upon which the impreſſion is made, ſounds which are now low, could not have been heard at all.—If the auditory nerve had, like the retina, been expanded into a large web, which had covered or lined ſome wide cavity, the impreſſion of ſounds, even in this caſe, had been much weaker than they are now: for this large cavity had given room for the ſounds to dilate; and all ſounds grow weaker, as they dilate.

Both of theſe inconveniencies are prevented by the preſent ſtructure of the labyrinth and cochlea, whoſe canals, by their winding, contain large portions of the auditory nerve, upon every point of which the ſmalleſt ſound being at once impreſſed becomes audible; and by their narrowneſs, the ſounds are hindered from dilating: and the impreſſions made upon the nerves by the firſt dilatations are always the ſtrongeſt.

The ſtrength of the impreſſion in narrow chanels is likewiſe increaſed on account of the elaſticity of the ſides of the bony canal; which, receiving the firſt and ſtrongeſt impulſes of the air, do reverberate them more ſtrongly upon the auditory nerve.

It may be obſerved, that though the air be the uſual matter of ſounds, ſo that a bell rung in vacuo is not heard at all, yet will moſt other bodies, properly diſpoſed, do the like office; only ſome more faintly than others.

Thus may a ſound be heard through water, or even through earth; of which we have various inſtances.

Add, that though the ear be the ordinary organ of *hearing*, yet Hagerup, a Daniſh phyſician, maintains, that one may hear with the teeth.—Thus, if one end of a knife, or the like, be applied on a harpſichord, and the other held between the teeth; the muſic thereof will be plainly heard, though the ears be ever ſo cloſely ſtopped.—But this, perhaps, may more properly be referred to the ſenſe of feeling.

Such as want the ſenſe of *hearing* are ſaid to be *mute* or *deaf*. See Deafness.

‘ The ſenſe of *hearing*, ſays Cicero, is always open; for ‘ this we have need of even when aſleep. The paſſage to it ‘ is full of turns and meanders; that nothing hurtful may ‘ enter, or find its way in. And if any little vermin does ‘ endeavour to paſs; it muſt ſtick and be bemired in the ‘ *cerumen*, or ear-wax, laid for that purpoſe near the entrance.’ *De Nat. Deor*. Lib. II. cap. 57.

Hearing is particularly uſed, in civil and judicial concerns, for a cauſe being brought before the judge and jury, and the parties being *heard* as to the merits thereof.

Such a cauſe was kept off eight months, before it was brought to a *hearing*.—We are to have our *hearing* the laſt day of the term.

The *hearing* of embaſſadors, at the courts of princes, is uſually called *audience*.

HEARSE, among hunters, an hind in the ſecond year of her age. See Hunting.

HEART, *Cor*, in anatomy, a muſculous part of the animal body, ſituate in the thorax; wherein the veins all terminate, and from which all the arteries ariſe; and which, by its alternate contraction and dilatation, is the chief inſtrument of the circulation of the blood, and the principle of life.—See *Tab. Anat*. (Splanch.) *fig*. 12. *lit*. cc.

This noble part is included in a capſula, or pouch, called the *pericardium*; whoſe ſtructure and office will be explained under the article Pericardium.

The figure of the *heart* is a cone, or pyramid reverſed; the upper and broader point whereof, is called the *baſis*; and the lower the *cone*, *apex*, or *point*; this is turned a little towards the left ſide.

The magnitude of the *heart* is indeterminate, and different in ſeveral ſubjects, according to their reſpective dimenſions.—Its ordinary length is about ſix inches, its breadth at the baſis four or five; and the whole circumference fourteen. Its place is in the middle of the thorax, between the two lobes of the lungs; and it is faſtened to the mediaſtinum and pericardium, and ſupported by the great blood-veſſels, to which alone it is immediately connected; being, for the conveniency of its motion, diſengaged from any other impediments.—It is covered with a thin membrane, which, about the baſis, is guarded with fat; and which is no other than the common membrane of the muſcles.

It has two great cavities called *ventricles*, ſomewhat unequal; the right being larger, capable of containing between two and three ounces of blood.—They are divided by a fleſhy partition, conſiſting of the ſame muſcular fibres with the parietes themſelves, and called the *ſeptum*; the figure whereof is concave towards the left ventricle, and convex towards the right.—There is no immediate communication between the ventricles; but for the blood to paſs out of one into the other, it muſt fetch a round through the lungs.

The parietes, or ſides, of theſe ventricles are of a thickneſs and ſtrength very unequal; the left much exceeding the right, becauſe of its office, which is to force the blood thro' all the parts of the body; whereas the right drives it thro' the lungs only, and is therein greatly aſſiſted by other parts.—The right ventricle, in effect, ſeems only intended with a view to the lungs; whence, in ſuch animals as have no lungs, we only find one ventricle, which is the left.

In the ventricles are little muſcles, called *columnæ carneæ*, or *lacertuli*; theſe are derived from the parietes, and connected, by tendinous extremities, to the valves of the *heart* hereafter mentioned.

The ventricles are capped each with an auricle, or little muſcle, conſiſting, like the ventricles themſelves, of a double order of fleſhy fibres.

The veſſels, either ariſing from, or terminating in the *heart*, and its auricles, are two arteries; *viz*. the aorta, and the pulmonary artery, which have their origin from the two ventricles; *viz*. the aorta from the left, and the pulmonary from the right: and two veins, which terminate in the auricles, *viz*. the cava vein in the right, and the pulmonary vein in the left.

At the reſpective orifices of theſe veſſels are placed valves; particularly, at the orifice of the arteries, within each of them, are three ſemilunar valves, or membranes of a ſemilunar figure, which cloſe the orifice of the artery, and hinder the relapſe of the blood into the *heart* at the time of its dilatation.—At the mouth of the right ventricle, juſt at its juncture with the auricle, are three others called *tricuſpides*, from their three points being faſtened by tendinous fibres to the columnæ carneæ; ſo that, upon the contraction or ſyſtole of the *heart*, they cloſe the orifice, and hinder the blood from recurring into the great vein.—The ſame office do the two mitral valves, at the exit of the left ventricle, ſtopping the return of the blood into the pulmonary vein.

The ſubſtance of the *heart* is intirely fleſhy, or muſculous.—The antients, indeed, generally took it for what they call a parenchyma; but Hippocrates had a juſter ſentiment; and after him Steno, and the moderns, have evidently found it to conſiſt of a continued ſeries of proper muſculous fibres, variouſly contorted, or wound up, and ending at the orifices of the reſpective ventricles, where they form their tendons.

In diſſecting the *heart*, after taking off the proper membrane, there appear, on the outer ſurface of the right ventricle, ſome ſlender ſtrait fibres tending to and ending in the baſis.—Immediately under theſe there is a double order of ſpiral fibres, the exterior whereof aſcend obliquely from the ſeptum to the baſis, and form a ſort of helix, or cochlea: the interior take a contrary courſe; winding obliquely from the right ſide towards the left, ſo as to encompaſs both ventricles, and ending in the baſis on the left ſide, form likewiſe an helix of an inverſe order.—Under theſe appear the fibres of the left ventricle; and firſt, a ſpiral ſeries running to the left, under which, as in the other ventricle, lie another order running the contrary way, which not only extend to the outward paries, but encompaſſing the whole ventricle, make the ſeptum more immediately appertain to, and be a part of, the left ventricle. Some of them, inſtead of terminating, as the reſt do, in the tendons of the *heart*, run inwards, and form the columnæ carneæ; while others, reaching down to the cone, are wound about it, and form the circle called the *centre of the heart*.

The fibres of the *heart* appear to be the ſame with thoſe of the other muſcles; whence the part now generally paſſes for a real muſcle; though ſome think that inference not overjuſt, inaſmuch as the aorta has the ſame claim to be reputed a muſcle.

Some late authors, upon conſidering the ſtructure and diſpoſition of the ſpiral fibres, chooſe rather to make the *heart* a double muſcle, or two muſcles tied together.—In effect, the two ventricles, with their reſpective auricles, are found two diſtinct bodies, two veſſels or cavities, which may be ſeparated, and yet remain veſſels; the ſeptum, which was ſuppoſed to belong only to the left, being now found to conſiſt of fibres derived from them both.—To ſay no more, the two ventricles, according to M. Winſlow, are two ſeveral muſcles united together, not only by the ſeptum, but by ſeveral plans of fibres ariſing from the exterior baſe of the *heart*, and meeting at the apex, which, entering the left ventricle, lines the parietes, *&c*.

The *heart* has alſo its proper blood-veſſels; *viz*. two arteries ſpringing from the entrance of the aorta; and one larger vein, with one or two leſſer; all which, from their encompaſſing the *heart*, are called *coronariæ*.

The nerves of the *heart*, and its auricles, come from a plexus of the par vagum, called by Willis, *plexus cardiacus*. It has alſo lympheducts, which carry the lymph from the *heart* to the thoracic duct.

The uſe of the *heart*, and its appendant auricles, is, to circulate the blood through the whole body: in order to which, they have an alternate motion of contraction and dilatation.—By the dilatation, called the *diaſtole*, their cavity is opened, and their internal dimenſions enlarged to receive the refluent blood from the veins; and by their contraction, called the *ſyſtole*, their cavity is ſhrunk, and their dimenſions leſſened, to expel the blood again into the arteries.

It muſt be added, that theſe alternate motions of the *heart* and auricles are oppoſite, in time, to each other; the auricles being dilated whilſt the *heart* is contracted again, and contracted whilſt it is dilated, to drive the blood into it.

By means of the right ventricle, the blood is driven through the pulmonary vein; from which, being received into the pulmonary artery, it is returned to the left ventricle; from which, by the aorta, it is diſtributed all over the reſt of the body, and thence returned to the right ventricle by the vena cava; ſo making an intire circulation through the whole body.

Schenchius gives an account of a man who had no *heart*; but Molinetti denies it: as alſo, that there ever were two *hearts* found in any man, though the caſe be common in divers inſects, which have often naturally ſeveral *hearts*. Witneſs ſilkworms; which have a chain of *hearts* running the whole length of their bodies. But we have, in other authors, inſtances of two *hearts*, even in the ſame man.—There have been *hearts* found all gnawed and devoured with worms. Muretus opened the *hearts* of ſome banditti, which were all hairy, or at leaſt inveſted with a tomentum, or down.—And, what is ſtill more extraordinary, we have accounts of perſons in whom the *heart* has been found inverted, or turned upſide-down; particularly, in a woman hanged ſome time ago in Saxony, and a man hanged at Paris. *Journ. des Sçav.*

Timorous animals have always larger *hearts* than courageous ones; as we ſee in deer, hares, aſſes, &c.—There is a bone ſometimes found in the baſis of the *hearts* of certain animals, particularly deer, which ſeem to be no other than the tendons of the fibres of the *heart* indurated and oſſified.

Hiſtorians relate, that pope Urban VIII. being opened after his death, was found to have ſuch a bone in his *heart*. The caſe is very uſual in the trunk of the aorta, which ſprings from the *heart*.

Many amphibious creatures, as frogs, &c. have but one ventricle in the *heart*.—The tortoiſe is ſaid, by the French academiſts, to have three ventricles: M. Buſſiere charges this on them as a miſtake; and maintains, it has but one. The point is ſcarce yet aſcertained. *Mem. de l'Acad. an.* 1703. and *Philoſ. Tranſ.* N° 328.

Theory of the motion of the HEART.—The principle of motion in the *heart*, or the power from which its alternate contraction and dilatation ariſes has been greatly controverted among the late phyſicians and anatomiſts.

The expulſion of the blood out of the ventricles, argues a very conſiderable motion in the part.—The motive power, it is certain, muſt ſurmount the reſiſtance made to it: and, according to Borelli's computation, the reſiſtance made to the motion of the blood through the arteries, is equal to 180,000 pounds, which therefore are to be removed by the *heart*; or elſe the circulation muſt ceaſe. Now, whence comes the machine of the *heart* to have ſuch a power? And after the expulſion, what other power is it that ſurmounts the former, and reſtores its part to the dilatation, that is to produce a reciprocal æſtus? This whole affair remained in the utmoſt darkneſs and uncertainty, till Dr. Lower's excellent treatiſe *De Corde*, where the mechaniſm, whereby the contraction, or ſyſtole, is effected, was admirably explained.—The cauſe of the dilatation, or diaſtole, which Dr. Lower had in great meaſure overlooked, has ſince alſo been happily ſupplied by Dr. Drake.

That the *heart* is a muſcle, furniſhed and inſtructed for motion like other muſcles, is abundantly demonſtrated by Dr. Lower and others; and as it is a ſolitary muſcle, without any proper antagoniſt, and not directly under the power of the will, nor exerciſing voluntary motion, it approaches neareſt to the ſphincter kind, all which have theſe conditions in common with it.

But in conſtant and regular alternations of contraction and dilatation, the *heart* differs exceedingly from all the other muſcles of the body.

This alternation has given the learned abundance of trouble, who, finding nothing peculiar in the ſtructure, which ſhould neceſſarily occaſion it; nor any antagoniſt, whoſe re-action ſhould produce it; have been extremely perplexed to find out the cauſe.

That contraction is the proper action and ſtate of all muſcles, is evident both from reaſon and experience. For if any muſcle be freed from the power of its antagoniſt, it immediately contracts, and is not, by any action of the will or ſpirits, to be reduced to a ſtate of dilatation.—Thus, if the flexors of any joint be divided; the extenſors of that joint being by that means freed from the contrary action of their antagoniſts, the joint is immediately extended, without any conſent of the will, and in that ſtate it remains; and ſo *vice verſa*, if the extenſors be divided.

Hence it appears, that the ordinary muſcles have no reſtitutive motion, but what they derive from the action of their antagoniſts, by which they are balanced.—Thus the ſphincters of the anus, veſica, &c. having no proper antagoniſts, are always in a ſtate of contraction, and ſuffer nothing to paſs them, but what is forced through them by the contrary action of ſome ſtronger muſcles, which, though not properly called antagoniſts, yet, on all neceſſary occaſions, perform the office of ſuch.

We have here, then, an adequate cauſe of the contraction of the *heart*; *viz.* the natural vis motrix of muſcular fibres, whoſe proper niſus, or tendency, is to contract themſelves.

It may be added, however, that though the muſcular fibres of the *heart*, acted by the nerves, be the immediate inſtrument of its conſtriction, or ſyſtole, as is ſhewn by Dr. Lower, yet is there another cauſe which contributes not a little thereto, and which Dr. Lower overlooked; *viz.* the intercoſtal muſcles and diaphragm, which aid and facilitate this contraction, by opening a paſſage for the blood through the lungs, which, denied, would be an invincible obſtacle.—Add, that the pulmonary artery and vein, ſpreading themſelves throughout all the diviſions and ſubdiviſions of the bronchia of the lungs, and being, as it were, co-extended therewith, muſt ſuffer the like alteration of ſuperficial dimenſions, as the bronchia do in the elevation and depreſſion of the coſtæ. So that while the ribs are in a ſtate of depreſſion, whether before commerce with the external air, or, after the annular cartilages of the bronchia ſhrink one into another, and by that means their dimenſions are exceedingly contracted: in conformity to which condition of the bronchia, the pulmonary artery and vein muſt likewiſe, either, by means of their muſcular coats, contract themſelves to the ſame dimenſions, or lie in folds or corrugations; which is leſs probable.—On the other hand, when the ribs are elevated, and the diaphragm bears downwards, the air ruſhing into the lungs, ſhoots out the cartilaginous rings, and divaricates the branches of the trachea, and by them extends the ſeveral diviſions of the pulmonary artery and vein, and thereby lengthens and enlarges their cavities: and this their alternate action will be continued, and imparted to the *heart*; from which they ariſe.

Thus is a paſſage opened to the blood from the right ventricle of the *heart*, to the left, through the lungs, to which it could not otherwiſe paſs; and the oppoſition which the blood, contained in that ventricle, muſt otherwiſe neceſſarily have made to its conſtriction, is taken off; and the ſyſtole thereby facilitated.

For the diaſtole, or dilatation of the *heart*, Dr. Lower contents himſelf to aſcribe it to a motion of reſtitution of the over-ſtrained fibres.—His words are, ‘Since all its motion conſiſts in its contraction, and the fibres of the *heart* are made for conſtriction only; it is evident, all the motion of the *heart* is in its ſyſtole: but, as the fibres are ſtretched beyond their tone in every conſtriction, for this reaſon, after that niſus is over, the *heart* relaxes again by a natural motion of reſtitution, and is diſtended by the influx of new blood from the veins. The diaſtole, then, is not effected by any further action of the *heart*, beſide a remiſſion of its former tenſion, and the influx of the blood.’

Now, if contraction be the ſole action of thoſe fibres, as it certainly is, and as the author here confeſſes; how can their diſtention, vulgarly, though improperly, called their relaxation, be a motion of reſtitution? for, from the nature of thoſe fibres, and their diſpoſition, the ſtructure of the *heart* manifeſtly appears conical, and its dilatation a ſtate of violence. So that the conſtriction is the true motion of reſtitution, and the only ſtate to which it will ſpontaneouſly return when the force is taken off; and thus we are left ſtill to ſeek for the true cauſe of the diaſtole, which appears the moſt difficult phænomenon relating to the *heart*.

Mr. Cowper, in his introduction to his anatomy, improves on the ſhare Dr. Lower hints the blood to have in that action, and makes it the main inſtrument of the dilatation of the *heart*; in which he is followed by Dr. Drake; who, however, differs from him as to the manner and reaſons of its being ſo. ‘The *heart* of an animal, ſays Mr. Cowper, bears a great analogy to the pendulums of thoſe artificial automata, clocks and watches; while its motion is performed like that of other muſcles, the blood doing the office of a pondus.’—If he means that the blood, in its reflux, by gravitating on the auricles and ventricles, dilates and expands them; acting therein as a counterpoiſe to its contraction as a muſcle; it is pity he had not given an explication at large of ſo abſtruſe and important a phænomenon; the ſpecific gravity of the blood not ſeeming a cauſe adequate to the effect it is here ſuppoſed to produce.—For if the blood act only as a weight, by mere gravitation, ſo much of it only as deſcends from above the *heart*, can be employed in that action;

which, at the largeſt computation, does not amount to above five pounds weight; and yet it muſt be able, according to the computation of Borelli, to overcome a reſiſtance of 135,000 pounds. Whatever, therefore, the force that dilates the *heart*, and is the cauſe of the diaſtole, be, it muſt be equal to that of the *heart*, the intercoſtal muſcles, and diaphragm; to all which it acts as an antagoniſt.

Such a power is hard, perhaps impoſſible, to be found in the machine of an animal body; and yet, without ſome ſuch antagoniſt, it is as impoſſible the circulation of the blood ſhould be maintained.—All the engines, yet diſcovered within the body, conſpire towards the conſtriction of the *heart*, which is the ſtate of quieſcence, to which it naturally tends: yet we find it alternately in a ſtate of violence, or dilatation; and on this alternation does all animal life immediately depend.

Some external cauſe, therefore, muſt be found to produce this phænomenon; which cauſe muſt be either in ſome quality of the air, or the preſſure of the atmoſphere, becauſe we have no conſtant and immediate commerce with any other media.

Some phyſicians obſerving this, and that, deprived by whatſoever means of communication with the external air, we became inſtantly extinct, have imagined, that, in the act of inſpiration, certain purer parts of the air were mixed with the blood in the lungs, and conveyed along with it to the *heart*, where they nouriſhed a ſort of vital flame; which was the cauſe of this reciprocal æſtus of the *heart*.

Others, rejecting an actual flame, have fanſied, that theſe fine parts of air, mixing with the blood in the ventricles of the *heart*, produced an efferveſcence, which dilated it.

But theſe notions have been long exploded, upon ample conviction; and it is a point yet undetermined, whether any air does mix with the blood at all in the lungs, or not.

But ſuppoſing that ſome air do inſinuate itſelf into the pulmonary vein; it can no other way dilate the *heart*, than by an efferveſcence in the left ventricle, which would not dilate the right.—But even this opinion is contradicted by autopſy, and abundantly confuted by divers authors.

Upon the whole, the groſs body of the atmoſphere appears to be the true antagoniſt to all the muſcles ſerving for ordinary inſpiration, and the conſtriction of the *heart*; which is confirmed not only from its ſufficient power, but from the neceſſity of its action upon animal bodies.

The *heart*, we have obſerved, is a ſolitary muſcle, of very great ſtrength; and the intercoſtal muſcles and diaphragm, which likewiſe have no antagoniſts, are a vaſt additional force, which muſt be balanced by the contrary action of ſome equivalent power, or other. For though the action of the intercoſtal muſcles be voluntary, it does not exempt them from the condition of all other muſcles ſerving for voluntary motion, which would be in a ſtate of perpetual contraction, notwithſtanding any influence of the will, were it not for the libration of antagoniſt muſcles. This libration, between other muſcles, is anſwered by the weight of the incumbent atmoſphere, which preſſes upon the thorax, and other parts of the body: and as, in all other voluntary motions, the influence of the will only gives a prevalence to one, of two powers before equilibrated; ſo here it ſerves to enable thoſe muſcles to lift a weight too ponderous for their ſtrength not ſo aſſiſted: ſo that, as ſoon as that aſſiſtance is withdrawn, the ribs are again depreſſed by the mere gravitation of the atmoſphere, which would otherwiſe remain elevated, through the natural tendency of thoſe muſcles to contraction.—This is evidently proved from the Torricellian experiment, and thoſe made upon animals *in vacuo*; where, as ſoon as the air is withdrawn, and the preſſure thereby taken off, the intercoſtal muſcles and diaphragm are contracted, and the ribs elevated in an inſtant, and cannot by any power of the will be made to ſubſide, till the air is again let in to bear them forcibly down.

As in the elevation of the ribs, the blood, by the paſſage opened for it, is, in a manner, ſolicited into the lungs; ſo in their depreſſion, by the ſubſidence of the lungs, and contraction of the blood-veſſels conſequent thereto, the blood is forcibly driven through the pulmonary vein into the left ventricle of the *heart*: and this, together with the general compreſſion of the body by the weight of the atmoſphere which ſurrounds and preſſes on its whole ſurface, is that power which cauſes the blood to mount in the veins, after the force impreſſed upon it by the *heart* is broken and ſpent, and which ſuffices to force the *heart* from its natural ſtate to dilatation.

Upon computing the weight of a column of air equal to the ſurface of the body, it appears a power ſufficient for the effects here aſcribed to it: and conſidering that the bodies of animals are compreſſible machines, it appears that it muſt, of neceſſity, affect them in the manner here laid down.—And yet, though our bodies be intirely compoſed of tubuli, or veſſels filled with fluids; this preſſure, how great ſoever, being equal, every way, could not affect them, were it not that the ſuperficial dimenſions are equally variable: becauſe, being compreſſed on all parts with the ſame degree of force, the contained fluids could not any-where begin to recede, and make way for the reſt to follow, but would remain as fixed and immoveable as if they were actually ſolid.

But, by the dilatation of the thorax, room is made for the fluids to move; and, by the coarctation of it, freſh motion is impreſſed; which is the great ſpring whereby the circulation is ſet, and kept going.

This reciprocal dilatation and contraction of the ſuperficial dimenſions of the body ſeems ſo neceſſary to animal life, that there is not any animal ſo imperfect as to want it, at leaſt none to which our anatomical inquiries have yet reached.—For though moſt kinds of fiſh, and inſects, want both moveable ribs and lungs, and, conſequently, have no dilatable thorax; yet that defect is ſupplied by an analogous mechaniſm, anſwering ſufficiently the neceſſities of their life.—Thus fiſhes, which have no lungs, have gills to do the office of lungs, receiving and expelling alternately the water, whereby the blood-veſſels ſuffer the ſame alteration of dimenſions as in the lungs of more perfect animals.

Add, that the lungs, or air-veſſels, of inſects, are much more different from thoſe of perfect animals, than thoſe of fiſhes are; and yet, in their action and uſe, they agree perfectly with both; that is, removing and expelling the air, and varying the dimenſions and capacities of the blood-veſſels. Having no thorax, or ſeparate cavity for the *heart* and air-veſſels, the latter are diſtributed through the whole trunk; by which they communicate with the external air through ſeveral ſpiracles, or vent-holes, to which are fitted ſo many little tracheæ, or wind-pipes, which thence ſend their branches to all the muſcles and viſcera, and ſeem to accompany the blood-veſſels all over the body, as they do in the lungs of perfect animals: by this diſpoſition, in every inſpiration the whole body is inflated, and in every expiration compreſſed; and, conſequently, the blood-veſſels muſt ſuffer a viciſſitude of extenſion and contraction, and a greater motion be thereby impreſſed on the contained fluids, than the *heart*, which in theſe creatures does not appear to be muſcular, would be capable of giving.—The only animal, exempted from this neceſſary condition of receiving and expelling alternately ſome fluid in and out of the body, is a fœtus: but this, while included in the womb, ſeems to have little more than a vegetative life; and ought ſcarce to be reckoned among the number of animals: and were it not for that ſmall ſhare of muſcular motion which it exerciſes in the womb, it might, without abſurdity, be accounted a graft upon, or branch of, the mother.

One difficulty we muſt not here conceal, which will lie againſt the whole doctrine; *viz.* that the *hearts* of ſeveral animals have been found to beat regularly, and ſtrongly, even *in vacuo*, not leſs ſo than in the air. Witneſs the *hearts* of frogs, tried by Mr. Boyle. *Philoſ. Tranſ.* N° 62.

Eſtimate of the force of the HEART.—The quantity of the force of the *heart* has been variouſly eſtimated, and on various principles, by various authors; particularly Borelli, Morland, Keill, Jurin, *&c.*

The force of the *heart* may be defined by the motion wherewith the *heart* contracts; or by the motion of a weight which being oppoſed to the blood at its exit out of the *heart*, will juſt balance and ſtop the ſame.—This we have no way of coming at *à priori*; the internal ſtructure of the part, and the nature and power of the contracting cauſe, being but imperfectly known: ſo that the only means remaining is, to eſtimate it by the effects.

All the action of the *heart* conſiſts in the contraction of its ventricles: the ventricles contracting, ſtrike, or preſs, upon the blood: and, communicating part of their motion thereto, drive it out with vehemence where the paſſage is open.—The blood, thus protruded into the aorta, and pulmonary artery, preſſes every way; partly againſt the coats of the arteries, which by the laſt diaſtole had been left in a collapſed, flaccid ſtate; and partly againſt the anterior blood moving on too ſlowly before it: by ſuch means, the coats of the arteries are gradually diſtended, and the antecedent blood has its motions accelerated.—By the way it may be obſerved, that the more flaccid the arteries are, the leſs reſiſtance will they make to a dilatation; and the more they are dilated, the more ſtrongly will they reſiſt a farther diſtraction: ſo that the force of the blood, at its egreſs out of the *heart*, is at firſt ſpent in diſtending the arteries, more than in protruding the antecedent blood; but afterwards more in protruding the blood, than in diſtending the arteries.

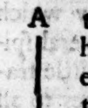
Borelli, we have already obſerved, in his *Oecon. Animal.* makes the obſtacles to the motion of the blood through the arteries, equivalent to 180,000 pounds; and the force of the *heart* itſelf, only equal to 3000 pounds, which is only one ſixtieth of the oppoſition it has to overcome: then, deducting 45,000 pounds for the adventitious help of the muſcular elaſtic coat of the arteries; he leaves the *heart* with a force of 3000 pounds to overcome a reſiſtance of 135,000 pounds; that is, with 1 to remove 45; which he ſuppoſes it enabled to do by virtue of percuſſion.

But had he proceeded, in his calculation, to the veins, which he allows to contain quadruple the quantity of blood found in the arteries, and to which this energy of percuſſion either does not reach at all, or but very languidly; he would readily have ſeen the ſyſtem of percuſſion to be inſufficient.

But his calculus itſelf is alſo found to be faulty; the force aſcribed by him to the *heart* being immenſely too great.—Dr. Jurin ſhews, that had he not made a miſtake in the computation, the reſiſtance which the *heart* has to overcome, muſt have come out, on his own principles, much greater; and, inſtead of 135,000 pounds, would have been 1,076,000 pounds; which tranſcends all probability.

The great faults in his ſolution conſiſt, according to Dr. Jurin, in his eſtimating the motive force of the *heart* by a pondus at reſt; in ſuppoſing the whole weight ſuſtained by a muſcle, in one of his experiments, to be ſuſtained wholly by the contracting force thereof; in aſſuming muſcles, equally heavy, to be of equal force; and in ſuppoſing the utmoſt force of the *heart* exerted at every ſyſtole.

Dr. Keill, in his *Eſſays of the Anim. Oecon.* firſt ventured to ſet aſide Borelli's calculus; and ſubſtituted another, almoſt infinitely ſmaller, in its ſtead. His method of eſtimating the force of the *heart* is as follows:—Having the velocity wherewith a fluid flows out at an orifice, without meeting any reſiſtance from an anterior fluid; the force which produces that motion is thus determined. Let the line A B be the height from which a falling body will acquire a velocity equal to that wherewith the fluid flows out at the orifice; then is the force, which produces the motion of this fluid, equal to the weight of a cylinder of the ſame fluid, whoſe baſe is equal to the orifice, and weight equal to 2 A B. Corol. 2. Prop. 36. Lib. II. Newton. *Princip.*



Now the blood flowing out of the *heart* is reſiſted, in its motion, by the anterior blood in the arteries and veins, and therefore cannot flow with all the velocity the force of the *heart* will give it; part of that force being ſpent in overcoming the reſiſtance of the maſs of blood: if, therefore, we knew how much the velocity of the blood is diminiſhed by this reſiſtance, or what proportion the velocity of the blood reſiſted has to the blood driven out, and not reſiſted; having already determined the velocity of the blood as it is reſiſted, we might eaſily recollect the velocity by which the blood would flow were it not reſiſted; and from thence find the abſolute force of the *heart*. To find this, the author made the following experiment.—Having uncovered the iliac artery and vein in the thigh of a dog, near his body, and paſſed convenient ligatures under them; he opened the whole diameter of the vein, and received the blood which run from it in the ſpace of ten ſeconds: the ſame was afterwards done by the artery, for the ſame ſpace of time; and both the quantities of the blood were exactly weighed: the experiment was repeated, for the greater ſecurity; till the quantity of blood from the artery was found, at a medium, to that from the vein, in the ſame ſpace of time, nearly as 7½ to 3.

Now the velocity of the blood in the iliac artery, ſo near the aorta, muſt be nearly the ſame with that in the aorta itſelf; and, conſequently, the velocity with which it flows out of the iliac artery, cut aſunder, is the ſame with which it would flow out of the *heart* unreſiſted: or, the blood runs through a wound in the iliac artery, with all the velocity it received from the *heart*. Now all the blood which runs along the iliac artery, returns again by the iliac vein; and, conſequently, the quantities of blood which paſs through both, in the ſame ſpace of time, are equal: the quantity of blood, therefore, which runs out of the iliac vein cut aſunder, is the ſame which ran through the iliac artery, before it was cut, in that ſpace of time. Having, therefore, the quantity which runs through the iliac artery when it is cut, and when it is not cut; we have their velocities: for the velocity of a fluid, running through the ſame canal, in equal ſpaces of time, is directly as their quantities: but the velocity of the blood, when the artery is cut, is equal to that it receives by the full force of the *heart*; and the velocity, when it is not cut, is that velocity with which the blood moves through the aorta, reſiſted by the anterior blood: and therefore theſe two velocities are to one another, as 7½ to 3.

If, now, the *heart* throw out two ounces of blood every ſyſtole, which is a probable aſſumption; then the blood moves through the aorta at the rate of 156 feet in a minute: and therefore the abſolute velocity wherewith the blood would be forced into the aorta, did it find no reſiſtance, is ſuch as would make it move 390 feet in a minute, or 6½ feet in a ſecond.

We now proceed to inquire, what is the height from which a falling body will acquire this given velocity? for this height doubled, gives the length of the cylinder whoſe baſe is equal to the orifice of the aorta, and weight equal to the abſolute force of the *heart*.

It is known by experiment, that the force of gravity will make a body move 30 feet in a ſecond, which is the velocity it acquires in falling through 15 feet; and therefore this velocity is to the velocity of the blood flowing without reſiſtance into the aorta, as 30 to 6.5: but becauſe the heights from which bodies acquire given velocities, are as the ſquares of the velocities, that is, as 900 to 42.25; therefore, as 900 to 42.25, ſo is 15 to 0.74. This height doubled, gives 1.48, or in inches 17.76; which is the height of a cylinder of blood, whoſe baſe is equal to the aorta, which we have ſuppoſed to be equal to 0.4187; and therefore the ſolid content is 7.436112, the weight of which is equal to the abſolute force of the *heart*. This weight is five ounces; whence the force of the *heart* is found equal only to the weight of five ounces.

The ſame author, by another method of calculating from the laws of projectiles, finds the force of the *heart* almoſt equal to eight ounces; which, though ſomewhat more than was before determined, yet the difference is of ſmall moment in reſpect of Borelli's account; the great failing in whoſe calculation Dr. Keill takes to ariſe from his not diſtinguiſhing between the blood at reſt, and the blood already in motion.—The force of the *heart*, it is certain, is not employed in giving motion to any quantity of blood at reſt, but only to continue it in motion: how that motion firſt aroſe, ſeems out of the human capacity to determine. It is demonſtrable, that if the reſiſtance of the blood always bore the ſame proportion to the force of the *heart* it does now, the blood never could at firſt be put in motion by the *heart*: if the blood conſtantly moved forwards, with the motion firſt communicated to it, and did the coats of the veſſels make no reſiſtance; the poſterior blood would not be retarded by the anterior, and the force of the blood would equal the intire force of the mover: but becauſe of the reſiſtance made by the coats of the blood-veſſels, and the force which is ſpent in diſtending them, the blood is continually retarded in its motion as it circulates; and would in a ſhort time ſtop, were not the motion loſt made up again by a freſh impulſe from the *heart*; and therefore the force of the *heart* muſt be equal to the reſiſtances the blood meets with in its motion: if it were more, the velocity of the blood would be continually increaſing; if leſs, it would continually decreaſe, and at laſt ſtop. And hence it is evident, that if the circulation of the blood was once ſtopped, all the force of the *heart* could never ſet it moving again.

Thus much for Dr. Keill's ſyſtem.—Dr. Jurin charges even this with its defects; and, particularly, in that it ſuppoſes the weight, whereby the motion of water running out at a veſſel may be generated, to be what generates that motion; which this laſt author takes for a miſapprehenſion of Sir Iſaac Newton's corollary: urging, that the water falling by the power of gravity, acquires its motion of itſelf; and that the weight falling the ſame time, only receives a motion equal to that of the water out of the veſſel.—There are ſome other points which he objects againſt, and of which the learned author has an expreſs vindication in the *Philoſophical Tranſactions*; to which his antagoniſt has ſince replied; but the author dying in the mean time, the diſpute ceaſed.

Dr. Jurin, however, proceeds to give another computation, on more unexceptionable principles; though his adverſary has found occaſion therein for recrimination.

He conſiders one of the ventricles of the *heart* impelling the blood, as a given body impelling another at reſt, with a given velocity; and, after communicating part of its motion thereto, proceeding with the ſame common velocity: on which principle, the force of the *heart* will either be equal to the factum of the weight of the ventricle, and its initial velocity ere it impels the blood; or to the ſum of the motions of the ventricle, and the blood flowing out of the ſame, and the motion communicated to the coats of the arteries, and the antecedent blood.

Now it is demonſtrable, 1°, That the motion whereby a hollow machine, unequally contractile, does act in contraction, is equal to the ſum of the factums of the ſeveral particles of the machine multiplied into their reſpective velocities. Whence it follows, that the motion of the machine is equal to the factum of its weight into ſome mean velocity between the particles moved ſwifteſt, and thoſe moved ſloweſt.—2°, That if the water be expreſſed out of the orifice of ſuch a machine, the motion of the water burſting out of the ſame will be equal to the ſum of the facta of any tranſverſe ſections of all the threads of water, ſeverally multiplied into their reſpective lengths and velocities: whence it follows, that the motion of the water is equal to the factum of the water iſſuing out at the orifice into ſome mean length between that of the longeſt thread and the ſhorteſt. Hence, alſo, if there be ſeveral ſuch machines full of water, and contracted alike, whether equally, or unequally, the motion of the water, burſting out at the orifice of one of them, will be in a ratio compounded of the quadruple ratio of any homologous diameter of the machine, and the reciprocal ratio of the time wherein the contraction is effected.

From theſe data is drawn a ſolution of the problem, *To find the force of the* heart.—For, calling the weight of the left ventricle, or the quantity of blood equal to the ſame, *p*; the inner ſurface of the ventricle, *S*; the mean length of the filaments, or threads, of blood expelled from the ſame, *l*; a ſection of the aorta, *s*; the quantity of blood contained in the left ventricle, q; the time wherein the blood would be thrown out of the *heart*, were the reſiſtance of the arteries and antecedent blood removed, t; the variable velocity, wherewith the blood would flow through the aorta, if the reſiſtance were taken away, v; the variable length of the aorta, paſſed over by the blood, x; and the time wherein the length x is run, z.—The mean variable velocity of the blood contiguous to the ventricle, or the mean velocity of the ventricle itſelf, will be $=\frac{sv}{S}$; the motion of the ventricle, $=p\times\frac{sv}{S}$; the motion of the blood iſſuing out, $=sv\times\overline{l+x}$; and their ſum, or the force of the ventricle, $=sv\times\frac{p}{S}+l+x$. But, $v=\frac{\dot{x}}{\dot{z}}$; whence, by the inverſe method of fluxions, the force of the ventricle is found $=\frac{sx}{z}\times\overline{\frac{p}{S}+\frac{x+l}{2}}$. But ſince $z=t$; $sx=q$. And hence, the force of the ventricle $=qt$ $\times\frac{pq}{S2s}+l$. After the like manner, the force of the right ventricle (noting the ſame things by Greek letters, which in the left are denoted by Italic ones) is found $=\frac{q}{t}+\frac{\pi}{\Sigma}+\frac{q}{2\sigma}+\lambda$. So that the whole force of the *heart* is $=\frac{q}{t}\times\frac{p}{S}+\frac{\pi}{\Sigma}+\frac{q}{2S}$ $+\frac{q}{2\sigma}+l+\lambda$. *Q. E. J.*

If now we ſuppoſe $p=8$ ounces, and π to four ounces avoird. $S=10$ ſquare inches, and $\Sigma=$ to as much; $l=2$, and $\lambda=1\frac{1}{2}$ inches: $q=2$ ounces avoird. $s=0{,}4185$ ſquare inches, $\sigma=0{,}583$; and $t=0.\,1''$; the forces of the ventricles will be equal to the weights under-written; *viz.*

	lib.	oz.
Of the left ventricle - -	9	1
Of the right ventricle - - -	6	3
Force of the whole *heart* - - -	15	4

Which weights have a velocity, wherewith they would move an inch each ſecond of a minute.

Coroll. Hence it is inferred, that when the pulſe is quicker than ordinary, either the reſiſtance is leſs than ordinary, or the force of the *heart* is increaſed, or a leſs quantity of blood than uſual is expelled at each contraction of the *heart*; and *vice verſa.*—As alſo, that if the reſiſtance be either increaſed or diminiſhed, either the pulſe, or the quantity of blood expelled at each contraction, will be either increaſed or diminiſhed reſpectively.—And that if the force of the *heart* be increaſed, or diminiſhed, either the pulſe muſt be accelerated, or the reſiſtance diminiſhed.

On theſe principles Dr. Jurin proceeds to demonſtrate the three following theorems;

1°, That the whole motion of reſiſtance made to the blood iſſuing out of the *heart* in the ſyſtole, or the whole motion communicated to the antecedent blood, and the coats of the arteries, is equal to the whole force of the *heart*, *quam proxime.*

2°, That the motion communicated to the antecedent blood in a ſyſtole, is to the motion communicated to the coats of the arteries, as the time of the ſyſtole is to the time of the diaſtole.

Whence, if, with Dr. Keill, we ſuppoſe the ſyſtole performed in one third of the interval between two pulſes, the motion communicated to the antecedent blood will be one third of the whole motion of the *heart*; and that communicated to the arteries, two thirds.

3°, In different animals, the force of the *heart* is in a ratio compounded of the quadruple ratio of the diameter of any homologous veſſel, and the inverſe ratio of the time wherein the *heart* is contracted; or a ratio compounded of the ratio of the weight either of the *heart*, or the whole animal, the ſubtriplicate ratio of the ſame weight, and the reciprocal ratio of the time.

HEART-BURN, a diſeaſe, among phyſicians uſually called *cardialgia.*

The teſtaceous powders, as oyſter-ſhells, crabs-eyes, chalk, &c. are the uſual remedies for the *heart-burn.*

HEART *of a tree*, the middle part thereof, taken longitudinally, is called ſo.

HEART, in the manage.—A horſe that works in the manage with conſtraint and irreſolution, and cannot be brought to conſent to it, is ſaid to be a horſe of *two hearts.*

HEARTH, *focus.* See the articles FIRE, CHIMNEY, &c.

HEARTH-MONEY. See the article CHIMNEY-MONEY.

EARTH-STONES. See the article FIRE-STONE.

EAT, *calor*, one of the primary qualities of bodies; oppoſed to *cold.*

Heat may be defined a phyſical being, whoſe preſence is known, and its degree meaſured by the expanſion of the air, or ſpirit, in the thermometer.

Heat in us is properly a ſenſation, excited by the action of fire: or it is the effect of fire on our organs of feeling.

Hence it follows, that what we call *heat*, is a particular idea, or modification of our own mind; and not any thing exiſting in that form in the body that occaſions it.—*Heat* is no more in the fire that burns the finger, than pain in the needle that pricks it.—In effect, *heat*, in the body that gives it, is only motion; and in the mind, only a particular idea or diſpoſition of the ſoul.

Heat, with reſpect to our ſenſation, or the effect produced on us by a *hot* body, is eſtimated by its relation to the organ of feeling; no object appearing to be *hot*, unleſs its *heat* exceed that of our body: whence, the ſame thing to different perſons, or at different times to the ſame perſon, ſhall appear both *hot* and cold.

Heat, as it exiſts in the hot body, or that which conſtitutes and denominates a body *hot*, and enables it to produce ſuch effects on our organ, is variouſly conſidered by the philoſophers.—Some will have it a quality, others a ſubſtance, and others only a mechanical affection, *viz.* motion.

Ariſtotle, and the Peripatetics, define *heat* a quality, or accident, whereby homogeneous things, *i. e.* things of the ſame nature and kind, are collected or gathered together; and heterogeneous ones, or things of different natures, are ſevered or diſunited.—Thus, ſays he, the ſame *heat* which aſſociates and brings into a maſs ſeveral particles of gold before ſeparate, ſeparates the particles of two metals before mixed together.

But, not only the doctrine, but the very inſtance he produces, is faulty: for *heat*, though continued to eternity, will never ſeparate a maſs, *e. g.* of gold, ſilver, and copper: and, on the contrary, if bodies of different qualities, as gold, ſilver, and copper, be put ſeparately in a veſſel over a fire; notwithſtanding all their heterogeneity, they will be mixed and congregated into a maſs thereby.

In effect, *heat* cannot be ſaid to do either this thing or that univerſally; but all its effects depend on the circumſtances of its application.—Thus, to do the ſame thing in different bodies, different degrees of *heat* are required; as, to mix gold and ſilver, the *heat* muſt be in one degree, and to mix mercury and ſulphur, in another.

Add, that the ſame degree of *heat* ſhall have oppoſite effects.—Thus a vehement fire ſhall render water, oils, ſalts, &c. volatile; and yet the ſame fire ſhall imbody ſand, and fixed alkaline ſalt into glaſs.

The Epicureans, and other corpuſcularians, define *heat* not as an accident of fire, but as an eſſential power or property thereof, the ſame in reality with it, and only diſtinguiſhed therefrom in the manner of our conception.

Heat, then, on their principles, is no other than the volatile ſubſtance of fire itſelf, reduced into atoms, and emitted in a continual ſtream from ignited bodies; ſo as not only to *warm* the objects within its reach, but alſo, if they be inflammable, to *kindle* them, turn them into fire, and conſpire with them to make flame.

In effect, theſe corpuſcles, ſay they, flying off from the ignited body, while yet contained within the ſphere of its flame, by their motion conſtitute fire; but when fled, or got beyond the ſame, and diſperſed every way, ſo as to eſcape the apprehenſion of the eye, and only to be perceivable by the feeling, they take the denomination of heat; inaſmuch as they ſtill excite in us that ſenſation.

The Carteſians, improving on this doctrine, aſſert *heat* to conſiſt in a certain motion of the inſenſible particles of a body, reſembling the motion whereby the ſeveral parts of our body are agitated by the motion of the heart and blood.

Our lateſt and beſt writers of mechanical, experimental, and chemical philoſophy, differ very conſiderably about *heat.*—The fundamental difference is, whether it be a peculiar property of one certain immutable body called *fire*; or whether it may be produced mechanically in other bodies, by inducing an alteration in the particles thereof.

The former tenet, which is as antient as Democritus, and the ſyſtem of atoms, had given way to that of the Carteſians, and other mechaniſts; but is now with great addreſs retrieved, and improved on, by ſome of the lateſt writers, particularly Homberg, the younger Lemery, s'Graveſande, and above all, by the learned and induſtrious Boerhaave, in a courſe of lectures expreſly on *fire*; the reſult whereof we have already laid down under the article FIRE.

The thing we call *fire*, according to this author, is a body ſui generis, created ſuch ab origine, unalterable in its nature and properties, and not either producible de novo, from any other body, nor capable of being reduced into any other body, or of ceaſing to be fire.

This fire, he contends, is diffuſed equably every-where, and exiſts alike, or in equal quantity, in all the parts of ſpace, whether void, or poſſeſſed by bodies; but that naturally, and in itſelf, it is perfectly latent and imperceptible; and is only diſcovered by certain effects which it produces, and which are cognizable by our ſenſes.

Theſe effects are *heat*, light, colour, rarefaction, and burning; which are all indications of fire, as being none of them producible by any other cauſe: ſo that where-ever we obſerve any of theſe, we may ſafely infer the action and preſence of fire.—But, though the effect cannot be without the cauſe, yet the fire may remain without any of theſe effects; any, we mean, groſs enough to affect our ſenſes, or become objects thereof: and this, he adds, is the ordinary caſe; there being a concurrence of other circumſtances, which are often wanting, neceſſary to the production of ſuch ſenſible effects.

Hence, particularly, it is, that we ſometimes find ſeveral, and ſometimes all, of theſe effects of fire together, and ſometimes one unaccompanied with any others; according as the circumſtances favour or diſpoſe things for the ſame.—Thus we find light without *heat*; as in rotten wood, putrid fiſhes, or the mercurial phoſphorus: nay, and one of them may be in the higheſt degree, and the other not ſenſible; as in the focus of a large burning-glaſs expoſed to the moon; where, though the light, as Dr. Hooke found, was ſufficient to have inſtantly blinded the beſt eye, yet no *heat* was perceivable, nor was there the leaſt rarefaction occaſioned in an exquiſite thermometer.

On the other hand, there may be *heat* without light, as we find in the ſolid phoſphorus; in fluids, which emit no light even when they boil, and not only *heat* and rarefy, but alſo burn or conſume the parts; and in metals, ſtones, *&c.* which conceive a vehement *heat* before they ſhine, or become ignited.—Nay, and there may be the moſt intenſe *heat* in nature without any light: thus in the focus of a large burning concave, where metals melt, and the hardeſt gems vitrify, the eye perceives no light; ſo that ſhould the hand happen to be put there, it would be inſtantly turned into a coal, or even a calx. So alſo rarefactions are frequently obſerved by the thermometer, in the night-time, without either *heat* or light, *&c.*

Thus it appears, that the effects of fire have a dependence on other concurring circumſtances; ſome more, and others leſs. —One thing ſeems to be required in common to them all, *viz.* that the fire be collected or brought into leſs compaſs: without this, as fire is every-where equably diffuſed, it could have no more effect in one place than another, but muſt either be diſpoſed to warm, burn, and ſhine every-where, or no-where. Indeed, ſuch every-where does amount to no-where; for to have the ſame *heat*, &c. in every place, would be to have no *heat* at all: it is only the changes that we perceive; thoſe alone make the mind diſtinguiſh in its ſtate, and become conſcious of the things that diverſify it. So, our bodies being equally preſſed on all ſides by the ambient air, we feel no preſſure at all; but if the preſſure be only taken off in any one part, as by laying the hand over an exhauſted receiver, we ſoon grow ſenſible of the load.

This collection is performed two ways: the firſt, by directing and determining the fluctuating corpuſcles of fire into lines, or trains, called *rays*; and thus driving infinite ſucceſſions of the fiery atoms upon the ſame place or body, each to produce its ſeveral effort, and ſecond that of the preceding ones, till by a ſeries of augmentations, the effect is ſenſible.—This is the office of thoſe bodies which we call *luminaries*; ſuch as the ſun, and other heavenly bodies; and alſo of our culinary fires, lamps, *&c.* on earth, which do not emit the fire from their own ſubſtance, as is commonly conceived, but only by their rotatory mutation direct the undetermined corpuſcles into parallel rays. And the effect may be ſtill further intended by a ſecond collection of theſe parallel, into converging rays, by means of a concave ſpeculum, or a convex glaſs, which at length brings them all into a point: whence thoſe aſtoniſhing effects of our large burning-glaſſes.

The ſecond way wherein the collection is made, is not by determining the vague fire, or giving it any new direction; but merely by aſſembling it: which is done by the attrition or rubbing of two bodies ſwiftly againſt each other; ſo ſwiftly, in effect, as that nothing in the air, except the floating fire, has activity enough to move an equal pace, or ſucceed faſt enough into the places continually relinquiſhed by it: by which means fire, the moſt agile body in nature, ſlipping in, becomes collected in the path of the moving body; ſo that the moveable has, as it were, a firy atmoſphere around it.—Thus it is the axes of chariot-wheels, mill-ſtones, the ropes of ſhips, cannon-balls, *&c.* conceive *heat*, and ſome of them kindle into flame.

Thus much for the circumſtance in *heat*, common to all the effects of fire, *viz.* collection.—The particular circumſtances are various: thus, for it to warm, or to *heat*, i. e. to give the ſenſation of it, it is neceſſary that there be more fire in the *hot* body, or thing, than in the organ whereby it is to be felt; otherwiſe the mind will not be put into any new ſtate upon its approach, nor have any new idea.—Whence, alſo, if the contrary to this obtains, *v. g.* if there be leſs fire in the external object than in the organ, it will raiſe an idea of cold, or chillineſs.

Thus it is, that a man coming out of a hot bath, into a moderately warm air, ſeems as if he were got into an exceſſive cold place; and another entering a room ſcarcely warm, in a very pinching day, will at firſt fanſy himſelf in a ſtove.—Whence it appears, that the ſenſe of *heat* does by no means determine the degree of fire; the *heat* being only the ratio, or difference between the internal and external fire.—As to the circumſtances neceſſary to the fire's producing light, burning, rarefaction, *&c.* ſee LIGHT, and BURNING.

The mechanical philoſophers, particularly my lord Bacon, Mr. Boyle, and Sir Iſaac Newton, look on *heat* in another light.—They do not conceive it as an original inherent property of any particular ſort of body; but as mechanically producible in any body.

My lord Bacon, in an expreſs treatiſe *De forma calidi*, deduces, from a particular enumeration of the ſeveral phænomena and effects of *heat*;

1°, That *heat* is motion: not, that motion generates *heat*, or *heat* motion; though, in many caſes, this be true: but, that the very thing *heat* is very motion, and nothing elſe.—But this motion, he ſhews, has ſeveral peculiar circumſtances, which conſtitute it *heat*.

As, 2°, That it is an expanſive motion, whereby a body endeavours to dilate or ſtretch into a larger dimenſion than it had before.

3°, That this expanſive motion is directed towards the circumference, and at the ſame time upwards; which appears hence, that an iron rod, being erected in the fire, will burn the hand that holds it, much ſooner than if put in laterally.

4°, That this expanſive motion is not equable, and of the whole, but only of the ſmaller particles of the body; as appears from the alternate trepidation of the particles of *hot* liquors, ignited iron, *&c.* And laſtly, that this motion is very rapid.

Hence, he defines *heat* an expanſive, undulatory motion in the minute particles of the body; whereby they tend, with ſome rapidity, towards the circumference, and at the ſame time incline a little upwards.

Hence, again, he adds, that if, in any natural body, you can excite a motion whereby it ſhall expand or dilate itſelf; and can ſo repreſs and direct this motion upon itſelf, as that the dilatation ſhall not proceed uniformly, but obtain in ſome parts, and be checked in others, you will generate *heat*.

This doctrine, Deſcartes and his ſect adhere to with ſome little variation.—According to them, *heat* conſiſts in a certain motion or agitation of the parts of a body, like to that wherewith the ſeveral parts of our body are agitated by the motion of the heart and blood.

Mr. Boyle, in a treatiſe of the *Mechanical Origin of Heat and Cold*, ſtrenuouſly ſupports the doctrine of the producibility of *heat*, with new obſervations and experiments: as a ſpecimen, we ſhall here give one or two.

In the production, ſays he, of *heat*, there appears nothing, on the part either of the agent or patient, but motion, and its natural effects.—When a ſmith briſkly hammers a ſmall piece of iron, the metal thereby becomes exceedingly *hot*: yet there is nothing to make it ſo, except the forcible motion of the hammer impreſſing a vehement and variouſly determined agitation on the ſmall parts of the iron, which, being a cold body before, grows, by that ſuperinduced commotion of its ſmall parts, *hot*: firſt, in a more looſe acceptation of the word, with regard to ſome other bodies, compared with which it was cold before: and then ſenſibly *hot*, becauſe this agitation ſurpaſſes that of the parts of our fingers; and in this inſtance oftentimes, the hammer and the anvil continue cold after the operation; which ſhews, that the *heat* acquired by the iron, was not communicated by either of thoſe implements as *heat*, but produced in it by motion great enough ſtrongly to agitate the parts of ſo ſmall a body as the piece of iron, without being able to have the like effect upon ſo much greater maſſes of metal, as the hammer and the anvil. Though, if the percuſſions were often and briſkly renewed, and the hammer were ſmall; this alſo might be *heated*.—Whence it is not neceſſary, that a body itſelf ſhould be *hot* to give *heat*.

If a large nail be driven by a hammer into a plank of wood, it will receive ſeveral ſtrokes on its head, ere it grow *hot*; but when it is once driven to the head, a few ſtrokes ſuffice to give it a conſiderable *heat*: for while, at every blow of the hammer, the nail enters farther into the wood, the motion produced is chiefly progreſſive, and is of the whole nail tending one way; but when the motion ceaſes, the impulſe given by the ſtroke, being unable to drive the nail farther on, or to break it, muſt be ſpent in making a various, vehement, and inteſtine commotion of the parts among themſelves, wherein the nature of *heat* conſiſts. *Mech. Product. of Heat and Cold.*

That *heat*, ſays the ſame author, is mechanically producible, appears probable from a conſideration of its nature, which ſeems principally to conſiſt in that mechanical property of matter called *motion*; but which is here ſubject to three conditions, or modifications.

Firſt, the agitation of the parts of the body muſt be vehement.—For this diſtinguiſhes the bodies ſaid to be *hot*, from thoſe which are barely fluid.—Thus, the particles of water, in its natural ſtate, move ſo calmly, that we do not feel it at all warm, though it could not be a liquor, unleſs they were in a reſtleſs motion; but when water becomes actually *hot*, the motion manifeſtly and proportionably appears vehement, ſince it does not only ſtrike our organs of feeling briſkly, but ordinarily produces numerous very ſmall bubbles, melts coagulated oil caſt upon it, and affords vapours, which by their agitation aſcend into the air.—And if the degree of *heat* be ſuch as to make the water boil, the agitation becomes more manifeſt by the confuſed motions, waves, noiſe, bubbles, and other obvious effects, excited therein. Thus, in a *heated* iron, the vehement agitation of its parts may be eaſily inferred from the motion, and the hiſſing noiſe it makes with the drops of water that fall from it.—But though the agitation be various, as well as vehement, yet there is a third condition required to make a body *hot*; which is, that the agitated particles, or at leaſt the greateſt number of them, be ſo minute, as to be ſingly inſenſible.—Were an heap of ſand to be vehemently agitated by a whirlwind, the bulk of the corpuſcles would keep their agitation from being properly *heat*, though by their numerous ſtrokes upon any man's face, and the briſk commotion of the ſpirits, which would thence enſue, they might perhaps produce that quality.

The ſecond condition is, that the determination be very various, and tend all manner of ways—This variety of determinations appears to be in *hot* bodies, both by ſome of the inſtances already mentioned, and eſpecially that of flame, which is a body; by the dilatation of metals when melted; and by the operations of *heat*, exerciſed by *hot* bodies upon others, in what poſture or ſituation ſoever the body, to be *heated* thereby, be applied to them: thus a coal, thoroughly kindled, will appear on all ſides red, and melt wax, and kindle brimſtone, whether the body be applied to the upper, the lower, or any other part of it.—Hence, if we duly attend to this notion of the nature of *heat*, it is eaſy to diſcern how it may be mechanically produced ſeveral ways; for, except in ſome few anomalous caſes, by whatever means the inſenſible parts of a body can be put into a very confuſed and vehement agitation, *heat* will be introduced into that body: and as there are ſeveral agents and operations, by which the *heating* motion may be excited; ſo there muſt be ſeveral mechanical ways of producing *heat*: various experiments may be reduced to almoſt each of theſe heads; chance itſelf having, in the laboratories of chemiſts, afforded ſeveral phænomena referable thereto.

This ſyſtem is further ſupported alſo by Sir Iſaac Newton, who does not conceive *fire*, as any particular ſpecies of body, originally endued with ſuch and ſuch properties.—*Fire*, according to him, is only a body much ignited, *i. e. heated* hot, ſo as to emit light copiouſly; what elſe, ſays he, is red-hot iron than fire? and what elſe is a burning coal than red-hot wood? or flame itſelf than red-hot ſmoke? It is certain, that flame is only the volatile part of the fuel *heated* red-hot, *i. e.* ſo hot as to ſhine; and hence only ſuch bodies as are volatile, *i. e.* ſuch as emit a copious fume, will flame; nor will they flame longer than they have fume to burn.—In diſtilling hot ſpirits, if the head of the ſtill be taken off, the aſcending vapours will catch fire from a candle, and turn into flame. And in the ſame manner ſeveral bodies, much *heated* by motion, attrition, fermentation, or the like, will emit lucid fumes; which, if they be copious enough, and the *heat* ſufficiently great, will be flame: and the reaſon why fuſed metals do not flame, is the ſmalneſs of their fume; this is evident; for, that ſpelter, which fumes moſt copiouſly, does likewiſe flame.—Add, that all flaming bodies, as oil, tallow, wax, wood, pitch, ſulphur, *&c.* by flaming, waſte, and vaniſh into burning ſmoke.

And do not all fixed bodies, when *heated* beyond a certain degree, emit light, and ſhine? and is not this emiſſion performed by the vibrating motion of their parts? and do not all bodies, which abound with terreſtrial and ſulphureous parts, emit light as often as thoſe parts are ſufficiently agitated; whether that agitation be made by external fire, or by friction, or percuſſion, or putrefaction, or by any other cauſe?—Thus, ſea-water, in a ſtorm; quickſilver agitated in vacuo; the back of a cat, or the neck of a horſe, obliquely rubbed in a dark place; wood, fleſh, and fiſh, while they putrefy; vapours from putrefying waters, uſually called *ignes fatui*; ſtacks of moiſt hay or corn; glow-worms; amber and diamonds by rubbing; fragments of ſteel ſtruck off with a flint, *&c.* all emit light. *Id. ibid.*

Are not groſs bodies and light convertible into one another? and may not bodies receive much of their activity from the particles of light, which enter their compoſition? I know no body leſs apt to ſhine than water; and yet water, by frequent diſtillations, changes into fixed earth; which, by a ſufficient *heat*, may be brought to ſhine like other bodies. *Id. ibid.*

Add, that the ſun and ſtars, according to Sir Iſaac Newton's conjecture, are no other than great earths vehemently *heated*: for large bodies, he obſerves, preſerve their *heat* the longeſt, their parts *heating* one another: and why may not great, denſe, and fixed bodies, when *heated* beyond a certain degree, emit light ſo copiouſly, as by the emiſſion and reaction thereof, and the reflexions and refractions of the rays within the pores, to grow ſtill hotter, till they arrive at ſuch a period of *heat* as is that of the ſun? Their parts alſo may be further preſerved from fuming away, not only by their fixity, but by the vaſt weight and denſity of their atmoſpheres incumbent on them, and ſtrongly compreſſing them, and condenſing the vapours and exhalations ariſing from them. Thus, we ſee, warm water, in an exhauſted receiver, ſhall boil as vehemently as the hotteſt water open to the air; the weight of the incumbent atmoſphere, in this latter caſe, keeping down the vapours, and hindering the ebullition, till it has conceived its utmoſt degree of *heat*. So, alſo, a mixture of tin and lead, put on a red-hot iron in vacuo, emits a fume and flame: but the ſame mixture, in the open air, by reaſon of the incumbent atmoſphere, does not emit the leaſt ſenſible flame.—Thus much for the *ſyſtem of the producibility of heat.*

On the other hand, M. Homberg, in his *Eſſai du Souffre Principe*, holds, that the chemical principle, or element, ſulphur, which is ſuppoſed one of the ſimple, primary, preexiſtent ingredients of all natural bodies, is real fire; and conſequently that fire is coeval with body. *Mem. de l'Acad. an.* 1705. See SULPHUR.

Dr. S'graveſande goes on much the ſame principle: Fire, according to him, enters the compoſition of all bodies, is contained in all bodies, and may be ſeparated or procured from all bodies, by rubbing them againſt each other, and thus putting their fire in motion. But fire, he adds, is by no means generated by ſuch motion. *Elem. Phyſ.* T. II. c. 1.

A body is then only ſenſibly *hot*, when the degree of its *heat* exceeds that of our organs of ſenſe; ſo that there may be a lucid body, without any ſenſible *heat*; and conſequently, as *heat* is only a ſenſible quality, without any *heat* at all.

Heat, in the *hot* body, ſays the ſame author, is an agitation of the parts of the body, made by means of the fire contained in it; by ſuch agitation a motion is produced in our bodies, which excites the idea of *heat* in our minds: ſo that *heat*, in reſpect of us, is nothing but that idea, and in the *hot* body nothing but motion.—If ſuch motion expel the fire in right lines, it may give us the idea of light; if in a various and irregular motion, only of *heat*.

M. Lemery the younger agrees with theſe two authors in aſſerting this abſolute and ingenerable nature of fire; but he extends it farther.—Not contented to confine it as an element to bodies, he endeavours to ſhew, that it is equably diffuſed through all ſpace; that it is preſent in all places, even in the void ſpaces between bodies, as well as in the inſenſible interſtices between their parts. *M. de l'Acad. an.* 1713. See ÆTHER.

This laſt ſentiment falls in with that of Boerhaave above delivered.—It ſeems extravagant to talk of *heating* cold liquors with ice; yet Mr. Boyle aſſures us, he has eaſily done it, by taking out of a baſon of cold water, wherein ſeveral fragments of ice were ſwimming, one piece or two which he perceived very well drenched with the liquor, and ſuddenly immerging them into a wide-mouthed glaſs of ſtrong oil of vitriol: for the menſtruum preſently mixing with the water, which adhered to the ice, produced in it a briſk *heat*, ſometimes with a manifeſt ſmoke, and that ſuddenly diſſolving the contiguous parts of the ice, and thoſe the next, the whole ice was ſoon reduced to water; and the corroſive menſtruum being, by two or three ſhakes, well diſperſed through it, the whole mixture would immediately grow ſo *hot*, that ſometimes the containing phial could not be endured in one's hand. Boyle, *ubi ſupra*.

There is a great variety in the *heat* of different places and ſeaſons.—Naturaliſts commonly lay it down, that the nearer any place is to the centre of the earth, the *hotter* it is found; but this does not hold ſtrictly true.—In digging mines, wells, *&c.* they find that at a little depth below the ſurface, it feels cool; a little lower, and it is yet colder, as being now beyond any reach, or influence, of the ſun's rays, inſomuch that water will freeze almoſt inſtantaneouſly; and hence the uſe of ice-houſes, *&c.* but when a little lower, *viz.* about 40 or 50 feet deep, it begins to grow warmer, ſo that no ice can bear it; and then the deeper they go, ſtill the greater is the *heat*: till, at length, reſpiration grows difficult, and the candles go out.—Hence ſome have recourſe to the notion of a fund of fire lodged in the centre of the earth; which they conſider as a central ſun, and the great principle of the generation, vegetation, nutrition, *&c.* of foſſil and vegetable bodies.

But Mr. Boyle, who had been at the bottom of ſome mines himſelf, ſuſpects that this degree of *heat*, at leaſt in ſome of them, may ariſe from the peculiar nature of the minerals generated therein. To confirm this, he inſtances a mineral of a vitriolic kind, dug up in large quantities, in ſeveral parts of England, which by the bare effuſion of common water will grow ſo *hot*, as almoſt to take fire.

On the other hand, as you aſcend high mountains, the air grows more and more piercing and cold: thus the tops of the Pico de Theide in Bohemia, the pike of Tenariff, and ſeveral others, even in the moſt ſultry countries, are found eternally inveſted with ſnow and ice; the *heat* never being ſufficient to thaw the ſame.

In ſome of the mountains of Peru there is no ſuch thing as running water, but all ice: plants make a ſhift to grow about the feet of the mountains, but near the top no vegetable can live; and this is not for want of food, but through the intenſeneſs of the cold.—This effect is attributed to the thinneſs of the air, and the little ſurface of earth there is to reflect the rays. The rays are here only determined into a paralleliſm; but the effect of direct parallel rays is found, by computation, to be very inconſiderable; this effect being really greater in winter than ſummer.

Heat, in geography.—The diverſity of the *heat* of climes and ſeaſons ariſes from the different angles under which the ſun's rays ſtrike upon the earth's ſurface.

It is ſhewn in mechanics, that a moving body, ſtriking perpendicularly on another, acts on it with all its force; and that a body ſtriking obliquely, acts with the leſs force, the more it deviates from the perpendicular.—Now fire, moving in right lines, muſt obſerve the ſame mechanical law as other bodies; and conſequently its action muſt be meaſured by the ſine of the angle of incidence: and hence fire, ſtriking on any obſtacle in a direction parallel thereto, has no ſenſible effect, by reaſon the ratio is almoſt infinite, *i. e.* it is nothing. Accordingly, the ſun, radiating on the earth in the morning, ſcarce produces any warmth at all.

Hence, Dr. Halley gives a mathematical computation of the effect of the ſun, under different ſeaſons and climates; going on this principle, that the ſimple action of the ſun, as all other impulſes or ſtrokes, is more or leſs forcible, according to the ſines of the angles of incidence, or to the perpendicular let fall on the plane: whence, the vertical ray (which is of the greateſt *heat*) being put for radius, the force of the ſun on the horizontal ſurface of the earth will be to that, as the ſine of the ſun's altitude at any other time.

Hence it follows, that the time of the continuance of the ſun's ſhining, being taken for a baſis, and the ſines of the ſun's altitudes erected thereon as perpendiculars; and a curve drawn through the extremities of thoſe perpendiculars; the area comprehended will be proportionate to the collection of the *heat* of all the ſun's beams in that ſpace of time.

Hence it will follow likewiſe, that under the pole the collection of all the *heat* of a tropical day is proportionate to a rectangle of the ſine of 23 degrees and an half, into 24 hours, or the circumference of a circle; that is, the ſine of 23 degrees and an half, being nearly $\frac{4}{10}$ of radius, as $\frac{8}{10}$ into 12 hours. Or, the polar *heat* is equal to that of the ſun continuing twelve hours above the horizon at 53 degrees height; than which the ſun is not five hours more elevated under the equinoctial.

But whereas the nature of *heat* is to remain in the ſubject, after the luminary that occaſioned its being *heated* is removed, and particularly in the air; under the equinoctial, the 12 hours abſence of the ſun does but little diminiſh the motion impreſſed by the paſt action of his rays, wherein *heat* conſiſts, before he riſes again; but under the pole, the long abſence of the ſun for ſix months, wherein the extremity of cold does obtain, hath ſo chilled the air, that it is, as it were, frozen, and cannot, before the ſun has got far towards it, be any ways ſenſible of his preſence, his beams being obſtructed by thick clouds, and perpetual fogs and miſts.

Add, that the different degrees of *heat* and cold, in different places, depend in a very great meaſure, upon the accidents of ſituation, with regard to mountains or valleys, and the ſoil.—The firſt greatly help to chill the air by the winds, which come over them, and which blow in eddies through the levels beyond.

Mountains, ſometimes, turning a concave ſide towards the ſun, have the effect of a burning mirror on the ſubject plain; and the like effect is ſometimes had from the concave or convex parts of clouds, either by refraction or reflexion. And ſome even take theſe to be ſufficient to kindle the exhalations lodged in the air, and to produce thunder, lightning, *&c.*

As to ſoils: a ſtony, ſandy, or chalky earth, it is known, reflects moſt of the rays into the air again, and retains but few; by which means a conſiderable acceſſion of *heat* is derived to the air; as, on the contrary, black looſe ſoils abſorb moſt of the rays, and return few into the air, ſo that the ground is much the *hotter*.

This the peaſants, who inhabit the moraſs de Veenen, where turf is dug, are very ſenſible of: walking there but a little while, the feet grow extremely *hot*, but the face not at all: on the contrary, in a ſandy place, the feet are ſcarce warm, when the face is ſcorched by the great reflexion.

The following table gives the *heat* to every tenth degree of latitude to the equinoctial and tropical ſun, by which an eſtimate may be made of the intermediate degrees.

Lat.	Sun in ♈ ♎	Sun in ♋	Sun in ♑
0	20000	18341	18341
11	19696	20290	15834
20	18797	21737	13166
30	17321	22651	10124
40	15321	23048	6944
50	12855	22991	3798
60	10000	22773	1075
70	6840	23543	000
80	3473	24673	000
90	0000	25055	000

Whence are deducible the following corollaries:

1°, That the equinoctial *heat*, when the ſun becomes vertical, is as twice the ſquare of the radius: which may be propoſed as a ſtandard to be compared with in all other caſes.

2°, That under the equinoctial, the *heat* is as the ſine of the ſun's declination.

3°, That in the frigid zones, when the ſun ſets not, the *heat* is as the circumference of a circle into the ſine of the altitude at 6. And, conſequently, that, in the ſame latitude, theſe aggregates of warmth are as the ſine of the ſun's declination; and at the ſame declination of the ſun, they are as the ſines of the latitudes into the ſines of the declination.

4°, That the equinoctial day's *heat* is every-where as the coſine of the latitude.

5°, In all places where the ſun ſets, the difference between the ſummer and winter *heats*, when the declinations are contrary, is equal to a circle into the ſine of the altitude at 6, in the ſummer parallel; and conſequently, thoſe differences are as the ſine of the latitude into, or multiplied by, the ſines of declination.

6°, From the foregoing table it appears, that the tropical ſun, under the equinoctial, has of all others the leaſt force; under the pole it is greater than any other day's *heat* whatever, being to that of the equinoctial as 5 to 4.

From the table, and theſe corollaries, a general idea may be conceived of the ſum of all the actions of the ſun in the whole year: and thus that part of *heat*, which ariſeth ſimply from the preſence of the ſun, may be brought to a geometrical certainty.—The *heat* of the ſun, for any ſmall portion of time, is always as a rectangle, contained under the ſine of the angle of incidence of the ray producing *heat* at that time.

Heat is uſually divided, by the ſchool-philoſophers, into *actual* and *potential*.

Actual **Heat** is that which we have been hitherto ſpeaking of, and which is an effect of real, elementary fire.

Potential **Heat** is that which we find in pepper, wine, and certain chemical preparations, as oil of turpentine, brandy, quick-lime, *&c.*

The Peripatetics account for the *heat* of quick-lime from an antiperiſtaſis.

The Epicureans, and other corpuſcularians, attribute even *potential heat* to atoms or particles of fire detained and locked up in the pores of thoſe bodies, and remaining at reſt therein; which being excited to action again by the *heat* and moiſture of the mouth, or by the effuſion of cold water, or the like cauſe, then break their incloſures, and diſcover what they are.

This doctrine is well illuſtrated by M. Lemery the younger, in the inſtances of quick-lime, regulus of antimony, tin, *&c.* in the calcination whereof he obſerves, 1°, That the fire, which they imbibe in the operation, makes a ſenſible addition to the weight of the body, amounting ſometimes to one tenth of the whole; and that, during this impriſonment, it ſtill retains all the particular properties or characters of fire, as appears hence, that when once ſet at liberty again, it has all the effects of other fire.

Thus a ſtony, or ſaline body being calcined, and water poured thereon, that fluid is found ſufficient, by its external impreſſion, to break up the cells, and let the fire out; and upon this the water is rendered more or leſs warm, according to the quantity of fire lodged therein.—Hence, alſo, it is, that ſome of theſe bodies viſibly contain a great deal of actual fire; and the ſlighteſt occaſion is capable of diſengaging it: and upon applying them to the ſkin, they burn, and raiſe an eſchar, not unlike the top of a live coal.

To this it is objected, that the particles of fire are only ſuch in virtue of the rapid motion wherewith they are agitated; ſo that to ſuppoſe them fixed in the pores of a body, is to diveſt them at once of that which conſtituted them fire, and, conſequently, to diſqualify them from producing the effects aſcribed to them.—To which M. Lemery anſwers, that though the rapid motion of fire do contribute very greatly to its effects, yet the particular figure of its particles is to be conſidered withal. And though fire ſhould be detained, and fixed in the ſubſtance of bodies, yet why ſhould it fare worſe than other fluids under the ſame circumſtances? Water, for inſtance, is a fluid, whoſe fluidity depends, as already obſerved, on fire; and, conſequently, it is leſs fluid than fire: and yet, every day, water is incloſed in bodies of all ſorts, without loſing its fluidity, or any of the properties that characterize it as water.

Add, that when water is frozen, the motion of its parts is, doubtleſs, diſcontinued; and yet, the figure of the particles remaining the ſame, it is ready to commence a fluid, as before, upon the leaſt warmth.

Laſtly, Though ſalt be allowed to be the matter of taſtes, and that it has certain properties, ariſing chiefly from the figure of its parts; yet it only acts when diſſolved; or, which amounts to the ſame, when it ſwims in a fluid proper to keep its parts in motion: yet it is not leſs ſalt, or leſs the matter of taſte, when not in a ſtate of diſſolution: to deſpoil it of that quality, the figure of its parts muſt be altered.

As to what may be farther objected, of the impoſſibility of fixing ſo fine, ſubtil, penetrative, and active a matter as fire, within the ſpongeous ſubſtance of a groſs, porous body; it will be of no great weight, unleſs it can be proved, that the pores of the cells are bigger than the ſame.—If it be inſiſted, again, that a body which could find its way into a ſolid body, might get out again the ſame way; and that as it only penetrated the body, by reaſon its own corpuſcles were ſmaller than the pores; the ſame conſideration muſt let it out again: it is anſwered, that the pores are not now in the ſame condition as before; the fire, in calcining, opened and dilated the pores; which, upon the fire's ceaſing, muſt naturally cloſe and contract again. *Mem. de l'Acad. an.* 1713.

Mr. Boyle endeavours to ſet aſide this account, and ſubſtitute a mechanical property; *viz.* a peculiar texture of parts, in theſe caſes, in lieu of fire.—Though a great likeneſs might be expected between the particles of fire adhering to the quick-lime, and thoſe of highly-rectified ſpirit of wine; yet he has not found, that the effuſion of the ſpirit upon quick-lime produced any ſenſible *heat*, or viſible diſſolution of the lime, though it ſeemed to be as greedily ſucked in, as common water would have been. And, farther, he found, that if cold water were poured on the ſame lime, ſo drenched, there would enſue no manifeſt *heat*; nor did the lump appear ſwelled, or broken, till ſome hours after: which ſeems to argue, that the texture of the lime admitted ſome particles of the ſpirit of wine into ſome of its pores, which were either larger, or more fit for it, without admitting it into the moſt numerous, whereinto the liquor muſt be received, to be able ſuddenly to diſſipate the corpuſcles of lime into their minuter particles.

Theſe phænomena, according to Mr. Boyle, ſeem to ſhew, that the diſpoſition which lime has to grow hot with water, greatly depends on ſome peculiar texture; ſince the aqueous parts, which one would think capable of quenching moſt of the fiery atoms ſuppoſed to adhere to quick-lime, did not near ſo much weaken the diſpoſition of it to *heat*, as that exceſs of the ſpirituous corpuſcles, and their contexture with thoſe of the lime, increaſed it.

Yet, in other places, this author appears rather to give into the corpuſcular ſcheme: urging, that if, inſtead of cold water, you quench the lime with *hot* water, the ebullition will be, oftentimes, far greater than if the liquor were cold; which, indeed, might well be expected, *hot* water being much fitter than cold, ſuddenly to pervade the body of the lime, and haſtily to diſſolve, and ſet at liberty, the fiery and ſaline parts wherewith it abounds. And what a greater intereſt ſalts may have in producing ſuch *heats*, than cold water, he has alſo tried, by pouring acid ſpirits, and particularly ſpirit of ſalt, upon good quick-lime: for, by this means, there was always a far greater degree of *heat* excited, than if he had uſed common water; and this, whether he employed the ſpirit cold or hot.

It is not eaſy, ſays the ſame author, to apprehend how ſuch light and minute bodies ſhould be ſo long detained, as muſt by this hypotheſis be allowed, in quick-lime eſpecially; ſince no great *heat* enſues the pouring of water upon minium, or *crocus martis per ſe*, though they have been calcined by a violent fire, the effluvia whereof ſeem to adhere to them, by the increaſe of the weight the lead and iron manifeſtly receive from the operation of it. *Mech. Orig. of Heat.*

Heat, in the animal œconomy, *natural* **Heat**, *vital* **Heat**. See *Innate* **Heat**.

Innate **Heat**, *calidum innatum*, is a term the antients had many vague notions about; but geometrical reaſoning has taught us to affix a more diſtinct idea hereto: for it is hence, ſays Dr. Quincy, we know, that this *innate heat* is no more than the attrition of the parts of the blood, occaſioned by its circulatory motion, eſpecially in the arteries; wherein, being propelled from a circular baſe, towards the apex of an hollow cone, with a force begun in the heart, it meets with a double reſiſtance; *viz.* againſt the ſides of the arteries, and againſt the preceding blood.

For whereas the blood contains in it parts that are fitted to excite *heat* whenever they can get at liberty; that is, if the parts incloſing them can be got aſunder; and whereas the parts incloſing ſuch corpuſcles cannot be got aſunder, unleſs by ſome niſus of the parts of the blood among one another, whereby the attrition and abraſion of the cohering particles is produced; it follows, that the *heat* will be ſo much the greater, by how much ſuch a niſus, and attrition of the parts among one another, is increaſed.

And with the ſame reſiſtances (that is, the ſections of the arteries, and the quantity of blood, remaining the ſame), and an increaſed force of the heart, and circular motion of the blood, the niſus and attrition of the parts of the blood amongſt one another, muſt neceſſarily be increaſed; both by the preceding blood being ſtruck harder upon by the protruſion of a ſucceeding blood coming on with an increaſed velocity; and the occaſioning thereby alſo more frequent ſtrokes againſt the ſides of the arteries; by which means, an increaſed velocity of blood increaſes the *heat*: and thus, conſequently, does its *heat* depend upon its circulation.

From hence it appears, that, at the ſame diſtances from the heart, the *heat* of equal quantities of blood will be as their velocities; and that, in the ſame velocities of blood, the *heat* will be reciprocally as the diſtances from the heart.—For ſince, in homogeneal and ſimple bodies, nothing elſe is required to diſengage the particles exciting *heat*, but a niſus and attrition of parts, produced by the force of the heart, to which is always proportional the velocity of the blood; and the reaction, or reſiſtance, of the arteries, and the antecedent blood; it follows, that if the reſiſtance, or reaction, is not altered, which it will not be at the ſame diſtance from the heart; then the *heat* of the blood will not be altered, unleſs by an alteration of the impetus, or velocity, impreſſed upon the blood from the heart: that is, as effects are proportional to their cauſes, the *heat* of the blood, at the ſame diſtances from the heart, will be proportional to its velocity.

In the ſame manner it appears, that if the velocities impreſſed by the heart be equal, there can be no change in the *heat* of the blood, but from a diverſified reſiſtance, or reaction, of the arteries and antecedent blood: but the reſiſtance of the preceding blood is proportional to its quantity, and its quantity is reciprocally proportional to the diſtance from the heart (for the nearer the blood is to the heart, ſo much the greater will be its quantity between any given place and the extremity of the artery); and therefore the reſiſtance of the arteries will alſo be ſo much the greater, by how much nearer they are to the heart: for, in this caſe, the reſiſtance is proportional to the velocity; and the velocity of the blood is always greateſt at the leaſt diſtances from the heart.

Hence the *heat* of the blood may be conſidered as a rectangle, under the velocity and the diſtance: that is, if in two perſons the velocity be as three, and the diſtances wherein we would determine the *heat* be as much more in one as in another; that is, as two to one; the *heat* of one will be ſix, and the other three: that is, the *heat* of the firſt will be double that of the ſecond: and if the diſtance of the firſt be as two, and the velocity as four; but the diſtance of the ſecond as three, and the velocity as one; the *heat* of the firſt will be as eight, and of the ſecond as three: and ſo the *heat* of the firſt will be more than double the *heat* of the ſecond.

Heat, in chemiſtry. See the article **Fire**.

Heat, in ſmithery, *&c.* See the article **Iron**.

Heat is alſo uſed, in reſpect of race-horſes, for the exerciſes to be given them by way of preparation, *&c.*

Two *heats* in a week are reckoned a juſt meaſure for any horſe, of what ſtate or conſtitution ſoever.—The jockeys lay it down as a rule, that one of the *heats* be given on the ſame day of the week whereon the horſe is to run his match; and this to be the ſharpeſt *heat*.

HEATHEN. See the article **Pagan**.

HEAVE, at ſea, ſignifies to throw away, or fling, any thing over-board.

When a ſhip, being at anchor, riſes and falls by the force of the waves, ſhe is alſo ſaid to *heave and ſet*.

To **Heave** *at the capſtan* ſignifies to turn it about. See **Capstan**.

To **Heave** *a flag abroad* is to hang it out. See **Flag**, and **Signal**.

To **Heave** *out the top-ſails* is to put them abroad.

Heave-Offerings, under the Jewiſh law, were things offered up to God by lifting them up on high.

HEAVEN, *cœlum*, an azure, tranſparent orb, inveſting our earth; wherein the celeſtial bodies perform their motions.

This is the popular notion of *heaven*; for the word, it muſt be obſerved, has various other ideas, in the language of philoſophers, divines, and aſtronomers: agreeable to which, we may lay down divers *heavens*; as the *higheſt*, or *empyrean heaven*; the *æthereal*, or *ſtarry heaven*; the *planetary heaven*, &c.

Heaven, among divines, called alſo the *empyrean heaven*, is the abode of God, and bleſſed ſpirits; as angels, and the ſouls of the righteous deceaſed.

In this ſenſe, *heaven* ſtands oppoſed to *hell*.

This is alſo frequently called, in Scripture, the *kingdom of heaven*, the *heaven of heavens*, and by St. Paul the *third heaven*; ſometimes *paradiſe*, the *new Jeruſalem*, &c.

This *heaven* is conceived as a place in ſome remote part of infinite ſpace, wherein the Deity is pleaſed to afford a nearer and more immediate view of himſelf, and a more ſenſible manifeſtation of his glory; and a more adequate perception of his attributes, than in the other parts of the univerſe, where he is likewiſe preſent.

This makes what the divines alſo call the *beatific viſion*.—Authors are much divided as to the reality of ſuch *local heaven*.

The inſpired writers give us very magnificent deſcriptions of *heaven*, the ſtructure, apparatus, and attendance thereof; particularly Iſaiah, and St. John the divine.—The philoſopher Plato, in his *Dial. de Anim.* ſpeaks of *heaven* in terms that bear ſo near a reſemblance to thoſe of Scripture, that Euſebius charges him with borrowing his account thence. *De Præpar. Evangel.* L. XI. c. 37.

The antient Romans had a kind of *heaven* in their ſyſtem of theology, which they called *elyſium*, or the *elyſian fields*.

The Mahometan *heaven*, or *paradiſe*, is very groſs, agreeable to the genius of their religion.

Heaven, among aſtronomers, called alſo the *æthereal* and *ſtarry heaven*, is that immenſe region wherein the ſtars, planets, and comets, are diſpoſed.

This is what Moſes calls the *firmament*, ſpeaking of it as the work of the ſecond day's creation; at leaſt it is thus the word רקיע is uſually rendered by his interpreters; though this ſomewhat abuſively, to countenance their own notion of the *heavens* being firm, or ſolid.—The word, it is certain, properly ſignifies no more than *expanſe*, or *extenſion*; a term very well adapted by the prophet to the impreſſion which the *heavens* make on our ſenſes: whence, in other parts of Scripture, the *heaven* is compared to a curtain, or a tent ſtretched out to dwell in.—The LXX firſt added to this idea of expanſion, that of *firm*, or *ſolid*; rendering it by ςερεωμα, according to the philoſophy of thoſe times; in which they have been followed by the modern tranſlators.

The later philoſophers, as Des Cartes, Kircher, *&c.* have eaſily demonſtrated this *heaven* not to be ſolid, but fluid; but they ſtill ſuppoſe it full, or perfectly denſe, without any vacuity, and cantoned out into many vortices.

But others carry the thing much farther, and overturn not only the ſolidity, but the ſuppoſed plenitude, of the *heavens*.—Sir Iſaac Newton has abundantly ſhewn the *heavens* void of almoſt all reſiſtance, and, conſequently, of almoſt all matter: this he proves from the phænomena of the celeſtial bodies; from the planets perſiſting in their motions without any ſenſible diminution of their velocity; and the comets freely paſſing in all directions towards all parts of the *heavens*.

Heaven, taken in this general ſenſe, for the whole expanſe between our earth and the remoteſt regions of the fixed ſtars, may be divided into two very unequal parts, according to the matter found therein; *viz.* the atmoſphere, or *aereal heaven*, poſſeſſed by air; and the *æthereal heaven*, poſſeſſed by a thin, unreſiſting medium, called *æther*.

Heaven is more particularly uſed, in aſtronomy, for an orb, or circular region, of the æthereal *heaven*.

The antient aſtronomers aſſumed as many different *heavens* as they obſerved different motions therein.—Theſe they ſuppoſed all to be ſolid, as thinking they could not otherwiſe ſuſtain the bodies fixed in them; and ſpherical, that being the moſt proper form for motion.

Thus we had ſeven *heavens* for the ſeven planets; *viz.* the *heavens* of the Moon, Mercury, Venus, the Sun, Mars, Jupiter, and Saturn.

The eighth was for the fixed ſtars, which they particularly called the *firmament*.

Ptolemy added a ninth *heaven*, which he called the *primum mobile*.

After him two *cryſtalline heavens* were added, by king Alphonſus, *&c.* to account for ſome irregularities in the motions of the other *heavens*: and, laſtly, an *empyrean heaven* was drawn over the whole, for the reſidence of the Deity; which made the number twelve.

The *cryſtalline heavens* were not ſuppoſed to have any ſtars fixed in them: they incompaſſed the inferior, ſtarry and planetary *heavens*, and communicated their motion to them.—The firſt ſerved to account for that ſlow motion of the fixed ſtars, whereby they advance a degree eaſtward in 70 years; whence the preceſſion of the equinox: the ſecond was to ſolve the motions of libration, or trepidation.

But others admitted many more *heavens*, according as their different views and hypotheſes required.—Eudoxus ſuppoſed 23, Calippus 30, Regiomontanus 33, Ariſtotle 47, and Fracaſtor no leſs than 70.

We may add, that the aſtronomers did not much concern themſelves whether the *heavens*, they thus allowed of, were real or not; provided they ſerved a purpoſe in accounting for any of the celeſtial motions, and agreed with the phænomena.

Among the other reveries of the rabbins, contained in the talmud, we find it aſſerted, that there is a place where the *heavens* and earth join together; that rabbi Barchana, going thither, laid his hat on the window of *heaven*; and that, going to take it again immediately after, it was gone; the *heavens* having carried it off: ſo that he muſt wait for a revolution of the orbs to bring it to its place again.

HEAVINESS. See Gravity.

For the laws of the deſcent of *heavy* bodies, ſee Descent.

Heavy bodies do not tend preciſely to the very centre of the earth, except at the poles, and the equator, by reaſon of the ſpheroidal figure of the earth.—Their direction is every-where perpendicular to the ſurface of the ſpheroid.

HEAULME, or **Heaume**, in heraldry, an helmet, or head-piece. See Helmet.

HEWING *of timber*. See the article Timber.

HEBBERMAN, in antient law-books, a poacher, or a fiſherman below London-bridge; thus called, becauſe he commonly fiſhes at ebb-water. See Ebb.

HEBBERTHEF, in antient cuſtoms, a privilege of having the goods of a thief, and the trial of him, within a particular diſtrict.

HEBDOMADARY*, **Hebdomadarius**, or **Hebdomadius**, a member of a chapter, or convent, whoſe week it is to officiate in the choir, to rehearſe the anthems and prayers, and to perform the uſual functions which the ſuperiors perform at ſolemn feaſts, and on other extraordinary occaſions.

* The word is formed of the Greek ἑϐδομας, which ſignifies the number ſeven; of ἑπτα, ſeven.

The *hebdomadary* generally collates to the benefices which become vacant during his week: though this is uſually looked on as an abuſe.

In cathedrals, the *hebdomadary* was a canon, or prebendary, who had the peculiar care of the choir, and the inſpection of the officers, for his week.

In monaſteries, the *hebdomadary* is he who waits at table for a week, or other ſtated period; directs and aſſiſts the cook, *&c.*

In church-antiquity, we meet with accounts of nine different ſorts of *hebdomadaries*; viz.—The *hebdomadarius cantor*, or *hebdomadary* chanter; *hebdomadarius chori*, *hebdomadary* of the choir; which two were really the ſame; *viz.* he who led or conducted the public ſervice: *hebdomadary* of the kitchen, *hebdomadarius coquinæ*; *hebdomadary* of the defunct, or the dead, *hebdomadarius defunctorum*, he who took care of the office and ſervice of the dead; *hebdomadarius invitatorii*, he who ſang the invitatory; *hebdomadarius lector ad menſam*, he who read at meal-time; *hebdomadarius majoris miſſæ*, he who read maſs; *hebdomadarius pſalterii*, who probably was the ſame with the *hebdomadarius chori*; and *hebdomadarius ſacri altaris*, who might be the ſame with *hebdomadary* of the high maſs.

HEBRAISM, an idiotiſm, or manner of ſpeaking, peculiar to the Hebrew tongue.

There is no underſtanding even the verſions of the Old Teſtament, without ſome acquaintance with the Hebrew; they are ſo full of *Hebraiſms*.

We have abundance of *Hebraiſms* borrowed from Scripture, and naturalized in our own language: as, *Son of perdition*; *To ſleep in the Lord*, &c.

HEBREW, ſomething relating to the people of the Jews, *i. e.* the twelve tribes, deſcended from the twelve patriarchs, ſons of Jacob. See Jews.—Thus we ſay,

Hebrew *bible*. See the article Bible.

Hebrew *character*.

There are two kinds of *Hebrew* characters: the *antient*, called alſo the *ſquare*; and the *modern*, or *rabbinical* characters.—The *ſquare Hebrew* takes its denomination from the figure of its characters, which ſtand more ſquare, and have their angles more exact and preciſe, than the other.

This character is uſed in the text of holy Scripture, and their other principal and moſt important writings.—When both this and the rabbinical character are uſed in the ſame work, the former is for the text, or the fundamental part; and the latter for the acceſſory part; as the gloſs, notes, commentaries, *&c.*

The beſt and beautifulleſt characters of this kind, are thoſe copied from the characters in the Spaniſh manuſcripts; next, thoſe from the Italian manuſcripts; then thoſe from the French; and laſtly, thoſe of the Germans, whoſe characters are much the ſame, with reſpect to the other genuine *ſquare Hebrew* characters, that the Gothic, or Dutch, characters are with reſpect to the Roman.

Several authors contend, that the *ſquare* character is not the real antient *Hebrew* character, written from the beginning of the language to the time of the Babyloniſh captivity; but that it is the Aſſyrian, or Chaldee character, which the Jews aſſumed, and accuſtomed themſelves to, during the captivity, and retained afterwards.—Theſe authors add, that what we call the *Samaritan* character, is the genuine antient *Hebrew*.

The learned Jeſuit Souciet maintains, with great addreſs, that the antient *Hebrew* character, is that found on the medals of Simon, and others, commonly called *Samaritan medals*; but which, he aſſerts, were really *Hebrew* medals, ſtruck by the Jews, and not by the Samaritans.

Modern, or *Rabbinical* HEBREW character, is a good neat character, formed of the *ſquare Hebrew* by rounding it, and retrenching moſt of the angles, or corners of the letters, to make it the more eaſy and flowing.—The letters uſed by the Germans, are very different from the *rabbinical* character uſed every-where elſe, though all formed alike from the ſquare character, but the German in a more ſlovenly manner than the reſt.

The Rabbins frequently make uſe either of their own, or the *ſquare Hebrew* character, to write the modern languages in.—There are even books in the vulgar tongues, printed in *Hebrew* characters; inſtances whereof are ſeen in the French king's library.

HEBREW *Language*, called alſo abſolutely HEBREW, is the language ſpoke by the *Hebrews*, and wherein all the books of the Old Teſtament are written; whence it is alſo called the *holy*, or *ſacred language*.

There is no piece, in all antiquity, written in pure *Hebrew*, beſide the books of the Old Teſtament; and even ſome parts of thoſe are in Chaldee.

The *Hebrew*, then, appears to be the moſt antient of all the languages in the world; at leaſt, it is ſo with regard to us, who know of no older. Some learned men will have it the language ſpoke by Adam in paradiſe; and that the ſaints will ſpeak it in heaven.

Alberti, in his *Hebrew Dictionary*, endeavours to find in each word, in its root, in its letters, and the manner of pronouncing it, ſome natural reaſon of the ſignification of that word. But he has carried matters too far; and it has been ſhewn, in the *Memoirs de Trevoux*, that, on his principles, words which ſignify quite different things, ſhould ſignify the ſame.

Neuman, and Loeſcher, have proſecuted Alberti's ſcheme further, and with more addreſs than he has done: the firſt, in his *Geneſis Linguæ Sanctæ*, and *Exodus Linguæ Sanctæ*; and the latter, in his treatiſe *de Cauſis Linguæ Hebrææ*.

Be that as it will, the *Hebrew*, ſuch as we have it in the holy Scripture, is a very regular, analogical language, and is particularly ſo in its conjugations. Properly ſpeaking, there is but one ſimple conjugation; but this is varied in each verb ſeven or eight different ways, which has the effect of ſo many different conjugations, and affords a great number of expreſſions, whereby to repreſent, under one ſingle word, all the different modifications of a verb; and ſeveral ideas at once; which in the modern, and moſt of the antient and learned languages, are expreſſible only by phraſes.

The original, or primitive words in this language, which they call *radices*, roots, rarely conſiſt of more than three letters, or of two ſyllables, which are expreſſed by two ſounds, or by the ſame ſound redoubled, which is indicated by a point.

There are twenty-two letters in the *Hebrew* language, which grammarians divide into *guttural*, *palatal*, *dental*, *labial*, and *lingual*.—This diviſion is taken from the ſeveral organs of ſpeech; ſome whereof contribute more than others to the pronunciation of certain letters.

Uſually, they only reckon five vowels in the *Hebrew*, which are the ſame with ours; *viz.* a, e, i, o, u; but then each vowel is divided into two, a long, and a breve, or ſhort: the ſound of the former is ſomewhat graver, and longer; and that of the latter ſhorter, and more acute.—It muſt be added, that the two laſt vowels have quite different ſounds; different, we mean, in other reſpects beſides quantity and degree of elevation.

To theſe ten or twelve vowels muſt be added ſome others called *ſemi-vowels*, which are only ſlight motions ſerving to connect the conſonants, and make the eaſier tranſitions from one to another.

The number of accents is prodigious in the *Hebrew*.—There are near forty different ones; and of theſe there are ſeveral whoſe uſe is not well aſcertained, notwithſtanding all the inquiries of the learned into that matter.

In the general, we know theſe three things: 1°, That they ſerve to diſtinguiſh the ſentences, and the members thereof, like the points and comma's, *&c.* in Engliſh. 2°, To determine the quantity of the ſyllables; and, 3°, To mark the tone wherewith they are to be ſpoke or ſung.

It is no wonder, then, that there ſhould be more accents in the *Hebrew* than in other languages; as they do the office of three different things, which, in other languages, are called by different names.

As we have no *Hebrew*, but what is contained in the Scriptures, that language to us wants a great many words; not only by reaſon, in thoſe primitive times, the languages were not ſo copious as at preſent, but alſo on this account, that the inſpired writers had no occaſion to mention many of the terms that might be in the language.

The Chaldee, Syriac, Ethiopic, *&c.* languages, are by ſome held to be only dialects of the *Hebrew*; as the French, Italian, Spaniſh, *&c.* are dialects of the Latin.

Rabbinical HEBREW, or *Modern* HEBREW, is the language uſed by the Rabbins, in the writings they have compoſed.

The baſis, or body hereof, is the *Hebrew* and Chaldee, with divers alterations in the words of thoſe two languages, the meanings whereof they have conſiderably enlarged and extended. Abundance of things they have borrowed from the Arabic.—The reſt is chiefly compoſed of words, and expreſſions, chieuy from the Greek; ſome from the Latin; and others, from the other modern tongues; particularly that ſpoken in the place where each Rabbin lived or wrote.

The *rabbinical Hebrew* muſt be allowed a very copious language.—M. Simon, in his *Hiſt. Crit. du Vieux Teſtam.* L. III. c. 27. obſerves, that there is ſcarce any art, or ſcience, but the Rabbins have treated thereof in it. They have tranſlated moſt of the antient philoſophers, mathematicians, aſtronomers, and phyſicians; and have wrote themſelves on moſt ſubjects: they do not want even orators and poets. Add, that this language, notwithſtanding it is ſo crowded with foreign words, has its beauties viſible enough in the works of thoſe who have written well in it.

M. Simon ſays, it is impoſſible to reduce it into an art, or ſyſtem of rules; but ſeveral learned men are of another ſentiment; and it not only appears poſſible, but has actually been performed. Genebrard firſt attempted it in his *Iſagoge Rabbinica*, which yet goes no further than to the learning to read it. Buxtorf ſeconded him, at the end of his *Hebrew Grammar*; where we have an additional piece, under the title *Lectionis Hebræo-Germanicæ uſus & exercitatio.* Others have gone yet further: Maius has lately given us a Rabbinical grammar, at Gieſſen, under the title of *Johannis Maii Grammatica Rabbinica:* and before him Sennert had done the ſame; *Rabbiniſmus*, h. e. *Præcepta Targumico-Talmudico-Rabbinica.* Wirtemb. *an.* 1666.

HECATOMB*, HECATOMBE, in antiquity, a ſacrifice of a hundred beaſts of the ſame kind, at a hundred altars, and performed by a hundred prieſts, or ſacrificers.

* The word is formed of the Greek ἑκατομϐη, which properly ſignifies a ſumptuous, or magnificent ſacrifice.—Others derive it from the Greek ἑκατον, *centum*, a hundred, and βȣς, *bos*, bullock, *&c.* On which footing the *hecatomb* ſhould be a ſacrifice of a hundred bullocks.—Others derive the word from ἑκατον, and πȣς, *pes*, foot; and on that principle hold, that the *hecatomb* might conſiſt of only twenty-five four-footed beaſts. They add, that it did not matter what kind of beaſts were choſe for victims, provided the quota of feet were but had.

Pythagoras is ſaid to have ſacrificed a *hecatomb* to the muſes, of a hundred oxen, in joy and gratitude for his diſcovering the demonſtration of the 47th propoſition of the firſt book of Euclid, *viz.* that in a rectangled triangle, the ſquare of the hypothenuſe is equal to the ſquares of the two other ſides.

For the origin of *hecatombs.*—Strabo relates, that there were a hundred cities in Laconia; and that each city uſed to ſacrifice a bullock every year, for the common ſafety of the country; whence the inſtitution of the celebrated ſacrifice of a hundred victims, called *hecatombs*. Others refer the origin of *hecatombs* to a plague; wherewith the hundred cities of Peloponneſus were afflicted; for the removal whereof, they jointly contributed to ſo ſplendid a ſacrifice.

Julius Capitolinus relates, that for a *hecatomb* they erected a hundred altars of turf, and on theſe ſacrificed a hundred ſheep, and a hundred hogs. He adds, that when the emperors offered ſacrifices of this kind, they ſacrificed a hundred lions, a hundred eagles, and a hundred other beaſts of the like kind.

HECATOMPHONIA*, 'EKATOMPHONIA, an antient ſacrifice among the Meſſenians; offered by ſuch as had ſlain a hundred enemies in battle.

* The word comes from ἑκατον, an hundred, an φονευω, to kill.

HECK, among huſbandmen, a rack, at which horſes are fed with hay.

It is alſo uſed as the name of an engine, wherewithal to take fiſh in the river Ouſe.—A ſalmon *heck* is a grate for the catching that ſort of fiſh. See *Salmon* FISHING.

Hence alſo HECKAGIUM, or HECCAGIUM, which occurs in antient records, for a rent paid the lord for the liberty to uſe ſuch engines.

HECKLING *of Hemp*. See the article HEMP.

HECTIC *, or HECTIC FEVER, in medicine, a ſort of ſlow habitual fever, ſeated in the ſolids, and gradually preying on and conſuming the ſubſtance thereof.

* The word is Greek ἑκτικὸς, formed of ἕξις, *habitus*, a quality hard to ſeparate from its ſubject.

A *hectic* is an uſual attendant of a conſumption; and is reputed one of the diagnoſtic ſigns thereof.

The *hectic*, according to Dr. Quincy, is the reverſe of thoſe fevers which ariſe from a plethora, or too great a fulneſs. This being attended with too lax a ſtate of the excretory paſſages, and particularly of thoſe of the ſkin, whereby ſo much runs off, as leaves not reſiſtance enough in the contractile veſſels, to keep them ſufficiently diſtended; ſo that they vibrate oftener, agitate the fluids more, and keep them thin and hot.

The remedy conſiſts in giving a firmer tone to the ſolids, and laying more load upon the fluids, and thus bringing them to a better conſiſtence; which is effected by means of balſamics, agglutinants, and foods of the beſt nouriſhment.—All evacuation herein is bad.

A milk diet is much recommended in *hectics*, and particularly aſſes milk, as being the leaſt viſcid and heavy of any kind. Dr. Baynard propoſes butter-milk as a ſuccedaneum to aſſes milk. According to him, it anſwers moſt of the indications in this caſe, as it cools, moiſtens, nouriſhes, &c. He adds, that he has known many perſons cured of obſtinate *hectics*, only by a continued uſe thereof.

HEDAGIUM *, antiently ſignified a toll, or cuſtom, paid at the hyth, or wharf, &c. for landing merchandize, goods, &c.

* The word is formed from *heda*, a hyth, port, or wharf.

From ſuch toll, or cuſtomary duty, exemptions were ſometimes granted by the ſovereign to particular perſons, and ſocieties.

HEDGE *, in agriculture, &c. a fence, incloſing a field, garden, or the like; made of branches of trees interwoven.

* The word is formed of the German *hag*, or *haeg*, or the Anglo-Saxon *hegge*, or *hege*; which ſignifies ſimply incloſure, circumference.

Quickſet-HEDGE, is that made of quick or live trees, which have taken root; in contradiſtinction to that made of faggots, hurdles, or dry boughs, &c.

To plant a *quick hedge* of thorn, or the like, Mortimer directs, that the ſets be about as big as the thumb, and cut within four or five inches of the ground; that if the *hedge* have a ditch, it be three feet wide atop, and one at bottom, and two deep: that if the *hedge* be without a bank or ditch, the ſets be in two rows, almoſt perpendicular, and at a foot diſtance; that the turf be laid with the graſs ſide downwards: that at every thirty feet diſtance, a young oak, elm, crab, or the like, be placed: that ſtakes be driven into the looſe earth, at about two feet and a half diſtance, ſo low as to reach the firm ground.

When the *hedge* is of eight or nine years growth, it may be ſplaſhed or laid down; by giving the ſhoots, or branches, a cut with a knife, or bill, half through; and then weaving them about the ſtakes, and trimming off the ſmall ſuperfluous branches.

Inſtead of building a garden-wall facing the north-eaſt, Mr. Lawrance adviſes, that to ſave charge, &c. a crab-tree *hedge* of three rows be planted; which will be a good mound, and quickly grow up to be a better fence than a wall againſt the weſt and ſouth-weſt winds, which make the greateſt deſtruction in a garden, and which blow two parts in three of the whole year; beſide the ſtock of fruit ſuch a *hedge*, grafted with red-ſtreak, or gennet-moyl, will yield.

Eſpalier HEDGES. See the article ESPALIER.

Tranſplanting of HEDGE-ROWS. See TRANSPLANTING.

HEEL, in anatomy, the hind part of the foot. See FOOT.

In winter, the *heels* are liable to a kind of chilblains, called *kibes*, which ſometimes tend to mortification.

The bone of the *heel* is called *calcaneum*. See the article CALCANEUM.

HEEL *of a horſe*, is the loweſt hind part of the foot, comprehended between the quarters, and oppoſite to the toe.

The *heel* ſhould be high and large, and one ſide not riſe higher on the paſtern than the other.—The diſtempers incident to this part, are ſcabbineſs and ſcratches. See SCRATCHES.

Some narrow-*heeled* horſes have high *heels*, but ſo weak and tender, that by preſſing the two ſides of the *heel* one againſt another, they will ſenſibly yield. See HOOF.

To open the HEELS, is to pare the foot, and cut the *heel* low, almoſt cloſe to the fruſh; taking it down within a finger's breadth of the coronet, or top of the hoof, ſo as to ſeparate the quarters, and by that means weaken and take away the ſubſtance of the foot, and make it cloſe, and become narrow at the *heels*.

The HEEL *of the horſeman*, being the part which is armed with a ſpur, the word is uſed for the ſpur itſelf: as, this horſe underſtands the *heels* well.

To ride a horſe from one HEEL *to another*, is to make him go ſideways, ſometimes towards one *heel*, and ſometimes another.

HEEL, in the ſea-language.—If a ſhip lean on one ſide, whether aground or afloat, they ſay ſhe *heels* a-ſtar board, or a-port; or ſhe *heels* off-ward, or to the ſhore; that is, ſhe inclines more to one ſide than to the other.

HEEL *of a maſt*, is that part of the foot thereof, which is pared away ſlanting, that the maſt may be ſtayed aftward on it. See MAST.

HEELER, or *Bloody*-HEEL *Cock*, is a fighting cock which ſtrikes, or wounds much with his ſpurs.

The maſters know ſuch a cock, even while a chicken, by the ſtriking of his two *heels* together in his going.

HEGIRA *, in chronology, a celebrated epocha, uſed by the Arabs and Mahometans, for the computation of time.

* The word is Arabic, formed of הגרה, *hagirah*, flight; of הגר, to fly, quit one's country, family, friends, &c.

The event which gave occaſion to this epocha, was Mahomet's flight from Mecca.—The magiſtrates of that city fearing his impoſtures might raiſe a ſedition, reſolved to expel him: this, accordingly, they effected in the year of our Lord 622. on the evening of the 15th or 16th of July.

To render this epocha more creditable, the Mahometans affect to uſe the word *hegira* in a peculiar ſenſe, for an act of religion, whereby a man forſakes his country, and gives way to the violence of perſecutors and enemies of the faith: they add, that the Coraſhites being then the ſtrongeſt party in the city, obliged their prophet to fly, as not being able to endure his aboliſhing of idolatry.

This flight was not the firſt of Mahomet's, but it was the moſt famous. It happened in the 14th year from his aſſuming the character of prophet and apoſtle, and promulgating his new religion.

The Orientals do not agree with us, as to the time of the *hegira*. Among the Mahometans, Amaſſi fixes it to the year of Chriſt 630. and from the death of Moſes, 2347. and Ben Caſſem, to the year of the world 5800. according to the Greek computation. Among the Chriſtians, Said Ebn Batrik refers the *hegira* to the year of Chriſt 614. and of the creation 6114.

Khondemir relates, that it was Omar, the ſecond caliph, that firſt eſtabliſhed the *hegira* as an epocha, and appointed the years to be numbered from it: at the time he made this decree, there were already ſeven years elapſed. This eſtabliſhment was made in imitation of the Chriſtians; who, in thoſe times, reckoned their years from the perſecution of Diocleſian.

But there is another *hegira*, and the earlier too, though of leſs eminence.—Mahomet, in the 14th year of his miſſion, was obliged to relinquiſh Medina: the Coraſhites had all along oppoſed him very vigorouſly, as an innovator, and diſturber of the public peace; and many of his diſciples, not enduring to be reputed followers of an impoſtor, deſired leave of him to abandon the city, for fear of being obliged to renounce their religion. This retreat makes the firſt *hegira*.—Theſe two *hegira's* the Mahometans, in their language, call *hegiratan*.

The years of the *hegira* conſiſt only of 354 days. To reduce theſe years to the Julian calendar, *i. e.* to find what Julian year a given year of the *hegira* anſwers to, reduce the year of the *hegira* given, into days, by multiplying by 354. divide the product by 365, and from the quotient ſubtract the intercalations, *i. e.* as many days as there are four years in the quotient; and, laſtly, to the remainder add 622. See YEAR.

HEIGHTH, the third dimenſion of a body, conſidered with regard to its elevation above the ground. See DIMENSION.

HEIGHTH, in aſtronomy, geography, &c. See ALTITUDE, and ELEVATION.

HEIGHTH, in the manage, &c. the ſtature of a horſe, &c.

It is a reputed imperfection in a horſe, when ſet too *high* on his legs, *i. e.* when the legs are too long in proportion to the body.

Some jockeys have determined a meaſure for them thus: Take a ſtring, and meaſure from the horſe's withers to his elbow; and what length that is, the ſame ſhould he have betwixt the elbow and the lower part of the heels.—Some meaſure their colts after this manner at a year old; being of opinion, that the legs of a colt at this age are as long as they ever will be.

The duke of Newcaſtle, and Sir W. Hope, allow this to hold generally, but not univerſally.

HEIGHTHS, in the military art, are the eminencies round a fortified place, whereon the armies uſually poſt themſelves.—The enemy had ſeized all the *heighths*; appeared on the *heighths*, &c.

HEIR *, Hæres, in the civil law, he who ſucceeds to the whole eſtate and effects of another, whether by right of blood, or of teſtament.

* The word is formed of the Latin *hæres*, of the verb *hærere*, to ſtick, remain faſt, be near, follow immediately, *&c.*

The inſtitution of an *heir*, is a circumſtance neceſſary to the validity of a teſtament.

There are two principal kinds of *heirs*, the *apparent* and *preſumptive.*

Heir *apparent* is he on whom the ſucceſſion is ſo ſettled, that he cannot be ſet aſide, without altering the laws of ſucceſſion.

Heir *preſumptive.* See the article Presumptive *heir.*

Heir, in common law, is he who ſucceeds, by right of blood, to any man's lands, or tenements in fee.

For, nothing paſſes in common law, *jure hæreditatis*, by right of inheritance, but fee.

By common law, therefore, a man cannot be *heir* to goods or chattels; for, *hæres dicitur ab hæreditate*; it is the inheritance denominates the *heir.*

Every *heir*, having lands by deſcent, is bound by the acts of his anceſtors, if he be named; it being a maxim, that *qui ſentit commodum, ſentire debet & onus.*

Moveables, or chattels immoveable, are given by teſtament, to whom the teſtator thinketh fit; otherwiſe they lie at the diſpoſition of the ordinary, to be diſtributed as he in conſcience likes beſt.

Laſt Heir. See the article Last *heir.*

Heir-loom *, in our law-books, ſignifies ſuch houſhold furniture, as is not inventoried after the owner's deceaſe; but neceſſarily comes to the heir along with the houſe. See Heir.

* *Conſuetudo hundredi de Stretford, in com. Oxon. eſt quod hæredes tenementorum infra hundredum prædict. exiſten. poſt mortem anteceſſorum ſuorum habebunt,* &c. *principalium, Anglice* an heir-loome, *viz. de quodam genere catallorum, utenſilium,* &c. *optimum plauſtrum, optimam carucam, optimum ciphum,* &c. Coke on Littleton.

Heir-loom comprehends divers implements; as tables, preſſes, cupboards, bedſteads, furnaces, wainſcot, and ſuch-like; which, in ſome countries, have belonged to a houſe for certain deſcents, and are never inventoried after the deceaſe of the owner, as chattels are; but accrue by cuſtom, not by common law, to the *heir*, with the houſe itſelf.

HELCESAITES, or Elcesaites. See Elcesaites.

HELEPOLIS *, in antiquity, a military machine for battering down the walls of a place beſieged.

* The word is Greek, ἑλεπολις; compounded of the words ἑλειν, to take; and πολις, a city.

The *helepolis*, as deſcribed by Diodorus Siculus, *&c.* appears to have been no more than the aries, or battering ram, with a roof, or covering over it, to prevent its being ſet on fire, as alſo to ſcreen the men who worked it. See Aries.

Some will have it a combination of two or three battering rams, moving on large ſtrong wheels, roofed over, and covered with raw or wet ſkins. It had ſeveral iron points, or heads, wherewith the execution was done; formed much like the thunderbolts which painters repreſent. Within was a great number of ſoldiers, who drove it with force of arm, and by means of ropes, violently againſt the wall where the breach was intended.

Others will have *helepolis* a generical name, comprehending all the machines uſed by the antients in beſieging towns; as, among us, the name *artillery* includes all the ſorts of large fire-arms.—But this opinion is chiefly founded on the origin of the name, and does by no means ſuit with thoſe minute deſcriptions given of the *helepolis* in the antient writers.

The invention of the *helepolis*, and divers other military machines, is aſcribed to Demetrius; which, with the great number of cities he took thereby, gave him the denomination of *Poliorcetes*, or city-taker.

HELIACA *, in antiquity, ſacrifices, and other ſolemnities, performed in honour of the ſun.

* The word is formed from the Greek ἥλιος, ſun.

HELIACAL *, in aſtronomy.—Heliacal *riſing* of a ſtar, planet, *&c.* is its iſſuing or emerging out of the rays and luſtre of the ſun, wherein it was before hid: whether this be owing to the receſs of the ſun from the ſtar, or that of the ſtar from the ſun.

* The word is derived from the Greek, ἥλιος, *ſol*, ſun.

Heliacal *ſetting*, is a ſtar's entering or immerging into the ſun's rays, and ſo becoming inconſpicuous by the ſuperior light of that luminary.

A ſtar riſes *heliacally*, when, after it has been in conjunction with the ſun, and on that account inviſible, it gets at ſuch a diſtance from him, as to be ſeen in the morning before the ſun's riſing.

The ſame is ſaid to ſet *heliacally*, when it approaches ſo near the ſun, as to be hid therein. So that, in ſtrictneſs, the *heliacal* riſing and ſetting are, only an apparition and occultation.

The *heliacal* riſing of the moon happens when ſhe arrives at the diſtance of 17 degrees from the ſun; for the other planets, 20 degrees diſtance is required: and for the ſtars more or leſs, as they are greater or ſmaller.

To find the Heliacal *riſing and ſetting by the globe.* See Globe.

The antients computed that a ſtar, between the tropics, would be forty days ere it got clear of the ſun's rays, and became conſpicuous again. Heſiod firſt made this computation; and the reſt followed him. The period comes very near to the computation of the moderns: for the ſun advancing nearly a degree every day, it will be 20 days approaching thereto, from the *heliacal* ſetting of the ſtar; and thirty days more withdrawing, till the *heliacal* riſing.

HELIASTES *, in antiquity, officers, or magiſtrates of Athens, who conſtituted a court of 500 perſons, and were judges, for taking cognizance of civil matters.

* Ulpian gives us two etymologies of the word; ſome, ſays he, derive it from ἥλιος, *helios*, ſun; and hold it thus called, by reaſon they ſat in the open air, in ſight of the ſun. Ulpian himſelf chooſes rather to derive *heliaſtes* from Ἡλιαια, *Hæliæa*, the place where this court or council was held; and that from ἁλιζω, I aſſemble; of ἁλις, *ſatis*, enough.

The court of *heliaſtes* was one of the ſix civil juriſdictions of Athens, and that before which matters of the greateſt moment were uſually brought: ſo that it was held the firſt and moſt conſiderable of all the civil tribunals. The delinquencies of the military men were alſo brought before the *heliaſtes.*

HELICE, ἙΛΙΚΗ, in aſtronomy, the ſame with *urſa major.* See Ursa.

HELICOID *parabola*, or the *parabolic ſpiral*, a curve ariſing upon a ſuppoſition of the axis of the common Apollonian parabola's being bent round into the periphery of a circle. See Parabola.

The *helicoid parabola*, then, is a line paſſing through the extremities of the ordinate, which now converge towards the centre of the ſaid circle.

Suppoſe, *e. gr.* the axis of the common parabola to be bent into the periphery of the circle BDM (See *Tab. Conics, Fig.* 11.); then the curve BFGNA, which paſſes through the extremities of the ordinates CF, and DG, which converge toward the centre of the circle A, conſtitutes what we call the *helicoid*, or ſpiral parabola.

If the arch BC, as an abſciſs, be called x, and the part CF of the radius, as an ordinate to it, be called y; the nature of this curve will be expreſſed by the equation $lx = yy$. See Curve, and Equation.

HELIOCENTRIC * *place*, of a planet, is the place wherein the planet would appear to be, if viewed from the centre of the ſun: or the point of the ecliptic, wherein a planet viewed from the ſun would appear to be.

* The word is compounded of ἥλιος, ſun; and κεντρον, centre.

The *heliocentric place*, therefore, coincides with the longitude of a planet viewed from the ſun.

Heliocentric *latitude of a planet*, is the inclination of the line drawn between the centre of the ſun, and the centre of a planet, to the plane of the ecliptic.

The *heliocentric latitude* of a planet is thus determined.—If the circle KLM (See *Tab. Aſtron. Fig.* 62.) repreſent the orbit of the earth round the ſun, and the inner one ANBn, be placed ſo as to be inclined to the plane of the other (for which reaſon it appears in the form of an ellipſis), when the planet is in N or n (which points are called its *nodes*), it will appear in the ecliptic, and ſo have no latitude; if it move to P, then, being ſeen by the ſun, it will appear to decline from the ecliptic, or to have latitude; and the inclination of the line RP, to the plane of the ecliptic, is called the planet's *heliocentric latitude*; and the meaſure of it is the angle PRq, ſuppoſing the line Pq to be perpendicular to the plane of the ecliptic.

This *heliocentric latitude* will be continually increaſing, till it come to the point A, which they call the *limit*, or utmoſt extent of it; and then it will decreaſe again, till it come to nothing in N; after which it will increaſe again, till it come to B; and laſtly, it will be decreaſing again, till the planet come to be in n, *&c.*

HELIOCOMETES, *comet of the ſun*; a phænomenon ſometimes obſerved at the ſetting of the ſun; thus denominated by Sturmius and Pylen, who had ſeen it, in regard it ſeems to make a comet of the ſun, being a large tail, or column of light, fixed or hung to that luminary, and dragging after it at his ſetting, much in the manner of a tail of a comet. In that obſerved by M. Pylen at Grypſwald, March 15. 1702. at five of the clock in the afternoon, the end which touched the ſun was only half the ſun's diameter broad; but the other end, oppoſite to the ſun, was much broader. Its length was above ten diameters of the ſun; and it moved in the ſame track as the ſun. Its colour was yellow next the ſun, and darker farther off. It was only ſeen painted on the thinner, higher clouds: a little teleſcope eaſily diſcovered, that there was nothing of it on the thicker, and lower clouds; though the naked eye could not diſcover ſo much. It laſted, in its full vigour, the ſpace of an hour, and then gradually diminiſhed.

HELIOSCOPE *, in optics, a ſort of teleſcope, peculiarly fitted for viewing and obſerving the ſun, without doing prejudice to the eye.

* The word is compounded of ἥλιος, the ſun; and σκεπτομαι, *video, ſpecto,* I ſee, view, conſider.

Helioſcopes are neceſſary in viewing the phænomena of the ſun, as his ſpots, eclipſes, *&c.*

There are various apparatus's of this kind.—As coloured glaſſes are found to diminiſh the force of the ſun's rays; to make a *helioſcope*, it is enough that both the object-glaſs, and the eye-glaſs of the teleſcope, be of coloured glaſs; the firſt, *e. g.* of red, and the latter green.

But, as there is a neceſſity for the glaſſes to be very tranſparent, and equally coloured, which rarely happens; Hevelius chooſes rather to uſe two plain coloured glaſſes, with a piece of paper between, either tied or cemented together, and applied before the eye-glaſs.

Dr. Hooke, in an expreſs treatiſe on *helioſcopes*, recommends four reflecting glaſſes placed in the tube: by theſe, he obſerves, the force of the rays will be ſo weakened, as only to ſtrike the eye with a 256th part of their force: and this *helioſcope* he prefers to all others.

M. Huygens's method is much eaſier. :—He only blackens the inſide of the eye-glaſs of the teleſcope, by holding it over the flame, or ſmoke of a lamp or candle: or, which is yet more commodious, blackens a piece of plain glaſs, and holds it between the eye and the object-glaſs: or, which is beſt of all, claps the ſmoked glaſs to another, with a rim of thick paper between, to keep the black from rubbing off; and fits the two into a cell, or frame, to be applied between the eye and the eye-glaſs.

HELIOTROPE *, ῾ΗΛΙΟΤΡΟΠΙΟΝ, in natural hiſtory, the plant ſun flower, or turnſole; ſo called, by reaſon its flowers always turn towards the ſun. See Turnsole.

* The word is compounded of the Greek, ἥλιος, ſun; and τρεπω, *verto,* I turn. See Supplement, article Heliotropium.

Heliotrope is alſo a precious ſtone, of a green colour, ſtreaked with red veins.

Pliny ſays, it is thus called by reaſon, when caſt into a veſſel of water, the ſun's rays, falling thereon, ſeem to be of a blood colour; and that, when out of the water, it gives a faint reflexion of the figure of the ſun; and is proper to obſerve eclipſes of the ſun withal, as a helioſcope.

The *heliotrope* is alſo called *oriental jaſper*, on account of its ruddy ſpots.

It is found in the Eaſt-Indies; as alſo in Ethiopia, Germany, Bohemia, *&c.* Some have aſcribed to it the faculty of rendering people inviſible, like Gyges's ring. See Supplement, articles Bloodstone, and Heliotrope.

HELISPHERICAL LINE, in navigation, denotes the rhumb line. See Rhumb Line.

It is thus called, becauſe, on the globe, it winds round the pole helically, *i. e.* ſpirally, and ſtill comes nearer and nearer to it.

HELIX *, in geometry, a ſpiral line. See Spiral.

* The word is Greek, ἑλιξ, and literally ſignifies *a wreath*, or *winding*; of ἑλισσω, *involvo,* I environ.

In architecture, ſome authors make a difference between the *helix* and the ſpiral.

A ſtair-caſe, according to Daviler, is in a *helix*, or is *helical*, when the ſtairs or ſteps wind round a cylindrical newel; whereas the ſpiral winds round a cone, and is continually approaching nearer and nearer its axis.

Helix is alſo applied, in architecture, to the caulicoles, or little volutes, under the flowers of the Corinthian capital; called alſo *urillæ.*—See *Tab. Archit. Fig.* 26. *lit.* D; ſee alſo Caulicoles.

Helix, in anatomy, is the whole circuit or extent of the auricle, outwards.

In oppoſition to which, the inner protuberance anſwering thereto is called *anthelix.* See Ear.

HELL, a place of puniſhment, wherein the wicked are to receive the reward of their evil deeds, after this life.

In this ſenſe, *hell* ſtands oppoſed to *heaven.* See Heaven.

Among the antients, *hell* was called Ταρταρος, Ταρταρα, *Tartarus, Tartara*; ᾍδης, *Hades, Infernus, Inferna, Inferi,* &c. —The Jews, wanting a proper name for it, called it *Gehenna*, or *Gehinnon*, from a valley near Jeruſalem, wherein was a Tophet, or place where a fire was perpetually kept.

Divines reduce the torments of *hell* to two kinds, *pœna damni*, the loſs and privation of the beatific viſion; and *pœna ſenſus*, the horrors of darkneſs, with the continual pains of fire inextinguiſhable.

Moſt nations and religions have their notions of a *hell.*—The *hell* of the poets is terrible enough: witneſs the puniſhment of Tityus, Prometheus, the Danaids, Lapithæ, Phlegyas, *&c.* deſcribed by Ovid in his *Metamorphoſis*—Virgil, after a ſurvey of *hell*, *Æneid.* Lib. VI. declares, that had he a hundred mouths and tongues, they would not ſuffice to recount all the plagues of the tortured.—The New Teſtament repreſents *hell* as *a lake of fire and brimſtone*; and *a worm which dies not*, &c. Rev. xx. 10, 14, *&c.* Mark ix. 43, *&c.* Luke xvi. 23, *&c.* The Caffres are ſaid to admit thirteen *hells*, and twenty-ſeven paradiſes; where every perſon finds a place of recompence ſuited to the degree of good or evil he has done.

There are two great points of controverſy among writers touching *hell:* the firſt, whether there really be any local *hell*, any proper and ſpecific place of torment by fire? the ſecond, whether the torments of *hell* are to be eternal?

I. The locality of *hell*, and the reality of the fire thereof, have been controverted from the time of Origen.—That father, in his treatiſe Περι Αρχων, interpreting the ſcripture account metaphorically, makes *hell* to conſiſt not in external puniſhments, but in the conſcience of ſinners, the ſenſe of their guilt, and the remembrance of their paſt pleaſures.—S. Auguſtine mentions ſeveral of the ſame opinion in his time; and Calvin, and many of his followers, have embraced it in ours.

The retainers to the contrary opinion, who are much the greateſt part of mankind, are divided as to the ſituation, and other circumſtances of this horrible ſcene.—The Greeks, after Homer, Heſiod, *&c.* conceived *hell*, Τοπον τινα ὑπο την γην μεγαν, *&c.* a large and dark place under the earth. Lucian, *De luctu*; and Euſtathius, *on Homer.*

Some of the Romans lodged it in the ſubterranean regions directly under the lake Avernus, in Campania; which they were led to from the conſideration of the poiſonous vapours emitted by that lake.—Through a dark cave near this lake, Virgil makes Æneas deſcend to *hell.* See Avernus.

Others placed *hell* under Tenarus, a promontory of Laconia; as being a dark frightful place, beſet with thick woods, out of which there was no finding a paſſage. This way, Ovid ſays, Orpheus deſcended to *hell.* Others fanſied the river, or fountain of Styx, in Arcadia, the ſpring-head of *hell*, by reaſon the waters thereof were mortal.

But theſe are all to be conſidered as only fables of poets; who, according to the genius of their art, allegorizing and perſonifying every thing, from the certain death met withal in thoſe places, took occaſion to repreſent them as ſo many gates, or entering-places, into the other world.

The primitive Chriſtians, conceiving the earth a large extended plain, and the heavens an arch drawn over the ſame, took *hell* to be a place in the earth, the furtheſt diſtant from the heavens; ſo that their *hell* was our antipodes.

Tertullian, *De anima*, repreſents the Chriſtians of his time, as believing *hell* to be an abyſs in the centre of the earth: which opinion was chiefly founded on the belief of Chriſt's deſcent into hades, *hell*, Matt. xii. 40. See the following article, Hell.

Mr. Whiſton has lately advanced a new opinion.—According to him, the comets are to be conceived as ſo many *hells*, appointed, in the courſe of their trajectories, or orbits, alternately to carry the damned into the confines of the ſun, there to be ſcorched by his flames; and then to return them to ſtarve in the cold, dreary, dark regions, beyond the orb of Saturn.

The reverend and orthodox Mr. T. Swinden, in an expreſs *Inquiry into the nature and place of Hell*, not contented with any of the places hitherto aſſigned; contends for a new one.—According to him, the ſun itſelf is the *local hell.*

This does not ſeem to be his own diſcovery:—It is probable he was led into the opinion by that paſſage in Rev. xvi. 8, 9.—Though it muſt be added, that Pythagoras ſeems to have had the like view, in that he places *hell* in the ſphere of fire; and that ſphere in the middle of the univerſe.—Add, that Ariſtotle mentions ſome of the Italic, or Pythagoric ſchool, who placed the ſphere of fire in the ſun, and even called it Jupiter's priſon. *De Cœlo*, L. II.

To make way for his own ſyſtem, Mr. Swinden undertakes to remove *hell* out of the centre of the earth, from theſe two conſiderations:—1°, That a fund of fuel or ſulphur, ſufficient to maintain ſo furious and conſtant a fire, cannot be there ſuppoſed: and, 2°, That it muſt want the nitrous particles in the air, to ſuſtain and keep it alive.—And how, ſays he, can ſuch fire be eternal, when by degrees the whole ſubſtance of the earth muſt be conſumed thereby?

It muſt not be forgot, however, that Tertullian had long ago obviated the former of theſe difficulties, by making a difference between *arcanus*, and *publicus ignis*, ſecret and open fire: the nature of the firſt, according to him, is ſuch, as that it not only conſumes, but repairs, what it preys upon.—The latter difficulty is ſolved by St. Auguſtine, who alleges, that God ſupplies the central fire with air, by a miracle.

Mr. Swinden, however, proceeds to ſhew, that the central parts of the earth are poſſeſſed by water rather than fire; which he confirms by what Moſes ſays of *water under the earth*, Exod. xx. from Pſalm xxiv. 2. &c.

As a further proof, he alleges, that there would want room in the centre of the earth, for ſuch an infinite hoſt of inhabitants, as the fallen angels, and wicked men.

Drexelius, we know, has fixed the dimenſions of *hell* to a

German cubic mile, and the number of the damned to an hundred thouſand millions: *De Damnator. Carcer. & Rogo.* But Mr. Swinden thinks he needed not have been ſo ſparing in his number, for that there might be found an hundred times as many; and that they muſt neceſſarily be inſufferably crouded in any ſpace we could allow them in our earth.—It is impoſſible, he concludes, to ſtow ſuch a multitude of ſpirits in ſuch a ſcanty apartment, without a penetration of dimenſions, which, he doubts, is not good philoſophy, even in reſpect of ſpirits: "If it be (he adds), he does not ſee "why God ſhould prepare, *i. e.* make a priſon for them, "when they might have been all crouded together into a "baker's oven," *p.* 206.

His arguments for the ſun's being the *local hell* are,

1°, Its capacity.—Nobody will deny the ſun ſpacious enough to receive all the damned conveniently; ſo that there will be no want of room. Nor will fire be wanting, if we admit of Mr. Swinden's argument againſt Ariſtotle, whereby he demonſtrates, that the ſun is hot, *p.* 208, and *ſeq.*—The good man is "filled with amazement to think what Pyrenean "mountains of ſulphur, how many Atlantic oceans of "ſcalding bitumen, muſt go to maintain ſuch mighty flames "as thoſe of the ſun: to which our Ætna and Veſuvius are "mere glow-worms," *p.* 137.

2°, Its diſtance and oppoſition to the empyreum, which has uſually been looked upon as the local heaven: ſuch oppoſition is perfectly anſwerable to that oppoſition in the nature and office of a place of angels and devils, of elect and reprobate, of glory and horror, of hallelujahs and curſings: and the diſtance quadrates well with Dives ſeeing Abraham *afar off, and the great gulph between them*; which this author takes to be the ſolar vortex.

3°, That the empyreum is the higheſt, and the ſun the loweſt place of the creation; conſidering it as the centre of our ſyſtem: and that the ſun was the firſt part of the viſible world created; which agrees with the notion of its being primarily intended or prepared to receive the angels, whoſe fall he ſuppoſes to have immediately preceded the creation.

4°, The early and almoſt univerſal idolatry paid the ſun; which ſuits well with the great ſubtilty of that ſpirit to entice mankind to worſhip his throne.

II. As to the eternity of *hell-torments*, we have Origen, again, at the head of thoſe who deny it; it being the doctrine of that writer, that not only men, but devils themſelves, after a ſuitable courſe of puniſhment, anſwerable to their reſpective crimes, ſhall be pardoned, and reſtored to heaven. Aug. *de Civit. Dei*, L. XXI. c. 17.—The chief principle Origen went upon was this, that all puniſhments are emendatory; applied only as painful medicines, for the recovery of the patient's health. And other objections inſiſted on by modern authors are the diſproportion between temporary crimes, and eternal puniſhments, *&c.*

The Scripture phraſes for eternity, as is obſerved by archbiſhop Tillotſon, do not always import an infinite duration: thus, in the Old Teſtament, *for ever* often ſignifies only a long time; particularly till the end of the Jewiſh diſpenſation: thus in the epiſtle of *Jude*, ver. 7. the cities of Sodom and Gomorrah are ſaid to be ſet forth for an example, ſuffering the vengeance of *eternal fire*; that is, of a fire that was not extinguiſhed till thoſe cities were utterly conſumed.—So one generation is ſaid to come, *&c.* but the earth endureth *for ever*.

In effect, M. le Clerc notes, that there is no Hebrew word which properly expreſſes eternity: הולם *holam*, only imports a time whoſe beginning or end is not known: and is accordingly uſed in a more or leſs extenſive ſenſe, according to the thing treated of.

Thus, when God ſays, concerning the Jewiſh laws, that they muſt be obſerv'd להולם *leholam*, for ever; we are to underſtand as long a ſpace as he ſhould think fit; or a ſpace whoſe end was unknown to the Jews before the coming of the Meſſiah.—All general laws, and ſuch as do not regard particular occaſions, are made *for ever*, whether it be expreſſed in thoſe laws, or not: which yet is not to be underſtood in ſuch a manner, as if the ſovereign power could no way change them.

Archbiſhop Tillotſon, however, argues very ſtrenuouſly, that where *hell-torments* are ſpoken of, the words are to be underſtood in the ſtrict ſenſe of infinite duration; and what he eſteems a peremptory deciſion of the point is, that the duration of the puniſhment of the wicked is in the very ſame ſentence expreſſed by the very ſame word which is uſed for the duration of the happineſs of the righteous, which all agree to be eternal. "Theſe, ſpeak-"ing of the wicked, ſhall go away, εις κολασιν αιωνιον, into "eternal puniſhment; but the righteous, εις ζωην αιωνιον, "into life eternal."

The ſame great author attempts to reconcile this eternity with the divine juſtice, which had not been ſatisfactorily done before.—Some had urged, that all ſin is infinite, in reſpect of the object it is committed againſt, *viz.* God; and therefore deſerves infinite puniſhment: but, that crimes ſhould be heightened by the quality of the object, to ſuch a degree, is abſurd: ſince the evil and demerit of all ſin muſt then be equal, inaſmuch as none can be more than infinite; and conſequently there can be no foundation for degrees of puniſhment in the next life. Add, that for the ſame reaſon as the leaſt ſin againſt God is infinite, in reſpect of its object; the leaſt puniſhment inflicted by God may be ſaid to be infinite, becauſe of its author; and thus all puniſhments from, as well as ſins againſt God, would be equal.

Others have urged, that if the wicked were to live for ever, they would ſin for ever: But this, ſays the author, is mere preſumption. Who can ſay, that if a man lived ever ſo long, he would never repent? Beſides, the juſtice of God only puniſhes ſins which men have committed, not thoſe they might poſſibly have committed.

Others therefore urge, that God gives men the choice of everlaſting happineſs and miſery; and that the reward promiſed to obedience is equal to the puniſhment threatened to diſobedience.—To which it was anſwered, that though it be not contrary to juſtice to exceed in rewards, that being matter of mere favour; it may be ſo to exceed in puniſhments.

It may be added, that man in this caſe has nothing to complain of, ſince he has only his election.—But though this may ſuffice to ſilence the ſinner, and make him acknowlege his deſtruction to be of himſelf, it does not ſatisfy the objection from the diſproportion between the crime and the puniſhment.—All the conſiderations, therefore, hitherto alleged, proving ineffectual; our great author is left to ſolve the difficulty himſelf.

In order to this, he obſerves, that the meaſure of penalties, with reſpect to crimes, is not only, nor always, taken from the quality and degree of the offence; much leſs from the duration and continuance of it; but from the reaſons of government, which properly require ſuch penalties as may ſecure the obſervation of the law, and deter men from the breach of it.—Among men, it is not reckoned injuſtice to puniſh murder, and many other crimes, which perhaps are committed in a moment, with perpetual loſs of eſtate, or liberty, or life. So that the objection of temporary crimes being puniſhed with ſuch long ſufferings, is of no force.

In effect, what proportion crimes and penalties are to bear to each other, is not ſo properly a conſideration of juſtice, as of wiſdom and prudence in the lawgiver, who may enforce his laws with what penalties he pleaſes, without any impeachment of his juſtice, which is out of the queſtion.

The primary end of all threatening is not puniſhment, but the prevention of it: God does not threaten, that men may ſin, and be puniſhed; but that they may not ſin, and ſo eſcape: and therefore the higher the threatening runs, the more goodneſs there is in it.

After all, it is to be conſidered, ſays the good archbiſhop, that he who threatens, has ſtill the power of execution in his own hands.—There is this difference between promiſes and threatenings; that he who promiſes, paſſes over a right to another, and thereby ſtands obliged to him, in juſtice and faithfulneſs, to make good his word: but it is otherwiſe in threatenings; he that threatens, keeps the right of puniſhing ſtill with him, and is not obliged to execute what he has threatened, any further than the reaſons and ends of government require.—Thus, God abſolutely threatened the deſtruction of Nineveh; and his peeviſh prophet underſtood the threatening to be abſolute, and was angry for being employed in a meſſage that was not made good: but God underſtood his own right, and did what he pleaſed, notwithſtanding the threatening he had denounced, and notwithſtanding Jonah was ſo touched in point of honour, that he had rather have periſhed, than Nineveh ſhould have eſcaped.

HELL, *hades*, is ſometimes alſo uſed, in the Scripture ſtyle, for *death*, or *burial*; by reaſon the Hebrew and Greek names ſignify ſometimes the place of the damned, and ſometimes ſimply the grave.

Divines are divided about the ſenſe of that article in the apoſtles creed, where our Saviour is ſaid to have been crucified, dead and buried, and that he deſcended into *hell*, Ἅδης.—Some underſtand this deſcent into *hell* as no other than a deſcent into the tomb, or ſepulcre; which others object againſt, in that his burial is expreſly mentioned before; and maintain, that our Saviour's ſoul actually deſcended into the ſubterraneous or local *hell*; where he triumphed over the devils, *&c.*

The Romaniſts add, that he there comforted the ſouls in purgatory; and brought away the ſpirits of the patriarchs, and other juſt perſons, departed till that time; carrying them with him into paradiſe.

In the Romiſh church, that part of *hell*, wherein thoſe were retained who died in the mercy and favour of God before our Saviour's ſufferings, is called *limbus*. See LIMBUS.

HELLEBORE, ΕΛΛΕΒΟΡΟΣ, or ELLEBORUS, a medicinal plant, reputed, among the antients, a ſpecific for the cure of melancholy and madneſs.

There are two ſorts of *hellebore*, the *black* and *white*.

Black HELLEBORE, *helleborus niger*, called alſo *melampodium*, and in Engliſh, the *chriſtmas roſe*, has a dark-coloured root, furniſhed with abundance of little fibres; its ſtem is green, its leaves are digitated, and its flowers are of a whitiſh colour, but in ſhape not unlike the roſe.

White HELLEBORE, *helleborus albus*, called alſo *veratrum*, in Engliſh, *neezewort*, has a whitiſh root, beſet with fibres of the ſame colour, ſhooting out at a ſort of bulb, not unlike the head of an onion. Its leaves are broad; at firſt green, afterwards of a yellowiſh-red. From the middle of the leaves riſes a ſtem, two or three feet high, which toward the upper part has ſeveral branches, each whereof bears a conſiderable number of little flowers like ſtars, diſpoſed in manner of a ſpica, or ear.

It is only the roots that are uſed, in each kind; which are to be choſen large and fair, furniſhed with thick filaments: thoſe of the *white* tan-coloured without, and white within; and thoſe of the *black*, blackiſh without, and browniſh within; dry, clean, and of a ſharp, diſagreeable taſte.

The antients, as already obſerved, had a great opinion of their efficacy in diſeaſes of the mind; whence various phraſes and forms of ſpeaking among writers: as *caput helleboro dignum:* Juvenal ſays, Miſers need a double doſe of *hellebore: Danda eſt ellebori multo pars maxima avaris.*—The iſland of Anticyra, ſituate againſt mount Œta, was famous for the growth and uſe of this plant: it being here in its greateſt perfection, and uſed with the beſt effect. Whence the proverb, *Naviget Anticyras*, Send him a voyage to Anticyra; ſpoken of a madman.

The white acts as a purgative, but ſo very violently, both upwards and downwards, as frequently to cauſe convulſions; whence the uſe of it internally is now out of doors: but it is ſtill retained with ſucceſs for the farcy in horſes, and the ſcab in ſheep.

The chief uſe wherein the preſent practice acknowleges it, is in form of a ſternutatory powder, to clear and open the head.

The black *hellebore* uſed among us, Dr. Quincy ſuggeſts to be much inferior in virtue to that of the antients; for that it will not operate much by ſtool; but is only a powerful alterative, getting far into the habit, and ſo promoting ſweat.

He adds, that he has known it do wonders in the gout and rheumatiſm, and that it rarely fails in obſtructions of the menſes. See Supplement, article HELLEBORUS.

HELLENISM, a ſort of Greciſm; or a phraſe peculiarly accommodated to the genius and conſtruction of the Greek tongue.

Helleniſm is diſtinguiſhed from Greciſm, in that the former is not applied to authors who have written in Greek: their language, it is evident, ſhould be a continual *helleniſm:* but it is applied to authors, who, writing in ſome other language, uſe terms and expreſſions peculiar to the Greek.

There are abundance of *helleniſms* in the vulgate verſion of the Scriptures.

HELLENISTIC, or HELLENISTIC *language*, that uſed among the *Helleniſts*. See HELLENISTS.

The critics are divided as to this language.—Several of them, and among the reſt Druſius and Scaliger, take it to be the language uſed among the Grecian Jews. They add, that it is in this language the Greek tranſlation of the Septuagint was written; and even the books of the New Teſtament compoſed.—M. Simon calls it the *language of the ſynagogue*.

It muſt not be imagined, that this was any peculiar language diſtinct from all others; or even any peculiar dialect of the Greek: it was thus denominated, to ſhew that it was Greek, mixed with Hebraiſms and Syriaciſms.

Salmaſius rejects the common opinion of the learned touching the *Helleniſtic* language; and has written two volumes on the ſubject, in which there is not a little logomachia.

HELLENISTS, HELLENISTÆ, a term occurring in the Greek text of the New Teſtament, and which in the Engliſh verſion is rendered *Grecians*.

The critics are divided as to the ſignification of the word.—Œcumenius, in his *Scholia* on *Acts* vi. 1. obſerves, that it is not to be underſtood as ſignifying thoſe of the religion of the Greeks, but thoſe who ſpoke Greek, τȣς ἑλληνιςι φθεγξαμενȣς.

The authors of the Vulgate verſion, indeed, render it, like ours, *Græci*; but Meſſieurs du Port Royal, more accurately, *Juifs Grecs*, Greek or Grecian Jews; it being the Jews who ſpoke Greek, that are here treated of, and who are hereby diſtinguiſhed from the Jews called *Hebrews*; that is, who ſpoke the Hebrew tongue of that time.

The *Helleniſts*, or Grecian Jews, were thoſe who lived in Egypt, and other parts, where the Greek tongue prevailed. It is to them we owe the Greek verſion of the Old Teſtament, commonly called the *Septuagint*, or that of the Seventy. See SEPTUAGINT.

Salmaſius and Voſſius are of a different ſentiment with regard to the *Helleniſts*. The latter will only have them to be thoſe who adhered to the Grecian intereſts. Scaliger is repreſented, in the *Scaligerana*, as aſſerting the *Helleniſts* to be the Jews who lived in Greece, and who read the Greek Bible in their ſynagogue.

HELM, in navigation, a horizontal piece of timber, ſerving to move another fitted into it at right angles, called the *rudder*.

The helm, or *tiller of a ſhip*, is a beam, or piece of timber, faſtened into the rudder, and ſo coming forward into the ſteerage; where he that ſtands at *helm* ſteers the ſhip.

A-lee the helm ſignifies to put the *helm* to the lee-ſide of the ſhip.

Bear up the helm is, to let the ſhip go more large before the wind.

Port the helm, is to put the *helm* on the left hand or ſide of the ſhip.

Right the helm, or *helm the midſhip*, is, to keep it even with the middle of the ſhip.

Starboard the helm is, to put it to the right ſide of the ſhip.

HELM, in chemiſtry, is the head of a ſtill, or alembic; thus called, becauſe in figure it ſomething reſembles a *helm*, or helmet.

Hence, to bring a thing *over the helm* is the ſame as to force it by fire up to the top of the veſſel, that it may diſtil down into the receiver by the beak of the head.

And when they ſay, ſuch a thing cannot be brought over the *helm*, they mean, that it is of too fixed a nature to be raiſed into vapour, by the force of fire.

HELMET, or HELM, an antient armour of defence, worn by the cavaliers, both in war, and in turnaments, as a cover and defence of the head; and ſtill uſed by way of creſt or ornament, over the ſhield, or coat of arms.

The *helmet* is known by divers other names, as the *caſk*, *head-piece*, *ſteel cap*, &c.

The *helmet* covered the head and face, only leaving an aperture about the eyes, ſecured by bars, which ſerved as a viſor.

The *helmet* is borne in armoury as a mark of nobility; and by the different circumſtances of the bearing of the *helmet*, are the different degrees of nobility indicated. In France, whence all our heraldry originally came, the following rules obtain.

A perſon newly ennobled, or made a gentleman, bears over his eſcutcheon, a *helmet* of bright iron or ſteel, in profile, or ſtanding ſideways; the viſor quite cloſe.

A gentleman of three deſcents bears it a little open, but ſtill in profile, ſhewing three bars of the viſor.

Antient knights, *&c.* have it in profile, but ſhewing five bars; the edges of ſilver.

A baron's *helmet* is of ſilver; the edges gold; with ſeven bars neither quite in profile, nor yet in front; with a coronet over it adorned with pearls.

Viſcounts and earls formerly bore a ſilver *helmet*, with gold edges; its poſition like the former; but now they bear it quite fronting, with a coronet over it.

Marquiſes bear a ſilver *helmet*, damaſked, fronting; with eleven bars, and their coronet.

Dukes and princes have their *helmet*, damaſked, fronting, the viſor almoſt open, and without bars; with their coronets over them.

Laſtly, the *helmets* of kings and princes are all of gold, damaſked, full fronting, and the viſor quite open, and without bars.

The *helmets* of baſtards are to be turned to the left, to denote their baſtardy.

Among the Engliſh heralds, theſe laws are of late ſomewhat varied.—Leigh will have the *helmet* in profile, and cloſe, to belong to knights: but all other authors give it to eſquires and gentlemen.

To a knight they aſſign the *helmet* ſtanding right forward, and the bearer a little open.

The *helmet* in profile, or poſited ſideways, and open, with bars, belongs to a nobleman under the condition of a duke.

The *helmet* right forward, and open, with many bars, is aſſigned to dukes, princes, and kings.

Thoſe turned ſideways are ſuppoſed to be giving ear to the command of their ſuperiors; and thoſe right forwards to be giving orders with abſolute authority.

Commonly there is but one *helmet* in a ſhield; but ſometimes there are two or three; if there be two, they muſt be placed facing each other; if three, the two extremes muſt be looking towards that in the middle.

HELMONTIAN *laudanum*. See LAUDANUM.

HELPS, in the manage.—To teach a horſe his leſſons, there are ſeven *helps*, or aids, to be known.—Theſe are the *voice*, *rod*, *bit*, or *ſnaffle*; the *calves* of the legs, the *ſtirrups*, the *ſpur*, and the *ground*.

The *helps* are occaſionally turned into corrections. See CORRECTION.

HELVETIC, ſomething that has a relation to the Switzers, or inhabitants of the Swiſs cantons, who were antiently called *Helvetii*.

The *Helvetic* body comprehends the republic of Switzerland, conſiſting of thirteen cantons, which make ſo many particular commonwealths.

By the laws and cuſtoms of the *Helvetic* body, all differences between the ſeveral ſtates and republics are to be decided within themſelves, without the intervention of any foreign power.

HELVIDIANS, a ſect of antient heretics, denominated from their leader *Helvidius*, a diſciple of Auxentius the Arian, whoſe diſtinguiſhing principle was, that Mary, the mother of Jeſus, did not continue a virgin; but had other children by Joſeph.

The *Helvidians* are called, by the Greeks, *Antidicomarianites*.

HEMEROBAPTISTS, a ſect among the antient Jews, thus called from their waſhing and bathing every day, in all ſeaſons.

Epiphanius, who mentions this as the fourth hereſy among the Jews, obſerves, that in other points theſe hereticks had much the ſame opinions as the Scribes and Phariſees; only that they denied the reſurrection of the dead, in common with the Sadducees, and retained a few other of the impieties of theſe laſt.

D'Herbelot ſpeaks of them as a ſect ſtill ſubſiſting.—The diſciples of St. John Baptiſt, ſays he, who in the firſt ages of the church were called *Hemerobaptiſts*, have conſtituted a ſect, or rather a religion, apart, under the name of *Mendai Iahia*. Theſe people, whom our travellers call Chriſtians of St. John Baptiſt, by reaſon their baptiſm is very different from ours, have been confounded with the Sabæans; from whom, however, they are very different.

HEMERODROMI*, among the antients, were centinels, or guards, appointed for the ſecurity and preſervation of cities, and other places.

* The word is Greek, ἡμεροδρομος: compounded of ἡμερα, day; and δρομος, courſe, running about, *&c.*

They went out of the city every morning, as ſoon as the gates were opened, and kept all day patrolling round the place; ſometimes, alſo, making excurſions farther into the country, to ſee that there were no enemies lying in wait to ſurpriſe them.

Hemerodromi were alſo a ſort of couriers, among the antients, who only travelled one day, and then delivered their packets, or diſpatches, to a freſh man, who run his day; and ſo on, to the end of the journey.

The Greeks had of theſe ſort of couriers, which they learnt from the Perſians, who were the inventors thereof, as appears from Herodotus.—Auguſtus had the ſame; at leaſt, he eſtabliſhed couriers, who, if they did not relieve each other from day to day, yet did it from ſpace to ſpace, and that ſpace was not very great.

HEMI, a word uſed in the compoſition of divers terms.—It ſignifies the ſame with *ſemi* or *demi*, viz. half; being an abbreviature of ἡμισυς, *hemiſys*, which ſignifies the ſame.

The Greeks retrenched the laſt ſyllable of the word ἡμισυς, in the compoſition of words; and, after their example, we have done ſo too, in moſt of the compounds borrowed from them.

HEMICRANIA, ἩΜΙΚΡΑΝΙΑ, in medicine, a ſpecies of cephalalgia, or head-ach; wherein only one hemiſphere, or half, or one ſide of the head, is affected.

HEMICYCLE*, Hemicyclium, a ſemicircle. See Semicircle.

* The word is compounded of ἡμισυς, *dimidius*, half; and κυκλος, circle.

Hemicycle is particularly applied, in architecture, to vaults in the cradle-form; and arches, or ſweeps, of vaults, conſtituting a perfect ſemicircle.

To conſtruct an arch of hewn ſtone, they divide the *hemicycle* into ſo many vouſſoirs; taking care to make them an uneven number, that there be no joint in the middle, where the key-ſtone ſhould be. See Key.

Hemicyclium was alſo a part of the orcheſtra in the antient theatre.—Scaliger, however, obſerves, it was no ſtanding part of the orcheſtra; being only uſed in dramatic pieces, where ſome perſon was ſuppoſed to be arrived from ſea, as in Plautus's *Rudens*.

The antients had alſo a ſort of ſun-dial, called *hemicyclium*.—It was a concave ſemicircle, the upper-end, or cuſp, whereof looked to the north.

There was a ſtyle, or gnomon, iſſuing from the middle of the *hemicycle*, whereof that point correſponding to the centre of the *hemicycle*, repreſented the centre of the earth; and its ſhadow projected on the concavity of the *hemicycle*, which repreſented the ſpace between one tropic and another, the ſun's declination, the day of the month, hour of the day, *&c.*

HEMINA*, a veſſel uſed as a meaſure among the antient Romans, containing half the ſextary.

* The word is formed of the Greek ἡμισυς, half.

The *hemina*, called alſo *cotyla*, and *acetabulum*, contained eight ounces of liquor; and was the twelfth part of the congius.

Several authors have wrote expreſs treatiſes on the Roman *hemina*; particularly Meſſ. Arnaud, and Pelletier.

S. Benedict preſcribes the *hemina*, as the portion, or quantity, of wine, to be allowed the religious of his order at each meal. F. Mabillon, who has wrote on the ſubject, ſhews, that this *hemina* was a meaſure peculiar to the Benedictines, as well as the pound of bread allowed the ſame religious, which only conſiſted of fifteen ounces. F. Lancelot has a diſſertation to prove, that the *hemina* of wine, preſcribed by S. Benedict, only amounts to a demi-ſeptier of Paris meaſure: but others make it two ſeptiers; and others three.

HEMIOLIUS*, or Hemiolia, an antient mathematical term, occurring chiefly in muſical writers.—It ſignifies the ratio of two things, whereof the one contains the other once and an half; as 3 : 2, or 15 : 10, otherwiſe called *ſeſquialterate*. See Ratio, and Sesquialterate.

* The word is compounded of ἡμισυς, half; and ὁλος, whole.

Macrobius, on the *Somnium Scipionis*, L. II. c. I. obſerves, that the concord, called in the antient muſic *diapente*, and in the modern a *fifth*, ariſes from this proportion.

HEMIOPE*, or Hemiopus, a muſical inſtrument in uſe among the antients.

* The word is compounded of ἡμισυς, half; and οπη, hole.

The *hemiopus* was a flute with only three ſmall holes. See Flute.

HEMIPLEGIA*, or Hemiplexia, in medicine, a palſy of one whole ſide of the body. See Palsy.

* The word is Greek, ἡμιπληγια; compounded of ἡμισυς, half; and πλησσω, I ſtrike, or ſeize.

HEMISPHERE*, Hemisphærium, in geometry, is one half of a globe, or ſphere, when divided into two by a plane paſſing through its centre.

* The word is compounded of ἡμισυς, half; and σφαιρα, ſphere, globe.

If the diameter of a ſphere be equal to the diſtance of the two eyes; and a right line drawn from the centre of the ſphere to the middle of that diſtance be perpendicular to the line which joins the eyes: the eyes making a rotation on the axis, or middle point between them, will ſee the whole *hemiſphere*.—If the diſtance of the eyes be either greater or leſſer than the diameter of the ſphere; in making ſuch rotation they will view reſpectively more or leſs than a *hemiſphere*. See Vision.

The writers in optics demonſtrate, that a glaſs *hemiſphere* unites parallel rays at the diſtance of a diameter, and one third of a diameter, from the pole of the glaſs.

The centre of gravity of a *hemiſphere* is five eighths of the radius diſtant from the vertex.

Hemisphere, in aſtronomy, is particularly uſed for one half of the mundane ſphere. See World.

The equator divides the ſphere into two equal parts, called the *northern* and *ſouthern hemiſpheres*.

The *northern hemiſphere* is that half in whoſe vertex is the north pole.—Such is that repreſented by DPA (Tab. *Aſtronomy*, *fig.* 52.), terminated by the equator DA, and having the pole P in its zenith.

The *ſouthern hemiſphere* is that other half DQA, terminated by the equator DA; and having the ſouth pole Q in its zenith.

The horizon alſo divides the ſphere into two *hemiſpheres*; the *upper*, and the *lower*.

The *upper hemiſphere* is that alſo of the mundane ſphere HZR, terminated by the horizon HR, and having the zenith Z in its vertex.

The *lower hemiſphere* is that other half HNR, terminated by the horizon HR; and having the nadir N in its vertex.

Hemisphere is alſo uſed for a map, or projection, of half the terreſtrial globe, or half the celeſtial ſphere, on a plane.

Hemiſpheres are frequently called *planiſpheres*.

HEMISPHEROIDAL, in geometry, ſomething that approaches to the figure of a *hemiſphere*, but is not juſtly ſo.

The cacao opens, when yellow and ripe, into two large *hemiſpheroids*, three feet in diameter.

HEMISTICH*, in poetry, a half verſe. See Verse.

* The word is compounded of ἡμισυς, half; and στιχος, verſe.

Such, *e. gr.* are, *Cernit Deus omnia vindex*—
or *Medio tutiſſimus ibis*, &c.

It is diſputed, whether or no the *hemiſtichs* in the *Æneid* were left with deſign; or whether they are owing to the work's being unfiniſhed?

In Engliſh, *&c.* the common and Alexandrine verſes require a reſt at the end of each *hemiſtich*; common verſes require it at the end of four ſyllables; and Alexandrine at the end of ſix.

Leonine verſes rhythm both at the end, and at the *hemiſtich.* See LEONINE.

HEMITONE, in the antient muſic, was what we now call an half-note, or tone.

HEMITRITÆUS*, ʽΗΜΙΤΡΙΤΑΙΟΣ, in medicine, an irregular, intermitting fever, which returns twice every day; by which it is diſtinguiſhed from the quotidian, which only returns once in the day,

* The word is compounded of ἡμισυς, half; and τριταιος, third: modern Latin authors expreſs it by *ſemitertiana.*

HEMLOCK, *cicuta*, a narcotic plant; of ſome uſe in phyſic, in that intention.

There is a plaiſter denominated from it in the college-diſpenſatory, conſiſting of the juice of the plant boiled up with gums, *&c.*

The common *hemlock* is, however, a poiſon; though not of the moſt violent ſort.—We have inſtances of conſiderable quantities being taken without the leaſt diſorder. *Philoſoph Tranſact.* N° 231.

The cicuta ſo much celebrated among the antients, was the juice of a ſpecies of this plant, called *oenanthe aquatica cicutæ facie.* See Supplement, article CICUTA.

HEMP, a plant of great uſe in the arts and manufactories; furniſhing thread, cloth, cordage, *&c.*

Hemp, by naturaliſts called *cannabis*, bears a near analogy to flax, *linum*; both in reſpect of form, culture, and uſe.

The plant is annual; that is, it muſt be ſown afreſh every year.—It riſes quick, into a tall, ſlender ſort of ſhrub, whoſe ſtem, however, is hollow, and big enough to be charred; and is often thus uſed in the compoſition of gunpowder.—Its leaves ariſe by fives or ſixes from the ſame pedicle, and are a little jagged; yielding a ſtrong ſmell which affects the head.—Its flowers grow in cluſters, oppoſite to each other, in manner of a St. Andrew's croſs; each conſiſting of five yellowiſh ſtamina, incompaſſed with a like number of petala, purple without, and white within.—Its fruit, or ſeed, is ſmall and round, filled with a white ſolid pulp; and grows on the top of the ſtem; having its ſtalks diſtinct from thoſe of the flowers.—Laſtly, its bark is a tiſſue of fibres, joined together by a ſoft matter, which eaſily rots away.

Hemp is of two kinds: male, popularly called *karl*; and female, or *fimble.*—It is the female alone that produces ſeed, to perpetuate the kind: from the ſeed of this ariſes both male and female.

It does not appear, that the antients were acquainted with the uſe of *hemp*, in reſpect of the thread it affords. Pliny, who ſpeaks of the plant in his *Natural Hiſtory*, Lib. XX. c. 23. ſays not a word of this; contenting himſelf with extolling the virtues of its ſtem, leaves, and root. In effect, what ſome writers of the Roman antiquities remark, *viz.* that the *hemp* neceſſary for the uſe of war, was all ſtored up in two cities of the weſtern empire; *viz.* at Ravenna and Vienne, under the direction of two procurators, called *procuratores linificii*; muſt be underſtood of linum, or flax.

The ſeed of *hemp* is ſaid to have the faculty of abating venereal deſires; and its decoction in milk is recommended againſt the jaundice.—The leaves are held good againſt burns, and the juice thereof againſt deafneſs.—The powder, or flour, mixed with any ordinary liquor, is ſaid to turn thoſe who drink thereof ſtupid.

The culture and management of *hemp* makes a conſiderable article in agriculture; there being divers operations required therein: as *pulling*, *watering*, *beating*, *ſwingling*, &c.

The plant is to be ſown in May, in a warm, ſandy, rich ſoil; and is itſelf ſufficient to deſtroy weeds on any ground.—About Lammas they begin to gather it; the light, or female, being firſt ripe. The marks of its maturity are, its leaves turning yellow, and the ſtalks white.

The way of gathering is, to *pull* it up by the roots; after which, they bind it up in handfuls, or bundles. The female they let ſtand eight or ten days in the air, that the ſeed may dry and ripen; after which, they cut off the heads, and beat or threſh them, to get out the ſeed.—They alſo beat the male, to get out a hurtful, thick, fetid ſort of duſt contained therein.

This done, they proceed to *water* or *rate* it, by laying it five or ſix days in a pool, or other ſtagnant water, to rot the bark. A ſtream, or running water, would do the buſineſs much better, but that it infects the water, and gives it a quality very pernicious to the health; for which reaſon, it is forbid to rate it in any waters uſed for domeſtic purpoſes.

When rotted, and taken out again, they *dry* it; then *brake* or beat out the dry bun, or hex, which is the woody part of the ſtem, from the rind or bark which covers it, by cruſhing it in a toothed or nicked inſtrument called a *brake*, beginning with the root end.

When the bun is ſufficiently broke, and hangs by ſmall ſhivers, they *ſwingle* or beat it out with a piece of wood edged for the purpoſe.—Note, the *karl hemp* they ſometimes break with the fingers, and ſtrip off the rind, without the help of the brake or ſwingle.

The next thing is to *beat* the *hemp*; which is done either on a block, or in a trough, with a hammer, or with beetles, till it feel ſufficiently ſoft and pliable.—It remains now to be *heckled*, or paſſed through divers toothed inſtruments, not unlike the wool-dreſſers combs, of different fineneſs: this ſeparating the ſhorter tow from it, the reſt is fit to be ſpun, wove, *&c.* for thread, cloth, cordage, or the like.

HENBANE, a poiſonous plant. See Supplement, article HYOSCIAMUS.

HENDECAGON*, in geometry, a figure which has eleven ſides, and as many angles.

* The word is Greek, ἑνδεκαγωνος; compounded of ἑνδεκα, eleven; and γωνια, angle.

HENDECAGON, in fortification, is uſed for a place defended by eleven baſtions.

HENDECASYLLABUM*, ʽΕΝΔΕΚΑΣΥΛΛΑ ΟΝ, in Greek and Latin poetry, a verſe of eleven ſyllables. See VERSE.

* The word is Greek; compounded of ενδεκα, eleven; and συλλαβη, ſyllable: of συλλαμβανω, I comprehend.

Sapphic and Phaleucic verſes are, *hendecaſyllaba*, or *hendecaſyllabic.* E. gr.

Sap. *Jam ſatis terris nivis atque diræ.*
Phal. *Paſſer mortuus eſt meæ puellæ.*

HENOTICUM*, in church-hiſtory, a famous edict of the emperor Zeno, in the fifth century, intended to reconcile and re-unite the Eutychians with the Catholics.

* The word is Greek, ἑνοτικον; *q. d.* irenic, reconciliative: of ἑνοω, I unite.

It was procured of the emperor, by means of Acacius, patriarch of Conſtantinople, with the aſſiſtance of the friends of Peter Mongus.

The ſting of this edict lies here; that it does not admit the council of Chalcedon, like the other three; but rather ſeems to charge it with errors.—It is in form of a letter, addreſſed by Zeno to the biſhops, prieſts, monks, and people, of Egypt and Libya. It was oppoſed by the Catholics, and condemned in form, by pope Felix III.

HEPAR, in anatomy, the liver. See the article LIVER.

HEPAR *uterinum*, the ſame with *placenta.* See PLACENTA.

HEPATIC, in medicine and anatomy, ſomething that relates to the liver; by the Greeks called ἡπαρ, *hepar.*

HEPATIC *aloes.* See the article ALOES.

HEPATIC *duct* is a veſſel more uſually called *porus bilarius.* See PORUS *bilarius.*

HEPATIC *flux.* See the article FLUX.

HEPATIC *plexus.* See the article PLEXUS *hepaticus.*

HEPATIC *vein* is that otherwiſe called *baſilica.* See BASILICA.

HEPATI-CYSTIC *ducts.* See CYST-HEPATIC *duct.*

HEPATITES, liver-ſtone, in natural hiſtory, a ſort of ſtone, thus denominated from its liver-colour, or becauſe it is generated in the liver.

HEPATITIS, ʽΗΠΑΤΙΤΙΣ, in medicine, an inflammation of the liver, with an abſceſs, or impoſthume, thereof.

The *hepatitis* bears a near reſemblance to the pleuriſy, only that its ſymptoms are leſs intenſe.

It uſually either kills the patient, or elſe diſcuſſes, or ſuppurates, gradually, or finally degenerates into a ſcirrhus.

HEPATOSCOPIA*, the art of divining, or diſcovering future or hidden things, by inſpecting the entrails of beaſts.

* The word is compounded of the Greek ἡπατος, the genitive of ἡπαρ, liver; and σκοπεω, I conſider: the liver being a part principally regarded.

The Romans call it *extiſpicina.* See EXTISPEX.

HEPTACHORD*, in the antient poetry.—*Heptachord* verſes were thoſe ſung, or played, on ſeven chords; that is, in ſeven different notes, or tones; and, probably, on an inſtrument with ſeven ſtrings.

* The word is compounded of ἑπτα, *ſeptem*; and χορδη, chord, ſtring.

HEPTAGON*, in geometry, a figure conſiſting of ſeven ſides, and ſeven angles.

* The word is compounded of ἑπτα, *ſeptem*, ſeven; and γωνια, angle.

If the ſides be all equal, it is called a *regular heptagon.*

HEPTAGON, in fortification, a place ſtrengthened with ſeven baſtions, for its defence. See BASTION.

HEPTAGONAL *numbers* are a ſort of polygonal numbers, wherein the difference of the terms of the correſponding arithmetical progreſſion is five.

One property, among others, of theſe numbers, is, that if they be multiplied by 40, and 9 be added to the product, the ſum is always a ſquare number. See NUMBER.

HEPTAMERIS literally ſignifies *a ſeventh part*: being formed of the Greek ἑπτα, ſeven; and μερις, part, or portion.

The word is uſed by M. Sauveur, in his *Principles of Acouſtics*, for the ſeventh part of a meris; and, in his ſyſtem, for the forty-third part of the octave.

HEPTAMERON, a term literally implying *ſeven days*: being compounded of ἑπτα, ſeven; and ἡμερα, day.

It is chiefly uſed as a title of certain books, containing the tranſactions of ſeven days.

The *Heptameron* of Margaret de Valois, ſiſter to Francis I. of France, and queen of Navarre, is a very ingenious piece, in the manner of Boccace's *Decameron*.

HEPTARCHY *, a government compoſed of ſeven perſons; or a country governed by ſeven perſons, or divided into ſeven kingdoms.

* The word is compounded of the Greek ἑπτα, ſeven; and αρχη, *imperium*, command, rule.

The Saxon *heptarchy* included all the ſouthern, as well as northern, parts of England, which were cantoned out into ſeven petty kingdoms; *viz.* thoſe of Kent, the South Saxons, Weſt Saxons, Eaſt Saxons, Northumberland, the Eaſt Angles, and Mercia.—The *heptarchy* was formed, by degrees, from the year 457. when the firſt kingdom of Kent was erected; and it terminated in 805. when king Egbert reunited them into one, and made the *heptarchy* into a monarchy. See MONARCHY.

HEPTATEUCH *, in matters of literature, a volume, or work, conſiſting of ſeven books.

* The word is compoſed of ἑπτα, ſeven; and τευχω, I do, I work: whence τευχος, a work, book; and ἑπτατευχος, *heptateuch*, a work of ſeven parts; or ſeven different works joined in one volume.

Heptateuch is chiefly applied to the firſt ſeven books of the old teſtament; *viz.* Geneſis, Exodus, Leviticus, Numbers, Deuteronomy, Joſhua, and Judges; that is, the five books of Moſes called the *pentateuch*, and the two following ones, which are uſually joined therewith.

HEPHTHEMIMERIS *, in the Greek and Latin poetry, a ſort of verſe conſiſting of three feet and a ſyllable; that is, of ſeven half feet.

* The word is Greek, ἑφθημιμερης: compoſed of ἑπτα, ſeven; ἡμισυς, half; and μερος, part.

Such are moſt of the verſes in Anacreon.

Θελω | λεγειν | Ατρει | δας
Θελω | δε Καδ | μον α | δειν, &c.

And that of Ariſtophanes, in his *Plutus*:

Επεσθε μητρι χοιροι.

They are alſo called *trimetri catalectici*.

HEPHTHEMIMERIS, or HEPHTHEMIMERES, is alſo a cæſura after the third foot; that is, on the ſeventh half-foot.

It is a rule, that this ſyllable, though it be ſhort in itſelf, muſt be made long, on account of the cæſura, or to make it an *hephthemimeris*. As in that verſe of Virgil;

Et furiis agitatus amor, & conſcia virtus.

It may be added, that the cæſura is not to be on the fifth foot, as it is in the verſe which Dr. Harris gives us for an example;

Ille latus niveum molli fultus Hyacintho.

This is not a *hephthemimeris* cæſura, but a henneamimeris, *i. e.* of nine half feet.

HERACLEONITES, antient heretics of the ſect of the Gnoſtics; thus called from their leader, Heracleon.

S. Epiphanius, *Hær.* 36. is very ample on this hereſy.

He repreſents Heracleon as one who had reformed the theology of the Gnoſtics in many points; though, at bottom, he had retained the principal articles thereof. He refined on the ordinary interpretations of abundance of texts of Scripture; and even altered the words of ſome, to make them conſiſt with his own notions.

For example; he maintained, that, by thoſe words of S. John, *all things were made by him*, is not to be underſtood the univerſe, and all that is good therein; but that the univerſe, which he calls *æon*, was not made by the word, but was made before him. And, to ſupport this conſtruction, he added to thoſe words of St. John, *without him nothing was made*, thoſe other words, *of things in the world*.

He diſtinguiſhed two kinds of worlds; the one divine, the other corruptible: and reſtrained the word παντα, *all things*, to this laſt. He held, that the Word did not create the world immediately, and of himſelf; but only that he gave occaſion to the demiurgos to do it.

The *Heracleonites*, after the example of their maſter, annulled all the antient prophecies; holding, that St. John was really the voice that proclaimed and pointed out the Meſſiah; but that the prophecies were only empty ſounds, and ſignified nothing.—They held themſelves ſuperior, in point of knowlege, to the apoſtles; and, on that footing, dared to advance the moſt extravagant paradoxes, on pretence of explaining Scripture in a ſublime, elevated manner. They were ſo fond of theſe myſtic interpretations, that Origen, though a ſtickler that way himſelf, was obliged to reproach Heracleon with his abuſing Scripture by that means.

HERACLIDÆ, in antiquity, the deſcendents of Hercules, whom the Greeks called Ἡρακλης, *Heracles*.

The *Heraclidæ* were expelled from Peloponneſus by Euriſtheus, king of Mycenæ, after the death of Hercules.

Return of the HERACLIDÆ into Peloponneſus is a celebrated epocha in the antient chronology.

The time of this return is differently aſſigned; by reaſon that authors miſtake the divers attempts which they made to return, for the return itſelf. The firſt attempt was twenty years before the taking of Troy; the ſecond was 100 years later, or 80 years after the taking of Troy. This laſt is ſuppoſed to have ſucceeded; at leaſt, according to Petavius, who mentions only theſe two. *Rat. Temp.* P. I. L. I. c. 12. and *Doctr. Temp.* L. IX. c. 30.

Scaliger diſtinguiſhes three attempts; and fixes the firſt 50 years later than Petavius; *viz.* 30 years after the taking of Troy. He ſays nothing of the ſecond, which was unfortunate, like the firſt; but he places the third in the ſame year with Petavius.

As it occaſioned a world of changes and revolutions in the affairs of Greece, inſomuch that ſcarce a ſtate, or people, but were turned upſide down thereby, the return of the *Heraclidæ* is the epocha of the beginning of profane hiſtory: all the time that preceded it is reputed fabulous. Accordingly, Ephorus, Cumanus, Calliſthenes, and Theopompus, only begin their hiſtories from hence.

HERALD *, an officer of arms, antiently in great repute, and poſſeſſed of ſeveral conſiderable functions, rights, and privileges.

* The word *herald*, according to Du Cange, comes from the Saxon here, or German *keer*, army; and *ald*, ſervant; becauſe chiefly ſerving in the army. Others will have the two words ſignify *champion of the army*; in alluſion to their office of denouncing war, proclaiming peace, &c.—Du Cange adds, that they were called *clarigarii*, as well as *heralds*. Borel derives the word from the Latin *herus*, maſter; *q. d.* one coming from his maſter: others from *herbaut*; *q. d.* high lord: others from *herold*, which is the ſame with *dominus veteranus*; and others, laſtly, from *heer*, maſter, or army; and *hold*; *q. d.* bound to his lord, or the army.

The origin of *heralds* is very antient.—Stentor is repreſented, by Homer, as *herald* of the Greeks, who had a voice louder than fifty men together. The Greeks called them κηρυκες, and ειρηνοφυλακες; and the Romans, *feciales*.

The Romans had a college of *heralds*, appointed to decide whether a war were juſt, or unjuſt; and to prevent its coming to open hoſtilities, till all means had been attempted for decideing the difference in a pacific way.

Heralds, or *heralds at arms*, have formerly been denominated *dukes at arms*, becauſe properly belonging to dukes; as kings at arms, to kings.

In England we have ſix *heralds*; viz. 1°, *Richmond*, 2°, *Lancaſter*, 3°, *Cheſter*, 4°, *Windſor*, 5°, *Somerſet*, 6°, *York*.—To which may be added a ſeventh, or *Brunſwick herald*, erected by king George I.—Their office is, to wait at court, to attend publick ſolemnities, to proclaim war and peace, to look to the regulation of the bearings of arms, and to ſearch pedigrees, &c.

They were formerly created and chriſtened by the king; who, ſlowly pouring a gold cup of wine on their head, gave them their *herald*'s name: now it is done by the earl-marſhal.—They could not arrive at the dignity of *herald*, without having been ſeven years pourſuivant; nor could they quit the function of *herald*, but to be made king at arms. See POURSUIVANT, &c.

Their principal employment was, to compoſe, or make out, coats of arms, genealogies, and titles, of the nobility. They were the ſuperintendents of military exploits, and the conſervators of the honours of war. They had a right to take away the arms of ſuch as, for cowardice, treaſon, &c. deſerved to be degraded. They had a commiſſion to examine and correct the vices and diſorders of the nobles, and, on ſuch occaſions, to exclude them from juſts, turnaments, &c. to them belonged, alſo, the correcting of all uſurpations and abuſes relating to crowns, coronets, caſks, creſts, ſupporters, &c. They took cognizance of all differences among the nobles, with reſpect to their bearings, the antiquity of their families, precedencies, &c. they went into the ſeveral countries to ſearch into the grounds and pretenſions of nobility; and had a right to open all libraries, and to command all the antient charters and inſtruments in the archives to be ſhewn them: they had admiſſion into all foreign courts, where they were commiſſioned to proclaim war and peace; and their perſons were held ſacred, as thoſe of embaſſadors. To them it belonged to make publication of juſts and turnaments; to call the people to them; to ſignify the cartels; to mark the ground, liſt, or place of duel; to ſee fair play obſerved; and to divide the ſun between the two parties. In the army, they advertiſed the cavaliers and captains of the day of battle, and aſſiſted therein before the ſtandard, retiring, after the firſt onſet, to ſome place of eminence, there to obſerve who behaved beſt, and to give a faithful report thereof to the king. They alſo numbered the dead, relieved the enſigns, re-demanded priſoners, ſummoned places to ſurrender, and in capitulations walked before the governor of the place, to ſecure and warrant his perſon. They were the principal arbitrators of the diſtribution of the ſpoils of the vanquiſhed, and of military rewards. They publiſhed victories; and gave notifications thereof to foreign courts. They convened the eſtates of the kingdom, aſſiſted at royal marriages, and frequently made the firſt demand; they alſo officiated at ſolemn feaſts, *&c.*

The modern *heralds*, *i. e.* thoſe we properly call *heralds*, have loſt a good deal of the diſtinction and office of the antient ones. What relates to the making out arms, the rectifying of abuſes therein, *&c.* is chiefly committed to the kings at arms.

And in the army, drums and trumpets have ſucceeded to the function of *heralds*, being ſent by the generals on the ſame errands; and on that account enjoying the ſame rights and privileges. Their perſons are under the protection of the law of nations, when they bear the marks of their offices publicly, *i. e.* the trumpeter his trumpet, and the drummer his drum; in the ſame manner as the *herald* his coat.

The *heralds*, with the kings at arms, and the four pourſuivants, are a college, or corporation; erected into ſuch by charter of Richard III. who granted them divers privileges, as to be free from ſubſidies, tolls, and all troubleſome offices. Clarencieux and Norroy king at arms are alſo called *provincial heralds*.

HERALDRY, the art of armoury, and blazoning; or the knowlege of what relates to the bearing of arms, and the laws and regulations thereof.

Heraldry likewiſe comprehends what relates to the marſhaling of ſolemn cavalcades, proceſſions, and other ceremonies at coronations, inſtalments, creations of peers, funerals, nuptials, *&c.*

HERB *, a name common to all plants whoſe ſtalks, or ſtems, die away every year, after their ſeed is become ripe.

> * The word is formed of the Latin *herba*; which ſome derive from *arvum*, field; others from the Greek φερβειν, *paſcere*, to feed; of φερβη, *pabulum*. Of the Greek *pherbe*, the Latins formed *pherba*; and of *ferba*, *herba*; after the manner of the Spaniards, who always change the *f* at the beginning of a word into *h*.

There are ſome *herbs* whoſe root periſhes with the ſtem: and others, where the root ſurvives the ſtem by ſeveral years.

Of the former, thoſe which come to maturity the firſt year, and after they have caſt their ſeed, die away, are called *annuals*: ſuch are wheat, rye, *&c.*

Thoſe which only bear flowers and fruit the ſecond year, or even the third year, and then periſh, are called *biennials* and *triennials*: ſuch are the garden angelica, and ſome others.

Herbs whoſe root does not periſh after they have ſhed their ſeed, are called *perennials*: ſuch are mint, *&c.*

Of theſe, ſome keep their leaves all the year round, and are called *ever-greens*; as the aſarabacca, *&c.* See EVER-GREENS.

The reſt loſe their leaves, and continue bare part of the year; as colts-foot, *&c.*

Herbs are alſo diſtinguiſhed into *kitchen*, or *ſullet herbs*, and *medicinal herbs*.

Sallet-HERBS. } See the articles { SALLET.
Medicinal HERBS. } { SIMPLE.

HERBAGE, a collective name, comprehending all kinds of herbs.

The antient hermits lived altogether on *herbage*.

What makes the principal difference in the goodneſs of butters and cheeſes, is the difference of *herbage*.

HERBAGE, in law, ſignifies the green paſture, or fruits of the earth, provided by nature for the bite or food of cattle.

HERBAGE is alſo uſed for a liberty which a man hath to feed his cattle in another man's ground; as, in the foreſt.

HERBAL, a book which treats of plants; or deſcribes the figure, genus, ſpecies, properties, virtues, *&c.* of herbs, trees, ſeeds, plants, *&c.*

Such are Gerard's *Herbal*, Parkinſon's *Herbal*, &c.

HERBAL is alſo uſed for a ſet or collection of ſpecimens of the ſeveral kinds of plants, dried and preſerved in the leaves of a book, called alſo a HORTUS SICCUS.

In the *Philoſophical Tranſactions*, we have a method deſcribed for preſerving ſpecimens for ſuch an *herbal*.—The flowers, leaves, *&c.* gathered perfectly ripe, and in their true colours, are to be ſpread on whity-brown paper, with the parts all diſplayed as diſtinctly as may be. If the ſtem, or body of the flower, *&c.* be thick, one half is to be pared away to make it lie flat. Over theſe is to be ſpread another paper; and the whole is to be put between two iron plates, ſcrewed tight together, and thus baked in an oven for two hours. When taken out, waſh the plants over with a mixture of brandy, and aqua fortis, and lay them on freſh paper to dry. Laſtly, lick over the back ſides with a bruſh dipped in a diſſolution of gum tragacanth, to make them ſtick; and lay them in the paper book, where they will lie faſt, and always look freſh.

HERBALIST, or HERBORIST, a perſon ſkilful in plants; the ſame with *botaniſt*.

HERBE, in the academies, a reward, or ſome good ſtuff given to a horſe that has worked well in the manage.

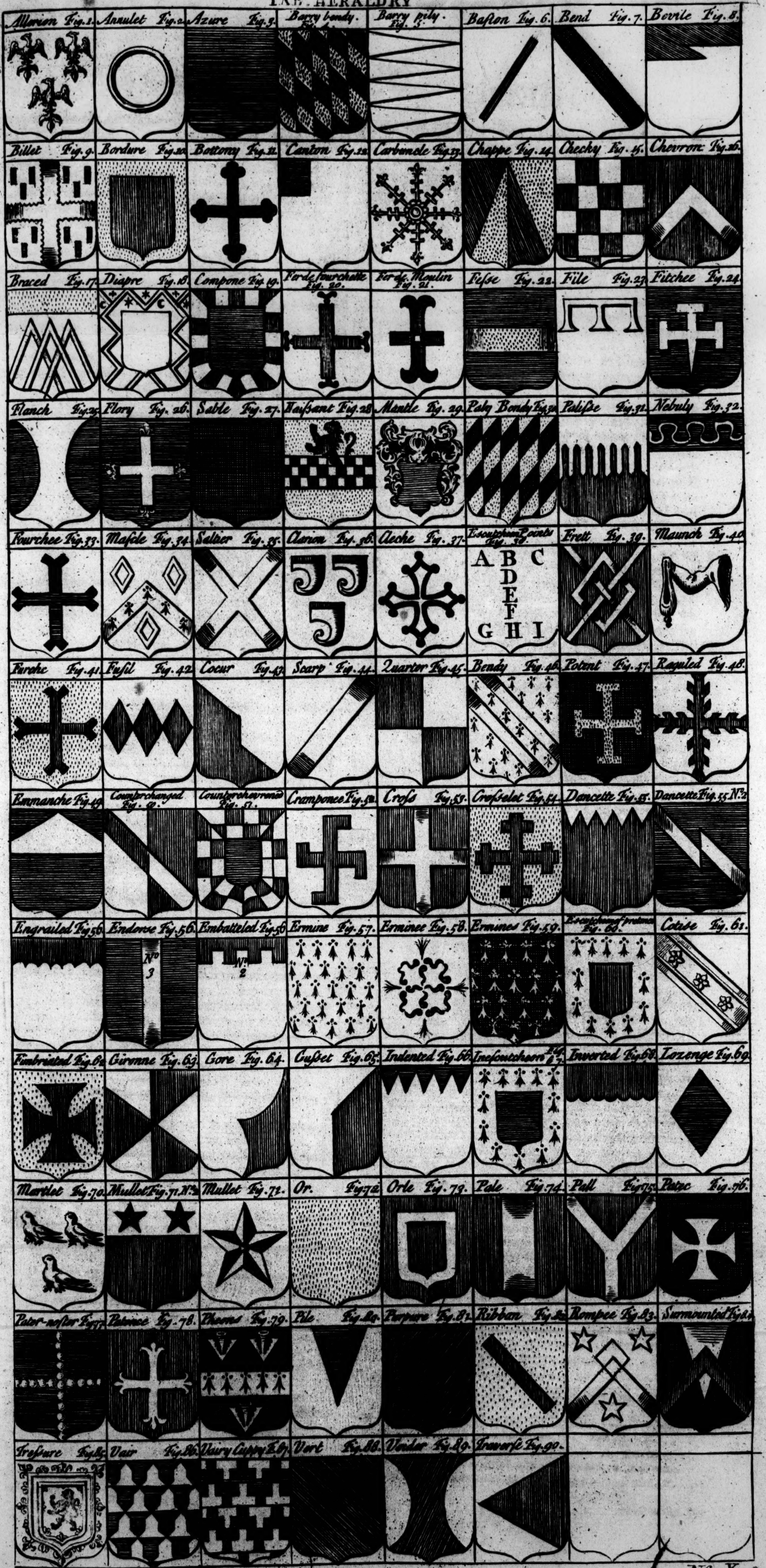
HERBENGER, or HARBINGER. See HARBINGER.

HERCULES, ΕΝΓΟΝΑΣΙΝ, in aſtronomy, one of the conſtellations of the northern hemiſphere. See CONSTELLATION.

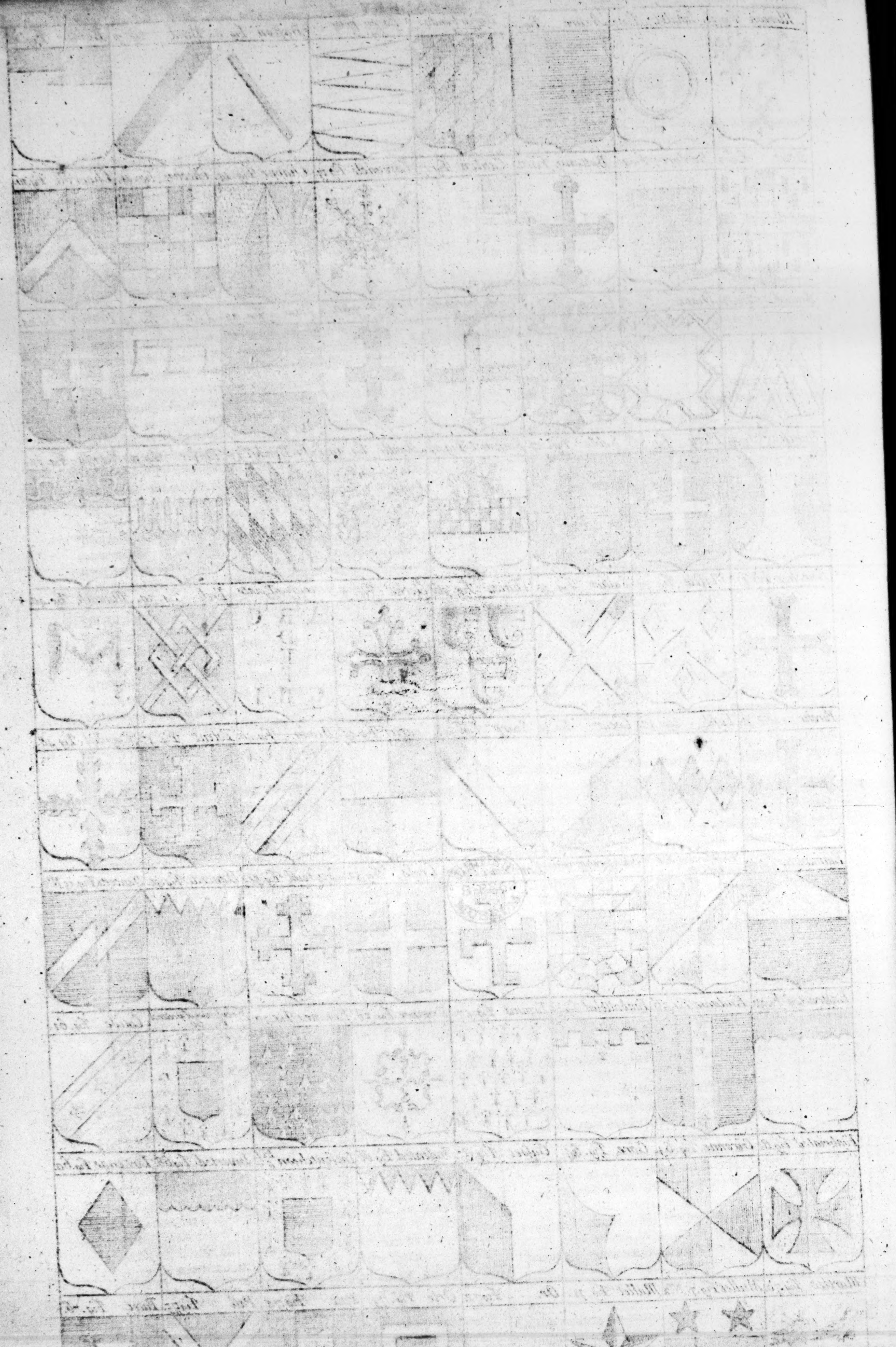
The ſtars in the conſtellation *Hercules*, in Ptolemy's catalogue, are 29; in Tycho's, 28; in the Britannic catalogue, 95. The longitudes, latitudes, magnitudes, *&c.* whereof are as follow:

Names and Situations of the Stars.	Signs	Longit.			Lat. North			Mag.
		°	′	″	°	′	″	
In the extrem. of the preced. foot	♎	28	7	58	57	6	9	5
Another following this, and con-		28	20	48	57	14	25	5 4
[tiguous	♏	0	41	32	57	13	30	6
In the preceding thigh		3	49	2	60	15	56	4
		3	53	59	61	5	43	5 6
5								
		4	41	24	60	38	53	6
That preceding the ulna.		19	8	16	37	35	34	5
		23	20	9	25	25	42	5 6
		23	7	21	30	14	32	6
North in the calf of the prec. leg		3	58	25	64	20	11	4
10								
In the preced. ulna; according to		21	18	33	37	14	20	4
[Bayer, in the hand		21	28	9	37	26	10	6
Another contig. to this to the		22	24	34	37	3	43	6
[south.		20	23	23	43	43	58	5
In the preced. south. calf of leg.		7	20	50	63	50	9	4
15								
North of the preced. in the club		24	50	5	32	11	7	6 5
Another contiguous to this		25	8	1	32	10	39	6
		23	1	35	39	22	43	5 6
In the preceding arm [preced.		24	51	32	40	2	12	3
In the club, the middle of the		28	27	13	28	10	49	6
20								
Againſt the preceding knee		9	56	46	65	51	29	4
		19	37	11	54	15	48	5
		19	43	17	54	10	22	5
		20	30	51	52	53	41	6
North of the ſubſeq. in the club		27	12	27	35	13	14	4 5
25								
[the arm-pit		81	52	35	57	53	20	5
In the preceding ſhoulder, near		26	45	10	42	44	55	3
South. of the preced. in the club	♐	1	3	32	27	9	23	6
Mid. of the ſubſeq. in the club.	♏	29	53	38	33	2	45	5
South. in the middle of the prec.		17	6	16	62	19	46	5
30 [thigh								
		24	53	26	51	41	38	6
		11	13	55	69	0	0	6
[thigh	♐	1	55	58	28	53	42	6
North. in the middle of preced.	♏	18	51	39	63	11	37	5
Preceding in the extremity of the	♐	3	30	30	26	12	9	6
35 [club								
		2	4	16	34	16	30	6
	♏	28	46	42	48	35	14	5
In the preceding ſide.		27	8	51	53	7	14	3 4
		14	58	13	69	33	21	5
South. of the ſubſeq. in the club	♐	4	12	55	30	41	30	5 6
40								
[againſt the buttocks		2	46	35	37	45	47	6
In the top of the preceding thigh	♏	24	22	7	60	19	48	3
Middle in the extremity of the	♐	5	18	31	27	27	57	5
[club		4	25	27	33	17	27	6
Subſequent in the extremity of		5	42	37	29	32	2	5 6
45 [the club								
		4	29	34	35	27	56	6
		0	24	26	51	54	1	6 5
		4	52	18	37	14	19	6
		0	55	30	51	48	33	5
That between the ſhoulders.		2	44	56	46	47	8	5
50								
		22	17	39	67	25	36	5 6
		1	8	7	53	45	58	5
In the neck		5	15	10	40	46	55	4 5
		4	26	56	47	41	7	6
		7	46	52	37	32	6	6
55								
That in the following ſide		3	57	40	53	17	15	3
More ſouth. in the foll. buttock		3	37	33	55	56	10	6
Preced. in the crown of the head		9	14	39	35	26	42	5 6
In the riſe of the follow. thigh		4	27	5	57	54	38	6
		8	18	4	47	12	48	6
60								
In the head		11	49	24	37	18	54	3
In the following ſhoulder		10	24	2	47	44	13	3 4
Subſeq. in the crown of the head		13	24	13	33	55	38	5 6
Foremoſt of three in the thigh		7	41	13	59	35	33	3 4
Foremoſt of two in the belly		9	33	15	55	59	17	5
65								
Middle on the following thigh		8	33	10	60	8	25	5
That following the hind ſhoulder		12	25	7	47	31	53	5
Subſequent and ſouth againſt the		10	53	28	55	32	12	6
[belly		6	13	52	69	2	52	6
Laſt of three in the thigh		10	59	0	60	10	3	4

TAB. HERALDRY


Allerion Fig. 1.
Annulet Fig. 2.
Azure Fig. 3.
Barry bendy. Fig. 4.
Barry pily. Fig. 5.
Baſton Fig. 6.
Bend Fig. 7.
Bevile Fig. 8.
Billet Fig. 9.
Bordure Fig. 10.
Bottony Fig. 11.
Canton Fig. 12.
Carbuncle Fig. 13.
Chappe Fig. 14.
Checky Fig. 15.
Chevron Fig. 16.
Braced Fig. 17.
Diapre Fig. 18.
Compone Fig. 19.
Fer de fourchette Fig. 20.
Fer de Moulin Fig. 21.
Feſse Fig. 22.
File Fig. 23.
Fitchee Fig. 24.
Flanch Fig. 25.
Flory Fig. 26.
Sable Fig. 27.
Naiſsant Fig. 28.
Mantle Fig. 29.
Paly Bendy Fig. 30.
Paliſse Fig. 31.
Nebuly Fig. 32.
Fourchee Fig. 33.
Maſcle Fig. 34.
Saltier Fig. 35.
Clarion Fig. 36.
Aeche Fig. 37.
Eſcutcheon Points Fig. 38.
A B C
D
E
F
G H I
Frett Fig. 39.
Maunch Fig. 40.
Furche Fig. 41.
Fuſil Fig. 42.
Cocur Fig. 43.
Scarp Fig. 44.
Quarter Fig. 45.
Bendy Fig. 46.
Potent Fig. 47.
Raguled Fig. 48.
Emmanche Fig. 49.
Counterchanged Fig. 50.
Countercheveroned Fig. 51.
Cramponee Fig. 52.
Croſs Fig. 53.
Croſselet Fig. 54.
Dancette Fig. 55.
Dancette Fig. 55 No. 2.
Engrailed Fig. 56.
Endorse Fig. 56.
No 3
Embatteled Fig. 56.
No 2
Ermine Fig. 57.
Erminee Fig. 58.
Ermines Fig. 59.
Eſcutcheon of pretence Fig. 60.
Cotise Fig. 61.
Fimbriated Fig. 62.
Gironne Fig. 63.
Gore Fig. 64.
Guſset Fig. 65.
Indented Fig. 66.
Ineſcutcheon Fig. 67.
Inverted Fig. 68.
Lozenge Fig. 69.
Martlet Fig. 70.
Mullet Fig. 71 No. 2.
Mullet Fig. 71.
Or. Fig. 72.
Orle Fig. 73.
Pale Fig. 74.
Pall Fig. 75.
Patee Fig. 76.
Pater-noſter Fig. 77.
Patonce Fig. 78.
Pheons Fig. 79.
Pile Fig. 80.
Purpure Fig. 81.
Ribban Fig. 82.
Rompee Fig. 83.
Surmounted Fig. 84.
Treſsure Fig. 85.
Vair Fig. 86.
Vairy Cuppy Fig. 87.
Vert Fig. 88.
Voider Fig. 89.
Traverſe Fig. 90.

No. X.



Names and Situations of the Stars.	Sign.	Longitude °	′	″	Latitude North. °	′	″	Magnit.
70								
In the hind arm	♐	15	32	52	49	20	18	5
Precedent of three in the hind foot		8	16	30	71	14	16	6
Middle in the following foot		13	13	40	71	48	31	5
In the following tibia		15	32	10	69	18	24	4
That in the following arm		20	55	31	51	12	41	3 4
75								
Laſt of three in the foot		20	23	36	71	49	49	6
In the calf of the following leg		22	43	20	63	28	19	6
In the following knee		24	5	50	60	43	57	3
Middle in the carpus of the following arm		24	49	26	52	44	27	3 4
Precedent and ſouth. in the branch		25	42	0	40	19	26	5
80								
North in the carpus		25	5	57	53	40	34	4
Precedent of two middle ones in the branch		26	7	34	45	4	57	4 5
		26	23	48	44	19	16	6
		27	37	30	45	42	6	6
Precedent of two over the carpus		28	14	26	54	1	44	6
85								
Inform. under the ſubſeq. in the carpus		28	21	20	49	33	56	6
Subſeq. and ſouth. of three in the carpus		28	20	10	52	13	26	4 5
		28	29	58	43	30	48	6
Laſt of the middle ones in the branch		28	29	54	44	17	9	4 5
Laſt over the carpus		0	5	11	54	50	30	6
90								
		2	21	15	45	19	56	6 7
That in the hind hand		3	8	56	52	13	13	5 6
Small one over it		3	13	35	53	12	30	6 7
Subſequent in the branch		3	25	30	45	6	56	4
Inform. behind the branch over the eagle's tail		13	46	35	45	17	5	5
95								

HERCULEUS *Morbus*, in medicine, the epilepſy; thus called from the terror of its attacks, and the difficulty of cure. See Epilepsy.

HERD, among hunters, a company, or aſſemblage, of black or fallow beaſts; in contradiſtinction to *flock*.

An *herd* of dear from ſuch a foreſt.—The deer begin to *herd* in the month of December.

In the hunting language, there are various terms uſed for companies of divers kinds of game.—We ſay an *herd* of harts and bucks; a *bevy* of roes; a *rout* of wolves; a *richeſs* of martens, *&c.* See Hunting.

HERDEWICH*, Herdewic, or Herdewych, in our antient law-books, a grange, or place for cattle and huſbandry.

* *Et unam* herdewycham *apud bethcotum in peco*, &c. Mon. Angl.

HEREBODE*, the king's edict, antiently iſſued to command his ſubjects into the field.

* The word is formed of the Saxon heɼe, army; and boꝺe, meſſenger.

HEREDITAMENTS, in law, are ſuch things immoveable, as a man may have to himſelf and his heirs, by way of inheritance; or which, not being otherwiſe bequeathed, do naturally, and of courſe, deſcend to him who is next heir of blood; and fall not to the executor or adminiſtrator, as chattels do.

Hereditaments is a word of a large extent; and is much uſed in conveyances: for, by the grant of hereditaments, iſles, ſeigniories, manors, houſes, and lands, of all ſorts, charters, rents, ſervices, advowſons, conveyances, and whatever may be inherited, will paſs.

HEREDITARY, ſomething appropriated to a family; or belonging thereto by right of ſucceſſion, from heir to heir.

Of monarchies, ſome are *hereditary*, others elective: of *hereditary* monarchies ſome deſcend only to the heirs male, as in France; others to the next of blood, whether male or female, as in England, Spain, *&c.*

The dominions of the emperor are diſtinguiſhed into *hereditary*, which are thoſe he derives from his anceſtors by right of blood and inheritance; and thoſe he enjoys in quality of emperor, by virtue of his election.

Hereditary is alſo applied to offices, and honours annexed to certain families.—Thus the offices of lord great chamberlain, and earl marſhal, are *hereditary* in the families of the Howards, and Lindſeys.

It is of no very long date, that the dignities of duke, count, *&c.* are *hereditary*.

The canon law has taken all poſſible precautions to prevent benefices from becoming *hereditary*.

Hereditary is alſo applied figuratively, to good or evil qualities, habitudes, *&c.* capable of being tranſmitted, by blood, from father to ſon.

The gout, king's evil, madneſs, *&c.* are *hereditary* diſeaſes; *i. e.* they are ſometimes tranſmitted from the parents in the ſtamen, or firſt rudiments of the fœtus. And ſuch, probably, is the origin of numerous other chronic diſeaſes.

Hereditary *Right* denotes a right, or privilege, in virtue whereof a perſon ſucceeds to the effects of his anceſtors.

The nonjurors, *&c.* hold *hereditary right* to be a *divine* right, *i. e.* of God's own appointment; and conſequently indiſpenſable; or, as they call it, *indefeaſible*. On this account they ſtickle for the obligation of *hereditary right*, in favour of the deſcendents of king James II.

HERESIARCH*, *Arch-heretic*; the founder or inventer of an hereſy; or a chief and ring-leader of a ſect of heretics.

* The word is Greek, ἁιρεσιαρχης, compounded of ἁιρεσις, *hæreſis*, hereſy; and αρχος, *princeps*, prince, chief.

Thus Arius and Socinus are called *hereſiarchs*; as being the founders and patriarchs of the Arians and Socinians.

Simon Magus is recorded as the firſt *hereſiarch* under the new law.

HERESY, an error in ſome eſſential point of Chriſtian faith, maintained with obſtinacy and diſingenuity.

It is properly the obſtinacy that conſtitutes the character of *hereſy*, not the error.—When a man is humble and ingenuous, ready and deſirous to receive further light and inſtruction; and when he gives every thing, urged againſt him, its due weight; he is not guilty of *hereſy*—*Errare poſſum*; hæreticus *eſſe nolo*; is a celebrated maxim of St. Auguſtine.

Tertullian, in his treatiſe *Of Preſcriptions*, defines *hereſy* by *choice*; agreeably to the etymology of the word.—An heretic, in this ſenſe, is one, who, of his own choice, on his own bottom, invents, propoſes, or even embraces, any new dogma, or article of faith.

The word is formed of the Greek ἁιρεσις, which, among the antients, had nothing of that odious ſignification attached to it by eccleſiaſtical writers of later times. It only ſignified a *peculiar opinion*, *dogma*, or *ſect*.

In this ſenſe, they ſaid, the *hereſy* of the Stoics, of the Peripatetics, *&c.* meaning their ſect, their ſyſtem, *&c.*

Heresy is ſometimes alſo uſed, by extenſion, for a propoſition that is notoriouſly falſe, in ſome other ſcience.

Thus, it is an *hereſy* in morals, to ſay, that a man muſt be ungrateful. It is an *hereſy* in geometry, to ſay, that two triangles, whoſe angles are ſimilar, are not proportional.

HERETIC, a perſon who maintains, or adheres to, an hereſy, eſpecially if convicted thereof.

A real *heretic*, is properly he who maintains a falſe opinion, out of a ſpirit of obſtinacy, faction, or hypocriſy.—An *heretic* makes profeſſion of Chriſtianity; by which he is diſtinguiſhed from an *infidel*, *Jew*, and *idolater*.

A man does not become an *heretic* by doing a thing condemned, or forbidden, by the goſpel; and, of conſequence, repugnant to the Chriſtian faith; but, by a ſtiff diſingenuous adherence to an opinion oppoſite to ſome article of the Chriſtian faith; whether it regard ſpeculation or practice.

The ſects of *heretics*, who have, at different times, diſturbed the church, are innumerable.

The emperor Maximus, who uſurped the throne from Gratian, was the firſt that decreed the pains of death to *heretics*.

By our own law, *heretics* were antiently to be burnt. And there was a writ, *De hæretico comburendo*, which lay for that purpoſe; but it was taken away by Stat. Car. II.

HERIOT. See the article Hariot.

HERISSON, in fortification, a beam armed with iron ſpikes, the points whereof are turned outward; ſupported in the middle by a ſtake, wherein is a pivot on which it turns: it ſerves as a barrier to block up a paſſage.

Heriſſons are frequently placed before gates; eſpecially the poſterns of a town or fortreſs, to ſecure thoſe paſſages, which muſt of neceſſity be frequently opened and ſhut.

HERITAGE. See the article Inheritance.

HERMAPHRODITE*, ʽΕΡΜΑΦΡΟΔΙΤΟΣ, a perſon who has both the ſexes, or the genital parts both of male and female.

* The word is formed of the Greek Ἑρμαφροδιτος, a compound of Ἑρμης, Mercury, and Αφροδιτη, Venus; *q. d.* a mixture of Mercury and Venus, *i. e.* of male and female. For, it is to be obſerved, *Hermaphroditus* was orignally a proper name, applied, by the heathen mythologiſts, to a fabulous deity, whom ſome repreſent as a ſon of *Hermes*, Mercury, and *Aphrodite*, Venus; and who, being deſperately in love with the nymph Salmacis, obtained of the gods to have his body and hers united into one. Others ſay, that the god *Hermaphroditus* was conceived as a compoſition of Mercury and Venus, to exhibit the union between eloquence, or rather commerce, whereof Mercury was god, with pleaſure, whereof Venus was the proper deity. Laſtly, others think this junction intended to ſhew, that Venus, pleaſure, was of both ſexes; as, in effect the poet Calvus calls Venus a god.

Pollentemque Deum Venerem.

As alſo Virgil, *Æneid.* Lib. II.

Diſcedo, ac, ducente Deo, flammam inter & hoſtes
Expedior.——

M. Spon obſerves, Heſychius calls Venus *Aphroditos*: and Theophraſtus affirms, that Aphroditos, or Venus, is *Hermaphroditus*; and that, in the iſland of Cyprus, ſhe has a ſtatue, which repreſents her with a beard like a man.—The Greeks alſo call *hermaphrodites* ανδρογυνοι, *androgyni*, *q. d.* men-women.

Naturaliſts diſtinguiſh four kinds of *hermaphrodites:* whereof one kind only are the perfect *hermaphrodites*, or thoſe who have the pudenda of both kinds; but theſe are rarely, if ever, found. It is affirmed, however, that there were once two ſuch *hermaphrodites* married to each other; and that each begot children upon the other. See various inſtances of *hermaphrodites*, in a diſſertation of M. Loffhagen, in the *Nov. Lit. Mar. Balth.* 1704. p. 105. Bauhine, *De Hermaphrod.* Ludov. Bonaciol. *Tract. de Part. Form.* cap. 9. Aldrovand. *de Monſtr.* cap. 1. Paul Zacch. *Quæſt. Med. Legal.* T. I. L. vii. § 8.

Others diſpute all that has been ſaid on the ſubject; maintaining, that the ill conformation of the parts of generation, the teſticles being detained or concealed in men, and the clitoris longer than ordinary in women, have been the ſole occaſion of ſo erroneous a notion. To which may be added, ſteatomatous tumors of the labia pudendi, which have ſometimes paſſed for teſticles.

Dr. Quincy thinks, that the frequent uſe of laſcivious frictions, and titillations, may contribute greatly to the extention of the clitoris; and make it paſs with the ignorant for a penis. This, he adds, was the caſe in the celebrated inſtance of the two nuns at Rome, who, after they had lived women for many years, were ſaid to have become men.—But, on what grounds he aſſerts this, we do not know.

‘ The extraordinary ſize of the clitoris, ſays Dr. Drake, and
‘ its propendence, ſometimes, out of the body in infants,
‘ makes the women miſtake ſuch children for that ſort of mon-
‘ ſters called *hermaphrodites*. Of this kind, I had one brought
‘ to me; the clitoris whereof hung out of the body ſo far,
‘ at about three years old, that it reſembled very much a
‘ penis; but it wanted a perforation: and inſtead of that, juſt
‘ behind it, the urine iſſued at an hole, which was nothing
‘ elſe but the corner of the rima; the clitoris filling all the
‘ reſt of the orifice: ſo that the parents miſtook it for a boy;
‘ and, as ſuch, chriſtened it.—But the neighbours called it
‘ an *hermaphrodite*.’ Anthropol. p. 148.

But we have an authentic account, in the hiſtory of the *Royal Academy of Sciences*, of a real *hermaphrodite*; which may put the point out of queſtion.—This perſon had all the external characters of a woman in the face, neck, breaſts, hips, and pudendum; and, accordingly, had been baptized in that quality, and named Margaret: but had withal the real characters of a man, and a very able one.—The pudendum muliebre appeared very well, but was not above two fingers breadth deep; out of the middle of the rima, or aperture thereof, hung a pretty bulky penis, which, in an erection, came out eight inches. The penis was well formed, except that it had no prepuce, nor was accompanied with any apparent teſticles. The urine and ſeed came out at it, as in men; and, what was very extraordinary, the menſes flowed thro’ the ſame; and this, very regularly, once a month.

The perſon was brought ſick to the hoſpital of St. James at Tholouſe; and the account was given by M. Veay, ſurgeon of the ſame hoſpital; who adds, that, having ſhewn the whole to ſeveral phyſicians, and the vicars general, they ordered the party to take the name and habit of a man; it being apparent, that he could do the office of a man; but not that of a woman.

The interpreters, and commentators of the civil law, hold, that an *hermaphrodite*, who has choſen the male ſex, as that which prevails moſt in him, may no longer do the office of a woman. And the French lawyers produce an arret of the parliament of Paris; whereby a young *hermaphrodite* was condemned to be burnt, on that very account.

At Athens, and Rome, they looked on *hermaphrodites*, as ominous monſters; and precipitated them into the ſea: as we are informed by Alexander ab Alexandro.

S. de Ranefort relates, that, at Surat, there are abundance of *hermaphrodites*; who, with womens clothes, wear mens turbans, to diſtinguiſh them; and let all the world know they have two ſexes.

In 1376. Albert, biſhop of Bremen, and brother of the duke of Brunſwick, was accuſed by John de Ceſterval, dean of his chapter, with being an *hermaphrodite:* but he cleared himſelf.

J. Frederic Mayer, a Lutheran divine, has an expreſs diſſertation, to prove, that an *hermaphrodite* cannot be a prieſt: it was printed at Grypſwald in 1705. And Willenberg, another Lutheran of Dantzick, has wrote to prove them excluded from all civil employments, like women.

Hermaphrodite is alſo applied, metaphorically, to divers other things, beſides the human ſpecies.

The lateſt botaniſts make a diviſion of plants, which they call *hermaphrodites*; as having both the male and female parts of generation; *viz.* the ſtamina and piſtil in the ſame flower.

Divers of the inſect and reptile kind are alſo *hermaphrodites*; particularly, worms, ſnails, &c.

In the *Memoirs of the French Academy*, we have an account of this very extraordinary kind of *hermaphrodites*; which not only have both ſexes, but do the office of both at the ſame time.—Such are earth-worms; the round-tailed worms found in the inteſtines of men and horſes; land-ſnails, and thoſe of freſh waters; and all the ſorts of leaches. And, as all theſe are reptiles, and without bones, M. Poupart concludes it probable, that all other inſects, which have theſe two characters, are alſo *hermaphrodites*.

The method of coupling, practiſed in this claſs of *hermaphrodites*, may be illuſtrated in the inſtance of earth-worms. Vid. Ray’s *Hiſt. Inſect.* p. 2. Theſe little creatures creep, two by two, out of holes proper to receive them; where they diſpoſe their bodies in ſuch manner, as that the head of the one is turned to the tail of the other. Being thus ſtretched lengthwiſe; a little conical button, or papilla, is thruſt forth by each; and received into an aperture of the other.

Theſe animals, being male in one part of the body, and female in another; and the body flexible withal; M. Homberg does not think it impoſſible, but that an earth-worm may couple with itſelf; and be both the father and mother of its young: an obſervation, which, to ſome, appears highly extravagant!

HERMATHENA*, ‘ΕΡΜΑΘΗΝΗ, in antiquity, a ſtatue repreſenting Mercury and Minerva both in one.

* The word is a compound of *Hermes*, Mercury; and *Athena*, a Greek name of Minerva.

M. Spon gives divers figures of *hermathenæ*, in his *Rech. Cur. de l’ Antiquité*, p. 98. They are a ſort of ſtatues raiſed on ſquare pedeſtals, after the manner of *Hermæ*; only that the attributes of Minerva are added thereto.

HERMERACLES, in antiquity, a ſtatue compounded of the figures of Mercury and Hercules.

M. Spon gives us a type of an *hermeracles*, *Rech. Cur. de l’ Antiq.* p. 96. fig. 13. The name, he obſerves, was given to a divinity, repreſented after the manner of *Hermes*, with the additional attributes of *Hercules*; *viz.* a lion’s ſkin, and a club.—This he aſcribes to the cuſtom among the Greeks, of placing the ſtatues of Mercury and Hercules in the academy, and gymnaſia, as both the one and the other preſided over the exerciſes of the youth.

HERMES, or **Herma**, among antiquaries, a ſort of ſquare or cubical figure of the god Mercury; uſually made of marble, though ſometimes of braſs or other materials, without arms or legs; and planted by the Greeks and Romans in their croſs-ways.

Servius gives us the origin hereof, in his comment on the eighth book of the *Æneid*. Some ſhepherds, ſays he, having one day caught Mercury, called, by the Greeks, *Hermes*, aſleep on a mountain; they cut off his hands: from which he, as well as the mountain, where the action was done, became denominated Cyllenius, from κυλλός, maimed: and thence, adds Servius, it is, that certain ſtatues without arms are denominated *hermes’s*, or *hermæ*.—But this etymology of the epithet Cyllenius contradicts moſt of the other antient authors; who derive it hence, that Mercury was born at Cyllene, a city of Elis; or even on the mountain Cyllene itſelf, which had been thus called before him.

Suidas gives a moral explication of this cuſtom, of making ſtatues of Mercury without arms. The *hermes’s*, ſays he, were ſtatues of ſtone placed at the veſtibles, or porches, of the doors and temples at Athens; for this reaſon, that, as Mercury was held the god of ſpeech, and of truth, ſquare and cubical ſtatues were peculiarly proper; having this in common with truth, that, on what ſide ſoever they are viewed, they always appear the ſame.

It muſt be obſerved, that Athens abounded more than any other place in *hermes’s:* there were abundance of very ſignal ones in divers parts of the city; and they were indeed one of the principal ornaments of the place. They were alſo placed in the high roads, and croſs-ways; by reaſon Mercury, who was the courier of the gods, preſided over the highways: whence he had his ſurname of Trivius, from *trivium*; and that of Viacus, from *via*.

From Suidas’s account above-cited, it appears, that the terms, *termini*, uſed among us in the door-caſes, balconies, &c. of our buildings, take their origin from theſe Athenian *hermes’s*; and that it were more proper to call them *hermetes* than termini; for that, though the Roman termini were ſquare ſtones, whereon an head was frequently placed, yet they were rather uſed as land-marks, and mere-ſtones, than as ornaments of building.

HERMETIC, or **Hermetical** *Art*, a name given to chemiſtry, on a ſuppoſition that Hermes Triſmegiſtus was the inventor thereof; or that he excelled therein. See Chymistry.

We know but little of this Hermes; only that he was an antient king of Egypt, a thouſand years prior to Æſculapius.—Zoſimus Panopolita mentions him, as having wrote of natural things: and there are ſeveral pieces ſtill extant under his name; but they are all ſuppoſititious.

Hermetical *Philoſophy*, is that which undertakes to ſolve and explain all the phænomena of nature; from the three chemical principles, ſalt, ſulphur, and mercury.

A conſiderable augmentation was made to the antient *hermetical philoſophy*, by the modern doctrine of alcali and acid.

HERMETICAL *Phyſic*, or *Medicine*, is that ſyſtem, or hypotheſis, in the art of healing, which explains the cauſes of diſeaſes, and the operations of medicines, on the principles of the *hermetical* philoſophy; and, particularly, on the ſyſtem of alcali and acid.

HERMETICAL *Seal*, a manner of ſtopping, or cloſing, glaſs veſſels, for chemical operations, ſo very accurately, that nothing can exhale, or eſcape; not even the moſt ſubtil ſpirits.

It is performed by heating the neck of the veſſel in the flame of a lamp till it be ready to melt; and then, with a pair of pinchers, twiſting it cloſe together.—This they call putting on *Hermes's ſeal*.

Though there are other ways of ſealing veſſels *hermetically*; viz. by ſtopping them with a plug, or ſtopple, of glaſs, well luted into the neck of the veſſel.—Or, by turning another ovum philoſophicum upon that wherein the matter is contained.

HERMHARPOCRATES, or **HERMARPOCRATES**, in antiquity, a deity, or figure of a deity, compoſed of Mercury, and Harpocrates, the god of ſilence.

M. Spon gives us an *hermharpocrates* in his *Rech. Cur. de l'Antiquité*, p. 98. fig. 15. having wings on his feet, like Mercury; and laying his finger on his mouth, like Harpocrates. It is probable they might mean, by this combination, that ſilence is ſometimes eloquent.

HERMIANI, or **HERMIATITÆ**, a ſect of heretics, in the ſecond century; thus called from their leader, Hermias.—They were alſo denominated Seleuciani.

One of their diſtinguiſhing tenets was, that God is corporeal.—Another, that Jeſus Chriſt did not aſcend into heaven with his body, but left it in the ſun.

HERMIT *, or **EREMIT**, **EREMITA**, a devout perſon, retired into ſolitude, to be more at leiſure for prayer and contemplation, and to diſencumber himſelf of the affairs of the world.

* The word is formed from the Greek ἐρημος, *eremus*, wilderneſs; and, according to the etymology, ſhould rather be written *eremit*, the ſpirit being ſoft.

An *hermit* is not reputed a religious, unleſs he have made the vows.

Paul, ſurnamed the *Hermit*, *Paulus Eremitanus*, is uſually reckoned the firſt *hermit*; though S. Jerom, at the beginning of the life of that ſaint, ſays, it is not known who was the firſt.—Some go back to S. John the Baptiſt; and others to Elias.

Others make S. Antony the founder of the *hermetical* life; but others take him to have only rekindled and heightened the fervour thereof; and hold, that the diſciples of that ſaint owned S. Paul of Thebes for the firſt perſon that practiſed it.—The perſecutions of Decius and Valerian are ſuppoſed to have been the occaſion.

Several of the antient *hermits*, as S. Antony, *&c.* though they lived in deſerts, had yet numbers of religious accompanying them.

There are alſo divers orders and congregations of religious, diſtinguiſhed by the title of *hermits*; as, *hermits* of S. Auguſtine; of S. John Baptiſt; of S. Jerom; of S. Paul, *&c.*

HERMITS *of S. Auguſtine*, is a religious order, more frequently called Auguſtines, or Auſtin-friers.

It is commonly pretended to have been inſtituted by that father; but without much ground. This is pretty certain, he laid the foundations of a monaſtic order about the year 388. and retired to his father's eſtate near Tagaſta, to lead a religious life, with ſome companions: but it does not at all appear, that this order has ſubſiſted ever ſince; nor that the *hermits* of S. Auguſtine are deſcended, without interruption, from them.

This order, in reality, only commenced under pope Alexander IV. in the middle of the thirteenth century, and was formed gradually by the union of divers congregations, which had no rule, or at leaſt had not that of S. Auguſtine.—Theſe congregations were that of John Bonites, the moſt antient of all; that of the *hermits* of Tuſcany; that of the Sack, or Bag; thoſe of Vallerſuta; of S. Blaiſe; of S. Benedict de Monte Fabalo; of the Tower of Palmes; Sancta Maria de Murcetta; of S. James de Molinio, and de Loupſavo near Lucca.

This coalition was not made by Innocent IV. as moſt hiſtorians of the order contend: all that pontiff did, was to unite ſome *hermits* in Tuſcany, to whom he gave the rule of S. Auguſtine; but theſe were a diſtinct body from thoſe juſt mentioned.——It was Alexander IV. that made the grand union: as appears from his bull, publiſhed in the *mare magnum* of the Auguſtines.

That pontiff undertook this union from the firſt year of his pontificate; *viz.* the year 1254. It was the year 1256 before the ſuperiors of all the congregations could be got together. In the general chapter the union was effected; Lanfranc Septala, a Milaneſe, was choſen general, and the order divided into four provinces; *viz.* thoſe of France, Germany, Spain, and Italy.

Since that, other orders have been united to the *hermits* of S. Auguſtine; as the Poor Catholics, *&c.* and the order now conſiſts of 42 provinces.

After ſo many unions, the order began to divide again, into ſeparate congregations, according to the relaxations, and reformations, that afterwards got footing.—Such are the Barefooted *hermits* of S. Auguſtine; the congregation of Centorbi, or the Sicilian reform; the congregation of the Colorites, in Calabria, *&c.*

There are alſo ſeveral congregations of nuns, under the appellation of *hermits of S. Auguſtine*.

There is alſo a third order of *hermits of S. Auguſtine*. See THIRD *Order*.

HERMITS *of Brittini*, was a congregation formed under pope Gregory IX. who gave them the rule of S. Auguſtine.

Their firſt *hermitage*, or abode, was in a ſolitary place, called Brittini, in the marquiſate of Ancona: whence the name. They led a very auſtere life; they never eat any meat, and faſted much.

HERMITS *of Camalduli*. See the article CAMALDULIAN.

HERMITS *of S. Jerom*. See the article JERONYMITES.

HERMITS *of S. John Baptiſt*, was a religious order in Navarre, whoſe principal convent, or *hermitage*, was ſeven leagues from Pampelona.

Till the time of Gregory XIII. they lived under the obedidience of the biſhop of that city; but the pope confirmed them a religious order; approved their conſtitutions; and admitted them to make the vows.—Their way of living was exceeding auſtere; they went bare-footed; wore no linen; lay on boards, with a large ſtone for a pillow; and bore a large wooden croſs on their breaſts.

Their houſe was a kind of laura, rather than a convent; cantoned out into cells, in which they lived ſolitary, in the middle of a wood.

HERMITS *of S. Paul*, the firſt *hermit*, is an order formed in the thirteenth century, by the union of two bodies of *hermits* in Hungary; *viz.* thoſe of S. James de Patach, and thoſe of Piſilia near Zante.

Upon being incorporated, they choſe S. Paul, the firſt *hermit*, for the common patron and protector of their order, and aſſumed his name.—They multiplied very conſiderably in Hungary, Germany, Poland, and other provinces; and, at length, came to have ſeventy monaſteries in Hungary alone: but the revolutions and wars in that kingdom reduced them again.

HERMITAGE properly ſignifies a little hut, or habitation, in ſome deſert place, where an hermit dwells.

HERMITAGE is alſo popularly attributed to any religious cell, built and endowed in a private and recluſe place, and thus annexed to ſome large abbey, of which the ſuperior was called *hermita*.

HERMODACTYLS, in medicine, a drug uſed as a gentle purgative, *&c.*

Naturaliſts, for a long time, were not agreed as to the origin of this drug.—Some would have it the root, and others the fruit, of a plant.—To reconcile them, ſome allowed two kinds of *hermodactyls*; the one a root, the other a fruit.

The *hermodactyl* is a root about the ſize of a little cheſtnut, in figure reſembling a heart; ruddy without, very white within; of a light, fungous ſubſtance; without fibres; eaſily broken; and reducible into a powder like flour; of a ſweetiſh taſte, but ſomewhat viſcid. It is brought to us dried, from Egypt and Syria.

Authors differ as to the plant which produces it. The moſt judicious allow it to be the root of a ſort of colchicum; tho' others take it for a tuberous iris.

Hermodactyls, are chiefly uſed to purge pituitous humours of the brain and joints.—They are ſo efficacious in ſcouring the mucilaginous glands, and preſerving them from the lodgments of gritty matters, which occaſion the gout, and arthritic complaints, that they are denominated, by ſome writers, *anima articulorum*.—They alſo promote ſweat. See Supplement, article HERMODACTYLS.

HERMOGENIANS, a ſect of antient heretics, denominated from their leader *Hermogenes*, who lived towards the cloſe of the ſecond century.

Hermogenes eſtabliſhed matter as his firſt principle; and made idea the mother of all the elements.

The *Hermogenians* were divided into ſeveral branches, under their reſpective chieftains; *viz. Hermiani*, *Seleucians*, *Materiarii*, &c.

Some will have the Manichees alſo to have ſprung from the *Hermogenians*.

HERNIA *, in medicine, a deſcent of the inteſtines, or omentum, out of their natural place; or, rather, the tumor formed by that deſcent, popularly called a rupture.

* The word is Latin, *hernia*; and originally ſignifies the ſame with *tumor ſcroti*; called alſo *ramex*. Priſcian obſerves, that the antient Marſi gave the appellation *herna*, to rocks: whence ſome will have *hernia's* thus called, *propter duritiem*, on account of their hardneſs.—Scaliger chooſes rather to derive the word from the Greek ἔρνος, *ramus*, branch.

When the peritonæum happens to be broken, or extraordinarily dilated, the viſcera, and, particularly, the caul and ſmall guts, are apt to fall out of their place, and to form theſe ſorts of tumours, called *hernia's*.

They happen moſt uſually in the inguen, or groin, or in the ſcrotum, and navel; though, ſometimes, in other places, as above and below the navel; in the ſide, far above the inguen; in the upper part of the thigh, near the ſpine, *&c.*

Hernia's are often occaſioned by blows, violent concuſſions, over-ſtretching in vomiting, and hard labour, or wind; from which laſt cauſe it is, that they are ſo frequent in children, and ſo eaſily helped by timely care: in adults they are generally incurable. From *hernia's* frequently ariſe the Iliac paſſion, and ſometimes inflammations, and even gangrenes of the inteſtines.

Hernia's are variouſly denominated, both according to the parts diſplaced, and thoſe whereon they fall.

A deſcent of the inteſtines into the ſcrotum, which is the moſt uſual kind of rupture, is called *enterocele*.

If, inſtead of the inteſtines, the omentum be fallen, it is called *epiplocele*.

A deſcent of both is called *entero-epiplocele*.

If the inteſtines fall on the navel, it is called *omphalocele*.

If they fall through the perforation of the obliquus deſcendens, into the groin, it is called *bubonocele*, or inguinalis.

There are alſo a ſpurious ſort of *hernia's*, or tumours of the teſtes, *&c.* occaſioned, not by the deſcent of any of the ſolid parts, but by a coagmentation of ſome of the fluids.

When the teſticles are ſwelled, and diſtended, with a watry humour, it is called an *hydrocele*, or *hernia aquoſa*. See HYDROCELE.

When with winds, *pneumatocele*, or *hernia ventoſa*. See PNEUMATOCELE.

When the tumour is owing to a mole, or excreſcence of fleſh, it is called *ſarcocele*, or *hernia carnoſa*. See SARCOCELE.

When to a dilatation of the veſſels, in manner of a varix, *circocele*, or *hernia varicoſa*.

A kind of prominent tumour in the throat is frequently alſo called *bronchocele*, or *hernia gutturalis*.

Some late authors alſo ſpeak of *hernia's*, or deſcents of the bladder into the ſcrotum; but theſe are very rare.—M. Mery concludes, that they never ariſe from mere accident; but, when they do happen, it muſt be the effect of an original ill conformation.—His reaſon is, that the bladder of urine is too big to paſs through the annuli, or rings, which the inteſtines paſs through; beſides that it is faſtened too ſtrongly, on all ſides, to admit of a deſcent.

M. Petit, however, is of a different opinion; and maintains, that *hernia's* of the bladder may be produced after the ordinary manner of others. See the *Memoires de l'Acad. an.* 1717.

HERO *, in the antient theology, and mythology, a great and illuſtrious perſon, of mortal nature; though, by the populace, ſuppoſed to partake of immortality; and, after his death, placed by them among the number of the gods.

* The word is formed of the Latin, *heros*; and that of the Greek, *ἥρως*, *ſemideus*, demigod. S. Auguſtine, *De Civit. Dei*, Lib. X. obſerves, that it is highly probable, that ſome one of Junos ſons was originally called by this name; that goddeſs being called in Greek Ἥρη: or it may be, that great men were diſtinguiſhed by this appellation; in alluſion to the opinion of the antients, that virtuous perſons, after their deaths, inhabit the wide expanſe of the air, which is Juno's province.——Iſidore inclines to think, that *heroes* were thus called *quaſi aeroes*, *aerei*, perſons of ſuperior merit, and worthy of heaven.—Plato derives the word from the Greek ἔρως, love; as intimating the *heroes* to have riſen from the copulation of a god with a mortal woman; or of a goddeſs with a man.—Others derive the name from the Greek εἴρειν, *dicere*, to ſpeak; the *heroes* being perſons who, by their eloquence, led the people at their pleaſure. Others, laſtly, derive it from the Greek, ἔρα, *terra*, earth; the *heroes*, on their principle, being the *dii terreſtres*, or gods of the earth.

Heroes were, properly, perſons partly of divine, and partly of human extraction; being begot between a deity and a mortal: as Achilles, who was the ſon of the goddeſs Thetis, by Peleus; and Hercules, who was the ſon of Jupiter, by Alcmena.

A *hero*, then, coincides with what we otherwiſe call a *demi-god*: accordingly, Lucian defines a *hero* to be a medium between a god and a man; or, rather, a compoſition of both.

HERO is alſo uſed in a more extenſive ſenſe, for a great, illuſtrious, and extraordinary perſonage; particularly in reſpect of valour, courage, intrepidity, and other military virtues.

F. Bouhours makes this diſtinction between a great man and a *hero*, that the latter is more daring, fierce, and enterpriſing; and the former more prudent, thoughtful, and reſerved:—in this ſenſe we properly ſay, Alexander was a *hero*, Julius Cæſar a great man.

HERO *of a Poem*, or *Romance*, is the principal perſonage, or he who has the top part therein.

Thus the *hero* of the *Iliad* is Achilles; of the *Odyſſee*, Ulyſſes; of the *Æneid*, Æneas; of *Taſſo's Jeruſalem*, Godfrey of Bulloign; of Milton's *Paradiſe Loſt*, Adam; though Mr. Dryden will have the devil to be Milton's *hero*, in regard he gets the better of Adam, and drives him out of paradiſe.

The character of Achilles is the inexorable wrath of a haughty, valiant, unjuſt, and revengeful prince: that of Ulyſſes, is the wiſe and prudent diſſimulation of a courageous king, whoſe conſtancy nothing could ſhake: that of Æneas, is piety, goodneſs, gentleneſs, good-nature, and humanity, ſuſtained, like the others, with an invincible courage.

Many of the critics find fault with the *hero* of the *Æneid*.—They ſay, he is too ſenſible and delicate; and wants of the fire, firmneſs, and uncontroulable ſpirit, remarkable in the *hero* of the *Iliad*.—Piety, tenderneſs, and ſubmiſſion to the gods, are the virtues of the middle claſs of mankind; they do not ſtrike and command enough for a *hero*, who is to be the inſtrument of ſuch notable exploits. S. Evremond looks on Æneas as fitter to have been the founder of a religious order, than of an empire. F. Boſſu defends Virgil's *hero*, or at leaſt Virgil, with admirable addreſs—Æneas's character, he obſerves, was not to be formed on the model, either of Achilles, or Ulyſſes, nor to be of the ſame kind with them; as the fable, and the deſign, of the *Æneid*, was very different from thoſe of the *Iliad*, and *Odyſſee*.

What Virgil had in view, was, to make the Romans receive a new kind of government, and a new maſter: this maſter, then, muſt have all the qualities requiſite for the founder of a ſtate, and all the virtues which make a prince beloved.—The violence of Achilles was, of conſequence, precluded; and ſo was the diſſimulation of Ulyſſes; that being a quality which renders a man ſuſpected, not beloved.

Virgil was reſtrained in his choice; his *hero* was to be of the genius of Auguſtus; and the poet was in the condition of a painter, who is obliged to accommodate a piece of hiſtory to the model of a face that is given him.—The character of Homer's two *heroes*, as being directly oppoſite to his deſign, he has thrown upon Turnus and Mezentius, who are the counterparts to his *hero*.

It is diſputed among the critics, whether it be neceſſarily required, that the *hero* of an epic poem be a good and virtuous man?—F. Boſſu maintains the negative: between a *hero* in morality, and a *hero* in poetry, the ſame diſtinction is to be made, as between moral and poetical goodneſs.—Hence, as the manners of Achilles, and Mezentius, are poetically as good as thoſe of Ulyſſes, and Æneas, ſo thoſe two cruel and unjuſt men are as regular poetical *heroes*, as theſe two juſt, wiſe, and good men.

Ariſtotle, indeed, repreſents the *heroic* virtue, as a virtue more than human; and, of conſequence, *heroes*, as divine perſons, whom the excellency of their nature raiſes above our claſs: but this he ſays only in his books of morality: in his poetics he ſpeaks another language:—The prime perſon of a poem, whom we call the *hero*, he there obſerves, muſt neither be good nor bad, but between both: he muſt not either be ſuperior to the generality of mankind, by his virtue and juſtice; nor inferior to them, by his crimes and wickedneſs: the moral and epic *heroes*, therefore, even on Ariſtotle's principles, have nothing in common with each other; the one muſt be raiſed above mankind, and the other muſt not be on a level with the moſt perfect of men.

In effect, reaſon, the nature of the poem, which is to be a fable, the practice of Homer, and the rules of Ariſtotle, and Horace, all agree, that ſo far is it from being neceſſary, that the *hero* of an epopea be a perfect, faultleſs man, that it is not neceſſary he be an honeſt man; and that it is no-ways irregular to make him as perfidious as Ixion; as unnatural as Medea; or as brutal as Achilles.

It is another ſubject of controverſy among the critics, whether the cataſtrophe, or concluſion of the action, is neceſſarily to leave the *hero* happy, and at eaſe; or whether it be allowable to leave him unhappy?

The general practice of the *heroic* poets ſtands for the firſt. We have ſcarce one example of a *hero* who is overcome, and remains unhappy; excepting Adam, in Milton.

In tragedy, the caſe is different: unhappy cataſtrophes, according to Ariſtotle, are preferable to happy ones, and were always much better received among the antients. Indeed, one reaſon may be, that, in the popular ſtates of Greece, monarchs being odious, nothing pleaſed them better, than to ſee the misfortunes of kings; and even among us, where that conſideration does not hold, yet the unhappy concluſion has its advantage.—The tragic ſcene is the throne of the paſſions; and terror and pity are there to rule in a peculiar manner: now thoſe paſſions ariſe the moſt naturally from unhappy events; and the audience, quitting the theatre full of the misfortunes wherewith the piece was cloſed, preſerve their concern much longer, and feel more forcible effects from it, than if their tears had been wiped away, and their ſighs ſmothered, in the ſatisfaction of a more happy peripetia.

But theſe reaſons have no place in the epopea; which is not intended ſo much to affect the paſſions, as to remove ill habitudes.—But it is true, withal, that the epopea does not exclude all unhappy concluſions: the nature of epic fable is ſuch as admits equally of good and bad perſons for the prime parts; the unhappy adventure of a lamb unjuſtly devoured by a wolf, is a ſubject every way as inſtructive, and as regular, as the generoſity of a lion, who lets himſelf be diſarmed of his rage by the innocence of the ſame lamb.

It is true, if the poet propoſed his *hero* as a pattern of perfection for imitation, the misfortunes falling on him would ſuit very ill with the deſign: but this was, doubtleſs, the fartheſt thing from the intentions of the great maſters of the epopea above-mentioned.—The only reaſon, perhaps, that can be given for the uniform practice of the poets in this reſpect is, that an epic poem containing an action of much more extent than that of a tragic poem, the reader would not be ſo well ſatisfied, if, after ſo many labours and difficulties as the *hero* is brought to ſtruggle withal, he ſhould not, at laſt, be brought off; but periſh miſerably. There is ſomething, no doubt, great and good in the *hero*, which, in the courſe of the poem, makes us concerned for him; ſo that, after ſo long an acquaintance, we cannot leave him miſerable without ſome anxiety; which it is not the final buſineſs of the poet to raiſe.

HEROIC, ſomething belonging to a hero, or heroine.

Thus we ſay, *heroic* actions, *heroic* virtue, *heroic* ſtyle, *heroic* verſe, *heroic* poet, *heroic* age, *&c.*

Heroic *age* is that age, or period, of the world, wherein the *heroes*, or thoſe called by the poets the *children of the gods*, are ſuppoſed to have lived.

The *heroic age* coincides with the fabulous age. See Fabulous.

Heroic *poem* is that which undertakes to deſcribe ſome extraordinary action, or enterprize.

Homer, Virgil, Statius, Lucan, Taſſo, and Milton, have compoſed *heroic poems*.

In this ſenſe, *heroic poem* coincides with epic poem. See Epic.

Heroic *poetry*. See the article Epic *poetry*.

Heroic *verſe* is that wherein *heroic* poems are uſually compoſed; or, it is that proper for ſuch poems.

In the Greek and Latin, hexameter verſes are peculiarly denominated *heroic verſes*, as being alone uſed by Homer, Virgil, *&c.*

Alexandrine verſes, of twelve ſyllables, were formerly called *heroic verſes*, as being ſuppoſed the only verſe proper for *heroic* poetry; but the later writers uſe verſes of ten ſyllables.

HEROINE, Heroina, or Herois, a woman that has the qualities and virtues of a *hero*; or, that has done ſome heroic action. See Hero.

HERODIANS, a ſect among the Jews, at the time of Jeſus Chriſt, mentioned by St. Matthew, xxii. 16. and St. Mark, iii. 6.

The critics, and commentators on the New Teſtament, are very much divided with regard to the *Herodians*.

St. Jerome, in his dialogue againſt the Luciferians, takes the name to have been given to ſuch as owned *Herod* for the meſſiah; and Tertullian and St. Epiphanius are of the ſame ſentiment.—But the ſame St. Jerome, in his comment on St. Matthew, treats the ſame opinion as ridiculous; and maintains, that the Phariſees gave this appellation, by way of deriſion, to Herod's ſoldiers, who paid tribute to the Romans: agreeably to which, the Syriac interpreters render the word by the *domeſtics of Herod*, i. e. his courtiers.

M. Simon, in his notes on the xxiid chapter of Matthew, advances a more probable opinion.—The name *Herodian*, he imagines to have been given to ſuch as adhered to Herod's party and intereſt, and were for preſerving the government in his family; about which there were, at that time, great diviſions among the Jews.

F. Hardouin will have the *Herodians* and Sadducees to have been the ſame.

HERPES*, ʽΕΡΠΗΣ, in medicine, a cutaneous heat, or inflammation, attended with a roughneſs of the ſkin, and the eruption of a number of little puſtules ſpreading every way.

* The word is formed of the Greek ἕρϖω, *paulatim gradior, repo*; by reaſon the eruptions *creep* from place to place.

There are divers kinds of this diſeaſe: as,

Miliary Herpes: this is an aſſemblage of innumerable little puſtules, under the cuticle, of the ſize of millet-ſeeds; popularly called the *ſhingles*.

The *herpes miliaris*, according to Wiſeman, approaches very nearly to the nature of the pſora; and therefore is to be cured with mercurial cathartics, *&c.*

Simple Herpes is a ſingle puſtule, or two, riſing chiefly on the face, of a whitiſh or yellowiſh colour, pointed, and with an inflamed baſe.—Theſe dry away, of their own accord, upon letting out the little drop of pus contained in them.

A third ſpecies of *herpes* is what we otherwiſe call *ſerpigo*; and, in Engliſh, a *tetter*, or *ring-worm*. See Serpigo.

Herpes *exedens* is of a more corroſive kind: the puſtules are ruddy, and attended with an itching; and ulcerate the parts they riſe on.

HERRING. See the articles Fish, and Fishery.

There are divers names given to preſerved *herrings*, according to the different manners wherein they are ordered: as,

1°, *Sea-ſticks*: theſe are ſuch as are catched all the fiſhing-ſeaſon, and are but once packed.—A barrel of theſe holds ſix or eight hundred; eight barrels go to the tun, by law: a hundred of *herrings* is to be a hundred and twenty; a laſt, is ten thouſand; and they commonly reckon fourteen barrels to the laſt.

There are others, repacked on ſhore, called *repacked herrings*: ſeventeen barrels of ſea-ſticks, commonly make from twelve to fourteen of repacked *herrings*.

The manner of repacking them is, to take out the *herrings*, waſh them out in their own pickle, and lay them orderly in a freſh barrel: theſe have no ſalt put to them, but are cloſe packed, and headed up by a ſworn cooper, with pickle, when the barrel is half full. The pickle is brine; ſo ſtrong, as that the *herring* will ſwim in it.

2°, *Summers*: theſe are ſuch as the Dutch chaſers, or divers, catch from June to the 15th of July.—Theſe are ſold away in ſea-ſticks, to be ſpent preſently, in regard of their fatneſs; for that they will not endure repacking. They go one with another, full and ſhotten; but the repacked *herrings* are ſorted, the full *herrings* by themſelves.

3°, The *ſhotten* and *ſick herrings* by themſelves; the barrel whereof is to be marked diſtinctly.

4°, *Crux herrings*; which are ſuch as are caught after the 14th of September.—Theſe are cured with that kind of ſalt called ſalt upon ſalt, and are carefully ſorted out, all full *herrings*, and uſed in the repacking.

5°, *Corved herrings*: theſe ſerve to make red *herrings*, being ſuch as are taken in the Yarmouth ſeas, from the end of Auguſt to the middle of October; provided they can be carried aſhore within a week, more or leſs, after their taking.—Theſe are never gipped, but rowed in ſalt, for the better preſerving of them, till they can be brought on ſhore; and ſuch as are kept to make *red herrings*, are waſhed in great vats in freſh water before they are hanged up in the *herring-hangs*, or *red-herring* houſes.

As for the *manner of ſalting herrings*.—The nets being haled on board, the fiſhes are taken out, and put into the warbacks, which ſtand on one ſide of the veſſels.—When all the nets are thus unloaded, one fills the gippers baſkets.—The gippers cut their throats, take out their guts, and fling out the full *herrings* into one baſket, and the ſhotten into another.—One man takes the full baſket when they are gipped, and carries them to the rower-back, wherein there is ſalt.—One boy rows and ſtirs them about in the ſalt, and another takes them, thus rowed, and carries them in baſkets to the packers.—Four men pack the *herrings* into one barrel, and lay them, one by one, ſtrait and even; and another man, when the barrel is full, takes it from the packers.—It is let ſtand a day, or more, open to ſettle, that the ſalt may melt and diſſolve to pickle; after which it is filled up, and the barrel headed.—The pickle is to be ſtrong enough to ſuſtain a *herring*; otherwiſe the fiſh decay in it.

Pickled Herring. } See the article *Herring* Fishery.
Red Herring.

Herrings are ſometimes preſcribed in medicine, by way of cataplaſms, to the feet, in fevers; as being ſuppoſed to draw the febrile matter downwards: though, it is more probable, this effect ſhould be owing to the ſalt uſed in the pickle, than to the fiſh.

Herring *buſs*, a veſſel uſed in the *herring* fiſhery. See Fishery.

Herring *cob* is a young *herring*. See *Herring* Fishery.

Herring *fiſhery*. See the article *Herring* Fishery.

Herring *ſilver*, a compoſition in money, formerly paid in lieu of a certain quantity of *herrings* for the proviſion of a religious houſe.

HERSE*, in fortification, a lattice, or portcullice, in form of a harrow; beſet with iron ſpikes.

* The word *herſe* is French, and literally ſignifies *harrow*: being formed of the Latin *herpex*, or *irpex*; which denote the ſame.

It is uſually hung by a rope faſtened to a moulinet; to be cut, in caſe of ſurprize, or when the firſt gate is broken with a petard; that the *herſe* may fall, and ſtop up the paſſage of the gate, or other entrance of the fortreſs.

The *herſe* is otherwiſe called a *ſarraſin*, or *cataract*; and when it conſiſts of ſtrait ſtakes, without any croſs-pieces, it is called *orgues*.

Herse is alſo a harrow, which the beſieged, for want of chevaux de friſe, lay either in the way, or in breaches, with the points up, to incommode the march as well of the horſe, as the infantry.

HERSILLON *, in the military art, a ſort of plank, or beam, ten or twelve feet long, whoſe two ſides are driven full of ſpikes, or nails, to incommode the march of the infantry, or cavalry.

* The word is a diminutive of *herſe*; the *herſillon* doing the office of a little herſe. See Herse.

HESPER *, Hesperus, in aſtronomy, the *evening-ſtar*; an appellation given to Venus when ſhe follows, or ſets after the ſun.

* The word is formed of the Greek ἑσπερος, and is ſuppoſed to have been originally the proper name of a man, brother of Atlas, and father of the Heſperides. See Hesperides.—Diodorus, L. III. relates, that *Heſperus* having aſcended to the top of mount Atlas, the better to obſerve and contemplate the ſtars, never returned more; and that hence he was fabled to have been changed into this ſtar.

HESPERIDES, ἙΣΠΕΡΙΔΕΣ, in the antient mythology, were the daughters of Heſper, or Heſperus, the brother of Atlas.

The *Heſperides* were three in number, Ægle, Arethuſa, and Heſperthuſa.—Heſiod, in his *Theogony*, makes them the daughters of *Nox*, night; and ſeats them in the ſame place with the Gorgons; *viz.* at the extremities of the weſt, near mount Atlas: it is on that account he makes them the daughters of Night, by reaſon the ſun ſets there.

The *Heſperides* are repreſented by the antients, as having the keeping of certain golden apples, on t'other ſide the ocean. And the poets give them a dragon to watch the garden where the fruit grows: this dragon they tell us Hercules ſlew, and carried off the apples.

Pliny and Solinus will have the dragon to be no other than an arm of the ſea, wherewith the garden was encompaſſed; and which defended the entrance thereof. And Varro ſuppoſes, that the golden apples were nothing but ſheep. Others, with more probability, ſay they were oranges.

The gardens of the Hesperides, *Heſperidum horti*, or *horti Heſperidum*, are placed by ſome authors at Larach, a city of Fez; by others, at Bernich, a city of Barca, which tallies better with the fable. Others take the province of Suſa in Morocco, for the iſland wherein the garden was ſeated. And laſtly, Rudbecks places the Fortunate iſlands, and the gardens of the *Heſperides*, in Sweden.

HESYCHASTES *, Hesychasta, a perſon who keeps himſelf vacant, and at leiſure, to attend the better, and with the leſs interruption, to the contemplation of divine things.

* The word is Greek ἡσυχαςης, formed of ἡσυχαζω, *quieſco, quieti indulgeo*, a derivative of ἡσυχος, *quietus*, quiet. So that *heſychaſtes* in Greek, anſwers to the literal ſenſe of *quietiſt* in Engliſh.

The name was chiefly uſed by the antients for ſuch among the monks as did not employ themſelves in any labour of the hands, but renounced all bodily action, to reſign themſelves wholly to prayer and meditation.

HETERIARCH *, Hetæriarcha, in antiquity, an officer in the Greek empire; whereof there were two ſpecies: the one called ſimply *heteriarch*; and the other, *great heteriarch*, who had the direction of the former.

* The word is Greek ἑταιριαρχα, formed of the Greek ἑταιρος, *ſocius*, companion, ally, and αρχη, *imperium*, command.

Their principal function was to command the troops of the allies; beſide which, they had ſome other duties in the emperor's court, deſcribed by Codin, *De Officiis*, c. 5. n. 30, 31, 32, 37.

HETEROCLITE *, Heterocliton, in grammar, an irregular, or anomalous word, which either in declenſion, conjugation, or regimen, deviates from the ordinary rules of grammar. See Anomalous, Irregular, &c.

* The word is Greek ἑτεροκλιτον, formed of ἑτερος, *alter*, another, different, and κλινω, I decline.

Heteroclite is more peculiarly applied to nouns, which vary, or are irregular, in point of declenſion; having fewer caſes, numbers, &c. than ordinary; or that are of one declenſion in one number, and another in another.

We have various ſorts of *heteroclites*, as defective, and redundant *heteroclites*, &c.—Under the claſs of *heteroclites*, come aptotes, diptotes, monaptotes, triptotes, tetraptotes, pentaptotes, &c. See Aptote, Diptote, &c.

HETERODOX *, in polemical theology, ſomething that is contrary to the faith or doctrine eſtabliſhed in the true church.

* The word is formed of the Greek ἑτεροδοξος, a compound of ἑτερος, *alter*, and δοξα, opinion,

Thus, we ſay, a *heterodox* opinion, a *heterodox* divine, &c.

The word ſtands in oppoſition to *orthodox*.

HETERODROMUS *Vectis*, in mechanics, a lever wherein the fulcrum, or point of ſuſpenſion, is between the weight and the power.

This is what we otherwiſe call a *lever of the firſt kind.*—Such is that repreſented *Tab. Mechanics*, *fig.* 1.

If either the weight be in the middle between the power and the fulcrum, or the power between the weight and the fulcrum, the lever is denominated *homodromus.*—Such are thoſe repreſented *fig.* 2. and 3.

HETEROGENEITY, in phyſics, the quality, or diſpoſition, which denominates a thing *heterogeneous*.

The word is alſo uſed for the *heterogeneous* parts themſelves.—In which ſenſe, the *heterogeneities* of a body are the ſame thing with the *impurities* thereof.

Heterogeneity is a term of a very lax ſignification, and is brought by the chemiſts to ſerve almoſt for any thing they do not underſtand; ſo that all diſagreement, or inaptitude to mixture between any bodies, is imputed to the *heterogeneity* of their parts.

But, ſo far as the term may be made uſe of, to convey any diſtinct ſignification, it muſt be by conſidering natural bodies under different ſortments, according as they are diverſified by figure, bulk, motion, and their more ſenſible properties: ſo that thoſe of different ſortments are *heterogeneous* to one another, and the parts of the ſame ſortment are homogeneous.

Thus the diviſion chemiſtry makes of bodies into oils, ſalts, ſpirits, &c. may be reckoned, with reſpect to one another, *heterogeneous*; though the parts of each diviſion are among themſelves homogeneous.

In effect, they are two terms, which ſerve frequently for a refuge to ignorance; otherwiſe the common terms of *like* and *unlike* might ſerve every whit as well. *Quincy.*

HETEROGENEOUS *, or Heterogeneal, literally imports ſomething of a different nature, or that conſiſts of parts of different, or diſſimilar kinds: in oppoſition to *homogeneous*. See Homogeneous.

* The word is Greek, formed of ἑτερος, *alter*, different, and γενος, *genus*, kind; *q. d.* compoſed of different kinds of parts.

Thus, we ſay, milk is a *heterogeneous* body; compoſed of, or containing, butter, cheeſe, and whey.

The refining of a metal, is the purging it of all its *heterogeneous* parts.

Heterogeneous is particularly applied, in mechanics, to thoſe bodies, whoſe denſity is unequal in different parts of their bulk.

Or, *heterogeneous* bodies are ſuch, whoſe gravities in different parts are not proportionable to the bulks thereof.

Bodies equally denſe, or ſolid in every part, or whoſe gravity is proportionable to their bulk, are ſaid to be homogeneous.

Heterogeneous *Light*, is that which conſiſts of parts or rays of different refrangibility, reflexibility, and colour.

Heterogeneous *Nouns*, in grammar, are ſuch as are of one gender in the ſingular number, and another in the plural. See Noun, Gender, &c.

Heterogeneous *Numbers*, are thoſe which are referred to different units, or integers.

Heterogeneous *Quantities*, are thoſe which are of ſuch different kind and conſideration, as that one of them, taken any number of times, never equals or exceeds the other.

Heterogeneous *Surds*, are ſuch as have different radical ſigns; as, $\surd^{2}\,aa$, and $\surd^{3} : bb : \surd^{5}\,9$, and $\surd^{7}\,19$.

How to reduce the *heterogeneous ſurds* to homogeneous ones; ſee under the article Surds.

HETERORHYTHMUS *, a term uſed by ſome fanciful writers, for a courſe of life unſuitable to the age of thoſe who live in it.

* The word is compounded of the Greek ἑτερος, and ῥυθμος, meaſure.

The ſame is alſo applied to pulſes, when they beat variouſly or irregularly in diſeaſes; or rather when a pulſe belonging to one age, is found in a patient of another.

HETEROSCII *, in geography, a term vulgarly applied to thoſe inhabitants of the earth, whoſe ſhadow at noon-tide is always projected the ſame way, either northward, or ſouthward.

* The word is Greek, formed of ἑτερος, other, different, and σκια, ſhadow.

In this ſenſe, the inhabitants of the temperate zones are denominated *heteroſcii*. See Zone.

Heteroscii, however, in ſtrictneſs, and according to the origin and reaſon of the word, is a term of relation; and denotes thoſe inhabitants, which, during the whole year, have their noon-tide ſhadows projected different ways from each other. Thus, we who inhabit the northern temperate zone, are *heteroſcii* with regard to thoſe who inhabit the ſouthern temperate zone: and they are *heteroſcii* with reſpect to us.

From this definition it follows, that only the inhabitants of the two temperate zones are *heteroſcii*; nor is the word ordinarily applied to any other. Though, in reality, there is always one part of the torrid zone, whoſe inhabitants are *heteroſcii* with regard to thoſe of the reſt, and with regard to thoſe of one of the temperate zones, except at the time of the ſolſtices. And even at that time, all of the torrid zone are *heteroſcii* with regard to thoſe of one of the temperate zones.

But as this is variable, and the people of the torrid zone have their ſhadow now on this, and then on that ſide; the cuſtom is to call them *amphiſcii*, and not *heteroſcii*.

HETEROUSII *, Heterousians, a ſect or branch of Arians, the followers of Aetius, and from him alſo denominated *Aetians*.

* The word is Greek, compoſed of ἑτερος, *alter*, and ουσια, ſubſtance.

They were called *Heterouſii*, by reaſon they held, not that the Son of God was of a ſubſtance like, or ſimilar to, that of the Father; which was the doctrine of another branch of Arians, thence called *Homoouſians*, *Homoouſii*: but that he was of another ſubſtance different from that of the Father. See ARIAN, and HOMOOUSIAN.

HEXACHORD*, in the antient muſic, a concord commonly called, by the moderns, a *ſixth*.

* The word is Greek: compounded of ἑξ, *ſex*, ſix; and χορδη, *chorda*, chord, or ſtring.

The *hexachord* is twofold; the *greater*, and *leſſer*.—The *greater hexachord* is compoſed of two greater tones, two leſſer tones, and one greater ſemitone; which make five intervals.

The *leſſer hexachord* conſiſts only of two greater tones, one leſſer tone, and two greater ſemitones.

The proportion of the former, in numbers, is as 3 to 5; and that of the other, as 5 to 8.

HEXAEDRON*, or HEXAHEDRON, in geometry, one of the five regular bodies, popularly called a *cube*. See CUBE.

* The word is Greek: formed of ἑξ, *ſex*, ſix; and ἑδρα, *ſedes*, ſeat.

The ſquare of the ſide of a *hexaedron* is in a ſubtriple ratio to the ſquare of the diameter of the circumſcribed ſphere.—Hence, the ſide of the *hexaedron* is to the ſide of the ſphere it is inſcribed in, as one to the $\sqrt{}$ 3; and, conſequently, it is incommenſurable thereto.

HEXAGON*, in geometry, a figure of ſix ſides, and as many angles.

* The word is Greek: formed of ἑξ, *ſex*, ſix; and γωνια, *angulus*, angle.

If theſe ſides and angles be equal, it is called a *regular hexagon*.

The ſide of a *hexagon* is demonſtrated to be equal to the radius of a circle circumſcribed about the ſame.

Hence, a regular *hexagon* is inſcribed in a circle, by ſetting the radius off ſix times upon the periphery.

To deſcribe a *hexagon* on a given line A B (Tab. *Geometry*, *fig.* 84.) draw an equilateral triangle A C B; the vertex C will be the centre of a circle which will circumſcribe the *hexagon* required.

HEXAGON, in fortification, is a fortreſs with ſix baſtions.

HEXAMERON*, or HEXÆMERON, a name given to divers writings, both of antient and modern authors, containing commentaries, or diſcourſes, on the firſt chapter of Geneſis; wherein is delivered the hiſtory of the creation, or the firſt ſix days of the world.

* The word is Greek: formed of ἑξαμερον, or ἑξαημερον; compoſed of ἑξ, *ſex*, ſix; and ἡμερα, which in the Doric dialect is wrote ἁμερα, day.

S. Baſil, S. Ambroſe, &c. have wrote *hexamerons*.

HEXAMETER*, in the antient poetry, a verſe uſed by Greek and Latin writers, conſiſting of ſix feet.

* The word is Greek, ἑξαμετρον: compoſed of ἑξ, ſix; and μετρον, meaſure, foot.

The firſt four feet of a *hexameter* may be indifferently either dactyls, or ſpondees; but the laſt foot, in ſtrictneſs, is always to be a ſpondee; and the laſt but one a dactyl.—Such is that of Homer,

> Εις ὕδωρ μ' ἐῤῥιψας, εχει Θεος εκδικον ομμα.

And that of Virgil,

> *Diſcite juſtitiam moniti, & non temnere divos.*

Hexameter verſes are divided into *heroic*; which are to be grave and majeſtical, ſuitable to the dignity of heroic poetry: and *ſatirical*; which may be more looſe and negligent: as thoſe of the epiſtles of Horace.

Epic poems, as the *Iliad*, *Odyſſee*, *Æneid*, &c. conſiſt of *hexameter* verſes alone; elegies and epiſtles ordinarily conſiſt, alternately, of *hexameters* and pentameters.

Some of the French and Engliſh poets have attempted to compoſe in *hexameter* verſes, but without ſucceſs. Jodelle made the firſt eſſay in 1553. with a diſtich in praiſe of Olivier de Magny, which Paſquier repreſents as a maſter-piece. It is this:

> *Phœbus, Amour, Cypris, veut ſauver, nourrir & orner*
> *Ton vers, & ton chef, d'umbre, de flamme, de fleurs.*

But this kind of poetry pleaſes nobody. The modern languages are not at all fit for a kind of verſe whoſe cadence depends altogether on long and ſhort ſyllables.

HEXAMILION*, HEXAMILI, or HEXAMILIUM, in antiquity, a celebrated wall, built by the emperor Emanuel, over the iſthmus of Corinth.

* It took its name from ἑξ, ſix; and μιλιον, which in the vulgar Greek ſignifies a mile; as being ſix miles long.

The deſign of the *hexamilion* was, to defend Peloponneſus from the incurſions of the barbarians.—Amurath II. having raiſed the ſiege of Conſtantinople, in the year 1424. demoliſhed the *hexamilion*; though he had before concluded a peace with the Greek emperor.

The Venetians reſtored it in the year 1463. by thirty thouſand workmen, employed for fifteen days, and covered by an army commanded by Bertoldo d'Eſte, general of the land-forces; and Louis Loredano, general of the ſea.

The infidels made ſeveral attempts upon it, but were repulſed, and obliged to retire from the neighbourhood thereof: but Bertoldo being killed at the ſiege of Corinth, which was attempted ſoon after; Bertino Calcinato, who took on him the command of the army, abandoned, upon the approach of the beglerbeg, both the ſiege, and the defence of the wall which had coſt them ſo dear: upon which, it was finally demoliſhed.

HEXAPLA*, in church-hiſtory, a bible diſpoſed in ſix columns; containing the text, and divers verſions thereof: compiled, and publiſhed, by Origen.

* The word is formed of ἑξ, *ſex*, ſix; and απλοω, *pando*, I open, I unfold.

Euſebius, *Hiſt. Eccl.* L. VI. c. 16. relates, that Origen, after his return from Rome under Caracalla, applied himſelf to learn Hebrew; and began to collect the ſeveral verſions that had been made of the ſacred writings, and of theſe to compoſe his *Tetrapla*, and *Hexapla*: others, however, will not allow him to have begun till the time of Alexander, after he had retired into Paleſtine, about the year 231.

To conceive what this *hexapla* was, it muſt be obſerved, that, beſides the tranſlation of the ſacred writings, called the *Septuagint*, made under Ptolemy Philadelphus, above 270 years before Chriſt; the Scripture had been ſince tranſlated into Greek by other interpreters. The firſt of thoſe verſions, or (reckoning the Septuagint) the ſecond, was that of Aquila, done about the year of Chriſt 140. the third was that of Symmachus, publiſhed, as is commonly ſuppoſed, under Marcus Aurelius: the fourth was that of Theodotio, under Commodus: the fifth was found at Jericho, in the reign of Caracalla, about the year 217. and the ſixth was diſcovered at Nicopolis, about the year 228. laſtly, Origen himſelf recovered part of a ſeventh, containing only the pſalms.

Now Origen, who had held frequent diſputations with the Jews in Egypt and Paleſtine, obſerving, that they always objected againſt thoſe paſſages of Scripture quoted againſt them, and appealed to the Hebrew text; the better to vindicate thoſe paſſages, and confound the Jews, by ſhewing, that the Seventy had given the ſenſe of the Hebrew; or, rather, to ſhew, by a number of different verſions, what the real ſenſe of the Hebrew was; undertook to reduce all theſe ſeveral verſions into a body, along with the Hebrew text; ſo as they might be eaſily confronted, and afford a mutual light to each other.

In order to this, he made choice of eight columns: in the firſt he gave the Hebrew text in Hebrew characters; in the ſecond, the ſame text in Greek characters; the reſt were filled with the ſeveral verſions above-mentioned; all the columns anſwering verſe for verſe, and phraſe for phraſe; and in the pſalms there was a ninth column for the ſeventh verſion.

This work Origen called Ἑξαπλα, *Hexapla*, q. d. *ſextuple*, or a work of ſix columns; as only regarding the firſt ſix Greek verſions.

Indeed, S. Epiphanius, taking in likewiſe the two columns of the text, calls the work *Octapla*, as conſiſting of eight columns.

This celebrated work periſhed long ago; though ſeveral of the antient writers have preſerved us pieces thereof: particularly S. Chryſoſtom on the *Pſalms*, Philoponus in his *Hexameron*, &c.—Some modern writers have earneſtly endeavoured to collect fragments of the *Hexapla*; particularly Druſius, and F. Montfaucon.

HEXASTYLE*, HEXASTYLOS, in the antient architecture, a building wtih ſix columns in front.

* The word is compoſed of ἑξ, ſix; and ϛυλος, column.

The temple of Honour and Virtue at Rome, built by Mutius, was a *hexaſtyle*.

HEYRS, in huſbandry, young timber-trees, uſually left for ſtandards in felling of woods, or copſes.

HIATUS, a Latin term, properly ſignifying the aperture of the mouth; from the verb *hiare*, to gape.

It is variouſly uſed, in works of literature, &c. to denote a *chaſm*, or *gap*; particularly in verſes, where there is a claſhing of vowels, by one word ending with a vowel, and the following one beginning with another.

As in—Tho' oft' the ear the open vowels tire.

This claſhing of vowels, ſo diſagreeable to the ear, is called a *hiatus* in proſe, as well as verſe.—The Romans were ſo very careful to avoid it, that they always ſuppreſſed the preceding vowel even in proſe; as is obſerved by Cicero, in his *Orator*.—In writing, to avoid it, they uſed to inſert the letter *d*: as in *redeo*, *redamo*, *mederga*, &c. Hence on the baſe of the Duilian column, we meet with *prædad. altod. marid.* &c. Voſſ.

HIATUS is alſo uſed for a defect in a manuſcript copy; where ſomething is loſt, or effaced, by the injuries of time, or otherwiſe.

In a theatrical piece, there is ſaid to be a *hiatus*, when a ſcene is not well connected to the next, but leaves the action interrupted, and the ſtage empty.

In matters of genealogy, HIATUS is an interruption in a line, or ſeries, of deſcendants.—Thoſe proofs of eight hundred years are impoſſible, by reaſon of the frequent *hiatus's* occaſioned by civil wars, Gothic inundations, *&c.*

HICKUP *, **Hickock**, **Hiccough**, or **Hicket**, *ſingultus*, in medicine, a ſudden irregular inſpiration; wherein the ſtomach, and the parts contained in the lower venter, are impelled downwards.

* The word ſeems formed of the Flemiſh *hick*, which ſignifies the ſame thing: others derive it *ab hiſcendo*; others, *a difficili anhelitu*: but others think the moſt natural derivation to be from the ſound yielded in this action.

The *hickup* is not immediately a diſorder of the ſtomach, as is uſually imagined; but a convulſive motion of the diaphragm; whereby that muſcle, retiring impetuouſly downwards, impels the parts beneath it.

It is occaſioned by ſharp humours; a too great plenitude of the ſtomach; a bit of any thing ſtopped at its upper orifice; or, in the general, by any thing capable of irritating the nerves of the diaphragm.

The remedy for the *hickup*, according to Hippocrates, is, to fetch the breath very long, or even to ſtop the breath for ſome time. A ſneezing happening upon a *hickup*, generally cures it; the diaphragm, ſhook by the violent expiration, being apt to throw off what before irritated it.

HIDAGE *, or **Hydage**, an extraordinary tax; antiently payable to the king for every hide of land. See Hide.

* *Sunt etiam quædam communes præſtationes, quæ ſervitia non dicuntur, nec de conſuetudine veniunt, niſi cum neceſſitas intervenerit, vel cum rex venerit; ſicut ſunt* hidagia, coragia, *&* carvagia, *& alia plura de neceſſitate, & ex conſenſu communi totius regni introducta, & quæ ad dominum non pertinent*, &c. Bracton, Lib. II. cap. 6.

King Ethelred, in the year of Chriſt 994. upon the landing of the Danes at Sandwich, taxed all his lands by *hides*. Every three hundred and ten *hides* of land, on this occaſion, found one ſhip furniſhed; and every *eight* hides found one jack, and one ſaddle, for the defence of the realm.—William the Conqueror took ſix ſhillings for every *hide* of land in England. *Flor. Wigorn.* an. 1084.

Hidage is alſo uſed for being quit of that tax; otherwiſe called *hide-gild*.

HIDE, the ſkin of a beaſt; particularly that of a bullock, or cow. See Skin, and Tanning.

We have *hides* of divers denominations, according to their ſtate, quality, *&c.*

Curried **Hide** is that which, after tanning, has paſſed through the currier's hands, and has thus received its laſt preparation, and is fitted for uſe.

Raw **Hide**, or *Green* **Hide**, is that which has not undergone any preparation; being in the ſame condition as when taken off the carcaſe.

Salted **Hide** is a green *hide*, ſeaſoned with ſea-ſalt and alum, or ſaltpetre; to prevent its ſpoiling and corrupting, either by keeping it too long in cellars, or in tranſporting it too far in a hot ſeaſon.

There are alſo *hides dried in the air*, ſent from America; particularly thoſe of buffalos.

Tanned **Hide** is a *hide* either green, ſalted, or dried, further dreſſed and prepared by the tanner, by paring off the hair, and ſteeping it in pits of lime and tan. See Tanning.

Hide, or **Hyde**, **Hyda**, in our antient cuſtoms, denoted a meaſure or quantity of land, containing ſo much as could be yearly tilled with a ſingle plough.

Beda calls the *hide* of land, *familia*; and defines it to be, ſo much as was ſufficient for the ordinary maintenance of one family.—In other authors it is called *manſum, manſio, carucata*, &c.

Crompton, in his *Juriſdict.* fol. 222. ſays, a *hide* of land contains one hundred acres: he adds, that eight *hides* make a knight's fee. In antient manuſcripts the *hide* is fixed at one hundred and twenty acres.

But Sir Edward Coke notes, that a knight's fee, a *hide*, or plough-land, a yard-land, and an oxgang of land, do not contain any certain determinate number of acres.

The diſtribution of England into *hides* of land is very antient; there being mention made of it in the laws of king John, c. 14. *Henricus* I. *maritand. filiæ ſuæ gratia imperatori, cepit ab unaquaque* hida *Angliæ tres ſol.* Spelman.

Hide-bound, a diſorder of a horſe, or other beaſt, wherein his ſkin ſticks ſo tight to his ribs and back, as not to be looſened from it with the hand.

The diſorder is ſometimes owing to poverty, and bad keeping; at other times to over-riding, or a ſurfeit, the horſe being ſuffered, when he is hot, to ſtand long in the wet; or to a morbid drineſs of the blood, which, not having its natural courſe, cauſes the ſkin to ſhrink up, and cleave to the bones.—Among huſbandmen, trees alſo are ſaid to be *hide-bound*, when the bark ſticks too cloſe.

HIDEL, in our antient ſtatutes, ſignifies a place of protection, or ſanctuary.

HIDGILD *, or **Hidegild**, in the laws of king Canute, is explained by *pretium redemptionis ſervi*; the price by which a ſervant was to redeem his ſkin from being whipped.

* The word is formed from the Saxon hide, ſkin; and gild, payment.—*Si liber feſtis diebus operetur, perdat libertatem; ſi ſervus, corium perdat, vel* hidgildum; *i. e.* let him be whipped (which was the puniſhment for ſervants), or let him pay for his ſkin; by which payment he is to be excuſed from whipping.

HIDROTICS *, or **Hydrotics**, in medicine, the ſame with *ſudorificks*.

* The word is compoſed of the Greek ἱδρως, ſweat.

Contrayerva, zedoary, guaiacum, angelica, *&c.* are of the number of *hidrotics*, or *hidrotic* medicines.

HIERACITES, **Hieracitæ**, a ſect of antient heretics; denominated from their leader, Hierax.

This hereſiarch was by nation an Egyptian; and, beſides his mother-tongue, was a maſter of the Greek, and well ſkilled in all the polite parts of learning. Being born a Chriſtian, he had been brought up to the ſtudy of the holy Scriptures, with which he had a more than ordinary acquaintance; ſo that he wrote commentaries on ſome of them: but, by an ill uſe of his knowlege, he fell into divers errors, in which his intereſt and authority among the monks of Egypt procured him abundance of followers.

He abſolutely denied the reſurrection of the body; maintaining, that the ſoul alone roſe again; and that the reſurrection was altogether ſpiritual.—Epiphanius ſurmiſes, that he might have imbibed this error from Origen.

The ſame Hierax, and his followers, likewiſe condemned marriage; being of opinion, that it was only allowed under the Old Teſtament, and till the coming of Jeſus Chriſt: but that, under the new law, all marriage was prohibited, as incompatible with the kingdom of God.

S. Epiphanius produces the paſſages of Scripture whereon he founded this doctrine: he adds, that Hierax did not give into Origen's error with regard to the myſtery of the Trinity, but allowed the Son to be really and truly begotten of the Father. He was alſo orthodox with reſpect to the Holy Ghoſt, excepting for ſome peculiarities received from the Melchiſedecians, on which he had refined. He lived a very auſtere life, and promoted the ſame among his followers; but, after his death, they degenerated very faſt.

HIERA PICRA *, in pharmacy, originally a kind of electuary, firſt deſcribed by Galen; compoſed of aloes, cinnamon, aſarabacca, ſpica-nardi, ſaffron, and maſtic, made up with honey, or ſyrup of violets and honey.

* It is denominated from the Greek ἱερος, *ſacer*, holy, by reaſon of its rare virtues; and πικρος, *amarus*, bitter; aloes, which is the baſe thereof, rendering it extremely bitter.

It was uſed to purge, and cleanſe the ſtomach; remove obſtructions, promote the menſes and hæmorrhoids, and ſweeten the blood: but its chief uſe among us is in powder, for making the tinctura ſacra.

Beſides this *ſimple hiera picra*, there is a *compound* ſort, called *diacolocynthidos Pachii*, by reaſon colocynthis is the baſe thereof; and that it was firſt uſed, with good ſucceſs, by Pachius of Antioch, in divers obſtinate diſeaſes.—It is compoſed of colocynth, opopanax, ariſtolochia rotunda, agaric, and other ingredients. It is uſed in epilepſies, apoplexies, palſies, and lethargies; and to excite the menſes, and promote the expulſion of the after-birth.

There is alſo a third ſort of *hiera*, called *liberans*; but rarely uſed.—Dr. Quincy ſays, it is one of the moſt ridiculous medleys ever contrived. It paſſes for a cordial, *&c.*

HIERARCHY *, **Hierarchia**, in theology, the order, or ſubordination, among the ſeveral choirs, or ranks, of angels.

* The word is Greek, ἱεραρχια, formed of ἱερος, *ſacer*, holy; and αρχη, *principatus*, rule: *q. d.* ἱερα αρχη, holy command, or rule in holy things.

S. Dionyſius, and other of the antient writers, eſtabliſh nine choirs, or orders, of celeſtial ſpirits; viz. *ſeraphim, cherubim, thrones, dominions, principalities, powers, virtues, angels*, and *archangels*: and theſe they divide into three *hierarchies*.

Hierarchy is alſo uſed, on earth, for the ſubordination between prelates, and other eccleſiaſtics. See Ecclesiastical Order, Priest, *&c.*

Archbiſhops, biſhops, prieſts, and deacons, compoſe the *hierarchy* of the church of England.—In that of Rome, the pope has likewiſe a place at the head of the *hierarchy*.

F. Cellot, a jeſuit of Paris, has publiſhed a volume expreſs (*De Hierarchia & Hierarchis*) on the *hierarchy*, and thoſe who compoſe it. He there diſtinguiſhes a created, and an uncreated *hierarchy*; a divine, and a human, or eccleſiaſtical *hierarchy*; and in this, a *hierarchy* of juriſdiction; a hie-

rarchy of order, and a *hierarchy* of graces, the moſt ſublime of all.

He defines *hierarchy* in the general, a command, or ſovereignty, in holy things: *principatus, ſive imperium, in rebus ſacris*; on which footing he holds, that *hierarchy* excludes all below biſhops; and that neither prieſts nor deacons can be reckoned among the number of *hierarchiſts*. Bellarmin, Hallier, Aurelius, &c. he holds, were all miſtaken, and did not diſtinguiſh between being *of* the *hierarchy*, and being *under* it.

According to him, to be *of*, or *in*, the *hierarchy*, are the ſame thing; and are only applicable to thoſe who govern the church, or have ſome part in the adminiſtration of the government thereof: on the contrary, to be *under* the *hierarchy*, is to be ruled or governed by the *hierarchy*.—Cellot will not admit of any difference between theſe three expreſſions. To prove that they all denote the ſame thing, he inſtances in the caſe of monarchy, alleged for the ſame purpoſe, by P. Aurelius: urging, that, in a monarchy, all, even the ſubjects, are in the monarchy, of the monarchy, or under the monarchy; and that none are excluded but foreigners; and that the caſe is the ſame in the *hierarchy*.

HIERATIC *paper*, among the antients, was the fineſt ſort of paper; which was ſet apart only for ſacred or religious uſes. See PAPER.

HIEROGLYPHIC *, ʽΙΕΡΟΓΛΥΦΙΚΑ, a ſymbol, or myſtic figure, uſed among the antient Egyptians, to cover, or conceal, the ſecrets of their theology.

* The word is compoſed of the Greek ἱερος, *ſacer*, holy; and γλυφειν, *ſculpere*, to engrave; it being the cuſtom to have the walls, doors, &c. of their temples, obeliſks, &c. engraven with ſuch figures.

Hieroglyphics are properly emblems or ſigns of divine, ſacred, or ſupernatural things; by which they are diſtinguiſhed from common ſymbols, which are ſigns of ſenſible and natural things.

Hermes Triſmegiſtus is commonly eſteemed the inventor of *hieroglyphics*: he firſt introduced them into the Heathen theology; from whence they have been tranſplanted into the Jewiſh and Chriſtian.

Sacred things, ſays Hippocrates, ſhould only be communicated to ſacred perſons.—Hence it was, that the antient Egyptians communicated to none but their kings and prieſts, and thoſe who were to ſucceed to the prieſthood and the crown, the ſecrets of nature, and the myſteries of their morality and hiſtory; and this they did by a kind of cabbala, which, at the ſame time that it inſtructed them, only amuſed the reſt of the people.—Hence the uſe of *hieroglyphics*, or myſtic figures, to veil their morality, politics, &c. from profane eyes. *Spon*.—This author, it may be obſerved, and many others, do not keep to the preciſe character of a *hieroglyphic*, but apply it to profane as well as divine things.

Hieroglyphics are a kind of real characters, which do not only denote, but in ſome meaſure expreſs the things.—Thus, according to Clemens Alexandrinus, *Strom*. 5. a lion is the *hieroglyphic* of ſtrength and fortitude; a bullock, of agriculture; a horſe, of liberty; a ſphinx, of ſubtilty, &c.

HIEROGLYPHICAL, ſomething containing a hieroglyphic. See HIEROGLYPHIC.

In Egypt are ſtill found divers obeliſks, figures, &c. full of *hieroglyphical* figures or characters.

‘ From the inmoſt receſſes of the dome, ſays Apuleius, he
‘ brings forth certain books written in myſtic, unintelligible
‘ characters; conſiſting partly of figures of animals, ap-
‘ parently ſuggeſting ſome compendious ſaying; and partly
‘ of knots, and flouriſhes; all abundantly ſecured from the
‘ too curious eyes of profane readers. The religious rites of
‘ the Egyptians are moſtly involved in ſuch figures of ani-
‘ mals, which are hence called ἱερογλυφικα γραμματα, *hie-*
‘ *roglyphical letters*.’

HIEROGRAMMATEI, ʽΙΕΡΟΓΡΑΜΜΑΤΕΙΣ, among the antient Egyptians, were the prieſts appointed to explain the myſteries of religion, and to direct the performance of the ceremonies thereof.

The *hierogrammatei* invented and wrote hieroglyphics, and hieroglyphical books; and occaſionally explained them, together with other matters relating to the doctrines of religion. If we may believe Suidas, they were alſo prophets; at leaſt, he relates, that a *hierogrammateus* foretold to an antient king of Egypt, that there would be an Iſraelite of great wiſdom, virtue, and renown, who ſhould humble Egypt.

The *hierogrammatei* were always near the king, to aſſiſt him with their informations and counſels: the better to fit them for this, they made uſe of the ſkill and knowlege they had acquired in the ſtars, and the motions of the heavenly lights; and even of the writings of their predeceſſors, wherein their functions and duties were delivered. They were exempted from all civil employments; were reputed the firſt perſons in dignity next the king; and bore a kind of ſceptre in form of a ploughſhare.

After Egypt became a province of the Roman empire, the *hierogrammatei* ſunk into neglect.

HIEROMNEMON *, an officer in the antient Greek church; whoſe principal function was to ſtand behind the patriarch at the ſacraments, ceremonies, &c. and ſhew him the prayers, pſalms, &c. which he was to rehearſe.

* The word is compoſed of the Greek ἱερος, ſacred; and μνημων, one who advertiſes, or puts in mind of.

He alſo cloathed the patriarch in his pontifical robes; and aſſigned the places of all thoſe who had a right to be around him, when ſeated on his throne; as the maſter of the ceremonies now does to the pope.

The *hieromnemon* was commonly a deacon: when he was in prieſt's orders, as it ſometimes happened, he was excuſed from dreſſing the patriarch in his pontifical habits. Whether he were deacon, or prieſt, he had always under him an officer named *caſtriſius*. He had alſo the keeping of the book intituled *Contacion*, or book of ordination; and that called the *Enthronianiſmus*, which was a ſort of ritual.

HIERONYMITES *, or *Hermits of St. Jerom*. See JERONYMITES.

* The word is compounded of ἱερος, holy; and ονομα, name.

HIEROPHANTES *, or HIEROPHANTA, in antiquity, a prieſt among the Athenians.

* The word comes from ἱερος, holy, ſacred; and φαινω, I appear.

The *hierophantes* was properly the chief perſon that officiated in the Eleuſinia, that great ſolemnity, ſacred to Ceres and Proſerpine. See ELEUSINIA.

St. Jerom ſays, that the *hierophantes* extinguiſhed the fire of luſt, by drinking cicuta, or the juice of hemlock; or even by making themſelves eunuchs.—Apollodorus obſerves, that it was the *hierophantes* who inſtructed perſons initiated into their religion, in the myſteries and duties thereof; and that it was hence he derived his name.—For the ſame reaſon he was alſo called *prophetes*, the prophet.—He had officers under him to do the ſame thing, or to aſſiſt him therein, who were alſo called *prophetes*, and *exegetes*, i. e. explainers of divine things.

To the *hierophantes* it belonged to dreſs and adorn the ſtatues of the gods, and to bear them in proceſſions, and ſolemn ceremonies.

HIEROPHYLAX *, an officer in the Greek church.—His function is that of guardian, or keeper of the holy things, utenſils, veſtments, &c. anſwering to our *ſacriſta*, or ſexton.

* The word is compoſed of ἱερος, *ſacer*; and φυλαξ, keeper; of φυλαττω, I keep.

HIEROSCOPY *, HIEROSCOPIA, a kind of divination, performed by conſidering the victim, and obſerving every thing that occurs during the courſe of the ſacrifice.

* The word is formed of ἱερος, *ſacer*; and σκοπεω, I view, or conſider.

HIGH, *altus*, a term of relation, applied to a body, conſidered according to its third dimenſion, or its elevation above the horizon, or even above the ground.

The pike of Tenariff is reputed the *higheſt* mountain in the world.—The Monument is two hundred and two feet *high* from the ground. See MONUMENT.

The tower of St. Paul's, before its firſt burning down in 1086. was five hundred and twenty feet *high*, excluſive of a pole of copper, whereon was a croſs fifteen feet and a half *high*.—The towers of Notre Dame at Paris, ſo much talked of, are but two hundred and twelve feet *high*, &c.

HIGH is alſo uſed to denote a perſon in power, dignity, &c.

Thus God is frequently called in ſcripture the *Moſt High*. So on earth we ſay, *high* and puiſſant lord, prince, &c.—The ſtates general of the United Provinces are called their *high mightineſſes*. See STATES, &c.

So in England we ſay, *high* court of parliament.

Lord *high* chancellor, } See { CHANCELLOR.
Lord *high* treaſurer. } See { TREASURER.

HIGH, in muſic, is ſometimes uſed in the ſame ſenſe with *loud*, in oppoſition to *low*: and ſometimes in the ſame ſenſe with *acute*, in oppoſition to *grave*.

HIGH-*bearing cock* is a term uſed with reſpect to fighting cocks; denoting one larger than the cock he fights withal.—As a *low*-bearing cock is one overmatched for height.

HIGH DUTCH is the German tongue in its greateſt purity, as ſpoken in Miſnia, &c. See TEUTONIC, &c.

HIGH *Operation*, in ſurgery, is a method of extracting the ſtone; thus called, by reaſon the ſtone is taken out at the upper part of the bladder.

For the method of performing the *high* operation. See LITHOTOMY.

The *high* operation is ſaid to have been firſt practiſed by Roſſetus, others ſay by Franco, a ſurgeon of Lauſanne. It has been lately retrieved by Mr. Douglaſs, and practiſed with good ſucceſs by Mr. Cheſelden, and others.

HIGH *relievo.* See the article RELIEVO.

HIGH *ſea*, or ocean, is that far from land. See SEA.

HIGH *water*, is that ſtate of the tides when they ceaſe to flow up.

HIGHNESS, a quality, or title of honour given to princes.

The kings of England and Spain had formerly no other title but that of *highneſs*; the firſt, till the time of James I. and the ſecond, till that of Charles V.

The petty princes of Italy began firſt to be complimented with the title of *highneſs* in the year 1630.—And the duke of Orleans aſſumed the title of *royal highneſs* in the year 1631. to diſtinguiſh himſelf from the other princes of France.

The duke of Savoy, after king of Sardinia, bore the title of *royal highneſs*, on account of his pretenſions to the kingdom of Cyprus.—It is ſaid that duke only took the title of *royal highneſs*, to put himſelf above the duke of Florence, who was called *great duke*; but the great duke has ſince aſſumed the title of *royal highneſs*, to put himſelf on a level with the duke of Savoy.

The prince of Conde firſt took the title of *moſt ſerene highneſs*, leaving that of ſimple *highneſs* to the natural princes.

HIIS *teſtibus*, q. d. *theſe witneſſes*; a phraſe antiently added in the end of a deed, written in the ſame hand with the deed; upon which the witneſſes were called, the deed read, and then their names entered. See WITNESS.

This clauſe of *hiis teſtibus*, in ſubjects deeds, continued till, and in, the reign of Henry VIII. but it is now omitted. *Cok.* on *Littlet.*

HILARIA, in antiquity, feaſts celebrated every year, by the Romans, on the eighth of the calends of April, in honour of Cybele, the mother of the gods.

The *hilaria* were ſolemnized with great pomp, and rejoicing. Every perſon dreſſed himſelf as he pleaſed, and took the marks, or badges, of whatever dignity, or quality, he had a fancy for.

The Romans took this feaſt originally from the Greeks, who called it ΑΝΑΒΑΣΙΣ, q. d. *aſcenſus*: the eve of that day they ſpent in tears and lamentations, and thence denominated it ΚΑΤΑΒΑΣΙΣ, *deſcenſus*.

Afterwards, the Greeks took the name ῾ΙΛΑΡΙΑ, from the Romans; as appears from Photius, in his extract of the life of the philoſopher Iſidore.

Caſaubon maintains, that beſide this particular ſignification, the word *hilaria* was alſo a general name for any joyful or feſtival day, whether public, or private and domeſtic. But Salmaſius does not allow of this.

Triſtan, T. I. p. 482. diſtinguiſhes between *hilaria* and *hilariæ*. The former, according to him, were public rejoicings; and the latter, prayers made in conſequence thereof; or even of any private feaſt, or rejoicing, as a marriage, &c. The public laſted ſeveral days; during which, all mourning, and funeral ceremonies, were ſuſpended.

The *hilaria* were firſt inſtituted in honour of the mother of the gods, as is obſerved by Macrobius, L. I. c. 10. and Lampridius, in his life of Alexander Severus; being apparently intended to expreſs the joy conceived at the birth of the gods.

HILARODI *, in the antient muſic and poetry, a ſort of poets among the Greeks, who went about ſinging little merry diverting poems or ſongs; though ſomewhat graver than the Ionic pieces.

* The word is Greek, ἱλαρῳδοι, compounded of ἱλαρος, joyful, and ᾠδη, ſinging, ſong.

The *hilarodi* appeared dreſſed in white, and were crowned with gold. At firſt they wore ſhoes; but afterwards they aſſumed the crepida, which was only a ſoal, tied over the foot with ſtraps.

They did not ſing alone; but had always a little boy, or girl, to attend them, playing on ſome inſtrument.

From the ſtreets, they were at length introduced into the tragedy, as the magodi were into comedy.

The *hilarodi* were afterwards called *Simodi*, from a poet named Simus, who excelled in this kind of poetry.

HILARODIA, a poem, or compoſition in verſe, made, or ſung, by a ſort of rhapſodiſts called *hilarodi*. See HILARODI.

Scaliger holds *hilarodia*, *hilaro-tragœdia*, *phlyacography*, and the *Rhinthonic fable*, to be all names for the ſame thing.

HILARO-TRAGOEDIA, a dramatic performance, partly tra- or ſerious; and partly comic, or merry.

Scaliger holds, the *hilaro-tragœdia* and *hilarodia* to be one and the ſame thing. Others rather take the *hilaro-tragœdia* to have been pretty nearly what we call a *tragi-comedy*. Others, again, will have it to have been a pure tragedy, only terminating with a happy cataſtrophe, which brings the hero out of a wretched into a fortunate ſtate.—But the firſt opinion ſeems the moſt probable, and the beſt warranted.

Suidas mentions one Rhinthon, a comic poet of Tarentum, as the inventor of this kind of poem: whence it was alſo called *Rhinthonica fabula*.

HILARY *Term.* See the article TERM.

HILL. See the article MOUNTAIN.

HILLOCK. See the article MOUNT.

HIN, a Hebrew meaſure, containing the ſixth part of an epha; or one wine gallon and two pints.

HIND, a female ſtag of the third year. See HUNTING.

HIND *Calf*, a hart of the firſt year. See HUNTING.

HIND *Hand*, in the manage. See the article HAND.

HINDENI *Homines* *, antiently ſignified a ſociety, or claſs of men.

* The word is formed from the Saxon hinꞇene, a ſociety, or company.

In the time of our Saxon anceſtors, all men were ranked into three claſſes, or *hindenes*; the *loweſt*, the *middle*, and the *higheſt*; and they were valued according to the claſs they were in; that in caſe an injury were done by any one, ſatiſfaction might be made according to the value or worth of the man it was done to. See SYXHYNDEMEN.

The *loweſt* were thoſe who were worth ten pounds, or two hundred ſhillings; called *viri ducentini*, or *twyhyndemen*, and their wives, *twyhynda's*.

The *middle* were valued at ſix hundred ſhillings; and were called *ſixhyndemen*, and their wives *ſixhynda's*.

The *higheſt* were valued at twelve hundred ſhillings, and were called *twelvehyndemen*, and their wives the *twelvehynda's*.

HINE, or HIND, in the Saxon language, ſignifies a ſervant, or one of the family; but it is now taken in a more reſtrictive ſenſe, for a ſervant at huſbandry: and the maſter-*hine*, is he that overſees the reſt.

HINGES, in building, thoſe neceſſary iron ligaments, by means whereof doors, lids, folds of tables, &c. make their motion, whether of opening, ſhutting, or folding.

The ſpecies of *hinges* are many, *viz.* bed, box, butts, caſement; Lancaſhire, and ſmooth-filed; caſting, cheſt-black, Lancaſhire, ſmooth-filed, coach, deſk, dovetails, eſſes, folding, garnets, dozen-ware-long, dozen-ware-ſhort, weighty-long, weighty-ſhort, lamb-heads, port, ſide Lancaſhire, ſide-ſmooth-filed, ſide with riſing joints; Lancaſhire, and ſmooth-filed, ſide with ſquares, ſcrew, ſcuttle, ſhutter; Lancaſhire, and ſmooth-filed, ſtall, trunk of ſundry ſorts, joints; Lancaſhire, dozen-ware with hooks, dozen-ware long, dozen-ware ſhort, weighty-long, weighty-ſhort.

HIP. See the article HAUNCH.

HIP-*ſhot*, a diſorder of a horſe, when he has wrung or ſprained his haunches, or *hips*, ſo as to relax the ligaments that are to keep the bone in its due place.

The ſigns are, that the horſe will halt much, and go aſidelong, trailing his leg after him; and the *hip* which is hurt will be lower than the other; the fleſh falling away on the ſide of his buttock.

HIPS, in building, are thoſe pieces of timber, placed at the corners of a roof.

The *hips* are much longer than the rafters, by reaſon of their oblique poſition, and are placed not with a right or ſquare angle, but a very oblique one; and by conſequence are not, at leaſt ought not to be, ſquare at any angle (as rafters are at all) but bevel at every one of them; and, which is yet more, as rafters have but four planes, theſe commonly have five.

They are commonly, by country workmen, called *corners*: ſome call them *principal rafters*, and others *ſleepers*. Indeed, *hips* and ſleepers are much the ſame; only the ſleepers lie in the valleys, and join at top with the *hips*; but thoſe ſurfaces or plains, which make the back of the *hip*, are the under-ſides of the ſleeper.

The backs of a hip, are thoſe two ſuperficies, or planes, on the outſide of the *hip*, which lie parallel, both in reſpect of their length and breadth, with the ſuperficies of the adjoining ſide, and end of the roof.

HIP-MOULD, is by ſome uſed for the back of the *hip*—Others underſtand it as a prototype, or pattern, commonly made of a piece of thin wainſcot; by which the back, and the ſides, of the *hip* are ſet out.

HIP-ROOF, among builders, called alſo *Italian-roof*, is a roof which has neither gable-head, nor ſhread-head, nor jirken head; which laſt are both gable and *hip* at the ſame end. A *hip-roof* has rafters as long, and with the angles at the foot, &c. at the ends of buildings, as it has at the ſides; and the feet of the rafters on the ends of ſuch buildings as have *hip-roofs*, ſtand on the ſame plane, *viz.* parallel with the horizon, and at the ſame height from the foundation, with rafters on the ſides of the roof.

Hip-Tyles. See the article Tyle.

HIPPEUS, or Equinus, in phyſiology, a ſort of comet which ſome writers ſuppoſe to bear a reſemblance in its tail to a horſe. But the ſhape of this kind of comet is not always alike; being ſometimes oval, and ſometimes imitating a rhomboides. Its train alſo is ſometimes ſpread from the front, or forepart, and ſometimes from the hind-part.

Hence, this claſs of comets is diſtinguiſhed into *equinus barbatus*, *equinus quadrangularis*, and *equinus ellipticus*. See Comet.

HIPPIATRICE *, the art of curing the diſeaſes of brutes, and particularly horſes.

* The word is compoſed of ἱππος, horſe; and ιατρος, phyſician.

This makes what we rather call the *farrier's art*. See Farrier.

HIPPOCENTAUR *, in antiquity, a fabulous monſter, ſuppoſed to be half horſe, and half man.

* The word is pure Greek, formed of ἱππος, *equus*, horſe; κεντεω, *pungo*, I prick, ſpur; and ταυρος, *taurus*, bull.

What gave occaſion to the fable, was, that a people of Theſſaly, inhabiting near mount Pelion, became thus denominated, by reaſon they were the firſt that taught the art of mounting on horſeback; which occaſioned ſome of their neighbours to imagine, that the horſe and man made but one animal.

The *hippocentaurs* ſhould ſeem to have differed from the centaurs, in this, that the latter only rode on bullocks, and the former on horſes, as the names themſelves intimate. See Centaur.

Pliny affirms, he had ſeen a real *hippocentaur* at Rome, which was brought out of Egypt, embalmed in honey: but this we may well ſuſpect to have been a cheat. V. Plin. *Hiſt. Nat.* l. 7. c. 2.—On the medals of Gallienus, is repreſented a centaur drawing a bow, or holding a globe in the right hand, and the helm of a ſhip in the left; with this inſcription, APOLLINI CONS. AUG. *To Apollo the conſervator of Auguſtus.*—Triſtan conſiders both the one and the other, as a ſymbol of the protection Gallienus received from Apollo in his wars againſt the Perſians.

HIPPOCRAS *, *Vinum* Hippocraticum, a kind of medicated wine. See the article Wine.

* Menage approves the conjecture of thoſe who derive *hippocras* from *Hippocrates*, as ſuppoſing him the inventor hereof: but we may better deduce it from the *manica Hippocratis*, or *Hippocrates's ſleeve*, uſed in the filtration of it.

Hippocras is a drink compoſed of wine, with ſpices and other ingredients infuſed therein; much uſed among the French by way of a cordial dram after meals.

There are various kinds of *hippocras*, according to the kind of wine, and the other additional ingredients made uſe of; as white *hippocras*, red *hippocras*, claret *hippocras*, ſtrawberry *hippocras*, *hippocras* without wine, cyder *hippocras*, &c.

That directed in our late college diſpenſatory, is to be made of cloves, ginger, cinnamon, and nutmegs, beat, infuſed in canary, with ſugar; to the infuſion, milk, a lemon, and ſome ſlips of roſmary, are to be put, and the whole ſtrained through a flannel. It is recommended as a cordial, and as good in paralytic, and all nervous caſes.

HIPPOCRATES'S *ſleeve*, *manica* Hippocratis, a kind of filtre, or ſtraining-bag, formed by joining the oppoſite angles of a ſquare piece of flannel, in form of a pyramid; and uſed to percolate, or ſtrain ſyrups, decoctions, *&c.* for clarification.

HIPPOCRATICA *facies*. See Facies *Hippocratica*.

HIPPODROME *, Hippodromus, in antiquity, a liſt, or courſe, wherein horſe-races are performed; and horſes exerciſed.

* The word is Greek, ἱπποδρομος, compoſed of ἱππος, *equus*, horſe; and δρομος, *curſus*, of the verb δρεμω, *curro*, I run.

HIPPOLAPATHUM, in natural hiſtory, a ſpecies of lapathum, called alſo *monk's rhubarb*.

HIPPOMANES *, a ſort of poiſon, famous among the antients as an ingredient in amorous philtres, or charms.

* The word is Greek, ἱππομανης, compounded of ἱππος, *equus*, horſe; and μανια, *furor*, fury, madneſs.

Naturaliſts are not agreed about the nature of the *hippomanes*.—Pliny deſcribes it as a blackiſh caruncle, found on the head of a new-foaled colt; which the dam bites off, and eats, as ſoon as ſhe is delivered. He adds, that if ſhe be prevented herein by any other's cutting it off before, ſhe will not take to, nor bring up, the young.

Virgil, and after him Servius and Columella, deſcribe it as a poiſonous matter, trickling from the pudendum of a mare, when proud, or longing for the horſe.

At the end of Mr. Bayle's dictionary is a very learned diſſertation on the *hippomanes*; and all its virtues, both real, and pretended.

HIPPOPODES *, or Hippopedes, in the antient geography, an appellation given to certain people, ſituated on the banks of the Scythian ſea; as being ſuppoſed to have horſes feet.

* The word is Greek, compoſed of ἱππος, horſe; and πȣ̃ς, *pes*, foot.

The *hippopodes* are mentioned by Dionyſius, *Geogr.* v. 310. Mela, L. III. c. 6. Pliny, L. IV. c. 13. and S. Auguſtine, *de civit.* L. XVI. c. 8.—But the truth is, that they had this appellation given them on account of their ſwiftneſs, or lightneſs of foot.

HIPPUS *, in medicine, a diſorder of the eyes, wherein they continually ſhake, and tremble; and thus repreſent objects as if continually fluctuating.

* It is thus called from the Greek, ἱππος, horſe; in regard, according to Blancard, objects appear to ſhift in it, as much as when we are riding.

HIRCUS *, *tragus*, or *goat*, in anatomy, a part of the auricle, or outer ear; being that eminence next the temples. See Ear.

* The word is Latin, and literally ſignifies *goat*.

Hircus, in aſtronomy, a fixed ſtar of the firſt magnitude, the ſame with *capella*. See Capella.

Hircus is alſo a denomination given to the rank ſmell exhaling from the arm-pits; and which has its ſource in the axillary glands.

Hircus is alſo uſed by ſome writers for a comet, encompaſſed as it were with a main, ſeemingly rough and hairy. See Comet.

HISSING, an appellation given by grammarians to the three conſonants, ſ, x, and z. See S, X, and Z.

HISTIODROMIA *, the art of ſailing, or of conducting veſſels on the ſea.

* The word is Greek, compoſed of ἱστιον, ſail, of ἱστος, the maſt of a ſhip, which comes from ἱστημι, *ſto*, I ſtand; and δρομος, courſe, of δρεμω, I run.

Hiſtiodromia is the ſame with what we otherwiſe call *navigation*.

Hiſtiodromia turns on four points, any two whereof being given, the other two are eaſily found from them, by the loxodromic tables, ſines, tangents, ſecants, Mercator's chart, *&c.* Theſe four things are, the difference of latitude, difference of longitude, the courſe, and the diſtance run.

HISTORICAL, ſomething that relates to hiſtory. See History.

Thus we ſay, *hiſtorical* truth, *hiſtorical* ſtile, *&c.*

The donation of Conſtantine, the reality of a pope Joan, *&c.* are *hiſtorical* points, very much controverted.

Henry Stephens has publiſhed an *hiſtorical* and poetical dictionary, ſince improved and augmented by Lloyd, Morery, Hoffman, *&c.* Mr. Bayle has given us an *hiſtorical* and critical dictionary: Diodorus Siculus, Vignier, and biſhop Nicolſon, *hiſtorical* libraries.

The *hiſtorical* art conſiſts chiefly in the arranging and diſpoſing the various incidents, ſo as to conſtitute one uniform, well connected whole. *F. Daniel.*

The principal qualities of the *hiſtorical* ſtile, are perſpicuity and brevity.

Historical *column*, is that whoſe ſhaft is adorned with baſſo-relievo's carved all around from bottom to top, repreſenting the hiſtory and actions of ſome illuſtrious perſon.

In *hiſtorical* columns, the figures may be either diſpoſed in a ſpiral line, continued from one end to the other; as in the Trajan column at Rome; or in diſtinct bands, or circles, containing ſo many different ſubjects.

HISTORIOGRAPHER *, a profeſſed hiſtorian, or writer of hiſtory; or a perſon who applies himſelf peculiarly thereto.

* The word is compoſed of the Greek, ἱστορια, hiſtory; and γραφω, *ſcribo*, I write.

The term is chiefly uſed for a perſon who has a peculiar charge and commiſſion to write the hiſtory of his time.—The *hiſtoriographer* to his majeſty, is an officer under the lord chamberlain: his ſalary 200 *l. per ann.*

HISTORY *, a recital, or deſcription of things as they are, or have been; in a continued, orderly narration of the principal facts, and circumſtances thereof. See Annals.

* The word is Greek, ἱστορια, *hiſtoria*; and literally denotes a ſearch of curious things, or a deſire of knowing, or even a rehearſal of things we have ſeen; being formed of the verb ἱστορειν, which properly ſignifies to know a thing by having ſeen it. Though the idea appropriated to the term *hiſtory*, is now much more extenſive; and we apply it to a narration of divers memorable things, even though the relater only takes them from the report of others. The origin of the word is from the verb ισημι, I know; and hence it is, that among the antients ſeveral of their great men were called *polyhiſtores*, q. d. perſons of various and general knowlege.

Hiſtory is divided, with regard to its ſubject, into the *hiſtory* of nature, and the *hiſtory of actions*.

History *of nature*, or *Natural* History, is a deſcription of natural bodies; whether terreſtrial, as animals, vegetables, foſſils, fire, water, air, meteots, *&c.* or celeſtial, as the ſtars, planets, comets, *&c.*

Such are Ariſtotle's, Dioſcorides's, Aldrovandus's, *&c.* *hiſtories*: ſuch alſo are Ray's and Geſner's *hiſtory* of quadrupedes; Willughby's *hiſtories* of birds, fiſhes, *&c.* Such, laſtly, are

Mr. Flamſteed's *hiſtoria cœleſtis*, or *hiſtory* of the heavenly bodies.

Natural hiſtory is much the ſame with what we otherwiſe call *phyſiology*.

HISTORY, with regard to actions, is a continued relation of a ſeries of memorable events, in the affairs, either of a ſingle perſon, a nation, or ſeveral perſons and nations; and whether included in a great, or little ſpace of time.

Thus, Thucydides has written the *hiſtory* of Greece; Livy, that of Rome; Mezeray, and F. Daniel, of France; Tyrrel, and Echard, the *hiſtory* of England; Buchanan of Scotland; Clarendon, the *hiſtory* of the rebellion; and Thuanus, biſhop Burnet, &c. the *hiſtory* of their own lives and times.

Euſebius, Baronius, &c. have written the *hiſtory* of the church; biſhop Burnet that of the Reformation, &c.

Several authors have written on the method of reading, and ſtudying *hiſtory*; among the reſt Lucian, Bodin, Voſſius the elder, Whear, Patrici, Beni, Maſcardi, De Silhon, F. le Moine, F. Rapin, the abbot de S. Real, F. Thomaſſin, Freſnoy, &c.

Hiſtory is divided into *antient* and *modern*, *univerſal* and *particular*, *ſacred* and *profane*.

F. Meneſtrier gives us the proper characters of the divers kinds of *hiſtory*, with great accuracy.—He diſtinguiſhes *hiſtory*, with regard to both its matter, and its form; and gives curious inſtances of each particular.

Hiſtory, with regard to its matter, is either *ſacred*, or *natural*, or *civil*, or *perſonal*, or *ſingular*.

Sacred HISTORY is that which lays before us the myſteries and ceremonies of religion, viſions or appearances of the Deity, &c. miracles, and other ſupernatural things, whereof God alone is the author.—Such are the book of Geneſis, the Goſpels, Apocalypſe, &c. See MIRACLE, PROPHECY, REVELATION, &c.

Natural HISTORY is a deſcription of the ſingularities of nature; its irregularities and prodigies; and the alterations it undergoes in the birth, progreſs, end, and uſe of things.—Such is Ariſtotle's *hiſtory* of animals; Theophraſtus's *hiſtory* of plants; and the intire body of natural *hiſtory*, by Pliny: ſuch alſo are Acoſta's natural *hiſtory* of the Indies; Plott's *hiſtory* of Staffordſhire, &c.

Civil HISTORY, is that of people, ſtates, republics, communities, cities, &c.—Such are thoſe of Thucydides, Halicarnaſſeus, Livy, Polybius, Mezeray, F. Daniel, Milton, Buchanan, &c.

Perſonal HISTORY, is that which gives the portrait, or life, of ſome ſingle perſon.—Such are the lives of Plutarch, Cornelius Nepos, Suetonius, &c. And the lives of the painters, poets, philoſophers, ſaints, &c.

Perſonal hiſtory is the ſame with what we otherwiſe call *biography*. See BIOGRAPHY.

Singular HISTORY is that which deſcribes a ſingle action, ſiege, battle, or even a war, or expedition, &c.

Hiſtory, with regard to its form, is either *ſimple*, or *figurate*, or *mixed*.

Simple HISTORY is that delivered without any art of foreign ornament; being only a naked and faithful recital of things, juſt in the manner and order wherein they paſſed.—Such are the chronicles of the eaſtern empire; the faſti; chronological tables, journals, &c.

Figurate HISTORY is that which is further enriched with ornaments, by the wit, ingenuity, and addreſs, of the hiſtorian.—Such are the political, and moral *hiſtories* of the Greeks, Romans, and moſt of the moderns.

This latter is a kind of rational *hiſtory*; which, without ſtopping at the ſhell or outſide, the appearances of things, diſcovers the ſecret ſprings and movements of the ſeveral events; it enters into the thoughts, the breaſts of the perſons concerned therein; diſcovers their intentions and views; and by the reſult of enterprizes and undertakings, diſcovers the prudence or weakneſs, wherewith they were laid, conducted, &c.

Theſe are much the moſt uſeful, and entertaining *hiſtories*.—To this claſs, may be peculiarly referred the *hiſtories* and annals of Tacitus, among the antients; and thoſe of Guicciardin, Thuanus, and biſhop Burnet, among the moderns.

Mixed HISTORY is that which, beſide the ornaments of figured *hiſtory*, calls in the proofs and authorities of ſimple *hiſtory*; furniſhing authentic memoirs, or original letters, manifeſtoes, declarations, &c. to vouch the truth of what is ſaid.—Such are the *hiſtories*, or collections of Ruſhworth; M. Rapin Thoyras's *hiſtory* of England; the genealogical *hiſtories* of Ducheſne; M. de Marca's *hiſtory* of Bearn, &c.

HISTORY is alſo uſed for a romance; or a fabulous, but probable, relation of a ſeries of actions or adventures feigned or invented by the writer. See ROMANCE.

Such is the *hiſtory* of the civil wars of Granada; the *hiſtory* of Don Quixote; the Ethiopic *hiſtory* of Heliodorus, &c.

HISTORY, in painting, denotes a picture compoſed of divers figures, or perſons, repreſenting ſome tranſaction, or piece of *hiſtory*, either real or feigned.

Painters are diſtinguiſhed into portrait-painters, flower and fruit painters, painters of beaſts and landſchapes, and *hiſtory* painters.—The firſt place is univerſally allowed to *hiſtory* painters, as the moſt difficult, maſterly, and ſublime province.

HISTRIO, in the antient drama, ſignified an actor, or comedian; but more eſpecially a pantomime, who exhibited his part by geſtures, and dancing.

HOAR-FROST, *pruina*. See FROST.

HOARSENESS, *raucedo*, a diminution of the voice; ſometimes attended with a preternatural aſperity or roughneſs thereof.

The part here affected is the aſpera arteria, and particularly its head, or the larynx. See ASPERA, and LARYNX.

The proximate cauſe of *hoarſeneſs* is a too copious effuſion of thin lympha upon the part.

Hoarſeneſs is a ſort of catarrhous indiſpoſition, ariſing from a too great acrimony or ſaltneſs of the lymph.

Sperma ceti, decoct. rapar. & rob paſſular. are approved remedies herein.—Where the diſorder is inveterate, incidents and expectorants are frequently of ſervice.

HOBBY, a ſort of hawk that preys upon ſmall game, as pigeons, larks, &c. See HAWK.

HOBITS, a ſort of ſmall mortars, from ſix to eight inches diameter, mounted on carriages, made after the gun-faſhion; uſed for annoying the enemy at a diſtance with ſmall bombs.

HOBLERS, or HOBILERS, HOBELARII, in our antient cuſtoms, were men, who, by their tenure, were obliged to maintain a light horſe, or hobby, for the certifying any invaſion towards the ſea-ſide.

The name was alſo uſed for certain Iriſh knights, who uſed to ſerve as light horſemen upon hobbies.

HOCK-*Tueſday money*. See the article HOKE-DAY.

HOD, a ſort of tray for carrying mortar; in uſe among bricklayers.

HODEGOS, a term purely Greek, ὁδηγὸς, ſignifying *guide*.

The word is chiefly uſed as the title of a book compoſed by Anaſtaſius the Sinaite, towards the cloſe of the fifth century; being a method of diſputing againſt the heretics, particularly the Acephali.

Mr. Toland has alſo publiſhed a diſſertation under the ſame title. Its ſubject is the pillar of fire, &c. which went before the Iſraelites, as a guide in the deſert.

HODGE-PODGE. See the article HOTCH-POT.

HODMAN, a young ſcholar admitted from Weſtminſter ſchool to be ſtudent in Chriſt-church in Oxford.

HOE, or HOW, a huſbandman's tool, made like a cooper's adz, to cut up weeds in gardens, fields, &c.

This inſtrument is of great uſe, and ought to be much more employed than it is, in hacking and clearing the ſeveral corners, creeks, and patches of land, in ſpare times of the year, which would be no ſmall advantage thereto. See Supplement, article HOING.

HOG *ſteer*, among hunters, a wild boar of three years old, See HUNTING.

HOGGET, or HOGREL, is a young boar of the ſecond year.

HOGENHINE, HOGHENHEYNE, or rather AGENHINE, *q. d. own ſervant*; he that comes gueſtwiſe to an inn, or houſe, and lies there the third night: after this he was accounted of that family; and if he offended the king's peace, his hoſt was anſwerable for him. See THIRD *night awn hind*.

HOGOE, properly, HAUT-GOUT, a meſs in cookery, ſo denominated from its high ſavour, or reliſh.

Its preparations, ingredients, &c. are various.—Its baſis is uſually ſome fleſh, *e. g.* leg of mutton, minced with ſuet, and ſavoury herbs, as ſhalot, thyme, ſpinach, &c. added thereto, with ſeaſoning of ſalt and pepper, and yolks of eggs: the whole worked up into a ball, and thus boiled; frequently, in the body of a cabbage, firſt faſhioned like a duck, or other fowl, with a head ſtuck on.—It remains to be ſerved up with a proper ſawce, as butter, yolks of eggs, anchovies, &c.

HOGSHEAD, a meaſure, or veſſel, of wine, or oil; containing the fourth part of a tun; or 63 gallons.

Two of theſe *hogſheads* make a pipe or butt.

The diſtillers weigh their veſſels when full, and for a *hogſhead* allow four hundred weight, two quarters, and twenty-two pound, caſk and liquor.

HOKE-DAY, HOCK-DAY or HOCK-TUESDAY, in our antient cuſtoms (*Dies Martis, quem quindenam paſchæ vocant*) the ſecond Tueſday after Eaſter week.

This day was very remarkable in former times, inſomuch as to be uſed on the ſame footing with Michaelmas, for a general term or time of account.—We find leaſes without date reſerving ſo much rent payable *ad duos anni terminos, ſcil. ad le hoke-day, & ad feſtum ſancti Michaelis*. See the article QUARTER.

In the accounts of Magdalen college, Oxford, there is yearly an allowance, *pro mulieribus hockantibus*, of ſome manors of theirs in Hampſhire; where the men *hock* the women on Mondays

days, and the women hock them on Tueſdays.—The meaning of it is, that, on that day, the women, in merriment, ſtopped the way with ropes, and pulled paſſengers to them, deſiring ſomething to be laid out in pious uſes.

HOKE-DAY *Money*, or HOKE-TUESDAY *Money*, a tribute antiently paid the landlord, for giving his tenants and bondmen leave to celebrate *hock-day*, or *hoke-day*, in memory of the expulſion of the domineering Danes.

HOLD *of a Ship*, the loweſt part of the ſhip; including all that part lying between the keelſon and the lower-deck. See *Tab. Ship. fig.* 2. *lit. G. fig.* 2. *n.* 116.

In the *hold* are the ſteward's-room, the powder-room, the bread-room, and the boatſwain's-room, divided from each other by bulk-heads.

The *hold* is the ſtore-room in a merchant-ſhip, or the place wherein the goods, at leaſt all the heavier and more cumberſome, are ſtowed: the reſt are diſpoſed between the two decks; at leaſt in Dutch ſhips, which have their *holds* very ſhallow, and the ſpace between the decks very high.

To find the burden of a ſhip, the *hold* is to be meaſured.

HOLD-FAST, an iron hook, in ſhape of the letter S, fixed in a wall, to retain and ſupport it.

HOLLAND, in the linendrapery, a fine, white, even, cloſe kind of linen cloth, chiefly uſed for ſhirts, ſheets, *&c.*

It is principally wrought in the provinces of Holland, Friſeland, and other parts of the United Provinces; whence the appellation.

The principal mart, or ſtaple, of this cloth, is at Haerlem, whither it is ſent from moſt other parts, as ſoon as wove, there to be whitened in the enſuing ſpring.

That manufactured in Friſeland is the moſt eſteemed, and called *friſe holland*. It is the ſtrongeſt and the beſt coloured of any of that fineneſs: it is never calendered, nor thickened, as the reſt; but is imported juſt as it comes from the whitſter: it is diſtinguiſhed by its being yard, quarter, and half wide; which is half a quarter more than thoſe commonly called *friſe hollands*, which are not right.

Guilix HOLLAND is very white and fine, and is chiefly uſed for ſhirts, being the ſtrongeſt of any for its fineneſs, except true friſe. It is juſt yard wide.

Alcmaer HOLLAND is a very ſtrong cloth, and wears exceeding well. It is about yard, quarter, and half wide.

HOLLOW, in architecture, a concave moulding, about a quadrant of a circle, by ſome called a *caſement*, by others an *abacus*. See CASEMENT.

HOLLOW *Square* is a body of foot, drawn up with an empty ſpace in the middle, for the colours, drums, and baggage; facing and covered by the pikes every way, to oppoſe the horſe.

HOLLOW *Tower*, in fortification, is a rounding made of the remainder of two briſures, to join the curtin to the orillon, where the ſmall ſhot are plaid, that they may not be ſo much expoſed to the view of the enemy. *Harris.*

HOLM *, HULMUS, ſignifies as much as *inſula amnica*, a river-iſland, according to Bede; or a plain, graſſy ground, upon the water-ſide, or in the water, according to Camden.

* Where any place is called by the name *holm*, or where this ſyllable is joined with any other in the name of a place, it ſignifies it to be ſurrounded with waters. As the *flatholmes*, the *ſtepholmes*, near Briſtol. If the ſituation of the place be not near the water, it may ſignify an hilly place; for *holm*, in Saxon, does alſo ſignify an hill, or cliff.

HOLOCAUST *, a kind of ſacrifice, wherein the whole offering is burnt, or conſumed, by fire; called alſo, in Scripture, a *burnt-offering*. See SACRIFICE, and OBLATION.

* The word is Greek, ὁλοκαυστον, formed from ὁλος, *totus*, whole; and καιω, *uro*, *igne abſumo*, I conſume with fire.

HOLOGRAPHUM *, in the civil law; ſomething written wholly in the hand-writing of the perſon who ſigns it.

* The word is Greek, compoſed of ὁλος, all; and γραφω, I write.

The word is chiefly uſed in ſpeaking of a teſtament, written wholly in the teſtator's own hand. See TESTAMENT.

The Romans did not approve of *holographic* teſtaments: and, though Valentinian authorized them by a novel, they are not uſed where the civil law is in full force.

HOLOMETER *, a mathematical inſtrument, ſerving univerſally for the taking of all ſorts of meaſures, both on the earth and in the heavens.

* The word is Greek, compoſed of ὁλος, all; and μετρεω, I meaſure.

The *holometer* is the ſame with what is otherwiſe denominated *pantometer*.

HOLSOM.—A ſhip is ſaid to be *holſom* at ſea, when ſhe will hull, try, and ride, well, without rolling or labouring.

HOLYNESS, or HOLINESS, ſanctity; the quality which conſtitutes, or denominates, a perſon, or thing, *holy*; *i. e.* pure, or exempt of ſin.

HOLYNESS is alſo uſed in reſpect of perſons, and things, that are ſacred; *i. e.* ſet apart to the ſervice of God, and the uſes of religion.

In this ſenſe we ſay, *holy* days, *holy* ordinances, the *holy* Bible, *holy* goſpels, *holy* war, *&c.*—The Roman catholics call the Inquiſition, the *holy* tribunal; the ſee of Rome, the *holy* ſee, *&c.*

Holy oil, *holy* water, *&c.* See UNCTION, WATER, *&c.*

Paleſtine is particularly called the *holy* land, and Jeruſalem the *holy* city.—Princes formerly made a practice of going to ſignalize their religion, in the *holy* land; who, if they had any real religion, would have ſtaid at home. See CROISADE.

In Romiſh countries, one third part of the year is taken up in *holy* days, ſaints days, *&c.* In Scotland they obſerve no ſtated *holy* days, beſides Sundays.

HOLY *Thurſday* is what we otherwiſe call *aſcenſion-day*; being ten days before Whitſunday. See ASCENSION.

HOLY *Week* is the laſt week of Lent, called alſo *paſſion-week*.

HOLY *Year* is ſometimes uſed for the year of Jubilee. See JUBILEE.

In the Jewiſh tabernacle, and afterwards in the temple, there were two places; the one called the *holy*, *ſanctum*; and the other, which was more retired, the *holy of holies*, *ſanctum ſanctorum*; or the ſanctuary.

The *holy* was ſeparated from the *holy of holies*, by a veil.—In this latter place was the ark of the covenant kept. See SANCTUM SANCTORUM.

HOLYNESS, is alſo a title, or quality, attributed to the pope, as that of majeſty is to kings.

Even kings, writing to the pope, addreſs him under the venerable appellation of your *holyneſs*, or *holy* father; in Latin, *ſanctiſſime*, or *beatiſſime pater*. See POPE.

Antiently, the ſame title, *holyneſs*, was given to all biſhops; as appears in S. Auguſtine, Fortunatus, Nicolas I. Caſſiodore, *&c.*—S. Gregory compliments ſome of his cotemporary biſhops with, your beatitude, and your *holyneſs*.

The Greek emperors of Conſtantinople were alſo addreſſed under the title of *holyneſs*, in regard of their being anointed with *holy* oil at their coronation.—Du Cange adds, that ſome of the kings of England have had the ſame attribute; and that the Orientals have frequently refuſed it to the pope.

Order of the HOLY GHOST is a military order in France; the principal, in point of dignity, in that kingdom.

It was inſtituted by king Henry III. in 1569. in memory of three great events happening on the ſame day; *viz.* his birth; acceſſion to the crown of France; and election to that of Poland: the order is to conſiſt of 100 knights only; who, to be admitted, are to make proof of their nobility for three deſcents.

The king is the grand maſter, or ſovereign; and takes the oath, as ſuch, on his coronation-day; whereby he ſolemnly vows to maintain, for ever, the order of the *Holy Ghoſt*; and not to ſuffer it to ſhrink, fall, or diminiſh, ſo long as it is in his power to hinder it; nor ever to attempt to alter or diſpenſe with any of the irrevocable ſtatutes of the order.

The knights are all to wear a gold croſs, hung about the neck by a blue ſilk ribband, or collar; and the officers and commanders are alſo to wear a croſs ſewed on the left ſide of their cloaks, robes, and other upper garments.

Before they receive the order of the *Holy Ghoſt*, that of S. Michael is conferred, as a neceſſary ſtep; for which reaſon their arms are always ſurrounded with a double collar.

HOLY GHOST, in heraldry.——*Croſs of the* HOLY GHOST conſiſts of a circle in the middle of a croſs, and on it the *Holy Ghoſt*, in figure of a dove: the four arms are drawn narrow from the centre, and widening to the ends, where the returning lines divide each of them into two ſharp points; upon each of which is a pearl.

From the intervals of the circle between the arms iſſue four flower-de-luces.—This is the croſs worn by the knights of the order of the *Holy Ghoſt* in France.

HOLY-ROOD *Day*, a feſtival obſerved by the Roman catholics, in memory of the exaltation of our Saviour's croſs. See EXALTATION *of the croſs*.

HOLY-WATER *Sprinkle*, among hunters, ſignifies the tail of a fox. See TAIL.

HOMAGE *, in its general ſenſe, denotes the reverence, reſpect, and ſubmiſſion, which a perſon yields his maſter, lord, prince, or other ſuperior.

* The word is formed of the Latin, *homo*, man; by reaſon, when the tenant takes this oath, he ſays, *Ego devenio homo veſter*, I become your man: for the ſame reaſon *homage* is alſo called *manhood*; ſo, the *homage* of his tenant, and the *manhood* of his tenant, is all one. *Coke* on *Littl.* fol. 64.

HOMAGE, HOMAGIUM, HOMINIUM, in law, is an engagement, or promiſe, of fidelity; which the vaſſal, or tenant, who holds a fee, renders to the lord, when admitted thereto. See FEE, VASSAL, LORD, *&c.*

In the original grants of lands and tenements, by way of fee, the lord did not only tie his tenants in certain ſervices, but alſo took a ſubmiſſion, with promiſe, and oath, to be true and loyal to him, as their lord and benefactor.

This ſubmiſſion, *&c.* is called *homage*; the form whereof, as appointed by ſtat. 17. Edward II. is in theſe words: When a free-man ſhall do *homage* to his lord, of whom he holdeth in chief, he ſhall hold his hands together, between the hands of his lord, and ſhall ſay thus: 'I become your man, from 'this day forth, for my life, for member, and for worldly 'honour; and ſhall owe you my faith, for the land I hold of 'you; ſaving the faith that I owe unto our ſovereign lord the 'king, and to mine other lords.'

In this manner the lord of the fee, for which *homage* is due, takes *homage* of every tenant, as he comes to the land, or fee. Glanvil, indeed, excepts women; who only perform *homage* by their huſbands; in regard *homage* is ſuppoſed to have a more immediate relation to ſervice in war: but Fitzherbert denies this exception. *Nat. Brev.* fol. 157.

It is added, that biſhops do no *homage*, but only fealty; and, probably, for the ſame reaſon as women. Yet do we read, that the archbiſhop of Canterbury does *homage* on his knees to our kings, at their coronation: and that the biſhop of Man is *homager* to the earl of Derby.

Fulbeck reconciles this: by our law, ſays he, a religious man may do *homage*, but may not ſay to the lord, *Ego devenio homo veſter*; becauſe he has already profeſſed himſelf to be only God's man; but he may ſay to him, 'I do unto you '*homage*, and to you ſhall be faithful and loyal.'

Homage, and fealty, or faith, are two diſtinct things, and different duties.

Originally *homage* was performed by the gentleman, and fealty by the peaſant. Others ſay, that *homage* was that performed to the lord himſelf, and fealty to his ſeneſchal, or ſteward, for his lord.—It is added, that he who holds lands for term of life, owes *homage*, but not fealty.

Biſhops take the oath of fealty and loyalty to the king, for the temporalities they hold of him; but without *homage*, or vaſſalage.

Homage-liege, a more extenſive kind of *homage*; whereby the vaſſal held of the lord, not only for his land, but for his perſon.—So that the lord might uſe him againſt all mankind, whether within or without the kingdom; excepting againſt the king.

This kind of *homage* was rendered bare-headed, with the hands joined on the goſpels, one knee on the ground, and without ſword, girdle, or ſpurs.—By which it was diſtinguiſhed from *frank homage*.

There are alſo other diſtinctions of *homage*; as,

Plain **Homage**, or *homage* of a fee; where no oath of fidelity is taken.

Homage *of devotion*, which is a donation made to the church; and does not import any duty, or ſervice, at all.

Homage *of peace*, which a perſon makes to another after a reconciliation, as an aſſurance, that he will no longer diſturb his peace, *&c.*

Homage, again, is divided into *new*, or that performed upon the grant of the fee; and *aunceſtrel*.

Homage *aunceſtrel*, is where a man, and his anceſtors, time out of mind, have held their land of the lord, and his anceſtors, by *homage*.

If ſuch lord have received *homage*, he is bound to acquit the tenant againſt all other lords above him, of every manner of ſervice: and if the tenant has done *homage* to his lord, and is impleaded, and vouches the lord to warranty, the lord is bound to warrant him; and if the tenant loſe, he ſhall recover in value againſt the lord, ſo much of the lands as he had at the time of the voucher, or any time after.

Homage is alſo uſed for the jury, in a court-baron, becauſe, commonly, conſiſting of ſuch as pay *homage* to the lord of the fee. See Jury, and Court-Baron.

Homage is alſo taken, in ſome caſes, for the particular place, or diſtrict, where the ſervices are to be performed.

HOMAGER, a perſon that does, or is bound to do, *homage* to another. See Homage.

This lordſhip is ſo extenſive, that there are above an hundred and twenty tenants, or *homagers*, therein.

HOMAGIO *reſpectuando*, a writ iſſued out to the eſcheator, commanding him to deliver ſeiſin of lands to the heir that is of full age, notwithſtanding his *homage* not being done.

HOMESOKEN *, or rather **Hamsoken**; ſometimes alſo written **Hamsoca**, and **Hamsocna**, the privilege, or protection, which every man enjoys in his own houſe.

* Hamſokne, *hoc eſt quietus eſſe de amerciamentis pro ingreſſu hoſpitii violenter & ſine licentia contra pacem regis, & quod teneatis placita de hujuſmodi tranſgreſſione in curia veſtra.* W. Thorn. 2030.

Hence, he who invades that freedom, is properly ſaid, *frangere hamſocam*, or *hamſocnam*.

This crime ſeems to amount to what we now call *burglary*; which is a crime of an heinous nature, as being not only a breach of the king's peace, but a breach of that liberty which a man hath in his houſe, which, as we commonly ſay, ſhould be his caſtle, and therefore ought not to be invaded. *Bracton*, Lib. III. See Burglary.

HOME-STALL, a manſion-houſe, or ſeat, in the country. *Ruſt.*

HOMER, or **Gomor**, a Jewiſh meaſure, containing the tenth part of the epha. See Epha.

HOMICIDE, in common law, the killing of a man.

Homicide is divided into *voluntary* and *caſual*.

Caſual **Homicide**, is either *merely caſual*, or *mixed*.—*Merely caſual* is, when a perſon kills another by pure miſchance, being about his lawful occaſions; as in the caſe of an ax ſlipping out of a man's hand, or falling off the helve while he is felling a tree.

It is accounted *mixed*, when there is negligence, or ſome other unwarrantable circumſtance, attending the action. See Manslaughter.

Voluntary **Homicide**, is that which is deliberate, and committed with a ſet purpoſe, and mind to kill; and is either with a precedent malice, or without.—The former is murder, which is a felonious killing, with malice prepenſe, any perſon in the realm, living under the king's protection. See Murder.

HOMILY *, originally ſignifies a conference, or converſation; but the word has ſince been applied to an exhortation, or ſermon, ſince delivered to the people.

* The word is Greek ὁμιλια; formed of ὁμιλος, *cœtus*, aſſembly, council.

The Greek *homilia*, ſays M. Fleury, ſignifies a familiar diſcourſe, like the Latin *ſermo*: and diſcourſes delivered in the church took theſe denominations, to intimate, that they were not harangues, or matters of oſtentation and flouriſh, like thoſe of profane orators; but familiar and uſeful diſcourſes, as of a maſter to his diſciples, or a father to his children.

All the *homilies* of the Greek and Latin fathers are compoſed by biſhops.—We have none of Tertullian, Clemens Alexandrinus, and many other learned perſons; by reaſon, in the firſt ages, none but biſhops were admitted to preach.

The privilege was not ordinarily allowed to prieſts, till toward the fifth century.—S. Chryſoſtom was the firſt preſbyter that preached ſtatedly. Origen, and S. Auguſtine, alſo preached, but it was by a peculiar licence, or privilege.

Photius diſtinguiſhes *homily* from ſermon; in that the *homily* was performed in a more familiar manner; the prelate interrogating and talking to the people, and they, in their turn, anſwering, and interrogating him; ſo that it was properly a converſation; whereas the ſermon was delivered with more form, and in the pulpit, after the manner of the orators.

There are ſeveral fine *homilies* of the fathers ſtill extant; and, particularly, of S. Chryſoſtom, S. Gregory, *&c.*

HOMINE *capto in withernamium*, a writ for apprehending him that has taken any bondman or woman, and led him or her out of the country; ſo that he or ſhe cannot be replevied according to law. See Withernam.

Homine *replegiando*, a writ for the bailing of a man out of priſon. See Bail.

HOMINICOLÆ *, in antiquity, a name which the Apollinariſts gave to the orthodox, to denote them worſhipers of man. See Apollinarists.

* The word is formed of the Latin *homo, hominis*, man; and *colo*, I worſhip.

As the orthodox maintained, that Jeſus Chriſt was God-man; the Apollinariſts accuſed them of adoring a man, and therefore called them *hominicolæ*.

HOMOCENTRIC *, in aſtronomy, a term of the ſame import with *concentric*. See Concentric.

* The word is Greek, compoſed of ὁμος, alike, ſimilar; and κεντρον, centre.

The hypotheſis of Ptolemy is explained by means of divers *homocentric* and excentric circles.

HOMOEOPTOTON, ΟΜΟΙΟΠΤΩΤΟΝ, a figure in rhetoric, whereby ſeveral nouns end in like caſes: *e. g. mœrentes, flentes, lachrymantes, & miſerantes.*

HOMOEOTELEUTON, ΟΜΟΙΟΤΕΛΕΥΤΟΝ, a figure in rhetoric, whereby ſeveral verbs in a ſentence are made to end alike: as *eos deduci, evehi quam deſeri malui.*—Or, *ut vivis invidioſe, delinquis ſtudioſe, loqueris odioſe.*

HOMOGENEOUS *, ΟΜΟΓΕΝΗΣ, or **Homogeneal**, is a term applied to various ſubjects, to denote, that they conſiſt of ſimilar parts, or of parts of the ſame nature and kind. —In contradiſtinction to *heterogeneous*, where the parts are of different natures, *&c.*

* The word is compoſed of the Greek ὁμος, like, ſimilar; and γενος, *genus*, kind.

Natural bodies, for the generality, are compoſed of *homogeneous* parts, as a diamond, a metal, *&c.*—Artificial bodies, on the contrary, are aſſemblages of heterogeneous parts, or parts of different qualities; as a building, of ſtone, wood, *&c.*

Homogeneal *Light*, is that whoſe rays are all of one and the ſame colour, degree of refrangibility, and reflexibility. See Light.

Homogeneal *Numbers*, are thoſe of the ſame kind and nature.

Homogeneal *Surds*, are ſuch as have one common radical ſign; as $\sqrt[3]{}:27$, and $\sqrt[3]{}:3$. See Surd.

HOMOGENEUM *Comparationis*, in algebra, the known quantity in an equation; called alſo *abſolute number*. See EQUATION.

It is called *homogeneum comparationis*, of *compariſon*, to diſtinguiſh it from the other terms; which, though *homogeneous* as well as this, *i. e.* always raiſed to the ſame degree of power, are not the quantities to which things are here *compared* or referred.

HOMOIOMERICAL *Principles*, a peculiar kind of principles, ſuppoſed by Anaxagoras in all mixed bodies; being determinate numbers of ſuch ſimilar principles, as, when they came to be parts, *e. g.* of an animal body, would there make ſuch maſſes and combinations as their nature required; *viz.* the ſanguinary particles would then meet all together, and make blood, the urinous particles conſtitute urine, the oſſeous ones bones, the carneous fleſh, *&c.* See PRINCIPLE.

HOMOLOGATION*, in the civil law, the act of confirming, or rendering a thing more valid and ſolemn, by a publication, repetition, or recognition, thereof.

> * The word comes from the Greek ὁμολογια, conſent, aſſent, formed of ὁμος, *ſimilis*, alike; and λογος, of λεγειν, *dicere*, to ſay; *q. d.* to ſay the ſame thing, to conſent, agree.

The creditors have ſigned the contract; there remains nothing but to get it *homologated.*

HOMOLOGOUS*, in geometry, is applied to the correſpondent ſides of ſimilar figures; which are ſaid to be *homologous*, or in proportion to each other.

> * The word is Greek, compoſed of ὁμος, ſimilar; and λογος, *ratio*, reaſon; *q. d.* quantities alike to each other in ratio.—So, if the ratio of A to B be the ſame as of C to D; here A is *homologous* to C, as B to D; by reaſon of the ſimilitude between the antecedents and conſequents. The two antecedents, and the two conſequents, then, in any continued geometrical proportion, are *homologous* terms.

Thus, the baſe of one triangle is *homologous* to the baſe of another ſimilar triangle: ſo, in ſimilar triangles, the ſides oppoſite to equal angles are ſaid to be *homologous*.

Equiangular, or ſimilar triangles, have their *homologous* ſides proportional.

All ſimilar rectangles are to each other, as the ſquares of their *homologous* ſides.

HOMOLOGOUS *Things*, in logic, are ſuch as agree in name, but are of different natures.—Theſe coincide with what we otherwiſe call *equivocal* and *homonymous terms.*

HOMONYMIA, in logic, an equivocation. See HOMONYMON, *&c.*

HOMONYMON*, ʽΟΜΟΝΥΜΟΝ, in logic, a word which has different meanings; or which is uſed to expreſs things of different nature and quality.

> * The word is compoſed of ὁμος, *ſimilis*; and the Ionic ονυμα for ονομα, name.

Homonyma are the ſame with what are otherwiſe called *polyſema*, *ſynonyma*, and *equivocals*.

HOMOOUSIANS*, HOMOUSIANS, HOMOUSIANISTS, HOMOUSIASTS, are names which the Arians antiently gave to the orthodox, by reaſon that they held, that God the Son is *homoouſios*, i. e. conſubſtantial with the Father.

> * The word is formed of the Greek, ὁμουσιος, or ὁμοȣσιος, ſignifying *of the ſame ſubſtance.*

Hunneric, king of the Vandals, who was an Arian, publiſhed a reſcript, directed to all the *homoouſian* biſhops. See PERSON, *&c.*

HOMOOUSIOS, ʽΟΜΟΟΥΣΙΟΣ, among divines, a being of the ſame ſubſtance or eſſence with another.

The divinity of Chriſt having been denied by the Ebionites and Cerinthians in the firſt century; by the Theodotians in the ſecond; by the Artemonians at the beginning of the third; and by the Samoſatenians, or Paulians, towards the cloſe of the ſame; a council was aſſembled at Antioch in 272. wherein Paulus Samoſatenus, head of this laſt ſect, and biſhop of Antioch, was condemned and depoſed; and a decree publiſhed, wherein Chriſt is aſſerted to be God of God, and ὁμοȣσιος, *i. e.* conſubſtantial with the father.

HOMOPHAGI. See the article OMOPHAGI.

HOMUNCIONISTS*, HOMUNCIONISTÆ, a ſect of heretics, the followers of Photinus; and from him alſo called *Photinians*. See PHOTINIANS.

> * The word is formed of the Latin, *homuncio*, a diminutive of *homo*, a man; *q. d.* little man.

They had this appellation, in reſpect of their denying the two natures in Jeſus Chriſt, and holding that he was only mere man.

HOMUNCIONITES, HOMUNCIONITÆ, were a ſect of antient heretics, whoſe diſtinguiſhing dogma it was, that the image of God was impreſſed on the body, not on the ſoul, or mind of man.

HOND-HABEND. See the article HAND-HABEND.

HONE, a fine ſort of whet-ſtone, whereon to ſet a razor, or penknife.

It is of a yellowiſh colour; and is vulgarly, but erroneouſly, ſuppoſed to be holly-wood petrified or changed into ſtone, by lying in a petrifying water for a certain ſeaſon.

Of theſe waters there are ſaid to be ſome in Oxfordſhire, that will thus petrify in a very ſhort time. See Supplement: article PETRIFACTION.

HONEY, *Mel*, a ſweet ſort of juice ſucked from vegetables by the bees, and repoſited in their combs.

Honey is properly one of the juices afforded by the flowers, and is found to exude from all ſorts thereof; the very bittereſt, as thoſe of aloes and colocynth, not excepted.

In all thoſe flowers, that have utricles at the bottom of the petala, there is found a viſcid, ruddy, ſweet juice in good plenty: whence it is, that we ſee the children gather cowſlips, foxgloves, *honey*-ſuckles, *&c.* and ſuck the *honey* from them.—The bees alſo viſit theſe flowers; and, putting in their proboſcides, or trunks, ſuck out the *honey* juice, and load their ſtomachs therewith: this is to be afterwards diſcharged, and laid up in their combs:—ſo that *honey* is evidently a vegetable ſubſtance.

In the belly of the bee is a ſmall tranſparent bladder, which is the proper receptacle of the *honey*: when the animal finds this full, it returns; enters one of the cells; and diſcharges it there, by that part of the head ſituate between the two jaws, which it extends wider than ordinary, moving its head, at the ſame time, this way and that.—If a drop happen to be ill placed, it ſucks it up again by its proboſcis, and diſcharges it anew.—When a cell is filled with *honey*, they ſtop it up with wax for winter ſtore.

Honey was antiently taken for a dew that fell, or deſcended, on the flowers: but what proves this a miſtake, is, that the bees only gather it after the ſun is up, when there is no dew left: it muſt, therefore, be a liquor prepared in the flower, and excreted by its proper veſſel, like manna.

It has been ſuppoſed by many, but erroneouſly, to be the fine duſt, or farina fœcundans, of the apices.—According to the obſervations of M. du Vernay, the bees, when in ſearch of their ſtores, fix on no other parts but the ſtamina and apices, and not ſuch as yield any other liquor: but it is, in reality, the wax, not the honey, which they collect there.

What is very remarkable, is, that *honey*, in virtue of its vegetable nature, is diſcovered by M. Lemery to contain iron; which diſcovery may ſerve as an anſwer to M. Geoffroy's chemical queſtion; *viz.* Whether there is any part of a plant without iron? For if ſo delicate an extract, from the fineſt part of the flower, and this further elaborated in the little viſcera of the inſect, be not void of iron, we may deſpair of ſeeing any part ſo.

We have two kinds of *honey*, *white* and *yellow*.—The *white*, *mel album*, called alſo *virgin honey*, trickles out ſpontaneouſly from the comb, by turning it up, or breaking it.

The ſecond kind, or *mel flavum*, is ſqueezed from the combs in a preſs, after having firſt ſoftened them with a little water over the fire.—There is alſo an intermediate ſort, of a yellowiſh white colour, drawn by expreſſion, without fire.

Honey, left two or three days, purges itſelf; throwing up a ſcum of wax, and other droſs, which is to be taken off.

Some naturaliſts will have *honey* to be of a different quality, according to the difference of the flowers or plants the bees ſuck it from.—Accordingly, Strabo relates, that there is a kind of *honey* in Pontus, which is a ſtrong poiſon; being procured by bees which feed upon aconite and hemlock.

F. Lamberti, in his account of Mingrelia, aſſures us of the contrary; and affirms it the beſt *honey* in the world, by reaſon of the great quantity of bawm growing there.—He adds, that there is another very white kind of *honey*, hard as ſugar; and which does not ſtick to the hands.

The antients ranked ſugar and manna among the ſpecies of *honey*.

Honey has conſiderable medicinal virtues; being reputed a good detergent and cleanſer; and, in that quality, it is uſed both internally and externally, for the viſcera, wounds, ulcers, *&c.*

Honey is the baſis of ſeveral compoſitions in pharmacy.—Of *honey*, with the addition of roſes or violets, mercurialis, *&c.* is made *mel roſatum*, *mercuriale*, *helleboratum*, &c.

There is alſo a *mel ſcilliticum*, or a preparation of ſquills: *mel paſſulatum*, made with raiſins boiled in hot water: and *mel anthoſatum*, made with roſmary-flowers.

The chemiſts alſo draw a water, a ſpirit, an oil, *&c.* from *honey*.

Honey is alſo an ingredient in ſeveral drinks, as mum, metheglin, &c. See MUM, and METHEGLIN. See alſo Supplement, article MEL.

Wild HONEY.—S. Adaman, abbot of Hii, in his deſcription of the holy places, obſerves, that in the place where St. John Baptiſt lived in the deſert, there are locuſts which the poor people boil with oil, and a ſort of herbs with large long leaves of a milk colour, and a taſte like that of *honey*; and that this is what in Scripture is called *wild honey*. See ACRIDOPHAGI.

Honey-comb, a waxen ſtructure, full of cells, framed by the bees to depoſit their *honey*, eggs, *&c.* in. See Cell, Wax, Honey, *&c.*

The great ſagacity and contrivance of the bees, in making their *combs*, have often been admired.—The labour is diſtributed regularly among them; ſometimes thoſe bees, that carry the wax in their jaws and chaps, moiſten and mollify it with ſome liquor that they diſtil upon it; the ſame ſometimes build the walls of their hexagonal cells; but ſometimes others do it; but thoſe that form the cells never poliſh them.—Others come and make the angles more exact; and cloſe and ſmooth the ſuperficies.—And as, in doing of this, ſome ſmall bits of wax are ſcraped off, there are ſome, whoſe buſineſs is to pick up theſe, that they may not be loſt.

M. Maraldi has alſo obſerved, that thoſe bees, that poliſh the walls, work longer than thoſe that build them; as if poliſhing were known to be not ſo laborious as building.

They begin their work on the top of the hive, faſtening it to the moſt ſolid part thereof: thence it deſcends downwards, being continued from top to bottom, and from one ſide to another: and, to make it the more ſolid, they uſe a ſort of tempered wax, that is pretty much like glue. The form of the cells, of which the *honey-comb* is made, is hexagonal; a figure that, beſides what is common with a ſquare and equilateral triangle, has the advantage of including a greater ſpace within the ſame ſurface. See Supplement, article Comb.

Honey-comb, in gunnery, is a flaw in the metal of a piece of ordnance, when it is ill caſt, and ſpongious.

Honey-dew is a ſweet-taſted *dew*, found early in the morning on the leaves of divers ſorts of plants.

Honey-dews are of a very different nature from blaſtings, being cauſed by the condenſing of a fat moiſt exhalation, raiſed, in an hot dry ſummer, from plants and bloſſoms; as alſo from the earth; which, by the coolneſs and ſerenity of the air in the night, or in the upper clear region of the air, is thickened into a fat gluey matter; and then falls to the earth again: part whereof reſts upon oak-leaves, and thoſe of ſome other trees, whoſe leaves are ſmooth, and do not eaſily admit the moiſture into them.

Gaſſendus holds, that a viſcid juice, tranſpiring out of the leaves, helps to compoſe this *honey*; or to convert the *dew*, falling on them, into an *honey* ſubſtance, which before had nothing of it: and hence he accounts for the reaſon why we find it on ſome trees, and not on others.

This *honey-dew*, falling on the ears and ſtalks of wheat, beſmears them with a different colour from the natural; and, being of a clammy ſubſtance, ſo binds up the young, tender, and cloſe ears of the wheat, by the heat of the ſun, that it prevents the growth and completing of the perfect grain therein.

A ſhower of rain, ſucceeding preſently after the fall thereof, or the wind blowing ſtiffly, are the only natural remedies againſt it. See Supplement, article Mildew.

HONI *ſoit qui mal y penſe*, q. d. *evil to him that thinks evil*; the motto of the moſt noble order of the knights of the garter. See Garter, and Motto.

HONOR.	See the article	Honour.
HONORABLE.		Honourable.
HONORARY.		Honourary.

HONORIACI, in antiquity, a ſpecies or order of ſoldiery under the eaſtern empire; who introduced the Goths, Vandals, Alani, Suevi, *&c.* into Spain.

Didymus and Verinianus, two brothers, had, with great vigilance and valour, defended the paſſages of the Pyreneans againſt the Barbarians for ſome time, at their own expence; but, being at length killed, the emperor Conſtantius appointed the *honoriaci* to defend thoſe paſſages, who, not contented to lay them open to all the nations of the north then ravaging the Gauls, joined themſelves to them.

HONOUR, Honor.—Beſide its literal ſenſe, wherein it denotes a teſtimony or token of eſteem and ſubmiſſion; *honour* is particularly applied in our cuſtoms to the more noble kind of ſeignories, or lordſhips; whereof other inferior lordſhips, or manors, hold or depend.

As a manor conſiſts of ſeveral tenements, ſervices, cuſtoms, *&c.* (See Service, *&c.*) ſo an *honour* contains divers manors, knights-fees, *&c.*

It was alſo formerly called *beneficium*, or *royal fee*; being always held of the king in capite. *Spelman.*—Antiently, *honour* ſignified the ſame as *baronia*.

By ſtat. 37 Henry VIII. c. 18. the king is impowered by letters patent to erect four ſeveral *honours*, *viz.* Weſtminſter, Kingſton upon Hull, S. Oſythe, and Donnington; and as many other *honours* as he will.—The manner of creating theſe *honours* may be gathered from the ſtat. 33 Hen. VIII. cap. 37, *&c.*

Counſellors of **Honour**, or *Honorary counſellors*, are ſuch as have a right to enter or ſit in aſſemblies, courts, *&c.* to deliberate or give judgment in the ſame, though they do not, regularly and properly, belong thereto.

The French call *chevaliers de* Honneur, *knights* or *gentlemen of* Honour, the gentlemen-uſhers of queens and princeſſes, who attend them, give them their hand, *&c.* See Usher.

Maids of **Honour** are young ladies in the queen's houſhold, whoſe office is to attend the queen, when ſhe goes abroad, *&c.* In England they are ſix in number, and their ſalary 300*l.* *per annum* each.

Honours *of the Louvre*, among the French, are certain privileges annexed to divers dignities or offices, particularly thoſe of duke, peer, chancellor, *&c.* as to enter the Louvre in a coach; to have the tabouret or ſtool in the queen's preſence, *&c.*

Honours *of the Houſe*, are certain ceremonies obſerved in receiving viſits, making entertainments, *&c.* performed either by the maſter himſelf, or by ſome perſon appointed for that purpoſe; as, to go and receive the gueſts, to conduct them out again, to ſee they be well ſeated, to help them to the choice bits, *&c.* And all this in a polite agreeable manner.

Honours *of the City*, are the public offices or employments thereof.—He who has been conſtable, overſeer of the poor, and churchwarden of his pariſh; common-councilman, alderman, and laſtly mayor; has paſſed all the *honours* of the city.

Honours *of the Church*, are the rights belonging to the patron, *&c.* As a ſeat and ſepulcre in the chancel, to be firſt ſerved with the conſecrated bread and wine, *&c.*

Honours are alſo applied to the principal part of the apparatus of great ceremonies; as coronations, conſecrations, chriſtenings, *&c.* Such are the oil, tapers, *&c.*

Such lords or ladies bore the *honours* at ſuch a ceremony.

In obſequies, they antiently preſented the *honours*, that is, the ſhield, creſt, ſword, gantlets, ſpurs, banner, horſe, *&c.*

Funeral **Honours**, are the ceremonies performed at the interments of great men; as hangings, hearſes, funeral harangues, *&c.*

Honour *Courts*, are courts held within the *honours* or ſeignories above-mentioned.

Honour *Point*, in heraldry, is that next above the centre of the eſcutcheon; dividing the upper part into two equal portions. See Point, and Escutcheon.

HONOURABLE *Amends*, *Amende honorable.* See the article Amends.

Honourable, or **Honorable** *Ordinaries*, in heraldry, are the principal ordinaries or bearings, which, when in their full extent, may poſſeſs one third of the field.

Some only allow of nine, *viz.* the *croſs*, *chief*, *pale*, *bend*, *feſſe*, *chevron*, *ſalteer*, *giron*, and *eſcutcheon*: others add more; *viz.* the *bar*, *bordure*, &c. See each under its proper article, Cross, Chief, Pale, *&c.*

HONOURARY, or **Honorary**, is underſtood of a perſon who bears or poſſeſſes ſome quality or title, only for the name's ſake, without doing any of the fuctions thereto belonging, or receiving any of the advantages thereof.

Thus we ſay, *honourary* counſellors. See *Counſellors of* Honour.

In the college of Phyſicians, London, are *honourary* fellows.

The royal academy of ſciences at Paris conſiſts of four claſſes of members; *viz. honourary*, penſionary, aſſociates, and adjuncts. See Academy.

Among theſe the *honourary* are to be twelve in number, and all inhabitants of the kingdom.

Honourary *Services*, are thoſe incident to the tenure of grand ſerjeanty, and commonly annexed to *honours*.

Honourary *Tutor*, is a perſon of quality appointed to have an eye over the adminiſtration of the affairs of a minor; while the onerary tutors have the real effective management thereof.

Honourary, **Honorarium**, is alſo uſed ſubſtantively, for a lawyer's fee; or a ſalary given to public profeſſors of any art or ſcience.

HONTFONGENETHEF, a thief taken hond-habend, *i. e.* having the thing ſtolen in his hand.

HOOD. See Chaperoon, and Cucullus.

Hood, in falconry, is a piece of leather, wherewith the head of an hawk, falcon, or the like, is covered.

After ſealing or ſewing up the eyelids of a young hawk, ſhe is to be fitted with a large eaſy *hood*, which is to be taken off, and put on very often, watching her two nights; and handling her frequently and gently about the head. When you perceive ſhe has no averſion to the *hood*, unſeal her in an evening by candle-light, continuing to handle, *hood*, and *unhood* her, as before, till at laſt ſhe takes no offence, but will patiently endure handling.

After unſealing, anoint with the finger and ſpittle the place, where the ſealing-thread was drawn through; then *hood* her, and hold her on your fiſt.

As ſoon as ſhe is well reclaimed, let her ſit upon a perch; but every night keep her on the fiſt three or four hours, ſtroaking, *hooding*, and *unhooding*, &c. And thus you may do in the day-time, when ſhe hath learned to feed eagerly, and without fear.

HOOF, *Ungula*, the horny part, which covers the feet of divers animals, as horſes, bullocks, *&c.*

The *hoof* ſerves much the ſame purpoſes as the nails of ſome animals, and the claws of others.

The *hoof* of a horſe ſurrounds the ſole, and the coffin bone.—To be good, it ſhould be of a dark colour, ſomewhat ſhining, high, ſmooth, of a round ſhape, but a little larger below than above; ſhort, that the horſe may tread more on the toe than on the heel; and ſomewhat hollow within, haveing a narrow fruſh, and broad heels.

The *hoof* ſhould not have circles, which are a ſign of its being brittle, and that the horſe, having been often ſhod, has had his feet ſpoiled by the many pieces broke out of it.—A white *hoof* alſo is commonly brittle.

To judge whether the *hoof* be good and ſtanch, lift up the foot, and conſider if it have a ſhoe forged purpoſely for it, and be very much pierced, and the holes made in unuſual parts, as wanting horn enough to take hold by in thoſe places where the nails are commonly driven.

Sometimes they are forced to pierce the ſhoes nigh the heels, becauſe the fore-part is bad; it being unuſual to drive the nails near the heels, except the toe be ſo much ſplit and broke as not to bear nails.

If the *hoof* be not round, but broad, and ſpreading out at the ſides and quarters, the horſe commonly has narrow heels, and, in time, will be flat-footed; which ſort of foot is weak, and will not long carry a ſhoe, nor travel far, but ſurbate: add, that treading more on his heels than toes, will cauſe him to go low on his paſterns.

If the *hoof* be long, it will make him tread altogether on his heels.—If crooked, *viz.* broad without, and narrow within, ſo that the horſe is ſplay-footed, it will cauſe him to tread too much inward, and cut or interfere.—If the fruſh be broad, the heels will be weak and ſoft.—If the heel be narrow and tender, the horſe will in time grow *hoof*-bound.—The infirmities to which *hoofs* are liable, are, the caſting of the *hoof*, *hoof*-bound, *hoof*-hard, *hoof*-hurt, looſe *hoof*, falſe quarters, *&c.*

Caſting of the Hoof.—A horſe is ſaid to *caſt his hoof*, when the whole coffin of the *hoof* becomes looſened, and falls off from the bone.—This may be remedied by care, and proper application; a new *hoof* being procurable, if the coffin bone, *&c.* be not hurt.

Horſes ſometimes caſt their *hoofs* by reaſon of ſome prick, ſtub, foundering, ſurbating, or other accident, that cauſes an impoſtumation in the foot; ſo that the *hoof*, and ſometimes the coffin bone, being ſpongy, and eaſily broken, fall off in large pieces. The laſt, when it happens, is a deſperate caſe.

Hoof-bound, is a ſhrinking in of a horſe's *hoof* on the top, and at the heel; which makes the ſkin ſtare above the *hoof*, and grow over the ſame.

It befals a horſe divers ways, either by keeping him too dry in the ſtable, by ſtrait ſhoeing, or by ſome unnatural heat after foundering.

Hoof-hurt.—In labouring beaſts, eſpecially oxen, if the *hoof* be hurt with a coulter or ſhare, it may be cured by a ſalve of pitch and greaſe mixed with powder of brimſtone, diſſolved together, and with a hot iron melted in the cleft of the hoof.

Hoof loosened, is a diſſolution or dividing of the horn or coffin of a horſe's *hoof* from the fleſh, at the ſetting on of the coronet.

If the parting be round about the coronet, it comes by means of foundering; if in part, then by a prick of ſome chanel nail, quitter-bone, retreat, graveling, cloying, or the like.

The ſigns of being looſened by foundering, is its breaking firſt in the fore-part of the coronet, right againſt the toes; becauſe the humour always deſcends towards the toe.—If it proceeds from pricking, graveling, or the like, the *hoof* will looſen round about equally, even at firſt.—If occaſioned by a quitter-bone, or hurt on the coronet, it will break right above the grieved part, and rarely be ſeen to go any farther.

Hoof-swelled, is an infirmity that ſometimes befals young horſes, when they are over-rid, or wrought hard, which makes them ſwell in that part, by reaſon of the blood falling down and ſettling there; which, if not ſpeedily removed, will uſually beget a wet ſpavin.

HOOK, in angling, *&c.* See Fishing-Hook.

Hooks, in building, *&c.* are of various ſorts; ſome of iron, and others of braſs; *viz.*

1°, *Armour hooks*, which are generally of braſs, and are to lay up arms upon, as guns, muſquets, half pikes, pikes, javelins, *&c.* 2°, *Caſement hooks.* 3°, *Chimney hooks*, which are made both of braſs and iron, and of different faſhions: their uſe is to ſet the tongs and fire-ſhovel againſt. 4°, *Curtain-hooks.* 5°, *Hooks* for *doors*, *gates*, &c. 6°, *Double line hooks*, large and ſmall. 7°, *Single line hooks*, large and ſmall. 8°, *Tenter hooks* of various ſorts. See Tenter.

HOOK-PINS, in architecture, are taper iron pins, only with a *hook*-head, to pin the frame of a roof or floor together.

HOP, *Lupulus*, a plant of the reptile kind, whoſe flower is a principal ingredient in beer, and other malt-liquors. See Brewing.

The *hop* creeps like bindweed, unleſs it find pales or ſhrubs to hang to; or unleſs they who cultivate it, plant poles for the purpoſe.—Its ſtem is long, flexible, rough, and hairy.—Its leaf is indented like that of the vine, and covered with a kind of prickly down, like that of the cucumber. Its flowers are of a greeniſh yellow, reſembling, both as to form and ſize, thoſe of the female elm; and they grow in a kind of bunch or cluſter. In this flower is a blackiſh bitter grain contained, which is the ſeed of the *hop.*

In the ſpring-time, while the bud is yet tender, the tops of the plant, being cut off, and boiled, are eat like aſparagus; and found very wholſome and effectual to looſen the body; the heads and tendrils are good to purify the blood in the ſcurvy, and moſt cutaneous diſeaſes: decoctions of the flowers, and ſyrups thereof, are of uſe againſt peſtilential fevers: julaps and apozems are alſo prepared with *hops*, for hypochondriacal and hyſterical affections, and to promote the menſes.

The propagation and culture of *hops* being a point of ſome nicety, as well as great advantage, we ſhall lay down a little ſyſtem thereof.—It is certain there is nothing in all the rural employments, that, under prudent management, turns to more account; very large eſtates having been raiſed by this commodity in a few years.—Switzer tells us, he has known ground yield 30*l.* per annum per acre, planted therewith: to ſay nothing of the great number of poor that are employed therein, *viz.* in the planting, ſoiling, digging, hoeing, poling, tying, picking, *&c.*

Culture of Hops, *and* Hop *Gardens.*—*Hops* are of divers kinds: Mortimer reckons four; *viz.* the *wild garlick hop*, which is not worth propagating; the *long and ſquare garlick hop*, which, though valuable, yet, on account of the redneſs towards the ſtalk, do not bear the beſt price; the *long white hop*, which is the moſt beautiful and fertile; and the *oval hop.*—Another author diſtinguiſhes the *hops* to be cultivated into the *white* and *grey binds*; the latter being a large ſquare *hop*, more hard, and bearing a plentifuller crop, than the former; though it does not ripen ſo early.

For the ſoil of Hops.—There are ſcarce any but may ſerve, except ſtony, rocky, and ſtiff clay ground: the beſt, however, is that which is light, deep, and rich; which will be the better if ſand, be mixed with it: a black garden mould is alſo excellent. If the ground be cold, ſtiff, and ſour, the beſt means of improvement is to burn-beat it. Mortimer adds, that in Kent, where they eſteem new land beſt for *hops*, they plant their *hop* gardens with cherry-trees and apple-trees, at a good diſtance; that when the land is paſt the beſt for *hops* (which happens in about ten years), the cherry-trees may begin to bear; and thirty years after, when the cherry-trees are ſpent, the apple-trees will be in perfection.

For the planting of Hops.—The ground is firſt to be prepared by tilling it the beginning of the winter, either with the plough or ſpade. In October (and ſometimes, though rarely, in March) they proceed to plant; marking out the places where each hillock, or little plantation, is to be. Some plant in ſquares, chequer-wiſe, which is the moſt convenient form, where they intend, in the courſe of the tillage, to plow with horſes between the hills: but the beſt form for the *hop*, as well as the moſt pleaſing to the eye, is the quincunx. See Quincunx.

If the ground be poor, or ſtiff, it is neceſſary ſome good mould, or elſe a compoſt of manure and earth, be laid in holes a foot ſquare, in the ſeveral places where the hills are to be.—The diſtance of the hills in dry hot ground may be ſix feet; but in moiſt and rich ground, ſubject to bear large *hops*, it ſhould be eight or nine.

For planting, the largeſt ſets are to be choſen, eight or ten inches long, having each three or four joints. Theſe are to be ſet in holes, made for the purpoſe, one at each corner of a hole, and a fifth in the middle, raiſing the earth two or three inches about.

For the dreſſing of Hops.—If the *hop*-ground be old, and worn out of heart, they find it convenient to dig about the plants, toward the beginning of each winter, and take away a quantity of the old earth; its place is then to be ſupplied with what is fatter and freſher.—If the *hops* be in good heart, manuring and pruning is moſt adviſeable. In order to this, they pull down the hills, and undermine all about, till they come near the principal roots. This done, taking off the earth from the roots, they find by the colour, *&c.* which are new ſhoots, and which old ones; and cut off all the new ones.—When the roots are thus dreſſed, the new mould or manure is to be applied.

For the poling.—The time is when the *hops* begin to appear above-ground: the number and dimenſion of the poles are to be adjuſted to the diſtance of the hills, the nature of the ſoil, and ſtrength of the *hop.*—To prevent *houſling*, the poles are to be made to lean outwards; and particularly toward the ſouth, to receive more of the ſun's beams; it being matter of obſervation, that a leaning pole always bears more *hops* than an upright one.

As to tying.—When the *hops* are got two or three feet above-ground, the next buſineſs is to conduct and tie them to ſuch poles as are empty, and at a proper diſtance from them.—They are to be tied with withered ruſhes, or woolen yarn; but not ſo cloſe as to hinder their climbing up the poles: two or three ſtrings may ſuffice for a pole. This operation is to be attended to in April and May.

About Midſummer, when they ceaſe to run in length, and begin to branch, ſuch of them as are not yet got up to the tops of the poles, ſhould have their heads nipped off, or elſe they ſhould be diverted from the pole, that they may branch the better; which is more for the increaſe of the *hop*, than its extending in length.

Some time in May, after rain, the hills are to be made up with a hoe, or ſpade, or by ploughing; which will be a means to deſtroy the weeds: and it is neceſſary, if the ſpring or ſummer prove dry, to water them twice or thrice in a ſeaſon.

Hops blow towards the latter-end of July: and the forward ones are ripe by the cloſe of Auguſt.—Their ripeneſs is diſcovered by their fragrant ſcent, their changing of colour, their being eaſily pulled, and by the browniſh colour of the ſeed.

Hops are to be gathered when they look a little browniſh, and that without delay: the moſt expeditious way is, to make a frame with four ſhort poles or ſticks, laid on four forks driven into the ground, of ſuch breadth, as to contain either the hair-cloth of the kiln, or a blanket tacked round it about the edges.—On this device, the poles, with the *hops* on them, may be laid, being either ſupported by forks, or by the edges of the frame; at each ſide whereof, the pickers may ſtand and pick the *hops* into it.—When the blanket, or hair-cloth, is full, untack it, carry it away, and place another, or the ſame emptied, in the ſame frame again; and this frame may be daily removed, with little trouble, to ſome new place of the garden near the work.

Hops muſt not be gathered while wet; but if the dew be on them, or a ſhower of rain has taken them, the pole may be ſhaken, and they will dry the ſooner: if they be over-ripe, they will be apt to ſhed their ſeed, wherein conſiſts their chief ſtrength; neither will they look ſo green, but ſomewhat brown, which much leſſens their value; though ſome let them ſtand as long as they can, becauſe they waſte leſs in the drying; for four pounds of undried *hops*, thorough ripe, will make one of the dry; whereas five pounds of thoſe ſcarcely ripe, yet in their prime, make but one; ſo that it is judged proprietors get more in the thorough ripe *hop* by the weight, than they loſe in the colour.

As faſt as the *hops* are picked, they muſt be dried: ſome, eſpecially the Flemmings and Hollanders, make uſe of an ooſt or kiln for this purpoſe: others dry them on the ordinary malt-kiln in an hair-cloth: but the beſt way is, to make a bed of flat ledges, about an inch thick, and two or three inches broad, ſawn, and laid one acroſs the other, chequerwiſe, the flat way; the diſtances are to be about three inches, or the like; the ledges ſo entered are put into another, that the floor may be even and ſmooth: this bed may reſt on two or three joyſts ſet edgewiſe to ſupport it from ſinking; then cover it with large double tin plates ſoldered together at each joint; and ſo order the ledges before they are laid, that the joints of the tin may always lie over the middle of a ledge; and when the bed is wholly covered with tin, fit boards about the edges of the kiln to keep up the *hops*, only let the one ſide be to remove, that the *hops* may be ſhoved off as before. The *hops* may be turned on this tin-bed or floor with great ſafety, and ſmall expence of fuel; beſides, that any manner of fuel will ſerve for this purpoſe as well as charcoal, the ſmoke not paſſing through the *hops*: but it muſt not be forgot, to make conveyances for it at the ſeveral corners and ſides of the kiln.

The turning of hops after the eaſieſt and moſt ſecure manner, is found to be not only a waſte and injury to the *hop*, but alſo an expence of fuel and time; yet it may be prevented, in caſe the upper bed, whereon the *hops* lie, have a cover that may be let down and raiſed at pleaſure; which cover may be tinned over, by nailing ſingle tin plates to the face of it, that when the *hops* begin to dry, you may let down this cover within a foot and leſs of the *hops*, which will ſo reflect the heat upon them, that the uppermoſt *hop* will be as ſoon dry as the lower, and every *hop* equally dried.

The method of bagging hops (after they have lain a month more to cool and toughen) is to make a round or ſquare hole in an upper floor, big enough for a man with eaſe to go up and down, and turn and wind in it; then tack a hoop about the mouth of the bag faſt with packthread, that it may bear the weight of the *hops* when full, and of the man that treads them: that done, let the bag down through the hole, and the hoop will reſt above, ſo as to keep the bag from ſliding wholly through; into this bag caſt a few *hops* and before you go in to tread, let an handful of *hops*, be tied at each lower corner with a piece of packthread, to make, as it were, a taſſel, whereby the bag, when full, may be conveniently lifted or removed; then go into the bag, and tread the *hops* on every ſide, another ſtill caſting in as faſt as you require, till it be full; when it is well trodden and filled, let the bag down by unripping the hoop, and cloſe the mouth of the bag, filling the two upper corners as you did the lower. This bag, if well packed and dried, will keep ſeveral years in a dry place; only care muſt be taken, that mice do not ſpoil or waſte the *hops*; not that they will eat them, but they love to make their neſts therein.

HOPLITES, * HOPLITÆ, in antiquity, were ſuch of the candidates at the Olympic and other ſacred games, as ran races in armour.

* The word is Greek ὁπλίτης, formed of ὅπλον, armour.

One of the fineſt pieces of the famous Parrhaſius, was a painting which repreſented two *hoplites*; the one running, and ſeeming to ſweat large drops; and the other laying his arms down, as quite ſpent, and out of breath. *Pliny*, L. XXXV. c. 10. and *Paſchaſ. De Coronis*, L. VI. c. 14.

HOPLOMACHI *, ʽΟΠΛΟΜΑΧΟΙ, in antiquity, were a ſpecies of gladiators, who fought in armour; either completely armed from head to foot, or only with a caſk and cuiraſs.

* The word is compoſed of the Greek ὅπλον, armour, and μάχομαι, I fight.

HOPPER, a veſſel wherein ſeed-corn is carried at the time of ſowing.

The word is alſo uſed for that wooden trough in a mill, into which the corn is put to be ground.

HORARY, ſomething relating to *horæ*, hours. See HOUR.

HORARY *Circles* of the globe.

HORARY *Circles*, or *Lines*, in dialling, are the lines or circles which mark the hours on ſun-dials.

HORARY *Motion of the Earth*, is the arch it deſcribes in the ſpace of an hour.

This is 15 degrees, though not accurately ſo (for the earth moves with different velocity, according to its greater or leſſer diſtance from the ſun); but it is near enough for ordinary computations.

HORD *, HORDA, in geography, is uſed for a company or tribe of wandering people, which have no ſettled abode or habitation, but ſtroll about, dwelling in chariots, or under tents, to be ready to ſhift as ſoon as herbage, fruits, and the preſent province is eaten bare.

* The term is Tartarian, and literally denotes a multitude.

HORD is more properly the name which the Tartars, who inhabit beyond the Wolga, in the kingdoms of Aſtracan and Bulgaria, give to their villages.

A *hord* conſiſts of fifty or ſixty tents ranged in a circle, leaving an open place in the middle.—The inhabitants of each *hord* uſually form a military company or troop; the eldeſt whereof is commonly the captain, and depends on the general or prince of the whole nation.

HORDEATUM, a liquid medicine, made of barley, boiled till it burſt.

Sometimes other ingredients are added, as the cold ſeeds, almonds, and the like.

HORDEOLUM *, in medicine, a ſmall tubercle ariſing on the outer verge of the palpebræ, or eye-lids.

* It is thus called from the Latin *hordeum*, barley, as reſembling a barley corn.

The cure of the *hordeolum*, and grando, is by diſcutients and ſuppuratives.

HORDICALIA *, or HORDICIDIA, in antiquity, a religious feaſt held among the Romans, wherein they ſacrificed cattle big with young.

* The word *hordicidia* is formed of *horda*; which Feſtus explains by *prægnans*, pregnant; and *cædo*, I ſacrifice. Ovid, in his *Faſti*, L. IV. v. 631. deſcribes *horda*, or *forda*, to be *bos prægnans*; of φορὸς, *gravida*.

This feaſt fell on the 15th of April; on which day they ſacrificed thirty cows, big with calf, to the goddeſs *Tellus*, or *Terra*, Earth: part of them were ſacrificed in the temple of Jupiter.—The calves taken out of their bellies were burnt to aſhes, at firſt, by the pontifices; afterwards, by the eldeſt of the veſtal virgins.

Alexander ab Alexandro, *Genial. Dier.* writes *hordalis dies*; and from him, ſome of the moderns call the feaſt *hordalia*; but Varro writes it *hordicalia*, and Feſtus, *hordicidia*.

HORIZON *, or HORISON, in aſtronomy, a great circle of the ſphere, dividing the world into two parts, or hemiſpheres; the one upper, and viſible; the other lower, and hid.

* The word is pure Greek ὁρίζων, which literally ſignifies bounding or terminating the ſight; being formed of ὁρίζω, *termino*, *definio*, I bound, I limit; whence it is alſo called *finitor*, finiſher.

The *horizon* is either *rational* or *ſenſible*.

Rational, *true*, or *aſtronomical* HORIZON, which is alſo called ſimply and abſolutely, the *horizon*, is a great circle, whoſe plane paſſes through the centre of the earth, and whoſe poles are the zenith and nadir. It divides the ſphere into two equal parts, or hemiſpheres.

Such is the circle HR (*Tab. Aſtronom. fig.* 52.), whoſe poles are the zenith and nadir; whence it follows, that the ſeveral points of the *horizon* are a quadrant diſtant from the zenith and nadir.

The meridian and vertical circles all cut the rational *horizon* at right angles, and into two equal parts.

Senſible, viſible, or *apparent* HORIZON, is a leſſer circle of the ſphere, as *h r*, which divides the viſible part of the ſphere from the inviſible.

Its poles, too, are the zenith and nadir; and, conſequently, the *ſenſible horizon* is parallel to the *rational*; and it is cut at right angles, and into two equal parts, by the verticals.

The *ſenſible horizon* is divided into *eaſtern* and *weſtern*.

The eaſtern or *ortive* HORIZON is that part of the *horizon* wherein the heavenly bodies riſe.

The weſtern or *occidual* HORIZON is that wherein the ſtars ſet.

HORIZON, in geography, is a circle paſſing over the earth, and dividing the viſible part of the earth and heavens from that which is inviſible.

The altitude, or elevation, of any point of the ſphere, is an arch of a vertical circle, intercepted between it and the ſenſible *horizon*.

This is peculiarly denominated *ſenſible horizon*, to diſtinguiſh it from the *rational*, or *true*, which paſſes through the centre of the earth; as already obſerved.

By *ſenſible horizon* is alſo frequently meant a circle, which determines the ſegment of the ſurface of the earth, over which the eye can reach; called alſo the *phyſical horizon*.

In this ſenſe we ſay, a ſpacious *horizon*; a narrow, ſcanty *horizon*.—To find the extent of the *horizon*, or how far a man's proſpect reaches, by means of the height of his eye, ſuppoſing the earth an uninterrupted globe; is a common caſe of right-angled plane triangles, where two ſides and an oppoſite angle are given.—Thus, ſuppoſe A H B (Tab. *Geography*, *fig.* 8.) a great circle of the terraqueous globe, C the centre, H C its ſemidiameter, and E the height of the eye: ſince HE is a tangent, the angle at H is a right angle; ſo that there are given H C, 398,386 miles, or 21,034781 Engliſh feet, C E the ſame length, and the height of the eye on the maſt of a ſhip, or at only a man's height, &c. added to it, and E H C the oppoſite right angle.

By theſe three parts given, it is eaſy to find all the other parts of the triangle.—And firſt, for the angle at C, in order to find the ſide H E; the proportion is, as the ſide C E to the angle at H, ſo is the ſide H C to the angle at E; which being ſubtracted from 90 degrees, the remainder is the angle at C. Then, as the angle at E is to its oppoſite ſide H C; or elſe, as the angle at H is to its oppoſite ſide C E; ſo is the angle at C to its oppoſite ſide E H, the viſible *horizon*.

Or the labour may be ſhortened by adding together the logarithm of the ſum of two given ſides, and the logarithm of their difference; the half of which two logarithms is the logarithm of the ſide required, nearly. For an example, we will take the two ſides in yards, by reaſon ſcarce any table of logarithms will ſerve us any farther: the ſemidiameter of the earth is 7,011594 yards; the height of the eye is two yards more, the ſum of both ſides is 14,023190.

Logar. of which ſum is —	7,1468468
Logar. of two yards, the differ. is	0,3010300
Sum of both logar. — —	7,4478768
The half ſum — —	3,7239384

is the logarithm of 5296 yards = three miles; which is the length of the line E H, or diſtance the eye can reach at ſix feet height.

This, at leaſt, would be the diſtance on a perfect globe, did the viſual rays come to the eye in a ſtrait line: but, by means of the refraction of the atmoſphere, diſtant objects on the *horizon* appear higher than really they are, and may be ſeen at a greater diſtance, eſpecially on the ſea; which is a matter of great uſe, eſpecially to diſcover land, rocks, &c.

Father Laval, profeſſor of hydrography at Marſeilles, found, that the *horizon* of his obſervatory to the ſea-ward was never more than 15 minutes, nor leſs than 13½; that is, the arch of the circumference of the earth, intercepted between the obſervatory and the *horizon*, fluctuated between thoſe two quantities: whence M. Caſſini deduces, that the extent of the *horizon* is ſeven French leagues, of three miles each; and that the obſervatory is 175 feet high.

The height of the *horizon*, at the ſame place, and the ſame elevation above it, is very ſubject to vary, by means of differences in the atmoſphere, which occaſion others in the refractions.

When the ſea was full, or the north-weſt or ſouth-weſt wind blew, and the air hazy about the *horizon*, F. Laval always found his *horizon* depreſſed, or lower; *i. e.* the refraction which ſhould raiſe it in that caſe was leſs than ordinary.—And yet, on the common principles, the air being now much charged with vapours, the very contrary was rather to be expected.—This makes M. Caſſini ſuſpect, that there is ſome other refractive matter in the atmoſphere, beſide the air itſelf.

The ſame author obſerves, that at a height ten times greater than that of F. Laval's obſervatory, he found the arch terminated by the *horizon* to the ſeaward, 42′, without any ſenſible variation; whence he concludes, that the variations are the greater, as the height is the leſs; which may ſeem contrary to what he had aſſerted in another place, *viz.* that the variations in the apparent altitudes of bodies are greater, as theſe objects are more remote, by reaſon they are ſeen through the larger quantity of air, which is all liable to be varied.—But the contradiction may be ſolved.

Another depreſſion of the viſible *horizon* is cauſed by the height of the obſerver's eye above the ſurface of the ſea.

HORIZON *of the globe*. See the article GLOBE.

HORIZONTAL, ſomething that relates to the *horizon*, or that is taken in the *horizon*, or on a level with the *horizon*.

We ſay, a *horizontal* plane, *horizontal* line, *horizontal* diſtance, &c.

HORIZONTAL *dial* is that drawn on a plane parallel to the horizon; having its gnomon, or ſtyle, elevated according to the altitude of the pole of the place it is deſigned for.

Horizontal dials are, of all others, the moſt ſimple and eaſy.—The manner of deſcribing them, ſee under the article DIAL.

HORIZONTAL *diſtance*. See the article DISTANCE.

HORIZONTAL *line*, in perſpective, is a right line drawn through the principal point, parallel to the horizon; or it is the interſection of the *horizontal* and perſpective planes.

Such is the line P Q (Tab. *Perſpective*, *fig.* 12.) paſſing through the principal point F.

HORIZONTAL *parallax*. See the article PARALLAX.

HORIZONTAL *plane* is that which is parallel to the horizon of the place; or nothing inclined thereto.

The buſineſs of levelling is, to find whether two points be in the *horizontal* plane; or how much the deviation is.

HORIZONTAL *plane*, in perſpective, is a plane parallel to the horizon, paſſing through the eye, and cutting the perſpective plane at right angles.

HORIZONTAL *projection*. See the article MAP.

HORIZONTAL *range*, or *level range*, of a piece of ordnance, is the line it deſcribes, when directed parallel to the horizon, or *horizontal* line.

Dr. Halley gives two very ready theorems: the one, to find the greateſt *horizontal* range at 45 degrees elevation, in any ſhot made upon any inclined plane, with any elevation of the piece whatſoever; and the other, to find elevations proper to ſtrike a given object with any force, greater than what is ſufficient to reach it with the middle elevation.

1°, A ſhot being made on an inclined plane; having the *horizontal* diſtance of the object it ſtrikes, with the elevation of the piece, and the angle at the gun between the object and the perpendicular; to find the greateſt *horizontal* range of that piece laden with the ſame charge; that is, half the latus rectum of all the parabolæ made with the ſame impetus.—

Take half the diſtance of the object from the nadir, and the difference of the given elevation from that half; ſubtract the verſed ſine of that difference from the verſed ſine of the diſtance of the object from the zenith: the difference of thoſe verſed ſines will be to the ſine of the diſtance of the object from the zenith, as the *horizontal* diſtance of the object ſtruck, to the greateſt range at 45 degrees.

2°, Having the greateſt *horizontal* range of a gun, the *horizontal* diſtance and angle of inclination of an object to the perpendicular; to find the two elevations neceſſary to ſtrike that object.—Halve the diſtance of the object from the nadir; this half is equal to the half ſum of the two elevations ſought: then ſay, as the greateſt *horizontal* range is to the *horizontal* diſtance of the object, ſo is the ſine of the angle of inclination, or diſtance of the object from the perpendicular, to a fourth proportional; which fourth being ſubtracted from the verſed ſine of the diſtance of the object from the zenith, leaves the verſed ſine of half the difference of the elevations ſought; which elevations are therefore had, by adding and ſubtracting that half of the difference to and from the aforeſaid half ſum.

HORIZONTAL *refraction*. See the article REFRACTION.

HORIZONTAL *ſhelters*, among gardeners, are defences, diſpoſed parallel to the horizon, for tender plants, bloſſoms, and fruits, in the ſpring, to defend them againſt blaſts, and pinching nights.

The uſual ſhelters that have obtained, are, baſs-mats, and other warm coverings, which are rolled up in the day-time, and let down in the night.—It was the reverend Mr. Lawrence who firſt propoſed *horizontal ſhelters*, chiefly on this principle; that moſt of our froſts and blaſts fall perpendicularly, *i. e.* the condenſed vapours, falling from the upper region, do, at night, form themſelves, toward the ſurface of the earth, into drops of dew, ſubject to be frozen by the coldneſs of the air.

Horizontal ſhelters are to be made by laying rows of tiles, at certain diſtances one above another, in the ſtructure of the wall, ſo as to project or hang over the plane of the wall, to carry off the dew, wet, &c.—It is an inconvenience objected to this method, that it is difficult to lead a tree rightly among the tiles, or to keep its figure duly filled up.

HORN, *cornu*, a hard, callous ſubſtance, growing on the head of divers animals.

It is laid down as a rule, by ſome naturaliſts, that no animals have *horns* but thoſe that are cloven-footed.

The *horns* are uſually a double part; inſomuch that there is but one exception, which is in the rhinoceros.

The *horns* of a deer are by huntſmen called his *head*. See HEAD.—In the hiſtory of the French Academy of Sciences. we have an account of a bullock's *horn*, dug out of the ground in plowing, which had ſhot forth fibrous roots, and appeared to have grown, or vegetated, after the manner of a plant.

Horns make a conſiderable article in the arts and manufactures.—Bullocks' *horns*, ſoftened by the fire, ſerve to make lanthorns, combs, inkhorns, tobacco-boxes, *&c.*

HORN is ſometimes alſo uſed for the hoof of a horſe, *&c.*

Ammon's **HORN**. See the article CORNU *Ammonis*.

Hart's **HORN**, *cornu cervi*.—The ſcrapings, or raſpings, of the *horn* of this animal are medicinal, and uſed in decoctions, ptiſans, *&c.*

It yields, by diſtillation, a very penetrative volatile ſpirit.

HORN is alſo a ſort of muſical inſtrument, of the wind kind; chiefly uſed in hunting, to animate and bring together the dogs, and the hunters.

The *horn* may have all the extent of the trumpet.

The term for ſounding antiently was, wind a *horn*; all *horns* being, in thoſe times, compaſſed: but ſince ſtrait *horns* are come in faſhion, they ſay, blow a *horn*; and ſometimes, plainly, ſound a *horn*.

There are various leſſons on a *horn*: as the recheat, double recheat, royal recheat, running or farewel recheat, *&c.* See RECHEAT.

The Hebrews made uſe of *horns*, formed of rams *horns*, to proclaim the jubilee; whence the name *jubilee*.

HORNS *of the uterus*, two proceſſes ariſing from the ſides of the fund. See CORNUA UTERI.

HORN, in architecture, is ſometimes uſed for *volute*. See VOLUTE.

HORN *of plenty*. See the article CORNU-COPIA.

HORN *with horn*, or **HORN** *under horn* (*cornutum cum cornuto*), is when there is common *per cauſe de vicinage*, intercommoning of horned beaſts. See COMMON, and INTERCOMMON.

HORN-WORK, in fortification, a ſort of out-work, advancing toward the field, to cover and defend a curtin, baſtion, or other place, ſuſpected to be weaker than the reſt: as alſo to poſſeſs a height, *&c.*—See Tab. *Fortification*, *fig.* 21. *lit. f.*

It conſiſts of two demi-baſtions; as LMN, and OPQ, Tab. *Fortification*, *fig.* 9. joined by a curtin NO.—Its ſides, or flanks, are uſually parallel; though ſometimes they approach or contract towards the place, forming what they call a *queue d'yronde*, or *ſwallow's tail*. See QUEUE *d'yronde*.

When the flanks are too long, they ſometimes make epaulements to flank them.—The parts of the *horn-work* next the country are to be defended by a parapet.

Two *horn works*, joined together, make a crown-work. See CROWN-WORK.

HORN-BEAM *pollengers*, a denomination given by ſome to trees of this ſpecies, which have been lopped, and are of about twenty years growth. See TREE.

HORNGELD *, ſignifies a tax, within the foreſt, to be paid for the feeding of *horned* beaſts. See GELD.

> * *Quietum eſſe omni collectione in foreſta de beſtiis cornutis*, &c. *Et ſint quieti de omnibus geldis, & danegeldis, & wodgeldis, & ſenegeldis, &* horngeldis, *&c.*

To be free of *horngeld*, is a privilege granted, by the king, to ſuch as he thinks good.

A horſe is ſaid to be HORN-*hipped*, when the tops of the two haunch-bones appear too high.

HORNAGIUM, HORNAGE, in our antient law-books, ſeems to import the ſame with *horngeld*.

HORODICTIC *quadrant*. See the article QUADRANT.

HOROGRAPHY *, the art of making, or conſtructing, dials; called alſo *horologiography*, *gnomonica*, *ſciatherica*, *photoſciatherica*, &c. See DIALLING.

> * The word is compounded of ὡρα, *hora*, time, hour; and γραφω, *ſcribo*, I write.

HOROLOGIOGRAPHY, the art of making, or constructing, dials. See DIALLING.

HOROLOGIUM *, ΩΡΟΛΟΓΙΟΝ, a common name, among antient writers, for any inſtrument, or machine, to meaſure the hours withal. See CHRONOMETER.

> * The word is originally Greek: compoſed of ὡρα, *hora*, time, hour; and λογος, ſpeech, diſcourſe.

Such are our clocks, watches, ſun-dials, *&c.* See CLOCK, WATCH, DIAL, *&c.* ſee alſo CLEPSYDRA.

HOROLOGIUM *, HOROLOGION, is alſo a name the Greeks give to their liturgy, or breviary; by reaſon it contains the daily hours, or the ſeveral offices to be rehearſed each day.

> * The Greeks call it ὡρολογιον, which anſwers to what in Latin and Engliſh we call *diurnum*, or diurnal.

The ὡρολογιον is the breviary of the Greeks.

HOROPTER, in optics, is a right line, drawn through the point where the two optic axes meet, parallel to that which joins the centres of the two eyes, or the two pupils.

Such is the line A B (Tab. *Optics*, *fig.* 67.) drawn through the point of concourſe C, of the optic axes of the eyes D and E, parallel to H I, which joins the centres of the eyes H and I.

It is called *horopter*; as being found, by experience, to be the limit of diſtinct viſion.

Plane of the HOROPTER. See PLANE *of the horopter*.

HOROSCOPE *, in aſtrology, the degree or point of the heavens riſing above the eaſtern point of the horizon, at any given time when a prediction is to be made of a future event: as, the fortune of a perſon then born, the ſucceſs of a deſign then laid, the weather, *&c.*

> * The word is Greek: compoſed of ὡρα, *hora*, hour; and the verb σκεπτομαι, *ſpecto*, *conſidero*, I conſider.—The Latins call it *cardo orientalis*; ſometimes, *aſcendens*.

Mercury and Venus were in the *horoſcope*, &c. They were formerly ſo infatuated with *horoſcopes*, that Albertus Magnus, Cardan, and others, are ſaid to have had the temerity to draw that of Jeſus Chriſt.

HOROSCOPE is alſo uſed for a ſcheme, or figure, of the twelve houſes; *i. e.* the twelve ſigns of the zodiac, wherein is marked the diſpoſition of the heavens for any given time.

Thus we ſay, to draw a *horoſcope*, conſtruct a *horoſcope*, &c. We call it, more peculiarly, *calculating* a nativity, when the life and fortune of a perſon are the ſubject of the prediction: for they draw *horoſcopes* of cities, great enterprizes, *&c.*

Lunar **HOROSCOPE** is the point which the moon iſſues out of, when the ſun is in the aſcending point of the eaſt.

This is alſo called the *part of fortune*.

HOROSCOPE is alſo a mathematical inſtrument, in manner of a planiſphere; but now diſuſed.

It was invented by J. Paduanus, who compoſed a ſpecial treatiſe thereon.

HORROR, HORROUR, ſtrictly ſignifies ſuch an exceſs of fear, as makes a perſon tremble.—In phyſic it denotes ſuch a ſhuddering, or quivering, as precedes an ague fit; and is often joined with rigores, and lumbagines. See AGUE, FEVER, *&c.*

Through ignorance of this acceptation, ſome have underſtood fear to be accounted by authors among the antecedent ſymptoms of thoſe diſtempers.

HORS *de ſon fee*, q. d. out of his fee, is an exception to avoid an action brought for rent, or other ſervice, iſſuing out of certain lands, by him that pretends to be the lord.—For if the defendant can prove the land to be without the compaſs of his fee, the action falls.

HORSE, a domeſtic quadruped, of great uſe in the affairs of agriculture, commerce, war, ſporting, *&c.*

The *horſe* makes the ſubject of a very extenſive art, called *horſemanſhip*; conſiſting of divers ſubordinate arts, or branches. See HORSEMANSHIP.

From the ſame beaſt alſo ariſe the profeſſions of chivalry, knighthood, *&c.*

Authors are divided as to the time when men firſt began to mount *horſes*.—The ſcholiaſt of Euripides, and Euſtathius on the ſecond book of the *Iliad*, ſpeak as if the antients had been unacquainted with the uſe of ſaddle *horſes*, and had only uſed them to draw chariots, *&c.* They add, that courſes on *horſeback* were not introduced, at the Olympic games, before the 85th olympiad.—But this can ſcarce be; in regard the centaurs, to whom the invention is attributed, lived long before that time.

It appears likewiſe, from Pauſanias, that there were *horſe*-courſes even in the time of Hercules, the inſtitutor of the Olympic games.

It was the cuſtom, among the antients, to impreſs ſome mark on their *horſes*: the moſt common were, a Σ, *ſigma*; a K, *kappa*; and a bullock's head. Hence thoſe marked with Σ's were called Συμφοραι; thoſe with a K, Κοππατιαι; and thoſe with a bull's head, Βουκεφαλοι, *Bucephali*.—This mark was ſtamped on the *horſe*'s buttocks, and his harneſs; as appears from the ſcholiaſt on Ariſtophanes's *Clouds*, Heſychius, *&c.*

The parts of a *horſe*'s body furniſh a great variety of terms, by no means to be overlooked.—The ſkin and coat are called the *hair*; the long hair on the neck, the *mane*; the fore-top, the *toping*, or *tuke*; the hair behind, on the feet, the *fetlock*, or *fetter-lock*; that growing over the top of the hoof, the *coronet*, or *cronet*; that on the eye-lids, the *brills*.—The ridge whereon the mane grows, is called the *creſt*, or *criſt*; the fore-part, from the neck to the fore-legs, the *brisket*, or *cheſt*; the mark frequently running down his face, the *rache*;

and that in the forehead, the *ſtar*.—The top of the ſhoulder-blades, at the ſetting of the neck, is called the *withers*; the place where the ſaddle is ſet, the *dock*; and a bruiſe or hurt thereon, a *navel-gall*; the middle of the back, from the mane to the hips, the *reins*; the extremity of the reins above the hips, the *croupe*; the tail, the *dock* or *runt*; the hollow or ſinking of the back-bone, the *ſway*; the hind part of the belly, next the genital, the *flank*; that nearer the thighs, the *groin*; the looſe ſkin wherein the yard is, the *ſheath*; and the fore parts of the ſhoulders, next the breaſts, the *fillets*.—The uppermoſt part of the hind leg, next the buttock, is called the *ſtiffle* or *ſtiffle joint*; the after joint, or bending of the hind leg, the *chambrel* or *elbow*; the inner, the *ham* or *hough*; the joint at the fetlock, the *paſtern ancle*, or *fetlock joint*; the foot, above the hoof of the ancle joint, the *coronet*.—The part from the withers to the top joint of the thigh, is called the *ſhoulder*; the middle joint of the fore leg, the *knee*; the right leg before, the *farther leg*; and the left, the *nearer*.—The hoof is called the *horn*; the hollow of the hoof, the *coffin*; the tender part of the hoof, next the heel, the *fruſh*; the ball of the foot, the *frog*; the part to be pared or cut off the hoof when overgrown, the *rift*; the fore part of the hoof, the *toes*; the hind part, where there is a riſing in the middle of the ſole, the *heel*; and the inſides meeting on the heel, the *quarters*.—Of moſt of theſe a further account will be found under the reſpective articles.

The maſters in this art lay it down, that an *horſe*, to be good and well made, muſt have three parts like thoſe of a woman; *viz.* the breaſt, which is to be broad, the hips round, and the mane long; three of a lion, *viz.* countenance, intrepidity, and fire; three of a bullock, *viz.* the eye, noſtril, and joint; three of a ſheep, *viz.* the noſe, gentleneſs, and patience; three of a mule, ſtrength, conſtancy, and foot; three of a deer, head, leg, and hair, ſhort; three of a wolf, throat, neck, and hearing; three of a fox, ear, tail, and trot; three of a ſerpent, memory, ſight, and turning; three of an hare or cat, running, walking, and ſuppleneſs.

Horſes are diſtinguiſhed into divers kinds; and are differently denominated, with regard to their ſtrain or country.—As, the *Neapolitan*, known by his hawk noſe.—The *Spaniſh genet*, by his ſmall limbs.—The *Barb*, by his fine head, and deep hoof.—The *Dutch*, by the roughneſs of his legs.—The *Engliſh*, by his ſtrong knitting together, *&c.*—The *Flandrin*, &c.

Horſes are alſo diſtinguiſhed, with regard to the uſes or offices they are reſerved for; as, the *coach-horſe*, *war-horſe*, *hunting-horſe*, *running-horſe*, *pack-horſe*, &c.

Horſes are alſo diſtinguiſhed with regard to their colours; as —A *bay*, which admits of divers ſhades or caſts; *viz.* a black bay, brown bay, dapple bay; all which have conſtantly black manes and tails.—*Dun* and *mouſe-dun*, having frequently a black liſt along the back, which denominates them *flea-backed*.—*Flea-bitten*, which is white ſpotted with red.—*Grey*, dapple-grey, ſilver-grey, ſad or powdered grey, black grey, ſandy grey, and iron grey.—*Griſſel* or *rount*, a light fleſh-colour intermixed with white.—*Peach-colour* or *bloſſom-colour*.—*Pyebald*, which conſiſts of two colours, one of them white.—*Roan*, a bay, black, or ſorrel, intermixed with white hairs—*Rubican*, black or ſorrel, with a few white hairs ſcattered about his body.—*Sorrel*, common ſorrel, red or cow-coloured ſorrel, bright or light-coloured ſorrel, burnt ſorrel; all chiefly diſtinguiſhed by the colour of their manes.—*Starling colour*, reſembling a browniſh or blackiſh grey, only more freckled, or intermixed with white. —*Tyger colour*, much the ſame with the branded grey, only the ſpots ſmaller.— *Wolf-colour*— *Deer-colour*— *Black*— *White*—&c.

Theſe colours are generally conſidered as ſymbolical of the nature, qualities, *&c.* of the beaſts; and accordingly their value is much influenced hereby.—The dapple grey is prized for beauty; the brown bay for ſervice; the black, with ſilver hair, for courage; the roan for countenance; the ſorrel, black without white, and iron grey, are reputed hot and fiery; the bright grey, flea-bitten, and black with white ſpots, are ſanguine; the white, dun, and pyebald, phlegmatic and heavy; the mouſe-dun, red bay, and blue grey, are dull; the peach-colour rarely prove obedient to the ſpur; the ſorrel ſeldom fail of being good, eſpecially if their legs, tails, and manes, be black; and the ſame may be ſaid of the flea-bitten, at leaſt thoſe ſo marked in the fore parts, or over the whole body; for, when only behind, it is an ill ſign.

Indeed it is hard laying down any univerſal rules in this caſe.—The white, which promiſe the leaſt, often prove good when black, about the eyes and noſtrils. And there are excellent iron greys, though that is not reputed a good colour.

For the age, teeth, mark, *&c.* of *Horſes*; ſee AGE, TOOTH, MARK, *&c.*

For the furniture, *&c.* of an *horſe*; ſee SADDLE, BRIDLE, BIT, *&c.*

HORSE is alſo uſed, in the military language, to expreſs the cavalry; or the body of ſoldiers who ſerve on horſeback. See CAVALRY.

The army conſiſted of 30,000 foot, and 10,000 *horſe*.

The *horſe* includes *horſe* guards, *horſe* grenadiers, and troopers. —Dragoons are alſo frequently comprehended under this name, though they fight on foot. See GRENADIER, and DRAGOON.

Horſe guards, by the Spaniards called *guardas a cavallo*; by the French, *gardes de corps*; by the Engliſh uſually, *life-guards*; are the guards of the king's perſon and body, conſiſting with us of 800 men well armed and equipped.

They are divided into four troops; to which are now added, by eſtabliſhment, two troops of grenadiers, conſiſting of eighty men, under the command of a captain.

Each troop of *horſe* guards is divided into four diviſions or ſquadrons; two of which conſiſting of an hundred men, commanded by a principal commiſſioned officer, two brigadiers, and two ſub-brigadiers, with two trumpets, mount the guard one day in ſix, and are relieved in their turns.

Their duty is, by parties from the guard, to attend the king's perſon when he goes out near home.—When he goes out of town, he is attended by detachments out of all the three troops.

One of three captains of the *horſe* guards attends on the king when he walks on foot, immediately next his perſon; carrying in his hand an ebony ſtaff, or truncheon, with a gold head.

One diviſion of grenadiers mounts with a diviſion of the troop to which they belong; and theſe go out on ſmall parties from the guard, perform centinel-duty on foot, attend the king alſo on foot, *&c.*

Maſter of the HORSE. See MASTER *of the horſe.*

Light HORSE includes all the *horſe* except thoſe of the life-guard.

The term *light horſe* is ſometimes alſo applied to an independent troop, or a troop not embodied into a regiment.

The denomination aroſe hence, that antiently they were lightly armed, in compariſon of the royal guards, which were armed at all points.

HORSE is alſo a term uſed in various arts and manufactories, for ſomething that helps to ſuſtain their work from the ground, for the more commodious working at it.

The *horſe*, uſed by tanners and ſkinners, called alſo the *leg*, is a piece of wood cut hollow and roundiſh, four or five feet long, and placed aſlope; upon which they pare their ſkins to get off the dirt, hair, fleſh, *&c.*

HORSE is alſo uſed, in carpentry, for a piece of wood jointed acroſs two other perpendicular ones, to ſuſtain the boards, planks, *&c.* which make bridges over ſmall rivers; and on divers other occaſions.

Little HORSE. See the article EQUULEUS.

HORSE is alſo a rope in a ſhip, made faſt to one of the fore-maſt ſhrouds, having a dead man's eye at its end, through which the pennant of the ſprit-ſail ſheats is reeved.—See *Tab. Ship. fig.* 1. *n.* 125.

HORSE is alſo a cant name lately introduced into the affair of lotteries, for the chance or benefit of a ticket, or number for one or more days, upon condition, if it be drawn a prize within the time covenanted for, of returning to the ſeller an undrawn ticket.

To determine the value of an *horſe*.—Multiply the amount of the prizes in the lottery by the time the *horſe* is hired for; and from the product ſubtract the amount of the number of prizes by the value of an undrawn ticket into the time of the *horſe*: the remainder being divided by the number of tickets into the whole time of drawing, the quotient is the value of the *horſe*.

HORSEMANSHIP, the art of breaking, diſciplining, and managing horſes.

Horſemanſhip, in its latitude, includes what relates to the knowlege of the make, colour, age, temper, and qualities, of *horſes*; their reſpective countries and climates, with the manner of breeding, propagating, *&c.* the diſcovery of the uſes or ſervices they are fitted for; whether the wars, the race, the ſaddle, or labour; and forwarding and accommodating them thereto.

In this general ſenſe, it alſo includes the knowlege of the defects and diſeaſes of *horſes*, and the remedies proper for the ſame; with the ſeveral operations requiſite thereto, as *docking*, *gelding*, *ſhoeing*, &c. and thus takes in the farriers province.

But the word is in a more peculiar manner underſtood of the art of riding; or of directing an horſe to advantage; not only in the ordinary motions, but more eſpecially in the managing, or making him work upon volts, airs, *&c.* See MANAGE.

HORSE-SHOE, a cover or defence for the ſole of an horſe's foot.

Of theſe there are ſeveral ſorts; as, the

Planch SHOE, or *Pancelet*, which is ſaid to make a good foot, and a bad leg; as cauſing the foot to grow beyond the meaſure of the leg. It is choſen for a weak heel, and will laſt longer than any other *ſhoe*; being borrowed from the moil, which has weak heels, and fruſhes to keep the feet from ſtones and gravel.

SHOES *with Calkins*, which, though intended to ſecure the horſe from ſliding, yet are reputed by many to do him more harm than good, in that he cannot tread evenly upon the ground; whereby, many times, he wrenches his foot, or ſtrains ſome ſinew, eſpecially upon ſtony ways, where ſtones will not ſuffer the calkins to enter.—*Double calkins* are leſs hurtful, as he treads evener with them than on the ſingle calkins; but then they muſt not be over-long, or ſharp-pointed, but rather ſhort and flat.

SHOES *with Rings*: theſe were firſt invented to make the horſe lift his feet up high; though ſuch *ſhoes* are more painful than helpful, beſide the unhandſomeneſs of the ſight.—The fault of not lifting the feet high enough is moſt incident to horſes that have not ſound hoofs; for tender feet fear to touch the ground hard: but what is intended for remedy, proves a prejudice to the horſe, by adding high calkins, or rings to his *ſhoes*; as by that means his heels are made weaker than before.

SHOES *with ſwelling welts or borders* round about them, are uſed in Germany, &c. which, being higher than the heads of the nails, ſave them from wearing.—Theſe are the beſt ſort of laſting *ſhoes*, if made of well tempered ſtuff, as they wear equally in all parts; and the horſe treads evenly upon them. Others, who uſe to paſs mountains and places where ſmiths are not ſo eaſily met with, carry *ſhoes* about them, with vices, whereby they faſten them to the horſe's hoofs without the help of the hammer or nail: yet is this more for ſhew than ſervice; for though ſuch *ſhoe* may ſave an horſe's feet from ſtones, yet it ſo pinches his hoof, that he goes with pain; and perhaps injures it more than the ſtones do.—On ſuch emergent occaſions, therefore, it were better to make uſe of the

Joint SHOE, which is made of two pieces, with a flat rivet nail joining them together in the toe, ſo that it might be taken both wide or narrow, to ſerve any foot.

Panton or *Pantable* SHOE, which opens the heels, and helps hoof-binding.—To which may be added, the *half panton ſhoe*.

Patten SHOE is uſed for an horſe that is burnt in the hip, ſtifle, or ſhoulder; as it cauſes him to bear upon that leg the grief is on, and conſequently makes him uſe it the better.

HORSE-SHOE, in fortification, is a work ſometimes of a round, ſometimes of an oval figure, incloſed with a parapet, raiſed in the ditch of a marſhy place, or in low grounds; ſometimes alſo to cover a gate; or to ſerve as a lodgment for ſoldiers, to prevent ſurprizes, or relieve an over-tedious defence.

HORSE-SHOE HEAD, a diſeaſe in infants, wherein the ſutures of the ſkull are too open, or too great a vacuity is left between them; ſo that the aperture ſhall not be totally cloſed up, or the cranium in that part be ſo hard as the reſt, for ſome years after.

This openneſs is found to be increaſed upon the child's catching cold. When the diſeaſe continues long, it is reputed a ſign of weakneſs, and ſhort life. In this caſe, it is uſual to rub the head now-and-then with warm rum, or brandy, mixed with the white of an egg, and palm-oil.

Sometimes the diſorder ariſes from a collection of waters in the head, called an *hydrocephalus*.

HORSE *Meaſure* is a rod of box, to ſlide out of a cane, with a ſquare at the end, being divided into hands and inches, to meaſure the height of horſes.

HORSHAM *ſtone* is a kind of thin broad ſlate, of a greyiſh colour; formerly much uſed, eſpecially in Suſſex, to heal or cover churches and chancels, great houſes, &c.

It is called *Horſham ſtone*, becauſe chiefly brought from the town of Horſham in Suſſex.

HORTAGILERS, in the grand ſeignior's court, are upholſterers, or tapeſtry-hangers.

There is no city better or more orderly regulated than the grand ſeignior's camp; and to have a notion of the magnificence of that prince, he muſt be ſeen in that equipage; he being much better lodged and accommodated there, than at Conſtantinople, or in any other city of his dominions.

He has always two tents or pavilions, and two ſets of furniture intire; that, while he is in one, they may pitch or ſpread the other.

In order to this, he has conſtantly four hundred *hortagilers*, or upholſterers, in his retinue, who go a day's journey before him to fix on a proper place. They firſt prepare the ſultan's tent, and then thoſe of the officers of the porte; and the beglerbegs, according to their rank.

HORTICULTURE*, the art of gardening. See GARDENING.

* The word is compounded of *hortus*, garden; and *colo*, I till, dreſs, &c.

HOSANNA*, in the Hebrew ceremonies, a prayer which they rehearſed on the ſeveral days of the feaſt of tabernacles.

* It was thus called, by reaſon there was frequent repetition therein of the word הושיענא *ſerva nunc*, or *ſerva, precor*, i. e. ſave us now; or, ſave us, we pray.

There are divers of theſe *hoſannas*.—The Jews call them *hoſchannoth*; i. e. the *hoſannas*.—Some are rehearſed on the firſt day, others on the ſecond, &c. which they call *hoſanna* of the firſt day, *hoſanna* of the ſecond day, &c.

HOSANNA *Rabba*, or *Grand* HOSANNA, is a name they give to their feaſt of tabernacles, which laſts eight days; by reaſon, during the courſe thereof, they are frequently calling for the aſſiſtance of God, the forgiveneſs of their ſins, and his bleſſing on the new year; and to that purpoſe they make great uſe of the *hoſchannoth*, or prayers above-mentioned.

The Jews, alſo, apply the term *hoſanna rabba*, in a more peculiar manner, to the ſeventh day of the feaſt of tabernacles; by reaſon they apply themſelves more immediately on that day to invoke the divine bleſſing, &c.

HOSE, from the Saxon *hoſa*, a ſtocking. See STOCKING.

HOSE IN HOSE, among botaniſts, ſignifies one long huſk of a flower within another; as in the polyanthos.

HOSE-HUSK, in botany, a long round huſk; as in pinks, july-flowers, &c.

HOSPITAL*, popularly SPITAL, a place or building erected out of charity, for the reception and ſupport of the poor, aged, infirm, ſick, and otherwiſe helpleſs.

* The word is formed of the Latin *hoſpes*, hoſt or ſtranger.

In the firſt ages of the church, the biſhop had the immediate charge of all the poor, both ſound and diſeaſed; as alſo of widows, orphans, ſtrangers, &c.—When the churches came to have fixed revenues allotted them, it was decreed, that, at leaſt, one fourth part thereof ſhould go to the relief of the poor; and, to provide for them the more commodiouſly, divers houſes of charity were built, which are ſince denominated *hoſpitals*.

They were governed wholly by the prieſts and deacons, under the inſpection of the biſhop.

In courſe of time, ſeparate revenues were aſſigned for the *hoſpitals*; and particular perſons, out of motives of piety and charity, gave lands and money for erecting of *hoſpitals*.

When the church-diſcipline began to relax, the prieſts, who, till then, had been the adminiſtrators of *hoſpitals*, converted them into a ſort of benefices, which they held at pleaſure, without giving account thereof to any body; reſerving the greateſt part of the income to their own uſe; ſo that the intentions of the founders were fruſtrated.—To remove this abuſe, the council of Vienne expreſly prohibited the giving any *hoſpital* to ſecular prieſts in the way of a benefice; and directed the adminiſtration thereof to be given to ſufficient and reſponſible laymen, who ſhould take an oath, like that of tutors, for the faithful diſcharge thereof; and be accountable to the ordinaries.—This decree was executed, and confirmed by the council of Trent.

In England, *hoſpitals*, founded for the mere relief of the indigent and neceſſitous, are peculiarly called *alms-houſes*; the name *hoſpital* being reſerved to thoſe deſtined for the ſick, aged, young, &c.—The principal of theſe are, the

Royal HOSPITAL, for diſabled ſoldiers, commonly called *Chelſea-College*.

It was founded by king Charles II. carried on by king James II. and finiſhed by king William and queen Mary.

The building is very ſpacious and magnificent: its figure is a Π; the middle or front part whereof conſiſts of a chapel and hall; the other two lines, being four ſtories high, are divided into wards or galleries, two in each ſtory; containing each twenty-ſix diſtinct apartments for the foot-ſoldiers. At each of the four corners of the main building, there is a pavilion, in one whereof is the governor's lodging, and the council-chamber; the other being lodgings for ſeveral of the officers of the houſe. Beſide the main building, there are four wings or out-buildings; one for the infirmary, another for ſeveral officers of the houſe, another for old maimed officers of horſe and foot; and the fourth for the baker, laundreſs, &c.

The number of ordinary penſioners is 476; beſide the officers and ſervants of the houſe: the out or extraordinary penſioners are alſo very numerous; and theſe, upon occaſion, do duty in the ſeveral gariſons, from whence draughts are made for the army, &c.

The penſioners are all provided with cloaths, diet, waſhing, lodging, firing; and have one day's pay in every week for ſpending-money.

The qualifications required to be admitted of this body, are, That the candidate bring a certificate from his ſuperior officer, that he has been maimed or diſabled in the ſervice of the crown; or that he has ſerved the crown twenty years, which muſt be made appear by muſter-rolls.

To defray the charges of this *hoſpital*, there is a conſiderable ſum paid yearly out of the poundage of the army; beſide one day's pay of each officer, and each common ſoldier, every year; which, in time of war, amounts to 13 or 14000*l*.

For the adminiſtration of this *hoſpital* there is a governor, lieutenant-governor, major, treaſurer, &c.

Greenwich HOSPITAL is a retreat for ſeamen, who, by age, wounds, or other accidents, are diſabled from ſervice; and for the widows and children of ſuch as are ſlain in the ſervice.

This, in point of magnificence and ſpacioùſneſs, greatly excels even Chelſea *hoſpital*. A good part of it was built in king Charles II.'s time, at the expence of 36000 *l*. It was much promoted by king William; and finiſhed under queen Anne, and king George I. and II.

The number of penſioners entertained in this *hoſpital* is 300. To each hundred men are allowed ſix nurſes; being the widows of ſeamen.

The victualling is according to the allowance of Chelſea *hoſpital*; viz. four men to a meſs; each meſs to contain four pounds of fleſh, a gallon of beer, &c.

It is adminiſtred by a governor, lieutenant-governor, captain, lieutenant, chaplain, ſteward, phyſician, &c.

Chriſt's HOSPITAL, popularly called the *Blue-coat hoſpital*, was antiently a monaſtery of grey friers, founded by Raihere, the firſt prior thereof, in the time of Henry I. It was diſſolved by Henry VIII. and converted, by Edward VI. into an *hoſpital* for poor children; who are ſupplied with all neceſſaries and conveniences; cloathed, dieted, and taught.

Since its firſt endowment it has received abundance of new donations. A great part of it was burnt down by the great fire; but is again rebuilt by the care of the governors; tho' not without incurring a great debt, and anticipating the revenues of the *hoſpital*.

Formerly, a thouſand poor children, moſt of them orphans, were maintained on this foundation; and ſix or ſeven ſcore yearly put out apprentices, and the girls to ſervice; but the number, through the deficiency of the funds, grew afterwards much leſs.

Here were two mathematical ſchools; the firſt founded by king Charles II. but they are now united. Youths are there taught ſeveral parts of practical mathematics, particularly navigation, to fit them for apprentices to maſters of ſhips: to ſay nothing of the grammar-ſchool (whence the moſt improved boys are yearly ſent to the univerſity), the writing-ſchool, drawing-ſchool, &c.

The officers of this *hoſpital* are a preſident, treaſurer, governors, &c.

S. Bartholomew's HOSPITAL adjoins to Chriſt's *hoſpital*; and formerly belonged to the ſame grey friers.

At the diſſolution of monaſteries, Henry VIII. left five hundred marks a year to it, for the relief of poor people; but it was more largely endowed, for the uſe of ſick and lame perſons only, by Edward VI.

It is governed by a preſident, treaſurer, &c. with other officers. It is furniſhed with two phyſicians, and three maſter ſurgeons, beſides as many aſſiſtant ſurgeons.

In this *hoſpital*, with two others depending on it, the one at Kingſland, called the Lock, the other in Southwark, are uſually about three hundred patients, provided with lodging, diet, phyſic, ſurgery, &c.

S. Thomas's HOSPITAL, in Southwark, is for the ſame purpoſes as that of S. Bartholomew.

It was originally founded an *hoſpital*, by Richard prior of Bermondſey, in 1213. ſurrendered to king Henry VIII. and given, by Edward VI. to the citizens of London, for an *hoſpital* for infirm and lame people.

It conſiſts of four quadrangular courts; in the firſt are ſix wards for women; in the ſecond, two chapels, the leſſer for the private uſe of the *hoſpital*, and the larger, parochial: in the ſame court, are the houſes of the treaſurer, and other officers: in the third court are ſix or ſeven wards for men: the fourth hath alſo three wards; baths, hot and cold; a chirurgery, apothecary's ſhop, &c.

There are about three thouſand perſons taken in, and diſcharged out of, this *hoſpital*, yearly.

The governors of this *hoſpital* are, the lord mayor and court of aldermen, with about two hundred and ſixty other citizens. Among which are, a preſident, treaſurer, &c. two phyſicians, and three ſurgeons.

Guy's HOSPITAL, or the HOSPITAL *of Incurables*, is the foundation of a wealthy citizen and bookſeller, Thomas Guy, Eſq;

It is chiefly intended for reputed incurable perſons; and is even to take in, yearly, a certain number of patients turned out of the other *hoſpitals*, particularly Bethlehem, as incurable.

The founder beſtowed 50,000 *l*. on the building in his lifetime; and, by will, endowed it with 200,000 *l*. at his death, in 1724. the greateſt benefaction, without diſpute, that ever was left by any one private man!

Its officers are, a preſident and governors, moſt of whom are the ſame with thoſe of S. Thomas's *hoſpital*, which is in the neighbourhood thereof; with a treaſurer, two phyſicians, two ſurgeons, &c.

Bridewell HOSPITAL.	See the article	WORK-HOUSE.
Sutton's HOSPITAL.		CHARTREUSE.
HOSPITAL *of Jeruſalem*.		HOSPITALER.

HOSPITALER, one that entertains and provides for poor people, travellers, &c.

The appellation is chiefly given to certain communities of religious; as, the *hoſpitalers* of Elſefort in Eſſex, inſtituted to take care of lepers; *hoſpitalers* of S. John Baptiſt, of Coventry; *hoſpitalers* of S. Julian; *hoſpitalers* of S. Leonard, at York, &c.

The religious *hoſpitalers* generally follow the rule of S. Auguſtine. Moſt of them pretend, that S. Martha was their firſt foundreſs, and chooſe her for their patron; by reaſon ſhe entertained Jeſus Chriſt at her houſe. Some of them go back to the patriarch Abraham, for their founder.

There are alſo *hoſpitalers* among the military orders; ſuch are the knights of S. Lazarus, and S. John of Jeruſalem.

HOSPITALERS, HOSPITALARII, more particularly denote an order of religious knights, who built an hoſpital at Jeruſalem, wherein pilgrims were received.—To theſe pope Clement V. transferred the effects and revenues of the Templars; whom, by a council held at Vienne, he ſuppreſſed, for their many and great miſdemeanours.

Theſe *hoſpitalers* were otherwiſe called, *Knights of S. John of Jeruſalem*; and are the ſame with thoſe whom we now call *knights of Malta*.

HOSPITIUM, *Inn*; a term peculiarly uſed, in our law-books, for an *inn of court*.

HOSPITIUM is alſo uſed for a little convent, which the relious built for the reception of ſtrangers and travellers of the ſame order, who had occaſion to ſtay with them ſome time. Moſt of theſe *hoſpitia*, or inns, in time became fixed convents.

HOSPODAR, the title borne by the prince of Walachia and Moldavia.

The *hoſpodars* of Walachia and Moldavia receive the inveſtiture of thoſe principalities from the grand ſeignior, by a veſt, and a ſtandard, which he gives them.

They are ſometimes depoſed by him; though, in other reſpects, they have the ſovereign power within their ſtates.

HOST *, HOSPES, a term of mutual relation, applied both to a perſon who lodges and entertains another, and to the perſon thus lodged, &c.

* The word is formed of the Latin *hoſpes*; which ſome will have thus called, *quaſi hoſtium*, or *oſtium petens*; for *oſtium* was antiently written with an aſpirate.

Thus the innkeeper ſays, he has a good *hoſt*, in ſpeaking of the traveller who lodges with him; and the traveller, again, ſays, he has a kind *hoſt*, in ſpeaking of his landlord.

It muſt be obſerved, then, that it was the cuſtom among the antients, when any ſtranger aſked for lodging, for the maſter of the houſe, and the ſtranger, each of them to ſet a foot on each ſide of the threſhold, and ſwear they would neither of them do any harm to the other.—It was this ceremony, that raiſed ſo much horror againſt thoſe who violated the law or right of hoſpitality, on either ſide; inaſmuch as they were looked on as perjured.

Inſtead of *hoſpes*, the antient Latins called it *hoſtis*, as Cicero himſelf informs us; though, in courſe of time, *hoſtis* came to ſignify an enemy: ſo much was the notion of hoſpitality altered.

HOST is alſo uſed by way of abbreviation for *hoſtia*, a victim, or ſacrifice, offered to the Deity. See HOSTIA.

In this ſenſe, *hoſt* is more immediately underſtood of the perſon of the Word incarnate, who was offered up an *hoſt*, or *hoſtia*, to the Father, on the croſs, for the ſins of mankind.

HOST, or HOAST, is chiefly uſed in the Romiſh church, for the body of Jeſus Chriſt, contained under the ſpecies of bread and wine, which is offered up every day, a new *hoſt*, or ſacrifice, in the maſs.

Pope Gregory IX. firſt decreed a bell to be rung, as the ſignal for the people to betake themſelves to the adoration of the *hoſt*.

The veſſel wherein the *hoſts* are kept, is called the *cibory*; being a large kind of covered chalice.

HOSTAGE *, a perſon left as ſurety for the performance of the articles of a treaty.

* The word is formed of *hoſt*, and that of *hoſpes*.

When two enemies are on the point of concluding a treaty, or capitulation, it is frequent for them to give *hoſtages* on each ſide, as ſureties for the execution of what is contained therein.

The gariſon of ſuch a place has capitulated, and given *hoſtages*. Such an officer was given as an *hoſtage*.

An *hoſtage* is either a principal, or an acceſſary, according to the ſtate of the caſe. He is only an acceſſary, when, for inſtance, a prince promiſes fidelity to another, and gives up his ſon, or ſome other great lord, to aſſure his engagement, without any further ſtipulation. For here, if the prince fail of his word, the *hoſtage* is no-ways accountable for it.

But the *hoſtage* becomes a principal, when it is expreſly ſtipulated,

lated, that he ſhall be anſwerable for the event: for inſtance, if a city engage to ſurrender, in caſe it be not relieved in ſo many days, and, to ſecure the engagement, give *hoſtages*, theſe *hoſtages* are what a ſurety is to a creditor for the debt of his principal. So that, if the relief do not come, and yet the citizens refuſe to ſurrender, the *hoſtages* ſtand in their place, become principals, and are liable to be puniſhed for the prevarication of thoſe they are become ſureties for.

An *hoſtage* given for another perſon becomes free when that perſon dies.

HOSTEL, or **HOTEL**, a French term, antiently ſignifying a houſe, or dwelling-place.

It is now more commonly uſed for the palaces, or houſes, of the king, princes, and great lords.

In this ſenſe they ſay, the *hotel del Conde*, *hotel de Conti*, *hotel de Louvre*, &c.

The grand prevot de l'*hotel*, is the firſt judge of the officers of the king's houſhold: his juriſdiction is much like that of lord ſteward of the houſhold of the king of England.

The *hotel de ville* is what we call a *town-houſe*, or *town-hall*.

HOTEL-DIEU, is a common name for the chief hoſpital for the reception of ſick perſons, in moſt of the cities of France.

The **HOTEL** *de Mars*, is an hoſpital near Paris; of the ſame nature with Chelſea-hoſpital.

HOSTIA *, **HOST**, in antiquity, a victim offered in ſacrifice to a deity.

> * The word is formed from *hoſtis*, enemy; it being the cuſtom to offer up a ſacrifice before they joined battle, to render the gods propitious; or, after the battle was over, to give them thanks.—Some chooſe to derive the word from *hoſtio*, q. d. *ferio*, I ſtrike.—Iſidore, on this word, remarks, that the name *hoſtia* was given to thoſe ſacrifices which they offered before they marched to attack the enemy: *Antequam*, ſays he, *ad hoſtem pergerent*, in contradiſtinction from *victims*, which were properly thoſe offered after the victory. Ovid ſeems to diſtinguiſh otherwiſe, when he ſays,
>
> *Victima, quæ cecidit dextra victrice, vocatur*;
> *Hoſtibus a domitis* hoſtia *nomen habet*.
>
> As if the *hoſtia* might be ſlain by any prieſt, but the victim only by the hands of the victor. Fronton makes another diſtinction: according to him, *victima* was a grand oblation, and *hoſtia* a ſmaller and leſs conſiderable one.

HOSTILITY *, the action of an enemy.—During a truce, all *hoſtilities* are to ceaſe on both ſides: ſuch a city ſtands neuter, and commits no *hoſtilities* on either ſide.

> * The word is Latin, *hoſtilitas*, formed of the primitive *hoſtis*, which ſignifies *enemy*; and which antiently ſignified ſtranger, *hoſpes*.

HOT-BATH. See the articles BATH, and THERMÆ.

HOT-BED, a piece of earth, or ſoil, plentifully enriched with manure, and defended from cold winds, &c. to forward the growth of plants, and to force vegetation, when the ſeaſon, or the climate, of itſelf, is not warm enough.

By means of *hot-beds*, ſkilfully managed, we can ſo nearly imitate the temperature of other climates, that ſeeds of plants brought from any country between the tropics, may be made to flouriſh even under the poles.

Heat and humidity being the great inſtruments of vegetation, to promote the growth of any plants, theſe muſt be duly proportioned, ſo as neither to exceed, nor come ſhort of, the bounds nature has allotted for it: too much heat we find rather ſcorches a plant, than makes it grow; and too much moiſture frequently chills it, unleſs quickly exhaled from the roots.—With us, a moderate heat is found the moſt eligible; ſuch as is raiſed by the ferment of wet ſtraw and horſe-litter, which, from the earth lying thereon, will ſend forth, for ſome time, a gentle ſteam, richly impregnated with vegetative ſalts.

The uſual way of making *hot-beds*, is of horſe-litter and graſs mixed together, and left on an heap for eight or ten days, to putrefy, and then removed into a bed, and covered up with glaſſes, or frames.—Others chooſe to take horſe-dung a month or ſix weeks old, and make a ſeed-bed of it, about four feet high, and cover it up with ſtraw a foot thick, which is to be removed in three or four days, and its place ſupplied either with cows-dung, or with the laſt year's ridges. The proceſs of ordering a good ſerviceable *hot-bed*, for the cuſtomary raiſing of cauliflowers, cucumbers, melons, radiſhes, and other tender plants and flowers, in January or February, is directed by Mr. Mortimer in manner following: Provide a warm place, defended from all the winds, by being incloſed with a pale, or hedge, made of reeds or ſtraw, about ſix or ſeven feet high; of ſuch dimenſions, or capacity, as occaſion requires.—Within this incloſure raiſe a bed, two or three feet high, and three feet over, of freſh horſe-dung, about ſix or eight days old; then tread it down very hard on the top, make it level, and, if you think fit, edge it round with boards, or brick, laying fine rich mould about three or four inches thick on it: when the extreme heat of the bed is over, which you may perceive by thruſting in your finger, plant your ſeeds at pleaſure, and ſet up ſome forks four or five inches above the bed, to ſupport a frame made of ſticks, and covered with ſtraw, or baſs-mat, in order to ſecure the ſeeds and plants from cold and wet; only the covering may be opened in a warm day, for an hour before noon, and an hour after.—But take care to earth up your plants as they ſhoot in height; and when able to bear the cold, they may be tranſplanted.

In Holland they make uſe of *hot-beds* made of ſand; which are not ſo apt to raiſe unwholſome damps, as thoſe of horſe-dung. The Dutch likewiſe made *hot-beds* of tanners bark; which, when once rightly prepared, will maintain an equable heat for ſix months.

Bradley, with very good reaſon, propoſes a thermometer to be uſed to regulate the heat of *hot-beds*.—For plants that are either to be brought up in a colder ſeaſon, or colder climate, than what they naturally require, you are to take the height at which the thermometer ſtands in their proper ſeaſon, or clime, as a ſtandard; and, by applying a thermometer to the *hot-bed*, judge whether the heat is to be increaſed, or remitted.—Thus an *hot-bed* for cucumbers muſt be kept, to raiſe the ſpirit in the glaſs, to the ſame height as the natural temperature of the weather will raiſe it to, about the latter end of May, and June, when cucumbers will grow abroad, without any artificial heat, or ſhelter. See Supplement, article HOT-BED.

HOT-HOUSE. See STOVE, and HYPOCAUSTUM.

HOT-SHOOTS, or **HOVILSES**, a ſort of factitious, or compound fire, made of a third part of any coal, pit, ſea, or charcoal, mixed with two thirds of loam.

Theſe ingredients are to be made up into balls, moiſtened with a little urine, round, or in any other form, at pleaſure, and expoſed to the air till thoroughly dry.—Then may they be built into the moſt orderly fire imaginable, affording a glowing, regular, and conſtant heat, for ſeven or eight hours, without ſtirring. This mixture is alſo uſed in ſome parts to ſlacken the impetuous devouring of the fire, and keep coals from conſuming too faſt.

HOTCH-POT, or **HODG-PODG**, primarily denotes a Flemiſh medley-diſh, made of fleſh cut in pieces, and ſodden with herbs, roots, &c.

HOTCH-POT, in law, ſignifies a mixture, or blending, of lands, given in marriage, with other lands in fee accruing by deſcent.—A man ſeiſed of thirty acres of land in fee, hath two daughters, and gives with one of them ten acres in frank-marriage, and dies ſeiſed of the other twenty. If, now, ſhe that is thus married will have any part of the twenty acres, ſhe muſt put her lands given in frank-marriage in *hotch-pot*, that is, ſhe muſt refuſe to take the ſole profits of the ten acres, but ſuffer them to be mingled with the other twenty; to the end an equal diviſion may be made of the whole thirty, between her and her ſiſter.—Thus for her ten acres, ſhe will be intitled to fifteen.—*Coke on Littl.*

HOTTS, or **HUTTS**, pounces, and round balls of leather, ſtuffed, or tied, on the ſharp ends of fighting-cocks ſpurs; to keep them from hurting one another in ſparring, or breathing themſelves.

HOUGH, *Ham*, the joint of the hind leg of a beaſt, which connects the thigh to the leg. See HAM.

To **HOUGH**, or *cut the Houghs*, is to ham-ſtring. See HAMSTRING.

HOUGH *bonny*, is an hard, round ſwelling, or tumour, growing upon the tip, or elbow, of the *hough*.

It generally proceeds from ſome ſtroke, or bruiſe; and, if neglected till the ſubſtance of the ſwelling becomes hard, like glue, it proves difficult to cure.

HOUND, *Canis venaticus*, an hunting dog.

Hounds may be diſtinguiſhed, with regard to the manner of their hunting, into, ſuch as find out and purſue the game by ſight, and the quickneſs and ſwiftneſs of their motion, of which kind are the *gaze-hound*, *agaſæus*; and *grey-hound*, *canis graius*; the *terrier*, &c.—And thoſe which find and purſue the game by the goodneſs of their ſmell.

The ſpecies of ſcenting-dogs may be divided farther; into *hounds*, ſimply ſo called, and *blood-hounds*; each whereof admits of ſome diverſities.

1°, As to *hounds*, ſimply thus called, thoſe which are all of one colour, as white, black, &c. are moſt valued; then thoſe ſpotted with red: thoſe ſpotted with dun are leſs prized, as uſually wanting courage and boldneſs.—*Fallow-hounds* are of good ſcent, and hardy, not fearing the water; they keep the chace well, without change; but are not ſo ſwift as the white; they love the hart above any other chace, having little ſtomach for the hare, &c. whence they are not ſo fit for private gentlemen; beſide that, they are apt to run at tame beaſts.

The *dun hounds* are of a more general uſe, being fit for all chaces.—Their ſagacity and fidelity in knowing and ſticking to their maſter's voice and horn, and to none elſe, are much admired: they alſo underſtand each other, and know which are babblers, which liars, &c. They are of different ſizes, and qualities in the ſeveral countries, &c. Mountainous and woodland parts breed a tall heavy ſort, called *ſlow hounds*: moderate ſoils, where the champain and covert ſhare pretty equally, produce a middle-ſized *hound* of a nimbler make.

The marks of a good and fair *hound* are, to be of a middle proportion, rather long than round; the noſtrils wide; back bowed; fillets, great; haunches, large; ham, ſtrait; tail, big near the reins, and the reſt ſlender to the end; the leg, big: the ſole, dry; and claws, large.

For the terms uſed in reſpect of *hounds*, their noiſes, &c. ſee Hunting.

To enter a young *hound*; after having taught him to know the halloe, and the ſound of the horn, at about eighteen months old he may be taken into the field. The beſt method to initiate him is, to take a live hare, and trail her upon the ground, this way, then that; and, at length, hide her at a proper diſtance. Then ſetting the *hound* near the trail, he will take wind, and run to and fro about the fields, woods, paths, &c. till he find which way ſhe has gone: as he approaches nearer the lodged hare, he will mend his pace, and at laſt leap on his prey, which he muſt be ſuffered to kill, and, bringing it to his maſter with triumph, he muſt be rewarded and encouraged.—This done, he may be let run in a pack of old *hounds* to confirm and perfect him.

It ought to be noted, that whatever young *hounds* are firſt entered at, and rewarded with, they will ever after covet moſt; ſo that if they be intended, *e. g.* for the hart, they muſt not be entered at the hare.

2°, The *grey-hound* might deſerve the firſt place, by reaſon of his ſwiftneſs, ſtrength, and ſagacity in purſuing his game; ſuch being the nature of this dog, that he is ſpeedy and quick of foot to follow, fierce and ſtrong to overcome, yet ſilent, coming upon his prey unawares.

The make and proportions required in a good *grey-hound*, are, that he have a long body, ſtrong, and pretty large, a neat ſharp head, ſparkling eyes, a long mouth, and ſharp teeth, little ears, with thin griſtles in them, a ſtrait, broad, and ſtrong breaſt, his fore legs ſtrait and ſhort, his hind legs long and ſtrait, broad ſhoulders, round ribs, fleſhy buttocks, but not fat, and a long tail, ſtrong, and full of ſinews.

Of this kind, thoſe are always fitteſt to be choſen among the whelps that weigh lighteſt; for they will be ſooner at the game, and ſo hang upon it, hindering its ſwiftneſs, till the heavier and ſtrong *hounds* come in to offer their aſſiſtance; whence, beſides what has been already ſaid, it is requiſite for a *grey-hound* to have large ſides, and a broad midriff, that he may take his breath in and out the more eaſily; his belly ſhould alſo be ſmall, which otherwiſe would obſtruct the ſwiftneſs of his courſe; and his hairs thin and ſoft.

The huntſman is to lead theſe *hounds* on his left hand, if he be on foot; and on the right, if on horſeback.—The beſt time to try and train them to the game, is at twelve months old, though ſome begin ſooner, with the males at ten, and the females at eight months old, which laſt are generally more ſwift than the dogs: they ſhould be kept in a ſlip, while abroad, till they ſee their courſe; neither ſhould you looſen a young dog till the game has been a conſiderable time on foot, he being apt, by over-eagerneſs at the prey, to ſtrain his limbs.

3°, The *gaze-hound*, or *beagle*, is a dog more beholden to the ſharpneſs of his ſight, than his noſe or ſmelling; by virtue whereof he makes excellent ſport with the deer and hare.—He is alſo noted as exquiſite in chooſing of one that is not lank or lean, but full, fat, and round, which, if it happen to return, and be mingled again with the reſidue of the herd, he will ſoon ſpy out, and leave the reſt untouched, never ceaſing, after he has ſeparated it from its company, and till he has wearied it to death.

Theſe dogs are much uſed in the north of England, and on champain ground, rather than buſhy and woody places, and by horſemen, more than footmen.—If at any time he happen to take a wrong way, upon the uſual ſign made by his maſter, he immediately returns, takes the right and ready courſe, beginning his chace afreſh, with a clear voice, and ſwift foot, following the game with as much courage as at firſt.

4°, The *blood-hound* differs nothing in quality from the *Scottiſh ſlut hound*, ſaving that it is longer ſhaped, and not always of the ſame colour; but ſometimes red, ſanded, black, white-ſpotted, &c. though moſt commonly either brown or red.

Their nature is, that being ſet on by the voice and words of their leader, to caſt about for the ſitting of the preſent game, and having found it, they will never ceaſe purſuing it with full cry till it be tired, without changing for any other.

They ſeldom bark, except in their chace, and are very obedient and attentive to the voice of their leader.—Thoſe that are really good, when they have found the hare, make ſhew thereof to the huntſman by running more ſpeedily, and with geſture of head, eyes, ears, and tail, winding to the form or hare's muſe, never giving over proſecution, and running with a gallant noiſe.

They have good and hard feet, and ſtately ſtomachs; and are very properly denominated *ſanguinary* or *blood-hounds*, by reaſon of their extraordinary ſcent; for if their game be only wounded, ſo that it eſcapes the huntſman's hands, or if it be killed, and never ſo cleanly carried away, theſe dogs, by their exquiſite ſmell, will diſcover it, and not be wanting, either by nimbleneſs or greedineſs, to come at it, provided there be any ſtains of blood.—Nay, though, by all the cunning and foreſight imaginable, a beaſt be conveyed away without ſpot or blood, yet through the rougheſt and moſt crooked ways and meanders, will this dog find out the deer-ſtealer, and, even in the thickeſt throng, will, by his ſmell, ſeparate and pick him out.

5°, The *terrier*, or *tarrier*, only hunts the fox or badger; being thus called, becauſe, after the manner of a ferret in ſearching for coneys, he leaps into the ground, and affrights or attacks the beaſts, either tearing them in pieces, or haling them out by force; or, at leaſt, driving them out of their harbours to be taken in a net, or otherwiſe.

The huntſmen have commonly a couple of *terriers*, that they may put in a freſh one, as occaſion ſerves, to relieve the other.

The time of entering the *terrier*, is when he is near a twelvemonth old: if it be not done within that time, he will hardly be brought to take the earth. This entering and fleſhing of them may be performed ſeveral ways.—Firſt, when the foxes and badgers have young cubs, take an old *terrier*, ſet him into the ground, and when he begins to bay, hold the young one at the hole or mouth of the earth, that he may liſten and hear the old one's bay.

The old fox or badger being taken, ſo that nothing remains within but the cubs, couple up the old ones, and put in the young in their ſteads, encouraging them by crying, To him, To him.—If they take any cub within, let them do with it what they liſt; not forgetting to give the old *terriers* their reward, which is blood and livers, fried with cheeſe, and ſome of their greaſe; ſhewing them alſo heads and ſkins to encourage them.

HOUR *, ὩΡΑ, *hora*, an aliquot part of a natural day, uſually a 24th, ſometimes a 12th.

* The origin of the word *hora*, or ὥρα, comes, according to ſome authors, from a ſurname of the ſun, the father of *hours*, whom the Egyptians call *horus*: Others derive it from the Greek ὁριζειν, to terminate, diſtinguiſh, &c. Others, from the word ȣρον, urine; pretending that Triſmegiſtus was the firſt that ſettled the diviſion of *hours*; which he did from obſervation of an animal conſecrated to Serapis, named the *cynocephalus*, which makes water twelve times a day, and as often in the night, at equal intervals.

An *hour*, with us, is a meaſure or quantity of time, equal to a 24th part of the natural day, or nycthemeron; or it is the duration of the 24th part of the earth's diurnal rotation. Fifteen degrees of the equator anſwer to an *hour*; though not preciſely, but near enough for common uſe.

The hour is divided into 60 minutes; the minute into 60 ſeconds, &c.

The diviſion of the day into *hours* is very antient; as is ſhewn by Kircher, *Oedip. Ægypt.* Tom. II. P. II. claſs VII. c. 8. tho' the paſſages he quotes from Scripture do not prove it.—The moſt antient *hour* is that of the 12th part of the day. Herodotus, Lib. II. obſerves, that the Greeks learnt from the Egyptians, among other things, the method of dividing the day into twelve parts.

The aſtronomers of Cathaya, &c. biſhop Beveridge obſerves, ſtill retain this diviſion. They call the *hour chag*; and to each *chag* they give a peculiar name, taken from ſome animal: the firſt is called *zeth*, mouſe; the ſecond *chiu*, bullock; the third *zem*, leopard; the fourth *mau*, hare; the fifth *chin*, the crocodile, &c.

The diviſion of the day into twenty-four *hours* was not known to the Romans before the firſt Punic war.—Till that time they only regulated their days by the riſing and ſetting of the ſun.

They divided the twelve *hours* of their day into four; *viz. prime*, which commenced at ſix o'clock, *third* at nine, *ſixth* at twelve, and *none* at three. They alſo divided the night into four watches, each containing three *hours*.

There are divers kinds of *hours*, uſed by chronologers, aſtronomers, dialiſts, &c.—Sometimes,

Hours are divided into *equal* and *unequal*.

Equal Hours are the 24th part of a day and night preciſely; that is, the time wherein fifteen degrees of the equator mount above the horizon.

Theſe are alſo called *equinoctial hours*, becauſe meaſured on the equinoctial; and *aſtronomical*, becauſe uſed by aſtronomers.

They are alſo differently denominated, according to the manner of accounting them in different countries.

Aſtronomical Hours are equal *hours*, reckoned from noon, or mid-day, in a continued ſeries of twenty-four.

Babyloniſh **HOURS** are equal *hours*, reckoned from ſun-riſe in a continued ſeries of twenty-four.

European **HOURS** are equal *hours*, reckoned from midnight; twelve from thence to noon, and from noon to midnight twelve more.

Jewiſh, or *planetary* or *antient* **HOURS**, are twelfth parts of the artificial day and night.

Hence, as it is only in the time of the equinoxes that the artificial day is equal to the night, it is then only that the *hours* of the day are equal to thoſe of the night: at other times they will be always either increaſing or decreaſing.

They are called *antient* or *Jewiſh hours*, becauſe uſed by the antients, and ſtill among the Jews. They are called *planetary hours*, by reaſon the aſtrologers pretend, that a new planet comes to predominate every *hour*; and that the day takes its denomination from that which predominates the firſt *hour* thereof: as, Monday from the moon, *&c.*

Italian **HOURS** are equal *hours*, reckoned from ſun-ſet, in a continued ſeries of twenty-four.

Unequal or *temporary* **HOURS**, are 12th parts of the artificial day and night.—The obliquity of the ſphere renders theſe more or leſs unequal at different times; ſo that they only agree with the equal *hours* at the times of the equinoxes.

HOURS, HORÆ, in the antient mythology, were certain goddeſſes, the daughters of Jupiter and Themis; at firſt only three in number, *Eunomia*, *Dice*, and *Irene*: to which were afterwards added two more, *Carpo* and *Thallote*.

Homer makes them the door-keepers of heaven. Ovid allots them the employment of harneſſing the horſes of the ſun:

> *Jungere equos Titan velocibus imperat* Horis.

HOURS, *Horæ*, in the Romiſh church, are certain prayers performed at ſtated times of the day; as *matins*, *veſpers*, *lauds*, &c.

The leſſer *hours*, are *prime*, *tierce*, *ſixth*, and *none*.—They are called *hours*, or *canonical hours*, as being to be rehearſed at certain *hours* preſcribed by the canons of that church, in commemoration of the myſteries accompliſhed at thoſe *hours*. Theſe *hours* were antiently alſo called *courſe*, *curſus*. F. Mabillon has a diſſertation on them, intituled, *De Curſu Gallicano*.

The firſt conſtitution injoining the obſervation of the canonical *hours*, is of the ninth century, being found in a capitular of Heito, biſhop of Baſil, directed to his curates, importing, that the prieſts ſhall never be abſent at the canonical *hours* either by day, or night.

Prayers of forty **HOURS**, are public prayers continued for the ſpace of three days ſucceſſively, and without intermiſſion, before the holy ſacrament, to obtain the aſſiſtance of heaven on ſome important occaſion.

In theſe days, care is taken, that the holy ſacrament be expoſed forty *hours*, *viz.* thirteen or fourteen *hours* each day.

HOUR-CIRCLES, or **HORARY** *circles*, in aſtronomy, *&c.* are great circles, meeting in the poles of the world, and croſſing the equinoctial at right angles; the ſame as *meridians*.

They are ſuppoſed to be drawn through every 15th degree of the equinoctial and equator, and on both globes are ſupplied by the meridian, *hour-circle*, and index. See GLOBE.

The planes of the *hour-circles* are perpendicular to the plane of the equinoctial, which they divide into 24 equal parts.

HOUR-GLASS, a popular kind of chronometer or clepſydra, ſerving to meaſure the flux of time, by the deſcent or running of ſand out of one glaſs veſſel into another.

The beſt *hour-glaſſes* are thoſe, which, inſtead of ſand, have egg-ſhells well dried in the oven, then beaten fine and ſifted.

Hour-glaſſes are much uſed at ſea for reckoning, *&c.*

There are alſo a ſort of *hour-glaſſes*, which depend on the flux of water, or ſome other liquid, more properly called *clepſydræ*. See CLEPSYDRA.

HOUR-LINES, on a dial, are lines which ariſe from the interſections of the plane of the dial, with the ſeveral planes of the *hour*-circles of the ſphere, and therefore muſt be all right lines. See DIAL.

HOUSAGE, a fee which a carrier, or other perſon, pays for laying up goods in a houſe.

HOUSE, *habitation*; a place built with conveniencies to live in; or a building wherein to ſhelter a man's perſon and goods from the inclemencies of the weather, and the injuries of ill-diſpoſed perſons.

We ſay a brick *houſe*, a ſtone *houſe*, a *houſe* of two ſtories, of three ſtories, a manor *houſe*, a farm *houſe*, &c.

Antient Rome conſiſted of 48000 *houſes* all inſulated or detached from one another.

A pleaſure *houſe*, or country *houſe*, is that built for a perſon to enjoy and divert himſelf occaſionally in. This is the *villa* of the antient Romans; and what in Spain and Portugal they call *quinta*; in Provence, *caſſine*; in ſome other parts of France, *cloſerie*; in Italy, *vigna*.

The word *vigna* is itſelf ſometimes uſed in Engliſh to denote the country-ſeats of the noble Romans; as the *vigna Farneſe*, *vigna Borgheſe*, &c.

The citizens of Paris have alſo their *maiſons de bouteilles*, *bottle-houſes*, to retire to, and entertain their friends; which, in Latin, might be called *micæ*: the emperor Domitian having a *houſe* built for the like purpoſe, mentioned under this name by Martial, Lib. II. Epig. 59.

It is a thing principally to be aimed at, in the ſite or ſituation of a country *houſe* or ſeat, that it have wood and water near it: if it cannot be conveniently built among trees, yet there are few places where trees may not be ſpeedily raiſed about it.

It is far better to have a *houſe* defended by trees than hills; for trees yield a cooling, refreſhing, ſweet, and healthy air, and ſhade, during the heat of the ſummer, and very much break the cold winds and tempeſts, from every point in the winter.—The hills, according as they are ſituated, defend only from ſome certain winds; and if they are on the north ſide of the *houſe*, as they defend from the cold air in the winter, ſo they alſo deprive you of the cool refreſhing breezes, which are commonly blown from thence in the ſummer.—And if the hills are ſituated on the ſouth ſide, it then proves alſo very inconvenient.

A *houſe* ſhould not be too low ſeated, ſince this precludes the convenience of cellars.—If you cannot avoid building on low grounds, ſet the firſt floor above the ground the higher, to ſupply what you want to ſink in your cellar in the ground; for in ſuch low and moiſt grounds, it conduces much to the drineſs and healthineſs of the air, to have cellars under the *houſe*, ſo that the floors be good and cieled underneath. *Houſes* built too high, in places obvious to the winds, and not well defended by hills or trees, require more materials to build them, and more alſo of reparations to maintain them; and they are not ſo commodious to the inhabitants as the lower-built *houſes*, which may be built at a much eaſier rate, and alſo as complete and beautiful as the other.

In buildings or *houſes* not above two ſtories with the ground-room, and not exceeding twenty feet to the raiſon-place, and upon a good foundation; the length of two bricks, or eighteen inches for the heading courſe, will be ſufficient for the ground-work of any common ſtructure, and ſix or ſeven courſes above the earth to a water-table, where the thickneſs of the walls is abated, or taken in, on either ſide the thickneſs of a brick, namely two inches and a quarter.

For large and high *houſes*, or buildings of three, four, or five ſtories with the garrets, the walls of ſuch edifices ought to be from the foundation to the firſt water-table, three heading courſes of brick, or twenty-eight inches at leaſt; and at every ſtory a water-table, or taking in on the inſide for the ſummers, girders, and joints to reſt upon, laid into the middle, or one quarter of the wall at leaſt, for the better bond.—But as for the innermoſt or partition-wall, a half brick will be ſufficiently thick; and for the upper ſtories, nine inches, or a brick length, will ſuffice.

The parts, proportions, *&c.* of the *houſes* in London, are regulated by a ſtatute made for rebuilding the city after the fire.—By this it is enacted, That the *houſes* of the firſt and leaſt ſort of building, fronting bye-ſtreets or lanes, ſhall be two ſtories high beſides cellars and garrets; the cellars ſix feet and an half high, if the ſprings of water hinder not; and the firſt ſtory nine feet from the floor to the cieling, and the ſecond ſtory as much: that all the walls in front and rear be as high as the firſt ſtory, full the thickneſs of the length of two bricks: and thence upwards to the garrets, of the thickneſs of one brick and an half; and that the thickneſs of the garret-walls on the back-part be left to the diſcretion of the builder, ſo that the ſame be not leſs than one brick length; and that the thickneſs of the party-wall in the garret be of the thickneſs of the length of one brick at leaſt.—That the *houſes* of the ſecond ſort of building, fronting ſtreets, and lanes of note, and the river of Thames, conſiſt of three ſtories high, beſides cellars and garrets; that the cellars thereof be ſix feet and an half high, if the ſprings hinder not; that the firſt ſtory contain full ten feet in height from the floor to the cieling; the ſecond ten feet, the third nine feet; that all the ſaid walls in the front and rear, as high as the firſt ſtory, be two bricks and an half thick, and from thence upward to the garret floor of one brick and an half thick; and the thickneſs of the garret-walls on the back-part be left to the diſcretion of the builder, ſo that the ſame may not be leſs than one brick thick: and alſo that the thickneſs of the party-walls between every *houſe* of this ſecond and larger ſort of building, be two bricks thick as high as the firſt ſtory, and thence upward to the garrets, of the thickneſs of one brick and an half.

Alſo, that the *houſes* of the third ſort of buildings, fronting the high and principal ſtreets, ſhall conſiſt of four ſtories high, beſides cellars and garrets; that the firſt ſtory contain full ten feet in height from the floor to the cieling, the ſecond ten feet and an half, and the third nine feet, the fourth eight feet and an half; that all the ſaid walls in front and rear, as high as the firſt ſtory, be two bricks and an half in thickneſs, and from thence upwards to the garret-floor, of the thickneſs of one brick and an half; and that the thickneſs of the garret-walls, on the back-part, be not leſs than one brick; and alſo that the party-walls between every *houſe* of this third and larger ſort of building, be two bricks thick as high as the firſt floor, and thence upwards to the garret-floor one brick and an half.

Alſo, that in all *houſes* of the fourth ſort of buildings, being manſion *houſes*, and of the greateſt bigneſs, not fronting any ſtreets or lanes, as aforeſaid, the number of ſtories, and the height thereof, ſhall be left to the diſcretion of the builder, ſo as he exceed not five ſtories.

The ſame act alſo injoins, that no timber be laid within twelve inches of the fore-ſide of the chimney-jambs; and that all joyſts on the back of any chimney be laid, with a trimmer, at ſix inches diſtance from the back; as alſo, that no timber be laid within the tunnel of any chimney, upon penalty to the workman, for every day's default, of 10*s.* and 10*s.* every week it continues unreformed.

Add, That as the buildings of London join one upon another, and almoſt every ſeveral *houſe* hath a diſtinct proprietor; the parliament hath decreed, that the wall dividing the proprietors grounds ſhould be built at the equal charge of both the owners: whence it may not be impertinent to ſhew how theſe party-walls are valued.

All brick-works, whether one, two, three, four, or any other number of brick lengths in thickneſs, are to be reduced to the thickneſs of a brick and an half.

It hath been obſerved, that about 4500 bricks, of about 16*s.* *per* thouſand; an hundred and a quarter of lime, at 10*s.* *per* hundred; and two loads and an half of ſand, at 3*s.* *per* load; will completely raiſe one rod of brick-work of a brick and an half thickneſs.

And thus much will a rod of party-wall, the materials only, reduced to a brick and half thick, amount to, at the former ſuppoſed rates; to which may be added, for workmanſhip, 1*l.* 8*s.*

So that for every rod of party-wall, they allow 3*l.* apiece; whence, if a party-wall be meaſured, and the meaſure, when reduced to a brick and an half, be found to contain ſixteen rods; that ſixteen multiplied by 3*l.* giveth 48*l.* and ſo much is the one proprietor to allow the other.

Town-**HOUSE**, or *Hall*, is a place where the officers and magiſtrates of a town or city hold their meetings, for the due adminiſtration of their laws and policy. See HALL, and GUILD.

Work-**HOUSE**. See WORK-*Houſe*; ſee alſo the article RASP-HUYS.

HOUSE is alſo uſed for a convent or monaſtery.

The chief abbey of ſuch an order has ſo many *houſes* dependent on it.—There have been reforms made of ſeveral religious *houſes*.

Regular prieſts give the name *houſes* to the places they reſide in, and not that of convents or monaſteries, which properly belong to ſimple friers.—Thus we ſay, the *Jeſuits houſe*, and the *Barnabites* or *Theatins houſe*.

The Jeſuits have both profeſſed *houſes*, and colleges for novices, which they call *houſes* of *probation*.

They have alſo *houſes* of *retreat* for ſpiritual exerciſes, where they receive ſecular perſons and eccleſiaſtics, diſpoſed to practiſe the ſame with them, for eight or ten days.

HOUSE is alſo uſed for one of the eſtates of the kingdom aſſembled in parliament.

Thus we ſay, the *houſe* of lords, the *houſe* of commons, &c. See PEERS, and COMMONS.

HOUSE is alſo uſed for a noble family; or a race of illuſtrious perſons iſſued from the ſame ſtock. See GENEALOGY.

In this ſenſe we ſay, the *houſe* or family of the Stuarts, the *houſe* of Bourbon, the *houſe* of Hanover, of Auſtria, of Lorain, of Savoy, &c.

HOUSE, in aſtrology, a *dodecatemory*, or twelfth part of the heavens. See DODECATEMORY.

The diviſion of the heavens into houſes is founded on this, that the ſtars and planets, when found herein, are ſuppoſed to have certain influences, either good or evil, upon ſublunary bodies; and to each *houſe* is aſſigned its particular virtue or influence; upon the conſideration whereof they draw horoſcopes. See HOROSCOPE.

This diviſion is made by ſix great circles, called *circles of poſition*, which cut each other in the common interſection of the meridian and horizon, in the ordinary way of domifying; which is that of Regiomontanus: for the antients had three other ways.

Theſe circles divide the equator into twelve equal parts, of 30 degrees each, without any regard to the zodiac.—The horizon and meridian are two circles of the celeſtial *houſes*, which divide the heavens into four equal parts, each whereof comprehends three *houſes*.—There are ſix above the horizon, and as many below it; and ſix eaſtern and ſix weſtern *houſes*.

The ſcheme or figure of the heavens conſiſts of twelve triangles, which are likewiſe called *houſes*; wherein are laid down the ſtars, ſigns, and planets, compriſed within the reſpective ſpaces of the circles of poſition.

Each planet has two certain *houſes*, wherein they ſay it exerts itſelf with peculiar vigour: Leo is the Sun's *houſe*, and Cancer that of the Moon; Capricorn is Saturn's, &c.

Some call the *houſes*, *dodecatemories*; but that name is more immediately appropriated to the twelve ſigns or diviſions of the zodiac. See DODECATEMORY.

The aſtrological *houſes* have their particular names according to their qualities.—The firſt is the *houſe of life*; being the aſcendant, and containing five degrees above the horizon, the reſt beneath it. The ſecond is the *houſe of riches*. The third, the *houſe of brothers*. The fourth, in the loweſt part of heaven, the *houſe of relations*, and angle of the earth. The fifth, the *houſe of children*. The ſixth, the *houſe of health*. The ſeventh, the *houſe of marriage*, and the angle of the weſt. The eighth, the *houſe of death*, and upper gate. The ninth, the *houſe of piety*. The tenth, the *houſe of offices*. The eleventh, the *houſe of friends*. And the twelfth, the *houſe of enemies*.

It is popularly, and as it were poetically, ſaid, that the ſun has twelve *houſes*; by which are meant the twelve ſigns; though, in reality, it has only one ſign; *viz.* Leo: beſide, the diviſion of *houſes* is accommodated to the equator, and not the zodiac.

They begin numbering the *houſes* with the aſcendant, and paſs thence to the imum cœli; ſo that the vertical point makes the beginning of the tenth.

HOUSE-BOTE, *Eſtovers*; or an allowance of timber out of the lord's wood, for the repair, and upholding a *houſe*, or tenement.

Some make *houſe-bote* twofold, *viz. Eſtoverium ædificandi & ardendi*. See ESTOVERS.

HOUSE-*robbing*, or **HOUSE**-*breaking*, the robbing or plundering a man in ſome part of his *houſe*, or his booth, or ſtall, in a fair or market; the owner, or his wife, children, or ſervants, being within the ſame.

This was made felony by ſtat. 23 Hen. VIII. and 3 Ed. VI. but it is ſince alſo made felony, though none be within the *houſe*, 26 Eliz. See BURGLARY.

HOUSE-*wife's cloth* is a middle ſort of linen cloth between fine and coarſe, fit for family uſes.

HOUSHOLD, the family or domeſtics of a prince, or private perſon.

The civil government of the king's court belongs chiefly to the lord ſteward of the *houſhold*. He has authority over all officers and ſervants of the king's houſe, except thoſe of the chapel, chamber, and ſtable, who are under the juriſdiction of the lord chamberlain, maſter of the horſe, and dean of the chapel.

Under the lord ſteward are a treaſurer of the *houſhold*, comptroller, cofferer, maſter of the *houſhold*, clerks of the green cloth, &c.

The troops of the *houſhold* are the horſe-guards, horſe-grenadiers, and foot-guards.—The *houſhold* troops of France are called the *gendarmerie*.

HOUSHOLD *days* are four ſolemn feſtivals in the year, when the king, after divine ſervice, offers a beſant of gold to God on the altar. See BESANT.

Theſe *houſhold days* are *Chriſtmas*, *Eaſter*, *Whitſunday*, and *All Saints*.

The *houſhold days* are a part of the twelve collar and offering days.

HOUSING *, or **HOUSSE**, a cover laid over the ſaddle of a horſe, in order to ſave it from the weather, dirt, &c.

* The word is formed of the French *houſſe*, which ſignifies the ſame thing; though it antiently denoted a kind of *hood*, worn by country-people.

The cavaliers appeared with their embroidered *houſings*.

Boot **HOUSING** is a piece of ſtuff faſtened to the hinder part of the ſaddle, that covers a horſe's croupe; either for the ſake of ornament, to hide the horſe's leanneſs, or to ſave the cloaths of the rider from being daubed and ſoiled by the ſweat of the horſe.

Shoe **HOUSING**, a piece of cloth bordered with a fringe, oftentimes put round the ſaddle, to cover the croupe, and hang down to the lower part of the belly, to ſave the ſtockens of thoſe that ride without boots.

HOW, among gardeners. See the article HOE.

HOWKER, or **HOOKER**, a veſſel much uſed by the Dutch; built,

built ſomething like a pink, but rigged and maſted like a hoy.

Howkers carry from fifty to two hundred ton; and, with a ſmall number of hands, will go to the Eaſt-Indies.

They tack ſoon and ſhort, will ſail well, and lie near the wind; and live almoſt in any ſea.

HOY, a ſmall veſſel or bark, whoſe yards are not acroſs, nor the ſails ſquare, like thoſe of ſhips, but the ſails like a miſſen, ſo that ſhe can ſail nearer the wind than a veſſel with croſs ſails can do.

HOYSE, or Hoise, the ſea word for haling up any thing into the ſhip, or getting up a yard, *&c.*

Thus they ſay *hoiſe* up the yard, *hoiſe* the water in, *&c.*

HOZING *of dogs*, the cutting out the balls of their feet. See Expeditating.

HUCKLE-*bone*, the hip-bone. See Coxæ *Os.*

HUCKSTER, one that ſells proviſions or ſmall wares by retail.

HUDSON'S-BAY *Company.* See the article Company.

HUE-AND-CRY, the purſuit of one who has committed felony, *&c.* on the highway.

If a party robbed, or any in the company of one murdered or robbed, come to the conſtable of the next town, and require him to raiſe *hue-and-cry*, or to purſue the offender, deſcribing him, and ſhewing, as near as he can, which way he is gone: the conſtable is forthwith to call for aid from the pariſh to ſeek the felon: and if he is not found there, he is to give the next conſtable warning; till he be apprehended, or at leaſt purſued to the ſea-ſide.

The Normans had a purſuit with a cry after offenders, not unlike this; which they called *clamor de haro.* See Clamor. *Hue* is alſo uſed alone, ann. 1 Edw. I. ſtat. 2.—In antient records it is called *huteſium & clamor.*

HUERS. See the article Conders.

HUG, or *Corniſh* Hug, a term uſed in wreſtling, when one has an adverſary on his breaſt, and holds him faſt there.

HUGUENOTS, an appellation given by way of contempt to the Reformed, or Calviniſts of France.

The name had its firſt riſe in 1560. but authors are not agreed as to the origin and occaſion thereof. Paſquier, Menage, *&c.* give us divers etymologies; but none of them are ſtuck to.

Du Verdier derives it from John Hus, whoſe opinions the *huguenots* chiefly receive, and *guenon*, ape, *q. d.* Hus's apes. See Hussites.

Coquille deduces the name from *Hugues Capet*, whoſe right of ſucceſſion to the crown the Calviniſts maintained againſt thoſe of the houſe of Guiſe, who pretended to be the ſucceſſors of Charlemaign.

Others derive it from one *Hughes*, or Hugh, a ſacramentarian, who had aſſerted much the ſame doctrines as the *Huguenots*, under Charles VI.

Others fetch it from the Swiſs word *benſquenaux*, i. e. ſeditious people; or from *eidgnoſſen*, i. e. allies or aſſociates in faith, which is the opinion Maimbourg moſt inclines to; who hence concludes, that *Huguenot* is originally no term of reproach.

Caſtelnau Mauriſſiere, in his *Memoirs*, will have the *Huguenots* to have been thus called by the populace, to denote them of leſs value than a little piece of money of the ſame name, being a maille, or farthing: which, in the time of Hugh Capet, was called *Huguenot*, q. d. not worth more than a farthing.

Others take the name to have been firſt given by way of deriſion to a certain German proteſtant, who, being taken and examined as to the conſpiracy of Amboiſe, before the cardinal de Lorrain, was confounded, and ſtopped ſhort, in the beginning of his harangue, which began with *Huc nos venimus.*

But the moſt plauſible opinion is that of Paſquier, who obſerves, that at Tours the people have a notion of a ſprite or goblin, called *king Hugon*, who ſtrolls about in the night-time; whence, as thoſe of the religion met chiefly in the night-time to pray, *&c.* they called them *Huguenots*; q. d. diſciples of king Hugon: for it was at Tours that they were firſt thus denominated.—This opinion F. Daniel aſſents to.

HUISSIER, a French name for an *uſher*, *ſerjeant*, or *beadle.*

HULKS are large veſſels, having their gun-decks from 113 to 150 feet long, and from 31 to 40 feet broad.—They will carry from 400 to 1000 tons.

Their chief uſe is for ſetting maſts into ſhips, and the like.

Antiently, the word *hulka* ſeems to have ſignified a *ſmall veſſel.*

HULL *of a ſhip* is her main body, without any maſts, yards, ſails, or rigging.—See *Tab. Ship. Fig.* 1. *litt.* A *to* R.

To Hull, or *lie a* Hull, is underſtood of a ſhip, when, either in a dead calm, or in a ſtorm, ſhe cannot carry all her ſails, but they are taken in to preſerve them; ſo that nothing but her maſts, yards, and rigging, are abroad, and her helm tied down to the lee-ſide of the ſhip.—In this ſtate ſhe will lie eaſily under the ſea, if ſhe be a good ſailer; and make her way one point before the beam.

To ſtrike a Hull, is to lie cloſely or obſcurely in the ſea in a ſtorm, or to tarry for ſome conſort, bearing no ſail, with the helm laſhed a-lee.

HUMAN, ſomething that relates to man, or the nature of man. See Nature.

The *human* body is the ſubject of medicine.

Epicurus and his followers deny, that the gods concern themſelves with *human* affairs.

Faith is diſtinguiſhed into divine and *human.*

HUMANITY, the nature of man, or that which denominates him *human.*

Neſtorius would not allow the infirmities of *humanity* to be attributed to the Deity; nor the attributes of the Deity to *humanity.*

Humanities is uſed, plurally, for the *humaniores literæ*, i. e. the ſtudy of the Greek and Latin tongues, grammar, rhetoric, poetry, and the antient poets, orators, and hiſtorians. Such a ſtudent has gone through his *humanities* with applauſe. —Calvin performed his *humanities* in the college de la Marche at Paris.

HUMECTATION*, *moiſtening*, in pharmacy; the prepareing of a medicine, by ſteeping it awhile in water, in order to ſoften and moiſten it when too dry; or to cleanſe it, or to prevent its ſubtile parts from being diſſipated in grinding, or the like.

Humectation is alſo uſed for the application of moiſtening remedies.

In this ſenſe we ſay, embrocations, emplaſters, unctions, *humectations*, fomentations, *&c.*

HUMERUS, or *Os* Humeri, in anatomy, the uppermoſt bone of the arm, popularly called the *ſhoulder-bone*; extending from the ſcapula, or ſhoulder-blade, to the upper end of the cubitus, or elbow.—*See Tab. Anat. (Oſteol.) Fig.* 3. *n.* 6. *Fig.* 7. *n.* 8. *Fig.* 3.

The *humerus* is a large, long, round, fiſtular bone, of a pretty hard, compact ſubſtance; and its inward cavity, which contains the marrow, is conſiderably long and large.

At its upper end it has a large round head, which is covered with a very ſmooth cartilage, and is received into the cavity of the ſcapula, which makes a juncture per arthrodiam.—This head of the bone being much larger than the ſocket into which it is received, the part extant is ſtrictly embraced by a ligament, one edge of which is faſtened to the margin of the cartilaginous ſocket of the ſcapula, and the other to the lower part of the head of this bone, hereby uniting them firmly together; yet ſo as to leave the motion the freeſt of all the articulations of the body, and therefore the bone very liable to diſlocations.

At the lower end of the *humerus* are two proceſſes, covered each with a cartilage; the external and leſſer receiving the extremity of the radius; and the internal, the head of the cubitus.

On the outſide of each of theſe proceſſes is a ſmall eminence, to which are faſtened the ligaments and heads of the muſcles that move the carpus and fingers.

In this bone are alſo three ſinus's; one on the fore-ſide of the large proceſs, receiving a proceſs of the cubitus; another on the back-part, which receives the olecranum; and the third, a ſmall ſemilunar one between the two proceſſes, anſwering to the eminence of the ſinus of the cubitus.

The later anatomiſts allow this bone five different motions, *viz.* upwards, downwards, forwards, backwards, and rotatory; and five pair of muſcles for performance of the ſame, *viz.* the deltoides, teres, pectoralis, infraſpinatus, ſubſcapularis, *&c.* See each under its proper article.

HUMID, Humidum, *moiſt.*

The ſchool-philoſophers make water the *primum humidum*, the firſt of *humid* bodies, and the cauſe or principle of humidity in others; which are more or leſs moiſt, as they partake more or leſs of this element.

HUMIDITY, *moiſture*; the quality or power of wetting or moiſtening other bodies.

Ariſtotle defines *humidity* by a paſſive quality, which indiſpoſes a body from being retained within its own bounds, but makes it eaſily retained in thoſe of another: which amounts to the ſame as his definition of fluidity.

Others of the peripatetic ſchool define *humidity* a quality whereby a body becomes humid, *i. e.* diſpoſed to moiſten other bodies, and, in moiſtening, to ſoften and diſpoſe them to receive any figure, or impreſſion.

Modern writers conſider *humidity* as a particular ſpecies of fluidity; and define it a fluor, which, being applied on a ſolid body, adheres thereto, and communicates the quality to other bodies. Others, ſomewhat more accurately, call *humidity* the power whereby a body moiſtens another: but what that power is, they do not ſhew.

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* The word is Latin, *humectatio*, formed of *humor*, moiſtur

But of this we are certain; *humidity* is only a ſort of relative mode.—So far as the component particles of a fluid, compared with reſpect to the pores and particles of other bodies, or the texture thereof, are apt and diſpoſed to enter thoſe pores, or ſtick to thoſe particles; ſo far is that fluid humid: on the contrary, ſo far as there is a repugnance or incongruity between the particles, *&c.* in reſpect of ſuch bodies, the fluid is not humid.

Thus quickſilver is not moiſt in reſpect to our hands or clothes, and other things, which it will not ſtick to; but it may be called *humid*, in reference to gold, tin, or lead, to whoſe ſurfaces it will preſently adhere, and render them ſoft and moiſt.—Even water itſelf, which wets almoſt every thing, and is the great ſtandard of moiſture and *humidity*, is not capable of wetting all things; for it ſtands, or runs off, in globular drops from the leaves of cabbages, and many other plants; and it will not wet the feathers of ducks, ſwans, and other water-fowl.

Add, that the texture alone may cauſe the fluid to be *humid*; as is plain, in that neither quickſilver, lead, or biſmuth, alone, will ſtick upon glaſs; yet, being mixed together, they will form a maſs that will do ſo: as appears, from ſuch a compoſition being frequently uſed in foliating looking-glaſſes.

HUMIDUM *radicale*, or *radical moiſture*.

This, in reality, ſeems to amount to no more than the pureſt and moſt defecate part of the nutritious matter, in a condition ready to be aſſimilated.

By too much heat, as in fevers, hectics, *&c.* this *humidity* is too haſtily exhauſted, and ſpent.

HUMILIATION, the act of humbling, *i. e.* of abating a perſon's pride, and bringing him lower in his opinion.

In this ſenſe, *humiliation* ſtands diſtinguiſhed from mortification: *humiliation* brings down the mind; mortification ſubdues the fleſh.

HUMILIS *muſculus*. See the article EYE.

HUMOR, or HUMOUR. See the article HUMOUR.

HUMORISTS, or *gli* HUMORISTI, the title of a celebrated academy of learned men at Rome.

The academy of *humoriſts* was eſtabliſhed by Paul Mancini, who made uſe of Gaſpar Salviani to aſſemble together all the men eminent for learning about Rome, and form them into a ſociety; as is obſerved by Janus Nicius, in his elogy of Salvinus, Part I. p. 32.

The device of this academy is, a cloud; which, being raiſed from the ſalt water of the ſea, returns again in freſh water: with this hemiſtich of Lucretius, Lib. VI. *Redit agmine dulci.* Jerom Alexander, a *humoriſt*, has three expreſs diſcourſes on this device.

The obſequies of M. Peireſc were celebrated in the academy of the *humoriſts*, whereof he was a member, in above forty different languages. Gaſſend. *Vita Peyreſk.* L. VI. p. 399.

HUMOROSI, the name of an academy eſtabliſhed at Cortona in Italy.

The *humoroſi* of Cortona muſt not be confounded with the humoriſti of Rome. See HUMORISTS.

HUMOUR, or HUMOR, in its general ſenſe, ſignifies the ſame as *liquor*, or *liquid*. See LIQUID.

HUMOUR, in medicine, is applied to any juice, or fluid part, of the body; as the chyle, blood, milk, fat, ſerum, lymph, ſpirits, bile, ſeed, ſalival and pancreatic juices, *&c.* See each of theſe under its proper head; CHYLE, BLOOD, BILE, *&c.*

The *four humours*, ſo much talked of by the antient phyſicians, are, four liquid ſubſtances, which they ſuppoſe to moiſten the whole body of all animals, and to be the cauſe of the divers temperaments thereof.

Theſe are, *phlegm*, *blood*, *bile*, and *melancholy*.

But the moderns do not allow of theſe diviſions. The *humours* they rather chooſe to diſtinguiſh into *nutritious*, called alſo *elementary*; as chyle, and blood: thoſe ſeparated from the blood; as bile, ſaliva, urine, *&c.* and thoſe returned into the blood.

Humours, again, are diſtinguiſhed into *natural*, or ſalutary; and *morbid*, or corrupted.—To the former claſs belong all the juices ordinarily ſecreted for the uſes of the body.

To the latter belong thoſe compound *humours*, which, thickening, and growing putrid, cauſe tumors, abſceſſes, obſtructions, and moſt diſeaſes.

Theſe are diſtinguiſhed by various names; *malignant*, *aduſt*, *acrimonious*, *corroſive*, *crude*, *peccant*, &c.

HUMOUR is alſo uſed for the particular temperament or conſtitution of a perſon, conſidered as ariſing from the prevalence of this or that *humour*, or juice of the body.

Thus we ſay, a bilious, choleric *humour*; a phlegmatic *humour*; a melancholic, hypochondriac *humour*; a ſanguine, gay, ſprightly *humour*, &c.

HUMOURS *of the eye*.—Anatomiſts and opticians diſtinguiſh three particular *humours* of the eye; which they call the *aqueous*, *cryſtalline*, and *vitreous*.

The *aqueous*, or watery *humour*, is placed in the anterior or fore-part of the eye, which it poſſeſſes; and is thus called, becauſe clear and fluid like water.

The *cryſtalline humour* is placed between the other two; and is thus called from its ſolidity and tranſparency, reſembling that of a cryſtal.

The *vitreous*, or glaſſy *humour*, fills the poſterior part of the eye; and is denominated from its reſemblance of melted glaſs.

Theſe three *humours* have each their ſhare in the refraction of the rays of light neceſſary to viſion.

Authors, both antient and modern, ſpeak of the regeneration of the *humours* of the eye; and give us inſtances of their reproduction, when, by any accident, they had been let out: but their inſtances, ſtrictly conſidered, generally go no farther than to the aqueous and vitreous *humours*.

Borri only, in a letter to Bartholine, ſays as much of the cryſtalline.—He affirms, that he has ſlit the pupil of the eye of divers animals, and ſqueezed out all the *humours*, even the cryſtalline, and has afterwards perfectly reſtored them again to ſight; and that the eyes of the birds, whereon the operation had been performed, inſtead of being damaged thereby, were rendered more lively and vigorous than uſual. He adds, that he had performed the ſame experiment on divers perſons, with ſo much ſucceſs, that there remained not the ſmalleſt appearance of a cicatrix in the eye. See CATARACT.

HUMOUR is alſo uſed, in dramatic poetry, for a ſubordinate or weaker ſpecies of what the critics call *manners*.

Humour is uſually looked on as peculiar to the Engliſh drama; at leaſt, our comic poets have excelled therein, and carried it beyond thoſe of any other nation: and ours is, perhaps, the only language that has a name for it.

Humour is uſually conſidered, by critics, as a fainter or weaker habitual paſſion peculiar to comic characters, as being chiefly found in perſons of a lower degree than thoſe proper for tragedy.

Every paſſion may be ſaid to have two different faces: one that is ſerious, great, formidable, and ſolemn, which is for tragedy; and another that is low, ridiculous, and fit for comedy; which laſt is what we call its *humour*.

Wit only becomes few characters: it is a breach of character to make one half the perſons in a modern, or indeed in any comedy, talk wittily and finely; at leaſt at all times, and on all occaſions.—To entertain the audience, therefore, and keep the dramatic perſons from going into the common, beaten, familiar ways and forms of ſpeaking and thinking, recourſe is had to ſomething to ſupply the place of wit, and divert the audience, without going out of character: and this does *humour*; which therefore is to be looked on as the true wit in comedy.

A very good judge, the duke of Buckingham, makes *humour* to be all in all: wit, according to him, ſhould never be uſed, but to add an agreeableneſs to ſome proper and juſt ſentiment, which, without ſome ſuch turn, might paſs without its effect.

HUNDRED, *centum*, *cent.* the number of ten times ten, or the ſquare of ten.

The place of *hundreds* makes the third in order in the Arabic numeration.

We uſually expreſs the quantity, or proportion, of the profits made in the way of commerce, *&c.* by the *hundred*.—They aſk two and a half *per cent.* or in the *hundred*, for remitting money to ſuch a city. The legal intereſt of money is five *per cent.* or five pounds in the *hundred*.

HUNDRED is alſo uſed as a meaſure to expreſs a certain quantity, or number, of things.—A *hundred* of ſalt at Amſterdam is fourteen tuns.

Deal boards are ſold at ſixſcore to the *hundred*, called the *long hundred*.—Pales and laths are counted at five ſcore to the *hundred*, if five feet long; and ſix ſcore, if three feet long.

HUNDRED *weight*, or the *great hundred*. See QUINTAL.

HUNDRED, HUNDREDUM, *centuria*, is alſo a part or diviſion of a ſhire, or county. See SHIRE, and COUNTY. It was ſo called, according to ſome, becauſe of old each *hundred* found 100 fidejuſſors or ſureties of the king's peace, or 100 able men for his war.

Others rather think it to have been ſo called, becauſe originally compoſed of a *hundred* families.—It is true, Brompton tells us, that a *hundred* contains *centum villas*; but then Giraldus Cambrenſis writes, that the Iſle of Man hath 343 villas. In both theſe places the word *villa* muſt be taken for a country family; for it cannot mean a village, becauſe there are not above forty villages in that iſland.

So, where Lambard tells us, that a *hundred* is ſo called, *a numero centum hominum*, it muſt be underſtood of a *hundred* men who are heads and chiefs of ſo many families.

Hundreds were firſt ordained by king Alfred, the 29th king of the Weſt Saxons: *Alfredus rex* (ſays Lambard, *verbo cen-*

turia) *ubi cum Guthruno Dano fœdus inierat, prudentiſſimum olim a Jethrone Moiſi datum ſecutus conſilium, Angliam primus in ſatrapias*, centurias, & *decurias partitus, eſt.—Satrapiam, ſhyre, a* Scyrian (*quod partiri ſignificat*) *nominavit, centuriam* hundred; & *decuriam, teothing ſive tienmantale*, i. e. *decemvirale collegium, appellavit; atque iiſdem nominibus vel hodie vocantur*, &c. See County, and Tithing.

This dividing of counties into *hundreds*, for the better government, king Alfred borrowed from Germany, where *centa*, or *centina*, is a juriſdiction over an hundred towns.

Such is the original of *hundreds*, which ſtill retain the name; though their juriſdiction be devolved to the county-court, ſome few excepted, which have been by privilege annexed to the crown, or granted to ſome great ſubject, and ſo remain ſtill in the nature of a franchiſe.

This has been ever ſince the ſtat. 14 Edw. III. whereby theſe *hundred* courts, formerly farmed out by the ſheriff to other men, were all, or moſt part, reduced to the county-court, and ſo remain at preſent: ſo that where we read now of *hundred* courts, they are to be underſtood of ſeveral franchiſes, wherein the ſheriff has nothing to do by his ordinary authority, except they of the *hundred* refuſe to do their office.

Hundred, or **Hundredum**, is ſometimes alſo uſed for an immunity, or privilege, whereby a man is quit of the *hundred*-penny, or cuſtom, due to the *hundred*.

Hundred-lagh ſignifies the *hundred* court, from which all the officers of the king's foreſt were freed by the charter of Canutus.

Hundred Suit, the payment of perſonal attendance, ordering ſuit and ſervice at the *hundred*-court.

HUNDREDERS, or **Hundredors**, **Hundredarii**, are men impanelled, or fit to be impanelled, of a jury, upon any controverſy, dwelling within the *hundred* where the land in queſtion lies.

Hundreder is alſo uſed for him who hath the juriſdiction of an *hundred*, and holds the *hundred*-court. See Headborough.

Sometimes it is alſo uſed for the bailiff of an *hundred*. See Bailiff.

HUNGARY *water*, *aqua* **Hungarica**, a diſtilled water, ſo denominated from a queen of *Hungary*, for whoſe uſe it was firſt prepared.

Hungary water is one of the diſtilled waters of the ſhops; and is directed, in the college diſpenſatory, to be made of roſemary-flowers infuſed ſome days in rectified ſpirit of wine, and the ſpirit then diſtilled.

It is an agreeable perfume, and its virtues are much the ſame as thoſe of the ſimple it is drawn from. See Rosemary.

HUNGER, *fames*, a natural appetite or deſire of food. *Hunger* is properly diſtinguiſhed into *natural*, and *animal*. *Natural hunger* is an irritation of the ſtomach, occaſioned by faſting; *animal hunger* is the ſenſation or perception of that irritation, and the deſire of food conſequent thereon.

There are various opinions as to the nature, cauſe, and definition, of *hunger*; the point having been controverted from Ariſtotle to our time.—Galen defines it, a painful ſenſation, ariſing from a divulſion of the ſtomach; the other Peripatetics call it an appetite, or deſire, of hot and dry: which two ſyſtems ſome authors have endeavoured to reconcile, by taking them both in; and, accordingly, define *hunger*, a natural appetite of hot and dry, occaſioned by a painful divulſion of the membranes of the ſtomach, ariſing from an emptineſs thereof.

The modern philoſophers ſpeak much more accurately and intelligibly on the point.—*Hunger* is generally conſidered, by them, as owing to the ſharpneſs or acrimony of the liquor contained in the ſtomach; which, vellicating the fibres thereof, occaſions this uneaſy ſenſation.—They add, that the occaſional cauſe of this vellication is, the emptineſs of the ſtomach; which, not furniſhing food for the ſtomach-liquor to be employed on, expoſes its inner membrane to the action thereof.

In effect, it is generally agreed, that there is ſome menſtruous juice, or humour, continually diſcharged from the excretory ducts of the neighbouring glands into the ſtomach, to aſſiſt in the diſſolution and digeſtion of the food; and that this liquor, after the food is gone, falls upon the ſtomach itſelf, and irritates its nerves ſo ſtrongly, as to propagate the impreſſion to the brain, and thus produce the perception of *hunger*.

This juice ſome will have to be acid, by reaſon bodies of that claſs are uſed to whet the appetite, and excite *hunger*; and that fatty bodies more readily remove it than others, by their adhering to the acid ſpicula, and blunting the points thereof.

Others, denying the exiſtence of any ſuch ſtomach-liquor, and accounting for digeſtion without it; conſequently deny *hunger* to have any dependence thereon.—The dry attrition of the coats of the ſtomach, according to them, is the only cauſe of it.

On both theſe principles, they ſay, it is, that the Indians elude their *hunger*, by ſwallowing pills, made of tobacco-leaves and calcined ſhells. Theſe pills take away the appetite; both as the tobacco-leaves gradually diminiſh the ſenſibility of the ſtomach; and as the calcined ſhells abſorb the ſalino-acid menſtruum. Thus alſo it is, that poor people frequently ſmoke tobacco to deceive their *hunger*, not to ſatisfy it: for tobacco affords no nutriment; but it occaſions a plentiful ſpitting, and by this means diſcharges the body of the acrid humour which cauſes *hunger*.

The latter ſyſtem Dr. Drake thus lays down:—When all the chyme and chyle is preſſed out of the ſtomach, it follows the motions of its contents, and is again, by means of its muſcular coat, reduced to a ſtate of contraction; and by that means the inner coat is brought to lie in folds, which touching, and, by means of the periſtaltic motion, rubbing lightly, upon one another, produce that gentle ſenſe of fretting, or vellication, which we call *hunger*; which, being felt firſt in the upper orifice, which is firſt evacuated, begins there to prompt us to repleniſh: but as, by degrees, the remainder of the contents are expelled, this friction, or rubbing, of the membranes upon each other, ſpreads gradually over the whole ſtomach, and renders our *hunger* more urgent and impatient, till, by a new repletion, we take away the cauſe.

Others think the blood, derived from the adjacent ramifications of the arteries into the ſtomach, ſufficient to account for *hunger*, without the mediation either of the attrition, or the menſtruum.—The maſs of blood itſelf, they obſerve, is rendered acid through abſtinence from food; its ſoft balſamic parts having been carried into all parts of the body, and lodged therein as nutriment, to ſupply the abſence of thoſe worn off, and exhaled: to which it may be added, that the velocity of the blood is conſiderably augmented, a good while after eating, beyond what it was during the action of digeſtion.

Hence it is, that perſons of a bilious conſtitution, young people, and thoſe who labour hard, muſt ſooner find themſelves *hungry* than others. 2°, That *hunger*, if it hold long, occaſions a violent heat, and even ſometimes a fever. 3°, That thoſe whoſe humours are craſs and viſcid, are leſs incommoded with *hunger* than others.

In effect, we obſerve, that ſome animals, whoſe humours are found to have thoſe conditions, as tortoiſes, &c. will live a long time without food.—For man, ſix or ſeven days are commonly ſuppoſed the limit within which, if he take no ſolid food, he dies; though we have inſtances of abſtinence which far ſurpaſs this. See Abstinence, and Fasting.

HUNGRY *evil* is an unnatural and over-haſty greedineſs, in a horſe, to devour his meat faſter than he can chew it; and may be known by his ſnatching at it as if he would devour it whole.

HUNTING, the art, or act, of purſuing and chaſing beaſts of game. See Game.

In its general ſenſe, *hunting* includes the purſuit both of hairy and feathered game; but, in its more proper and reſtrained ſignification, it is only applicable to beaſts of venery and chaſe.

F. De Launay, profeſſor of the French laws, has an expreſs treatiſe of *hunting*.—From thoſe words of God to Adam, Gen. i. 26. and 28. and to Noah, Gen. ix. 2, 3. *hunting* was conſidered as a right devolved, or made over, to man; and the following ages appear to have been of the ſame opinion. Accordingly we find, that, among the more civilized nations, as the Perſians, Greeks, and Romans, it always made one of their genteeler diverſions; and as to the wilder and more barbarous, it ſerved them with food and neceſſaries. —The Roman juriſprudence, which was formed on the manners of the firſt ages, made a law of it; and eſtabliſhed it as a maxim, that as the natural right of things, which have no maſter, belongs to the firſt poſſeſſor; wild beaſts, birds, and fiſhes, are the property of whoever can take them firſt.

But the northern nations of barbarians who over-ran the Roman empire, bringing with them a ſtronger taſte for the diverſion; and the people being now poſſeſſed of other and more eaſy means of ſubſiſtence from the lands and poſſeſſions of thoſe they had vanquiſhed; their chiefs and leaders began to appropriate the right of *hunting*, and, inſtead of a natural right, to make it a royal one.—Thus it continues to this day; the right of *hunting*, among us, belonging only to the king, and thoſe who derive it from him.

And hence have ariſen all our laws and charters of the foreſt, laws and regulations for preſervation of the game, &c. See Forest.

Hunting is practiſed in a different manner, and with a different apparatus, according to the nature, genius, and addreſs, of the particular beaſt which is the object thereof.—Theſe beaſts are, the hart, hind, hare, boar, wolf, buck, doe, fox, marten, and roe; the five firſt whereof are denominated beaſts of the foreſt, or venery, *ſylveſtres*; and the five latter, beaſts of the field, or of chaſe, *campeſtres*.

The gentlemen, and maſters of the ſport, have framed a new ſet of terms, which may be called the *hunting language*; a little view or vocabulary whereof we ſhall here give the reader.

The terms, then, uſed for beaſts of venery and chaſe, as they are in company, are theſe:——They ſay, a *herd* of harts, and all manner of deer.—A *bevy* of roes.—A *ſounder* of ſwine.—A *rout* of wolves.—A *richeſs* of martens.—A *brace* or *leaſh* of bucks, foxes, or hares.—A *couple* of rabbets or conies.

There are alſo terms for their lodging.——A hart is ſaid to *harbour*.—A buck *lodges*.—A roe *beds*.—A hare *ſeats* or *forms*.—A coney *ſits*.—A fox *kennels*.—A marten *trees*.—An otter *watches*.—A badger *earths*.—A boar *couches*.

Hence, to expreſs their diſlodging, they ſay, *unharbour* the hart.—*Rouſe* the buck.—*Start* the hare.—*Bolt* the coney.—*Unkennel* the fox.—*Tree* the marten.—*Vent* the otter.—*Dig* the badger.—*Rear* the boar.

The terms for their noiſe at rutting time are as follows:

A hart *belleth*.—A buck *growns* or *troats*.—A roe *bellows*.—A hare *beats* or *taps*.—An otter *whines*.—A boar *freams*.—A fox *barks*.—A badger *ſhrieks*.—A wolf *howls*.—A goat *rattles*.

Terms for their copulation.——A hart or buck goes to *rut*.—A roe goes to *tourn*.—A bear goes to *brim*.—A hare or coney goes to *buck*.—A fox goes to *clicketing*.—A wolf goes to *match* or *make*.—An otter *hunteth* for his kind.

Terms for the footing and treading.——Of a hart we ſay, the *ſlot*.—Of a buck, and all fallow deer, the *view*.—Of all deer, if on the graſs, and ſcarce viſible, the *foiling*.—Of a fox, the *print*; and of other the like vermin, the *footing*.—Of an otter, the *marks*.—Of a boar, the *track*.—The hare, when in open fields, is ſaid to *ſore*; when ſhe winds about to deceive the hounds, ſhe *doubles*; when ſhe beats on the hard highway, and her footing comes to be perceived, ſhe *pricketh*: in ſnow it is called, the *trace* of the hare.

The tail of a hart, buck, or other deer, is called the *ſingle*.—That of a boar, the *wreath*.—Of a fox, the *bruſh* or *drag*; and the tip at the end, the *chape*.—Of a wolf, the *ſtern*.—Of a hare and coney, the *ſcut*.

The ordure or excrement of a hart, and all deer, is called *fewmets* or *fewmiſhing*.—Of a hare, *crotiles* or *crotiſing*.—Of a boar, *leſſes*.—Of a fox, the *billiting*; and of other the like vermin, the *fuants*.—Of an otter, the *ſpraints*.——As to the heads of deer, ſomething has already been ſpoken under the article HEAD.

For the attire or parts thereof, thoſe of a ſtag, if perfect, are, the *bur*, the *pearls*, the little *knobs* on it, the *beam*, the *gutters*, the *antler*, the *ſur-antler*, *royal*, *ſur-royal*, and all at top, the *croches*.—Of the buck, the *bur*, *beam*, *brow-antler*, *back-antler*, *advancer*, *palm*, and *ſpellers*.

If the croches grow in the form of a man's hand, it is called a *palmed head*.—Heads bearing not above three or four, and the croches placed aloft, all of one height, are called *crowned heads*.—Heads having double croches, are called *forked heads*, becauſe the croches are planted on the top of the beam like forks.

They ſay, a *litter* of cubs; a *neſt* of rabbets; a ſquirrel's *dray*.

The terms uſed in reſpect of the dogs, &c. are as follow:

Of grey-hounds, two make a *brace*; of hounds, a *couple*.—Of grey-hounds, three make a *leaſh*; of hounds, a *couple and half*.—They ſay, *let ſlip* a grey-hound; and *caſt off* a hound.—The ſtring wherein a grey-hound is led, is called a *leaſh*; and that of a hound, a *lyome*.—The grey-hound has his *collar*, and the hound his *couples*.—We ſay, a *kennel* of hounds, and a *pack* of beagles.

Stiles or manners of HUNTING are various, according to the country, the beaſt, and the means whereby he is to be caught.

The *hunting* uſed by the antients, was much like that now practiſed for the rein-deer; which is ſeldom *hunted* at force, or with hounds; but only drawn with a blood-hound, and foreſtalled with nets and engines.—Thus did they with all beaſts; whence a dog is never commended by them for opening, before he has diſcovered where the beaſt lies. Hence, they were not in any manner curious as to the muſic of their hounds, or the compoſition of their kennel or pack, either for deepneſs, loudneſs, or ſweetneſs of cry, which is become a principal point in the *hunting* of our days.

Their huntſmen, indeed, were accuſtomed to ſhout, and make a great noiſe; as Virgil obſerves, in the third of his *Georgics: Ingentem clamore premes ad retia cervum.* But that clamour was only to bring the deer to the nets laid for him.

The Sicilian way of *hunting* had ſomething in it very extraordinary.—The nobles, or gentry, being informed which way a herd of deer paſſed, gave notice to one another, and appointed a meeting; every one bringing with him a croſs-bow or long-bow, and a bundle of ſtaves ſhod with iron, the heads bored, with a cord paſſing through them all: thus provided, they came to the herd, and, caſting themſelves about in a large ring, ſurrounded the deer.—Then each taking his ſtand, unbound his faggot, ſet up his ſtake, and tied the end of the cord to that of his next neighbour, at the diſtance of ten feet from one another.—Then taking feathers, dyed in crimſon, and faſtened on a thread, they tied them to the cord; ſo that, with the leaſt breath of wind, they would whirl round.—Which done, the perſons who kept the ſtands withdrew, and hid themſelves in the next covert.

Then the chief ranger, entering within the line with hounds to draw after the herd, rouſed the game with their cry; which, flying towards the line, were turned off, and, ſtill gazing on the ſhaking and ſhining feathers, wandered about as if kept in with a real wall, or pale.

The ranger ſtill purſued; and calling every perſon by name, as he paſſed by their ſtand, commanded him to ſhoot the firſt, third, or ſixth, as he pleaſed; and if any of them miſſed, or ſingled out another than that aſſigned him, it was counted a grievous diſgrace.

By ſuch means, as they paſſed by the ſeveral ſtations, the whole herd was killed by the ſeveral bands. *Pier. Hieroglyphic.* Lib. VII. cap. 6.

Hunting, as practiſed among us, is chiefly performed with dogs; of which we have various kinds, accommodated to the various kinds of game: as *hounds*, *grey-hounds*, *ſtaunch-hounds*, *blood-hounds*, *terriers*, &c. See HOUND.

In the kennels, or packs, they generally rank them under the heads of *enterers*, *drivers*, *flyers*, *tyers*, &c.

On ſome occaſions, nets, ſpears, and inſtruments for digging the ground, are alſo required: nor is the *hunting*-horn to be omitted.

The uſual chaſes among us are, the *hart*, *buck*, *roe*, *hare*, *fox*, *badger*, and *otter*.—We ſhall here give ſomething of what relates to each thereof.

By the way let it be obſerved, with regard to the ſeaſons of beaſts, that hart and buck *hunting* begins at the end of fence-month, which is a fortnight after Midſummer, and laſts till Holy-rood day.—The hind and doe come in courſe on Holy-rood day, and laſt till Candlemas.—Fox *hunting* comes in at Chriſtmas, and holds till the Annunciation.

Roe *hunting* begins at Michaelmas, and ends at Candlemas.—Hare *hunting* commences at Michaelmas, and goes out at the end of February.—Where the wolf and boar are *hunted*, the ſeaſon for each begins at Chriſtmas; the firſt ending at the Annunciation, the ſecond at the Purification.

Here, too, is the place for ſome general terms, and phraſes, more immediately uſed in the progreſs of the ſport itſelf; what belongs to the ſeveral ſorts of game, in particular, being reſerved for the reſpective articles.

When the hounds, then, being caſt off, and finding the ſcent of ſome game, begin to open and cry; they are ſaid to *challenge*.—When they are too buſy, before the ſcent be good, they are ſaid to *babble*.—When too buſy, where the ſcent is good, to *bawl*.—When they run it end-ways orderly, holding in together merrily, and making it good, they are ſaid to be in *full cry*.—When they run along without opening at all, it is called *running mute*.

When ſpaniels open in the ſtring, or a grey-hound in the courſe, they are ſaid to *lapſe*.

When beagles bark and cry at their prey, they are ſaid to *yearn*.

When the dogs hit the ſcent the contrary way, they are ſaid to *draw amiſs*.

When they take freſh ſcent, and quit the former chaſe for a new one, it is called *hunting change*.

When they *hunt* the game by the heel or track, they are ſaid to *hunt counter*.

When the chaſe goes off, and returns again, traverſing the ſame ground, it is called *hunting the foil*.

When the dogs run at a whole herd of deer, inſtead of a ſingle one, it is called *running riot*.

Dogs ſet in readineſs where the game is expected to come by, and caſt off after the other hounds are paſſed, are called a *relay*.—If they be caſt off ere the other dogs be come up, it is called a *vauntlay*.

When, finding where the chaſe has been, they make a proffer to enter, but return, it is called a *blemiſh*.

A leſſon on the horn, to encourage the hounds, is named a *call*, or a *recheat*.—That blown at the death of a deer, is called the *mort*.—The part belonging to the dogs of any chaſe they have killed, is the *reward*.—They ſay, *take off* a deer's ſkin; *ſtrip* or *caſe* a hare, fox, and all ſorts of vermin; which is done by beginning at the ſnout, and turning the ſkin over the ears, down the tail.

Badger HUNTING.——A badger is called by ſeveral names; *viz.* a *grey brock*, *boreſon*, or *bauſon*.—The male is called a *badger* or *bore-pig*, and the female a *ſow*.

This beaſt is very frequent in Italy, Sicily, the Alpine, and Helvetian coaſts; and is not uncommon in France and England.

There are two kinds; the one reſembling a dog, and the other a hog. They differ in their ſnout and colour; the one reſembling that of a dog, the other of a ſwine. The firſt has a greyer or whiter coat than the other, and goes farther out to prey.

They differ alſo in their meat; the one eating fleſh and carrion, like a dog; the other roots and fruit, like a hog.

Tuberville mentions two ſorts of badgers, but in a ſomewhat different manner: the one, according to him, caſting his fiaunts long, like a fox, having his reſidence in rocks, and making his burrow very deep; whereas the burrows of the other are made in light ground, and have more variety of cells and chambers. The one is called the *badger-pig*, and the other the *badger-whelp*; or the one may be called *canine*, and the other *ſwiniſh-badger*. The firſt has his noſe, throat, and ears, yellowiſh; and is, in other parts, much blacker, and higher-legged, than the latter. He ſays, both live on fleſh, hunting greedily after carrion; and are pernicious to warrens, eſpecially when big with young. When the badgers earth, after they have dug a good depth, they make uſe of an expedient to carry off the earth: in order to which, one of them lies down on his back, and upon his belly the reſt lay the earth; thus taking his hind-feet in their mouths, they draw the belly-laden badger out of the hole, or cave, and having diſburdened him, he re-enters, and repeats the labour till the work be compleated.

The badger is a very ſleepy beaſt, eſpecially in the day-time, ſeldom ſtirring abroad but in the night; whence the denomination *lucifuga*, q. d. avoider of the light.

The badger is a deep-biting beaſt, having very ſharp teeth; to guard againſt the effects whereof, it is uſual to put great broad collars about the dogs necks. His back is broad, and his legs are longer on the right-ſide than the left; whence he runs beſt on the ſide of a hill, or cart-road way. He fights on his back, and by this means is at liberty to uſe both his teeth and nails. He has a faculty of blowing up his ſkin after a ſtrange manner, by which he defends himſelf againſt any blow or bite of the dogs; ſo that you may threſh your heart out on his back to no purpoſe: but a ſmall ſtroke on the noſe diſpatches him preſently. In Italy and Germany they eat the fleſh of badgers, boiling it with pears; but in England it is not liked, being of a ſweetiſh and rankiſh taſte. It is beſt in September; and, of the two kinds, the *ſwiniſh-badger* is the beſt meat.

They are long-livers, and generally grow blind by mere age; from which time they never ſtir out of their holes, but are fed by the reſt.

The method of *hunting* the badger is thus:—Seek the earth and burrows where he lies, and in a clear moon-ſhine night go and ſtop all the holes but one or two, and therein place ſacks, faſtened with drawing-ſtrings, which may ſhut him in as ſoon as he ſtrains the bag.—The bags thus ſet, caſt off your hounds, and beat all the groves, hedges, or tufts, within a mile, or two: what badgers are abroad, being alarmed by the dogs, will ſtrait repair to their earths, and ſo be taken.

He that ſtays to watch the ſacks, muſt ſtand cloſe, and upon a clear wind; elſe the badger will find him, and fly ſome other way for ſafety. If the hounds either encounter him, or undertake the chaſe before he can get into his earth, he will ſtand at bay like a boar, and make excellent ſport.

If the badger be attacked in his earth; as ſoon as he perceives the terriers yearn him, he will ſtop the hole between the dogs and himſelf; and if the dogs continue baying, he removes his baggage with him, and goes into another apartment, or chamber, of which he uſually has half a dozen in the burrow; thus retreating from one to the other, till he can go no farther, and barricading the way, as he goes.

Buck HUNTING, or HUNTING of fallow deer.—The buck, the firſt year, is called a *fawn*; the ſecond year, a *pricket*; the third, a *ſorel*; the fourth, a *ſore*; the fifth, a *buck of the firſt head*; the ſixth year, a *great buck*.

The female is called *doe*, or *doo*.—The firſt year, a *fawn*; the ſecond, a *tegg*; the third, a *doe*.

This beaſt is common in moſt countries, being as corpulent as a hart, but in moſt things reſembling more a roe, except in colour; which is various, but moſt commonly branded or ſandy on the back, having a black liſt all along on the ridge, and the belly and ſides ſpotted with white.

The male has horns not much differing from a hart, except in largeneſs, and they grow out of the head like fingers out of the hand; whence it is called *cervus palmatus*. The female is without horns.

Leſs art and ſkill are required in lodging a buck, than in harbouring a hart; nor does there need ſo much drawing after: it is ſufficient that you judge by the view, and mark what grove, or covert, he enters; for he does not wander and rove ſo often as a hart, nor ſo frequently change his layer. When hard hunted, he uſually takes to ſome ſtrong-hold, or covert, he is acquainted with; not flying far before the hounds, nor croſſing, nor doubling, nor uſing any of the ſubtleties the hart is accuſtomed to.

The buck will beat a brook, but ſeldom a great river, as the hart; nor can he ſtay ſo long at ſoil.

The greateſt ſubtlety a huntſman need uſe in *hunting* the buck is, to beware of *hunting* counter or change, becauſe of the plenty of fallow deer, which uſe to come more directly upon the hounds than the red deer do.

The buck herds more than the hart, and lieth in the drieſt places; but if he be at large, unconfined in a park, he herds but little from May to Auguſt, becauſe the flies trouble him. He takes delight in hilly places, but chooſes the dales to feed in.

Fox HUNTING.—This animal, the firſt year, is called a *cub*; the ſecond, a *fox*; the third, an *old fox*.

His nature, in many reſpects, is like that of a wolf; and both bring the ſame number of cubs at a litter: but the fox litters deep under ground, which the wolf does not.

A bitch fox is hard to take, when bragged, and with cub, in regard ſhe lies near her burrow, into which ſhe runs upon hearing the leaſt noiſe: indeed it is no eaſy matter to take her at any time, as being a beaſt of exceeding ſubtlety. What makes *fox-hunting* the more entertaining is, the ſtrong hot ſcent this creature affords, which keeps up an excellent cry; but as his ſcent is hotter at hand, ſo it dies ſooner than that of a hare, &c. Add, that he never flies far before the hounds, as not truſting to his legs, or the champaign ground, but has recourſe to the ſtrongeſt coverts.—When he can no longer ſtand up before the hounds, he takes earth, and muſt be dug out.—When courſed by grey-hounds on a plain, his laſt refuge is, uſually, to piſs on his tail, and ſlap it in their faces as they come near him; ſometimes ſquirting, alſo, his thicker excrement upon them, to make them give over their courſe.

When a bitch fox goes a clicketing, and ſeeks the dog, ſhe cries with a hollow voice, not unlike the howling of a mad dog; and the like noiſe ſhe makes when ſhe miſſes any of her cubs: but ſhe never cries at all when ſhe is killing, but defends herſelf in ſilence to the laſt gaſp.

The fox is taken with hounds, grey-hounds, terriers, nets, and gins.—Of terriers there are two ſorts: the one crook-legged, and commonly ſhort-haired, which take earth well, and lie long at fox, or badger; the other is ſhagged, and ſtrait-legged, which will not only hunt above ground as others, but alſo enter the earth with great fury, though theſe cannot ſtay in ſo long, by reaſon of their vehemence.

The fox chooſes to earth in ground hard to dig; as in clay, or ſtony ground, or amongſt the roots of trees; and his earth has commonly but one hole, which goes ſtrait along in, before it come at their couch: he ſometimes, by craft, poſſeſſes himſelf of a badger's old burrow, which has variety of chambers, holes, and angles. Geſner relates, that he frequently cheats the badger of his habitation, by laying his excrement at the mouth of the other's burrow. Some pretend, that the wolf being an enemy to the fox, this latter ſecures his earth, by laying an herb called ſea-onion in the mouth thereof, which the wolf has a natural averſion to, ſo that he never comes near the place where it either lies, or grows.

Hare HUNTING.—A hare, the firſt year, is called a *leveret*; the ſecond year, a *hare*; the third, a *great hare*.

A hare is called, in Hebrew, *arnebet*; which, being feminine, poſſeſſed a great many with the notion, that all hares were females.—He is called *lagωs*, by the Greeks, for his immoderate luſt; and, by the ſame nation, *ptoox*, for his fear; and, by the Latins, *lepus*, quaſi *levi-pes*, to denote his ſwiftneſs of feet.

There are four ſorts of hares.—Some live in the mountains, ſome in the fields, ſome in the marſhes, and ſome any-where, indifferently.

Thoſe of the mountains are the moſt ſwift, and thoſe of the marſhes the ſloweſt: the wandering hares are the moſt difficult and dangerous to follow.

Each part and member of the hare is formed for celerity. The head is round and ſhort, of a convenient length; the ears long and lofty, to hear the enemy at a diſtance, and ſave itſelf in time; the lips continually move, ſleeping and waking; and the eye is too big and round for the lid to cover it, even when aſleep; ſo that the creature ſleeps, as it were, on the watch. The breaſt is capacious, and fitted to take more breath than that of any other beaſt.

They feed abroad, to conceal their forms; and never drink, but content themſelves with the dew. The hare's ears lead the way in her chaſe; for with one of them ſhe hearkeneth to the cry of the dogs, the other being ſtretched forth like a ſail, to promote her courſe.

The hares of the mountains often exerciſe themſelves in valleys and plains, and through practice grow acquainted with the neareſt way to their forms: thoſe which frequent buſhes and brakes, are not able to endure labour; nor are very ſwift, being tender-footed, and growing fat through diſcontinuance of exerciſe.

When the hare has left the dogs far behind, ſhe goes to ſome hill or riſing ground, where, rearing on her hinder legs, ſhe obſerves at what diſtance her purſuers are.

The ſcent is naturally ſtronger in wood-hares than field-hares; but in all ſorts it is ſtrongeſt when they feed on green corn.—In winter-mornings, the ſcent does not lie till the froſt be a little thawed: and it may be added, that a hare always leaves more ſcent when ſhe goes to relief, than when ſhe goes to form.

Her footſteps are more ſeen in winter, than ſummer; becauſe, as the nights are longer, they travel farther.—Their prints are very uncertain at the full moon; at which time they leap and play together. The young, it is to be obſerved, tread heavier than the old, by reaſon their limbs are weaker. A buck, or male hare, is known by his beating the hard highways, feeding farther out in the plains, and making his doublings of a greater compaſs than the female, who keeps cloſe by ſome covert ſide; turning, winding, and croſſing, in the buſhes, like a coney, and rarely running out an end: whereas the buck, having once made a turn or two about his form, then farewel turns! for he will frequently lead them five or ſix miles without once turning his head. Add, that the buck is known, at his riſing out of form, by his hinder parts, which are more white, and his ſhoulder, which is redder, than the doe's.

The hare regulates its conduct according to the weather.—In a moiſt day ſhe holds the highways more than at any other time, by reaſon the ſcent is then moſt apt to lie; and if ſhe come at the ſide of any young grove, or ſpring, ſhe forbears to enter, but ſquats down aſide thereof, till the hounds have over-ſhot her; upon which ſhe returns the ſame way ſhe came without turning into any covert, for fear of the wet and dew hanging on the boughs.

Regard is alſo to be had to the place where the hare ſits, and upon what wind: for if her form be either upon the north or ſouth wind, ſhe will not willingly run into the wind, but aſide, or down the wind: on the contrary, if ſhe form in the water, it is a ſign ſhe is foul, and meaſled, and in the courſe will make all her doubling and croſſing about brook-ſides, and near plaſhes; for her ſcent, under this condition, being very ſtrong, ſhe needs a place that will take but little. Sometimes, when hunted down, ſhe will ſtart a freſh hare, and ſquat in the ſame form; at other times ſhe will creep under the door of a ſheep-cote, and hide among the ſheep, or run among a flock of ſheep; and will not, without the utmoſt difficulty, be taken from among them.—Add, that ſome will take the ground like a coney: this is called going to *vault*.

Some hares will go up one ſide of the hedge, and come down the other: and we have known a hare, that, being ſorely hunted, has got upon a quickſet hedge, and ran a good way on the top thereof, and then leaped off upon the ground: and it is no unuſual thing for them to take themſelves to furz-buſhes, and leap from one to another, whereby the hounds are frequently in default.

A hare, it is ſaid, does not live above ſeven years, at moſt, eſpecially the buck: and if he and the doe keep one quarter, they will not ſuffer any ſtrange hare to ſit by them: whence the proverb, ‘The more you hunt, the more hares you ſhall have;’ ſince, having killed one hare, another comes and poſſeſſes his form. By the way it is to be obſerved, that to enter a young kennel of hounds, regard muſt be had to the nature of the country, and of the quarry: for, according to the place wherein they are entered, and the game firſt given them, will they afterwards prove. Thus, if they be entered in a champaign country, they will ever after more delight to hunt there than on any other ground.

Having found where a hare hath relieved in ſome paſture, or corn-field; to find her form, the ſeaſon of the year, and the ſtate of the weather, are to be conſidered.—In the ſpring, or ſummer, a hare will not ſit in the buſhes, becauſe frequently offended with piſmires, ſnakes, and adders; but will ſit in corn-fields, and open places.—In winter they chooſe to ſit near towns and villages, in tufts of thorns and brambles, eſpecially when the wind is northerly, or ſoutherly.—According to the ſeaſon, and nature of the place where the hare is accuſtomed to ſit, there beat with your hounds, and ſtart her; which is better ſport than trailing of her from her relief to her form.—Having ſtarted her, ſtep in, and halloe in the hounds till they have undertaken it; crying, That, That, or There, There, and go on with full cry: then recheat them, and follow at a diſtance, taking care not to forward them too much at firſt; as being apt, in the firſt heat, to over-ſhoot the game.—Above all things, mind the firſt doubling the hare makes, which is to be a key, or direction, for the whole day; all the other doublings ſhe afterwards makes being like the firſt.—According to the policies you ſee her uſe, and the place where you hunt, make your compaſs, to help the defaults, great or little, long or ſhort; always ſeeking the moiſteſt and moſt commodious places for the hounds to ſcent in.

Hart HUNTING, or HUNTING of *red deer*.—This animal, the firſt year, is called a *calf*, or *hind calf*; the ſecond year, a *knobber*; the third, a *brock*; the fourth, a *ſtaggard*; the fifth, a *ſtag*; the ſixth, a *hart*.

The female is called a *hind*.—The firſt year ſhe is a *calf*; the ſecond, a *hearſe*, and ſometimes a *brocket*'s *ſiſter*; the third, a *hind*.

Terms occurring more eſpecially in *hunting* the hart, and not yet explained, are as follow.—The print, or impreſſion, where a deer has lain, is called a *layer*: if it be in covert, or a thicket, it is called his *harbour*.—Where a deer has paſſed into a thicket, leaving marks whereby his bulk may be gueſſed at, it is called an *entry*.—When they caſt their heads, they are ſaid to *mew*.—When they rub their heads againſt trees, to bring off the peels of their horns, they are ſaid to *fray*.—When a deer, hard hunted, takes to ſwimming in the water, ſhe is ſaid to go to *ſoil*.—When they turn head againſt the hounds, they are ſaid to *bay*.—When the hounds touch the ſcent, and draw on till they put up the hart, they are ſaid to *draw on the ſlot*.

As to the nature and qualities of the hart, it is to be obſerved, that he is an excellent ſwimmer; there being inſtances, when ſore hunted, of his plunging in the ſea, and being killed by fiſhermen twelve miles from land.—When, in going to rut, they have occaſion to croſs a great river, or arm of the ſea, it is ſaid, they aſſemble in great herds: the ſtrongeſt goes in firſt, and the next of ſtrength follows; and ſo one after the other, relieving themſelves by ſtaying their heads on the buttocks of each other.

The hind commonly carries her calf eight or nine months, which uſually falls in May: ſome have two at once; and they always eat up the ſkin wherein the calf lay.—As the young grows up, the old one teaches it to run, and leap, and how to defend itſelf from the hounds.

The hart is amazed at hearing any one call, or whiſtle, in his fiſt: if you cry, ware, ware, or take heed, you will ſee him inſtantly turn back, and make ſome little ſtand.—His ſenſe of hearing is very perfect when his head and ears are erected; but very imperfect when he holds them down: hence, when he pricks up his ears, he is known to be apprehenſive of danger. When he is on foot, and not afraid, he wonders, and takes pleaſure to gaze at every thing he ſees.

The hart is very long-lived, commonly reaching to an hundred years, or upwards.—The principal marks of his age are taken from his head, yet is this ſomewhat precarious; ſome having more croches thereon, at the ſame age, than others.—Thoſe are accounted to excel in beauty of horns, which bear them high.

The horns do not grow to the bone or ſcalp of the head, but only to the ſkin, branching into many ſpears, and falling off once a year, in the ſpring.—Though ſolid throughout as ſtones, yet, if they remain a while in the air, they grow very light and friable, diſcovering themſelves to be no other than an earthy ſubſtance, concrete and hardened with a ſtrong juice into the form of bones.

The horns being fallen, they retire, and hide themſelves in the ſhades, to avoid the annoyance of flies; and only come out to feed in the night.—Their new horns appear, at firſt, like bunches, very ſoft and tender; but, by the increaſe of the ſun's heat, they at length grow harder, and are covered with a rough ſkin called a *velvet head*.—As that ſkin dries, they daily try the ſtrength of their new heads upon trees, which not only burniſhes and ſcrapes off the roughneſs, but, by the pain they feel hereby, admoniſhes them how long to forbear the company of their fellows: for when the horn grows inſenſible, they return to their former condition.

The taking of this beaſt requires a deal of art, and attention.—‘The deceitful and ſubtle hart, ſays Geſner, by windings ‘and turnings, deceives its hunters, no leſs than the harts of ‘Mæandros, flying from the terrible cry of Diana's hounds. ‘The prudent hunter, therefore, muſt frame his dogs, as Pythagoras did his ſcholars, with words of art, to ſet them on, ‘and take them off, at pleaſure.’

When he goes for ſport, he is firſt to encompaſs the beaſt en ſon giſte, in her own layer; and thus unharbour her in the view of the dogs, that ſo they may never loſe her ſlot or footing.—But note, a deal of choice and diſcretion is here required: for he may not ſet off upon every one, either of the herd, or thoſe which wander ſolitary: the young, the ſmall, *&c.* are to be paſſed over; and partly by ſight, and partly by the footing, fewmets, the largeneſs of the layer, *&c.* he muſt make judgment of the game, ſingling out for that purpoſe the largeſt head in the whole herd.

There are divers means for knowing an old hart; *viz.* by the *ſlot*, the *entries*, the *abatures*, and *foils*, the *fewmets*, *gate* and *walks*, *fraying-ſtocks*, and the *head* and *branches*.

1°, As to the *ſlot*.—The treadings of the hart's foot are to be carefully noted: if you find the treadings of two, the one long, and the other round, yet equally big, the longeſt ſlot declares the largeſt hart: add, that the old hart's hind-foot never over-reaches the fore-foot, as that of the young one does.—2°, The fewmiſhing is chiefly to be judged of in April or May: if it be large and thick, it ſignifies the hart to be old.—3°, To know the height and thickneſs of the hart, obſerve his entries and galleries into the thickets, and what boughs he hath over-ſtridden, and mark from thence the height of his belly from the ground; for a young deer uſually creeps low, as he paſſes to his harbour, and goes through places which the old one, being ſtiff and ſtately, will not ſtoop to.—4°, By his gait it may be known whether the hart be large, and whether he will ſtand long before the hounds: if he have a long ſtep, he will ſtand long; being ſwift, light, and well breathed: if he have a great ſlot, which is the ſign of an old deer, he will be a laſter.—As to his fraying-poſt, note, that the older the hart is, the ſooner he goeth to fray, and the greater is the tree he chooſes to fray upon; it being neceſſary it be ſuch as may not bend.—Now, to ſeek or find out a hart in his haunt, or feeding-place, it is to be obſerved, that he changes his manner of feeding every month.—From the concluſion of the rutting time, which is in November, they feed in heaths, and broomy places.—In December they herd together, and withdraw into the ſtrength of the foreſts, to ſhelter themſelves from the ſeverer weather, feeding on holm-trees, elder-trees, brambles, *&c.* The three following months they leave herding, but keep four or five in a company, and in the corners of the foreſt will feed on the winter-paſture, ſometimes making their excurſions into the neighbouring corn-fields, if they can perceive the blades of wheat, rye, *&c.* appear above-ground.—In April and May they reſt in thickets and ſhady places, ſtirring very little till rutting time, unleſs diſturbed.—The three ſucceeding months they are in their pride of greaſe, and reſort to ſprings, copſes, and corn fields.–In September and October they leave the thickets, and go to rut; during which ſeaſon, they have no certain place either for food or harbour.

Having found out the game, the *hunters* diſcouple and caſt off the dogs; and, ſome on horſeback, others on foot, follow the cry with the utmoſt art, obſervation, and ſpeed; remembering and preventing the ſubtle turning and headings of the hart; ſtanding with dexterity and intrepidity to leap hedge, pales, ditch, *&c.*

The utmoſt addreſs and circumſpection is to be uſed to keep to the beaſt firſt attempted, and to prevent the dogs from purſuing any other: this, in effect, makes one of the principal difficulties and glories of the chace; the beaſt having a hundred devices to put off ſome other head for his own: ſometimes he will ſend forth ſome other little deer in his ſtead into the dogs way, lying cloſe the while himſelf; on which occaſion the huntſman is to ſound a retreat, and break off the dogs, and take in leam, till the game be recovered.

Sometimes he will purpoſely ſeek out for other deer at layer, and rouſe them, to make the *hounds* hunt change, himſelf lying down flat in ſome of their layers upon his belly, to make the hounds over-ſhoot him: add, that they may neither ſcent nor vent him, he will gather up his fore feet under his belly, and blow or breathe on ſome moiſt place of the ground, ſo that the hounds ſhall paſs within a yard, without apprehending him.—He will break into one thicket after another, to find deer, rouſing, gathering them together, and herding with them; and even beating ſome of them into his treads, that he may the more eaſily eſcape.—Finding himſelf ſpent, he will break herd, and fall to doubling and croſſing in ſome hard beaten highway; always running againſt the wind, not only to cool himſelf, but the better to hear the voice of his purſuers.

The laſt refuge of a hart ſorely *hunted*, is the ſoil; keeping the middle, for fear, leſt by touching a bough, or the like, he may give ſcent to the hounds. He always ſwims againſt the ſtream, whence the old rule, 'He that will his chace 'find, let him try up the river, and down the wind.' In taking ſoil, he will ſometimes cover himſelf under water, ſo as to ſhew nothing but his noſe.

Where opportunity of water fails, he will fly into herds of cattle, as cows, ſheep, *&c.* and will ſometimes leap on an ox, cow, or the like, laying the fore part of his body thereon, that ſo touching the earth only with his hinder feet, he may leave a ſmall, or no ſcent behind.—What is further ſtill, the chief huntſman to Lewis XII. relates, that a hart which they were in hard chace of, leaped into a great tall white thorn, which grew in a ſhadowy place, and there ſtood aloft till he was run through by a huntſman, rather than he would ſtir.

The hart being killed, the huntſman with his horn windeth the fall of the beaſt; upon which every one approaches; the ſkilfulleſt opens the beaſt, rewarding the hounds with what properly belongs to them; the huntſman, at the ſame time, dipping bread in the ſkin and blood of the beaſt to give the hounds their full ſatisfaction.

The hart is known to be ſpent by his running ſtiff, high, and lampering; by his mouth being black and dry, without foam on it, and his tongue hanging out; though he will ſometimes cloſe his mouth to deceive the ſpectators: and by his ſlot, for he will ſometimes cloſe his claws together, as if he went at leiſure, and ſtrait again open them wide, making great glidings, and hitting his dew-laps upon the ground, *&c.*

When quite ſpent, and cloſe beſet, or intercepted on all ſides, the hart uſually takes to bay, and makes force with his head againſt the firſt man or dog that cloſes in upon him, unleſs prevented with a ſpear, ſword, or the like.—Hence it is very dangerous going in to a hart at bay, eſpecially at rutting time, for then they are more than ordinarily fierce.

The hart being killed, his death is ſolemnized with great ceremony.—The firſt thing, when the huntſmen come in, is to cry, *Ware haunch*, that the hounds may not break in to the deer: having ſecured this, they cut his throat, and blood the younger hounds, to make them love a deer, and learn to leap at his throat. Then having blown the mort, and all the company being come in, the moſt diſtinguiſhed perſon, who has not taken *ſay* before, takes up the knife, and lays it croſs the belly of the deer (ſome of the aſſiſtants holding by the fore legs, and at the ſame time the huntſman drawing down the pizzle) and thus he draws the knife along the middle of the belly, beginning near the briſket, cutting deep enough to diſcover how fat he is. Then the moſt ſkilful perſon breaks up the deer, by firſt ſlitting the ſkin from the cutting of the throat downward, making the arber, that the ordure may not break forth, and then paunching him, and rewarding the hounds therewith.

Laſtly, the perſon that took the *ſay*, being preſented with a drawn hanger, he is to cut off the head; which done, and the hounds rewarded therewith, the concluding ceremony, if a buck, is a double, if a ſtag, a treble mort blown by one, and a recheat in concert by all that have horns: the whole is then concluded with a general whoo whoop.

Otter HUNTING.–The otter is ſuppoſed by ſome, to be of the caſtor or beaver kind, being, like it, an amphibious creature, and living both in the water, and on land; beſide that the reſemblance in point of ſhape is ſuch, as, were his tail off, he were in all reſpects like the beaver; differing in nothing but habitation, the beaver frequenting both the ſalt water and the freſh, but the otter only the freſh.

Though the otter lives much in the water, he does not breathe like fiſhes, but after the manner of quadrupeds.—He is web-footed, like our water-fowl, and can endure to be under water a long time without reſpiration; and yet in fiſhing he is frequently found to pop up his noſe for breath.–He has an admirable ſmell, whereby ſome ſay he will directly wind a fiſh in the water a mile or two off; and is a moſt pernicious beaſt to a fiſh-pond, his dexterity at diving, and hunting under water, being ſuch, that ſcarce any fiſh can eſcape him: if by painful *hunting* aſhore he cannot fill his belly, he will feed on herbs, ſnails, or frogs: he will ſwim a fiſhing two miles together, always againſt the ſtream, that when his belly is full, the current may carry him down again to his lodging, which is always near the water, and artificially built with boughs, ſprigs, and ſticks, couched together in fine order.

The fleſh of this beaſt is cold and fiſhy, as often feeding on ſtinking fiſh: for which reaſon it is not eaten among us: though among the Germans it is a pretty common food; and the Carthuſian friers, who are forbidden to eat all manner of fleſh beſide, are allowed this. Some in England alſo have, of late, ſaid much in praiſe of otter pye.

The otter is to be hunted by particular dogs, called *otter hounds*; and alſo with ſpecial inſtruments, called *otter ſpears.*—To find him out, ſome are to go on one ſide of the river, and ſome on the other; beating all the way on the banks, with the dogs following.—Thus it is ſoon found if there be an otter in that quarter; for the otter cannot endure long in the water, but muſt come forth to make his ſpraints, and in the night ſometimes to feed on graſs, and other herbs. If the hounds find an otter, look in the ſoft and moiſt places, to learn by the prints, which way he bent his head: if theſe make no diſcovery, it may be partly perceived by the ſpraints.—This done, follow the hounds, and lodge him as a hart or deer.

The otter always endeavours to keep to the water, where he is maſter.—In *hunting* him therefore, you are to be ready with your ſpears, to watch his vents; for that is the chief advantage: if you perceive where he ſwims under water, ſtrive to ſet a ſtand before him, where you expect he will vent, and there endeavour to ſtrike him with the ſpear: if you miſs, purſue him with the hounds; which, if they be good, and well entered, will come chaunting and trailing along the river-ſide, and beat every tree-root, every oſier-bed, and tuft of bulruſhes; nay, ſometimes, they will take the water, and beat it like a ſpaniel; by which means the otter can hardly eſcape.

If the beaſt find himſelf wounded with a ſpear, he uſually makes to land, where he will maintain a furious battle with the dogs.

Roe-buck HUNTING.—The *roe-buck*, the firſt year, is called a *hind.*—The ſecond, a *gyrle.*—The third, a *hemuſe.*—The fourth, a *roe-buck of the firſt head.*—The fifth year, a *fair roe-buck.*

We have no *roe* deer in England; but they abound in Scotland, Germany, Africa, *&c.* And it ſhould ſeem they had been more common among us, our huntſmen ſtill retaining the proper terms for the chace.

They make good chace, ſtand long, and fly end-way.–When a *roe* croſſes and doubles, it is called *trapyning.*

Their ſwiftneſs appears not only on earth, but in waters, through which they cut their way as with oars; whence they love lakes and ſtreams, breaking the floods to come at freſh paſture, feeding on ruſhes, *&c.*

Horns grow only on the male; being ſet with ſix or ſeven branches, not palmed, but branchy, yet ſhorter than fallow deer. After rutting he caſts his head.

They are ſaid never to wink, not even when aſleep; for which conceit their blood is by ſome fanciful people preſcribed to perſons dim-ſighted or purblind.—The tail of this beaſt is leſs and ſhorter than that of a fallow deer, inſomuch that it is queſtioned whether it ought to have that denomination.

They keep moſt in mountains among the rocks; and when *hunted*, Martial tells us, will hang thereon with their horns, to delude the dogs.—They are often taken by counterfeiting their voice, which the huntſman does by the aſſiſtance of a leaf in his mouth.

When *hunted*, they turn much, and often, and will come back on the dogs directly, when they can no longer endure.

They alſo take ſoil, as the hart; and will ſometimes hang by a bough in ſuch a manner, as that nothing ſhall appear but their ſnout.

HURDLES, in fortification, twigs of willows, or oſiers, interwoven cloſe together, ſuſtained by ſtrong ſtakes, and uſually laden with earth.

Hurdles, called alſo *clayes*, ſerve to render batteries firm, to conſolidate the paſſage over muddy ditches, and to cover traverſes, and lodgments, for the defence of the workmen againſt the artificial fires or ſtones that may be caſt upon them. See CLAYES.

HURDLES, in huſbandry, are frames made either of ſplit timber, or of hazel-rods, platted together; to ſerve for gates in incloſures, or to make ſheepfolds, &c.

HURDS, or HARDS *of Flax*, or *Hemp*, the coarſer parts, ſeparated in the dreſſings from the tear or fine ſtuff. See HEMP, and FLAX.

HURLE *Bone*, in a horſe, is a bone near the middle of the buttock; very apt to go out of its ſockets with a ſlip or ſtrain.

HURLERS, a number of large ſtones, ſet in a kind of ſquare figure near St. Clare in Cornwall; ſo called from an odd opinion held by the common people, that they are ſo many men petrified or changed into ſtones, for profaning the ſabbath-day by *hurling* the ball, an exerciſe for which the people of that country have been always famous.

The *hurlers* are oblong, rude, and unhewed.—Many authors ſuppoſe them to have been trophies erected in memory of ſome battle: others take them for boundaries to diſtinguiſh lands. Laſtly, others, with more probability, hold them to have been ſepulcral monuments.

HURTS, in heraldry, by ſome written HEURTS, and by others HUERTS, are azure or blue rundles.

The Engliſh heralds diſtinguiſh between the colours of rundles, and give them different names agreeable thereto: thoſe of other nations content themſelves to call thoſe *torteaux d'azure*; and in other caſes, only add the reſpective colour to the term *torteaux*.

But theſe being blue, ſome will have them to ſignify bruiſes or contuſions in the fleſh, which often turn to that colour; others ſuppoſe them whortle-berries.

HURRICANE, a furious ſtorm of wind, ariſing from a contrariety and oppoſition of ſeveral winds.

Hurricanes are frequent in the Eaſt and Weſt-Indies; making terrible ravages in the iſlands thereof; blowing down houſes, rooting up trees, and even whole woods, &c.

They uſually begin in the north, ſome ſay the weſt, but turn round; and in a little time veer through all points of the compaſs.

It is the cuſtom for the French and Engliſh inhabitants in the Caribbee Iſlands, to ſend every year about June to the native Caribbees of S. Dominico and S. Vincent, to know whether there will be any *hurricanes* that year: and about ten or twelve days before any *hurricane* come, they conſtantly ſend them word.

The prognoſtics thoſe Barbarians go by, are given us by captain Langford, who, in 1697. engaged one of them, by civilities, to reveal them to him.

It is one of their principles, that all *hurricanes* come either on the day of the full, or of the change, or quarter of the moon; each of which is diſcovered by a number of phænomena, in the preceding quarters, as, a turbulent ſky, ſun red, univerſal calm, the ſtars appearing red, noiſes in hollows or cavities of the earth, ſtrong ſmell of the ſea, a ſettled weſterly wind, &c. That author aſſures us, he received this benefit from the information, that whereas *hurricanes* are ſo dreadful, that all ſhips are afraid to put out to ſea while they laſt, and chooſe rather to periſh at anchor in the roads; yet, with good management, he found that a veſſel may lie out at ſea in theſe, as ſafely as in other ſtorms, by taking care the ports be well barred and calked, the topmaſts and tops taken down, the yards a-port laſt, and the doors and windows ſecured.—With theſe precautions that experienced navigator preſerved his veſſel in two great *hurricanes*, and taught others how to do the ſame, by putting out from port, where they would inevitably have periſhed. And from the prognoſtics above, he foretold ſeveral *hurricanes* at land.

He adds, that all *hurricanes* begin from the north, and turn to the weſtward, till arriving at the ſouth-eaſt, their force is ſpent.

The cauſe he ſuggeſts to be the ſun's leaving the zenith of thoſe places, and going back towards the ſouth; and the repelling or bounding back of the wind, occaſioned by the calming of the general trade-wind. *Philoſoph. Tranſact.* N° 246.

HUSBAND, *Maritus*, a man joined, or contracted with a woman, in marriage.

By the laws of England, the wife is ſuppoſed wholly under the dominion of her *huſband*, nor can act or will any thing of herſelf.

In Germany, the power of the *huſband* is not ſo extenſive; even the princes of the empire have not a ſovereign and deſpotic power over their wives and children.—Pagenſtecher, a German lawyer, has a diſſertation to prove, that, by the law of nature, a *huſband* has not a deſpotic power over his wife; and that marriage is not monarchy. He ſtruggles hard to explain that paſſage of St. Paul to the Epheſians, cap. v. ver. 22. conſiſtently with his ſcheme.

J. Philip Palthen, profeſſor of law at Gripſwald, gives us a very learned diſſertation on the *huſband* of a queen, who is not king, *De Marito Reginæ*. He defines him a man married with a princeſs that holds a crown by right of inheritance, but who only contracted marriage with him, on covenant that the marriage ſhould not change his condition, nor give him any command over his wife, or any joint authority with her, nor intitle him to ſucceed to any of her royalties after her deceaſe, without the intervention of ſome further act. Hence he concludes, that in ſuch caſe it is the queen who is really king.

This, however, does not hinder but the *huſband* may be a king elſewhere, and in that quality ſuperior to his wife; for a maiden queen may either marry a ſovereign prince, or a ſubject, and that either of her own realm, or another: of all which caſes he gives inſtances; as, that of Ferdinand and Iſabella, whoſe marriage did not give any authority to the one over the kingdom of Arragon, nor to the other over that of Caſtile; of Joan daughter of Iſabella, and Philip of Auſtria; Philip II. of Spain, and Mary queen of England; the two Joans queens of Naples; Mary queen of Scots, and the dauphin of France; and laſtly, queen Anne, whoſe *huſband* was her ſubject, and who yielded homage to her as a vaſſal, and took an oath of fidelity to her as her miniſter.—M. Palthen proceeds to examine in what kingdoms this may happen; and ſhews, that it cannot be in an elective kingdom, nor in an uſufructuary one; whence he concludes, that we ſhall never ſee it in Poland, France, or Germany; but that there are inſtances of it in all the other monarchies, of any ſtanding in Europe.

He goes on to ſhew, that a queen ought not to marry a king; that it is no violation of the conjugal ſociety, for her *huſband* to be ſubject to her; and finally he anſwers all the difficulties that may be ſtarted with regard thereto, particularly from paſſages of Scripture; as 1 Cor. xiv. 34. Gen. iii. 16. Eph. v. 22. Col. iii. 18, &c.

HUSK, among botaniſts, the part which a flower grows out of.

Of theſe there are ſeveral kinds; as, *bulbous*, or *round huſks*, *bottle huſks*, *middle huſks*, *foot huſks*, *hoſe huſks*, &c. See Supplement, article CALYX.

HUSSARS, HUSSARDS, or HUSSARTS, an order or ſpecies of ſoldiery in Poland, and Hungary, commonly oppoſed to the Ottoman cavalry.

The *huſſars* are horſemen, clothed in tygers and other ſkins, and garniſhed and ſet out with plumes of feathers. Their arms are the ſabre, and bayonet.

They are very reſolute; firm partiſans; but they are better in a haſty expedition, than in a ſet battle.

The emperor and king of France have of theſe *huſſars* in their ſervice.

HUSSITES, a party of reformers, the followers of John Huſs.

John Huſs, from whom the *Huſſites* take their name, was born in a little village in Bohemia, called *Huſs*.—He fell into the ſentiments of Wickliff, and the Waldenſes; and in the year 1407. began openly to oppoſe and preach againſt divers errors in doctrine, as well as corruptions in point of diſcipline, then reigning in the church.

He was condemned with Jerom of Prague by the council of Conſtance, and burnt, in the year 1415. but his diſciples ſtill ſtuck to his doctrines.—Joh. Ziſca, being put at their head in Bohemia, maintained a war a long time againſt the emperor Sigiſmund, with great ſucceſs. And Procopius Holy, another of their leaders, afterwards conducted them with equal courage.

The *Huſſites* ſpread over all Bohemia and Hungary, and even Sileſia and Poland; and there are ſome remains of them ſtill ſubſiſting in all thoſe parts.

HUSTINGS, HUSTINGUM, a court of common pleas held before the lord mayor and aldermen of London, in Guildhall.

Of the great antiquity of this court we find this mention in the laws of king Edward the Confeſſor.—*Debet etiam in*

London, *quæ eſt caput regni & legum, ſemper curia domini regis ſingulis ſeptimanis, die lunæ,* huſtingis *ſedere & teneri: fundata erat olim & ædificata ad inſtar, & ad modum, & in memoriam veteris magnæ Trojæ; & uſque in hodiernum diem, leges, & jura, & dignitates, & libertates, regiaſque conſuetudines ſuas una ſemper inviolabilitate conſervat.* Taylor, *Hiſt. of Gavel-kind.*

The court of *huſtings* is the principal and higheſt of all the courts of the city.—Error or attaint lies there of a judgment or falſe verdict in the ſheriffs courts.

Other cities and towns had alſo courts of the ſame name, as Wincheſter, Lincoln, York, *&c.*

HUT, or **Hutt**, from the Saxon, hutte, a ſmall cottage, or hovel.

The word is alſo uſed for the ſoldiers lodges in the field; otherwiſe called *baracks*, or *caſerns.* See Barack.

HUXING *of Pike*, among fiſhermen, a particular method of catching that fiſh.

For this purpoſe, they take thirty or forty as large bladders as can be got; blow them up, and tie them cloſe and ſtrong; and at the mouth of each, tie a line, longer or ſhorter, according to the depth of the water. At the end of the line is faſtened an armed hook, artfully baited; and thus they are put into the water with the advantage of the wind, that they may gently move up and down the pond.

When a maſter pike has ſtruck himſelf, it affords a deal of entertainment to ſee him bounce about in the water with a bladder faſtened to him; at laſt, when they perceive him almoſt ſpent, they take him up.

HYACINTH, or **Jacinth**, in natural hiſtory, a precious ſtone; originally thus called from its reſemblance of the purple flower named *hyacinth.*

Though this, it has been obſerved, holds of the antient, rather than the modern *hyacinth*, the modern kind being uſually of a deep reddiſh yellow, approaching to a flame-colour, or that of the deepeſt amber. The antient ſeems to have been a different ſtone, of a purple colour tending to blue.

There are four ſorts of *hyacinths* among our jewellers: thoſe intermixed with a vermilion colour; thoſe of a ſaffron colour; thoſe of an amber colour; and, laſtly, thoſe of a white, intermixed with a ſlight red.

Hyacinths, again, are diſtinguiſhed into *oriental* and *occidental.* The *oriental* come from Calicut and Cambaya, and are equal in hardneſs to the oriental amethyſt.—The *occidental* are found in Bohemia and Portugal, which are a degree ſofter.

The ſtone graves or cuts fine, and would be more uſed for ſeals, *&c.* but that the graving frequently coſts more than the ſtone.

The antients uſed it for amulets and taliſmans; and bore it about their necks, or ſet in rings, *&c.* ſuppoſing it to have the virtue of ſecuring them from the plague, *&c.*

The *hyacinth* uſed in medicine, and whereof the confection of *hyacinth* is made, is a different ſtone from all theſe, of which there are three ſeveral ſorts: the firſt about the bigneſs and figure of a grain of ſalt, and pretty ſoft: the ſecond ruddy, and ſhaped like the point of a diamond, found in divers parts of Italy, Sileſia, Bohemia, *&c.* The third is white, intermixed with yellow, and ſome other colours; being found in the ſame places as the red.

In ſtrictneſs, only the firſt kind ſhould be uſed in the confection of *hyacinth*; but the druggiſts and apothecaries frequently ſubſtitute the other. See Supplement, article Hyacinth.

Confection of **Hyacinth**, is a thin cordial electuary, compoſed of divers kinds of precious ſtones; particularly of that whoſe denomination it bears, with certain earths, ſeeds, roots, coral, hartſhorn, and divers other ingredients, well mixed, and ground together.

HYACINTHIA, in antiquity, feaſts held at Sparta, in honour of Apollo, and in commemoration of his favourite Hyacinth.

This Hyacinth was the ſon of Amyclas, king of Sparta, and was beloved both by Apollo and Zephyrus. The youth ſhewing moſt inclination to the former, his rival grew jealous; and, to be revenged, one day, as Apollo was playing at the diſcus, *i. e.* quoits, with Hyacinth, Zephyrus turned the direction of a quoit which Apollo had pitched, full upon the head of the unhappy Hyacinth, who fell down dead. Apollo then transformed him into a flower of the ſame name: and, as a farther token of reſpect, they ſay, commanded this feaſt. The *hyacinthia* laſted three days; the firſt and third whereof were employed in bewailing the death of Hyacinth, and the ſecond in feaſting and rejoicing.

The perſons who aſſiſted at the ceremony were crowned with ivy; by reaſon, ſays Voſſius, *De Idolol.* Lib. II. c. 14. that Bacchus and Apollo were the ſame perſon.

HYBRISTICA, in antiquity, a ſolemn feaſt, held among the Greeks, with ſacrifices, and other ceremonies; whereat the men attended in the apparel of women, and the women in that of men, to do honour to Venus in quality either of a god, or a goddeſs, or both.

Or, according to the account given by others, the *hybriſtica* was a feaſt celebrated at Argos, wherein the women, being dreſſed like men, inſulted their huſbands, and treated them with all marks of ſuperiority, in memory of the Argian dames having antiently defended their country with ſingular courage againſt Cleomenes and Demaratus.

Plutarch ſpeaks of this feaſt in his treatiſe of the great actions of women.—The name, he obſerves, ſignifies *infamy*; which is well accomodated to the occaſion, wherein the women ſtrutted it about in mens cloaths, while the men were obliged to dangle in petticoats.

HYADES *, in aſtronomy, are ſeven ſtars in the bull's head, famous among the poets for the bringing of rain.

* Whence their name, Ὑάδες, from the Greek, *ὕειν, pluere*, to rain.

The principal of them is in the bull's left eye, by the Arabs called *Aldebaran.* Their longitudes, latitudes, *&c.* ſee among thoſe of the other ſtars in the conſtellation Taurus.

The poets feign them to have been the daughters of Atlas and Pleione. Their brother Hyas being torn in pieces by a lioneſs, they wept his death with ſuch vehemence, that the gods, in compaſſion to them, tranſlated them into heaven, and placed them in the bull's forehead; where, as they ſay, they continue to weep: this conſtellation being ſuppoſed to preſage rain.

Others repreſent the *Hyades* as Bacchus's nurſes, and the ſame with the *Dodonides*, who fearing the reſentment of Juno, and flying from the cruelty of king Lycurgus, were tranſlated by Jupiter into heaven.

HYDATIS, ΥΔΑΤΙΣ, in medicine, a diſeaſe of the eyes; being a fatty ſubſtance, growing under the ſkin of the upper eye-lid; by which the whole eye-lid, in children, is ſometimes rendered œdematous.

Hydatis is alſo uſed among the modern phyſicians, for a little bladder of water, occaſionally found in divers parts of the body.

HYDATIDES *, in medicine, are little tranſparent bags or bladders full of water, frequently found in divers parts of the body.

* The word is formed of the Greek, ὕδορ, water, which in the genitive caſe, gives ὕδατος, whence ὑδατις, hydatis.

Hydatides are moſt common in dropſical perſons, and are ſuppoſed to ariſe from a diſtention and rupture of the lymphe-ducts; being found chiefly in the parts abounding in thoſe veſſels, as the liver, lungs, *&c.*—They are alſo ſometimes found in icterical caſes. See Dropsy, Jaundice, *&c.*

We have inſtances of *hydatides* voided both by ſtool, by urine, and by vomiting.—They are of all ſizes, from a pin's head to that of a pullet's egg.

HYDATOIDES *, ΥΔΑΤΟΕΙΔΗΣ, a name ſome authors give to the aqueous humour of the eye, incloſed between the cornea and uvea.

* The word is compoſed of ὕδορ, ὕδατος, water, and εἶδος, form, reſemblance. See Eye.

HYDATOSCOPIA *, called alſo **Hydromancy**, a kind of divination, or method of foretelling future events, by means of water.

* The word is compounded of ὕδατος, the genitive of ὕδωρ, water, and σκοπεω, I view, I conſider.

There is a natural or allowable kind of *hydatoſcopia:* it conſiſts in foretellings ſtorms, tempeſts, hurricanes, *&c.* from natural ſigns or indications in the ſea, air, clouds, *&c.*

HYDE *of Land.* See the article Hide.

HYDE-*gild.* See the article Hide-*gild.*

HYDRA, a ſouthern conſtellation, conſiſting of twenty-ſix ſtars, imagined to repreſent a water-ſerpent.

The ſtars in *hydra*, in Ptolemy's catalogue, are twenty-five; in Dr. Halley's ſixty-eight; the longitudes, latitudes, *&c.* whereof are as follow.

Names and Situations of the Stars.	Sign.	Longit.			Latitude.			Mag.
		°	′	″	°	′	″	
	♌	5	32	11	22	29	15	4 3
[head		9	17	52	25	46	6	6
North of thoſe preceding in the		5	59	3	12	25	37	4
South of thoſe preceding againſt		6	53	14	14	38	5	5
[the noſtrils		11	58	2	29	44	42	6
5.								
In the aperture of the mouth.		7	59	12	14	17	10	4
		7	47	49	11	58	23	5
North of two in the forehead.		8	1	52	11	7	59	4
South. in the forehead.		8	35	4	11	35	0	5
		11	31	6	20	26	5	5 6
10								
		13	15	41	23	50	45	6
In the hind part of the head		10	15	18	11	0	3	4
		14	31	58	24	18	44	6
Preceding of two in root of the		13	4	5	11	3	45	6
[neck		18	8	22	23	53	9	6

Tab. Hydraulicks & Hydroſtaticks

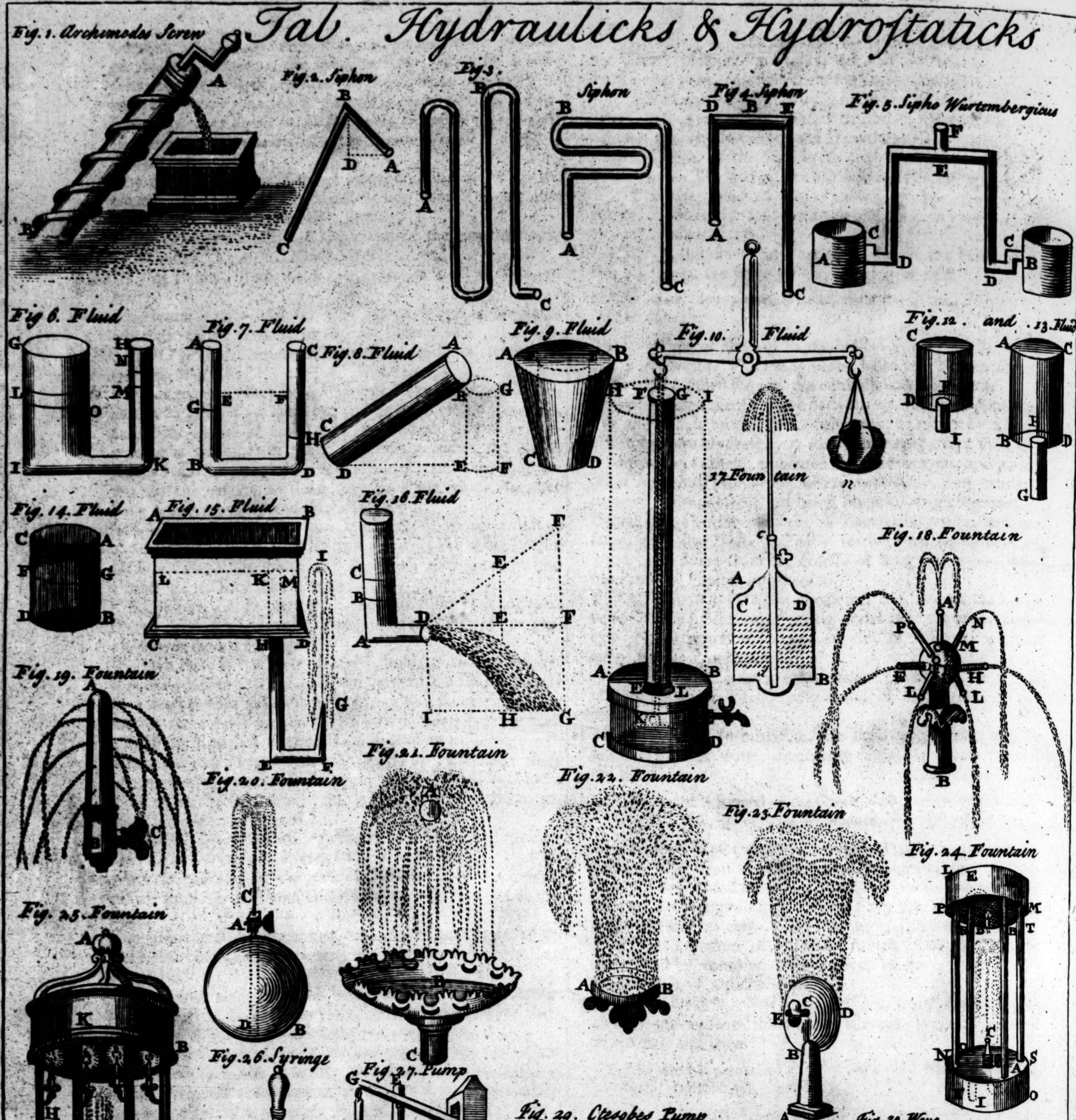
Fig. 1. Archimedes Screw
Fig. 2. Siphon
Fig. 3.
Siphon
Fig. 4. Siphon
Fig. 5. Sipho Wurtembergicus
Fig. 6. Fluid
Fig. 7. Fluid
Fig. 8. Fluid
Fig. 9. Fluid
Fig. 10. Fluid
Fig. 12. and 13. Fluid
Fig. 14. Fluid
Fig. 15. Fluid
Fig. 16. Fluid
17 Fountain
Fig. 18. Fountain
Fig. 19. Fountain
Fig. 20. Fountain
Fig. 21. Fountain
Fig. 22. Fountain
Fig. 23. Fountain
Fig. 24. Fountain
Fig. 25. Fountain
Fig. 26. Syringe
Fig. 27. Pump
Fig. 29. Ctesibes Pump
Fig. 30. Wave
Fig. 32. Wave
Fig. 33. Wave
Fig. 31. Wave
Fig. 28 Pump forcing
Fig. 32. Hydromantic
Fig. 34. Hydro-statical Ballance
Fig. 31. Hydromantic
Fig. 34. River

N°. XI. a.

	Names and Situation of the Stars.	Signs.	Longitude			Latitude			Magnit.
			°	′	″	°	′	″	
15		♌	18	26	1	24	0	29	6
			18	34	32	22	11	31	6
	Subſequent in the root of the neck		15	57	4	13	2	47	4
			19	23	26	21	8	10	6
			20	14	28	23	23	33	6
20			22	12	42	26	11	13	6
			21	29	56	23	50	49	6
	Small one over the heart		21	9	15	19	15	8	6
			23	4	56	22	57	49	6
			22	57	59	22	24	32	2
25	Middle of three in bending of the neck		21	15	42	16	44	1	5
	South.		21	25	41	15	0	3	5
			23	42	29	19	15	1	7
			25	49	39	22	15	0	7
	Laſt of three in bending of the neck		23	19	19	14	18	17	4
30			26	53	18	23	6	24	6
	That following the heart		28	21	17	26	37	6	5
	That following this	♍	1	23	33	26	5	14	4
		♌	28	57	20	19	43	16	7
	That, again, following this to the North.	♍	4	1	45	23	11	31	5
35			3	22	9	18	24	47	6
			5	7	52	22	29	43	7
	Another behind this and more North.		5	4	10	22	1	2	4
			3	33	37	18	20	37	6
			5	3	1	17	24	10	7
40	Preceding of three following theſe as in a right line		10	44	50	24	40	10	4
			12	22	47	24	8	24	5
			15	52	28	30	11	53	7
			12	58	27	23	14	2	7
	Middle of three in the right line		13	45	56	23	29	50	5
45	Small one following this		15	54	24	23	4	24	6
	Laſt of three in the right line		16	3	39	21	49	28	4
			17	26	16	23	45	3	7
	Contiguous to bottom of the cup		18	44	33	24	59	42	6
	South. beneath baſe of the cup		25	1	40	30	16	31	5
50			26	14	11	30	41	12	6
	North. beneath baſe of the cup		24	15	35	25	37	33	4
	In △ againſt the laſt and ſouth bend of the tail { Preceding	♎	3	37	39	31	35	14	3 4
	South		6	47	40	33	26	12	4
	Laſt		9	4	42	31	27	56	4
55	Antepenultimate of the tail	♎	20	32	8	14	33	15	5 6
	Laſt but one of tail behind Corvus		22	42	30	13	43	18	3
		♏	1	59	34	12	2	6	6
	In the extremity of the tail		4	18	31	13	0	37	4
			5	52	38	13	4	11	6
60			8	20	0	12	54	21	5
			9	55	55	14	2	26	5
	Informes following Hydra's tail, between Libra, Centaurus, and Lupus		12	28	42	8	57	4	5 6
			12	49	10	9	1	56	6
			13	1	49	9	26	50	6
65			14	8	58	11	3	9	5
			15	52	1	10	13	50	6 7
			16	43	19	10	23	52	6 7

HYDRAGOGUES*, ῾ΥΔΡΑΓΩΓΑ, a ſpecies of purgative medicines; being ſuch as are ſuppoſed peculiarly fitted to diſcharge ſerous, or watry humours.

* The word is formed of ὑδωρ, water; and αγειν, to draw, to lead.

The ſtrongeſt cathartics, Dr. Quincy obſerves, chiefly anſwer to the character of *hydragogues*; in that by their forcibly ſhaking and vellicating the bowels, and their appendages, they ſqueeze out water enough to make the ſtools appear little elſe.

The principal *hydragogues*, in the common opinion, are the juices of the root of iris, of ſoldanella, mechoacan, jalap, *&c.* In the general, all ſudorific, aperitive, and diuretic medicines, are truly *hydragogues*.

HYDRARGYRUM*, ῾ΥΔΡΑΡΓΥΡΟΝ, a name given to mercury, or quickſilver. See MERCURY.

* The word is Greek, formed of ὑδωρ, *aqua*, water; and αργυρος, *argentum*, ſilver; *q. d.* water of ſilver, by reaſon of its reſembling liquid, or melted ſilver.

HYDRAULICS*, that part of ſtatics which conſiders the motion of fluids, and particularly water; with the application thereof in artificial water-works.

* The word is derived from the Greek, ὑδραυλος, ſounding water, formed of ὑδωρ, *aqua*, water; and αυλος, *tibia*, pipe or flute; the reaſon whereof is this; that at the time of the firſt invention of organs, being unacquainted with the method of applying bellows to blow them, they made uſe of a cataract or fall of water to make a wind, and ſound them.

To *hydraulics* belong not only the conducting and raiſing of water, with the conſtructing of engines for thoſe purpoſes; but alſo the laws of the motion of fluid bodies.

Hydroſtatics explain the æquilibrium of fluids, or the gravitation of fluids at reſt: upon removing that æquilibrium, motion enſues; and here *hydraulics* commence.

Hydraulics, therefore, ſuppoſe hydroſtatics; and the generality of writers, from the immediate relation between the two, join them together, and call them both either *hydraulics*, or *hydroſtatics*.

The laws of *hydraulics* the reader will find under the article FLUID.

The art of raiſing waters; with the ſeveral machines employed for that purpoſe, as *ſiphons*, *pumps*, *ſyringes*, *fountains*, *jets d'eau*, *fire-engines*, &c. are deſcribed under their proper articles, SIPHON, PUMP, SYRINGE, FOUNTAIN, HYDROCANISTERIUM, *&c.*

The principal writers who have cultivated and improved *hydraulics*, are Jo. Ceva, in his *Geometria Motus*: Jo. Bap. Balianus, *De Motu Naturali Gravium, Solidorum & Liquidorum*: Mariotte, in his *Mouvement des Eaux & autres Fluides*: D. Guglielmini, in his *Menſura Aquarum Fluentium*, where the higher laws of *hydraulics* are reduced to practice: Sir Iſaac Newton, in his *Phil. Nat. Princ. Mathemat.* and Varignon, in the *Memoirs of the Royal Academy of Sciences*.

As to *hydraulic* machines, Hero of Alexandria is the firſt who has written thereon. Of the moderns, the principal are, Solomon de Caux, in a French treatiſe of *Machines, and chiefly hydraulic ones*: Caſp. Scottus, in his *Mechanica Hydraulico-pneumatica*: De Chales, in his *Mundus Mathematicus*: Boecler, in his *Architectura Curioſa*: and Luc. Antonius Portius.

HYDRAULO-PNEUMATICAL, a compound term, applied, by ſome authors, to ſuch engines as raiſe water by means of the ſpring of the air. See AIR, WATER, and ENGINE.

Mr. Boyle mentions a very pretty fountain, which he calls *hydraulo-pneumatical*; made by the ſpring of the air preſſing up water in a pipe, upon the air's being exhauſted out of a receiver, and thus the weight of the atmoſphere taken off. See FOUNTAIN.

HYDRELÆON*, ῾ΥΔΡΕΛΑΙΟΝ, in pharmacy, a mixture of common oil and water.

* The word is a compound of the Greek ὑδωρ, *aqua*, water; and ελαιον, *oleum*, oil.

The *Hydrelæon* was taken internally, to excite vomiting; externally, it is anodyne, and promotes ſuppuration.

HYDRENTEROCELE*, ῾ΥΔΡΕΝΤΕΡΟΚΗΛΗ, in medicine, an hernia, or tumour, occaſioned by a deſcent of the inteſtines, and water along with them, into the ſcrotum. See HERNIA.

* The word is compounded of ὑδωρ, water; εντερον, inteſtine; and κηλη, tumour.

HYDROCANISTERIUM, a fire-engine; or a machine which ſpouts water plentifully, and with force; uſed to be applied to the extinguiſhing of fires, and conflagrations of houſes, *&c.*

We have various contrivances to this effect.—The firſt, and which is, as it were, the baſis of all the reſt, is a pump incloſed in a ciſtula or wooden vehicle filled with water, and mounted on wheels; the pump being wrought with long levers which come out of the ciſtula; and the water it raiſes directed to the place by means of a jointed tube.

The Dutch and others uſe a long flexible tube of leather, ſail-cloth, or the like, which they carry or conduct in the hand from one room to another, as occaſion requires; ſo that the engine may be applied where the fire is only withinſide, and does not burſt out to expoſe it to its external action.

To improve on this original fire-engine, they have ſince contrived to make it yield a continued ſtream; by ſubſtituting a forcing or preſſing pump in lieu of the ſucking pump. See *Forcing* PUMP.

HYDROCELE*, ῾ΥΔΡΟΚΗΛΗ, in medicine, a ſwelling or bloating of the outer integument or ſkin of the ſcrotum, occaſioned by watry humours detained therein.

* The word is formed of the Greek, ὑδωρ, water; and κηλη, tumour.

The *hydrocele* is diſtinguiſhed from an hernia, in that the firſt is formed by ſlow degrees, and the latter all at once.

Youth is moſt expoſed to the *hydrocele*.—It is remedied by drying medicines; or by letting out the water with a lancet, a ſeton, or the like.—But theſe only amount to a palliative cure: to go to the bottom of the diſeaſe, recourſe muſt be had to cauteries.

HYDROCEPHALUS*, ῾ΥΔΡΟΚΕΦΑΛΟΣ, in medicine, a watry head, or dropſy in the head.

* The word is Greek, formed of ὑδωρ, water; and κεφαλη, *caput*, head.

The *hydrocephalus* is a congeſtion of water in the head, ſo as to diſtend and render it ſoft.

There are three kinds of *hydrocephali*. The firſt, when the water is gathered between the ſkull and the ſkin: the ſecond, when between the ſkull and the brain: and the third, when the water is collected in the ventricles of the brain.

Children are more liable to *hydracephali*, than adults; by reaſon their head is ſoft, and has been much compreſſed in the womb; or, perhaps, by their having been too roughly handled by the midwife.—Add, that the bones of childrens heads being very ſoft, and their ſutures not yet exactly cloſed, they eaſily open, and give way to an influx of water from without; whereas, in adults, the bones of the cranium are very hard, and cloſely bound together.

The internal *hydrocephalus* is a diſeaſe very difficult to cure. —There is no remedy but ſevere bliſtering on the ſutures.— It ſometimes ends in mortal convulſions, and ſometimes in lethargies, or apoplexies

The head, in this caſe, is ſometimes extended to a prodigious bulk, ſo that the perſon cannot bear or ſuſtain it. Of this we have an extraordinary inſtance given us by Dr. Friend, of a girl two years old, whoſe head was 26 inches in circumference. *Philoſoph. Tranſact.* N° 318. See Supplement, article HYDROCEPHALUS.

HYDROGRAPHICAL *Maps*, more uſually called *ſea charts*, are projections of ſome part of the ſea, in plano, for the uſe of navigation.

In theſe are laid down all the rhumbs, or points, of the compaſs, the meridians, parallels, *&c.* with the coaſts, capes, iſlands, rocks, ſholes, ſhallows, *&c.* in their proper places, proportions, *&c.*

Chriſtopher Columbus, the firſt great diſcoverer of America, was a man that earned his living by making and ſelling *hydrographical maps.* He happened to be heir to the memoirs, or journals, of a noted pilot, one Alonzo Sanchez de Huelva, captain of a ſhip, who, by chance, had been driven by a ſtorm to the iſland of S. Domingo, and died at Columbus's houſe ſoon after his return. This gave Columbus the firſt hint to attempt a diſcovery of the Weſt-Indies, in which he ſucceeded.

For the conſtruction of the ſeveral kinds of *hydrographical maps*, ſee CHART.

For their uſes, ſee the article SAILING.

HYDROGRAPHY *, that part of geography which conſiders the ſea; principally, as it is navigable.

* The word is compounded of the Greek ὕδωρ, *aqua*, water; and γραφω, *ſcribo*, *deſcribo*, I write, deſcribe.

Hydrography teaches how to deſcribe and meaſure the ſea; it gives an account of its tides, counter-tides, currents, ſoundings, bays, gulphs, *&c.* as alſo of its rocks, ſhelves, ſands, ſhallows, promontories, harbours, diſtances, *&c.* from port to port; with all that is remarkable, either out at ſea, or on the coaſt.

Some of the beſt authors uſe the term in a more extenſive ſenſe; ſo as to denote the ſame with *navigation.*

In this ſenſe *hydrography* includes the doctrine of ſailing; the art of making ſea charts, with the uſes thereof; and every thing neceſſary to be known, in order to the ſafeſt and moſt expeditious performance of a voyage. See SAILING.

Hydrography is the moſt perfect of all the mathematical ſciences; there being ſcarce any thing wanting to its perfection, but the diſcovery of the longitude.

The Jeſuits Ricciolus, Fournier, and de Chales, are the principal writers on the ſubject of *hydrography.*

In France they have profeſſors of *hydrography* eſtabliſhed in all their ſea-ports, who are to inſtruct the youth intended for the ſea, in all the parts of navigation, ſailing, ſteering, *&c.* with the ſeveral branches of mathematics neceſſary thereto; as arithmetic, and the doctrine of the ſphere, and trigonometry.

They are royal profeſſors, and teach gratis; having ſalaries allowed them by the king. They are alſo charged with the examination of pilots, *&c.*

HYDROMANCY *, ‘ΥΔΡΟΜΑΝΤΕΙΑ, the act, or art, of divining, or foretelling, future events, by means of water.

* The word is Greek, compoſed of ὑδωρ, water; and μαντεια, divination.

Hydromancy is one of the four general kinds of divination: the other three, reſpecting the other elements; *viz.* fire, air, and earth; are denominated *pyromancy*, *aeromancy*, and *geomancy.*

Varro mentions the Perſians as the firſt inventors of *hydromancy*, adding, that Numa Pompilius, and Pythagoras, made uſe thereof.

The writers in optics furniſh us with divers *hydromantic* machines, veſſels, *&c.*

To conſtruct an *hydromantic* machine, by means whereof an image, or object, ſhall be removed out of the ſight of the ſpectator, and reſtored again, at pleaſure, without altering the poſition, either of the one or the other.—Provide two veſſels, A B F, C G L K (*Tab. Hydraulics*, *fig.* 31.); the uppermoſt filled with water, and ſuſtained by three little pillars, one whereof, B C, is hollow, and furniſhed with a cock B. Let the lower veſſel C L be divided by a partition H I, into two parts; the lower whereof may be opened, or cloſed, by means of a cock at P.

Upon the partition place an image, which the ſpectator in O cannot ſee, by a direct ray G L.

If now the cock B be opened, the water deſcending into the cavity C I, the ray G L will be refracted from the perpendicular G R to O; ſo that the ſpectator will now ſee the image by the refracted ray O G.—And again, ſhutting the cock B, and opening the other P, the water will deſcend into the lower cavity H L; whence, the refraction ceaſing, no rays will now come from the object to the eye.—But, ſhutting the cock P again, and opening the other B, the water will fill the cavity again, and bring the object in ſight of O afreſh.

To make an *hydromantic* veſſel, which ſhall exhibit the images of external objects. as if ſwimming in water.—Provide a cylindrical veſſel A B C D (*Tab. Hydraulics*, *fig.* 32.) divided into two cavities by a glaſs E F, not perfectly poliſhed: in G apply a lens convex on both ſides; and in H incline a plain mirror, of an elliptic figure, under an angle of 45°; and let I H and H G be ſomething leſs than the diſtance of the focus of the lens G; ſo that the place of the images of an object radiating through the ſame may fall within the cavity of the upper veſſel.—Let the inner cavity be blackened, and the upper filled with clear water.

If, now, the veſſel be diſpoſed in a dark place, ſo as the lens be turned towards an object illuminated by the ſun, its image will be ſeen as ſwimming in the water.

HYDROMEL *, ‘ΥΔΡΟΜΕΛΙ, a drink made of water and honey; called alſo, by the Greeks, μελικρατον.

* The word is compoſed of ὑδωρ, water; and μελι, *mel*, honey.

Hydromel is honey, diluted with a ſufficient quantity of water, and fermented by a long and gentle heat.

Under the claſs of *hydromels* come our mead, and metheglin.

Hydromel is either *ſimple*, called alſo *aqueous*, where honey and water are the only ingredients, which may be prepared at any time; or *compound*, when other drugs are added to improve and exalt the flavour and virtues.

It is particularly called *vinous hydromel*, when it equals the ſtrength of wine; which it is brought to do, not only by the great quantity of honey uſed in it, but alſo by its long coction, inſolation, *&c.* This is only to be made in the heat of ſummer.

Vinous hydromel (the ſame with what we uſually call *mead*, &c.) is made of rain-water, and the beſt honey, boiled together, and ſcummed, from time to time, till they become of a conſiſtence to ſuſtain an egg. This done, the liquor is expoſed to the ſun for forty days, to diſpoſe it to ferment; then adding ſome Spaniſh wine, and keeping it two or three months, it acquires a flavour ſcarce inferior to malmſey.— It fuddles readily; and the drunken fit from it holds longer than that produced by wines, by reaſon of its more viſcid conſiſtence.

Hydromel is the common drink of the Poles and Ruſſians. Diodorus Siculus, *lib.* v. and Ariſtotle, relate, that the Celtiberi, and Taulantii, antient people of Illyria, drank *hydromel*, inſtead of wine.

HYDROMETER *, an inſtrument wherewith to meaſure the gravity, denſity, velocity, force, or other properties, of water.

* The word is compounded of the Greek ὑδωρ, water; and μετρον, meaſure.

That wherewith the ſpecific gravity of water is determined, is more uſually called an *aræometer*, or *water-poiſe.* See ARÆOMETER, and WATER-*poiſe.*

HYDROMETRIA, HYDROMETRY, the menſuration of water, and other fluid bodies, their gravity, force, velocity, quantity, *&c.*

Hydrometria includes both hydroſtatics, and hydraulics.

The term is modern, but very little in uſe.—The firſt inſtance where we meet with it is, in the year 1694. when a new chair, or profeſſorſhip, of *hydrometry*, was founded in the univerſity of Boulogna, in favour of S. Guglielmini, who had carried the doctrine of running waters, with reſpect to rivers, canals, dykes, bridges, *&c.* to an unuſual length.

HYDROMPHALUS *, ‘ΥΡΔΟΜΦΑΛΟΣ, in medicine, a tumour in the navel, ariſing from a collection of water.

* The word is formed of the Greek ὑδωρ, water; and ομφαλος, *umbilicus*, navel.

The *hydromphalus* is diſtinguiſhed from other tumours of the navel, by its being very ſoft, and yet not tractable and obedient to the touch, ſo as to diminiſh, or enlarge, by compreſſing it. When viewed, placed between the eye and the light, it is found tranſparent.

The *hydromphalus* is to be diſcuſſed by emollient and reſolutive medicines. It is alſo cured by a puncture made in the middle of the navel.

HYDROMYSTES *, or HYDROMYSTA, a name antiently given to certain officers in the Greek church; whoſe buſineſs was to make the holy water, and ſprinkle it on the people. See *Holy* WATER.

* The word is compounded of ὑδωρ, *aqua*, water; and μυστης, a perſon ſet apart for the offices of religion.

HYDROPARASTATÆ*, or HYDROPARASTÆ, a ſect of heretics, the followers of Tatian: called alſo *Encratitæ*, *Apotactitæ*, *Saccophori*, *Severiani*, and *Aquarians*.

* The word is formed of the Greek, ὕδωρ, water; and παρίστημι, I preſent, I offer.

The *Hydroparaſtatæ* were a branch of Manichees, whoſe diſtinguiſhing tenet was, that water ſhould be uſed in the euchariſt inſtead of wine.

HYDROPHOBIA*, ʽΥΔΡΟΦΟΒΙΑ, in medicine, an averſion or dread of water; a ſymptom ariſing in perſons bitten by a mad dog, or other beaſt made mad by the bite of that creature.

* The word is Greek, compounded of ὕδωρ, water; and φοβος, *timor*, fear.

Though the term *hydrophobia* do, in ſtrictneſs, only denote this one ſymptom; yet it is frequently applied to the whole diſeaſe conſequent on ſuch a bite, with all its ſymptoms.

The hiſtory of this horrible diſeaſe, as given by Celius Aurelianus, Dr. Mead, Etmuller, Liſter, *&c.* is as follows:—The bite of a mad dog is attended with this ſurpriſing circumſtance, that its effects frequently do not diſcover themſelves till after the cauſe is forgot; the wound itſelf cloſing and healing like any other common wound. But, ſome time after, direful ſymptoms enſue: uſually they commence in about forty days; ſometimes in ſixty; ſometimes not till ſix months; and ſometimes not till a year, or even two years. The firſt thing obſerved, is a wandering pain throughout the whole body, but chiefly about the wounded part; the patient grows anxious and melancholy, and very prone to anger; complaining of every thing, as the ambient air, the heavineſs of his bed-cloaths, *&c.* He vomits; his pulſe intermits, and ſomewhat of a tremor is obſerved, with convulſions of the nerves and tendons: along with theſe he feels an inward heat and thirſt: at laſt the grand ſymptom appears, which denominates the diſeaſe; *viz.* the *aquæ pavor*, or dread of water, ſo that he cannot bear ſo much as the ſight of any liquid, without the utmoſt conſternation; much leſs can he ſwallow the ſmalleſt drop. This is the pathognomonic ſign of the diſeaſe's being come to its height; and never happens till two or three days before the patient's death; the diſeaſe being then, by the unanimous conſent both of antient and modern phyſicians, abſolutely incurable.

With this there are other concomitant ſymptoms.—He foams at the mouth, his eyes ſtare, he cannot ſwallow his ſpittle without pain; and his penis is conſtantly erected: ſome bark and ſnarl like dogs; and actually fanſy themſelves transformed into thoſe creatures; and, in the height of their madneſs, are ready to fly upon, and tear to pieces, the byſtanders.—Palmarius obſerves, that the *hydrophobous* patient cannot bear to look in a glaſs, or any tranſparent body: and adds, that he never recovers, unleſs he knows himſelf in a glaſs; this being a ſign, that the poiſon has not laid hold of the vital parts.

An abſolute bite or wound is not at all neceſſary to produce this terrible diſeaſe; the ſaliva of a mad dog, *&c.* being able to convey the diſeaſe by mere contact, or application to the ſkin.—Thus we have an inſtance in the *Philoſophical Tranſactions*, of two men catching the diſeaſe by putting their fingers in the mouth of a puppy, that had been bit by its mad dam, and feeling its tongue and throat: and the like inſtance we have, in the ſame work, of two children in Ireland, who, by touching and handling the head of a dog that had been bit by a mad dog, and waſhing the wound, cured the dog, but caught the diſeaſe themſelves, though not bitten.

For the nature and cauſe of the *hydrophobia*;—Dr. Mead, from ſeveral hiſtories of particular caſes, concludes, that it is the effect of a particular kind of inflammation of the blood, accompanied with ſo great a tenſion and drineſs of the nervous membranes, and ſuch an elaſticity and force of the fluid with which they are filled, that the moſt common repreſentations are made to the mind with too great effect; ſo that the uſual impreſſions on the organs cannot be ſuffered.—Hence that timorouſneſs, unaccountable anxiety, and diſquietude, which are always the forerunners of the dread of liquids; as alſo, the pain often felt in making of water; and the ſtrange averſions ſometimes found in patients at the ſight of any thing white, the retina being hurt and grieved by the lively impreſſions of that colour thereon.—Nor is it hard to conceive, that when the ſaliva is hot, and the throat inflamed and dry, the ſwallowing of drink ſhould cauſe ſuch an intolerable agony.

M. Tauvry, from a nice diſſection and examen of the parts of a perſon dead hereof, conjectures, that the ſaliva and bile are the fluids firſt infected; and that the patient vomiting a mixture hereof, the throat becomes excoriated thereby; and hence that horror for all foods; and particularly for fluids, in regard theſe diſſolve thoſe grievous ſalts contained in the ſaliva and bile. He adds, that the nature of the poiſon is ſuch, as diſſolves the balſamic and nutritious part of the blood, whence the veins are dried up, ſo as not eaſily to admit any blood from the arteries; and the arterial blood by this means ſuſtaining the action and impreſſion of its veſſels for ſo long a time, is ſtill further diſſolved, attenuated, and ſpiritualized; and thus ſent, in too great quantity, and with too great rapidity, to the brain; whence thoſe convulſions, diſtractions, *&c.*

Dr. Liſter, from the remarkable hiſtory of J. Corton, whom he attended under this diſeaſe, concludes, 1°, That ſome of the organic parts of his body were actually transformed into, or affected after the nature of a dog, eſpecially the gula, tongue, *&c.* ſo that any fluid offered him, in the erect poſture of a man, was frightful, as well as difficult, to take, as much as it would be for us to get a dog to drink ſtanding on his hind legs. But this was not all; for when he was turned upon his belly, and would have acted the dog, he could not drink; though the ſight of the liquor in that poſture gave him as much pleaſure, as in the other poſture it did pain; and, though he frequently put out his tongue, and lapped, yet he could not endure to take any thing liquid into his mouth, as though ſomething hindered him within. 2°, That his ſpittle was invenomed; for as oft as he ſwallowed it, his ſtomach vehemently abhorring it, it went to his heart, as he ſaid, and was preſent death to him: and ſo liquid things, coming nearer to the conſiſtence of ſpittle, might give him the greater terror, as they tended to promote the diſcharge of ſaliva into his mouth: and for the ſame reaſon might be more difficult to ſwallow than ſolid things.

As to the cure of the *hydrophobia*, Dr. Mead, after Galen, recommends it, in this as in other venomous caſes, to enlarge the wound, made by the bite, by a circular inciſion, to apply a cautery to it, and to keep it open for at leaſt forty days. But, if this method ſeem too cruel, it may ſuffice to extract the poiſon by clapping a cupping-glaſs on the place, having firſt made a deep ſcarification. The doctor adds, he has known a perſon freſh-bitten, happily ſaved by the ſole application of the unguentum Ægyptiacum made exceedingly hot.

If theſe external precautions have not been uſed, or not in time, recourſe muſt be had to internal remedies: alexipharmacs muſt be drank; among which, the aſhes of river lobſters, or cray-fiſh, are principally extolled by all the antient phyſicians; ſo that Galen affirms, no bodyhad ever died who uſed this remedy. Theſe aſhes to be taken to the quantity of one or two ſpoonfuls every day for forty days ſucceſſively, either alone, or with gentian-root and frankincenſe in wine.

But the frequent and ſudden plunging of the patient over head and ears in the ſea-water after the bite, is the beſt and ſureſt preſervative againſt this diſeaſe.

Etmuller recommends cardiacs and alexipharmacs, but all in a double doſe, and long continued; and garlick, rue, and ſalt, to be beat together, and applied in form of a cataplaſm over the wound. Purging with hellebore and mercurius dulcis is alſo good; and cantharides are a ſort of ſpecific. Scarifying is commended; and, after the ſcarification, an onion roaſted under the aſhes is to be applied. But the readieſt remedy, he adds, is burning the place affected with a red-hot iron, which effectually removes all the malignity. If the phyſician be not called till late, a cupping-glaſs is to be applied very hot: an iſſue near the place may likewiſe be of ſervice. Sir Theodore Mayerne gives the following preſcriptions for the bite of a mad dog. Pluck the feathers from the breech of an old cock, and apply it bare to the bite: if the dog were mad, the cock will ſwell and die; and the perſon bitten will do well: if the cock dies not, it is a proof the dog was not mad. *Philoſoph. Tranſ.* N° 191.

It is a common notion, that an hair of the ſame dog, applied on the bite, attracts the venom, and works a cure: but a phyſician of Roſtoch, in a formal diſſertation ſome years ago, proved this a popular error; and that the remedy was more like to do harm than good.

The marks whereby to know, that a dog is mad, are, his neither eating nor drinking, foaming at the mouth and noſtrils, looking ſad and ſullen, and running at any thing in his way, whether man or beaſt, known or unknown, without barking.—Baldus, a famous lawyer, died of the *hydrophobia* four months after his being bit in the lip by a little dog. And the ſame is ſaid of Diogenes the Cynic.

The members of the royal academy of ſciences furniſh us with various inſtances of perſons cured of the diſeaſe by various means.—M. Poupart mentions a woman perfectly recovered by bleeding her to deliquium, binding her in a chair for a year, and feeding her all that time with bread and water.—M. Berger relates, that, of ſeveral perſons bitten, two were cured by bleeding them in the forehead.—M. du Hamel adds, that he has known ſalt-water, applied on the wound, effect a cure.—Divers caſes are produced of thoſe cured of the aquæ pavor, by being overwhelmed with a great quantity of water; and one, by being only tied to a tree, and 200 pales of water thrown on him.—But the beſt inſtance is that of M. Morin. A maid of twenty years of age, having all the ſymptoms, was bathed in a tub of river-water, wherein a buſhel of ſalt had been diſſolved. They plunged her in naked again and again, till haraſſed almoſt to death;

death, they then left her ſitting in it, quite ſenſeleſs.—When ſhe came to herſelf, ſhe was ſurpriſed to find herſelf looking at the water without any concern. *Hiſtoire de l'Acad. an.* 1709.

HYDROPHORIA *, in antiquity, a feaſt, or funeral ceremony, held among the Athenians, and people of Ægina, in memory of thoſe who periſhed in the deluge.

* The word is formed of the Greek ὑδωρ, water; and φερω, I bear, or carry off.

HYDROPIC *, a dropſical patient, or a perſon ſwelled and bloated with the abundance of water.

* The word is Greek, ὑδρωπικος, formed of ὑδωρ, water; and ωψ, *facies*, face.

HYDROPS *, in medicine. See the article DROPSY.

* The word is Greek, ὑδρωψ, of ὑδωρ, *aqua*; and ωψ, *vultus*.

HYDROPS *ad matulam*, a term ſometimes uſed for a diabetes.

HYDROPOTA *, ὙΔΡΟΠΟΤΗΣ, in medicine, a perſon who drinks nothing but water.

* The word is Greek, formed of ὑδωρ, water; and ποτης, *potor*, drinker; of πινω, *bibo*, I drink.

It has long been controverted among phyſicians, whether or no the *hydropotæ* live longer than other perſons? See DRINK.

HYDROSCOPE *, an inſtrument antiently uſed for the meaſuring of time.

* The word is Greek, ὑδροσκοπιον, formed of ὑδωρ, water; and σκοπεω, I view, I conſider.

The *hydroſcope* was a kind of water-clock, conſiſting of a cylindrical tube, conical at bottom: the cylinder was graduated, or marked out, with diviſions, to which the top of the water becoming ſucceſſively contiguous, as it trickled out of the vertex of the cone, pointed out the hour.

Syneſius deſcribes the *hydroſcope* at large in one of his letters. See CLEPSYDRA.

HYDROSTATICAL *Balance*, a kind of balance contrived for the eaſy and exact finding the ſpecific gravities of bodies, both liquid and ſolid.

The inſtrument is of conſiderable uſe in eſtimating the degree of purity of bodies of all kinds; the quality and richneſs of metals, ores, minerals, &c. the proportions in any mixture, adulteration, or the like: of all which the ſpecific weight is the only adequate judge.

The *hydroſtatical* balance is founded on this theorem of Archimedes, that a body heavier than water weighs leſs in water than in air, by the weight of as much water as is equal to it in bulk.—Whence, if we ſubtract the weight of the body in water, from its weight in air; the difference gives the weight of as much water as is equal in magnitude to the ſolid propoſed.

Having, therefore, two bodies, the one firm, the other fluid, together with the weight of each apart: to find their proportion, divide the greater by the leſſer; the quotient compared to one, that is, unity, will be the antecedent of the proportion deſired.

The inſtrument, with all its apparatus, is repreſented, *Tab. Hydroſtatics, fig.* 34. and needs little deſcription.

To uſe it, the weights E are ſo adjuſted, as to balance what is to be hung on the other end of the beam; in which ſtate the inſtrument is ready for application.

Now, to find the ſpecific gravity of a fluid.—Hang to the other end of the beam the little ſcale F, and to the bottom of the ſcale the bubble G; then fill a cylindrical veſſel O P, about two thirds with common water; and when the bubble is let into it, the beam will remain in an horizontal poſition, if the water be of the ſame ſpecific gravity, as that in which the bubble was adjuſted: if it be not, there will be a variation; which is to be corrected by means of little weights for that purpoſe.

Having thus adjuſted the bubble in that water, the ſpecific gravity of any other fluid will be found by weighing the bubble therein: and, ſince you always weigh ſo much of the liquid as is equal to the bulk of the bubble; if there be any variation between ſuch quantity, and the like quantity of water, it will be diſcovered by putting weights into the aſcending ſcale.

2°, To find the ſpecific weight of a ſolid.—Inſtead of the bubble, hang on the bucket H I K, and the beam will be in æquilibrio: put the ſolid intended to be examined therein, and counterpoiſe it with weights in the other ſcale; this done, note the weight, and diſburden the ſcale of the ſolid, and its counterpoiſe, and ſink the bucket into the glaſs of water.—Then, as the bucket will loſe as much of its weight as is the weight of an equal bulk of water, add the ſcale R upon the part, which will bring all to an equilibrium.—Laſtly, put the ſolid into the bucket, and counterpoiſe it again with the weights; and as it anſwers in its proportion to water, it may be judged either genuine, or adulterate, by comparing it to a ſtandard of that ſpecies of bodies to which it is ſuppoſed to belong.

HYDROSTATICS *, the doctrine of gravitation in fluids; or that part of mechanics which conſiders the weight or gravity of fluid bodies, particularly of water, and of ſolid bodies immerged therein.

* The word is Greek, compoſed of ὑδωρ, water; and ϛατικη, ſtatics; of ϛατος, *ſtans*, ſtanding; of ιϛημι, *ſto*, *ſiſto*, I ſtand, I ſtop; *hydroſtatics* being conceived as the doctrine of the equilibrium of liquors. See EQUILIBRIUM, and STATICS.

To *hydroſtatics* belongs whatever relates to the gravities and æquilibria of liquors, with the art of weighing bodies in water, in order to eſtimate their ſpecific gravities.

Mr. Boyle has applied *hydroſtatics* to good purpoſe, in examining and proving the goodneſs and purity of metals, minerals, and other bodies, particularly fluids, in an expreſs treatiſe intituled, *Medicina Hydroſtatica*.

The laws of *hydroſtatics*, with the application thereof, ſee delivered at large under the articles FLUID, and SPECIFIC *Gravity*.

Hydroſtatics are frequently confounded with *hydraulics*, by reaſon of the affinity of the ſubjects; and ſeveral authors chooſe to treat of the two promiſcuouſly.

The oldeſt writer on *hydroſtatics* is Archimedes, who firſt delivered the laws thereof in his book *De inſidentibus humido*. Marin Ghetaldus firſt brought his doctrine to experiment, in his *Archimedes promotus*; and from him Mr. Oughtred took the greateſt part of what he has given us on this ſubject.—M. Mariotte, in a French treatiſe, publiſhed at Paris in 1686. *Of the Motion of Water, and other Fluids*, gives moſt of the propoſitions of *hydroſtatics*, and hydraulics, proved by reaſon, and confirmed by experiments. The Jeſuit F. Tertius de Lanis, in the third tome of his *Magiſterium Naturæ & Artis*, lays down the doctrines of *hydroſtatics* more amply than they are elſewhere found. F. Lamy, in the ſecond part of his mechanics, intituled, *Traité de l'Equilibre des Liqueurs*, delivers the fundamental laws of *hydroſtatics*, and hydraulics; and the like is done by Dr. Wallis, in his *Mechanica*. Laſtly, Sir Iſaac Newton gives ſome of the ſublimer matters, in the ſecond book of his *Philoſoph. Nat. Princ. Mathemat.*

HYDROTICS *, in medicine. See the article HYDROPIC.

* The word is Greek, formed of ὑδωρ, *aqua*, water.

HYGIEINE *, ὙΓΙΕΙΝΗ, that branch of medicine which conſiders *health*, and diſcovers proper means and remedies, with their uſe, in the preſervation of that ſtate.

* The word is Greek, formed of ὑγιης, ſound, healthy.

The objects of this branch of medicine are, the non-naturals. See NON-NATURALS.

Hygieine, more largely taken, is divided into three parts; *prophylactice*, which foreſees and prevents diſeaſes; *ſynteritice*, employed in preſerving health; and *analeptice*, whoſe office is to cure diſeaſes, and reſtore health.

HYGROCIRSOCELE *, in medicine, a branch of a vein ſwelled with ill blood, or other humours: or a varicous tumour of ſome of the veins of the teſtes, attended with a gathering of water in the ſcrotum.

* The word is compounded of the Greek ὑγρος, *humidus*; and κιρσοκηλη, *ramex varicoſus*.

HYGROMETER *, a machine, or inſtrument, whereby to meaſure the degrees of drineſs, or moiſture, of the air.

* The word is compounded from the Greek ὑγρος, *humidus*, moiſt; and μετρεω, *metior*, I meaſure. See HYGROSCOPE.

There are divers kinds of *hygrometers*; for, whatever body either ſwells or ſhrinks, by drineſs or moiſture, is capable of being formed into an *hygrometer*.—Such are woods of moſt kinds, particularly aſh, deal, poplar, &c. Such alſo is catgut, the beard of a wild oat, &c.

The beſt and moſt uſual contrivances for this purpoſe are as follow.

Conſtruction of HYGROMETERS.—Stretch an hempen cord, or a fiddle-ſtring, as A B (*See Tab. Pneumatics, fig.* 7.) along a wall, bringing it over a truckle, or pully, B; and to the other extreme D, tie a weight E; into which fit a ſtyle, or index, F G.—On the ſame wall fit a plate of metal H I, divided into any number of equal parts, and the *hygrometer* is complete.

For it is matter of undoubted obſervation, that moiſture ſenſibly ſhortens the length of cords and ſtrings; and that as the moiſture evaporates, they return to their former length; and the like may be ſaid of a fiddle-ſtring.—The weight, therefore, in the preſent caſe, upon an increaſe of the moiſture of the air, will aſcend; and, upon a diminution of the ſame, it will deſcend.

Hence, as the index F G will ſhew the ſpaces of aſcent, and deſcent; and thoſe ſpaces are equal to the increments, and decrements, of the length of the cord, or gut, A B D; the inſtrument will diſcover, whether the air be more or leſs humid now, than it was at another given time.

Or thus: if a more ſenſible and accurate *hygrometer* be required, ſtrain a whipcord, or fiddle-ſtring, over ſeveral truckles, or pullies, A, B, C, D, E, F, and G (*Fig.* 8.); and proceed with the reſt as in the former example. Nor does it matter whether the ſeveral parts of the cord A B, BC, CD, DE, EF, and FG, be parallel to the horizon, as expreſſed in the preſent figure, or perpendicular to the ſame.

The advantage of this, above the former *hygrometer*, is, that we have a greater length of cord in the ſame compaſs: and the longer the cord, the greater its contraction and dilatation.

Or thus:—Faſten a hempen cord, or fiddle-ſtring, A B, (*fig.* 9.) to an iron hook; and let the other end, B, deſcend upon the middle of a horizontal board, or table, E F; near B hang a leaden weight of a pound, C, and fit an index C G. Laſtly, from the centre B deſcribe a circle; which divide into any number of equal parts.

Now, it is matter of obſervation, that a cord or gut twiſts itſelf as it is moiſtened, and untwiſts again as it dries.—Mr. Molyneux, ſecretary of the Dublin ſociety, writes, that he could perceive this alternate twiſting and untwiſting in a cord, by only breathing on it eight or ten times, and then applying a candle toward it. Hence, upon an increaſe or decreaſe of the humidity of the air, the index will ſhew the quantity of twiſting or untwiſting; and, conſequently, the increment or decrement of humidity, or ſiccity.

Or thus:—Faſten one end of a cord, or fiddle-ſtring, H I, (*fig.* 10.) to a hook, H; and to the other end faſten a ball, K, of a pound weight. Draw two concentric circles on the ball, and divide them into any number of equal parts. Fit a ſtile, or index, N O, into a proper ſupport, N, ſo as the extremity O may almoſt touch the diviſions of the ball.

Here, the cord or gut twiſting or untwiſting, as in the former caſe, will indicate the change of moiſture, &c. by the ſucceſſive application of ſeveral diviſions of the circles to the index.

Or thus:—Provide two wooden frames, A B and C D, (*fig.* 11.) with grooves therein; and between thoſe grooves fit two thin leaves of aſh, A E F C, and G B D H, ſo as they may eaſily ſlide either way. At the extremes of the frames A, B, C, D, confine the leaves with nails, leaving between them the ſpace E G H F, about an inch wide. On I faſten a ſlip of braſs dented, I K; and in L a little dented wheel, upon whoſe axis, on the other ſide of the machine, an index is to be put. Laſtly, from the centre of the axis, on the ſame ſide, draw a circle, and divide it into any number of equal parts.

Now, it being found by experience, that aſhen wood readily imbibes the moiſture of the air, and ſwells therewith; and as that moiſture ſlackens, ſhrinks again; upon any increaſe of the moiſture of the air, the two leaves A F and B H, growing turgid, will approach nearer each other: and, again, as the moiſture abates, they will ſhrink, and again recede.—Hence, as the diſtance of the leaves can neither be increaſed nor diminiſhed without turning the wheel L, the index will point out the changes in reſpect of humidity, and ſiccity.

It is to be noted, that all the *hygrometers* above deſcribed become ſenſibly leſs and leſs accurate; and, at length, undergo no ſenſible alteration at all from the humidity of the air. The following is much more laſting.

Take the MANOSCOPE, deſcribed under that article, and inſtead of the exhauſted ball, E (*fig.* 21.), ſubſtitute a ſponge, or other body, which eaſily imbibes moiſture. To prepare the ſponge, it may be neceſſary firſt to waſh it in water; and when dry again, in water or vinegar wherein ſal ammoniac, or ſalt of tartar, has been diſſolved, and let it dry again.

Now, if the air become moiſt, the ſponge growing heavier will preponderate; if dry, the ſponge will be hoiſted up; and, conſequently, the index will ſhew the increaſe or decreaſe of humidity of the air.

In the laſt mentioned *hygrometer*, Mr. Gould, in the *Philoſophical Tranſactions*, inſtead of a ſponge, recommends oil of vitriol, which is found to grow ſenſibly lighter or heavier, in proportion to the leſſer or greater quantity of moiſture it imbibes from the air; ſo that being ſatiated in the moiſteſt weather, it afterwards retains or loſes its acquired weight, as the air proves more or leſs moiſt.—The alteration in this liquor is ſo great, that in the ſpace of fifty-ſeven days, it has been known to change its weight from three drachms to nine; and has ſhifted an index or tongue of a balance 30 degrees.—A ſingle grain, after its full increaſe, has varied its æquilibrium ſo ſenſibly, that the tongue of a balance, only an inch and half long, has deſcribed an arch one-third of an inch in compaſs; which arch would have been almoſt three inches, if the tongue had been one foot, even with ſo ſmall a quantity of liquor; conſequently, if more liquor, expanded under a large ſurface, were uſed, a pair of ſcales might afford as nice an *hygrometer* as any kind yet invented.—The ſame author ſuggeſts, that oil of ſulphur per campanam, or oil of tartar per deliquium, or the liquor of fixed nitre, might be ſubſtituted in lieu of the oil of vitriol.

This balance may be contrived two ways; by either having the pin in the middle of the beam, with a ſlender tongue a foot and half long, pointing to the diviſions on an arched plate; as repreſented in *fig.* 12.

Or, the ſcale with the liquor may be hung to the point of the beam near the pin, and the other extreme be made ſo long, as to deſcribe a large arch on a board placed for the purpoſe, as repreſented in *fig.* 13.

From a ſeries of hygroſcopical obſervations, made with an apparatus of deal wood, deſcribed in the *Philoſophical Tranſactions*, Mr. Coniers concludes; 1°, That the wood ſhrinks moſt in ſummer, and ſwells moſt in winter; but is moſt liable to change at ſpring and fall. 2°, That this motion happens chiefly in the day-time; there being ſcarce any variation in the night. 3°, That there is a motion even in dry weather; the wood ſwelling in the morning, and ſhrinking in the afternoon. 4°, The wood, by night as well as day, uſually ſhrinks when the wind is in the north, north-eaſt, and eaſt, both in winter and ſummer. 5°, That by conſtant obſervation of the motion and reſt of the wood, with the help of a thermometer, one may tell the ſituation of the wind without a weather-cock.

He adds, that the time of the year may be known by it; for in ſpring it moves quicker and more than in winter; in ſummer it is more ſhrunk than in ſpring; and has leſs motion in autumn than in ſummer.

HYGROSCOPE *, is commonly uſed in the ſame ſenſe with *hygrometer*. See HYGROMETER.

* The word is compounded of ὑγρος, moiſt, and σκοπεω, *video*, *ſpecto*, I ſee, or conſider.

Wolfius, however, regarding the etymology of the word, makes ſome difference. According to him, the *hygroſcope* only ſhews the alterations of the air in reſpect of humidity and drineſs; but the hygrometer meaſures them. A *hygroſcope*, therefore, is a leſs accurate hygrometer.

HYIOTES, ΥΙΟΤΗΣ, *Filiation*. See ADOPTION.

HYKES, a ſort of blankets, in great uſe among the natives of Barbary. They are woven by the women, who make no uſe of a ſhuttle therein, but conduct every thread of the woof with their fingers. One of theſe *hykes* is uſually ſix yards long, and five or ſix broad, ſerving the Kabyle as well as Arab, both male and female, for a complete dreſs in the day, and for his bed and covering in the night.—It is a looſe and troubleſome kind of garment, being frequently diſconcerted, and falling on the ground; ſo that the wearer is every moment to be tucking it up, and folding it anew round his body. Dr. Shaw (*Trav. p.* 289.) takes it to be much the ſame with the peplus, if not with the toga, of the antients.

HYLE *, or HYLEC, among alchymiſts, is their firſt matter; or it is matter conſidered as produced by nature herſelf; called alſo *chaos*.

* The word is Greek ὑλη, which ſignifies matter.

HYLEG, or HYLECH, in aſtrology, an Arabic term for a planet, or for a point of the heavens, which in a man's nativity becomes, as is pretended, the moderator and ſignificator of life.

HYLEGIAL *Places*, among aſtrologers, are thoſe wherein a planet being found, is qualified to have the government of life attributed to it.

HYLOBII *, or HYLOBIANS, a ſect of Indian philoſophers, thus denominated by the Greeks, in regard they retired to foreſts, to be more at leiſure for the contemplation of nature.

* The name is compounded of the Greek ὑλη, which, beſide matter, ſignifies alſo wood, foreſt; and βιος, life.

HYMEN, in poetry, a term of invocation.—HYMEN, or HYMENÆUS, is properly a fabulous divinity, ſuppoſed by the antients to preſide over marriages; and who accordingly was invoked in epithalamiums, and other matrimonial ceremonies, under the formula, Hymen o Hymenæe!

The poets generally crown this deity with a chaplet of roſes; and repreſent him, as it were, diſſolved and enervated with pleaſures; dreſſed in a yellow robe, and ſhoes of the ſame colour; with a torch in his hand.—Catullus, in one of his epigrams, addreſſes him thus:

Cinge tempora floribus,
Suaveolentis amaraci.

It was for this reaſon, that the new-married couple bore garlands of flowers on the wedding-day: which cuſtom alſo obtained among the Hebrews; and even among the Chriſtians, during the firſt ages of the church, as appears from Tertullian, *De Corona Militari*, where he ſays, *Coronant & nuptæ ſponſos*.—S. Chryſoſtom likewiſe mentions theſe crowns of flowers; and to this day the Greeks call marriage ςεφανωμα, in reſpect of this crown or garland.

HYMEN, ΥΜΗΝ, in anatomy, a thin membrane or ſkin, reſembling a piece of fine parchment, ſuppoſed to be ſtretched in the neck of the womb of virgins, below the nymphæ; and to be broke when they are deflowered; an effuſion of blood following the breach.

The *hymen* is generally looked upon as the teſt of virginity; and when broke, or withdrawn, ſhews that the perſon is not in a ſtate of innocence.—This notion is very antient. Among the Hebrews, it was the cuſtom for the parents to ſave the blood ſhed on this occaſion, as a token of the virginity of their daughter; and to ſend the ſheets, next day, to the huſband's relations. And the like is ſaid to be ſtill practiſed in Portugal, and ſome other countries.

And yet authors are not agreed as to the exiſtence of ſuch a membrane. Nothing, Dr. Drake obſerves, has employed the curioſity of anatomiſts, in diſſecting the organs of generation in women, more than this part: they have differed not only as to its figure, ſubſtance, place, and perforation, but even its reality; ſome poſitively affirming, and others flatly denying it.

De Graaf himſelf, the moſt accurate inquirer into the ſtructure of theſe organs, confeſſes, he always ſought it in vain, though in the moſt unſuſpected ſubjects, and ages: all he could find was, a different degree of ſtreightneſs, or wideneſs; and different corrugations, which were greater or leſs, according to the reſpective ages; the aperture being ſtill the leſs, and the rugoſities the greater, as the ſubject was younger, and more untouched.

Dr. Drake, on the other hand, declares, that, in all the ſubjects he had had opportunity to examine, he does not remember to have miſſed the *hymen* ſo much as once, where he had reaſon to depend on finding it. The faireſt view he ever had of it was, in a maid who died at thirty years of age: in this he found it a membrane of ſome ſtrength, furniſhed with fleſhy fibres, in figure round, and perforated in the middle with a ſmall hole, capable of admitting the end of a woman's little finger, and ſituate a little above the orifice of the urinary paſſage, at the entrance of the vagina of the womb.

In infants, it is a fine thin membrane, not very conſpicuous, becauſe of the natural ſtreightneſs of the paſſage itſelf, which does not admit of any great expanſion in ſo little a room; which might lead De Graaf into a notion of its being no more than a corrugation.

This membrane, like moſt others, does, probably, grow more diſtinct, as well as firm, by age. That it not only exiſts, but is ſometimes very ſtrong, and impervious, may be collected, from the hiſtory of a caſe reported by Mr. Cowper: in a married woman, twenty years of age, whoſe *hymen* was found altogether impervious, ſo as to detain the menſes, and to be driven out, by the preſſure thereof, beyond the labia of the pudendum, not unlike a prolapſus of the uterus: on dividing it, at leaſt a gallon of grumous blood came forth. It ſeems the huſband, being denied a paſſage that way, had found another thro' the meatus urinarius; which was found very open, and its ſides extruded like the anus of a cock.

Upon a rupture of the *hymen*, its parts, ſhrinking up, are ſuppoſed to form thoſe little fleſhy knots, called *carunculæ myrtiformes*.

Hymen is alſo uſed, by botaniſts, for a fine, delicate ſkin, wherewith flowers are incloſed while in the bud, and which burſts as the flower blows, or opens.

The term *hymen*, in this ſenſe, is particularly uſed in ſpeaking of roſes.

HYMN*, a ſong, or ode, in honour of God; or a poem proper to be ſung, compoſed in honour of ſome deity. See Song, and Ode.

* The word is Greek, ὑμνος, hymn; formed of the verb ᾀδω, *celebro*, I celebrate.

Iſiodore, on this word, remarks, that *hymn* is properly a ſong of joy, full of the praiſes of God; by which, according to him, it is diſtinguiſhed from *threna*, which is a mourning ſong, full of lamentation.

The *hymns*, or odes, of the antients, generally conſiſted of three ſtanzas, or couplets: the firſt called *ſtrophe*; ſecond, *antiſtrophe*; and the laſt, *epode*.

S. Hilary, biſhop of Poitiers, is ſaid to have been the firſt that compoſed *hymns* to be ſung in churches: he was followed by S. Ambroſe. Moſt of thoſe in the Roman breviary were compoſed by Prudentius. They have been tranſlated into French verſe by Meſſieurs De Port Royal.

The Te Deum is alſo commonly called a *hymn*, though it be not in verſe: ſo alſo is the Gloria in excelſis.

In the Greek Liturgy there are four kinds of *hymns*; but then the word is not taken in the ſenſe of a praiſe offered in verſe, but ſimply of laud, or praiſe.—The angelic *hymn*, or Gloria in excelſis, makes the firſt kind; the triſagion, the ſecond; the cherubic *hymn*, the third; and the *hymn* of victory and triumph, called ἐϖινικιος, the laſt. See Trisagion, &c.

HYOIDES*, ὙΟΕΙΔΕΣ, in anatomy.—The *Os* Hyoides, called alſo *bicorne*, is a bone ſituate at the root of the tongue; making, as it were, the baſis or foundation thereof.

* It is thus called from its imperfect reſemblance of the Greek upſilon Υ; the word being formed of υ and ειδος, form: for which reaſon it is alſo called *ypſiloides*, and *hypſiloides*.

It generally conſiſts, in adults, of three little bones; and, in children, of five or ſix. The middle bone of the three, which is the ſhorteſt and broadeſt, is called the *baſis*; and the two ſide-bones *cornua*, or horns: whence alſo the appellations, *bicorne* and *ceratoides*.

The baſis of the *hyoides* is about a thumb's breadth long on the outer ſide, which is convex; the inner being concave. It is half a finger broad, and has a ſmall protuberance in the middle. The cornua are an inch and half long, and broader at bottom than at the extremes, which are about two inches aſunder.

It has two cartilaginous proceſſes, called *cornicula*, faſtened about the juncture of its cornua with the baſis: they are tyed to the proceſſus ſtyloides by long, ſlender ligaments; though ſometimes between them and the ſtyloides there is found a ſmall muſcle, beſide the ſtyloceratohyoideus.

The baſis of this bone lies, as it were, on the head of the larynx; and its horns are faſtened, by ligaments, to the upper proceſſes of the cartilago ſcutiformis, and ſtyloides.

It is moved by five pair of muſcles; *viz.* the *ſternohyoideum*, the *coracohyoideum*, the *mylohyoideum*, *geniohyoideum*, and *ſtylohyoideum*. See each under its proper article.

HYOTHYROIDÆ*, in anatomy, a pair of muſcles of the larynx; which, ariſing from the anterior part of the os hyoides, are inſerted into the cartilago thyroides.—They ſerve as antagoniſts to the ſternothyroides, and lift up the thyroid cartilage.

* The word is compounded of *hyoides*, and *thyroides*. See Thyroides, &c.

HYPÆTHROS*, or Hypæthrion, ὙΠΑΙΘΡΙΟΝ, in the antient architecture, a kind of temple, open at the top, and thereby expoſed to the air.

* The word is formed of ὑϖο, *ſub*, under; and αιθρα, air.

The *hypæthron*, according to Vitruvius, is an open building, or portico, ſuch as antiently were certain temples that had no roof, or covering.—Of this we have an inſtance, in the temple of Jupiter Olympius, built by Coſſutius, a Roman architect at Athens.

Of *hypæthrons*, ſome were decaſtyle, others pycnoſtyle; but they had all rows of columns, within-ſide, forming a kind of periſtyle; which was eſſential to this ſort of temple. See Peristyle.

HYPALLAGE*, *immutation*; a grammatical figure, whereby, of different expreſſions which give the ſame idea, we make choice of that which is leaſt natural and obvious; or, when there is a mutual permutation or change of caſes, moods, regimens, &c.

* The word is Greek, ὑϖαλλαγη; formed of ὑϖαλλαττω, I change; compoſed of ὑϖο and αλλαττω, I change; of αλλος, *alter*, another.

As in this inſtance, *Dare claſſibus auſtros*; inſtead of *Dare claſſes auſtris*.

HYPAPANTE*, or Hypante, a name which the Greeks give to the feaſt of the Purification of the holy virgin; or the preſentation of Jeſus in the temple.

* The words are Greek, ὑϖαντη, and ὑϖαπαντη, which properly ſignify humble, and lowly meeting; being compounded of ὑϖο, under, beneath; and αντιαω, or απαντιαω, I meet: of αντι, *contra*, againſt.—The denominations are taken from the meeting of old Simeon and Anna the propheteſs in the temple, at the time the child Chriſt Jeſus was brought thither.

HYPER, a Greek word uſed in the compoſition of divers terms derived from that language.

The Greek prepoſition ὑϖερ, *hyper*, literally ſignifies *above*, *beyond*; and, in compoſition, it expreſſes ſome exceſs, or ſomething beyond the ſignification of the ſimple word it is joined with.—Hence,

HYPERBATON*, or Hyperbasis, in grammar and rhetoric, is a tranſpoſition; or, a figurative conſtruction, inverting the natural and proper order of the terms of a diſcourſe. See Transposition.

* The word is Greek, ὑϖερβατον, or ὑϖερϐασις; derived of ὑϖερβαινω, *tranſgredior*, I go beyond: formed of ὑϖερ, *ultra*, beyond; and βαινω, *eo*, I go.

The *hyperbaton*, Longinus obſerves, is no other than a tranſpoſal of ſenriments, or words, out of the natural order and method of diſcourſe; and always implies great violence, or ſtrength of paſſion, which naturally hurries a man out of himſelf, and diſtracts him variouſly.—Thucydides is very liberal in *hyperbatons*.

Quintilian calls the *hyperbaton*, *verbi tranſgreſſio*.—It is of uſe to enliven and animate the diſcourſe: it is very proper to expreſs a violent paſſion, and repreſent an agitation of mind in the livelieſt manner.

HYPERBOLA, in geometry, one of the curve lines, formed by the ſection of a cone. See Conic *ſection*.

The *hyperbola* ariſes when the plane that cuts the cone is not parallel to one of its ſides, as it is in the *parabola*; but diverges from it outwards, not inward, as in the *ellipſis*.

Thus: if the cone ABC (ſee Tab. *Conics*, *fig.* 27.) be ſo cut, as that the axis of the ſection DQ continued, concur with the ſide of the cone AC, continued to E; the curve ariſing from this ſection is a *hyperbola*.

Some authors define the *hyperbola* to be, a ſection of the cone by a plane parallel to its axis; but this definition is faulty: for though it be true, that ſuch a ſection really deſcribes a *hyperbola*; yet it is likewiſe true, that a thouſand others may be deſcribed where the plane is not parallel to the axis, and which, of conſequence, are not included in the definition.

Authors ſometimes call the plane terminated by this curve, a *hyperbola*; and, in reſpect thereof, call the curve itſelf, the *hyperbolic line*.

A *hyperbola* may be defined, with reſpect to its properties, to be a curve line, wherein the ſquare of the ſemiordinate is to the rectangle of the abſciſs into a right line compounded of the ſame abſciſs, and a given right line called the *tranſverſe axis*, as another given right line, called the *parameter* of the axis, is to the tranſverſe axis: or it is a curve line, wherein $a y^2 = a b x + b x x$, that is, $b : a = y^2 : a x + x^2$.

In the *hyperbola*, a mean proportional between the tranſverſe axis and parameter, is called the *conjugate axis*: and if the tranſverſe axis A B (Tab. *Conics*, *fig*. 27. *n*. 2.) be joined directly to the axis A X, and be biſected in C; the point C is called the *centre* of the *hyperbola*.

If a right line D E paſs through the vertex A, *fig*. 20. parallel to the ordinates *M m*, it is a tangent to the *hyperbola* in A.

If a right line D E be drawn through the vertex A of an *hyperbola* parallel to the ordinates *M m*, and be equal to the conjugate axis, *viz*. the parts D A and A E equal to the ſemiaxis; and right lines C F and C G be drawn from the centre C through D and E; thoſe lines are called *aſymptotes* of the *hyperbola*.

The ſquare of the right line C I, or A I, is called the *power* of the *hyperbola*.

Properties of the HYPERBOLA.—In the *hyperbola*, the ſquares of the ſemiordinates are to each other, as rectangles of the abſciſs into a certain right line compoſed of the abſciſs and tranſverſe axis.—Hence, as the abſciſſes x increaſe, the rectangles $a x + x^2$, and conſequently the ſquares of the ſemiordinates y^2; and therefore the ſemiordinates themſelves increaſe. The *hyperbola*, therefore, continually recedes from its axis.

2°, The ſquare of the conjugate axis is to the ſquare of the tranſverſe, as the parameter to the tranſverſe axis.—And hence, ſince $b : a :: \mathrm{PM}^2 : \mathrm{AP}.\mathrm{PB}$, the ſquare of the conjugate axis, is to the ſquare of the tranſverſe; as the ſquare of the ſemiordinate is to the rectangle of the abſciſs into a line compoſed of the abſciſs and tranſverſe axis.

3°, *To deſcribe an* hyperbola, in a continued motion; the tranſverſe axis, and the diſtance from the vertex, being given. In the two foci F and *f*, *fig*. 28. fix two nails, or pins; and to one of them, in F, tie a thread F M C, faſtening the other end C to the ruler C *f*, which exceeds the ſame by the tranſverſe axis A B. The other end of the ruler being perforated, put it on the pin *f*; and fixing a ſtyle to the thread, move the ruler. Thus will the ſtyle trace out an *hyperbola*.—Again, with the ſame data, any number of points in an *hyperbola* are eaſily found, which may be connected into an *hyperbola*. Thus, from the focus *f*, with any interval greater than A B, deſcribe an arch; and making $f b = \mathrm{AB}$; with the remaining interval *b m*, from the point F, draw another arch interſecting the former in *m*: for, as $f m - \mathrm{F} m = \mathrm{AB}$; *m* is a point in the *hyperbola*. And ſo of the reſt.

4°, If, in an *hyperbola*, the ſemiordinate P M, *fig*. 20. be produced till it meet the aſymptote in R; the difference of the ſquares of P M and P R is equal to the ſquare of the conjugate ſemiaxis D A.—Hence, as the ſemiordinate P M increaſes, the right line P R decreaſes, and conſequently M R; and therefore the *hyperbola* itſelf approaches nearer to the aſymptote; but it can never abſolutely meet it, becauſe, as $\mathrm{PR}^2 - \mathrm{PM}^2 = \mathrm{DA}^2$; it is impoſſible $\mathrm{PR}^2 - \mathrm{PM}^2$ ſhould ever become $= 0$.

5°, In an *hyperbola*, the rectangle of M R and M *r* is equal to the difference of the ſquares PR^2 and PM^2.—And hence, the ſame rectangle is equal to the ſquare of the conjugate ſemiaxis D A; and conſequently all rectangles formed in the ſame manner are equal.

6°, If *q m* be parallel to the aſymptote C F, the rectangle of *q m* into C *q* is equal to the power of the *hyperbola*.—And hence, 1°, If we make $\mathrm{CI} = \mathrm{AI} = a$, $\mathrm{C}q = x$, and $q m = y$, we ſhall have $a^2 = x y$; which is the equation expreſſing the nature of the *hyperbola* between its aſymptotes. 2°, The aſymptotes, therefore, being given in poſition, and the ſide of the power of C I or A I; if in one of the aſymptotes C G, you take any number of abſciſſes; ſo many ſemiordinates will be found, and by them any number of points in an *hyperbola* will be determined by finding third proportionals to the abſciſs, and the ſide of the power C I.—3°, If the abſciſſes be not computed from the centre C, but from ſome other point L; and C L be ſuppoſed $= b$; we ſhall have $\mathrm{C}q = b + x$; and conſequently $a^2 = b y + x y$.

7°, In the *hyperbola*, as the tranſverſe axis is to the parameter; ſo is the aggregate of the tranſverſe ſemiaxis and abſciſs, to the ſubnormal: and as the aggregate of the tranſverſe ſemiaxis and abſciſs is to the abſciſs; ſo is the aggregate of the intire tranſverſe axis and abſciſs to the ſubtangent. See SUBNORMAL, and SUBTANGENT.

8°, If within the aſymptotes of an *hyperbola*, from a point thereof, *fig*. 29. be drawn two right lines H *m* and *m* K, and other two L N and N O, parallel to the ſame; $\mathrm{H}m.\, m\mathrm{K} = \mathrm{LN}.\, \mathrm{NO}$. And the ſame will hold, if you draw L N *o* parallel to the right line thus drawn H *m k*; *viz*. in this caſe, likewiſe, $\mathrm{H}m.\, mk = \mathrm{LN}.\, \mathrm{N}o$.—Conſequently, all rectangles formed after this manner of right lines drawn parallel either to the ſame line H *k*, or to two, H *m* and *m* K, are equal to each other.

9°, If a right line H *k* be drawn in any manner between the aſymptotes of an *hyperbola*; the ſegments H E and *m k* intercepted on each ſide between the *hyperbola* and aſymptotes are equal.—And hence, if $\mathrm{E}m = o$; the right line H *k* is a tangent to the *hyperbola*: conſequently, the tangent F D intercepted between the aſymptotes, is biſected in the point of contact V. Laſtly, the rectangle of the ſegments H *m* and *m k*, parallel to the tangent F D, is equal to the ſquare of half the tangent D V.

10°, The ſquare of the ſemiordinate in an *hyperbola*, is to the rectangle of the abſciſs, and aggregate of the tranſverſe diameter A B, *fig*. 30. and abſciſs A P, as the ſquare of the conjugate ſemidiameter A D, is to the ſquare of the tranſverſe ſemidiameter C A.—Hence, if you ſuppoſe A P x, and $2r^2 = \mathrm{AB} = a$, you will have $v^2\ r^2 = a x + x^2$; and conſequently $y^2 = (c^2 a x + c^2 x^2) : \frac{1}{4} a a = \frac{4c^2 x}{a} + \frac{4c^2 x^2}{a^2}$. Suppoſe $4c^2 : a = b$; then will $y^2 = bx + bx^2 : a$.

So that the ſame equation defines the nature of the *hyperbola* in reſpect of its diameter, as expreſſes it in reſpect of its axis; and the parameter is a third proportional to the conjugate diameters D E and A B.

11°, If from the vertex A, and any point of the parabola N, you draw A F and T N parallel to the aſymptote C R; the rectangle of T N into T C will be equal to the rectangle of F A into F C.—Hence, if $\mathrm{TC} = x$, $\mathrm{TN} = y$; the equation expreſſing the nature of a *hyperbola* within aſymptotes, in reſpect of its diameter, will be $x y = a b$.

12°, An aſymptote being taken for a diameter; divided into equal parts, and through all the diviſions, which form ſo many abſciſſes continually increaſing equally, ordinates to the curve being drawn parallel to the other aſymptote; the abſciſſes will repreſent an infinite ſeries of natural numbers; and the correſponding *hyperbolic* or aſymptotic ſpaces, will repreſent the ſeries of logarithms of the ſame numbers. Hence different *hyperbolas* will furniſh different ſeries of logarithms to the ſame ſeries of natural numbers; ſo that to determine any particular ſeries of logarithms, choice muſt be made of ſome particular *hyperbola*.—Now, the moſt ſimple of all the *hyperbolas* is the equilateral one, *i. e.* that whoſe aſymptotes make a right angle between them. This, M. De Lagni alleges in favour of the binary arithmetic, as being the reſult of ſuch equilateral *hyperbola*. See BINARY *arithmetic*.

For the locus of an HYPERBOLA, ſee the article LOCUS.

For the quadrature of an HYPERBOLA, ſee QUADRATURE.

Ambigenal HYPERBOLA is that which has one of its infinite legs inſcribed, and the other circumſcribed.

Equilateral HYPERBOLA is that wherein the conjugate axis A B, *fig*. 20. and D E, are equal.

Properties of the equilateral HYPERBOLA.—Since the parameter is a third proportional to the conjugate axis, it is alſo equal to the axis.

Wherefore, if in the equation $y^2 = b x + b x : a$, you ſuppoſe $b = a$; the equation $y^2 = a x + x^2$ will expreſs the nature of the equilateral *hyperbola*.

And hence the ſquares of the ordinates y^2 and z^2 are to each other as $a x + x^2$ and $a v + v^2$: that is, as the rectangles of the abſciſſes into right lines compoſed of the abſciſs and parameter.

If you ſuppoſe $\mathrm{HC} = x$, $\mathrm{CA} = r$, then will $\mathrm{AP} = x - r$, and $\mathrm{PB} = r + x$. Conſequently $y^2 = x^2 - x^2$.

And ſince $\mathrm{AE} = \mathrm{CA}$; the angle A C E will be half right; and conſequently the angle of the aſymptotes F C G a right angle.

Infinite HYPERBOLAS, or HYPERBOLAS *of the higher kinds*, are thoſe defined by the equation $a y^{m} + {}^{n} = b z^{m} (a + x)^{n}$. Hence, in infinite *hyperbolas* $a y^{m} + {}^{n} : a v^{m} + {}^{n} = b x^{m} (a + x)^{n} : b z^{m} (a + z)^{n}$: that is, $y^{m} + {}^{n} : v^{m} + {}^{n} = x^{m} (a + x)^{n} : z^{m} (a + z)^{n}$.

As the *hyperbola* of the firſt kind, or order, has two aſymptotes; that of the ſecond kind, or order, has three; that of the third, four, *&c.*

In reſpect of theſe, the *hyperbola* of the firſt kind is called the *Apollonian* or *conical hyperbola*.

Apollonian HYPERBOLA is the common *hyperbola*, or the *hyperbola* of the firſt kind: thus called in contradiſtinction to the *hyperbolas* of the higher kinds.

HYPERBOLE *, in rhetoric, a figure, whereby the truth and reality of things are exceſſively either enlarged, or diminiſhed. See EXAGGERATION.

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* The word is Greek, ὑπερβολη, *ſuperlatio*; formed of the verb ὑπερβαλλειν, *exſuperare*, to exceed, ſurpaſs by far.

The character of an *hyperbole* is to exaggerate or extenuate the idea of the thing ſpoken of, beyond the bounds of truth, or even probability.—As, He ran ſwifter than the wind; he went ſlower than a tortoiſe, *&c.*

Hyperbole's, ſays Seneca, lye without deceiving; they lead the mind to truth by fictions; they convey the ſentiment intended, tho' by expreſſing it in terms which render it incredible.—The *hyperbole* premiſes too much, in order to make you conceive enough.

Ariſtotle obſerves, that *hyperbole's* are the favourite figures of young authors, who love exceſs and exaggeration; but that philoſophers ſhould not uſe them without a great deal of reſerve.

The pitch to which an *hyperbole* may be carried, is a point of great delicacy: to carry it too far, is to deſtroy it: it is of the nature of a bow-ſtring, which, by immoderate tenſion, ſlackens; and frequently has an effect quite contrary to that intended. *Longinus.*

Thoſe *hyperbole's* are beſt, which are latent, and are not taken for *hyperbole's*. For this reaſon, they ſhould ſcarce ever be uſed but in a paſſion, and in the middle of ſome important incident: ſuch is the *hyperbole* of Herodotus, ſpeaking of the Lacedemonians, who fought at Thermopylæ: 'They defended themſelves, for ſome time, with the arms that were 'left them, and at laſt with their hands and teeth; till the 'Barbarians, continually ſhooting, buried them, as it were, 'with their arrows.' Now, what likelihood is there, that naked men ſhould defend themſelves with their hands and teeth againſt armed men; and that ſo many perſons ſhould be buried under their enemies arrows? Yet does there appear ſome probability in the thing, by reaſon it is not ſought for the ſake of the figure; but the *hyperbole* ſeems to ariſe out of the ſubject itſelf. *Id.*

Of the like kind is that paſſage of a comic poet mentioned by Longinus: 'He had lands in the country no larger than a 'Lacedemonian epiſtle.'

There are certain manners of tempering the harſhneſs of *hyperbole's*, and giving them an air of probability. Virgil ſays, that to ſee the fleets of Antony and Auguſtus at the battle of Actium, one would have taken them for the Cyclades floating on the water: and Florus, ſpeaking of the expedition wherewith the Romans built a number of veſſels in the firſt Punic war, ſays, 'It ſeemed, not that the ſhips were built 'by workmen, but that the trees were transformed into 'ſhips by the gods.' They do not ſay, that the ſhips were floating iſlands; nor that the trees were metamorphoſed into ſhips; but only that one might have taken them to be ſo.

This precaution ſerves as a kind of paſſport to the *hyperbole*, if we may be allowed the phraſe, and makes it go down even in proſe: for what is excuſed before it is ſaid, is always heard favourably, how incredible ſoever it be. *Bouhours.*

HYPERBOLIC, or **HYPERBOLICAL**, ſomething relating either to an *hyperbole*, or an *hyperbola*. See HYPERBOLA, and HYPERBOLE.

Thus we ſay, an *hyperbolic* expreſſion; an *hyperbolic* image, *&c.*

HYPERBOLIC *Conoid.* See the article CONOID.

HYPERBOLIC *Cylindroid*, is a ſolid figure, whoſe generation is given by Sir Chriſtopher Wren, in the *Philoſophical Tranſactions.*

Two oppoſite *hyperbola's* being joined by the tranſverſe axis, and through the centre a right line being drawn at right angles to that axis; and above that, as an axis, the *hyperbola's* being ſuppoſed to revolve; by ſuch revolution, a body will be generated, which is called the *hyperbolic cylindroid*, whoſe baſes, and all ſections parallel to them, will be circles. In a ſubſequent *Tranſaction*, the ſame author applies the new figure to the grinding of *hyperbolical* glaſſes; affirming, that they muſt be formed this way, or not at all.

HYPERBOLIC *Leg* of a curve, is that which approaches infinitely nearer to ſome aſymptote.

Sir Iſaac Newton reduces all curves, both of the firſt and of the higher kinds, into thoſe with *hyperbolic legs*, and thoſe with parabolic ones. See CURVE.

HYPERBOLIC *Line* is uſed by ſome authors for what we call the *hyperbola* itſelf.

In this ſenſe, the plane ſurface, terminated by the curve line, is called the *hyperbola*; and the curve line that terminates it, the *hyperbolic line.*

HYPERBOLIC *Mirror.* See the article MIRROR.

HYPERBOLIC *Solid.* See the article CUBATURE.

HYPERBOLIFORM *Figures*, are ſuch curves as approach, in their properties, to the nature of the *hyperbola*; called alſo *hyperboloids.*

HYPERBOLOIDES, are *hyperbola's* of the higher kind, whoſe nature is expreſſed by this equation: $a y^m x^n = b x^m (a+x^n)$: eſpecially if $m > 1$, or $n > 1$, *e. g.* $a y^3 = b x^2 (a+x)$.

HYPERBOREAN, Ὑ΄ΠΕΡΒΟΡΕΟΣ, in the antient geography.—The antients denominated thoſe people and places *hyperborean*, which were to the northward of the Scythians. They had but very little acquaintance with theſe *hyperborean* regions; and all they tell us of them is very precarious, and much of it falſe.

Diodorus Siculus ſays, the *hyperboreans* were thus called by reaſon they dwelt beyond the wind *Boreas*; ὑπερ, ſignifying *above* or *beyond*; and Βορεας, *Boreas*, the north wind. This etymology is very natural and plauſible; notwithſtanding all that Rudbecks has ſaid againſt it, who would have the word to be generally Gothic, and to ſignify *nobility.*

Herodotus doubts, whether or no there were any ſuch thing as *hyperborean* nations: Strabo, who profeſs'd that he believed there were, does not take *hyperborean* to ſignify *beyond Boreas*, or the north, as Herodotus underſtood it: the prepoſition ὑπερ, in this caſe, he ſuppoſes only to help form a ſuperlative; ſo that *hyperborean*, on his principle, means no more than *moſt northern*: by which it appears the antients ſcarce knew themſelves what the name meant by it.

HYPERCATALECTIC *, in the Greek and Latin poetry, is applied to verſes which have one or two ſyllables too much; or beyond the regular meaſure. See VERSE.

* The word is Greek ὑπερκαταληκτικος; compoſed of ὑπερ, over, beyond, and καταληγω, I put to the number, I add; ſo that *hypercatalectic* denotes as much as *ſuperadded.*

The Greek and Latin verſes are diſtinguiſhed, with reſpect to their meaſure, into four kinds: *acatalectic* verſes, where nothing is wanting at the end; *catalectic*, which want a ſyllable at the end; *brachycatalectic*, which want a whole foot at the end; and, laſtly, *hypercatalectic*, which have one or two ſyllables too many.—Theſe laſt are alſo called *hypermeters.*

HYPERCATHARSIS *, Ὑ΄ΠΕΡΚΑΘΑΡΣΙΣ, in medicine, *ſuper-purgation*; a too violent, and exceſſive purgation.

* The word is compounded of the Greek ὑπερ, *ſupra*, and καθαριζω, I purge.

HYPERCRISIS *, Ὑ΄ΠΕΡΚΡΙΣΙΣ, in medicine, any immoderate critical excretion.

* The word is compounded of ὑπερ, *ſupra*, and κρισις, *criſis*, judgment.

Thus, when a fever terminates in a looſeneſs, the humours ſometimes flow off faſter than the ſtrength can bear, and are therefore to be checked.—This is a *hypercriſis.*

HYPERCRITIC *, an over-rigid cenſor, or critic; one who will let nothing paſs, but animadverts ſeverely on the ſlighteſt fault.

* The word is compounded of ὑπερ, *ſupra*, over, above, beyond, and κριτικος, of κριτης, *judex*; of κρινω, *judico*, I judge.

HYPERDULIA *, in the Romiſh theology, is the worſhip rendered to the holy virgin. See VIRGIN.

* The word is Greek ὑπερδουλεια, compoſed of ὑπερ, above, and δουλεια, worſhip, ſervice.

The worſhip offered to ſaints is called *dulia*; and that to the mother of God, *hyperdulia*; as being ſuperior to the former.

HYPERMETER *, in the antient poetry, the ſame with *hypercatalectic.* See HYPERCATALECTIC.

* The word is compoſed of ὑπερ, *ſupra*, and μετρον, meaſure.

HYPERSARCOSIS, Ὑ΄ΠΕΡΣΑΡΚΩΣΙΣ, in medicine and ſurgery, an exceſs of fleſh; or rather, a fleſhy excreſcence, ſuch as thoſe generally ariſing on the lips of wounds, *&c.*

HYPERTHYRON, in the antient architecture, a ſort of table uſed after the manner of a frieze, over the jambs of Doric doors and gates, and the lintels of windows. It lies immediately under the corona; and is by our workmen uſually called the *king-piece.*

* The word is formed of ὑπερ, *ſupra*, over, and θυρα, *janua*, gate.

HYPHEN, Ὑ΄ΦΗΝ, an accent or character in grammar, which implies, that two words are to be joined, or connected into one compound word.—As, male-ſanus, male-adminiſtration, *&c.*

Hyphens ſerve alſo to connect the ſyllables of ſuch words as are divided by the end of the line.

HYPNOTICK *, Ὑ΄ΠΝΩΤΙΚΟΣ, in medicine, a remedy which promotes or induces ſleep; called alſo *ſoporific*, and *opiate.*

* The word comes from the Greek ὑπνος, *ſomnus*, ſleep.

HYPO, Ὑ΄ΠΟ, a Greek particle, retained in the compoſition of divers words borrowed from that language; literally denoting *under*, *beneath.*—In which ſenſe it ſtands oppoſed to ὑπερ, *ſupra*, above.

HYPOBOLE *, in rhetoric, a figure whereby we anſwer, beforehand, to what we apprehend the adverſary will object.

* The word comes from the Greek ὑπο, and βαλλω, *jacio*, I caſt.

HYPOCATHARSIS *, Ὑ΄ΠΟΚΑΘΑΡΣΙΣ, in medicine, a too faint, or feeble purgation.

* The word is compounded of ὑπο, *ſub*, under, and καθαιρω, I purge.

HYPOCAUSTUM *, Ὑ΄ΠΟΚΑΥΣΤΟΝ, among the Greeks and Romans, was a ſubterraneous place, wherein was a furnace that ſerved to heat the baths.—Vitruvius calls it *caldarium.*

* The word is Greek, formed of the prepoſition ὑπο, *ſub*, under, and the verb καιω, *incendo*, I burn.

The antients had properly two ſorts of *hypocauſta*; the one called by Cicero *vaporarium*, and by others *laconicum* or *ſudatio*; which was a large ſweating bath, in which were three brazen veſſels called *caldarium*, *tepidarium*, and *frigidarium*, according to the water contained therein.

The other *hypocauſtum* was a ſort of *fornax* or oven to heat their winter parlours, or *cœnatiunculæ hybernæ*.

The latter *hypocauſtum* was called *alveus* and *fornax*; and the man that tended the fire, *fornacator*.

Hypocaustum, among the moderns, is that part or place where the fire is kept that warms a ſtove, or hot-houſe. See Stove.

HYPOCHONDRIA *, ʽΥΠΟΧΟΝΔΡΙΑ, in anatomy, a ſpace on each ſide the epigaſtric region, or upper part of the lower belly. See Abdomen, and Epigastric.

* The word is compoſed of the prepoſition ὑπο, *ſub*, under; and χονδρος, cartilage; *q. d. cartilagini ſubjacens*, or under the cartilages of the ribs, *&c.*

The *hypochondria* compoſe the upper part of the epigaſtrium.

They are ſituate on each ſide, between the cartilago enſiformis, the cartilages of the ribs, and the tip of the breaſt; and are divided, with reſpect to their ſituation, into *right* and *left*.

In the *right hypochondrium* the liver is found; and in the *left* the ſpleen, and a great part of the ſtomach.

Hippocrates ſometimes uſes the word *hypochondrium* for the whole lower venter or belly.

The *hypochondria* are ſubject to divers diſorders.

HYPOCHONDRIAC *affection*, or *paſſion*, a popular diſeaſe, otherwiſe called the *ſpleen*, *vapours*, &c.

The *hypochondriac* is a very comprehenſive diſeaſe: it is variouſly denominated, according to the various ſymptoms it is attended with, and the various parts where it is ſuppoſed to be ſeated, or in which it ariſes.

When conceived as ſituate in the *hypochondriac* regions, or ariſing from ſome diſorder of the parts contained therein, *viz.* the ſpleen, liver, *&c.* it is properly called the *hypochondriacal diſeaſe*, *ſpleen*, &c.

When conceived as owing to ſome diſorder of the womb, it is called the *hyſteric affection*, &c.

And laſtly, when the flatulent rumblings in the inteſtines, belchings, *&c.* are conſidered, it is called the *vapours*.

The *hypochondriac* is a very common and very obſtinate diſeaſe: few men of a ſedentary life, and fewer women, are free from it: its ſymptoms are very numerous: the moſt uſual are, a pain in the ſtomach, windineſs, vomitings, a ſwelling or diſtention of the *hypochondrium*, or upper part of the belly, noiſes and rumblings in the lower venter, wandering pains, a conſtriction of the breaſt, difficulty of breathing, palpitation of the heart, faintings, vigiliæ, inquietudes, ſwimming of the head, fear, ſuſpicions, melancholy, deliriums, *&c.* Not that all theſe accidents befal every perſon ſeized with this diſeaſe; but ſometimes ſome of them, and at other times others, according to the conſtitution, *&c.* of the patient.

In effect, the *hypochondriacal* is a very vague, indeterminate ſort of diſorder. Dr. Sydenham obſerves, that its ſymptoms ape or emulate thoſe of moſt other diſeaſes; and that whatever part it is in, it produces ſomewhat like the common diſeaſes of that part.—Thus, in the head, it produces a ſort of apoplexy; fits like the epilepſy, called *hyſteric* fits; intolerable head-ach, *&c.* In perſons affected with the chloroſis, it produces a palpitation of the heart; ſometimes, though rarely, it ſeizes the lungs, and cauſes a continual dry cough: it alſo imitates the colic, and iliac paſſion, and ſometimes the ſtone, jaundice, *&c.* In the inteſtines it produces a diarrhœa; in the ſtomach, nauſeas: ſometimes it ſeizes the external parts, and particularly the back, which it renders chilly and painful; and the legs and thighs, which it ſwells ſo as to reſemble the dropſy, ſeizing the teeth: it reſembles the ſcurvy (indeed, Etmuller makes the ſcurvy itſelf to be only a great degree of this diſeaſe). Laſtly, which is the moſt unhappy circumſtance of all, the patient is ſometimes more affected in mind than in body.

The ſeat of this diſeaſe is commonly ſuppoſed to be in the animal ſpirits, and the nervous ſyſtem. Its cauſe is referred to an acid ſalt abounding in the maſs of blood; to which the ill diſpoſition of the ſtomach, and the other parts contained in the epigaſtrium, may greatly contribute. Purcel aſſigns crudities and indigeſtions as the prime cauſe. According to Sydenham, vehement motions of the body, or more uſually violent perturbations of the mind, as grief, anger, fear, *&c.* are its procatarctic cauſes.

For the cure, the principal indication is to purify and ſtrengthen the blood, which is to be effected, after proper evacuations, by chalybeats, bitters, ſtrengtheners, and volatile ſpirits. The cortex has alſo notable virtues in this diſeaſe; as has alſo a milk diet. Riding is admirable.

Hypochondriacal *medicines*, are remedies proper in the *hypochondriacal* diſeaſe.

Such are all thoſe which tend to purify the blood, humours, and ſpirits; as chervil, baum, agrimony, and the other cephalic and cardiac herbs: ſuch alſo are thoſe which purge melancholy or atra bilis, according to the old authors, and thoſe which diſpel wind and vapours; and all medicines good for diſorders of the nerves, particularly vervain, both male and female; but above all, frequent, gentle, anodyne purges are excellent.

Hypochondriacal *regions*. See Hypochondria.

HYPOCHYMA *, or Hypochysis, in medicine, a diſeaſe of the eyes, more uſually called a *cataract*. See Cataract.

* The word is Greek, ὑποχυμα, which literally denotes ſhedding, effuſion, or pouring out; the diſeaſe having formerly been ſuppoſed to ariſe from an effuſion of ſome viſcid humour upon the pupil.

HYPOCHYSIS, in medicine. See Hypochyma.

HYPOCISTIS *, ʽΥΠΟΚΙΣΤΙΣ, in medicine, a juice uſed in the compoſition of theriaca, *&c.*

* The word is Greek, formed of ὑπο, under, and κιϛος, *ciſtus*.

The *hypociſtis* is the juice of a ſhoot or excreſcence of the ſame name, ſprouting out from the foot of a kind of ciſtus, which is called *ledon* or *ladanifera*; common enough in the hot countries.

The ſhoot grows about a foot high; and one, two, or three inches thick; and is ſomewhat bigger at top than at bottom; and is ſoft, ſucculent, of a yellowiſh colour, and ſurrounded from ſpace to ſpace with a ſort of rings, or browniſh knots.

When gathered, they pound it in a mortar, and expreſs the juice: that done, they evaporate it on the fire till it come to the conſiſtence of a hard blackiſh extract, much like Spaniſh liquorice. Then they make it up into little maſſes for carriage.

It is of a tart aſtringent taſte, and uſed to ſtop fluxes of the belly, vomitings, and hæmorrhages; though antiently much more than at preſent. It is alſo an ingredient in ſome unguents.

It is ſometimes uſed as a ſubſtitute to acacia.—Dr. Quincy ſays, it is the more powerful aſtringent of the two.

HYPOCRAS. See the article Hippocras.

HYPODROME. See the article Hippodrome.

HYPOGÆUM *, in the antient architecture, is a name common to all the parts of a building that are under-ground; as the cellar, butteries, and the like places.

* The word is Greek, ὑπογειον, formed of ὑπο, under, and γαια, *terra*, earth.

Hypogæum, ʽΥΠΟΓΑΙΟΝ, in aſtrology, is a name given to the celeſtial houſes which are below the horizon; and eſpecially the *imum cœli*, or bottom of heaven.

HYPOGASTRIC *region*. See Hypogastrium.

Hypogastric *artery*, is an artery ariſing from the iliaca interna, and diſtributed to the bladder, the rectum, and the genital parts, particularly in women.

Hypogastric *vein*, ariſes in the ſame parts, and diſcharges itſelf into the iliaca interna.

HYPOGASTRIUM *, in anatomy, the lower part of the abdomen, or lower venter; commencing from two or three inches below the navel, and extending to the os pubis.

* The word is Greek, formed of ὑπο, *ſub*, under; and γαϛηρ, *venter*, belly.

HYPOGLOTTIS *, or Hypoglossis, in anatomy, is a name given to two glands of the tongue.

* The word is Greek, compoſed of ὑπο, *ſub*, under; and γλωττα, *lingua*, tongue.

There are four large glands of the tongue; two of them called *hypoglottides*, ſituated under it, near the venæ ranulares; one on each ſide of the tongue. They ſerve to filtrate a kind of ſerous matter, of the nature of ſaliva, which they diſcharge into the mouth by little ducts near the gums.

Hypoglottis, or Hypoglossis, in medicine, denotes an inflammation or ulceration under the tongue; called alſo *ranula*.

HYPOMOCHLION *, in mechanics, the fulcrum of a lever; or the point which ſuſtains its preſſure, when employed either in raiſing or lowering bodies.

* The word is Greek, ὑπομοχλιον, formed of ὑπο, *ſub*, under; and μοχλος, *vectis*, lever.

The *hypomochlion* is frequently a roller ſet under the lever; or under ſtones, pieces of timber, *&c.* that they may be the more eaſily lifted up, or removed.

HYPOPYON *, in medicine, a diſeaſe of the eyes.—It conſiſts in a collection of pus, under or behind the cornea; which ſometimes covers the whole pupil, and obſtructs the light.

* The word is Greek, ὑποπυον, formed of ὑπο, *ſub*, under; and πυον, pus.

Some will have this diſorder the ſame with *unguis*; but the more accurate make a difference.

The *hypopyon* ariſes from a rupture of the veſſels in the uvea, occaſioned either by ſome external violence, or the acrimony of the blood therein.

It is very difficult of cure.—The ſuppuration is to be prevented by proper cataplaſms; or, if theſe will not take effect, is to be promoted.

HYPORCHEMA, in the Greek poetry, a poem compoſed in divers kinds of verſes, and of different lengths; but always very ſhort, and full of Pyrrhic feet.

HYPOSPATHISMUS *, in the antient ſurgery, an operation practiſed, by making three inciſions in the forehead, to the very bone, about two inches long; in order to cut or divide all the veſſels between thoſe inciſions. The deſign of the operation was to prevent defluxions on the eyes.

* The word is Greek, ὑποσπαθισμος, formed of ὑπο, under, and σπαθη, *ſpatula*; by reaſon after inciſions were made, they thruſt a ſpatula all along between the pericranium and the fleſh.

HYPOSTASIS *, a Greek term, literally ſignifying *ſubſtance*, or *ſubſiſtence*; it is uſed in theology for *perſon*.

* The word ὑποϛασις is compounded of ὑπο, *ſub*, under; and ἵϛημι, *ſto*, *exiſto*, I ſtand, I exiſt; *q. d. ſub-ſiſtentia*.

Thus we hold, that there is but one nature or eſſence in God, but three *hypoſtaſes*, or perſons.

The term *hypoſtaſis* is of a very antient ſtanding in the church. S. Cyril repeats it divers times, as alſo the phraſe *Union according to hypoſtaſis*. The firſt time it occurs in all chriſtian antiquity, is in a letter of that father to Neſtorius, where he uſes it inſtead of προσωπον, the word we commonly render *perſon*, which did not ſeem expreſſive enough. 'The philoſophers, ſays S. Cyril, have allowed three *hypoſtaſes*: they have extended the divinity to three *hypoſtaſes*: they have even ſometimes uſed the word *Trinity*: and nothing was wanting but to have admitted the conſubſtantiality of the three *hypoſtaſes*, to ſhew the unity of the divine nature, excluſive of all triplicity in reſpect of diſtinction of nature, and not to hold it neceſſary to conceive any reſpective inferiority of *hypoſtaſes*.'

This term has occaſioned great diſſenſions in the antient church; firſt among the Greeks, and afterwards alſo among the Latins.

In the council of Nice, *hypoſtaſis* was defined to denote the ſame with *eſſence*, or *ſubſtance*; ſo that it was hereſy to ſay, that Jeſus Chriſt was of a different *hypoſtaſis* from the Father; but cuſtom altered its meaning.

In the neceſſity they were under of expreſſing themſelves ſtrongly againſt the Sabellians, the Greeks made choice of the word *hypoſtaſis*, and the Latins of *perſona*; which change proved the occaſion of endleſs diſagreement. The phraſe τρεις ὑποϛασεις uſed by the Greeks, ſcandalized the Latins, whoſe uſual way of rendering ὑποϛασις in their language, was by *ſubſtantia*: the barrenneſs of the Latin tongue in theological phraſes, allowed them but one word for the two Greek ones, ȣσια and ὑποϛασις; and thus diſabled them from diſtinguiſhing *eſſence* from *hypoſtaſis*.—For which reaſon they choſe rather to uſe the term *tres perſonæ*, than *tres hypoſtaſes*.—An end was put to theſe logomachia's, in a ſynod held at Alexandria about the year 362. at which S. Athanaſius aſſiſted; from which time the Latins made no great ſcruple of ſaying *tres hypoſtaſes*, nor the Greeks of *three perſons*.—Among the Greeks the cuſtom obtained to ſay μια ȣσια, τρεις ὑποϛασεις, *one eſſence*, *three ſubſtances*; and among the Latins, not *una eſſentia*, *tres ſubſtantiæ*, but with the ſame meaning, *una eſſentia*, or *ſubſtantia*, *tres perſonæ*. Some later Latin writers, to avoid the ambiguity of the words *ſubſtance* and *perſon*, uſe ſubſiſtence, and ſay, one eſſence, three ſubſiſtences. Thoſe who took the word *hypoſtaſis* in its antient ſignification, could not bear to hear of three *hypoſtaſes*, which, according to them, were ſo many divine eſſences or ſubſtances. And yet they who uſed the word in the new ſenſe againſt the Sabellians, all along declared, that they meant by it three individuals, or three ſubjects which ſubſiſt alike, and not three different eſſences or ſubſtances: ſo that in their ſenſe, they admitted three *hypoſtaſes* in one and the ſame eſſence.—Others, by eſſence, underſtood a common and indefinite nature, as humanity is to all men in the general; and by *hypoſtaſis*, a ſingle nature, peculiar to each individual, as each man in particular is a modification of the whole human nature or eſſence.—But this laſt ſignification, which ſome attribute to S. Baſil, if applied to the Deity, would imply tritheiſm: for if the three perſons in the Trinity be three *hypoſtaſes*, juſt as Peter, James, and John, are, there are manifeſtly three Gods.

HYPOSTASIS, in medicine, the ſediment of the urine, or that thick heavy part of the urine, which ſubſides and ſettles at bottom.

HYPOSTATICAL, in theology, is a term uſed in ſpeaking of the myſtery of the incarnation.

Hypoſtatical union, is the union of the human nature with the divine.

The Word was united *hypoſtatically* to the human nature in the perſon of Jeſus Chriſt.

HYPOSTATICAL *principles*, among the chemiſts, and particularly the Paracelſiſts, are the three chemical elements, *ſalt*, *ſulphur*, and *mercury*; called alſo the *tria prima*. See PRINCIPLE, and ELEMENT.

HYPOTHECA *, in the civil law, an obligation, whereby the effects of a debtor are made over to his creditor, to ſecure his debt.

* The word comes from the Greek, ὑποθηκη, a thing ſubject to ſome obligation; of the verb ὑποτιθημαι, *ſupponor*, I am ſubjected; of ὑπο, under, and τιθημι, *pono*, I put.

As the *hypotheca* is an engagement procured on purpoſe for the ſecurity of the creditor, various means have been made uſe of to ſecure to him the benefit of the convention. The uſe of the pawn or pledge is the moſt antient; which is almoſt the ſame thing with the *hypotheca*; all the difference conſiſting in this, that the pledge is put into the creditor's hands; whereas, in a ſimple *hypotheca*, the thing remained in the poſſeſſion of the debtor. It was found more eaſy and commodious to engage an eſtate by a civil covenant, than by an actual delivery: accordingly, the expedient was firſt practiſed among the Greeks; and from them the Romans borrowed both the name and the thing: only the Greeks, the better to prevent frauds, uſed to fix ſome viſible mark on the thing, that the public might know it was *hypothecate*, or mortgaged by the proprietor: but the Romans, looking on ſuch advertiſements as injurious to the debtor, forbad the uſe of them.

The Roman lawyers diſtinguiſhed four kinds of *hypotheca's*: The *conventional*, which was with the will and conſent of both parties: the *legal*, which was appointed by law, and for that reaſon called *tacit*: the *prætor's pledge*, when by the flight or non-appearing of the debtor, the creditor was put in poſſeſſion of his effects: and the *judiciary*, when the creditor was put in poſſeſſion by virtue of a ſentence of the court.

The *conventional hypotheca* is ſubdivided into *general* and *ſpecial*. The *hypotheca* is *general*, when all the debtor's effects, both preſent and future, are engaged to the creditor. It is *ſpecial*, when limited to one or more particular things.

For the *tacit hypotheca*, the civilians reckon no leſs than twenty-ſix different ſpecies thereof.

HYPOTHENAR *, in anatomy, the ſecond muſcle of the little finger.

* The word is compounded of ὑπο, *ſub*; and *thenar*, the hollow of the hand.

The *hypothenar* ariſes from the little bone of the carpus, ſituate over the others, and is inſerted externally into the firſt bone of the little finger, which it ſerves to withdraw from the reſt.

The ſixth and laſt muſcle of the toes is alſo called *hypothenar*, or abductor.

HYPOTHENUSE *, or rather HYPOTENUSE, in geometry, is the longeſt ſide of a right-angled triangle; or that ſide which ſubtends, or is oppoſite to, the right angle.

* The word is Greek, ὑποτεινȣσα, *ſubtendens*, formed of ὑποτεινω, *ſubtendo*, I ſubtend.

Thus in the triangle KML (*Tab. Geometry*, *Fig.* 71.) the ſide ML, oppoſite to the right angle K, is called the *hypothenuſe*.

It is a celebrated problem in geometry, that in every rectilinear right-angled triangle, as KML, the ſquare of the *hypothenuſe*, ML, is equal to the ſquares of both the other ſides, KL and KM.—This is particularly called the *Pythagorean* problem, from its inventor Pythagoras, who is ſaid to have ſacrificed a whole hecatomb to the Muſes, in gratitude for their aſſiſting him therein.

HYPOTHESIS *, in logic, is a propoſition or principle which we ſuppoſe, or take for granted, in order to draw concluſions therefrom, for the proof of a point in queſtion. See POSITION, and PRINCIPLE.

* The word is Greek, ὑποθεσις, formed of ὑπο, *ſub*, under; and θεσις, *poſitio*; of τιθημι, *pono*, I put.

In diſputation, they frequently make falſe *hypotheſes*, in order to draw their antagoniſts into abſurdities; and even in geometry truths are often deducible from ſuch falſe *hypotheſes*.—Thus, if the ſky ſhould fall, we ſhould catch larks: The conſequence is good, though drawn from a falſe *hypotheſis*.

Every conditional or hypothetical propoſition may be diſtinguiſhed into *hypotheſis* and *theſis*: the firſt rehearſes the conditions under which any thing is affirmed or denied; and the the latter is the thing itſelf affirmed or denied.

Thus, in the propoſition, a triangle is half of a parallelogram, if the baſes and altitudes of the two be equal; the latter part is the *hypotheſis*, if the baſes, &c. and the former the theſis, a triangle is half a parallelogram.

In ſtrict logic, we are never to paſs from the *hypotheſis* to the theſis; that is, the principle ſuppoſed muſt be proved to be true, before we require the conſequence to be allowed.

HYPOTHESIS, in phyſics, &c. denotes a kind of ſyſtem laid down from our own imagination, whereby to account for ſome phænomenon or appearance of nature.

Thus we have *hypotheſes* to account for the tides, for gravity, for magnetiſm, for the deluge, &c.

The real and ſcientific cauſes of natural things generally lie very deep: obſervation and experiment, the proper means of arriving at them, are in moſt caſes extremely ſlow; and the human mind is very impatient: hence we are frequently driven to feign or invent ſomething that may ſeem like the cauſe, and which is calculated to anſwer the ſeveral phænomena; ſo that it may poſſibly be the true cauſe.

Philoſophers are divided as to the uſe of ſuch fictions or *hypotheſes*, which are much leſs current now than they were formerly.—The lateſt and beſt writers are for excluding *hypotheſes*, and ſtanding wholly on obſervation and experiment.

Whatever is not deduced from phænomena, ſays Sir Iſaac Newton, is an *hypotheſis*; and *hypotheſes*, whether metaphyſical, or phyſical, or mechanical, or of occult qualities, have no place in experimental philoſophy. *Phil. Nat. Prin Math. in Calce.*

The Carteſians take upon them to ſuppoſe what affections in the primary particles of matter they pleaſe; juſt what figures, what magnitudes, what motions, and what ſituations, they find for their purpoſe.—They alſo feign certain unſeen, unknown fluids, and endue them with the moſt arbitrary properties; give them a ſubtilty which enables them to pervade the pores of all bodies, and make them agitated with the moſt unaccountable motions. But is not this to ſet aſide the real conſtitution of things, and to ſubſtitute dreams in their place? Truth is ſcarce attainable even by the ſureſt obſervations; and will fanciful conjectures ever come at it? They who found their ſpeculations on *hypotheſes*, even tho' they argue from them regularly, according to the ſtricteſt laws of mechanics, may be ſaid to compoſe an elegant and artful fable; but it is ſtill only a fable. Cotes *in Præfat. ad Newton. Princip.*

Hypothesis is more particularly applied, in aſtronomy, to the ſeveral ſyſtems of the heavens: or the divers manners wherein different aſtronomers have ſuppoſed the heavenly bodies to be ranged, moved, *&c.*

The principal *hypotheſes* are the *Ptolemaic*, *Copernican*, and *Tychonic*.

The Copernican is now become ſo current, and is ſo well warranted by obſervation, that the retainers thereto hold it injurious to call it an *hypotheſis*.

HYPOTHETICAL *propoſition* is a combination of two categorical propoſitions, the latter whereof follows from the former, which is diſtinguiſhed by the particle *if*.

Such, *e. g.* are, If he be a man, he is an animal: if the Turk ſleep, the cock crows: if you repent, you ſhall be forgiven.

HYPOTRACHELION* in anatomy, denotes the lower part of the neck. See Neck.

* It is thus called from ὑπο, *ſub*, under; and τραχηλος, *collum*, neck.

Hypotrachelion, in architecture, is uſed for a little frieze in the Tuſcan and Doric capital, between the aſtragal and annulets; called alſo the *colerin*, and *gorgerin*.

The word is alſo applied by ſome authors, in a more general ſenſe, to the neck of any column; or that part of the capital thereof below the aſtragal.

HYPOTYPOSIS*, in rhetoric, a figure whereby a thing is ſo livelily deſcribed or painted, that it does not ſeem to be read, or heard, but actually ſeen, or preſented before the eyes.

* The word is Greek, ὑποτυπωσις, formed of the verb ὑποτυποω, *per figuram demonſtro*, I ſhew, repreſent, or make any thing be ſeen: of ὑπο, under; and τυπος, type, image, reſemblance.

Such is that elegant one of Cicero, wherein he paints the barbarity of Verres: *Ipſe inflammatus ſcelere & furore, in forum venit. Ardebant oculi; toto ex ore crudelitas emanabat. Expectabant omnes quo tandem progreſſurus, aut quidnam acturus eſſet; cum repente hominem corripit, atque in foro medio nudari ac deligari, & virgas expedire jubet. Clamabat ille miſer ſe civem eſſe Romanum*, &c.

The *hypotypoſis* is frequently uſed by the poets, and particularly Virgil, who abounds in paintings.

HYPOZOMA, in anatomy, a name given to ſuch membranes as ſeparate two cavities.

In this ſenſe, the mediaſtinum is an *hypozoma*.

HYPSILOGLOSSUS, in anatomy, the ſame with *baſioglſſus*.

HYPSILOIDES, in anatomy. See Hyoides.

HYPSISTARII*, Hypsistarians, a ſect of heretics in the fourth century; thus called from the profeſſion they made of worſhiping the moſt High God.

* The word is Greek, ὑψιςαριοι, formed from ὑψιςος, *hypſiſtos*, higheſt.

The doctrine of the *Hypſiſtarians* was an aſſemblage of Paganiſm, Judaiſm, and Chriſtianity. They adored the moſt High God with the Chriſtians; but they alſo revered fire and lamps with the Heathens; and obſerved the ſabbath, and the diſtinction of clean and unclean things, with the Jews.

The *Hypſiſtarii* bore a near reſemblance to the Euchites, or Maſſalians.

HYSSOP, Hyssopus, a medicinal herb, of a detergent cleanſing quality, and chiefly uſed in diſeaſes of the breaſt and lungs.

It is a ſtanding ingredient in pectoral apozems. There are alſo a ſyrup, and a ſimple diſtilled water from it, uſed in the ſhops.

It has alſo a faculty to comfort and ſtrengthen; and is prevalent againſt melancholy and phlegm.—It is propagated only by ſlips.

Its tops and flowers, reduced to powder, are by ſome reſerved to ſtrew upon the colder ſallad-herbs.

HYSSOPIC *art*, a name which Paracelſus gave to chemiſtry, conſidered as that art purifies metals, minerals, &c. in alluſion to that text in the Pſalms, "Purge me with *hyſſop*, and I "ſhall be clean."

HYSTERALGY*, in medicine, a pain in the matrix or womb, occaſioned by ſome inflammation, or other diſorder therein.

* The word is compounded of the Greek ὑςερα, *matrix*, womb; and αλγος, *dolor*, pain,

HYSTERIC* *affection*, or *paſſion*, a diſeaſe in women, called alſo *ſuffocation of the womb*, and vulgarly *fits of the mother*.

* The word is Greek, ὑςερικος, formed of ὑςερα, womb.

Hyſteric affection is generally uſed by authors promiſcuouſly with *hypochondriac affection*; the two diſeaſes being ſuppoſed to be, in reality, the ſame.—They only differ indeed in point of relation and circumſtance.

The *hyſteric* is properly a ſpecies or branch of the hypochondriac, peculiar to women, and ſuppoſed to ariſe from ſome diſorder of the womb.

One of the ſymptoms, or effects, of hypochondriac diſeaſes is, convulſions, or fits, not unlike thoſe of the epilepſy: theſe we call *hyſteric fits*; and the diſeaſe that produces them, the *hyſteric affection*. *Sydenham.*

It is alſo particularly denominated *hyſteric ſuffocation*, from one of its principal ſymptoms, which is a contraction of the breaſt, and a difficulty of breathing.

Some women under this diſorder fanſy a rope tied about their necks, ready to ſtrangle them; and others think a piece of ſomething is got into their throats, which they cannot ſwallow; but which ſtops their breath: and ſome will even remain a good while as if really ſtrangled, without any ſenſe or motion.

The more common ſymptoms or accidents of this diſeaſe are, a ſwimming of the head, a dazling of the eyes, inquietudes, pains of the abdomen, belches, nauſeas, vomitings, deliriums, and convulſions. It is not always attended with all theſe ſymptoms, but ſometimes with more, and ſometimes with fewer of them, and thoſe more or leſs violent.

Dr. Purcel deſcribes an *hyſteric* paroxyſm, as beginning with a ſenſe of coldneſs creeping up the back, and afterwards ſpreading over the whole body; then enſues a head-ach, and ſometimes a palpitation of the heart, with a fainting, from which the patient ſoon recovers. Sometimes, after the coldneſs, there ſucceeds a remarkable heat, which brings on the fore-mentioned ſymptoms.—Baglivi adds, that *hyſteric* women feel a ſenſe of cold in the crown of the head: and this he takes to be the chief diagnoſtic of the diſeaſe.

The ordinary cauſes of this diſorder are violent paſſions, rage, love, grief, ill news, ſweet ſmells, *&c.* As for the popular notion of malignant vapours ariſing from the womb, and occaſioning all theſe ſymptoms, the learned all diſcard it, and hold men as ſubject to the diſeaſe as women. The real cauſe they affirm is in the animal ſpirits, and the nervous ſyſtem; and the affection does not differ from the hypochondriac.

For the cure; as many of the ſymptoms are convulſive, antiſpaſmodics are indicated. During the paroxyſm, fetid things, whether internally or externally applied, are of advantage; particularly caſtoreum, the ſmoke of burnt horn, or burnt feathers, held to the noſe. Volatile ſpirits alſo help to wake the patient out of the paroxyſm; as alſo tickling in the ſoles of the feet. Where it is ſeverer than ordinary, recourſe muſt be had to puncture, ſcarification, veſicatories, and even to cauſtics.

HYSTERICS, or Hysteric *medicines*, are remedies proper to remove *hyſteric* affections; and to remedy diſorders of the womb.

There are divers ſpecies of *hyſterics*: ſome evacuate or cleanſe the womb, by expelling any impurities lodged therein: others tend to ſtop immoderate fluxes thereof; and others ſtrengthen the tone of the part.

According to Dr. Quincy, *hyſteric* affections ariſe either from too titillating, or too uneaſy ſenſations: the former proceed from that irritation of the nerves, which the make and ſecretion of thoſe parts have naturally ſubjected them to, and which, in ſome ſorts of conſtitutions, ariſe to that degree, as to draw the whole ſyſtem into diſorder, and occaſion a ſurpriſing variety of ſymptoms; *e. g.* ſeveral ſorts of convulſions, and ſpecies of madneſs; which therefore are by ſome termed *furores uterini.*

Theſe diſorders are moſt effectually allayed by ſuch things as are in a manner the reverſe of cordials, and are both in ſmell and taſte very offenſive and diſagreeable: they ſeem to anſwer this end by ſuffocating, as it were, the ſpirits, and damping their inordinate ſallies, ſo that ſuch ſtimulation ceaſes, and the fibres return to their natural tone and motions: for, as what is grateful to the ſenſes gives an inexpreſſible emotion to the fine nervous filaments; ſo does what is fetid and diſagreeable quite deſtroy that emotion, and deaden it: and as the former kind conſiſt chiefly of fine ſubtile volatile parts, by which, as before explained under CEPHALICS, they are fitter to enter the nerves; ſo theſe are generally of a clammy viſcous contexture, and therefore the fitter to envelope and entangle that ſubtile juice; whereby its motion is much retarded.

HYSTEROLOGY*, HYSTEROLOGIA, in rhetoric, a vicious manner of ſpeaking, wherein the natural order of things is inverted; called alſo by the Greeks ὕστερον πρότερον; *q. d.* putting the firſt thing where the laſt ſhould be.

* The word is Greek, ὑστερολογια, ſignifying *a diſcourſe inverted.*

HYSTERON-PROTERON, *ὕστερον πρότερον.* See HYSTEROLOGY.

HYSTEROTOMIA*, ΥΣΤΕΡΟΤΟΜΙΑ, in anatomy, an anatomical diſſection of the uterus, or womb. See MATRIX.

* The word is formed of the Greek, ὑστερα, *matrix,* womb; and *τεμνω, ſeco,* I cut, I diſſect.

HYSTEROTOMOTOCY, ΥΣΤΕΡΟΤΟΜΟΤΟΚΕΙΑ, in ſurgery, an operation more uſually called the *Cæſarian ſection.* See CÆSARIAN.

HYTH, or HITH, a port, wharf, or little haven, to embark or land wares at.—Such is *Queen-hith,* &c.

I.

I, The ninth letter of the Engliſh alphabet: it is both a vowel and a conſonant; agreeable to which two different powers, it has two different forms.

The Hebrews called the *j* conſonant *jod,* יוד from יד *hand* and *ſpace*; in regard it is ſuppoſed to repreſent the hand clenched, ſo as to leave the ſpace underneath void. With them, it was pronounced as the conſonant *y,* as it ſtill is among the Germans, and ſome other people. The Greeks had no *j* conſonant, and for that reaſon uſed their vowel *i* inſtead of it, as coming the neareſt in ſound. The French and Engliſh have two kinds of *j* conſonants; the firſt has a ſnuffling kind of ſound, and ſerves to modify that of the vowels, pretty much in the manner of g; as in *jew, juſt, jovial:* the latter is pronounced like the Hebrew jod; inſtances of which we have in ſome of our words, which are indifferently written with a y or an *i* before a vowel; as voiage, *voyage,* loial, *loyal,* &c. in which caſes, the *i* is apparently a conſonant, as being only a motion of the palate, which gives a modification to the following vowel.

The vowel *i,* according to Plato, is proper for expreſſing fine and delicate, but humble things: on which account that verſe in Virgil,

Accipiunt inimicum imbrem, rimiſque fatiſcunt,

which abounds in *i*'s, is generally admired.

The vowel *i* was the only vowel which the Romans did not mark with a daſh of the pen, to ſhew when it was long; inſtead of which, to denote it long, they uſed to make it bigger than ordinary, as in PIſo, VIvus, &c.—According to Lipſius, they often repeated it when it was to be long, as in *dii.* They ſometimes alſo denoted the length of this letter by adding *e* to it, and turning it into a diphthong, as *divei* for *divi, omneis* for *omnis,* &c.

I, was antiently a numeral letter, and ſignified an hundred, according to the verſe,

I. *cı compar erit, & centum ſignificabit.*

I, in the ordinary way of numbering, ſignifies one; and when repeated, it ſignifies as many units as it is repeated times.

In abbreviatures and ciphers, *I* frequently repreſents the whole word Jeſus, whereof it is the firſt letter.

JABAJAHITES, a ſect among the muſſulmen, who, according to Ricaut, teach, That God is not perfectly wiſe; that his knowlege does not extend to every thing; and that time and experience have furniſhed him with the knowlege of many things whereof he was before ignorant.—Thus, ſay they, not being appriſed from all eternity of every event that ſhall happen in the world, he is now obliged to govern it according to the chance and occurrence of thoſe events.

JACK, in a ſhip, is that flag which is hoiſted up at the ſpritſail-top-maſt-head. See *Tab. Ship. Fig.* 1. *n.* 146.

In falconry, *jack* ſignifies the male of birds of ſport. See HAWK, and FALCON.

JACK-*Ketch* is a name given by the populace to the public hangman.

JACK-*in-a-lantern.* See the article IGNIS FATUUS.

JACOB's STAFF, a mathematical inſtrument for taking heights and diſtances; the ſame with the *croſs-ſtaff.* See CROSS-STAFF.

JACOBINS, a name given in France to the religious who follow the rule of S. Dominic, on account of their principal convent, which is near the gate of S. James, in Latin *Jacobus,* at Paris; and which, before they came poſſeſſed of it in the year 1218. was an hoſpital of pilgrims, dedicated to the ſaid ſaint.

Others maintain, that they have been called *Jacobins* ever ſince they were eſtabliſhed in Italy, in regard they pretended to imitate the lives of apoſtles.

They are alſo called *friers predicants,* or preaching friers, and make one of the four orders of mendicants.

JACOBITES, a ſect of heretics, who were antiently a branch of the Eutychians, and are ſtill ſubſiſting in the Levant.

They were ſo called from *Jacobus,* James, of Syria, who was one of the heads of the Monophyſites, or ſectaries who owned but one nature in Jeſus Chriſt.

The Monophyſites were a ſect of vaſt extent, comprehending the Armenians, Cophts, and Abyſſinians; but thoſe among them who are properly *Jacobites,* were but few; and among thoſe, too, there is now a diviſion, ſome being Romanized, and others perfectly averſe to the Romiſh church: each of which parties have their ſeveral patriarchs, the one at Caremit, and the other at Derzapharan.

As to their faith, all the Monophyſites, both *Jacobites* and others, follow the doctrine of Dioſcorus touching the unity of nature and perſon in Jeſus Chriſt.

JACOBITE, in England, is a term of reproach beſtowed on ſuch perſons as diſallow the late revolution, and ſtill aſſert the rights, and adhere to the intereſts, of the late abdicated king James, and his line.

JACOBUS, a gold coin, worth 25 ſhillings; ſo called from king James the Firſt of England, in whoſe reign it was ſtruck.

We uſually diſtinguiſh two kinds of *Jacobus,* the *old* and the *new*; the former valued at 25 ſhillings; weighing ſix penyweights ten grains: the latter, called alſo *Carolus,* valued at 23 ſhillings; in weight five peny-weight, twenty grains.

JADE, a greeniſh ſtone, bordering on olive-colour, much eſteemed for its hardneſs, which exceeds that of porphyry, agate, or jaſper; and is only to be cut with diamond-duſt.

It is in mighty eſteem among the Turks and Poles, who adorn all their fine works with it, and eſpecially the handles of their ſabres.

This ſtone, applied to the reins, is ſaid to be a preſervative from the nephritic colic.—M. Bernier tells us, that the caravans of Tibet carry it to Cachemire, and that the Galibis prize it as highly as the diamond. The natives of South-America value it on account of the virtues they attribute to it in the epilepſy, ſtone, and gravel.—In a treatiſe on it printed at Paris, it is called the *divine ſtone.* See Supplement, article JADE.

JALAP, JALAPIUM, or JALAPPA, a root of a plant not much unlike our briony, and therefore by ſome called *brionia Peruviana*; as being brought to us chiefly from Peru and New-Spain, much uſed as a cathartic.

The mechoacan and this are reckoned of a ſpecies; and therefore as this is ſometimes called *mecoacana nigra,* that goes as often by the name of *jalapium album.*

As *jalap* does not appear to have been known to the antients, it has its place in medicine only ſince thoſe parts of America which produce it, have been traded to by the Europeans.

That which breaks blackeſt, moſt brittle, ſound, and ſhining withinſide, is the beſt, by reaſon of the reſinous parts, which give it thoſe properties, are ſuppoſed to contain its medicinal virtues.

Some take great pains to extract its reſin, which is to be done with any ſpirituous menſtruum, but afterwards they want correctors for it: the moſt common is ſalt of tartar, or loaf-ſugar; but if correcting conſiſts in ſeparating its parts, as it certainly does, the drawing it from the root, and making it into a reſin, ſhould ſeem to be needleſs.—M. Boulduc, who has made ſeveral experiments on it, ſays, it is one of the beſt cathartics we have, taken as nature only has prepared it.

IAMBIC, a kind of verſe, found in the Greek and Latin poets; conſiſting wholly, or at leaſt in great part, of *iambus's*, or feet ſo called.

Iambic verſes may be conſidered, either with regard to the diverſity, or the number of their feet: under each of which heads there are diſtinct kinds, which have different names.—1°, *Pure iambics* are thoſe which conſiſt intirely of *iambus's*; as the fourth piece of Catullus made in praiſe of a ſhip:

> *Phaſelus ille, quem videtis, hoſpites.*

The ſecond kind are theſe called ſimply *iambics*.—Theſe have no iambus's but in the even feet, though there are ſometimes tribrachys's added to them, excepting to the laſt, which is always an iambus; and in the uneven feet they have ſpondees, anapæſts, and even a dactyl in the firſt: ſuch is that of Medea in Ovid.

> *Servare potui: perdere anpoſſim rogas?*

The third kind are the *free iambic* verſes, in which it is not abſolutely neceſſary there ſhould be any iambus, excepting in the laſt foot; of which kind are all thoſe of Phædrus:

> *Amittit merito proprium, qui alienum appetit.*

In comedies, the antient authors ſeldom confine themſelves more, frequently leſs, as we may obſerve in Plautus and Terence: but the ſixth is always indiſpenſably an iambus.

As to the varieties, occaſioned by the number of ſyllables; —*Dimeter iambic* is that which has but four feet:

> *Queruntur in ſilvis aves.*

Thoſe which have ſix are called *trimeters*: theſe are the moſt beautiful, and are uſed principally for the theatre; particularly in tragedy; wherein they are vaſtly preferable to the verſes of ten or twelve feet, uſed in our modern drama; in regard they come nearer to the nature of proſe, and ſavour leſs of art and affectation.

> *Dii conjugales, tuque genialis tori*
> *Lucina cuſtos*, &c.

Thoſe with eight are called *tetrameters*, and are only uſed in comedies:

> *Pecuniam in loco negligere maximum interdum eſt lucrum.* Terent.

Some add an *iambic* monometer, with two feet:

> *Virtus beat.*

They are called *monometers*, *dimeters*, *trimeters*, and *tetrameters*; that is, of one, two, three, and four meaſures, becauſe a meaſure conſiſted of two feet; the Greeks meaſuring their verſes two feet by two feet, or by dipodys, or epitrites, joining the iambus and ſpondee together.

All the *iambics* hitherto mentioned are *perfect*; they have their juſt number of feet, without any thing either deficient or redundant.—The *imperfect iambics* are of three kinds; the *catalectic*, which want a ſyllable:

> *Muſæ Jovem canebant.*

The *brachycatalectic*, which want an intire foot:

> *Muſæ Jovis gnatæ.*

The *hypercatalectic*, which have either a foot or a ſyllable too much:

> *Muſæ ſorores ſunt Minervæ,*
> *Muſæ ſorores Palladis lugent.*

Many of the hymns and anthems uſed in the Romiſh church, are *dimeter iambics*, that is, conſiſting of four feet.

IAMBUS*, ΙΑΜΒΟΣ, in the Greek and Latin proſody, a poetical foot, conſiſting of a ſhort ſyllable followed by a long one; as in

◡—◡ — ◡— ◡—
Θεȣ, λεγω, De', *meas.*

Syllaba longa brevi ſubjecta vocatur iambus, as Horace expreſſes it; who alſo calls the *iambus* a ſwift, rapid foot, *pes citus*.

* The word, according to ſome, took its riſe from *Iambus*, the ſon of Pan and Echo, who invented this foot; or perhaps, who only uſed ſharp biting expreſſions to Ceres, when afflicted for the death of Proſerpine: ſome rather derive it from the Greek, ιος, *venenum*, poiſon; or from ιαμβιζω, *maledico*, I rail, or revile; becauſe the verſes compoſed of *iambus's* were at firſt only uſed in ſatire.

JAMES—S. JAMES *of the Sword*, *San* JAGO *del Eſpada*, a military order in Spain, inſtituted in 1170. under the reign of Ferdinand II. king of Leon and Gallicia.

Its end was, to put a ſtop to the incurſions of the Moors: three knights obliging themſelves by a vow to ſecure the roads.

An union was propoſed and agreed to in 1170. between theſe and the canons of S. Eloy; and the order was confirmed by the pope in 1175.

The higheſt dignity in this order is that of grand maſter, which has been united to the crown of Spain.—The knights are obliged to make proof of their deſcent from families that have been noble for four generations on both ſides: they muſt alſo make it appear, that their ſaid anceſtors have neither been Jews, Saracens, nor heretics; nor even to have been called in queſtion by the inquiſition.

The novices are obliged to ſerve ſix months in the galleys, and to live a month in a monaſtery.—Heretofore they were truly religious, and took a vow of celibacy; but Alexander III. gave them a permiſſion to marry. They now make no vows but of poverty, obedience, and conjugal fidelity; to which, ſince the year 1652. they have added that of defending the immaculate conception of the holy virgin.—Their habit is a white cloke, with a red croſs on the breaſt.—This is eſteemed the moſt conſiderable of all the military orders in Spain: the king carefully preſerves the office of grand maſter in his own family; on account of the rich revenues and offices, whereof it gives him the diſpoſal.—The number of knights is much greater now than formerly, all the grandees chooſing rather to be received into this, than into the order of the golden fleece; inaſmuch as this puts them in a fair way of attaining to commands, and gives them many conſiderable privileges in all the provinces of Spain, but eſpecially in Catalonia.

JANIZARIES*, an order of infantry in the Turkiſh armies; reputed the grand ſeignior's foot-guards.

* Voſſius derives the word from *genizers*, which, in the Turkiſh language, ſignifies *novi homines*, or *milites*: D'Herbelot tells us, that *jenitcheri* ſignifies a *new band*, or *troop*; and that the name was originally given by Amurath I. called the Conqueror, who, chooſing out one fifth part of the Chriſtian priſoners, whom he had taken from the Greeks, and inſtructing them in the diſcipline of war, and the doctrines of their religion, ſent them to Hagi Bektaſche (a perſon whoſe pretended piety rendered him extremely revered among the Turks) to the end that he might confer his bleſſing on them, and at the ſame time give them ſome mark to diſtinguiſh them from the reſt of the troops.—Bektaſche, after bleſſing them in his manner, cut off one of the ſleeves of the fur gown which he had on, and put it on the head of the leader of this new militia; from which time, *viz.* the year of Chriſt 1361. they have ſtill retained the name *jenitcheri*, and the fur cap.

As, in the Turkiſh army, the European troops are diſtinguiſhed from thoſe of Aſia; the *janizaries* are alſo diſtinguiſhed into *janizaries* of *Conſtantinople*, and of *Damaſcus*.

Their pay is from two aſpers to twelve *per diem*; for when they have a child, or do any ſignal piece of ſervice, their pay is augmented.

Their dreſs conſiſts of a dolyman, or long gown, with ſhort ſleeves, which is given them annually by the grand ſeignior, on the firſt day of Ramazan. They wear no turban, but in lieu of that a kind of cap, which they call *zarcola*, and a long hood of the ſame ſtuff hanging on their ſhoulders. On ſolemn days they are adorned with feathers, which are ſtuck in a little caſe in the fore-part of the bonnet.

Their arms, in Europe, in a time of war, are a ſabre, a carabine, or muſquet, and a cartouch-box hanging on the left ſide.—At Conſtantinople, in time of peace, they only carry a long ſtaff in their hand. In Aſia, where powder and firearms are more uncommon, they wear a bow and arrows, with a poigniard, which they call *haniare*.

The *janizaries* were heretofore a body formidable even to their maſters the grand ſeigniors: Oſman they firſt ſtripped of his empire, and afterwards of his life; and ſultan Ibrahim they depoſed; and at laſt ſtrangled in the caſtle of the Seven Towers: but they are now much leſs conſiderable. Their number is, or ought to be, fixed to twenty thouſand.

The *janizaries* are children of tribute, levied by the Turks among the Chriſtians, and bred up to the military life.—They are taken at the age of twelve years, to the end that, forgetting their country and religion, they may know no other parent, but the ſultan. However, generally ſpeaking, they are not now-a-days raiſed by way of tribute; for the carach, or tax, which the Turks impoſe on the Chriſtians, for allowing them the liberty of their religion, is now paid in money; excepting in ſome places, where, money being ſcarce, the people are unable to pay in ſpecie, as in Mengrelia, and other provinces near the Black ſea.

The officer who commands the whole body of *janizaries*, is called the *janizar agaſi*; in Engliſh, *aga* of the *janizaries*: he is one of the chief officers of the empire.

Though the *janizaries* are not prohibited marriage, yet they rarely marry, nor then, but with the conſent of their officers; as imagining a married man to make a worſe ſoldier than a bachelor.

The *janizaries* were at firſt called *jaja*, that is, footmen, to diſtinguiſh them from the other Turks, the troops whereof conſiſted moſtly of cavalry.

Vigenere tells us, that the diſcipline obſerved among the *janizaries*,

nizaries, is extremely conformable, in a great many things, to that uſed in the Roman legions.

JANIZARIES, at Rome, are officers or penſioners of the pope, called alſo *participantes*, by reaſon of certain rights or dues which they enjoy in the annates, bulls, or expeditions, of the Roman chancery.

Moſt authors are miſtaken in the nature of their office: the truth is, they are officers of the third bench, or college of the Roman chancery.—The firſt bench conſiſts of writers, the ſecond of abbreviators, and the third of *janizaries*; who are a kind of correctors and reviſers of the pope's bulls.

JANSENISM, the doctrine of Cornelius Janſen, commonly called *Janſenius*, biſhop of Ypres in Flanders, with relation to grace, and free-will.

Janſeniſm made no great noiſe in the world, till after the death of its author, in 1638. when Fromond and Calenus, his executors, publiſhed his book, intituled *Auguſtinus*.

The whole doctrine was reduced by the biſhops of France into five propoſitions, which follow: I. Some commands of God are impoſſible to righteous men, even though they endeavour, with all their powers, to accompliſh them; the grace being wanting, by which they ſhould be enabled to perform them. II. In the ſtate of corrupted nature, a man never reſiſts inward grace. III. To merit and demerit in the preſent ſtate of corrupt nature, it is not requiſite a man ſhould have that liberty which excludes neceſſity: that which excludes conſtraint is ſufficient. IV. The Semipelagians admitted the neceſſity of inward preventing grace to each act in particular, and even to the beginning of faith: but they were heretics, in regard they aſſerted, that this grace was ſuch, as that the will of man might either reſiſt or obey it. V. It is Semipelagianiſm to ſay, that Jeſus Chriſt died, or ſhed his blood, for all men in general.

Janſeniſm conſiſts in maintaining theſe doctrines; which may be done two ways: 1°, By aſſerting, that theſe propoſitions are ſound and orthodox. 2°, In affirming, that they are evil and heretical in the ſenſe wherein the church has condemned them; but that this ſenſe is not that of *Janſenius*.

Janſeniſm has been condemned by the popes, Urban VIII. Innocent X. Alexander VII. and Clement XI.

JANUARY*, the name of the firſt month of the year, according to the computation now uſed in the weſt.

* The word is derived from the Latin *Januarius*, a name given it by the Romans, from *Janus*, one of their divinities, to whom they attributed two faces; becauſe, on the one ſide, the firſt day of *January* looked towards the new year, and, on the other, towards the old one.—The word *Januarius* may alſo be derived from *janua*, gate; in regard this month, being the firſt, is, as it were, the gate of the year.

January and *February* were introduced into the year by Numa Pompilius; Romulus's year beginning in the month of March.

The Chriſtians heretofore faſted on the firſt day of *January*, by way of oppoſition to the ſuperſtition of the Heathens, who, in honour of Janus, obſerved this day with feaſtings, dancings, maſquerades, *&c.*

JAPAN *Earth*, or *Catechu*, a medicinal ſubſtance of a dark purple colour; very auſtere upon the palate, ſeeming to melt in the mouth, and leaving ſomewhat of a ſweetiſh taſte behind it.

It is famous for ſtopping fluxes of all kinds; and is the juice of a vegetable, not an earth, as its name imports. See CATECHU.

JAPANNING, the art of varniſhing, and drawing figures on wood, *&c.* after the ſame manner as the workmen do who are natives of Japan, a famous iſland not far from the coaſt of China.

The manner of *japanning* on wood, ordinarily practiſed among us, is ſaid to be this:—They take a pint of ſpirit of wine well dephlegmated, and four ounces of gum lacca (which laſt muſt be ſeparated from the ſticks and rubbiſh); then bruiſing it roughly in a mortar, they put it to ſteep in ſpring-water, tied up in a bag of coarſe linen, together with a little Caſtile ſoap, for the ſpace of twelve hours. This done, they rub out all the tincture, and add to it the ſpirit, and a little alum, and reſerve it apart; they then add as much maſtic, and white amber, diſſolved in a matraſs, with ſpirit of wine, by a two days digeſtion, frequently ſtirring it, that it do not ſtick to the glaſs; then they ſtrain the whole, and preſs it out into another veſſel.

This done, they take the wood to be *japanned*, and cover it with a layer of this varniſh, till it be ſufficiently drenched with it; then taking ſome of the colour the figures are to be of, they incorporate it with ſeven times as much of the varniſh, and apply it with a pencil, going over each part three ſeveral times, each a quarter of an hour after the other: two hours after this they poliſh it with a peſtle, or with Dutch reeds.

As to the colours uſed in this art, for a fair red they take Spaniſh vermilion, with a fourth part of Venice laque: black, they make of ivory calcined between two crucibles; for blue, they uſe ultramarine, and only twice as much varniſh as colour.—The reſt are applied as above directed, except the green, which is difficult to make fair and lively, and therefore is ſeldom uſed.—Thus far my author, on whoſe authority I deſire this article may ſtand. *D. Ruſt.* tom. I.—Parker will give much ampler inſtructions. See his treatiſe *Of Japanning*, Folio. Oxford, 1688. paſſim.

Night JAPANNING is performed by applying three or four layers with the colours firſt, then two of pure varniſh uncoloured, made according to the former proceſs. Before it be dry, they ſift ſome aventurine, or gold wire reduced to powder, over it, and then cover it with as many layers of pure varniſh, as render it like poliſhed glaſs; and laſtly, rub it over with tripoli, oil of olive, or an hatter's felt. See VARNISH.

JAR*, or JARR, an earthen pot or pitcher, with a big belly, and two handles.

* The word comes from the Spaniſh, *jarra*, or *jarro*, which ſignify the ſame.

JAR is uſed for a ſort of meaſure, or fixed quantity of divers things.— The *jar* of oil is from eighteen to twenty-ſix gallons: the *jar* of green ginger is about an hundred pounds weight.

JASPER*, JASPIS, a ſort of precious ſtone, chiefly opake, but ſometimes tranſparent incertain parts; and not much different from the agate, excepting in this, that it is more ſoft, and does not take ſo good a poliſh.

* The word is Hebrew, and has neither been changed by the Greeks, Latins, nor us: ſome Greek verſions give it the name of *beryl*. Onkelos calls it *panther*, in regard of its being ſpotted like that animal.

In ſome of theſe ſtones, as alſo in the agates, nature has amuſed herſelf, in repreſenting rivers, trees, animals, landſchapes, *&c.* as if they were painted.—The *jaſper*, found in the Pyreneans, is uſually ſtained with various colours; tho' there are ſome that have but one colour, as red, or green; but theſe are the leaſt valuable: the moſt beautiful is that bordering on the colour of lacca, or purple; next to that, the carnation; but what is now moſt valued, is the green ſpotted with red. See Supplement, article JASPER.

IATRALIPTIC, ΙΑΤΡΑΛΕΙΠΤΙΚΗ, that part of phyſic which cures by unguents and frictions; and the application of fomentations, plaiſters, *&c.*

It was one Prodicus, a diſciple of Æſculapius, and native of Selymbria, who firſt inſtituted the *iatraliptic* art.

JAVELIN, a kind of ſpear, or half-pike, uſed by the antients both on horſeback, and on foot.

It was five feet and an half long; and the ſteel, wherewith it was headed, had three ſides or faces, which all terminated in a point.

JAUNDICE*, a diſeaſe conſiſting in a ſuffuſion of the bile, and a rejection thereof to the ſurface of the body, whereby the whole exterior habit is diſcoloured.

* The word is derived from the French, *jauniſſe*, yellowneſs; of *jaune*, yellow.

Of this there are three kinds; the firſt, properly called the *jaundice*, or *yellow jaundice*, is owing to the yellow bile, which, in this caſe, is too exalted, or too abundant in the maſs of blood; or perhaps to an obſtruction of the glands of the liver, which prevents the gall's being duly ſeparated from the blood: or, finally, to a ſtoppage of the porus bilarius, or the like means, whereby the mixture of that fluid with the aliment in the inteſtines is prevented.

The ſecond, called the *black jaundice*, is owing to the ſame bile's being mingled with acids.

The third, bordering on *green*, takes its riſe alſo from a different mixture of bile with an acid.— This is uſually called the *chloroſis*, or green ſickneſs; and is a diſtemper pretty common in young women.

In the *yellow jaundice*, the albuginea, or white of the eye, and the ſkin, are chiefly yellow; and beſides, they are troubled with an itching.—In the *black jaundice*, the natural colour is loſt, by reaſon of an atrabilary humour ſpread underneath the ſkin: it firſt appears browniſh, and afterwards of a lead colour.

The *jaundice* often proves a forerunner of the dropſy.—A doctor of the faculty of Montpelier calls the *yellow jaundice*, attended with periodical pains, a *rheumatiſm of the liver*; and another of the ſame place calls it, a *quartan ague of the liver*.

The acid ſpirit of ſal ammoniac is ſaid to be an excellent remedy againſt the *jaundice*. See Supplement, article ICTERUS.

JAW, in anatomy. See the article MAXILLA.

ICADES, the name of an antient feaſt, celebrated every month by the Epicurean philoſophers, in memory of their maſter Epicurus.

The day on which it was held, was the twentieth day of the moon, or month; which was that whereon Epicurus came into the world: and hence came the name *icades*, from εικας, of εικοσι, *twenty*.

They adorned their chambers on this day, and bore his image in ſtate about their houſes, making ſacrifices, *&c.*

ICE, a brittle, tranſparent body, formed of ſome fluid frozen or fixed by cold.

Towards the poles there are found vaſt piles of *ice*, reaching two or three hundred feet above the ſurface of the water, and appearing like iſlands; about whoſe origin there are different opinions: ſome aſcribe them to ſnow, which, falling, in great abundance, in theſe cold climates, and melting in the ſea, accumulates gradually, till thoſe huge heaps are at length formed: but the more common opinion is, that this *ice* is formed from the freſh waters which flow from the neighbouring lands. Bartoli has written an Italian treatiſe expreſly on *ice* and *coagulation*. And the *Acta Eruditorum* furniſh us with an account of a French author on the ſame ſubject. See COAGULATION, and COLD.

ICH-DIEN, the motto of the arms of the prince of Wales, ſignifying, in High Dutch, *I ſerve*.

Sir Henry Spelman judges it to be Saxon, Ic ðien, *Ic thien*; the Saxon ꝺ *d*, with a tranſverſe ſtroke ð, being the ſame with *th*; and ſignifying, *I ſerve*, or *am a ſervant*; as the miniſters of the Saxon kings were called *thiens*, or *thanes*.

ICHNOGRAPHY *, in perſpective, the view of any thing cut off by a plane parallel to the horizon, juſt at the baſe, or bottom, of it.

* The word is derived from the Greek ιχνος, *veſtigium*, footſtep; and γραφω, *ſcribo*, I deſcribe; as being a deſcription of the footſteps, or traces, of a work.

Ichnography is the ſame with what is otherwiſe called the *plan*, *geometrical plan*, or *ground-plot*, of any thing.

ICHNOGRAPHY, in architecture, is a tranſverſe ſection of a building, exhibiting the circumference of the whole edifice, and of the ſeveral rooms and apartments in the given ſtory; together with the thickneſs of the walls, and partitions; the dimenſions of the doors, windows, and chimneys; the projectures of the columns and piers, with every thing viſible in ſuch a ſection.

The drawing or deſigning of this is properly the work of the maſter-architect, or ſurveyor; it being, indeed, the moſt difficult of any.

ICHNOGRAPHY, in fortification, denotes the plan, or repreſentation, of the length and breadth of a fortreſs; the diſtinct parts of which are marked out, either on the ground itſelf, or upon paper.

ICHOGLANS *, the grand ſeignior's pages, ſerving in the ſeraglio.

* The word, according to ſome authors, is compoſed of the two Turkiſh words *ich*, or *itch*; which ſignifies *within*; and *oglan*, page. In which ſenſe *ichoglan* is a page ſerving within-ſide the palace, or ſeraglio. Others derive it from the barbarous Greek ισκολας, or ισκολος; which was formed from the Latin *incola*. Theſe two etymologies give nearly the ſame ſenſe to *icholan*, taking *incola* for *domûs incola*.

Theſe are the children of Chriſtians, and bred up in an auſterity ſcarce to be conceived. The ſultan prefers them to offices more or leſs conſiderable, as they appear more or leſs capable, and devoted to his ſervice; but it is to be obſerved, they are incapable of offices till forty years of age, unleſs they have ſome particular diſpenſation from the grand ſeignior. They are educated with a great deal of care in the ſeraglio's of Peria, Adrianople, and Conſtantinople. They are under the direction of a capi aga, who preſides over their exerciſes, and treats them with a world of ſeverity. They are divided into four odas, or chambers, where, according to their ſeveral talents, or inclinations, they are inſtructed either in the languages, religion, or exerciſes of the body.

ICHOR * properly ſignifies a thin, watry humour, like ſerum; but is ſometimes alſo uſed for a thicker kind, flowing from ulcers; called alſo *ſanies*.

* The word is originally Greek, ιχωρ; where it ſignifies any humour, or humidity.

ICHTHYOCOLLA *, popularly called *iſinglaſs*, a medicinal ſubſtance, procured from a fiſh common in the Danube; which has no bones except about the head.

* The word is Greek, ιχθυοκολλα, formed of ιχθυς, *piſcis*, fiſh; and κολλα, *gluten*, glue.

After the bladder, and other membranous parts, of this fiſh are cut into ſmall pieces, they boil them in water to a thick jelly; which is ſpread abroad, and dried, then rolled up, and brought to us in the form we ſee it in the ſhops.

It is of a very glutinous quality, and conſequently good in all diſorders which ariſe from too thin and ſharp a ſtate of the fluids.

ICHTHYOPHAGI *, *Fiſh-eaters*, a name given to a people, or rather to ſeveral different people, who lived wholly on fiſhes.

* The word is Greek, Ιχθυοφαγοι; compounded of ιχθυς, *piſcis*, fiſh; and φαγειν, *edere*, to eat.

The *Ichthyophagi*, ſpoken of by Ptolemy, are placed by Sanſon in the provinces of Nanquin, and Yantong. Agatharchides calls all the inhabitants between Carmania and Gedroſia, by the name *Ichthyophagi*.

From the accounts given us of the *Ichthyophagi*, by Herodotus, Strabo, Solinus, Plutarch, *&c.* it appears, indeed, that they had cattle, but that they made no uſe of them, excepting, as they ſay, to feed their fiſh withal. They made their houſes of large fiſh-bones, the ribs of whales ſerving them for their beams. The jaws of theſe animals ſerved them for doors, and the mortars wherein they pounded their fiſh, and baked it in the ſun, were nothing elſe but their vertebræ.

ICONOCLASTES *, or ICONOCLASTÆ, breakers of images; a name which the church of Rome gives to all who reject the uſe of images in religious matters.

* The word is Greek, Εικονοκλαστης; formed from εικων, *imago*; and κλαειν, *rumpere*, to break.

In this ſenſe not only the reformed, but ſome of the eaſtern churches, are called *Iconoclaſtes*, and are all eſteemed by them heretics, as oppoſing the worſhip of the images of God, and the ſaints, and breaking their figures and repreſentations in churches.

ICONOGRAPHIA *, the deſcription of images, or antient ſtatues of marble, and copper; alſo of buſts and ſemi-buſts, penates, paintings in freſco, moſaic works, and antient pieces of miniature.

* The word is Greek, εικονογραφια; derived from εικων, *imago*; and γραφω, *ſcribo*, I deſcribe.

ICONOLATRA *, or ICONOLATER, one who worſhips images; a name which the Iconoclaſtes give to thoſe of the Romiſh communion, on account of their adoring images, and of rendering to them the worſhip only due to God.

* The word comes from the Greek εικων, and λατρευω, *colo*, I worſhip.

ICONOLOGIA *, the interpretation of antient images, monuments, and emblems.

* The word is formed from the Greek εικων, and λεγω, I ſpeak.

ICOSAHEDRON, a regular body, or ſolid, terminated by twenty equilateral and equal angles.

The *icoſahedron* may be conſidered as conſiſting of twenty triangular pyramids, whoſe vertices meet in the centre of a ſphere, imagined to circumſcribe it; and therefore they all have their heights and baſes equal; wherefore the ſolidity of one of thoſe pyramids, multiplied by 20, the number of baſes, gives the ſolid content of the *icoſahedron*.

ICTERIC *, a term in phyſic, applied to ſuch perſons as have the jaundice; which the Latins call *icterus*, *aurigo*, or *morbus regius*. See JAUNDICE.

* The word is derived from the Greek ικτερος, which ſignifies the ſame; and ſome derive it further from ικτις, a kind of weazel, with yellow eyes.

Icteric medicines are thoſe remedies preſcribed in caſes of the jaundice.

IDEA *, IΔEA, the image, or reſemblance, of a thing; which, though not ſeen, is conceived by the mind. See IMAGE.

* The word is Greek; Cicero renders into Latin by *exemplar*, and *exemplum*; and Plato himſelf, in ſome places, by παραδειγμα. Cicero, in his *Topics*, alſo expreſſes it by *forma*, and *ſpecies*.

Plato has only given the *idea* of a perfect commonwealth: *Plato ideam tantum adumbravit, ſeu depinxit, perfecti ſtatus reipublicæ.* Cic.

IDEA, in pſychology, denotes the immediate object of the mind about which we are employed, when we perceive or think of any thing.

Thus, when we look at the ſun, we do not ſee that luminary itſelf, but its image, or appearance, conveyed to the ſoul by the organ of ſight; and this image we call *idea*.

The origin of *ideas* has been a long time diſputed among philoſophers. The Peripatetics maintain, that external objects emit ſpecies which reſemble them all around; and that theſe ſpecies, ſtriking on our ſenſes, are by them tranſmitted to the underſtanding; and that being material and ſenſible, they are rendered intelligible by the active intellect; and are at length received by the paſſive.

Others are of opinion, that our ſouls have of themſelves the power of producing *ideas* of things we would think upon; and that they are excited to produce them by the impreſſions which objects make on the body, though theſe impreſſions are not images in any reſpect like the objects that occaſioned them. And in this, ſay they, it is, that man is made after the image of God, and that he partakes of his power; for as God made all things out of nothing, and can reduce them to nothing when he pleaſes, ſo man can create as many *ideas* as he pleaſes, and annihilate them when he has done.

Others maintain, that the mind has no occaſion for any thing beſides itſelf to perceive objects; and that, by conſidering itſelf, and its own perfections, it is able to diſcover all things that are without.—Others, with Deſcartes, hold, that our *ideas* were created and born along with us.

Malebranche, and his followers, aſſert, that God has in himſelf the *ideas* of all the beings he has created; that thus he ſees all things, in conſidering his own perfections, to which they correſpond,

correſpond; and that, as he is intimately united to our ſouls, by his preſence, our mind ſees and perceives things in him which repreſent created beings; and that it is thus we come by all our *ideas*. He adds, that though we ſee all ſenſible and material things in God, yet that we have not our ſenſations in him. When we perceive any ſenſible object, in our perception is included both a ſenſation, and a pure *idea*. The ſenſation is a modification of the ſoul, and it is God who cauſes it in us: but for the *idea* joined with the ſenſation, it is in God; and it is in him that we ſee it.

The Carteſians diſtinguiſh three kinds of *ideas*.—The firſt, *innate*; ſuch, they ſay, is that we have of God, as of a being infinitely perfect.—The ſecond *adventitious*, which the mind receives in proportion as bodily objects preſent themſelves to our ſenſes: ſuch is the idea of body, ſound, figure, light, &c.—The third, according to theſe philoſophers, are *factitious*, which are thoſe which the mind forms, by uniting and aſſembling the *ideas* which it already had: and theſe are called *complex*. But Mr. Locke ſeems to have put this matter out of diſpute; having made it appear, that all our *ideas* are owing to our ſenſes; and that all innate, created, and factitious *ideas*, are mere chimera's.

Our mind, he ſhews, has not abſolutely any *ideas* beſides thoſe preſented to it by the ſenſes, and thoſe which it forms by its own operations on thoſe others which the ſenſes furniſh: ſo that a man, deſtitute of one of his ſenſes, would never have any *idea* belonging to that ſenſe; and, ſuppoſing him deſtitute of all the ſenſes, he would never have any *idea* at all; external objects having no other way of producing *ideas* in him, but by means of ſenſation, he would have no *idea*, not even of reflection; becauſe, in wanting all ſenſation, he wants that which would excite in him the operations of his mind; which are the objects of his reflection.

It is plain, therefore, there is no innate *idea*; no general truth, or firſt principle, inherent on the ſoul, and created with it; no immediate object of the mind, before it had perceived external objects, by means of the ſenſes, and reflected on that perception. Thoſe *ideas* only ſeem to be innate, becauſe we find we have them as ſoon as we come to the uſe of reaſon; but they are, in effect, what we formed from the *ideas* wherewith the mind was inſenſibly filled by the ſenſes. Thus, when the mind is employed about ſenſible objects, it comes by the ideas of bitter, ſweet, yellow, hard, &c. which we call *ſenſation*; and, when employed about its own operations, perceiving and reflecting on them, as employed about the *ideas* before got by ſenſation, we get the ideas of perception, thinking, doubting, willing, &c. which we call *inward ſenſation*, or *reflection*: and theſe two; *viz.* external material things, as the objects of ſenſation; and the operations of our own minds, as the objects of reflection; are the only originals whence all our *ideas* have their riſe.—When we have conſidered theſe, and their ſeveral modes and combinations, we ſhall find, that they contain our whole ſtock of *ideas*; inſomuch that the underſtanding does not ſeem to have the leaſt glimmering of any *ideas*, that it did not receive from one of thoſe ſources.

And thus far the mind appears merely paſſive, as not having it in its power to chooſe whether it will have theſe firſt beginnings, or materials of knowlege, or not. For the objects of ſenſe will obtrude their *ideas* upon the mind; and the operations of the mind will not let us be without ſome (however obſcure) notion of them.

Ideas are divided into *ſimple*, and *complex*.

Simple IDEAS include all thoſe which come into the mind by ſenſation; and though the qualities of bodies that affect our ſenſes, are in the things themſelves ſo mixed and united, that there is no ſeparation between them, yet the *ideas* they produce in the mind are ſimple and unmixed. Again, ſome of theſe *ideas* we acquire purely by means of one ſenſe; as the *ideas* of colours, only by the eye; of ſounds, by the ear; of heat, by the touch, &c. Other *ideas* we gain by ſeveral ſenſes, as of ſpace, extenſion, figure, reſt, motion, &c. for theſe have their effect, both on the ſight, and the touch. There are other ſimple *ideas*, again, formed in the mind, both by ſenſation and reflection, jointly; as thoſe of pleaſure, pain, power, exiſtence, unity, ſucceſſion, &c. And of ſome of theſe kinds of *ideas* are all, or at leaſt the moſt conſiderable, of thoſe ſimple *ideas* which the mind hath, and out of which is made all its other knowlege.

The better to comprehend the nature of ſimple *ideas*, it will be convenient to diſtinguiſh between them, as they are *ideas* of perceptions in our minds, and as they are modifications of the bodies that cauſe ſuch perceptions in us, that we may not think, as is uſually done, that they are exactly the images and reſemblances of ſomething inherent in the object; for moſt of thoſe of ſenſation are in the mind no more the likeneſs of any thing exiſting without us, than the names that ſtand for them are the likeneſs of the *ideas*.

But here the qualities of bodies which produce thoſe *ideas* in our minds are to be diſtinguiſhed into *primary*, and *ſecondary*. *Primary qualities* are ſuch as are utterly inſeparable from the body, in what ſtate ſoever it be; and ſuch as our ſenſes conſtantly find in every particle of matter; which are ſolidity, extenſion, figure, mobility, and the like. *Secondary qualities* are, ſuch as are, in reality, nothing in the objects themſelves, but only powers to produce various ſenſations in us, by means of their primary qualities; that is, by the figure, bulk, texture, &c. of their particles, as colour, ſounds, taſte, &c.

Now the *ideas* of primary qualities are, in ſome ſenſe, reſemblances of them, and their patterns do really exiſt in the bodies themſelves; but the *ideas* produced in us by thoſe ſecondary qualities have no reſemblance of them at all. There is nothing like our *ideas* exiſting in the bodies themſelves, that occaſion them: they are, in the bodies we denominate from them, only a power to produce thoſe ſenſations in us; and what is ſweet, warm, blue, &c. in the *idea*, is no more than the bulk, figure, and motion, of the particles of the bodies themſelves, which we call ſo.

The mind has ſeveral faculties of managing theſe ſimple *ideas*; which are worthy of notice; as, 1°, That of diſcerning juſtly, and diſtinguiſhing rightly, between one and another; in which conſiſts the accuracy of judgment.

2°, That of comparing them, one with another, in reſpect of extent, degree, time, place, or any other circumſtances of relation, or dependence, one on another.

3°, That of compounding, or putting together, the ſimple *ideas*, received by ſenſation and reflection, in order to make complex ones.

4°, Children, by repeated ſenſations, having got ſome *ideas* fixed in their memories, by degrees learn the uſe of ſigns; and when they can ſpeak articulately, they make uſe of words, to ſignify their *ideas* to others.

Hence, the uſe of words being, to ſtand as outward marks of our internal *ideas*, and thoſe *ideas* being taken from particular things, if every particular *idea* that we take in ſhould have a particular name affixed to it, names would grow endleſs. —To prevent this inconvenience, the mind has another faculty, whereby it can make the particular *ideas* received from ſuch objects, become general; which is done by conſidering them as they are in the mind, ſuch appearances, ſeparate from all other exiſtences, and circumſtances of exiſtence, as time, place, and other concomitant *ideas*: and this is called *abſtraction*; whereby *ideas*, taken from particular things, become general repreſentatives of all of that kind, and their names, general names, applicable to whatever exiſts conformable to ſuch abſtract *ideas*. Thus, the ſame colour being obſerved to-day in chalk, or ſnow, which we obſerved yeſterday, in paper, or milk, we conſider that appearance alone, make it a repreſentative of all the ſame kind, and give it the name of *whiteneſs*; by which ſound we always ſignify the ſame quality, whereſoever to be met with, or imagined.

From the powers of combining, comparing, and ſeparating, or abſtracting ſimple *ideas*, acquired by ſenſation and reflection, all our complex *ideas* are formed; and, as before, in the perception of *ideas*, the underſtanding was paſſive, ſo here it is active, exerting the power it hath in the ſeveral acts and faculties above-mentioned, in order to frame compound *ideas*.

Complex IDEAS, though their number be infinite, and their variety endleſs, yet may they all be reduced to theſe three heads; *viz. modes*, *ſubſtances*, and *relations*.—*Modes* are ſuch complex *ideas*, as, however compounded, are not ſuppoſed to exiſt by themſelves, but are conſidered as dependences on, or affections of, ſubſtances: ſuch are the *ideas* ſignified by the words *triangle*, *gratitude*, *murder*, &c.

Theſe are of two kinds: 1°, Such as are only variations, or different combinations, of the ſame ſimple *idea*, without the mixture of any other; as a dozen, a ſcore, &c. which may be called *ſimple modes*. 2°, There are others, compounded of ſimple *ideas*, of ſeveral ſorts put together, to make one complex one; as *beauty*, *theft*, &c.

Subſtances have their *ideas* from ſuch combinations of ſimple *ideas*, as are taken to repreſent diſtinct particular things, ſubſiſting by themſelves; in which the ſuppoſed, or confuſed *idea* of ſubſtance, ſuch as it is, is always the firſt and chief.

Relations are a kind of complex *ideas*, ariſing from the conſideration, or compariſon, of one *idea* with another. Of theſe, ſome only depend on the equality, or exceſs, of the ſame ſimple *idea* in ſeveral ſubjects; and theſe may be called *proportional relations*; ſuch as equal, more, bigger, ſweeter. —Another occaſion of comparing things together is owing to the circumſtances of their origin and beginning; which not being afterwards to be altered, make the relations depending thereon as laſting as the ſubjects to which they belong. Thus it is with natural relations, as father, mother, uncle, couſin, &c. Thus alſo it is with relations by inſtitution, as prince and people, general and army, &c. As to moral relations, they are the conformity or diſagreement of mens free actions to laws and rules, whether human or divine.

Further, *ideas* may be divided into *clear*, or *diſtinct*; and *obſcure*, or *confuſed*.

Simple IDEAS are *clear*, when they continue ſuch as the objects repreſent them to us when our organs of ſenſation are in a good tone and order; when our memories retain them, and can produce and preſent them to the mind whenever it has occaſion to conſider them; and when, with this, the mind ſees that theſe ſimple *ideas* are ſeverally different one from another.—The contrary to which is what we call *obſcurity* and *confuſion* of *ideas*.

Again, *ideas*, with reſpect to the objects whence they are taken, or which they are ſuppoſed to repreſent, come under a threefold diſtinction: being either *real*, or *fantaſtical*; *true*, or *falſe*; *adequate*, or *inadequate*.

By *Real* Ideas are meant, ſuch as have a foundation in nature; ſuch as have a conformity with the real being or exiſtence of things, or with their archetypes.

Fantaſtical Ideas are ſuch as have no foundation in nature, nor any conformity with that being to which they are referred as their archetypes.

All our ſimple *ideas* are real; not that they are images or repreſentations of what does exiſt, but as they are the certain effects of powers in things without us, ordained by our maker to produce in us ſuch ſenſations. They are real *ideas* in us, in regard, that by them we diſtinguiſh the qualities that are really in the bodies themſelves; their reality lies in the ſteady correſpondence they have with the diſtinct conſtitutions of real beings; but whether with thoſe conſtitutions as cauſes or patterns, it matters not, ſo long as they are conſtantly produced by them.

As to complex *ideas*; in regard they are arbitrary combinations of ſimple *ideas* put together, and united under one general name, in forming whereof the mind uſes its own liberty; ſome are found *real*, and ſome *imaginary*. 1°, Mixed modes and relations, having no other reality than what they have in the minds of men, are real; nothing more being required to their reality, but a poſſibility of exiſting conformable to them. Theſe *ideas*, being themſelves archetypes, cannot differ from their archetypes, and ſo they cannot be chimerical, unleſs any one jumbles inconſiſtent *ideas* in them: indeed, thoſe that have names aſſigned to them, ought to have a conformity to the ordinary ſignification of thoſe names, to prevent their appearing fantaſtical. 2°, Our complex *ideas* of ſubſtances being made in reference to things exiſting without us, whoſe repreſentations they are thought, are no further real, than as they are combinations of ſimple *ideas* really united and co-exiſting in things without us. Thoſe are fantaſtical, that are made up of ſeveral *ideas* that never were found united; as centaur, *&c.*

As to true and falſe Ideas, it may be obſerved, that truth and falſhood, in propriety of ſpeech, belong only to propoſitions; and that when *ideas* are termed *true* or *falſe*, there is ſome tacit propoſition, which is the foundation of that denomination. Our *ideas* being nothing elſe but appearances, or perceptions, in the mind, can no more be ſaid to be true or falſe, than ſingle names of things can be ſaid to be ſo: for truth and falſhood lying always in ſome affirmation or negation, our *ideas* are not capable of them, till the mind paſſes ſome judgment of them.—In a metaphyſical ſenſe they may be ſaid to be true, *i. e.* to be really ſuch as they exiſt; though in things called *true*, even in that ſenſe, there ſeems to be a ſecret reference to our *ideas*, looked upon as the ſtandards of that truth; which amounts to a mental propoſition. When the mind refers its *ideas* to any thing extraneous to it, they are then capable of being true, or falſe: becauſe, in ſuch a reference, the mind makes a tacit ſuppoſition of their conformity to that thing; which ſuppoſition, as it is true or falſe, ſo the *ideas* themſelves come to be denominated.

Real ideas are divided into *adequate*, and *inadequate*.

Adequate Ideas are thoſe which perfectly repreſent thoſe archetypes which the mind ſuppoſes them taken from, and which it makes them ſtand for.

Inadequate Ideas are ſuch as do but partially, or incompletely, repreſent thoſe archetypes to which they are referred.

IDENTITATE *nominis*, a writ which lies for him who, upon a capias or exigent, is arreſted, and committed to priſon, for another man of the ſame name.

IDENTITY, *ſameneſs*; that by which a thing is itſelf, and not any thing elſe.—In which ſenſe, *identity* differs from *ſimilitude*, as well as *diverſity*.

Our idea of *identity* we owe to that power which the mind has of comparing the very being of things; whereby, conſidering any thing as exiſting at any certain time and place, and comparing it with itſelf as exiſting at any other time, *&c.* we accordingly pronounce it the ſame.

When we ſee any thing in any certain time and place, we are ſure it is that very thing, and can be no other, how like ſoever it may be to ſomething elſe in all other reſpects: in regard we conceive it impoſſible, that two things of the ſame kind ſhould exiſt together in the ſame place, we conclude, that whatever exiſts any-where at the ſame time, excludes all of the ſame kind, and is there itſelf alone. When, therefore, we demand, Whether any thing be the ſame, or no; it refers always to ſomething that exiſted at ſuch a time, in ſuch a place; which, it was certain, at that inſtant, was the ſame with itſelf, and no other.

We have ideas of three ſorts of ſubſtances: of God; of finite intelligences; and of bodies.—God being eternal, unalterable, and every-where; concerning his *identity* there can be no doubt. Finite ſpirits having had their determinate place, and time of beginning to exiſt, the relation to that time and place will always determine to each its *identity* as long as it exiſts.—And the ſame will hold of every particle of matter to which no addition, or from which no ſubtraction, is made. Theſe three exclude not one another out of the ſame place; yet each exclude thoſe of the ſame kind out of the ſame place.—The *identity* and diverſity of modes and relations are determined after the ſame manner that thoſe of ſubſtances are; only the actions of finite beings, as motion and thought, conſiſting in ſucceſſion, cannot exiſt in different times and places as permanent beings: for no motion or thought, conſidered as at different times, can be the ſame; each part thereof having a different beginning of exiſtence. From whence it is plain, that exiſtence itſelf is the *principium individuationis*, which determines a being to a particular time and place incommunicable to two beings of the ſame kind.

Thus, ſuppoſe an atom exiſting in a determined time and place; it is evident, that, conſidered in any inſtant, it is the ſame with itſelf, and will be ſo, as long as its exiſtence continues. The ſame may be ſaid of two, or more, or any number of particles, whilſt they continue together, the maſs will be the ſame, however jumbled; but if one atom be taken away, it is then not the ſame maſs.

But, in vegetables, the *identity* depends not on the ſame maſs, and is not applied to the ſame thing: the reaſon of this is, the difference between an inanimate body, and a crude maſs of matter; this latter being only the coheſion of particles any how united, the other ſuch a diſpoſition or organization of parts, as is fit to receive and diſtribute nouriſhment, ſo as to continue and frame the wood, bark, leaves, *&c.* (of an oak, for inſtance) in which conſiſts the vegetable life. That, therefore, which hath ſuch an organization of parts, partakeing of one common life, continues to be the ſame plant, though that life be communicated to new particles of matter vitally united to the living plant.—The caſe is not ſo much different in brutes, but that any one may hence ſee what makes an animal, and continues it the ſame. The *identity* of the ſame man likewiſe conſiſts in a participation of the ſame continued life, in ſucceeding particles of matter vitally united to the ſame organized body.

To underſtand *identity* aright, we muſt conſider what idea the word ſtands for; it being one thing to be the ſame ſubſtance; another, the ſame man; and a third, the ſame perſon. An animal is a living organized body; and the ſame animal is the ſame continued life communicated to different particles of matter, as they happen ſucceſſively to be united to that organized living body; and our notion of man is but of a particular ſort of animal. Perſon ſtands for an intelligent being, that reaſons and reflects, and can conſider itſelf the ſame thing in different times and places; which it doth by that conſciouſneſs that is inſeparable from thinking. By this every one is to himſelf, what he calls *ſelf*, without conſidering whether that ſelf be continued in the ſame, or in diverſe ſubſtances. In this conſiſts perſonal *identity*, or the ſameneſs of a rational being; and ſo far as this conſciouſneſs extends backward to any paſt action, or thought, ſo far reaches the *identity* of that perſon. It is the ſelf-ſame now it was then; and it is by the ſame ſelf, with this preſent one, that now reflects on it, that that action was done. Self is that conſcious thinking thing, whatever ſubſtance it matters not, which is conſcious of pleaſure and pain, capable of happineſs or miſery; and ſo is concerned for itſelf as far as that conſciouſneſs extends. That with which the conſciouſneſs of this preſent thinking thing can join itſelf, makes the *ſame* perſon, and is one ſelf with it; and ſo attributes to itſelf, and owns all the actions of that thing as its own, as far as that conſciouſneſs reaches.

This perſonal *identity* is the object of reward and puniſhment, being that by which every one is concerned for himſelf. If the conſciouſneſs went along with the little finger; when that was cut off, it would be the ſame ſelf, that was juſt before concerned for the whole body.—If the ſame Socrates, waking and ſleeping, did not partake of the ſame conſciouſneſs, he would not be the ſame perſon: Socrates waking could not be, in juſtice, accountable for what Socrates ſleeping did; no more than one twin, for what his brother-twin did; becauſe their outſides were ſo like, that they could not be diſtinguiſhed.

But ſuppoſe I wholly loſe the memory of ſome parts of my life, beyond a poſſibility of retrieving them, ſo that I ſhall never be conſcious of them again; am I not again the ſame perſon that did thoſe actions, though I have forgot them? I anſwer, we muſt here take notice what the word *I* is applied to, which in this caſe is the man only: and the ſame man being preſumed to be the ſame perſon, *I* is eaſily here ſuppoſed to ſtand alſo for the ſame perſon. But if it be poſſible for the ſame man to have a diſtinct, incommunicable conſciouſneſs at different times, it is paſt doubt, the ſame man would, at different times, make different perſons.—Which we ſee is the ſenſe of mankind in the ſolemneſt declaration of their opinions; human laws not puniſhing the madman for the ſober man's actions, nor the ſober man for what the madman did; thereby making them two perſons.

Thus we ſay, in Engliſh, ſuch an one is not himſelf, or is beſide himſelf: in which phraſes it is inſinuated, that ſelf is changed, and the ſelf-ſame perſon is no longer in that man. But is not a man, drunk or ſober, the ſame perſon? Why elſe is he puniſhed for the ſame fact he commits when drunk, though he be never afterwards conſcious of it? Juſt as much the ſame perſon, as a man that walks, and does other things, in his ſleep, is the ſame perſon, and is as anſwerable for any miſchief he ſhall do in it. Human laws puniſh with a juſtice ſuitable to their way of knowlege; becauſe, in theſe caſes, they cannot diſtinguiſh certainly, what is real, and what is counterfeit: and ſo the ignorance in drunkenneſs, or ſleep, is not admitted as a plea. For though puniſhment be annexed to perſonality, and perſonality to conſciouſneſs, and the drunkard is not conſcious, perhaps, of what he did; yet human judicatures juſtly puniſh him, becauſe the fact is proved againſt him; but want of conſciouſneſs cannot be proved for him. But in the great day, wherein the ſecrets of all hearts ſhall be laid open, it may be reaſonable to think, no one ſhall be made to anſwer for what he knows nothing of, but ſhall receive his doom; his own conſcience accuſing, or elſe excuſing him.

To conclude this article; whatever ſubſtance begins to exiſt, it muſt, during its exiſtence, be the ſame: whatever compoſition of ſubſtances begin to exiſt, during the union of thoſe ſubſtances, the concrete muſt be the ſame. Whatſoever mode begins to exiſt, during its exiſtence it is the ſame; and ſo if the compoſition be of diſtinct ſubſtances, and different modes, the ſame rule holds. Whence it appears, that the difficulty or obſcurity that has been about this matter, rather ariſes from names ill uſed, than from any obſcurity in the things themſelves. For whatever makes the ſpecific idea, to which the name is applied, if that idea be ſteadily kept to, the diſtinction of any thing into the ſame and diverſe, will eaſily be conceived.

IDEOT. See the article Idiot.

IDES*, Idus, in the Roman calendar, a denomination given to eight days in each month; commencing, in the months of March, May, July, and October, on the 15th day; and in the other months on the 13th day: and reckoned backward, ſo as in the four months above ſpecified to terminate on the 8th day, and in the reſt on the 6th.

* The origin of the word is conteſted: ſome will have it formed from ιδειν, to ſee; by reaſon the full moon was commonly ſeen on the day of the *ides*; others from ειδος, ſpecies, figure, on account of the image of the full moon then viſible: others from *idulium*, or *ovis idulis*, a name given by the Hetrurians to a victim offered on that day to Jupiter; others from the Hetrurian word *iduo*, i. e. *divido*; by reaſon the *ides* divided the moon into two nearly equal parts.

The *ides* came between the calends and the nones.

The 15th day, in March, May, July, and October, and the 13th in the other months, being called the *ides* of thoſe months; *idus Martii*, *Maii*, &c. the fourteenth day of the ſame four months, and the 12th of the other eight, were *pridie idus*, or the eve of the *ides* of March, *&c.* the 13th day in the four months, and the 11th in the eight, was called the third of the *ides* of ſuch months, 3 *idus Martii*, &c. ſo the 12th day in the four, and the 10th in the eight months, were the 4th of the *ides*, 4 *idus Martii*, &c. and thus of the reſt, to the 8th and 6th days, which made the 8th of the *ides*, 8 *idus Martii*, &c.

This way of accounting is ſtill in uſe in the Roman chancery, and in the calendar of the breviary.—The *ides* of May were conſecrated to Mercury: the *ides* of March were always eſteemed unhappy, after Cæſar's murder: the time after the *ides* of June was reckoned fortunate for thoſe who entered into matrimony: the *ides* of Auguſt were conſecrated to Diana, and were obſerved as a feaſt-day by the ſlaves: on the *ides* of September, auguries were taken for appointing the magiſtrates, who formerly entered into their offices on the *ides* of May, and afterwards on thoſe of March.

IDIOM*, Idioma, is ſometimes uſed for the peculiarities of a language; ſometimes for a *dialect*; or the language of ſome particular province; differing, in ſome reſpects, from the language of the nation in general whence it is derived.

* The word comes from the Greek, ιδιωμα, propriety; of ιδιος, proper, own.

IDIOPATHY*, a diſeaſe, or indiſpoſition, peculiar to ſome member, or part, of the body, not cauſed by any other diſeaſe, or preceding affection; nor having any dependence on the reſt of the body.

* The word is Greek, ιδιοπαθεια; derived from ιδιος, proper, particular; and παθος, paſſion, affection.

In which ſenſe it ſtands oppoſed to *ſympathy*, which is when the indiſpoſition takes its riſe from ſome prior diſorder in ſome other part of the body.

Thus a cataract in the eye is an *idiopathy*: an epilepſy is either *idiopathic*, or *ſympathic*: *idiopathic*, when it happens purely through ſome fault in the brain; *ſympathic*, when it is preceded by ſome other diſorder.

IDIOSYNCRASY*, in phyſic, a temperament peculiar to ſome body, in conſequence whereof, whether in ſickneſs, or in health, it has a more than ordinary averſion, or inclination, to certain things, or is more affected with them, than others uſually are.

* The word is derived from the Greek, ιδιος, proper; συν, with; and κρασις, *craſis*, mixture, temperament.

IDIOT*, or Ideot, in the Engliſh laws, denotes a natural fool, or fool from his birth.

* The word is originally Greek, ιδιωτης, which primarily imports a private perſon, or one who leads a private life, without any ſhare or concern in the government of affairs.

A perſon who has underſtanding enough to meaſure a yard of cloth, number twenty rightly, and tell the days of the week, *&c.* is not an *idiot* in the eye of the law.

Idiot, *idiota*, is alſo uſed, by antient writers, for a perſon ignorant, or unlearned; anſwering to *illiteratus*, or *imperitus*. In this ſenſe, Victor tells us, in his *Chronicon*, that, in the conſulſhip of Meſſala, the holy goſpels, by command of the emperor Anaſtaſius, were corrected and amended, as having been written by idiot evangeliſts: *Tanquam ab* idiotis *evangeliſtis compoſita*.

IDIOTA *inquirendo vel examinando*, a writ iſſued out to the ſheriff of a county, where the king has notice that there is an *idiot* naturally born, ſo weak of underſtanding, that he cannot govern, or manage, his inheritance; directing him to call before him the party ſuſpected, and examine him, and inquire, by a jury of twelve men, whether he be an *idiot*. For the king, by his prerogative, has the government of the lands and ſubſtance of ſuch as are naturally defective in their own diſcretion.

IDIOTISM*, in grammar, a phraſe, or manner of ſpeaking, peculiar to a language, and which cannot be rendered word for word into any other.

* The word is derived from the Greek, ιδιος, proper, peculiar.

Idiotiſm is defined, by ſome authors, an inflexion of ſome verb, or a particular conſtruction of ſome phraſe, or particle, that is anomalous, and deviates from the ordinary rule of the language of the nation, but which is in uſe in ſome particular province of it.

Several authors have written of the *idiotiſms* in the Greek and Latin languages; that is, of the particular turns in thoſe tongues which vary the moſt from each other, and from the more popular among the modern tongues: but the examples of theſe *idiotiſms* being borrowed from the beſt authors, *idiotiſm*, in this ſenſe, cannot properly be called an irregularity.

IDOL*, a ſtatue, or image, of ſome falſe god, to whom divine honours are paid, altars and temples erected, and ſacrifices offered.

* The word comes from the Greek, ειδωλον, which ſignifies the ſame; of ειδος, *imago*, image, figure.

IDOLATRY*, the worſhip and adoration of falſe gods; or the giving thoſe honours to creatures, or the works of man's hand, which are only due to God.

* The word comes from the Greek, ειδωλολατρεια, which ſignifies the ſame; compoſed of ειδος, *imago*, image; and λατρευειν, *ſervire*, to ſerve.

Several have written of the origin and cauſes of *idolatry*: among the reſt, Voſſius, Selden, Godwyn, and Tenniſon; but it is ſtill a doubt, who was the firſt author of it. It is generally allowed, however, that it had not its beginning till after the deluge; and many are of opinion, that Belus, who is ſuppoſed to be the ſame with Nimrod, was the firſt man that was deified.

But whether they had not paid divine honours to the heavenly bodies before that time, cannot be determined; our acquaintance with thoſe remote times being extremely ſlender.

All that can be ſaid with certainty is, that, 426 years after the deluge, when God led Terah and his family out of Chaldæa, and Abraham paſſed over Meſopotamia, Canaan, the kingdom of the Philiſtines, and Egypt, it does not appear that *idolatry* had then got any footing in any of thoſe countries; though ſome idly pretend, that Abraham himſelf was an idolater.

The firſt mention we find made of it is, in Gen. xxxi. 19. where Rachel is ſaid to have taken the idols of her father: for though the meaning of the Hebrew word theraphim תרפים be diſputed, yet it is pretty evident, they were idols. Laban calls them his gods, and Jacob calls them ſtrange gods, and looks on them as abominations.

Cluverius, *Germ. Antiq.* Lib. I. maintains Cain to have been the firſt idolater; and the falſe gods that he worſhiped to have been the ſtars, to whom he ſuppoſed God had left the government of the lower world: but this is mere conjecture.

The principal cauſes that have been aſſigned for *idolatry* are, the indelible idea which every man has of God, and the evidence which he gives of it to himſelf: an inviolable attachment to the ſenſes, and an habit of judging and deciding by them, and them only: the pride and vanity of the human mind, which is not ſatisfied with ſimple truth, but mingles and adulterates it with fables: the ignorance of antiquity, or of the firſt times, and the firſt men, whereof we have but very dark and confuſed knowlege by tradition, they having left no written monuments or books: the ignorance and change of languages: the ſtile of the oriental writings, which is figurative and poetical, and perſonifies every thing; the ſuperſtition, ſcruples, and fears, inſpired by religion: the flattery of writers: the falſe relations of travellers: the fictions of poets: the imaginations of painters and ſculptors: a ſmattering of phyſics, that is, a ſlight acquaintance with natural bodies, and appearances, and their cauſes: the eſtabliſhment of colonies, and the invention of arts, miſtaken by barbarous people: the artifices of prieſts: the pride of certain men, who have affected to paſs for gods: the love and gratitude borne by the people to certain of their great men and benefactors: and finally the Scriptures themſelves ill underſtood.

IDYLLION *, in poetry, a little poem, containing the deſcription, or narration, of ſome adventures.

* The word is derived from the Greek, ειδυλλιον, diminutive of ειδος, figure, repreſentation; in regard this poetry conſiſts in a lively natural image, or repreſentation of things.

Theocritus is the oldeſt author who has written *idyllions*. The Italians imitate him, and have brought the *idyllion* into modern uſe.

The *idyllions* of Theocritus have a world of delicacy; they appear with a clowniſh, ruſtic kind of ſimplicity; but are full of the moſt exquiſite beauties; they ſeem drawn from the breaſt of nature herſelf, and to have been dictated by the graces.

The *idyllion* is a kind of poetry, which paints the objects it deſcribes; whereas the epic poem relates them, and the dramatic acts them. The modern writers of *idyllions* do not keep up to that original ſimplicity obſerved by Theocritus; the people of our days would not bear an amorous fiction, reſembling the clumſy gallantries of our peaſants.—Boileau obſerves, that the ſhorteſt *idyllions* are uſually the beſt.

JEALOUSY, *Waters of.* See the article WATERS.

JEAT. See the article JET.

JECTIGATION, in phyſic, a trembling, palpitation, or diſorderly and convulſive motion, of the whole body, of one ſide, or only of the heart, and pulſe of a ſick perſon: this ſhews that the brain, which is the origin of the nerves, is attacked, and threatened with convulſions.

JECUR. See the article LIVER.

JECUR *Uterinum*.—The *placenta* is by ſome thus called, from the ſuppoſed ſimilitude of its figure, and office, with that of the liver. See PLACENTA.

JEER *Capſtan*. See the article CAPSTAN.

JEHAGH, in the eaſtern chronology. See GEAGH.

JEJUNE *Style*. See the article STYLE.

JEJUNUM, the ſecond of the ſmall guts; thus called from the Latin *jejunus*, hungry; becauſe always found empty. See INTESTINES.

JENNET, in horſemanſhip. See the article HORSES.

JEOFAILE, or JEOFAYLE, a compound of three French words *je ay failé*, I have failed; it is uſed in a legal ſenſe, when the parties to any ſuit have, in pleading, proceeded ſo far, that they have joined iſſue, which ſhall be tried, or is tried by a jury, and this pleading or iſſue is badly joined, ſo that it will be error if they proceed.

In this caſe, one of the parties might, by their counſel, ſhew it to the court, as well after verdict given, as before the jury was charged, by ſaying, *This inqueſt you ought not to take*: or, *To judgment you ought not to go.*

But this occaſioning great delays in ſuits; for the redreſs thereof ſeveral ſtatutes were made; *viz.* 32 H. III. c. 30. by which it was enacted, ‘That if the jury have once paſſed upon the iſſue, though afterwards there be found a *jeofaile* in the pleading, yet ſhall judgment be given according to the verdict of the jury.’ Other ſtatutes have alſo been made relating to the ſame thing, in the time of king James I. and queen Elizabeth, and yet the fault not mended.

JERONYMITES, or HIERONYMITES, a denomination given to divers orders, or congregations of religious; otherwiſe called *Hermits of S. Jerom.*

The firſt, called *Hermits of S. Jerom* of Spain, owe their origin to the third order of S. Francis, whereof the firſt *Jeronymites* were members.—Gregory the eleventh confirmed this order, under the name of *S. Jerom*, whom they had choſen for their patron, and their model; and gave them the conſtitutions of the convent of S. Mary of the Sepulchre, with the rule of S. Auguſtine; and for habit, a white tunic, with a ſcapulary, a little capuche, and a mantle, all of their natural colour, without dying, and of a mean price.

The *Jeronymites* are in poſſeſſion of the convent of S. Laurence, in the Eſcurial, where the kings of Spain are buried. —In Spain there is likewiſe an order of nuns of S. Jerom, founded by a lady towards the cloſe of the 15th century. Sixtus put them under the juriſdiction of the *Jeronymites*, and gave them the conſtitutions of the monaſtery of S. Martha of Cordoua, which were afterwards changed by Leo X. for thoſe of the order of S. Jerom.

Hermits of S. Jerom, of the Obſervance, or *of Lombardy*, were founded by Lupus d'Olmedo in 1424. in the mountains of Cazalla, in the dioceſe of Sevil.

The third order of *Jeronymites* was founded by Peter Gambacorti about the year 1377. but the vows they made were only ſimple till 1568. when Pius V. appointed them to be ſolemn. They have houſes in Tirol, Italy, and Bavaria.

The fourth congregation of *Jeronymites*, are the *Hermits of S. Jerom of Fiezoli*, begun in 1360. when Charles de Montegraneli, of the family of the count of that name, retiring into ſolitude, firſt eſtabliſhed it at Verona. It was approved by Innocent VII. under the rule and conſtitutions of S. Jerom. But Eugenius, in 1441. changed it for that of S. Auguſtine.—As the founder was of the third order of S. Francis, they preſerved that habit; but, in 1460. Pius permitting ſuch as pleaſed to change it, occaſioned a diviſion among them. This order was finally ſuppreſſed by Clement XI. in 1668.

JESILBASCH, *Green-head*, a name of reproach, which the Perſians give to the Turks, becauſe their emirs wear a green turban.

JESSANT *, in heraldry, is applied to a fleur-de-lis, or the like figure, ſeeming to ſpring, or ſhoot out of ſome other charge.—He bears ſable three leopards heads; *jeſſant*, fleurs-de-lis, or.

* The word is formed from the obſolete French *jeſſer*, to riſe or ſpring out.

JESUATES, JESUATÆ, an order of religious, otherwiſe called *apoſtolical clerks*, or *Jeſuates of S. Jerom*.

They were founded by John Columbin, and approved of by Urban V. in 1367. at Viterbo; where he himſelf gave, to ſuch as were preſent, the habit they were to wear.—They followed the rule of S. Auguſtine, and were ranked by Pius V. among the order of Mendicants.

They were called *Jeſuates*, becauſe their firſt founders had the name of Jeſus continually in their mouths: to which they added the name of *S. Jerom*, by reaſon they choſe that ſaint for their protector.

For two centuries the *Jeſuates* were mere lay-brothers; but in 1606. Paul V. gave them leave to enter into holy orders. —In moſt of their houſes they were employed in pharmacy, others practiſed diſtillation, and ſold aqua vitæ; which occaſioned their being called *aqua-vitæ-mongers*.

Being very rich in the ſtate of Venice, that republic ſolicited their ſuppreſſion, and obtained it of Clement IX. and their effects being employed towards ſupporting the expences of the war in Candia.

JESUITS, an order of religious, founded by Ignatius Loyola, called alſo *the ſociety of Jeſus*.

This order has rendered itſelf very conſiderable by its miſſions into the Indies, and by its other employments relating to the ſtudy of the ſciences, and the education of youth. The council of Trent calls them, *regular clerks of the company of Jeſus*.

It was in the year 1538. that Ignatius, having aſſembled ten of his companions at Rome, choſen moſtly out of the univerſity of Paris, propoſed to them to make a new order. After this, he preſented the plan of his inſtitution to Paul III. who appointed three commiſſioners to examine it; upon whoſe report the pontiff confirmed the inſtitution, under the name of *the company of Jeſus*, by a bull in 1540.—By this bull, their number was reſtrained to ſixty; but that reſtriction was taken away, two years afterwards, by another bull. —The order has ſince been confirmed by ſeveral ſucceeding popes, who have added many new rights and privileges to it.

The end principally propoſed by this order is, to gain converts to the Romiſh church; with which view they diſperſe themſelves in every country and nation, and with amazing induſtry and addreſs purſue the end of their inſtitution. No difficulty ſo great that they cannot ſurmount, no danger ſo imminent that they will not undergo; and, as ſome ſay, no crimes ſo ſhocking that have not been perpetrated by them for the ſervice of their cauſe.

They have no particular habit; but change and accommodate it to times, and occaſions. The order conſiſts of five different claſſes; *profeſſed fathers*, *ſpiritual coadjutors*, *approved ſcholars*, *lay-brothers*, called alſo *temporal coadjutors*, and *novices*.

The *profeſſed fathers*, which make the body of the company, take the three ſolemn vows of religion publicly, and to theſe add a ſpecial vow of obedience to the head of the church; as to what regards miſſions among idolaters, heretics, &c.—The *ſpiritual coadjutors* alſo make public vows of chaſtity, poverty, and obedience; but omit the fourth relating to miſſions.—*Approved ſcholars* are thoſe, who, after two years noviciate, have been admitted, and have made three vows of religion; not ſolemn, indeed, but yet declared.—Theſe are in the way to become profeſſed, or ſpiritual coadjutors, according as the general thinks fit. Theſe degrees, eſpecially that of profeſſed, are never conferred till after two years noviciate, and ſeven years ſtudy, ſeven of regency, a third year of noviciate, and thirty-three years of age. The vows of the ſcholars are abſolute on their ſide, but only conditional on the ſide of the order; the general having it in his power to diſpenſe with them.

The order is divided into *aſſiſtances*, the aſſiſtances into *provinces*, and the provinces into *houſes*.—It is governed by a general, who is perpetual and abſolute. He reſides at Rome, and is elected by a general congregation of the order. He has with him five perſons, who are, as it were, his miniſters. They are called *aſſiſtants*, and bear the name of the kingdom or country to which they belong, and by which they are appointed; *viz.* of Italy, France, Spain, Germany, and Portugal.—To theſe belongs the care of preparing the matters of their reſpective aſſiſtances, and of putting them in a method to facilitate their diſpatch. It is by theſe, that both inferiors and ſuperiors go regularly before the general.—They are choſen by the congregation, and are not only the general's counſellors to aſſiſt him in his buſineſs, but are alſo to obſerve his conduct; and, if they find occaſion, they may call a general congregation without his conſent, who may depoſe him in form; or they have it in their power to depoſe him themſelves, after having, by letter, obtained the ſuffrages of their provinces.

Each province has four kinds of *houſes*; viz. *profeſſed houſes*, which can have no lands belonging to them; *colleges*, where the ſciences are taught; *reſidences*, where are a number of workmen employed in ſuch offices, as have any immediate relation to preaching, confeſſion, miſſions, *&c.* and houſes of *novices*. Among the colleges, there are ſome called ſimply *colleges*, and others called *ſeminaries*.—Theſe laſt are ſet apart for the young Jeſuits to go through their courſes of philoſophy and theology in; the others are for ſtrangers.

Each province is governed by a *provincial*, and each houſe by a *ſuperior*; who is called a *rector* in the colleges, and a *ſuperior* in the other houſes.—Ignatius regulated the diſcipline of theſe houſes, and eſpecially of the colleges, by what he had obſerved in the Sorbonne, while he ſtudied at Paris.

The profeſſed of this order renounce, by a ſolemn vow, all preferment, and eſpecially prelacy; and cannot receive any, unleſs injoined thereto by the pope, under pain of ſin.—This the pope ſometimes does; inſomuch that they have had eight cardinals of their order.

JET, *Gagates*, called alſo *black amber*, a light, ſmooth, pitchy, fiſſile ſtone, extremely black; formed of a bituminous juice in the earth, in the manner of coal.

It works like amber, and has moſt of its qualities: it abounds in Dauphiné, but the beſt in the world is ſaid to be produced in Yorkſhire.—It readily catches fire, flaſhes, and yields a bituminous ſmell.

There is alſo a factitious *jet*, made of glaſs, in imitation of the mineral *jet*: this is now uſually drawn out into long hollow threads, which are cut and faſhioned at pleaſure.—It is much uſed in embroideries, and in the trimmings of mourning, and may be made of any colour, though it is uſually black, and white; and of late is denominated *bugles*. See Supplement, article GAGATES.

JET D'EAU, a French word, ſignifying a *fountain* that caſts up water to any conſiderable height in the air. See FOUNTAIN.

Mariotte ſhews, that a *jet d'eau* will never raiſe water ſo high as its reſervoir, but always falls ſhort of it by a ſpace, which is in a ſubduplicate ratio of that height.—The ſame author ſhews, that if a greater *jet* branch out into many ſmaller ones, or be diſtributed through ſeveral *jets*, the ſquare of the diameter of the main pipe muſt be proportioned to the ſum of all the expences of its branches: and that if the reſervoir be 52 feet high, and the adjutage half an inch in diameter, the pipe ought to be three inches in diameter.

JETSON. See the article FLOTSON.

JEWEL-OFFICE, or **JEWEL-HOUSE**, an office which takes care of faſhioning and weighing the king's plate; and delivering it out by warrants from the lord chamberlain.

When his majeſty makes any preſent of plate, *&c.* they have the charge of providing it; with ſome other things leſs material.

The principal officers are, the *maſter of the jewel-office*, whoſe ſalary is 450*l.* per ann. a *yeoman*, a *groom*, and a *clerk*; all in the king's gift.

There are alſo in this office, in the gift of the lord chamberlain, the poet laureat at 100*l.* per ann. ſalary: the king's hiſtoriographer, at 200*l.* per ann. the hiſtory painter, and principal painter, at 200*l.* per ann. the painter in enamel, and the ſurveyor and keeper of the pictures, at 200*l.* per ann. each.

The *goldſmith* and *jeweller* are employed by the maſter, and are uſually in his gift.

JEWS. See the articles JUDAISM, ELECTION, *&c.*

JEW'S-EAR, *Auriculæ Judæ*, or *Fungus Sambucinus*, a kind of fungus, or ſpongy ſubſtance, that grows about the root of the elder-tree.

It is chiefly uſed in decoction, which is found detergent, and vulnerary, and a good gargle in ſore throats.

JEWISH *Oeconomy.* } See the articles { OECONOMY.
JEWISH *Hours.* } { HOUR, *&c.*

JEZIDES, or **JEZIDEANS**, a term uſed among the Mahometans, to ſignify *heretics*.

In which ſenſe *Jezidean* ſtands oppoſed to *Muſſulman*. Leunclavius tells us, that the name is derived from an emir, called *Jezid*, who killed the two ſons of Ali, Haſan and Huſſein, two grandſons of Mahomet on their mother's ſide, and perſecuted the poſterity of the prophet.—The Agarenians, whoſe emir or prince he was, looked on him as an impious and heretical perſon, and hence took occaſion to call all whom they accounted heretics, *Jezideans*.

Some authors mention the *Jezides* as a particular people, ſpeaking a language different both from the Turkiſh and Perſian, though ſomewhat akin to the laſt.—They further tell us, that there are two kinds of *Jezides*; the one *black*, the other *white*. The white have no ſlit in the boſom of their ſhirt; but barely an opening for the head to paſs through; a thing that they obſerve with a great deal of ſtrictneſs, in memory of a circle of gold and light which they ſay fell from heaven upon the neck of their grand ſcheik, or chief of their ſect.—The black *Jezides* are faquirs, or religious.

The Turks and *Jezides* bear a ſtrong averſion to each other; and the greateſt affront one can put upon a Turk, is to call him a *Jezidean*.—On the contrary, the *Jezides* love the Chriſtians; being perſuaded that *Jezid*, their chief, is Jeſus Chriſt: or, rather, becauſe ſome of their traditions mention, that *Jezid* made an alliance with the Chriſtians againſt the Muſſulmen.

They drink wine, even to exceſs, when they can get it, and eat ſwine's fleſh.—They never undergo circumciſion, excepting when they are forced to it by the Turks. Their ignorance is ſurpriſing; they have no books. Indeed they pretend to believe in the goſpel, and in the ſacred books of the Jews; but they go without ever reading either one or other of them. They make vows, and go on pilgrimage; but have no moſques, temples, nor oratories, no feaſts, nor ceremonies; all their religious worſhip conſiſting in ſinging hymns to Jeſus Chriſt, the Virgin, Moſes, and Mahomet.—When they pray, they look towards the eaſt, in imitation of the Chriſtians; whereas the Muſſulmen turn towards the ſouth.—They believe the devil may poſſibly, one day, come into favour again with God; and that he is the executor of God's juſtice in the other world: for which reaſon, they make it a point of prudence not to ſpeak ill of him, leſt he ſhould revenge himſelf of them.

The black *Jezides* are reputed ſaints; and it is forbidden to weep at their death; inſtead whereof, they make rejoicings: and yet, for the generality, they are no more than ſhepherds. They are not allowed to kill the animals they eat; that office belongs to the white *Jezides*.—The *Jezides* go in companies, like the Arabs. They often change their habitations, and live in black tents made of goats-hair, and encompaſſed with large ruſhes and thorns interwoven. They diſpoſe their tents in a circle, placing their flocks in the middle.—They buy their wives: the ſtated price whereof is 200 crowns, be they better or worſe. They are allowed divorce, provided it be to become faquirs.—It is a crime among them to ſhave the beard, though ever ſo little.—They have ſome cuſtoms which intimate, that they ſprung originally out of ſome ſect of Chriſtians: for inſtance, in their feaſts one of them preſents a cup full of wine to another, bidding him take the cup of the blood of Jeſus Chriſt; which laſt kiſſes the hand of him who preſents it, and drinks.

IGNIS *Fatuus*, a common meteor, chiefly ſeen in dark nights, frequenting meadows, marſhes, and other moiſt places.—Known among the people by the appellations, *Will with a wiſp*, and *Jack with a lantern*.

It ſeems to ariſe from a viſcous exhalation, which, being kindled in the air, reflects a ſort of thin flame in the dark, without any ſenſible heat.

It is often found flying along rivers, hedges, *&c.* by reaſon it there meets with a ſtream of air to direct it.

IGNITION, in chemiſtry, the application of fire to metals, till ſuch time as they become red-hot, without melting.

This happens in gold and ſilver; but eſpecially in iron: but lead and tin are too ſoft and fuſible to bear *ignition*.

IGNORAMUS, q. d. *We do not know*; a word uſed by the grand jury, impanelled on the inquiſition of cauſes criminal, and written upon the bill, when they diſlike their evidence, as defective, or too weak to make good the preſentment.

The effect of which is, that all farther inquiry upon that party for that fault is thereby ſtopped, and he is delivered without farther anſwer. See Billa.

IGNORANCE, the privation, or want, of knowlege.

Ignorance is chiefly owing to three cauſes: want of ideas; want of a diſcoverable connection between the ideas we have; and want of tracing and examining our ideas.

There are ſome things we are *ignorant* of for want of ideas: all the ſimple ideas we have, are confined to the obſervation of our ſenſes, and the operations of our own minds, which we are conſcious of in ourſelves. What other ideas it is poſſible other creatures may have, by the aſſiſtance of other ſenſes or faculties, more or perfecter than we have, or different from ours, is not for us to determine: but to ſay there are no ſuch, becauſe we conceive nothing of them, is no better an argument, than if a blind man ſhould be poſitive there was no ſuch thing as light and colours, becauſe he had no manner of idea of any ſuch thing.—What faculties, therefore, other ſpecies of creatures have, to penetrate into the nature and inmoſt conſtitutions of things, we know not: this we know, and certainly find, that we want other views of them, beſides thoſe we have, to make diſcoveries of them more perfect. The intellectual and ſenſible world are in this perfectly alike; that the parts which we ſee of either of them, hold no proportion with that we ſee not; and whatſoever we can reach with our eyes, or our thoughts, of either of them, is but a point, almoſt nothing, in compariſon of the reſt. Again, the want of ideas, which we yet ſeem capable of, is another great obſtacle in our way, and keeps us in *ignorance* of things, which we conceive capable of being known. Bulk, figure, and motion, we have ideas of; yet, not knowing what is the particular bulk, motion, and figure, of the greateſt part of the bodies of the univerſe, we are *ignorant* of the ſeveral powers, efficacies, and ways of operation, whereby the effects we daily ſee are produced. Theſe are hid from us in ſome things, by being too remote; and in others by being too minute. When we conſider the vaſt extent of the known and viſible parts of the world, and the reaſons we have to think, that what lies within our ken, is but a ſmall part of the immenſe univerſe; we ſhall then diſcover an huge abyſs of *ignorance*. What are the particular fabricks of the great maſſes of matter, which make up the whole ſtupendous frame of corporeal beings, how far they are extended, and what is their motion, and how continued, and what influence they have upon one another; are contemplations that, at firſt glimpſe, our thoughts loſe themſelves in!—If we confine our thoughts to this little canton, this ſyſtem of our ſun, and the groſſer maſſes of matter which viſibly move about it; what ſeveral ſorts of vegetables, animals, and intellectual corporeal beings, infinitely different from thoſe of our little ſpot of earth, may probably be in the other planets; to the knowlege of which, even of their outward figures and parts, we can no way attain, whilſt we are confined to this earth; there being no natural means, either by ſenſation or reflection, to convey their certain ideas into our minds?—There are other bodies in the univerſe, no leſs concealed from us by their minuteneſs: theſe inſenſible corpuſcles being the active parts of matter, and great inſtruments of nature, on which depend all their ſecondary qualities and operations; our want of preciſe diſtinct ideas of their primary qualities, keeps us in incurable *ignorance* of what we deſire to know about them.

Did we know the mechanical affections of rhubarb, or opium, we might as eaſily account for their operations of purging, and cauſing ſleep, as a watchmaker can for the motions of his watch.—The diſſolving of ſilver in aqua fortis, or gold in aqua regia, and not *vice verſa*; would be then, perhaps, no more difficult to know, than it is to a ſmith to underſtand, why the turning of one key will open a lock, and not the turning of another.—But whilſt we are deſtitute of ſenſes acute enough to diſcover the minute particles of bodies, and to give us ideas of their mechanical affections, we muſt be content to be *ignorant* of their properties and operations: nor can we be aſſured about them any farther, than ſome few trials we make are able to reach; but whether they will ſucceed again another time, we cannot be certain.—This hinders our certain knowlege of univerſal truths concerning natural bodies; and our reaſon carries us herein very little beyond particular matter of fact: and therefore it is matter of doubt, that how far ſoever human induſtry may advance uſeful and experimental philoſophy in phyſical things, yet ſcientifical will ſtill be out of our reach; becauſe we want perfect and adequate ideas of thoſe very bodies which are neareſt to us, and moſt at our command.

This, at firſt ſight, ſhews us, how diſproportionate our knowlege is to the whole extent, even of material beings: to which if we add the conſideration of that infinite number of ſpirits that may be, and probably are, which are yet more remote from our knowlege, and whereof we have no cognizance at all; we ſhall find, this cauſe of *ignorance* conceals from us, in an impenetrable obſcurity, almoſt the whole intellectual world; a greater, certainly a more beautiful world, than the material: for, abating ſome very few ideas of ſpirits, which we get from our own mind by reflection, and from thence the beſt we can collect of the Father of all ſpirits, the author of them, and us, and all things; we have no certain information ſo much as of the exiſtence of other ſpirits, but by revelation: much leſs have we diſtinct ideas of their different natures, ſtates, powers, and ſeveral conſtitutions, wherein they agree or differ one from another, and from us: and therefore, in what concerns their different ſpecies and properties, we are under an abſolute *ignorance*.

Another cauſe of *ignorance* is, the want of diſcoverable connexion between thoſe ideas we have: where we want that, we are utterly incapable of univerſal and certain knowlege; and are, as in the former caſe, left only to obſervation and experiment.—Thus the mechanical affections of bodies having no affinity at all with the ideas they produce in us, we can have no diſtinct knowlege of ſuch operations beyond our experience; and can reaſon no otherwiſe about them, than as the effects or appointments of an infinitely wiſe agent, which perfectly ſurpaſs our comprehenſions.—The operation of our minds upon our bodies is as unconceivable: how any thought ſhould produce a motion in body, is as remote from the nature of our ideas, as how any body ſhould produce any thought in the mind. That it is ſo, if experience did not convince us, the conſideration of the things themſelves would never be able, in the leaſt, to diſcover to us.—In ſome of our ideas there are certain relations, habitudes, and connexions, ſo viſibly included in the nature of the ideas themſelves, that we cannot conceive them ſeparable from them by any power whatſoever: in theſe only we are capable of certain and univerſal knowlege.—Thus the idea of a right-lined triangle neceſſarily carries with it an equality of its angles to two right ones; but the coherence and continuity of the parts of matter, the production of ſenſation in us, of colours and ſounds, *&c.* by impulſe and motion, being ſuch wherein we can diſcover no natural connexion with any ideas we have, we cannot but aſcribe them to the arbitrary will and good pleaſure of the wiſe architect.—The things that we obſerve conſtantly to proceed regularly, we may conclude do act by a law ſet them; but yet by a law we know not, whereby though cauſes work ſteadily, and effects conſtantly flow from them; yet their connexions and dependencies being not diſcoverable in our ideas, we can have but an experimental knowlege of them.—Several effects come every day within the notice of our ſenſes, of which we have ſo far ſenſitive knowlege; but the cauſes, manner, and certainty, of their production, we muſt, for the foregoing reaſons, be content to be *ignorant* of. In theſe we can go no farther than particular experience informs us of matter of fact; and, by analogy, we gueſs what effects the like bodies are, upon other trials, like to produce. But as to perfect ſcience of natural bodies (not to mention ſpiritual beings), we are ſo far from being capable of any ſuch thing, that it may be reckoned loſt labour to ſeek after it.

The third cauſe of *ignorance* is, our want of tracing thoſe ideas we have, or may have; and finding out thoſe intermediate ideas, which may ſhew us what habitude of agreement or diſagreement they may have one with another: and thus many are *ignorant* of mathematical truths for want of application in inquiring, examining, and by due ways comparing, thoſe ideas.

JIG, in muſic, *&c.* See the article Gigg.

ILIAC * *paſſion*, a violent and dangerous kind of cholic; called alſo *volvulus*, *miſerere mei*, and *chordapſus*.

It conſiſts in an expulſion of feculent matter by vomit, accompanied with a ſwelling and tenſion of the abdomen, an intenſe pain, and a total conſtipation of the bowels.

The immediate cauſe of the *iliac paſſion* ſeems owing to an irregularity, or inverſion, of the periſtaltic motion of the guts; *viz.* where it begins with the lower, and is continued upwards.

Other cauſes are, the hardneſs of the excrements, inflammation of the inteſtines, and their engagement in the ſcrotum, as ſometimes happens in hernias; or their twiſting, and entering within one another.

Perſons afflicted with the *iliac paſſion*, have ſometimes been found to return ſuppoſitories and clyſters, as well as their ſtools, by the mouth.

Some have been cured of it by ſwallowing a great quantity of quickſilver, or a muſquet-ball. When the guts are twiſted, or enter one within another, the weight of theſe bodies ſometimes ſets them to rights again. See Supplement, article Iliaca Passio.

Iliac *veſſels*. See the articles Artery, and Vein.

ILIACUS *externus*, or *pyriformis*; a muſcle of the thigh, which ariſes from the internal concave part of the os ſacrum, towards the bottom; and, deſcending obliquely along the great ſinus of the os ilium, from a round fleſhy origin, joins the glutæus medius, and is inſerted by a round tendon at the bottom of the great trochanter.

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* It takes its name from the inteſtine *ilion*, in regard of its being uſually affected in this diſtemper; or, perhaps, from the Greek verb ειλειν, to wind, or twiſt; whence alſo it is the Latins call it *volvulus*.

ILIACUS *internus*, a muſcle of the thigh, which ariſes fleſhy from the internal concave part of the os ilium; and, in its deſcent over the inferior part of it, joins with the pſoas magnus, and is inſerted with it under the termination of the pectineus.

This, with the pſoas magnus, moves the thigh forward in walking.

ILIAD*, ΙΛΙΑΣ, the name of an antient epic poem; the firſt, and fineſt, of thoſe compoſed by Homer.

* The word is derived from the Greek ιλιας, of ιλιον, *Ilium*, Troy, a famous city in Aſia, which the Greeks beſieged for the ſpace of ten years, and at laſt deſtroyed, on account of the rape of Helena, which makes the ſubject of the work.

The poet's deſign in the *Iliad* was, to ſhew the Greeks, who were divided into ſeveral little ſtates, how much it was their intereſt to preſerve an harmony and good underſtanding among them.—In order to which, he ſets before their eyes the calamities that befel their anceſtors from the wrath of Achilles, and his miſunderſtanding with Agamemnon; and the advantages that afterwards accrued to them from their union.

The *Iliad* is divided into twenty-four books, which are marked with the letters of the alphabet.—Pliny gives us an account of an *Iliad* written on ſo very ſlender a paper, that the whole might be contained in a nut-ſhell.

For the conduct of the *Iliad*, ſee Father Boſſu, Madam Dacier, and M. De la Motte.

The critics maintain the *Iliad* to be the firſt, and yet the beſt, poem that ever appeared in the world: Ariſtotle's *Poetics* are almoſt taken wholly from it; the philoſopher had nothing to do, but to form precepts from the poet's practice.—Some authors tell us, that Homer invented not only poetry, but all other arts and ſciences; and that there are the viſible marks of a perfect knowlege in every one of them, to be ſeen in the *Iliad*.

The ingenious Mr. Barns, of Cambridge, has very ſtrenuouſly attempted to prove Solomon to have been the author of the *Iliad*.

ILIUM *inteſtinum*. See the article INTESTINE.

ILIUM *os*. See the article *Oſſa* INNOMINATA.

ILLEGITIMATE *birth*, or *delivery*. See DELIVERY, and ABORTION.

ILLEVIABLE, in law, a debt or duty which cannot, or ought not, to be levied. See LEVY.

The word *nihil* is uſually ſet on a debt, or due, that is *illeviable*.

ILLUMINATION, in a general ſenſe, denotes the act of a luminous body, or a body that emits light; ſometimes, alſo, the paſſion of an opake body that receives it.

ILLUMINATIVE *lunar month*. See MONTH.

ILLUMINED, ILLUMINATI, a church-term, antiently applied to ſuch perſons as had received baptiſm.

This name was occaſioned by a ceremony in the baptiſm of adults; which conſiſted in putting a lighted taper in the hand of the perſon baptized, as a ſymbol of the faith and grace he had received in the ſacrament.

ILLUMINED, ILLUMINATI, is alſo the name of a ſect of heretics, who ſprang up in Spain about the year 1575. and were called, by the Spaniards, *Alumbrados*.

Their leaders were, Villalpando, a prieſt, originally of the iſle of Tenariff, and a Carmelite, called *Catherine de Jeſus*.—Theſe had a great number of diſciples and followers, moſt of whom were apprehended, and clapped up in the Inquiſition at Cordoua: ſome of them were put to death, and the reſt abjured their errors.

Their principal doctrines were, that, by means of a ſublime manner of prayer, which they had attained to, they entered into ſo perfect a ſtate, that they had no occaſion for ordinances, ſacraments, nor good works; and that they could give way, even to the vileſt actions, without ſin.

The ſect of *Illumined* was revived in France, in the year 1634. and were ſoon after joined by the Guerinets, or diſciples of Peter Guerin, who together made but one body, called alſo *Illumined*: but they were ſo hotly purſued by Louis XIII. that they were ſoon deſtroyed.

The brothers of the *Roſy croſs* are ſometimes alſo called *Illumined*. See ROSYCRUCIAN.

ILLUSTRIOUS, ILLUSTRIS, was heretofore, in the Roman empire, a title of honour peculiar to people of a certain rank.

It was firſt given to the moſt diſtinguiſhed among the knights, who had a right to bear the latus clavus: afterwards, thoſe were intitled *illuſtrious*, who held the firſt rank among thoſe called *honorati*; that is, the præfecti prætorii, præfecti urbis, treaſurers, comites, &c.

There were, however, different degrees among the *illuſtres*: as in Spain they have grandees of the firſt and ſecond claſs, ſo in Rome they had their *illuſtres*, whom they called great, *majores*; and others leſs, called *illuſtres minores*.—For inſtance; the præfectus prætorii was a degree below the maſter of the offices, though they were both *illuſtres*.

The *Novels* of Valentinian diſtinguiſh as far as five kinds of *illuſtres*; among whom, the *illuſtres adminiſtratores* bear the firſt rank.

IMAGE*, IMAGO, in optics, a natural, lively repreſentation of an object, oppoſed to a ſmooth, well-poliſhed ſurface, or mirror.

* The Latin word, *imago*, comes originally from the Greek μιμεισθαι, *imitari*, to imitate, or mimic.

IMAGE, taken more largely, denotes the ſpectre, or appearance, of any object, whether by reflexion, or refraction.

In all plane mirrors, the *image* is of the ſame magnitude as the object; and appears as far behind the mirror, as the object is before it.

In convex mirrors, the *image* appears leſs than the object; and farther diſtant from the centre of the convexity, than from the point of reflexion.

Mr. Molyneux gives the following rule for finding the diameter of an *image*, projected in the diſtinct baſe of a convex mirror: as the diſtance of the object from the mirror is to the diſtance from the *image* to the glaſs; ſo is the diameter of the object, to the diameter of the *image*.

IMAGE is alſo uſed for the trace, or mark, which outward objects impreſs on the mind, by means of the organs of ſenſe.

IMAGE alſo ſignifies an artificial repreſentation performed by man; as in painting, ſculpture, and the like.—In which ſenſe the word is now generally uſed in ſpeaking of things holy, or imagined to be ſo.

The uſe and adoration of *images*, are things that have been a long time controverted in the world.—The Lutherans condemn the Calviniſts for breaking the *images* in the churches of the Catholics, looking on it as a kind of ſacrilege; and yet they condemn the Romaniſts (who are profeſſed *image-worſhipers*) as idolaters: nor can theſe laſt keep pace with the Greeks, who go far beyond them in this point; which has occaſioned abundance of diſputes among them.

The Jews abſolutely condemn all *images*, and do not ſo much as ſuffer any ſtatues or figures in their houſes, much leſs in their ſynagogues, or places of worſhip.

The Mahometans have a perfect averſion to *images*; which was what led them to deſtroy moſt of the beautiful monuments of antiquity, both ſacred and profane, at Conſtantinople. The noble Romans preſerved the *images* of their anceſtors with a great deal of care and concern, and had them carried in proceſſion at their funerals and triumphs: theſe were commonly made of wax, or wood; though ſometimes of marble, or braſs. They placed them in the veſtibles of their houſes; and they were to ſtay there, even if the houſes happened to be ſold, it being accounted impious to diſplace them.—Appius Claudius was the firſt who brought them into the temples, in the year of Rome 259. and he added inſcriptions to them, ſhewing the origin of the perſons repreſented, and their brave and virtuous achievements.

It was not, however, allowed for all, who had the *images* of their anceſtors in their houſes, to have them carried at their funerals; this was a thing only granted to ſuch as had honourably diſcharged themſelves of their offices: for thoſe who failed, in this reſpect, forfeited that privilege: and in caſe they had been guilty of any great crime, their *images* were broken in pieces.

IMAGE alſo ſignifies a lively deſcription of any thing in a diſcourſe.

Images in diſcourſe are defined, by Longinus, to be, in general, any thoughts proper to produce expreſſions, and which preſent a kind of picture to the mind.

But, in the more limited ſenſe, he ſays, *images* are ſuch diſcourſes as come from us, when, by a kind of enthuſiaſm, or an extraordinary emotion of the ſoul, we ſeem to ſee the things whereof we ſpeak, and preſent them before the eyes of thoſe who hear us.

Images, in rhetoric, have a very different uſe from what they have among the poets: the end principally propoſed in poetry is, aſtoniſhment and ſurprize; whereas the thing chiefly aimed at in proſe is, to paint things naturally, and to ſhew them clearly.—They have this, however, in common, that they both tend to move each in its kind.

Theſe *images*, or *pictures*, are of vaſt uſe, to give weight, magnificence, and ſtrength, to a diſcourſe. They warm and animate it; and, when managed with art, according to Longinus, ſeem, as it were, to tame and ſubdue the hearer, and put him in the power of the ſpeaker.

IMAGINARY *root*, in algebra. See the article ROOT.

IMAGINATION, a power or faculty of the ſoul, whereby it conceives and forms ideas of things, by means of impreſſions made on the fibres of the brain, by ſenſation.

The organs of our ſenſes are compoſed of fibrillæ, or little fibres, which, at one end, terminate in the outward parts of the body and ſkin, and at the other in the middle of the brain.

Theſe fibres may be moved two ways: either beginning at that end which terminates in the brain, or at that which terminates without.—Now the agitation of theſe fibres cannot be communicated to the brain, but the ſoul will be affected, and perceive ſomething.—If then the agitation begins where objects make their firſt impreſſion, *viz.* on the external ſurface of the fibres of our nerves, and is communicated thence to the brain; the ſoul, in that caſe, judges that what ſhe perceives is without; that is, ſhe perceives an external object as preſent: but if only the interior fibres be moved by the courſe of the animal ſpirits, or in ſome other manner; the ſoul then imagines, and judges, that what ſhe perceives is not without, but within the brain; that is, ſhe perceives an object as abſent: and herein lies the difference between ſenſation and *imagination*.

To give a more diſtinct idea of the faculty of *imagination*, according to the doctrine of Malebranche, it muſt be obſerved, that as often as there happens to be any alteration in that part of the brain where the nerves terminate, there alſo happens an alteration in the brain; that whenever there is any motion in that part, to change the order of its fibres, there alſo happens a new perception in the ſoul, and ſhe finds ſomething new, either by way of ſenſation, or *imagination*; neither of which can be without an alteration of the fibres in that part of the brain.—So that the faculty of *imagining*, or *imagination*, only conſiſts in the power which the ſoul has of forming images of objects, by producing a change in the fibres of that part of the brain, which may be called the principal part, becauſe it correſponds to all the parts of our body, and is the place where the ſoul (if it may be ſo ſaid) immediately reſides.—It matters not which that part is, nor whether the opinion of Willis be true, who places the common ſenſe in the two bodies, called *corpora ſtriata*, and the *imagination* in the *corpus calloſum*; or that of Fernelius, who places ſenſation in the pia mater, that encompaſſes the ſubſtance of the brain; or that of Deſcartes, who places it in the pineal gland: it ſuffices that there is ſome ſuch part.

Since then the *imagination* only conſiſts in a power which the ſoul has of forming images of objects, by impreſſing them on the fibres of the brain, it follows that the larger and more diſtinct the veſtigia or tracks of the animal ſpirits, which are the lines or ſtrokes, as it were, of thoſe images, are; the more ſtrongly and diſtinctly the ſoul *imagines* thoſe objects.—Now as the breadth, depth, and cleanneſs of the ſtrokes of a ſculpture depend on the force wherewith the graver acts, and the obedience which the copper yields; ſo the depth and cleanneſs of the tracts of the *imagination* depend on the force of the animal ſpirits, and the conſtitution of the fibres of the brain; and it is that variety which is found in thoſe two things, to which we owe almoſt all that vaſt difference which we obſerve in peoples minds.—On the one ſide are abundance and ſcarcity, briſkneſs and ſlowneſs, largeneſs and ſmalneſs of the animal ſpirits; and, on the other hand, delicacy or groſſneſs, humidity or drineſs, ſtiffneſs or flexibility of the fibres of the brain; and, laſtly, a particular relation which the animal ſpirits may have with thoſe fibres: from the various combinations of which things, will reſult a ſufficiently great variety, to account for all the different characters which appear in the minds of men: and from the ſame principle flows that difference which is obſerved in the ſame perſon's mind, at different times, and under different circumſtances, as in childhood, manhood, and old age, in ſickneſs, health, *&c.*

It may here be obſerved, that the fibres of the brain are more agitated by the impreſſion of objects, than by the courſe of the animal ſpirits; and for this reaſon the ſoul is more affected with objects, which it perceives by ſenſation, and which it looks on as preſent, and capable of giving it pleaſure or pain, than by thoſe perceived by *imagination*, which it judges to be diſtant.—And yet it ſometimes happens, that in perſons, whoſe animal ſpirits are extremely agitated by faſting, waking, drinking, a fever, or ſome violent paſſion, theſe ſpirits move the inward fibres of the brain as forcibly as outward objects do; ſo that thoſe perſons perceive things by ſenſation, which they ſhould only perceive by *imagination*; for *imagination* and *ſenſation* only differ from each other, as the greater from the leſs. See Malebranche, *Recher. de la Verité*, Lib. II. See the articles MADNESS, DELIRIUM, PHRENSY, MELANCHOLY, *&c.*

IMAM, or IMAN, a miniſter in the Mahometan church, anſwering to a pariſh-prieſt among us.

The word properly ſignifies what we call a prelate, *antiſtes*, one who precedes others; but the Muſſulmen frequently apply it to a perſon who has the care and intendency of a moſque, who is always there the firſt, and reads prayers to the people, which they repeat after him.

IMAM is alſo applied, by way of excellence, to the four chiefs or founders of the four principal ſects in the Mahometan religion.

Thus Ali is the *imam* of the Perſian, or of the ſect of the Schiaites: Abu-beker the *imam* of the Sunnites, which is the ſect followed by the Turks. Saphii, or Safi-y, the *imam* of another ſect, *&c.*

The Mahometans do not agree among themſelves about this *imamate*, or dignity of the *imam*. Some think it of divine right, and attached to a ſingle family, as the pontificate of Aaron.—Others hold, that it is, indeed, of divine right, but deny it to be ſo attached to any ſingle family, as that it may not be transferred to another. They add, that the *imam* is to be clear of all groſs ſins; and that otherwiſe he may be depoſed, and his dignity may be conferred on another. However this be, it is certain, that after an *imam* has once been owned as ſuch, by the Muſſulmen, he who denies, that his authority comes immediately from God, is accounted impious; he who does not obey him, is a rebel; and he who pretends to contradict what he ſays, is eſteemed a fool, among the orthodox of that religion.

IMBARGO, or EMBARGO, a ſtop or ſtay put upon ſhips, or merchandize, uſually by public authority. See EMBARGO.

IMBECILLITY, a ſtate of languor, or decay; wherein the body is not able to perform its uſual exerciſes or functions.

IMBEZLE, or IMBEZZLE, to waſte, pilfer, or purloin.

As where a perſon intruſted with goods waſtes, conſumes, and diminiſhes them, he is ſaid to *imbezle* them.

IMBIBE, is commonly uſed in the ſame ſenſe as *abſorb*; *viz.* where a dry porous body takes up another that is moiſt.

IMBRICATED, is uſed by ſome botaniſts to expreſs the figure of the leaves of ſome plants, which are hollowed like an *imbrex*, or gutter-tile, or are laid in cloſe ſeries over one another like the tiles on an houſe.

IMITATION, in muſic, a kind of compoſition wherein one part is made to imitate another, either throughout the whole piece, which is one of the kinds of canon, or only during ſome meaſures, which is a *ſimple imitation*.

Sometimes the movement, or the figure of the notes, alone, is *imitated*; and that, ſometimes, even by a contrary motion, which makes what they call a *retrograde imitation*.

Imitation differs from *fugue*, in regard, in the former the repetition muſt be a ſecond, a third, a ſixth, ſeventh, or ninth, either above or below the firſt voice; whereas if the repetition were in uniſon, a fourth, fifth, or eighth, higher or lower, it would be a *fugue*.

IMMACULATE, *without ſtain*.—A term much uſed among the Romaniſts, when, ſpeaking of the conception of the bleſſed virgin, they call it *immaculate*: intimating, that ſhe was born without original ſin.

When the cap is given to a doctor of the Sorbonne, he is obliged to ſwear, that he will defend the *immaculate* conception. This was decreed by an act of the Sorbonne in the fourteenth century; in imitation of which, eighty other univerſities made the ſame order.

The military orders in Spain are all ſolemnly obliged to defend this prerogative of the virgin. See CONCEPTION.

There is alſo a Congregation of the IMMACULATE *Conception*; in moſt nunneries whereof is a ſociety of ſecular maids, whoſe end is to honour the *immaculate conception*: of which they make a public proteſtation every year, and a private one every day.

IMMANENT, in logic.—The ſchoolmen diſtinguiſh two kinds of actions; the one *tranſient*, which paſs from the agent to the patient; the other *immanent*, which continue in the agent.

IMMATERIAL, ſomething devoid of matter, or that is pure ſpirit.

Thus God, angels, and the human ſoul, are *immaterial* beings.—Plato proves the *immateriality* of the ſoul from theſe ſix topics. 1°, Its ſimplicity. 2°, Its independency on the body, which is twofold; in its *eſſe*, and in its *operari*, in exiſting, and in acting or operating ſeparately. 3°, Its rule and authority over the body. 4°, Its likeneſs and ſimilitude to God, which diſcovers itſelf in the pleaſure it enjoys in ſpiritual things, in its aiming at ſpiritual objects, *&c.* 5°, Its ſpiritual manner of perceiving material objects. And, laſtly, its indiviſibility, capacity, activity, and immortality. See SOUL.

IMMEDIATE, that which precedes or follows ſome other thing, without any interpoſition.

IMMEDIATE, alſo, ſignifies ſomething that acts without means, or without medium. In which ſenſe we ſay, *immediate* grace, an *immediate* cauſe, *&c.*

There have been great diſputes among divines about *immediate* grace.—The queſtion in debate is, Whether grace act on the heart and mind by an immediate efficacy, independent of all external circumſtances; or, Whether a certain aſſemblage and improvement of circumſtances, joined to the miniſtry of the word, may produce the converſion of ſouls. See GRACE.

IMMEDIATE *Mode*. } See the article { MODE.
IMMEDIATE *Fire*. } { FIRE.

IMMEMORIAL, an epithet given to the time or duration of any thing whoſe beginning we know nothing of.

In a legal ſenſe, a thing is ſaid to be of time *immemorial*, or time out of mind, that was before the reign of our king Edward II.

IMMENSE, that whoſe amplitude, or extenſion, no finite meaſure whatſoever, or how oft ſoever repeated, can equal.

IMMERSION, an act by which any thing is plunged into water, or ſome other fluid. See FLUID.

In the firſt ages of Chriſtianity, baptiſm was performed by *immerſion*; by three *immerſions*.—The cuſtom of *immerſion* is ſaid to be ſtill preſerved in Portugal, and among the Anabaptiſts in other parts.

IMMERSION, in pharmacy, is the preparation of ſome medicine, by letting it ſteep for ſome time in water, in order to take ſome ill quality or taſte from it.

This is done in rhubarb, to moderate its force; in lime, to take away its ſalt; and in olives, which are preſerved in brine.

IMMERSION, in aſtronomy, is when a ſtar or planet comes ſo near the ſun, that we cannot diſcern it; being as it were enveloped, and hid in the rays of that luminary.

IMMERSION alſo denotes the beginning of an eclipſe of the moon; that is, the moment when the moon begins to be darkened, and to enter into the ſhadow of the earth.

The ſame term is alſo uſed with regard to an eclipſe of the ſun, when the diſk of the moon begins to cover it.

In this ſenſe, *immerſion* ſtands oppoſed to *emerſion*, which ſignifies the moment wherein the moon begins to come out of the ſhadow of the earth; or the ſun begins to ſhew the parts of his diſk which were hid before.

IMMERSION is frequently applied to the ſatellites of Jupiter, and eſpecially to the firſt ſatellite; the obſervation whereof is of ſo much uſe for diſcovering the longitude.

The *immerſion* of that ſatellite is the moment in which it appears to enter within the diſk of Jupiter; and its *emerſion* the moment wherein it appears to come out.

The *immerſions* are obſerved from the time of the conjunction of Jupiter with the ſun, to the time of his oppoſition: and the *emerſions* from the time of his oppoſition to his conjunction.—The peculiar advantage of theſe obſervations is, that during eleven months of the year, they may be made, at leaſt, every other day.—The perfection of this theory, and the praxis thereon, we owe to M. Caſſini.

Scruples of IMMERSION. See the article SCRUPLE.

IMMORTAL, that which will laſt to all eternity, as having in itſelf no principle of alteration, or corruption.

Thus, God, and the human ſoul, are *immortal*. Plato defines *immortality*, ουσια εμψυχος και αιδιος μονη, *animated eſſence, and eternal manſion*; and proves the *immortality* of the ſoul from two kinds of arguments; the one *artificial*, the other *inartificial*.

The *inartificial* arguments for the ſoul's *immortality* are teſtimonies and authorities, whereof he cites ſeveral; and adds, in general, that all the great men and poets, who had any thing divine in them, have at all times aſſerted the *immortality* of the ſoul.

Artificial or proper arguments for the *immortality* are either *ſpeculative* or *practical*: of the firſt kind are thoſe drawn from, 1°, The ſimple, uniform, ſpiritual, and divine nature of the ſoul. 2°, From its infinite capacity. 3°, Its deſiring and longing after *immortality*, and its inward horror of falling into nothing; proving it abſurd that, the ſoul ſhould die, when life is its proper and adequate object. 4°, Its rational activity; proving that whatever has in itſelf a principle of rational and ſpontaneous motion, by which it tends towards ſome ſupreme good, is *immortal*. 5°, The various ideas which it has of ſpiritual things; particularly the idea it has of *immortality*: and, 6°, Its immateriality.

His *practical* or moral arguments for the *immortality* of the ſoul, are drawn from, 1°, The juſtice of God, which can never ſuffer the wicked to eſcape unpuniſhed, nor the good unrewarded after death. 2°, The dependence which religion has on this opinion, in regard, without this perſuaſion, there would be no religion in the world. 3°, The opinion which men have, that juſtice and every kind of virtue are to be cultivated, that they may at laſt live with God. 4°, The ſtings of conſcience, and anxious ſolicitude we are under about a future ſtate.

IMMUNITY, a privilege or exemption from ſome office, duty, or impoſition.

Immunity is more particularly underſtood of the liberties granted to cities, and communities.

The princes heretofore granted all kinds of *immunities* to eccleſiaſtics, exempting them from all impoſitions; but the eccleſiaſtics of thoſe days were not ſo rich as thoſe of ours: they gave all they had to the poor.

There is ſtill a privilege of *immunity* in ſome places, and eſpecially in Italy, belonging to eccleſiaſtical things, and perſons; who are exempted from certain dues, and are ſheltered from the purſuits of juſtice. Though there are ſome crimes for which they cannot plead the privileges of their *immunity*, as premeditated murder, *&c.*

IMMUTABILITY, the condition of a thing that cannot change.

Immutability is one of the divine attributes.

There is a twofold *immutability* in God; a *phyſical*, and a *moral* one.—The *phyſical immutability* conſiſts in this, that the ſubſtance of God does not, nor can, receive any alteration.—His *moral immutability* conſiſts in his not being liable to any change in his thoughts, will, or deſigns; but that what he wills, he has willed from all eternity. See GOD.

IMPALED, in heraldry, is underſtood of a ſhield party per pale, or divided into two halves by a line drawn palewiſe through the middle, from the top to the bottom.

When the coats of arms of a man and his wife, who is not an heireſs, are borne in the ſame eſcutcheon, they muſt be *impaled*, or marſhaled in pale, *i. e.* the huſband's on the right ſide, and the wife's on the left; and this the heralds call *baron and feme*, two coats *impaled*.

If a man have had two wives, he may *impale* his coat in the middle between theirs; and if he have had more than two, they are to be marſhaled on each ſide of his in their proper order.

IMPALEMENT, in a penal ſenſe. } See EMPALEMENT.
IMPALEMENT, in phytology. }

IMPALPABLE, that, whoſe parts are ſo extremely minute, that they cannot be diſtinguiſhed by the ſenſes, particularly by that of feeling.

IMPANATION, a term uſed among divines to ſignify the opinion of the Lutherans with regard to the euchariſt; who believe that the ſpecies of bread and wine remain, together with the body of our Saviour, after conſecration.

IMPANATORES. See the article ADESSENARII.

IMPANELLING, in law. See EMPANELLING.

IMPARES *Scamilli*. See the article SCAMILLI.

IMPARLANCE, or EMPARLANCE. See EMPARLANCE.

IMPASSIBLE, that which is exempt from ſuffering; or which cannot undergo pain, or alteration.

The Stoics place the ſoul of their wiſe man in an *impaſſible*, imperturbable ſtate. See APATHY.

IMPASTATION, the mixtion of divers materials of different colours, and conſiſtencies, baked or bound together with ſome cement, and hardened either by the air, or fire.

IMPASTATION is ſometimes uſed for a ſort of maſons-work, made of ſtucco, or ſtone ground ſmall, and wrought up again in manner of a paſte.

Authors are of opinion that the obeliſks, and the huge antique columns ſtill remaining, were made, ſome by *impaſtation*, and others by fuſion; but this is wholly erroneous: they are all cut out of quarries, yet open in Egypt, Arabia, *&c.*

IMPASTING, in painting. See EMPASTING.

IMPEACHMENT *of Waſte*, a reſtraint from committing of waſte upon lands and tenements; or a demand of recompence for waſte made by a tenant who has but a limited eſtate in the land granted.

He that hath a leaſe without *impeachment of waſte*, hath by that a property or intereſt given him in the houſes and trees, and may make waſte in them without being called to an account for it.

IMPECCABILITY, the ſtate of a perſon who cannot ſin: or a grace, privilege, or principle, which puts him out of a poſſibility of ſinning.

The ſchoolmen diſtinguiſh ſeveral kinds and degrees of *impeccability*: that of God, belongs to him by nature: that of Jeſus Chriſt, conſidered as man, belongs to him by the hypoſtatical union: that of the bleſſed, is a conſequence of their condition: that of men, is the effect of a confirmation in grace, and is rather called *impeccance* than *impeccability*; accordingly divines diſtinguiſh between theſe two: this diſtinction is found neceſſary in the diſputes againſt the Pelagians, in order to explain certain terms in the Greek and Latin fathers, which without this diſtinction are eaſily confounded.

IMPEDIT, in law. See the article QUARE *Impedit*.

IMPENETRABILITY, a quality whereby a thing becomes unable to be pierced or penetrated; or a property of body whereby it ſo fills up certain ſpaces, as that there is no room in them for any other body.

Dr. Harris defines *impenetrability*, the diſtinction of one extended ſubſtance from another, by means whereof the extenſion of one thing is different from that of another: ſo that two extended things cannot be in the ſame place, but muſt neceſſarily exclude each other.

IMPENITENCE, or IMPENITENCY, an hardneſs of heart, which makes a perſon perſevere in vice, and prevents his repentance.

Final *impenitence* is the ſin againſt the Holy Ghoſt, which is neither pardoned in this life, nor in that to come.

IMPERATIVE, in grammar, is one of the moods or manners of conjugating a verb, ſerving to expreſs a commandment; as, *go*, *come*, &c. See MOOD.

In Hebrew, and other oriental languages, the future tenſe has frequently an *imperative* ſignification.

IMPERFECT *Plants*, among botaniſts, are ſuch as either really want flower, and ſeed, or are ſuppoſed to want them; no flower or ſeed having yet been diſcovered in the greater part of thoſe plants included in this claſs by the botanical writers.

Mr. Ray diſtinguiſhes the plants called imperfect in his time according to the places of their growth, into,

I. *Aquatics*, or ſuch as grow in the water: and that either, 1°, In the ſea, and then they are called *marine plants*; which are either of an hard and ſtony conſiſtence, as the corals, and corallines; or of a more ſoft and herbaceous one. Of theſe laſt ſome are like herbs, and are of two kinds; the greater, which are cauliferous, as the fucus: the leſſer, as the alga: the others have more of the muſcus, or fungus appearance, as the ſpongia. 2°, *Freſh-water plants*, and thoſe have either no leaves, but are capillaceous, as the conſervæ; or their leaves are either ſingle, or divided into three parts, as the lens paluſtris, and lenticula paluſtris triſulca.

II. *Imperfect plants*, which grow in dry ground: theſe are divided into (1°), Such as have their ſubſtance, either woody or fleſhy; and have ſcarce any thing common with the *perfect plants*, neither the green herbaceous colour, nor the texture of herbs; nor flower, ſeed, nor leaf, properly ſpeaking; as all the fungi, which are either, 1°, Such as grow on trees, and therefore are called *arboreous*, as the fungus laricis, called *agaric*, and the fungus ſambuci, which we call *Jews-ear*. 2°, Terreſtrial, and thoſe either cauliferous, with heads either lamellated or porous underneath, or without ſtalks, as the pezicæ of Pliny, and fungus pulverulentus, crepitus lupi, or common puff-balls. 3°, Subterraneous, as the tubera terræ, or truffles. (2°), Such as have a more ſoft and dry conſiſtence, and this more like that of herbs; of which ſome are both cauliferous and branched, as the muſci, or moſſes: others are without ſtalks, adhering like a cruſt to the ſurface of the earth, ſtones, trees, or wood; as the lichen terreſtris and arboreus. This was the opinion of Mr. Ray, as to the claſs of imperfect plants; but their number has been, ſince his time, greatly diminiſhed; almoſt all of theſe named here having been found lately to have real ſeeds. See Supplement, articles FUNGUS, CORALLIUM, and MUSCUS.

IMPERFECT *tenſe*, in grammar, ſignifies an indefinite time between the preſent and the paſt; as, *I taught*, *I heard*.

IMPERFECT *flowers* are thoſe which want the petala; hence alſo called *apetalous*, and *ſtamineous flowers*.

IMPERFECT *numbers*, in arithmetic, are thoſe whoſe aliquot parts, taken together, do not make the juſt number itſelf, but either come ſhort of it, in which caſe they are called *deficient numbers*; or exceed it, and then they are called *abundant numbers*.

IMPERFECT *mixts*. See the article MIXT.

IMPERIAL, ſomething belonging to an emperor, or empire.

Thus we ſay, his *imperial* majeſty, the *imperial* crown, *imperial* arms, *&c.*

IMPERIAL *crown*. See the article CROWN.

IMPERIAL *chamber* is a ſovereign court eſtabliſhed for the affairs of the immediate ſtates of the empire. See CHAMBER.

IMPERIAL *cities*, in Germany, are thoſe which own no other head but the emperor.

Theſe are a kind of little commonwealths; the chief magiſtrate whereof does homage to the emperor, and pays him the Roman month; but in other reſpects, and in the adminiſtration of juſtice, the magiſtrate is ſovereign.

The *imperial cities* have a right of coining money, and of keeping forces, and fortified places: their deputies aſſiſt at the *imperial* diets, where they are divided into two branches, that of the Rhine, and that of Suabia.—There were formerly twenty-two in the former, and thirty-ſeven in the latter; but there are now only forty-eight in all.

IMPERIAL *diet* is an aſſembly or convention of all the ſtates of the empire.

It is uſually held at Ratiſbon; where the emperor, either in perſon, or by his commiſſioner, and the electors, ſecular and eccleſiaſtical, princes, prelates, princeſſes, counts, and deputies of *imperial* cities, aſſiſt.

The *diet* is divided into three *colleges*, which are thoſe of the electors, the princes, and the cities.—The electors alone form the firſt; the ſecond conſiſts of princes, prelates, princeſſes, and counts, and the third of the deputies of *imperial* cities.

Each college has its *director*, who preſides in the conſultations: the elector of Mentz, in the college of electors; the archbiſhop of Saltzburg, in that of the princes; and the deputy of the city of Cologne, in that of the cities.

In the *diet*, each principality has a voice; but all the prelates (ſo they call the abbots and provoſts of the empire) have but two voices, and all the counts but four.

Though the three colleges agree, yet the emperor has a negative voice: when he alſo conſents, the reſolutions paſs into a law, which obliges all the ſtates of the empire, both mediate and immediate.

IMPERIAL *medals*. See the article MEDAL.

IMPERII *receſſus*. See the article RECESSUS *imperii*.

IMPERSONAL *verb*, in grammar, is ſuch an one, as is only uſed in the third perſon ſingular; as, *oportet*, *licet*, &c.

IMPERVIOUS, a thing not to be pervaded, or paſſed through; either by reaſon of the cloſeneſs of its pores, or the particular configuration of its parts. See PORE, PENETRATION, *&c.*

IMPETIGO, in medicine, an extreme roughneſs, and foulneſs of the ſkin, attended with an itching, and plentiful ſcurf.

In which ſenſe it amounts to the ſame with *lichen*, *volatica*, and *mentagra*.

The *impetigo* is a ſpecies of dry, pruriginous itch, wherein ſcales, or ſcurf, ſucceed apace; ariſing from ſaline corroſive humours thrown out upon the exterior habit of the body, by which means the internal parts are uſually relieved.

It is divided into *mitis*, mild, not accompanied with any malignity; and *fera*, ſevere, which comes near to a leproſy.

IMPETRATION, the act of obtaining any thing by requeſt or prayer.

IMPETRATION was more particularly uſed in our ſtatutes for the preobtaining of benefices and church-offices in England from the court of Rome, which did belong to the diſpoſal of the king, and other lay-patrons of the realm; the penalty whereof is the ſame with that of proviſors, 25 E. III. See PROVISOR.

IMPETUS, in mechanics. See MOMENTUM, and MOTION.

Paracentric IMPETUS. See the article PARACENTRIC.

IMPING, in falconry, the inſerting of a feather in the wing of an hawk, in the place of one that is broken.

IMPLANTATION, one of the ſix kinds of tranſplantation, uſed by ſome for the ſympathetic cure of certain diſeaſes.

Implantation is performed by placing plants, or at leaſt the roots of plants, in a ground prepared for that purpoſe, and watered with what the patient has uſed to waſh himſelf withal. By which means, it is pretended, the diſeaſe is tranſlated into the plant.—If the plant happen to die before the cure be perfected, by reaſon of the ill qualities it imbibes, other plants, they ſay, muſt be placed inſtead of it, and the proceſs be continued as in the firſt: but this is all idle and abſurd.

IMPLEAD, to ſue, or proſecute by courſe of law. See PLEADING.

IMPLEMENTS * is uſed for all things neceſſary for a trade, or the furniture of an houſhold.

* The word is formed either from the Latin *implere*, to fill up; or from the French *employer*, to employ.

In this ſenſe we frequently find it uſed in wills, and conveyances of moveables.

IMPLEX *action*. See the article ACTION.

IMPLICIT *, ſomething tacitly compriſed, or underſtood; that is, contained in a diſcourſe, clauſe, or propoſition, not in expreſs terms, but only by induction and conſequence.

* The word is derived from the Latin *in*; and *plico*, I fold.

IMPLICIT *faith*. See the article FAITH.

IMPLICIT *condition*. See the article CONDITION.

IMPLY *a contradiction*, a phraſe uſed among philoſophers, in ſpeaking of the object of divine omnipotence.

God can do every thing that does not *imply a contradiction* proceeding from God: by which is not meant a relation of the action to the executive power of God; for to ſay that God, by this power, could do whatever does not *imply a contradiction* proceeding from this power, would only be to ſay, that God can do what he can do.—In that propoſition therefore is meant a relation to the other attributes and ſimple perfections of God: thus, God can do whatever does not *imply a contradiction* to ſome other of his attributes. For inſtance, he cannot atteſt a falſe religion by his word, or by miracle, becauſe this is repugnant to his goodneſs and truth.

But becauſe all things that *imply a contradiction*, cannot be ſaid to have ſuch a reſpect to the attributes of God; therefore we may ſay more generally, that thoſe things *imply a contradiction*, which involve a contrariety from the terms or object.—For there are two things requiſite to the being of any thing; the one on the ſide of the agent, *viz.* a power of acting; the other on that of the patient or object, *viz.* a non-reſiſtance.—For want of the firſt condition, there are a thouſand things which we cannot do; and for want of the ſecond condition, there are many things that God cannot do: for that which, when it is affirmed, is yet denied, is impoſſible.

IMPORTATION, the act of *importing* or bringing in merchandizes from foreign countries.

IMPOSITION *of hands*, an eccleſiaſtical action, by which the evangelical miſſion, and the power of abſolving, is conveyed.

Impoſition of hands was a Jewiſh ceremony, introduced, not by any divine authority, but by cuſtom: it being the practice among thoſe people, whenever they prayed to God for any perſon, to lay their hands on his head.

Our Saviour obſerved the ſame cuſtom, both when he conferred his bleſſing on children, and when he cured the ſick; adding prayer to the ceremony.—The apoſtles likewiſe *laid hands* on thoſe upon whom they beſtowed the Holy Ghoſt.—

The prieſts obſerved the ſame cuſtom when any one was received into their body.—And the apoſtles themſelves underwent the *impoſition of hands* afreſh, every time they entered upon any new deſign.—In the antient church, *impoſition of hands* was even practiſed on perſons when they married; which cuſtom the Abyſſinians ſtill obſerve.

But this term, which, in its original ſignification, is general, is now reſtrained, by cuſtom, to that *impoſition* which is practiſed at ordination.—Spanheim has written a treatiſe *De impoſitione manuum*; and Tribenhorius and Braunius have done the ſame. See ORDINATION.

IMPOSITION is alſo a kind of tranſplantation practiſed for the cure of certain diſeaſes.

It is performed by taking ſome of the implanted ſpirit or excrement of the part affected, or of both together, and placing them in a tree, or a plant, between the bark and the wood, after which it is covered up with mud. Inſtead of this, ſome bore a hole in the tree with an auger; and ſhutting up the hole again with a tampion of the ſame wood, cover it over with mud.

If it be deſired the effect ſhould be laſting, a tree is choſen that will continue long, as an oak. If it be deſired the effect ſhould be ſpeedy, they chooſe a tree that grows faſt; in which laſt caſe, the matter ſerving as the medium of tranſplantation muſt be taken out of the tree as ſoon as the effect has followed, becauſe the too great alteration of the ſpirit might be ſome prejudice to the patient. But all this is idle and abſurd, and the whole buſineſs of ſuch cures deſervedly laughed out of the world.

IMPOSITION *of tonage*, &c. See DUTY, *&c.*

IMPOSSIBLE, that which cannot be done.

A propoſition is ſaid to be *impoſſible*, when it contains two ideas which mutually deſtroy each other, and which can neither be conceived, nor united together in the mind.

Thus it is *impoſſible*, that a circle ſhould be a ſquare; becauſe we conceive clearly, that ſquareneſs and roundneſs deſtroy each other by the contrariety of their figure.

There are two kinds of *impoſſibilities*, *phyſical* and *moral*.

Phyſical **IMPOSSIBILITY** is that which cannot be done by the powers of nature.

A thing is *Morally* **IMPOSSIBLE**, when of its own nature it is poſſible, but yet is attended with ſuch difficulties, as that, all things conſidered, it appears *impoſſible*.

Thus it is *morally impoſſible*, that all men ſhould be virtuous; or that a man ſhould throw the ſame number with three dice an hundred times ſucceſſively.

Any thing contrary to decency and good ſenſe is alſo ſaid to be *impoſſible*, among thoſe who reaſon from moral topics; thus the lawyers ſay *Omne turpe impoſſibile*: thoſe conditions are *impoſſible*, which ſenſe and decorum do not allow to be performed, though in themſelves very poſſible to thoſe who have no regard to good ſenſe, *&c.*

IMPOST, in law, properly denotes the tribute or tax appointed by a ſovereign to be paid for ſuch merchandize as is brought into any haven in his dominions from foreign nations.

Impoſt is diſtinguiſhed from *cuſtom*, in that cuſtom more properly ſignifies the duties paid to the king for goods ſhipped off or exported.—But the two are frequently confounded together. See CUSTOM.

IMPOSTHUME, a collection of matter, or pus, in any part of the body; either owing to an obſtruction of the fluids in that part, which makes them change into ſuch matter; or to a tranſlation of it from ſome other part where it was generated. See ABSCESS.

IMPOSTS, in architecture, the capitals of pillars, or pilaſters, which ſupport arches. See alſo *Tab. Archit. Fig.* 36. *lit. d. Fig.* 40.

An *impoſt*, ſometimes alſo called *chaptrel*, is a ſort of plinth, or little cornice, which crowns a pier, and ſupports the firſt ſtone whence an arch or vault commences.

Impoſts conform to their proper orders.—The Tuſcan is a plinth only; the Doric has two faces crowned; the Ionic has a larmier over the two faces, and its mouldings may be carved; the Corinthian and Compoſite have a larmier, freeze, and other mouldings.

The projecture of the *impoſt* muſt not exceed the naked of the pilaſter.—Sometimes the entablature of the order ſerves for the *impoſt* of the arch; and this looks very grand and ſtately.

The *impoſt* is a thing eſſential to an ordonnance; inaſmuch as without it, in the place where the curve line of the arch meets with the perpendicular line of the pillar, there always ſeems a kind of elbow.

IMPOTENCE *, or **IMPOTENCY**, a want of ſtrength, power, or means, to perform any thing.

* The word is derived from the prepoſition *in*, taken privatively; and *potentia*, power.

Divines and philoſophers diſtinguiſh two kinds of *impotency*, *natural* and *moral*.—The firſt is a want of ſome phyſical principle neceſſary to an action; or it is where a being is abſolutely defective, or not free, and at liberty to act: the ſecond only imports a great difficulty; as a ſtrong habit to the contrary; a violent paſſion, inclination, or the like.—*Impotency* is more particularly uſed for a natural inability to coition.

In this ſenſe, *impotency* is defined an inability or inſufficiency in the male to impregnate the female.

The decretals idly diſtinguiſh three cauſes, or rather ſpecies, of *impotency*; viz. *frigidity*, *witchcraft*, and *impotentia coeundi*.

IMPRECATION *, a curſe, or wiſh that ſome evil may befal any one.

* The word is derived from the Latin *in*; and *precor*, I pray.

The antients had their goddeſſes called *Imprecations*, in Latin *Diræ*, i. e. *Deorum iræ*, who were ſuppoſed to be the executioners of evil conſciences.—They were called *Diræ* in heaven, *Furies* on earth, and *Eumenides* in hell.

The Romans owned but three of theſe *Imprecations*, and the Greeks only two.—They invoked them, with prayers, and pieces of verſes, to deſtroy their enemies.

IMPREGNATION *, the emiſſion of the ſeed of the male in coition, by which the female conceives, or becomes with young.

* The word is derived from the Latin *imprægnare*, of *prægnans*, a woman with child.

IMPREGNATION is alſo figuratively uſed in pharmacy, when a liquor imbibes the particles of ſome other body.

Thus a menſtruum is ſaid to be *impregnated* with a body, diſſolved in it, as much as its pores are able to receive.

IMPRESSED *ſpecies*. See the article SPECIES.

IMPRESSION, in philoſophy, is applied to the ſpecies of objects which are ſuppoſed to make ſome mark or *impreſſion* on the ſenſes, the mind, and the memory.

The Peripatetics tell us, that bodies emit ſpecies reſembling them, which ſpecies are conveyed by the exterior ſenſes to the common ſenſory: theſe *impreſſed* ſpecies, being material and ſenſible, they ſay, are rendered intelligible by the active intellect; and, when thus ſpiritualized, are called *expreſſions*, or *expreſs ſpecies*, as being expreſſed from the others.

IMPRESSION is alſo frequently uſed in ſpeaking of the editions of a book, or of the number of times it has been printed.

M. Arnaud aſſures us, there were above two hundred *impreſſions* of the Louvain bible in one age; and it is affirmed, that Thomas à Kempis of the *Imitation of Chriſt* has undergone more *impreſſions* than there have been months ſince it was firſt compoſed.

Impreſſion, however, differs from *edition*: the former, properly ſpeaking, takes in no more than what belongs to the printing, the letter, paper, margin, page, diſtances of words and lines, and the diſpoſition of every thing that may have a good or bad effect on the eye: the latter, beſides all this, takes in the care of the editor, who has reviſed the copy, corrected or augmented it, adding notes, tables, and other like things, which he judged might contribute towards makeing the book more uſeful and correct.

Indeed, very frequently the word *edition* only refers to this latter part; as when, in ſpeaking of the works of S. Auguſtine, we quote the edition of Eraſmus, the Lovaniſts, Benedictines, *&c.* where we have no regard to the printing part, but only to the care and pains of the editors.

Privilege for **IMPRESSION**. See the article PRIVILEGE.

IMPREST, *Auditors of*. See the article AUDITORS.

IMPRISONMENT, the ſtate of a perſon reſtrained of his liberty, and detained under the cuſtody of another.

Falſe **IMPRISONMENT**. See the articles FALSE, and APPEAL.

IMPROPER *fractions* are ſuch as have their numerators equal to, or greater than, their denominators.

Such, *e. g.* are, $\frac{5}{3}$, $\frac{12}{12}$, *&c.*

Theſe, properly ſpeaking, are not *fractions*, but either whole or mixed numbers; and are only put into the form of *fractions*, in order to be added, ſubtracted, multiplied, or divided, *&c.*

IMPROPER *motion*. See the article MOTION.

IMPROPRIATION is a term uſed where the profits of an eccleſiaſtical benefice are in the hands of a layman.

In which ſenſe it ſtands diſtinguiſhed from *appropriation*, which is, where the profits of a benefice are in the hands of a biſhop, college, *&c.* though the two are now often uſed promiſcuouſly.—There are ſaid to be 3845 *impropriations* in England.

IMPROPRIETY, the quality of ſomething that is not fit, or proper. See PROPER, and PROPRIETY.

Grammarians obſerve three kinds of faults in language; a *ſoleciſm*, *barbariſm*, and *impropriety*: an *impropriety* is committed when a word is uſed that has not a *proper* ſignification. See SOLECISM, and BARBARISM.

IMPROVIDÈ, in law. See QUIA *improvidè*.

IMPULSIVE, a term in philoſophy, applied to the action of a body which impels or puſhes another.

Thus the arm is ſaid to give an *impulſive* motion to the ſtone that it throws. See PROJECTILE.

In this ſenſe, *impulſive* ſtands contradiſtinguiſhed from *attractive* and *repulſive*.

Sir Iſaac Newton ſuggeſts, that attraction itſelf may poſſibly be effected by an *impulſive* power.

IMPUTATION, a term much uſed among divines, ſometimes in a good, and ſometimes in an ill ſenſe: in the latter it is uſed to ſignify the charging the ſin to the account of one, which was committed by another.

Thus Adam's ſin is *imputed* to all his poſterity; all his deſcendants, by his fall, becoming as criminal in the ſight of God, as if they had fallen themſelves; and bearing the juſt puniſhment of his firſt crime. See ORIGINAL *ſin*.

Imputation, uſed in a good ſenſe, ſignifies the charging of another's juſtice, or merit.

Thus the juſtice of Jeſus Chriſt is imputed to us; his merits, and the price of his ſufferings, being applied to us.

The *imputation* of the merits of Chriſt ſignifies no more, among the Reformed, than an extrinſic juſtice, which does not make us truly juſt, but only makes us appear ſo; which hides our ſins, but does not efface them.

For this reaſon, thoſe of the Romiſh communion decline the uſe of the word *imputation*; and aſſert, that the juſtifying grace, which applies to us the merits of Jeſus Chriſt, not only covers our ſins, but alſo effaces them; that this grace is intrinſic and inherent, renewing intirely the inward man, and rendering him pure, juſt, and without ſpot before God; and that this juſtice is given him on account of the juſtice of Jeſus Chriſt, that is, by the merits of his death and paſſion.—In a word, ſay they, though it is the obedience of Jeſus Chriſt that has merited juſtifying grace for us, yet it is not the obedience of Jeſus Chriſt that renders us formally juſt: and in like manner, it is not the diſobedience of Adam that makes us formally ſinners, but it is this diſobedience that has merited for us, both that we ſhould be ſinners, and that we ſhould undergo the puniſhment of ſin.

Proteſtants ſay, that the ſin of the firſt man is *imputed* to his deſcendants; they being looked on as culpable, and puniſhed as ſuch, becauſe of the ſin of Adam.—Catholics hold, that this is not enough; we are not only eſteemed and puniſhed as criminals, ſay they, but we are actually criminal ourſelves by original ſin.

Again, Proteſtants ſay, that the juſtice of Jeſus Chriſt is *imputed* to us, and that our juſtification is only the *imputation* of Chriſt's juſtice; his ſufferings ſtanding inſtead of ours, and God accepting his death as a ſatisfaction in lieu of our own.—But Catholics teach, that the juſtice of Chriſt is not only *imputed*, but actually communicated to the faithful, by the operation of the Holy Ghoſt: ſo that they are not only reputed juſt, but alſo are made ſo.

INACCESSIBLE *height*, or *diſtance*, is that which cannot be actually meaſured, by reaſon of ſome impediment in the way; as water, or the like. See DISTANCE, &c.

INACTION, *ceſſation of action*, a term much uſed in the myſtical divinity; by which is underſtood a privation, or annihilation, of all the faculties; whereby the door is, as it were, ſhut to all external objects, and a kind of ecſtaſy is procured, during which God ſpeaks immediately to the heart.

It is the ſtate of *inaction* that is held the moſt proper for receiving the Holy Spirit; and in this fit of dozing, they ſay, it is that God communicates ſublime and ineffable ſentiments and graces to the ſoul.

Some do not make it conſiſt in this ſtupid kind of indolence, or general ſuſpenſion of all ſenſation; but by *inaction* only mean a ceſſation of deſires, in which as the ſoul does not determine itſelf to any poſitive acts, neither does it abandon itſelf to uſeleſs meditations, or the vain ſpeculations of reaſon; but demands in general every thing that may be agreeable to God, without preſcribing any thing to him.

This latter is the doctrine of the antient myſtics, and the former that of the modern ones, or the quietiſts.

In general, however, it may be ſaid, that *inaction* is not the moſt likely way of pleaſing God; it is our actions chiefly by which we are to gain his favour; he will have us to act; ſo that *inaction* cannot be agreeable to him.

INACTIVITY *of matter*. See VIS *inertiæ*.

INADEQUATE *idea*, or *notion*, is a partial or incomplete repreſentation of any thing to the mind. See IDEA.

INALIENABLE, that which cannot be validly alienated, or made over to another. See ALIENATION.

Thus the dominions of the king, the church, minors, &c. are *inalienable*, otherwiſe than with a reſerve of the right of redemption for ever.

INAMELLING, or ENAMELLING. See the article ENAMELLING.

INANIMATE *, denotes a body that has either loſt its ſoul, or that is not of a nature capable of having any.

* The word is derived from the Latin prepoſition *in*, taken privatively; and *anima*, ſoul.

Thus, a dead man is an *inanimate* lump, and metals are *inanimate* bodies.

INANITION, a term in phyſic, ſignifying emptineſs; or the ſtate of the ſtomach, when it is empty, and needs food.

There are flatulencies which proceed from repletion, and others from *inanition*, which laſt are the more dangerous.

INARTICULATE, an epithet applied to ſuch ſounds, ſyllables, or words, as are not pronounced diſtinctly. See ARTICULATION.

INAUGURATION *, the coronation of an emperor, or king; or the conſecration of a prelate; ſo called in imitation of the ceremonies uſed by the Romans, when they were received into the college of augurs.

* The word comes from the Latin *inaugurare*, which ſignifies to dedicate a temple, or to raiſe any one to the prieſthood, having, in order to that, firſt taken auguries. See AUGUR, and AUGURY.

INCA, or YNCA, an appellation which the natives of Peru give to their kings, and princes of the blood.

The chronicle of Peru relates the origin of the *incas*: this country had been a long time the theatre of all ſorts of wars, horrible crimes, and diſſenſions, till at length there appeared two brothers, the one of whom was called *Mangocapa*: of this perſon the Indians uſe to tell wonders; they ſay he built the city of Cuſco, ſettled laws and policy, and taught them to adore the ſun: and he and his deſcendants took the name of *inca*, which, in the language of Peru, ſignifies *king*, or *great lord*. Theſe *Incas* grew ſo powerful, that they made themſelves maſters of the whole country, from Paſto to Chili, 1300 leagues long, and held it till the diviſions between *inca* Guaſcar, and Atabalipa; which the Spaniards laying hold of, made themſelves maſters of Peru, and put an end to the empire of the *incas*.

They number only twelve of theſe *incas*.—It is ſaid, the moſt conſiderable among the nobles of the country ſtill bear the name of *inca*.

INCALESCENCE *, the growing hot of any thing, either by motion and friction, or as quick-lime does, by pouring water on it.

* The word is compounded of *in*, and *caleo*, or *caleſco*, I grow warm.

INCAMERATION *, in the apoſtolical chancery, the union of ſome land, right, or revenue, to the domain of the pope. See CHAMBER.

* The word is derived from the Latin *in*, and *camera*, chamber.

INCANTATION *, *inchantment*; words and ceremonies uſed by magicians to raiſe devils; or rather to impoſe on the credulity of the people. See MAGIC, FASCINATION, WITCHCRAFT, &c.

* The word is derived from the Latin *in*, and *canto*, I ſing. See CHARM, and CARMEN.

INCAPACITY, in matters of benefices among the canoniſts, is of two kinds: the one renders the proviſion of a benefice null in its original; the other is acceſſary, and annuls the proviſions, which at firſt were valid.

Incapacities of the firſt kind, are the want of a diſpenſation for age in a minor, for legitimation in a baſtard, for naturalization in a foreigner, &c.

Of the latter kind, are grievous offences and crimes; as being concerned in ſeeing a ſentence of death executed, &c. which they decree, vacate the benefice to all intents, or render the holding it irregular.

INCARNATION, in theology, ſignifies the act whereby the Son of God aſſumed the human nature; or the myſtery by which Jeſus Chriſt, the eternal Word, was made man, in order to accompliſh the work of our ſalvation.

The Indians own a kind of Trinity in the Godhead, and ſay, that the ſecond perſon thereof has been incarnate nine times, and will be *incarnate* a tenth; and they give him a different name in each of theſe *incarnations*. See Kircher. *Chin. Illuſtr.*

The æra uſed among Chriſtians, whence they number their years, is the time of the *incarnation*, that is, of Chriſt's conception in the virgin's womb.

This æra was firſt eſtabliſhed by Dionyſius Exiguus, about the beginning of the ſixth century, till which time the æra of Diocleſian had been in uſe.

Some time after this, it was conſidered, that the years of a man's life were not numbered from the time of his conception, but from that of his birth: which occaſioned them to poſtpone the beginning of this æra, for the ſpace of one year, retaining the cycle of Dionyſius intire, in every thing elſe.

At Rome they reckon their years from the *incarnation*, or birth of Chriſt, that is, from the 25th of December, which cuſtom has obtained from the year 1431.—In France, and ſeveral other countries, they alſo reckon from the *incarnation*; but then they differ from the other in the day of the *incarnation*, fixing it, after the primitive manner, not to the day of the birth, but conception of our Saviour.—Though the Florentines ſtick to the day of the birth, and begin their year from Chriſtmas. See Petav. *de Doct. Temp.* Grandamicus *de Die Nat.*

INCARNATION *, in medicine, ſignifies the healing and filling up ulcers and wounds with new fleſh.

* The word is formed from *in*, and *caro*, fleſh.

The medicines which effect this, are commonly called *incarnatives.*

INCARNATIVE, in medicine and ſurgery, is applied to medicines, bandages, and ſutures, which diſpoſe a wound or ulcer to fill up with fleſh. Whence they are alſo called *anaplerotics*, from ανα, again; and πληροω, to fill.

INCARNATIVE *medicine*, is ſuch an one as makes the fleſh heal and unite.

INCARNATIVE *bandage*, is a fillet with an eye or nooſe at one end of it, ſo as the other end may be put through it.—To make uſe of this bandage, they apply the middle of it to the ſide oppoſite to the wound; ſo that the aperture may be over the wound itſelf; and ſlipping the other end through it, they draw the lips of the wound cloſe to each other, that they may grow together.

INCARNATIVE *ſuture*, is ſuch an one as, by rejoining the lips of a wound, and keeping them together, by means of a thread drawn through them with a needle, occaſions them to grow up, and heal.

INCARTATION, in chemiſtry, the refining of gold, by means of ſilver, and aqua fortis.

This is the ſame with what is otherwiſe called *departing*. See DEPART.

INCENSE *, an aromatic, odoriferous reſin; otherwiſe called *frankincenſe*.

* The word comes from the Latin *incenſum*, q. d. *burnt*; as taking the effect for the thing itſelf.

Incenſe was formerly burnt in the temples of all religions, to do honour to the divinities that were there adored. Many of the primitive Chriſtians were put to death, becauſe they would not offer *incenſe* to idols. In the Romiſh church they ſtill retain the uſe of *incenſe* in many of their ceremonies, particularly at ſolemn funerals, beſtowing it on ſuch perſons as they would honour, as on prelates, &c. and ſometimes alſo on the people.

INCEPTIVE, a word uſed by Dr. Wallis to expreſs ſuch moments, or firſt principles, which, though of no magnitude themſelves, are yet capable of producing ſuch as are. See INFINITE, and INDIVISIBLE.

Thus a point has no magnitude itſelf, but is *inceptive* of a line which it produces by its motion. So a line, though it have no breadth, is yet *inceptive* of breadth; that is, it is capable, by its motion, of producing a ſurface which has breadth, &c.

INCEST, the crime of venereal commerce between perſons who are related in a degree prohibited marriage by the laws of the country.

Some are of opinion, that marriage ought to be permitted between kinſfolks, to the end that the affection, ſo neceſſary in marriage, might be heightened by this double tie; and yet the rules of the church have formerly extended this prohibition even to the ſeventh degree, but time has now brought it down to the third or fourth degree.

The words *adultery* and *inceſt* are not indecent, though they ſignify very infamous things; becauſe they repreſent them as covered with a veil of horror, which makes us look on them only as crimes: the words, therefore, rather ſignify the guilt of thoſe actions, than the actions themſelves.

Moſt nations look on *inceſt* with horror, Perſia and Egypt alone excepted. In the hiſtory of the antient kings of thoſe countries we meet with inſtances of the brother's marrying the ſiſter: the reaſon was, becauſe they thought it too mean to join in alliance with their own ſubjects; and ſtill more ſo, to have married into the families of any foreign princes.

As to the Perſians, there was a ſtill more abominable ſort of *inceſt* practiſed by their magi: if we may truſt Catullus, *carm.* 91.

> *Nam magus ex matre & gnato gignatur oportet,*
> *Si vera eſt Perſarum impia religio.*

Spiritual **INCEST** is the like crime committed between two perſons who have a ſpiritual alliance, by means of baptiſm, or confirmation.

Spiritual **INCEST** is alſo underſtood of a vicar, or other beneficiary, who enjoys both the mother and the daughter; that is, holds two benefices, the one whereof depends on the collation of the other.

Such a *ſpiritual inceſt* renders both the one and the other of thoſe benefices void.

INCESTUOUS, the name of a ſect or hereſy, which aroſe in Italy about the year 1065.

The hereſy of the *Inceſtuous* had its beginning at Ravenna; the learned of which place, being conſulted by the Florentines about the degrees of affinity which prohibit marriage, made anſwer, that the ſeventh generation, mentioned in the canons, was to be taken on both ſides together; ſo that four generations were to be reckoned on one ſide, and three on the other.

They proved this their opinion by a paſſage in Juſtinian's *Inſtitutes*, where it is ſaid, that a man may marry his brother's or ſiſter's grand-daughter, though ſhe be but in the fourth degree: whence they concluded, that if my brother's grandchild be in the fourth degree with reſpect to me, ſhe is in the fifth with reſpect to my ſon, in the ſixth with reſpect to my grandſon, and in the ſeventh with reſpect to my great grandſon.

Peter Damian wrote againſt this opinion, and pope Alexander II. condemned it in a council held at Rome.

INCH, a known Engliſh meaſure, the twelfth part of a foot.

INCH *of candle*, a manner of ſelling goods among merchants.

The method of it is thus.—Notice is uſually given upon the Exchange in writing, and elſewhere, when the ſale is to begin: againſt which time the goods are divided into ſeveral parcels, called *lots*, and papers printed of the quantity of each, and of the conditions of ſale; as, that none ſhould bid leſs than a certain ſum more than another has bid before. During the time of bidding, a ſmall piece, of about an *inch*, of wax-candle, is burning; and the laſt bidder, when the candle goes out, has the lot or parcel expoſed to ſale.

INCHASING, in ſculpture. See the article ENCHASING.

INCHOATIVE, a term ſignifying the beginning of a thing, or action; the ſame with what is otherwiſe called *inceptive*. See INCEPTIVE.

INCHOATIVE *verbs*, according to the ſtrict rules of the Latin tongue, are uſed by the beſt authors indifferently with primitives, having almoſt all the tenſes in common with them; nay, ordinarily they expreſs our ſentiments with more energy, and the actions themſelves in a more perfect ſtate.

INCIDE, *cut*.—Thoſe medicines are ſaid to *incide*, which conſiſt of pointed, and ſharp particles; as acids, and moſt ſalts; by the force or inſinuation of which, the particles of other bodies, which before cohered, are divided from one another.

And thus ſome expectorating medicines are ſaid to *incide*, or cut the phlegm, when they break it, ſo as to occaſion its diſcharge. See EXPECTORATION.

INCIDENCE, in mechanics, expreſſes the direction in which one body ſtrikes on another; otherwiſe called *inclination*.

In the incurſions of two moving bodies, their *incidence* is ſaid to be *perpendicular* or *oblique*, as their directions or lines of motion make a ſtrait line, or an oblique angle at the point of contact.

Angle of **INCIDENCE**, commonly denotes the angle comprehended between an *incident* ray, or other body, and a perpendicular to the plane in point of *incidence*.

Thus, ſuppoſing AB (*Tab. Optics, Fig.* 26.) an incident ray proceeding from the radiant point A, to B the point of *incidence*, and HB a perpendicular to DE in the point of *incidence*: the angle ABH, comprehended between AB and HB, is the *angle of incidence*—by others called the *angle of inclination.*

Angle of **INCIDENCE** is alſo uſed by Dr. Barrow, and ſome others, for the complement of the above angle, or of the angle of inclination.

Thus, ſuppoſing AB an *incident* ray, and HB a perpendicular, as before; the angle ABD comprehended between it and the reflecting or refracting plane DE, is the *angle of incidence*; and the angle ABH, the angle of inclination.

Others, with Wolfius, make another diſtinction; which ſee under the articles ANGLE, REFLEXION, and REFRACTION.

It is demonſtrated by optical writers, 1°, That the *angle of incidence*, ABH, *Fig.* 26. is always equal to the angle of reflexion HBC, or the angle ABD to the angle CBE.

2°, That the ſines of the *angles of incidence* and refraction are to each other reciprocally as the reſiſtances of the mediums.

3°, That from air to glaſs the ſine of the *angle of incidence* is to the ſine of the reflected angle as 300 to 193, or nearly as 14 to 9: on the contrary, that from glaſs to air, the ſine of the *angle of incidence*, is to the ſine of the refracted angle as 193 to 300, or as 9 to 14.

It is true, Sir Iſaac Newton having ſhewn, that the rays of light are not all equally refrangible, there can be no preciſe ratio fixed between the ſines of the angles of refraction and *incidence*: but the proportion which comes neareſt, is that above ſpecified. See LIGHT, COLOUR, REFRANGIBILITY, &c.

INCIDENCE *of eclipſe*. See the article ECLIPSE.

Axis of **INCIDENCE**. See the article AXIS *of incidence*.

Cathetus of **INCIDENCE**. See CATHETUS *of incidence*; ſee alſo REFLEXION.

Line of **INCIDENCE**, in catoptrics, denotes a right line, as AB, *Tab. Optics, Fig.* 26. whereby light is propagated from a radiant point A, to a point B, in the ſurface of a ſpeculum.—This is alſo called an *incident ray*.

Line of **INCIDENCE**, in dioptrics, is a right line, as AB, *Fig.* 56. whereby light is propagated unrefracted, in the ſame medium,

dium, from the radiant point to the ſurface of the refracting body HKLI.

Point of Incidence. See the article Point of *Incidence*.

Scruples of Incidence. See the article Scruples.

INCIDENT, in a moral ſenſe, denotes an event; or a particular circumſtance of ſome event.

Incident, in a poem, is an epiſode, or particular action, tacked to the principal action, or depending on it.

A good comedy is to be full of agreeable *incidents*, which divert the ſpectators, and form the intrigue. The poet ought always to make choice of ſuch *incidents*, as are ſuſceptible of ornament ſuitable to the nature of his poem. The variety of *incidents* well conducted make the beauty of an heroic poem, which ought always to take in a certain number of *incidents* to ſuſpend the cataſtrophe, that would otherwiſe break out too ſoon.

Incident *Ray*. See the articles Ray, Incidence, and Inclination.

INCINERATION *, in chemiſtry, the reduction of vegetables into aſhes, by burning them gently.

* The word is derived from the Latin prepoſition *in*, and *cinis*, aſhes.

Thus fern is *incinerated* for the making of glaſs.

INCISION *Crucial*. See the article Crucial.

Grafting by Double Incision. See Engrafting.

INCISIVE, Incisivus, in anatomy, is applied to ſeveral teeth, a double muſcle, and certain orifices ſituated near thoſe teeth.

Incisivi *Dentes*, called alſo *inciſores*, or *cutters*, and ſometimes *riſores*, becauſe they ſhew themſelves in laughing, are eight in number; four in each jaw, ſituate in the fore-ſide, and in the middle of the others.—See *Tab. Anat. (Oſteol.) fig.* 2. *lit. d.*

They are ſhorter and ſharper than the others, and are inſerted into their alveoli by a ſingle root, or twang; for which reaſon they fall eaſily, eſpecially thoſe of the upper ſide.

They are called *inciſivi*, becauſe their office is to cut or incide the meat. See Tooth.

Incisivus is alſo an appellation given to the firſt proper muſcle of the upper lip; becauſe it has its origin in the bone of the upper jaw, near the place of the *inciſive* teeth; hence it paſſes, and is inſerted, into the upper lip, which it ſerves to draw up.

The maxillary bones have four internal orifices, two whereof are called Incisiva, as being directly under the *dentes inciſivi*.

INCLINATION, in medicine and chemiſtry, the operation of pouring off a clear liquor from ſome fæces, or ſediment, by only gently ſtooping the veſſel.

This amounts to the ſame with what is otherwiſe called *decantation*.

Inclination, in phyſics, expreſſes the mutual approach or tendency of two bodies, lines, or planes, towards one another; ſo that their directions make either a ſtrait line at the point of contact, or an angle of a greater or leſſer magnitude.

Inclination *of a Right Line to a Plane*, is the acute angle, which ſuch right line makes with another right line drawn in the plane through the point where the inclined line interſects it, and through the point where it is alſo cut by a perpendicular drawn from any point of the inclined lines.

Inclination *of an incident Ray*, is the angle which it makes with a line drawn to the point of incidence, perpendicular to the reflecting or refracting ſurface.

This is otherwiſe called the *angle of inclination*: ſometimes alſo the *angle of incidence*.

Inclination *of a reflected Ray*, is the angle which a ray after reflection makes with the axis of *inclination*.

Thus, if AB, *Tab. Opt. fig.* 26. be the incident ray, HB a perpendicular to DE in the point B, and BC the reflected ray; CBH will be the *inclination of the reflected ray*; and ABC the *inclination* of the incident ray.

Inclination *of the Axis of the Earth*, is the angle which it makes with the plane of the ecliptic; or the angle between the planes of the equator and ecliptic.

Inclination *of a Planet*, is an arch or angle comprehended between the ecliptic, and the place of a planet in his orbit.

The greateſt *inclination* of Saturn, according to Kepler, is 2°. 32′; of Jupiter 1°. 20′; of Mars 1°. 50′. 20″; of Venus 3°. 22′; of Mercury 6°. 54′. According to de la Hire, the greateſt declination of Saturn is 2°. 33′. 30″; of Jupiter 1°. 19′. 20″; of Mars 1°. 51′. 0″; of Venus 3°. 23′. 5″; of Mercury 6°. 52′. 0″.

Inclination *of a Plane*, in dialing, is the arch of a vertical circle, perpendicular both to the plane, and the horizon, and intercepted between them.

To find this, take a quadrant, and apply its ſide to the ſide of a ſquare, and apply the other ſide of your ſquare to your plane: if the plumbet fall parallel to the ſide of the ſquare, then the lower ſide of the ſquare ſtands level; by which draw an horizontal line, whereon erect a perpendicular, and apply your ſquare to that perpendicular; and if the plumbet falls parallel to the ſide of the ſquare, then that is alſo a level line, and your plane ſtands horizontally: if the plumbet falls not parallel to the ſide of the ſquare, then turn your ſquare, until it does; and draw an horizontal line, on which erect a perpendicular, to which apply your ſquare, and obſerve what angle your plumbet makes on the quadrant, with the ſide of the ſquare; that is the angle of the *inclination of the plane*.

Inclination *of two Planes*, is the acute angle made by two lines drawn one in each plane, through a common point of ſection, and perpendicular to the ſame common ſection.

Thus, in *Tab. Geometry, fig.* 98. the *inclination* of the plane KEGL to the plane ACDB is the angle HFI, or *fhi*, made by the right lines HF and FI in the point F, perpendicular to the line of ſection EG.

Angle of Inclination, in optics, is the ſame with what is otherwiſe called the *angle of incidence*.

Thus, in *Tab. Optics, fig.* 26. ſuppoſing AB an incident ray, proceeding from the radiant A to the point of incidence B, on the ſurface of a mirror; the angle ABH, comprehended between it and the perpendicular HB, is called indifferently, by Mr. Molyneux and others, the *angle of inclination*, or *of incidence*.

Argument of Inclination. See Argument.

Inclination, in a moral ſenſe. See Appetite.

INCLINED *Plane*, in mechanics, is that which makes an oblique angle with the horizon.

It is demonſtrated in mechanics, that a body, as B (*Tab. Mechanics, fig.* 58.), laid on an *inclined plane*, always loſes part of its weight; and that the power or weight L, required to ſuſtain it, is to the weight of D as the height BA of the plane is to the length of it CA.—And hence alſo it follows, that the inclination of the plane may be ſo ſmall, that the greateſt weight may be ſuſtained on it by the ſmalleſt power.

Hence it becomes a rule, that the force wherewith any heavy body would deſcend on an *inclined plane*, is to the force of the deſcent in the perpendicular, as the line of the angle of the *plane's inclination* is to the radius. See Descent.

Suppoſe, therefore, a body or weight given, and it were required to find the power neceſſary to ſuſtain it on an *inclined plane* D.—Call the weight W, and the power P: then, by the above rule, R : W : : S. incl. : P. that is, as radius is to the weight, ſo is the ſine of the angle of the *plane's inclination* to the horizon, to the power ſought: where, the three firſt being given, the fourth is known of courſe.

INCLINERS, in dialing. See Dial, and Deincliners.

INCOGNITO, a term borrowed from the Italians, uſed when a perſon is in any place where he would not be known; but it is more particularly applied to princes, or great men, who enter towns, or walk the ſtreets, without their ordinary train, or the uſual marks of their diſtinction and quality.

The grandees in Italy make a common cuſtom of walking the ſtreets *incognito*; and always take it amiſs, on ſuch occaſion, when people pay their compliments to them. It is not barely to prevent their being known, that they take theſe meaſures; but becauſe they would not be treated with ceremony, nor receive the honours due to their rank.

When the horſes in princes, cardinals, and embaſſadors coaches have no taſſels, which they call *fiocchi*; and the curtains, which they call *bandinelle*, are drawn; they are reputed to be *incognito*; and nobody that meets them is obliged to ſtop, or make his honours to them.

The cardinals alſo, when they would be *incognito*, leave off the red hat.

INCOMBUSTIBLE, that which cannot be burnt or conſumed by fire.

Metals melt, ſtones calcine, and are yet *incombuſtible*.—Cloth made of lapis amianthus is *incombuſtible*: it is cleaned by fire, but not burnt. See the article Asbestos.

At Dole, in France, is ſaid to be an *incombuſtible* taper. Gregory of Tours ſpeaks of ſome wooden kettles in his time, that bore the fire as long as thoſe of iron.—Sylla undertook to burn down a tower of wood which defended Archelaus, one of Mithridates's lieutenants; but he could not attain his end, by reaſon of its being coated with alum. It is alum-water wherewith thoſe people beſmear themſelves, who handle burning coals, melt Spaniſh wax on their tongues, &c. See Fire-Eater, and Alum.

INCOMMENSURABLE, a term in geometry, uſed where two lines, when compared to each other, have no common meaſure, how ſmall ſoever, that will exactly meaſure them both.

In the general, two quantities are ſaid to be *incommenſurable*, when no third quantity can be found that is an aliquot part of both: or, when thoſe quantities are not to one another as unity to a rational number; or as one rational number to another.

The ſide of a ſquare is *incommenſurable* to the diagonal, as is demonſtrated by Euclid; but it is commenſurable in power, the ſquare of the diagonal being equal to twice the ſquare of the ſide.

Pappus, lib. 4. prob. 17. ſpeaks alſo of *incommenſurable* angles. Surfaces which cannot be meaſured by a common ſurface, are alſo ſaid to be *incommenſurable* in power.

INCOMPATIBLE, that which cannot ſubſiſt with another without deſtroying it.

Thus cold and heat are *incompatible* in the ſame ſubject; the ſtrongeſt overcoming and expelling the weakeſt.

INCOMPLEX *oppoſition.* See the article OPPOSITION.

INCOMPOSITE *numbers* are the ſame with what Euclid calls *prime numbers.* See PRIME, and NUMBER.

INCONCINNOUS *diſcords.*	See the article	DISCORDS.
INCONCINNOUS *ſyſtem.*		SYSTEM.

INCORPORATION *, the mixing the particles of different bodies ſo together, as to make an uniform ſubſtance, or compoſition, of the whole, without leaving any poſſibility of diſcerning the ingredients or bodies mixed, in any of their particular qualities.

* The word is formed from *in*, and *corpus*, body.

INCORPOREAL, *ſpiritual*; a thing, or ſubſtance, which has no body. See the articles SPIRIT, and BODY.

Thus the ſoul of man is *incorporeal*, and may ſubſiſt independent of the body. See SOUL.

Thoſe ideas which are independent of bodies, can neither be corporeal themſelves, nor be received within a corporeal ſubject: they diſcover to us the nature of the ſoul, which receives within itſelf what is *incorporeal*, and receives it in a corporeal manner too; whence it is, that we have *incorporeal* ideas even of bodies themſelves. *Fenelon.*

INCORRUPTIBLE, that which cannot be corrupted. See CORRUPTION.

Thus ſpiritual ſubſtances, as angels, human ſouls, &c. and thus alſo glaſs, gold, mercury, &c. may be called *incorruptible.*

INCORRUPTIBLES, INCORRUPTIBILES, the name of a ſect which ſprang out of the Eutychians.

Their diſtinguiſhing tenet was, that the body of Jeſus Chriſt was *incorruptible*; by which they meant, that after and from the time wherein he was formed in the womb of his holy mother, he was not ſuſceptible of any change, or alteration; not even of any natural and innocent paſſions, as of hunger, thirſt, &c. ſo that he eat without any occaſion, before his death, as well as after his reſurrection.—And hence it was that they took their name.

INCRASSATING, the act of condenſing, or rendering fluids thicker, by the mixture of other leſs fluid particles: or by expelling the finer particles, and compinging and bringing the groſſer nearer together.

INCRUSTATION, the lining or coating of a wall, either with gloſſy ſtones, ruſtics, marble, pottery, or ſtucco-work; and that either equably, or in panels and compartiments.

INCRUSTED, or INCRUSTATED *column*, is a column conſiſting of ſeveral pieces, or ſlips, of ſome precious marble, maſticated or cemented around a mould of brick, or other matter; which is done, not only to ſave the precious ſtone, whether it be agate, jaſper, or the like; but alſo for the ſake of ſhewing pieces of it of uncommon largeneſs, by the neatneſs and cloſeneſs of the *incruſtation*, which renders the joints imperceptible, where the cement is of the ſame colour.

INCUBATION, the action of a hen, or other fowl, brooding on her eggs.

INCUBUS*, *night-mare*; a diſeaſe conſiſting in an oppreſſion of the breaſt, ſo very violent, that the patient cannot ſpeak, or even breathe.

* The word is derived from the Latin *incubare*, to lie down on any thing, and preſs it. The Greeks called it ἐφιάλτης, q. d. *ſaltator*, leaper, or ſomething that ruſheth on a perſon.

In this diſeaſe the ſenſes are not quite loſt, but they are drowned and aſtoniſhed, as is alſo the underſtanding and imagination; ſo that the patient ſeems to think ſome huge weight thrown on him, and ready to ſtrangle him.

Children are very liable to this diſtemper; ſo are fat people, and men of much ſtudy and application of mind; by reaſon the ſtomach, in all theſe, finds ſome difficulty in digeſtion.

The *incubus* ſeems to be couſin-german to the epilepſy and apoplexy: for, if it laſts long, it degenerates into one or other of thoſe diſtempers. Others reckon it a kind of aſthma, and call it *aſthma nocturnum*; and ſay, it proceeds from the ſame cauſes, and is helped by the ſame means, as the common aſthma.

INCUMBENT, in law, a clerk reſident in his benefice, with cure.

He is called *incumbent* of ſuch church, becauſe he ought to bend his whole ſtudy to diſcharge his cure. See RECTOR.

INCUMBRAVIT, in law. See QUARE *incumbravit.*

INCURVATION, the act of bending a bone, or other body, from its natural ſhape.

INCURVATION *of the rays of light.* See LIGHT, and REFRACTION.

INCUS, in anatomy, the ſecond of the oſſicles, or little bones, of the ear. See the article EAR.

INDE. See the article INDIGO.

INDEFEISIBLE, or INDEFEAZABLE, in our law, ſignifies what cannot be defeated, or made void.—As, a good and *indefeiſible* eſtate.

INDEFINITE, *indeterminate*; that which has no certain bounds, or to which the human mind cannot affix any. Deſcartes uſes the word, in his philoſophy, inſtead of *infinite*, both in numbers and quantities, to ſignify an *inconceivable* number, or number ſo great, that an unit cannot be added to it: and a quantity ſo great, as not to be capable of any addition.

Thus, he ſays, the ſtars, viſible and inviſible, are in number *indefinite*; and not, as the antients held, infinite: and that quantity may be divided into an *indefinite* number of parts, not an infinite number.

INDEFINITE is alſo uſed, in the ſchools, to ſignify a thing that has but one extreme; for inſtance, a line drawn from any point, and extended infinitely.

Thus what they call *eternity a parte ante*, or *eternity a parte poſt*, are *indefinite* durations.

INDEFINITE *propoſition.* See the article PROPOSITION.

INDEFINITE, in grammar, is underſtood of nouns, pronouns, verbs, participles, articles, &c. which are left in an uncertain indeterminate ſenſe, and not fixed to any particular time, thing, or other circumſtance.

INDELIBLE*, that which cannot be blotted out, or effaced.

* The word is formed from the Latin *delere*, to blot, with the prepoſition *in* taken negatively.

Thus baptiſm, and the order of the prieſthood, are ſaid to convey *indelible* characters.

INDEMNITY*, an act by which one promiſes to guarantee, or ſave harmleſs, ſome other perſon from any loſs, or damage, that might accrue to him on any particular account.

* The word is originally Latin, and is formed from the negative *in*, and *damnum*, loſs.

When a church is appropriated to an abbey, or college, the archdeacon loſeth his induction-money for ever; in recompence whereof, he ſhall have yearly, out of the church ſo appropriate, one or two ſhillings, more or leſs, for a penſion, as was agreed at the time of the impropriation: and this penſion is called an *indemnity*.

INDENTED, INDENTEE, in heraldry, is when the out-line of a bordure, ordinary, &c. is notched, in form of the teeth of a ſaw.

INDENTED *verge.*	See the article	DENTED.
INDENTED *medals.*		MEDALS.
INDENTED *wheel.*		WHEEL.

INDENTURE, in law, a writing which compriſes ſome contract between two, at leaſt; being indented at top anſwerable to another part, which has the ſame contents.

It differs from a deed-poll, in that this laſt is a ſingle deed, and is unindented.

INDEPENDANT *troop.* See the article TROOP.

INDEPENDENTS, a ſect of Puritans in England and Holland; ſo called, as denying not only any ſubordination among their clergy, but alſo all *dependency* on any other aſſembly.

They maintain, that every ſeparate church, or particular congregation, has in itſelf radically and eſſentially every thing neceſſary for its own government; that it has all eccleſiaſtical power and juriſdiction; and is not at all ſubject to other churches, or their deputies, nor to their aſſemblies, or ſynods.

Though the *Independents* do not think it neceſſary to aſſemble ſynods; yet, if any be held, they look on their reſolutions as weighty and prudential counſels, but not as deciſions to be peremptorily obeyed.

They agree, that one or more churches may help another church with their advice and aſſiſtance, and even reprove it when it offends; provided they do not pretend to any ſuperior authority, or right to excommunicate, &c.

In matters of faith and doctrine, the *Independents* agree with the reſt of the Reformed; ſo that the difference is rather political, than religious.

During the civil wars in England, the *Independents* becoming the moſt powerful party, and getting to the head of affairs, moſt of the other ſects, that were averſe to the church of England, joined them; which occaſioned them to be diſtinguiſhed into two ſects.

The firſt are, in effect, Preſbyterians, only differing from them in matters of diſcipline.—The others, whom M. Spanheim calls *Pſeudo-Independents*, are a confuſed aſſemblage of Anabaptiſts, Socinians, Antinomians, Familiſts, Libertines, &c.

F. Orleans ſpeaks of the riſe of the *Independents* in the following terms: ‘ Out of the ſame ſect (the Preſbyterians) had
‘ riſen ſome time ago, on pretence of further reformation, a
‘ new ſect, which was not only averſe to the monarch, but
‘ the monarchy, both which it undertook to deſtroy; and in
‘ lieu thereof to form a republic.—They were called by the
‘ name of *Independents*, in regard that, profeſſing to carry
‘ the goſpel-liberty ſtill farther than the other Puritans, they
‘ rejected not only biſhops, but alſo ſynods, pretending each
‘ aſſembly ought to govern itſelf *independently* of all others; in
‘ which, ſaid they, conſiſts the liberty of the children of God.
‘ At firſt they were only diſtinguiſhed among the Preſbyterians,
‘ as the more zealous from the more indifferent, the more rigid

‘ from the more remiſs, by a greater averſion to all pomp and pre-eminence both in church and ſtate, and by a more ardent deſire to reduce the practice of the goſpel to its primitive purity. It was their maxim of *independency* that firſt diſtinguiſhed them, and rendered them ſuſpected to the reſt. But they had addreſs and artifice enough to gain ground, and in effect they made abundance of proſelytes out of all other parties and perſuaſions.’

Independentiſm is peculiar to Great Britain, the Britiſh colonies, and the United Provinces. One Morel in the 16th century endeavoured to introduce it into France; but it was condemned at the ſynod of Rochel, where Beza preſided, and again at the ſynod of Rochel in 1644.

INDETERMINATE, in geometry, is underſtood of a quantity either of time, or place, which has no certain or definite bounds. See INDEFINITE.

INDETERMINATE *Problem*, is that, whereof there may be infinite different ſolutions.

For inſtance, if a number be required that may be a multiple of 4 and 5; where the anſwer may be 20, 40, 60, *&c.* to infinity: or, if it were required to find two numbers whoſe ſum, together with their product, may be equal to a given number; or, to make a rhomboides, wherein the rectangle under the two ſides may be equal to a given ſquare.—Both of which problems admit of infinite ſolutions.

INDEX *, in anatomy, denotes the fore finger.

> * It is thus called from *indico*, I point or direct; becauſe that finger is generally ſo uſed: whence alſo the extenſor indicis is called *indicator*.

The Greeks call it λιχανὸς, *licker*; this finger being uſed to be dipped in ſawces, *&c.* in order to ſtir them; after which it is uſually licked; or, as others will have it, becauſe the nurſes uſe it to take up the food wherewith they feed their infants; firſt licking it, to taſte whether or no it be hot.

INDEX, in arithmetic, is the ſame with what is otherwiſe called the characteriſtic, or exponent of a logarithm. See LOGARITHM.

The *index* is that which ſhews of how many places the abſolute number belonging to the logarithm conſiſts, and of what nature it is, whether an integer, or a fraction.

Thus, in this logarithm 2,521293, the number ſtanding on the left hand of the point is called the *index*; and becauſe it is 2, it ſhews you that the abſolute number anſwering to it conſiſts of three places: for it is always one more than the *index*, becauſe the *index* of 1 is 0; of 10 is 1; and of 100 is 2, *&c.*—As in this example:

0 1 2 3 4 5 6 7 8 9
1 2 3 4 5 6 7 8 9 where the upper numbers are *indices* to the lower. And therefore in thoſe ſmall tables of Brigg's logarithms, where the *index* is omitted, it muſt be always ſupplied, before you can work by them.

If the abſolute number be a fraction, the *index* of the logarithm has a negative ſign, and is marked thus, $\overline{2}$,562293; which ſhews the correſponding number to be a decimal fraction of three places; *viz.* 1 365.

Mr. Townly has a peculiar way of noting theſe *indices*, when they expreſs fractions, now much in uſe, *viz.* by taking, inſtead of the true *index*, its arithmetical complement to 10: ſo that he would write the logarithm now mentioned thus: 8.562293.

How *indices* are to be added and ſubtracted, ſee under the article LOGARITHM.

INDEX *of a Globe*, is a little ſtyle fitted on to the north-pole, and turning round with it, pointing to certain diviſions in the hour-circle.

It is ſometimes alſo called *gnomon*. See GLOBE.

INDEX, or INDICE, is alſo the denomination of a congregation at Rome, whoſe buſineſs is to examine books, and to put ſuch as they think fit to prohibit the reading and ſelling of, into an *index*.

Indices, or *expurgatory indices*, is the name by which the catalogues of prohibited books are called; among which, however, there is this difference, that ſome are condemned purely and abſolutely, and others only *donec corrigantur*, till they be corrected.

Philip II. of Spain was the firſt who procured an *index* to be publiſhed of the books condemned by the inquiſition of Spain. Pope Paul IV. took the hint, and in 1559. ordered the congregation of the holy office at Rome to print a ſecond. Pius V. recommended the matter to the council of Trent, who made another. After this, the duke of Alva procured another to be printed at Antwerp, in 1571.—Clement VIII. in 1596. publiſhed a very copious one, called by the name of the *Roman index*.—There were two others publiſhed in 1583. and 1612. by the cardinals Guiroci and Sandoval, and ſeveral others by the inquiſitors and maſters of the ſacred palace. The moſt conſiderable of all the *indices* is that of Sottomayor, which was made for all the ſtates ſubject to the king of Spain, and comprehends all the others; coming down as low as the year 1667.

INDIA, or *Eaſt* INDIA Company, Coins, Silk, *&c.* See COMPANY, COIN, SILK, *&c.*

INDIAN *Ink.* } See the article { INK.
INDIAN *Ocean.* } See the article { OCEAN.

INDIAN *Wood*, called alſo *Jamaica* and *Campeche Wood*, is taken out of the heart of a large tree growing plentifully in the iſles of Jamaica, Campeche, *&c.* uſed in dyeing, its decoction being very red.

It has been obſerved, that putting ſome of this decoction into two bottles, and mixing a little powder of alum with the one, it will become of a very beautiful red, which will hold; the other in a day's time becoming yellow, though both bottles were ſtopped from the air alike; and that if a little of the ſame decoction be expoſed to the air, it will become as black as ink in the ſame ſpace of time.

INDICATION, a ſign diſcovering, or pointing out, ſomething to be done.

INDICATION, in phyſic, ſignifies the pointing out or diſcovering what is fit to be done, and what means applied in any caſe, from a knowlege of the nature of the diſeaſe, and the virtues of medicines.

Indications are of four kinds: *preſervative*, or *prophylactic*, which direct how to cut off the cauſe of an approaching diſeaſe; *curative*, which ſhew how to remove a diſeaſe actually formed; *palliative*, which direct how to leſſen its effects, or take off ſome of its ſymptoms, before it can be wholly removed; and *vital*, which relate to the ſtrength of the body.

That part of phyſic which treats of *indications* is called *ſemeiotica*. See SEMEIOTICA.

INDICATIVE, in grammar, the firſt mood or manner of conjugating verbs, ſhewing either the time preſent, paſt, or future.

I love, is the preſent tenſe; *I loved*, the paſt; and *I will love*, is the future; of the *indicative* mood.

INDICATIVE *Column*. See the article COLUMN.

INDICATOR, in anatomy, a muſcle of the index, or finger next following the thumb. See INDEX.

The *indicator* is the firſt proper muſcle of the index; and is ſo called, becauſe it ſerves to extend that finger to point at any thing withal.

It has its origin in the middle and hind part of the cubitus, and is inſerted by a double tendon into the ſecond phalanx of the index, and to the tendon of the great extenſor, with which it acts in conjunction in ſtretching out the finger. See *Tab. Anat.* (Myol.) *fig.* 7. *n.* 10 49.

INDICTION, ſignifies the convoking of an eccleſiaſtical aſſembly; as a ſynod, or council, and even a diet.

INDICTION is applied to the ſeveral ſeſſions of the ſame councils.

Hence it is, that at the end of the ſeſſions of the council of Trent, the decree by which the council appoints the day of the future ſeſſion, is called the *indiction* of that ſeſſion.

INDICTION, in chronology, a term uſed for a kind of epocha, or manner of accounting time among the Romans; containing a cycle or revolution of fifteen years, which, when expired, begins anew, and goes round again without intermiſſion.

This method of computation has no dependence on the heavenly motions.—Petavius ſays, there is nothing in chronology leſs known than the Roman *indiction*; he means, than its origin and commencement.—It is the general opinion, that it was inſtituted in the time of Conſtantine; but this is a mere gueſs.—There were *indictions* in the time of the emperor Conſtantius, as appears from the Theodoſian Code.—The learned hold, that *indictions* were originally no other than certain annual taxes, the tariffs whereof were publiſhed every year: but why they were ſo called, why confined to a cycle of fifteen years, when, and on what occaſion, inſtituted, is not known!

We find three kinds of *indictions* mentioned in authors; the *indiction* of Conſtantinople, beginning on the firſt of September; the Imperial or Cæſarean *indiction*, on the 14th of September; and the Roman or papal *indiction*, which is that uſed in the pope's bulls, and which begins on the firſt of January.

The popes have dated their acts by the year of the *indiction*, ever ſince Charlemaign made them ſovereign; before which time they dated them by the years of the emperors.

At the time of the reformation of the calendar, the year 1582. was reckoned the tenth year of the *indiction*: ſo that beginning to reckon hence, and dividing the number of years elapſed between that time and this by 15, the remainder will be the year of *indiction*, correſponding to the year of our Lord 1749.

The *indiction* may alſo be found by adding 3 to the year of our Lord, and dividing the ſum by 15, the remainder is then the year of the *indiction*: if there be no remainder, the *indiction* is 15.

The word *indiction* comes from *indictio*, which ſignifies eſtabliſhment,

bliſhment, order, or denunciation.—The time of the *indiction*, among the Romans, was that wherein the people were ſummoned to pay a certain tribute; and it is for this reaſon, that the imperial *indiction* began towards the end of September; becauſe the harveſt being then got in, it was ſuppoſed, the people could more eaſily pay their tax.

INDICTIVE, Indictivus, an epithet given to certain feaſt-days appointed by the Roman magiſtrates, *viz.* the conſul, or prætor.

INDICTMENT*, in law, a bill, or declaration, of complaint, drawn up, in form of law, for the benefit of the commonwealth; exhibited as an accuſation of one for ſome offence, criminal or penal, unto jurors, and by their verdict found to be true, and preſented before a judge, or officer, who has power to puniſh or certify the ſame offence.

* The word is derived from the French *enditer*, *indicare*; or, according to M. Lambard, from ενδεικνυμι, I charge, I inform againſt.

Indictment, in common law, ſignifies as much as *accuſatio* among the civilians; though in ſome points it differs. See Accusation.

It ſeems to be an accuſation, becauſe the jury, who inquire of the offence, do not receive it, till the party that offereth the bill, appearing, ſubſcribe his name, and proffer his oath for the truth of it.

It is always at the ſuit of the king, and differs from an *accuſation* in this, that the preferrer is no-way tied to the proof thereof upon any penalty, if it be not proved, except there appear a conſpiracy.

INDICUM *folium*. See the article Folium.

INDICUS *cocculus*. See the article Cocculus.

Indicus *coſtus*. See the article Costus.

INDIGESTION, a crudity, or want of due coction, either in a food, a humour of the body, or an excrement.

In the ſyſtem of trituration, *indigeſtion*, which is a crudity, may be very naturally accounted for, from the relaxation of the fibres of the ſtomach.—A bilious *indigeſtion*, in the opinion of Hacquet, a great advocate for trituration, is owing to too much force in the ſtomach, or too much vivacity in its oſcillations, which ſpoil the digeſtion, by rendering the trituration imperfect. But this is hardly ſatisfactory: for it ſhould ſeem, that digeſtion would be the more perfect, in proportion as the force of the ſtomach is increaſed. See Digestion, and Trituration.

INDIGETES, a name which the antients gave to ſome of their gods.

There are various opinions about the origin and ſignification of this word; ſome pretending, it was given to all the gods in general; and others, only to the ſemi-gods, or great men deified: others ſay, it was given to ſuch gods as were originally of the country, or rather ſuch as were the gods of the country that bore this name; and others again hold, it was aſcribed to ſuch gods as were patrons and protectors of particular cities.

Thoſe of the firſt opinion maintain, that the gods were ſo called by antiphraſis, becauſe they wanted nothing; the word coming from the verb *indigeo*, I want.—If this were true, the word *indigetes* would ſignify nearly the ſame thing in Latin with the Hebrew שדי *ſchaddia*, which the Scripture frequently gives to God; as ſignifying, that he is ſufficient for himſelf, and needs nothing.

Thoſe of the ſecond opinion derive the word from *indigitare*, to call, or invoke; it being theſe gods who were ordinarily invoked, and who, it was ſuppoſed, lent the readieſt ear to the vows that were made them.—To this purpoſe they cite Macrobius, who uſes the word *indigitare* in that ſenſe; telling us, the Veſtals make their invocations thus, Apollo Phyſician! Apollo Pæan! *Veſtales ita* indigitant, *Apollo Medice! Apollo Pæan!*—They add, that their books of prayers, and forms of invocation, were called *indigitamenta*.

Laſtly, others hold *indigetes* to be derived from *inde genitus*, or *in loco degens*, or from *inde* and *ago*, for *dego*, I live, I inhabit; which laſt opinion ſeems the moſt probable.

In effect, it appears, 1°, That theſe *indigetes* were alſo called *local gods*, *dii locales*, or *topical gods*, which is the ſame thing. 2°, The *indigetes* were ordinarily men deified, who indeed were, in effect, local gods, being eſteemed the protectors of thoſe places where they were deified; ſo that the ſecond and third opinion are very conſiſtent. 3°, Virgil joins *patrii* with *indigetes*, as being the ſame thing, *Georg.* I. *Dii patrii, indigetes.* 4°, The gods to whom the Romans gave the name *indigetes* were, Faunus, Veſta, Æneas, Romulus, all the gods of Italy; and at Athens Minerva, ſays Servius; and at Carthage, Dido.—It is true, we meet with Jupiter *indiges*; but that Jupiter *indiges* is Æneas, not the great Jupiter; as we may ſee in Livy, Lib. I. c. 3. in which laſt ſenſe, Servius aſſures us, *indiges* comes from the Latin, *in diis ago*, I am among the gods.

INDIGNATORIUS, a muſcle thus called, as being ſuppoſed to draw the eye from its inner corner outwards, which gives an appearance of ſcorn and anger.

But this is properly a compound motion of two muſcles: for which ſee Eye.

INDIGO, a dyer's drug, of a deep blue colour, brought hither from the Weſt Indies.

It is drawn from the leaves of a plant which the Spaniards call *anil*, and we *anele*, *nil*, *Indian woad*, *glaſtum Indicum*, *blue weed*, and *indigo*.

The method of preparation is ſaid to be this.—When the plant has arrived at a certain height, and its leaves are in a good condition, they cut them down, and throw them into a kind of vat, covering them with water. Theſe they boil together for the ſpace of twenty-four hours; at the top there ſwims a ſcum, with all the different colours of the rainbow. Then the water is let off into another veſſel, where they agitate and churn it, as it were, with five or ſix long poles, fitted together for that purpoſe. This they continue to do, till the water becomes of a deep green, and till the *grain*, as they call it, forms itſelf, which they diſcover by taking a little of it out into another veſſel, and ſpitting in it; for if then they perceive a bluiſh dreg ſubſiding, they ceaſe to beat. The matter then precipitates of itſelf to the bottom of the veſſel; and, when it is well ſettled, they pour off the water. After this they take out the *indigo*, and put it into little linen bags, and let it drain; which done, they put it into ſhallow wooden boxes; and, when it begins todry, they cut it into ſlices, and let them harden in the ſun.

There are ſeveral kinds of *indigo*; the beſt is that called *ſerquiſſe*, from the name of a village where it is prepared. That is uſually the beſt which is in flat pieces, of a moderate thickneſs, and pretty hard; it ſhould alſo be clean, light enough to ſwim in the water, inflammable, of a fine blue colour, marked a little on the inſide with ſilver ſtreaks, and appearing purpliſh when rubbed on the nail. *Indigo* is uſed among the painters, who grind and mix it with white to make a blue colour; for without that mixture it would paint blackiſh.

They alſo mix it with yellow, to make a green colour.—It is alſo uſed in dying, and by the laundreſſes, to give a bluiſh caſt to their linen.

In the *Hortus Indus Malabaricus*, is an account of the plant whence *indigo* is drawn: the decoction of whoſe root is ſaid to be excellent againſt nephritic colics; its leaves, applied to the abdomen, good to promote urine; and the *indigo* itſelf is ſaid to be of good uſe in drying of tumours.

INDIRECT *Modes*, of ſyllogiſms, in logic, are the five laſt modes of the firſt figure, expreſſed by the barbarous words *baralipton*, *celantis*, *dabitis*, *friſeſomorum*. See Mode.

It is the converſion of the concluſion which renders the *modes indirect*: for inſtance, a ſyllogiſm in darii, and another in dabitis, would be perfectly alike, were it not for that converſion; the porpoſitions having the ſame quantity, and the ſame quality, and the middle term being the ſubject in the major, and the attribute in the minor, in both. It remains then, that, to make a diſtinction, that which is the ſubject of the concluſion in darii, be the attribute in the concluſion of dabitis; and that which is the attribute in the firſt, the ſubject in the laſt. See Syllogism.

DA- Every thing that promotes ſalvation is advantageous:
RI- There are afflictions which promote ſalvation:
I. Therefore there are afflictions which are advantageous.
DA- Every thing that promotes ſalvation is advantageous:
BI- There are afflictions which promote ſalvation:
TIS. Therefore ſome things promoting ſalvation are afflictions.

Indirect *Confirmation*. See Confirmation.

INDIVIDUAL, Individuum, in logic, a particular being of any ſpecies; or that which cannot be divided into two or more beings, equal, or alike.

The uſual diviſion in logic is made into genera or genus's, thoſe genera into ſpecies, and thoſe ſpecies into *individuals*. See Genus, Species, and Division.

The ſchoolmen make a fourfold diſtinction of *individuals*; *viz.*

Individuum *Vagum*, that, which though it ſignifies but one thing, yet may be any of that kind; as when we ſay a man, a certain perſon, or one, ſaid ſo and ſo; though but one perſon is meant, yet that perſon, for aught that appears to the contrary, may be any body.

Individuum *Determinatum* is, when the thing is named and determined; as, Alexander, the river Nile, *&c.* this is alſo called *individuum ſignatum*.

Individuum *Demonſtrativum* is, when ſome demonſtrative pronoun is uſed in the expreſſion; as, this man, that woman.

Individuum *ex Hypotheſi*, or by ſuppoſition, when an univerſal name or term is reſtrained, by the ſuppoſition, to a particular thing: as when we ſay, the ſon of ſuch an one, and it be known that he had but one ſon.

INDIVISIBLES, in geometry, thoſe indefinitely ſmall elements, or principles, into which any body or figure may be ultimately reſolved.

A line is ſaid to conſiſt of points, a ſurface, of parallel lines, and a ſolid of parallel and ſimilar ſurfaces; and becauſe each of theſe elements is ſuppoſed *indiviſible*, if in any figure a line be drawn through the elements perpendicularly, the number of points in that line will be the ſame as the number of the elements.

Whence it appears, that a parallelogram, priſm, or cylinder, is reſolvable into elements, or *indiviſibles*, all equal to each other, parallel, and like to the baſe; and a triangle into lines parallel to the baſe, but decreaſing in arithmetical proportion: ſo alſo are the circles, which conſtitute the parabolic conoid, and thoſe which conſtitute the plane of a circle, or the ſurface of an iſoſceles cone.

A cylinder may be reſolved into cylindrical curve ſurfaces, having all the ſame height, and continually decreaſing inwards, as the circles of the baſe do; on which they inſiſt.

This way of conſidering magnitudes, is called the method of *indiviſibles*, which is only the antient method of exhauſtions, a little diſguiſed and contracted.

It is found of good uſe in ſhortening mathematical demonſtrations; of which we may give an inſtance in that famous propoſition of Archimedes, That a ſphere is two thirds of a cylinder ſubſcribing it.

Suppoſe a cylinder, an hemiſphere, and an inverted cone (Tab. *Geometry*, *fig.* 99.), to have the ſame baſe and altitude, and to be cut by infinite planes all parallel to the baſe, of which dg is one; it is plain, the ſquare of dh will every-where be equal to the ſquare of kc (the radius of the ſphere) the ſquare $hc = eh$ ſquare; and, conſequently, ſince circles are to one another as the ſquares of the radii, all the circles of the hemiſphere will be equal to all thoſe of the cylinder, deducting thence all thoſe of the cone: wherefore the cylinder, deducting the cone, is equal to the hemiſphere; but it is known, that the cone is one third of the cylinder, and conſequently the ſphere muſt be two thirds of it.

INDIVISO.—*Pro* INDIVISO. See the article PRO.

INDOCTORUM *parliamentum*. See PARLIAMENTUM.

INDORSEMENT, any thing written on the back of a deed, or inſtrument. See ENDORSING.

A condition written on the back of an obligation is commonly called an *indorſement:* from *in*, and *dorſum*, back.

INDORSEMENT *of a bill of exchange*. See ENDORSEMENT.

INDUCIARUM *petitio*. See the article PETITIO.

INDUCTION, in logic, a conſequence drawn from ſeveral propoſitions, or principles, firſt laid down.

Thus, the concluſion of a ſyllogiſm is an *induction* made from the premiſes. See SYLLOGISM.

INDUCTION is alſo uſed for a kind of ſyllogiſm itſelf; being a medium between an enthymeme and a gradation, in regard it wants a propoſition (which, however, is underſtood), as in the enthymeme; and abounds in aſſumptions (which yet are collateral, or of the ſame degree), which is the caſe in a gradation.

For inſtance; every terreſtrial animal lives, every aereal animal lives, every aquatic animal lives, and every reptile animal alſo lives; therefore every animal lives.

Here, it may be obſerved, are various aſſumptions, from the more general ſpecies of the animal kind collected into one; which this propoſition is ſuppoſed to precede; *e. g.* that every animal is either terreſtrial, aereal, aquatic, or reptile.

Suidas reckons three kinds of *induction:* that juſt mentioned, which concludes or gathers ſome general propoſition from an enumeration of all the particulars of a kind he calls the *dialectic induction*.

The ſecond proceeds by interrogation, and concludes probably, or with a veriſimilitude: this is what the Greeks called παραγωγη, and was that which Socrates ordinarily made uſe of, as Cicero in his *Topics*, and Quintilian, have obſerved.

The third kind of *induction* is properly rhetorical; being a concluſion drawn from ſome example, or authority.

This is a very imperfect *induction*, all its force lying in a propoſition which is concealed, and which will hardly bear being expreſſed.—Thus, he that ſays, Codrus died bravely for his country, therefore I muſt die bravely for my country; proves nothing, unleſs this propoſition be carried in mind, that I muſt do the ſame with Codrus. Again, Archimedes, and the other mathematicians, ſay, the ſun is much bigger than the earth; therefore, it muſt be owned, the ſun is much bigger than the earth. Where this propoſition is underſtood, *viz.* whatever Archimedes, and the other mathematicians, ſay, is true.

INDUCTION, in the Engliſh laws, is uſually taken for the giving poſſeſſion to an incumbent of his church, by leading him into it, and delivering him the keys, by the commiſſary, or biſhop's deputy, and by his ringing one of the bells.

When a clerk is inſtituted into a benefice, he is to exhibit his mandate from the biſhop to the archdeacon, or other perſon to whom it is directed, and hath a right thereby to be *inducted* into his living; and if he be refuſed *induction*, he hath a remedy both in the eccleſiaſtical court, and alſo an action of the caſe in common-law, againſt the archdeacon. If the *inductor*, or perſon to be *inducted*, be kept out of the church, or houſe, by laymen, the writ *de vi laica* lies for the clerk, which is directed out of the chancery to the ſheriff of the county, to remove the force, *&c.*—If another clergyman, preſented by the ſame patron, keep poſſeſſion, a ſpoliation is grantable out of the ſpiritual court, whereby the tythes, *&c.* ſhall be ſequeſtred, till the right be determined.

The archdeacon rarely *inducts* a clerk in perſon, but uſually iſſues out a warrant to the clerks and lettered perſons within the archdeaconry, impowering any of them to do it in his ſtead.

The uſual form and manner of *induction* is, for the *inductor* to take the clerk by the hand, and then to lay it on the key of the church, which muſt be then in the door, and to ſay, 'By virtue of this inſtrument, I *induct* you into the real, actual, and corporal poſſeſſion of the rectory or vicarage of ——, with all its fruits, profits, members, and appurtenances.' This done, he opens the door, and puts the clerk in poſſeſſion of the church, and ſhuts the door upon him; who, after he hath tolled a bell (if there be any), comes out, and deſires the *inductor* to indorſe a certificate of his *induction* on the archdeacon's warrant, and that all preſent will ſignify it under their hands. If the church-key cannot be had, it is ſufficient that the clerk lays hold of the ring of the door, and, within the time limited, read the Common Prayer, and thirty-nine articles of the church, in the church-porch: within two months after this, the clerk muſt read the thirty-nine articles, and all the ſervice of the day, both at morning and evening-prayers, and declare his aſſent and conſent; he muſt alſo then read the biſhop's Engliſh certificate, in which is the declaration of his conformity; and of all this he muſt have two or three good witneſſes, who muſt ſign that they heard him do it, and be ready to atteſt it, *viva voce*, if required; and, within three months after *induction*, he muſt alſo take the abjuration-oath at the quarter-ſeſſions, or in ſome one of the courts at Weſtminſter-hall.

INDULGENCE, in the Romiſh theology, the remiſſion of a puniſhment due to a ſin, granted by the church, and ſuppoſed to ſave the ſinner from purgatory.

The Romaniſts found their *indulgences* on the infinite treaſure of the merits of Jeſus Chriſt, the Holy Virgin, and all the ſaints; which they ſuppoſe the church has a right of diſtributing, by virtue of the communion of ſaints.

The Roman jubilee carries with it a plenary, or full *indulgence*, for all the crimes committed therein.

The pope alſo grants bulls of plenary *indulgence* to ſeveral churches, monaſteries, and even to private perſons; and it is a frequent thing to have general *indulgences* for the time of the principal feaſts of a year.—Their caſuiſts ſay, that a plenary *indulgence* does not always prove effectual, for want of complying with the conditions whereon it was granted.

For the extirpation of hereticks it has been a common practice with the popes, to grant *indulgences*. Thus Clement XII. 'That we may ſtir up and encourage the faithful to exterminate this ungracious crew of forlorn wretches, [the Cevennois, when in arms againſt Lewis XIV.] we fully grant and indulge the full remiſſion of all ſins, whatever they may be (relying upon that power of binding and looſing, which our Lord conferred upon his chief apoſtle), to all thoſe that ſhall liſt themſelves in this ſacred militia, if they ſhall happen to fall in battle.' See ABSOLUTION.

INDULGENCE, or INDULTO, ſignifies alſo a ſpecial favour, or privilege, conferred either on a community, or a particular perſon, by the pope's bulls; in virtue whereof the party is licenſed to do or to obtain ſomething contrary to the intention and diſpoſition of the common laws.

There are two kinds of *indulto's:* the one *active*, which conſiſts in a power of nominating and preſenting freely, and without reſerve, to benefices that are otherwiſe limited, and reſtrained by the laws of the apoſtolical chancery; ſuch are thoſe ordinarily granted to ſecular princes, cardinals, biſhops, *&c.*

Paſſive indulto's conſiſt in a power of receiving benefices, and expectative graces; of which kind are thoſe of a parliament, of graduates, and mandataries.

The *indulto* of kings is the power given them of preſenting to conſiſtorial benefices, either by treaty, by favour, or ſpecial privilege.

The *indulto* of cardinals is a licence for holding regular as well as ſecular benefices, and for diſpoſing of benefices *in commendam*, or continuing them, *&c.*

Indulto of parliament is a right of privilege granted to the chancellor, preſidents, counſellors, and other officers in the parliaments of France, to obtain a benefice of the collator, upon the king's nomination directed to him.—This is a kind of advowſon, or patronage, belonging to the French king; the *indulto* being a mandate, or grace, by which he is permitted to name to any collator he pleaſes, a counſellor, or other officer of parliament, on whom the collator ſhall be obliged to beſtow a benefice; ſo that the right of the *indulto* reſides radically in the king, the officers being only the objects thereof.

INDURATING, a term applied to ſuch things as give a harder or firmer conſiſtence to others, either by the greater ſolidity of their particles, or by diſſipating the thinner parts of any matter, ſo as to leave the remainder harder.

Thus a tumour is *indurated*, either by the addition of earthy and ſolid particles, as in the ſcirrhi, and knotty ſwellings; or by tranſpiring the thinner parts through the ſkin, whereby the remainder grows more fixed, as in an œdema.

INDUSTRY, *fruits of.* See the article FRUITS.

INEQUALITY *of natural days.* See EQUATION.

INEQUALITY *optical.* See the article OPTICAL.

INERTIÆ *vis.* See the article VIS *Inertiæ*.

INESCATION*, a kind of tranſplantation, practiſed for the cure of certain diſeaſes by a ſuppoſed ſympathetic power. See TRANSPLANTATION, and SYMPATHETIC.

* The word is derived from the privative prepoſition *in*, and *eſca*, food.

It conſiſts in impregnating a proper medium, or vehicle, with ſome of the mumia, or vital ſpirit, of the patient, and giving it to ſome animal to eat. It is pretended, the animal unites and aſſimilates that mumia with itſelf, correcting it, and imbibing its vicious quality; and by that means reſtoring health to the perſon whereto the mumia belonged. If the animal happens to die before the cure be effected, a ſecond animal muſt be pitched on, and the experiment repeated.—Some tell us, that the blood of the patient, well putrefied or fermented, does the buſineſs better than any other part; but all this is idle and abſurd, and now deſervedly laughed out of the world.

INESCUTCHEON, in heraldry, a ſmall *eſcutcheon* borne in a larger one, as part of ſome other coat. See ESCUTCHEON.

He beareth ermine, and *ineſcutcheon* gules.

This is alſo ſometimes called an *eſcutcheon of pretence*.

He who marries an heireſs, bears her coat of arms on an *ineſcutcheon*, or *eſcutcheon of pretence*, in the middle of his own coat.

IN ESSE is applied to things which are actually exiſting.

Authors make a difference between a thing *in eſſe*, and a thing *in poſſe*. A thing that is not, but may be, they ſay, is *in poſſe*, or *potentia*; but a thing apparent and viſible, they ſay, is *in eſſe*, that is, it has a real being *eo inſtanti*; whereas the other is caſual, and at beſt but a poſſibility.

INFALLIBLE*, that which cannot deceive, or be deceived.

* The word comes from the Latin prepoſition *in*, taken privatively; and *fallo*, I deceive.

Upon this term ſtands one of the principal heads of controverſy between the Reformed and the Catholics; the latter of whom maintain, that the church, aſſembled in general council, is *infallible*; which the former deny. See CHURCH.

The principal reaſons alleged for the *infallibility*, are drawn from the obſcurity of the Scriptures, the inſufficiency of private judgment, and the neceſſity there is of ſome *infallible* judge for the deciſion of controverſies.

The *infallibility* of the pope is a doctrine of a late ſtanding, and is not intirely acquieſced in, even in their own communion.—Du Pin, a doctor of the Sorbonne, has written againſt it; and the late behaviour of the cardinal De Noailles, and the proteſting biſhops, ſeconded by a conſiderable part of the clergy of France, ſhew, to how low an ebb the pope's *infallibility* is reduced in that country.

INFAMOUS*, in the ordinary uſe of the word, ſignifies ſomething notoriouſly contrary to virtue, or honour.

* The word is derived from the Latin *in*, and *fama*, fame, report.

Aulus Gellius uſes the word *infames materias*, for what we ordinarily call *paradoxes*, i. e. diſcourſes remote from the common opinion; propoſitions that appear oppoſite to truth, &c. as the elogy of Therſites, the praiſe of a quartan ague, &c.

INFAMOUS, in law, denotes a perſon, or thing, which is of no repute, or eſteem, in the world.

There are two kinds of *infamy*: ſome perſons being *infamous* by right, *de jure*; as thoſe who have been noted by the laws, or ſtigmatized by public judgment.

Others are *infamous* in fact, *de facto*: as thoſe who exerciſe ſome ſcandalous profeſſion; as a catchpole, a merry andrew, a hangman, an informer, &c.

Heretofore there were crowns of *infamy* given, by way of puniſhment, to criminals: they were made of wool.

INFANT, in a law-ſenſe, a perſon under the age of one-and-twenty years.

An *infant* eight years of age, or upwards, may commit homicide, and be hanged for it, if it appear, by any other act, that he had knowlege of good and evil; for here *malitia ſupplebit ætatem*: yet *Coke* on *Littleton*, ſect. 405. ſays, 'An '*infant* ſhall not be puniſhed till the age of fourteen;' which, according to him, is the age of diſcretion.

INFANTE, and INFANTA, are titles of honour given to the children of ſome princes; particularly thoſe of the houſes of Spain and Portugal.

It is uſually ſaid, that the appellation *infante* was introduced into Spain, on occaſion of the marriage of Eleanor of England with king Ferdinand of Caſtile; and that their ſon Sancho was the firſt that bore it.—But this is contradicted by Pelagius biſhop of Oviedo, who lived in the year 1100. and who informs us, that the titles *infante* and *infanta* were uſed in Spain ever ſince the reign of king Evremond II.

INFANTRY, the body of foot-ſoldiers in an army, or other corps.

The *infantry* ſtand contradiſtinguiſhed from the *cavalry*, or horſe.

INFATUATE*, to prepoſſeſs any one in favour of ſome perſon or thing that does not deſerve it, ſo far as that he cannot eaſily be diſabuſed.

* The word *infatuate* comes from the Latin *fatuus*, fool; of *fari*, to ſpeak out; which is borrowed from the Greek *φαω*, whence *φατης*, which ſignifies the ſame with *vates* in Latin, or *prophet* in Engliſh: and the reaſon is, becauſe their prophets or prieſts uſed to be ſeized with a kind of madneſs, or folly, when they began to make their predictions, or deliver oracles.

The Romans called thoſe perſons *infatuated*, *infatuati*, who fanſied they had ſeen viſions, or imagined the god Faunus, whom they called *Fatuus*, had appeared to them.

INFECTION*, the catching a diſeaſe, by ſome effluvia, or fine particles, which fly off from diſtempered bodies, and, mixing with the juices of others, occaſion the ſame diſorders, as were in the bodies they came from.

* The word comes from the Latin verb *inficere*, which properly ſignifies to dye of ſome other colour; *inficere*, i. e. *facere, ut aliquid intus ſit*, to occaſion ſomething to be imbibed. See CONTAGION.

INFERIOR, INFERIOUR, ſtands oppoſed to *ſuperior*. See SUPERIOR.

INFERIOR *maxilla*.	See the article	MAXILLA.
INFERIOR *ocean*.		OCEAN.
INFERIOR *planet*.		PLANET.
Obliquus INFERIOR.	See the article	OBLIQUUS.
Serratus INFERIOR.		SERRATUS.
Subſcapularis INFERIOR.		SUBSCAPULARIS.
INFERIORIS *labii depreſſor*.	See	DEPRESSOR.
INFERIORIS *labii elevator*.		ELEVATOR.

INFIDEL, a term applied to ſuch perſons as are not baptized, and that do not believe the truths of the Chriſtian religion.

It is baptiſm that makes the ſpecific difference between an heretic and an *infidel*.

INFINITE, that which has neither beginning, nor end: in which ſenſe God alone is *infinite*.

INFINITE is alſo uſed to ſignify that which has had a beginning, but will have no end: as angels, and human ſouls.

This makes what the ſchoolmen call *infinitum a parte poſt*; as, on the contrary, by *infinitum a parte ante*, they mean that which has an end, but had no beginning. See INDEFINITE, and FINITE.

INFINITE, in mathematics, is applied to quantities which are either greater, or ſmaller, than any aſſignable ones.

In which ſenſe it differs not much from what we otherwiſe call *indefinite*, or *indeterminate*. Thus, an

INFINITE, or INFINITELY *great*, line in geometry, denotes only an indefinite or indeterminate line; to which no certain bounds, or limits, are preſcribed.

INFINITE *ſeries*. See the article SERIES.

Arithmetic of INFINITES. See the article ARITHMETIC.

Characters in arithmetic of INFINITES. See CHARACTER.

INFINITE *propoſition*, in logic. See PROPOSITION.

INFINITE *diſtreſs*, in law. See the article DISTRESS.

INFINITELY *ſmall quantity*, called alſo an *infiniteſimal*, is that which is ſo very minute, as to be incomparable to any finite quantity; or it is that which is leſſer than any aſſignable quantity.

An *infinite* quantity cannot be either augmented, or leſſened, by adding or taking from it any finite quantity; neither can a finite quantity be either augmented, or leſſened, by adding to, or taking from it an *infinitely ſmall quantity*.

If there be four proportionals, and the firſt be *infinitely* greater than the ſecond; the third will be *infinitely* greater than the fourth.

If a finite quantity be divided by an *infinitely* ſmall one, the quotient will be an *infinitely* great one; and if a finite quantity be multiplied by an *infinitely* ſmall one, the product will be an *infinitely* ſmall one; if by an *infinitely* great one, the product will be a finite quantity.

If an *infinitely* ſmall quantity be multiplied into an *infinitely* great one, the product will be a finite quantity.

INFINITELY *Infinite Fractions*, or all the powers of all the fractions whoſe numerator is one, are together equal to an unit. See the demonſtration hereof given by Dr. Wood, in Hooke, *Phil. Coll.* N° 3. p. 45, *ſeq.*

Hence, it is deduced, 1°, That there are not only *infinite* progreſſions, or progreſſions *in infinitum*; but alſo *infinitely* farther than one kind of infinity. 2°, That the *infinitely* infinite progreſſions are notwithſtanding computable, and to be brought into one ſum; and that not only finite, but ſo ſmall as to be leſs than any aſſignable number. 3°, That of *infinite* quantities, ſome are equal, others unequal. 4°, That one *infinite* quantity may be equal to two, three, or more other quantities, whether *infinite* or finite.

INFINITE *Series.* See the article SERIES.

INFINITIVE, in grammar, the name of one of the moods, which ſerve for the conjugating of verbs.

The *infinitive* does not denote any preciſe time, nor does it determine the number, or perſons, but expreſſes things in a looſe indefinite manner; as, *to teach*, &c.

In moſt languages, both antient and modern, the *infinitive* is diſtinguiſhed by a termination peculiar to it; as τυπτειν in the Greek, *ſcribere* in the Latin, *ecrire* in the French, *ſcrivere* in the Italian, &c. but the Engliſh is defective in this point; ſo that to denote the *infinitive*, we are obliged to have recourſe to the article *to*; excepting ſometimes when two or more *infinitives* follow each other.

The practice of uſing a number of *infinitives* ſucceſſively, is a great, but a common fault in language; as, *he offered to go to teach to write* Engliſh.—Indeed, where the *infinitives* have no dependence on each other, they may be uſed elegantly enough; as, *to mourn, to ſigh, to ſink, to ſwoon, to die.*

INFINITY, the quality which denominates a thing *infinite.*

The idea ſignified by the name *infinity* is beſt examined, by conſidering to what things *infinity* is by the mind attributed, and how the idea itſelf is framed: finite and infinite are looked upon as the modes of quantity, and are attributed primarily to things that have parts, and are capable of increaſe or diminution, by the addition or ſubtraction of any the leaſt part. Such are the ideas of ſpace, duration, and number.—When we apply this idea to the ſupreme being, we do it primarily in reſpect of his duration and ubiquity; and more figuratively, when to his wiſdom, power, goodneſs, and other attributes, which are properly inexhauſtible and incomprehenſible: for when we call them *infinite*, we have no other idea of this *infinity*, but what carries with it ſome reflection on the number, or the extent, of the acts or objects of God's power and wiſdom, which can never be ſuppoſed ſo great, or ſo many, that theſe attibutes will not always ſurmount and exceed, though we multiply them in our thoughts with the *infinity* of endleſs number. We do not pretend to ſay, how theſe attributes are in God, who is infinitely beyond the reach of our narrow capacities; but this is our way of conceiving them, and theſe are our ideas of their *infinity.*

We come by the idea of *infinity* thus: Every one that has any idea of any ſtated length of ſpace, as a foot, yard, &c. finds that he can repeat that idea, and join it to another, to a third, and ſo on, without ever coming to an end of his additions. From this power of enlarging his idea of ſpace, he takes the idea of infinite ſpace, or immenſity. By the ſame power of repeating the idea of any length or duration we have in our minds, with all the endleſs addition of number, we alſo come by the idea of eternity.

If our idea of *infinity* be got, by repeating without end our own ideas, it may be aſked, Why do we not attribute it to other ideas, as well as thoſe of ſpace and duration; ſince they may be as eaſily, and as often, repeated in our minds, as the other? yet nobody ever thinks of infinite ſweetneſs, or whiteneſs, though he can repeat the idea of ſweet or white, as frequently as thoſe of yard or day? To this it is anſwered, that thoſe ideas which have parts, and are capable of increaſe by the addition of any parts, afford us by their repetition an idea of *infinity*; becauſe with the endleſs repetition there is connected an enlargement, of which there is no end: but it is not ſo in other ideas; for, if to the perfecteſt idea I have of white, I add another of equal whiteneſs, it enlarges not my idea at all. Thoſe ideas, which conſiſt not of parts, cannot be augmented to what proportion men pleaſe, or be ſtretched beyond what they have received by their ſenſes; but ſpace, duration, and number, being capable of increaſe by repetition, leave in the mind an idea of an endleſs room for more; and ſo thoſe ideas alone lead the mind towards the thought of *infinity*.

We are carefully to diſtinguiſh between the idea of the *infinity* of ſpace, and the idea of a ſpace infinite.—The firſt is nothing but a ſuppoſed endleſs progreſſion of the mind over any repeated idea of ſpace: but to have actually in the mind the idea of a ſpace infinite, is to ſuppoſe the mind already paſſed over all thoſe repeated ideas of ſpace, which an endleſs repetition can never totally repreſent to it; which carries in it a plain contradiction. See SPACE.

This will be plainer, if we conſider *infinity* in numbers: the *infinity* of numbers, to the end of whoſe addition every one perceives there is no approach, eaſily appears to any one that reflects on it: but how clear ſoever this idea of the *infinity* of numbers be, there is nothing yet more evident, than the abſurdity of the idea of an actual infinite number.

INFIRMARY, a place where the ſick and weak belonging to any ſociety, or community, are diſpoſed, either for nurſing or cure. See HOSPITAL.

INFLAMMATION *, in phyſic, a tumour attended with a preternatural heat, and redneſs; frequently ariſing from ſome obſtruction; by means whereof the blood flowing into ſome part faſter than it can run off again, ſwells up, and cauſes a tenſion, with an unuſual ſoreneſs, redneſs, and heat.

* The word comes from the Latin *in*, and *flamma* flame.

The immediate cauſe of *inflammations* is an exceſs, or overflowing of blood in the part affected: other cauſes, more remote, may be the denſity and coagulation of the blood, or the relaxation and contuſion of the fibres.

Phyſicians have given particular names to the *inflammations* of ſeveral parts; that of the eyes is called *ophthalmia*, that of the lungs *peripneumonia*, and that of the liver *hepatites.*

INFLATION *, *blowing up*, the act of ſtretching or filling any flaccid, or diſtendible body, with a flatulent or windy ſubſtance.

* The word is formed from the Latin *in*, and *flatus*; of *flo*, I blow.

INFLECTION, in optics, is defined, by Dr. Hook, a multiplicate refraction of the rays of light, cauſed by the unequal denſity, and fluctuating motion, of the conſtituent parts of the medium; whereby the progreſs of the rays is hindred from going on in a right line, and *inflected*, or deflected, by a curve.

This property was firſt taken notice of by Dr. Hook; who ſhews that it differs both from *reflection* and *refraction*; in that thoſe are both made at the ſuperficies of the body, but this in the middle of it within.

Sir Iſaac Newton diſcovered alſo by plain experiment this *inflection* of the rays of light; and M. de la Hire aſſures us, he found, that the beams of the ſtars being obſerved, in a deep valley, to paſs near the brow of a hill, are always more refracted, than if there were no ſuch hill, or the obſervations were made on the top thereof; as if the rays of light were bent down into a curve, by paſſing near the ſurface of the mountain.

Sir Iſaac Newton, in his *Optics*, makes ſeveral experiments and obſervations on the *inflection* of the rays of light; which ſee under LIGHT, and RAYS.

INFLECTION, in grammar, the variation of nouns and verbs, in their ſeveral caſes, tenſes, and declenſions.

Inflection is a general name, under which are comprehended both conjugation and declenſion. See CONJUGATION, and DECLENSION.

Point of **INFLECTION** of a curve, in geometry, is the point, or place, where the curve begins to bend, or turn a contrary way. See POINT.

If a curve line, as AFK (*Tab. Geometry, fig.* 100.), be partly concave, and partly convex towards any right line, as AB, or towards a fixed point; the point F, which divides the concave from the convex part, and conſequently is at the beginning of the one, and end of the other, is called the *point of inflection*, as long as the curve, being continued beyond F, keeps its courſe the ſame: when it returns back again towards that part or ſide, from whence it took its original, it is called the *point of retrogreſſion*. See the article RETROGRESSION.

To conceive this, it is to be conſidered, that whatever quantity goes on continually increaſing or decreaſing, it cannot change from a poſitive to a negative expreſſion, or from a negative to a poſitive one, without firſt becoming equal to an infinite, or nothing. It becomes equal to nothing, if it continually decreaſe; and equal to an infinite, if it continually increaſe.

Now, if through the point F be drawn the ordinate EF, and the tangent FL, and from any point, as M, on the ſame ſide, as AF, be drawn the ordinate MP, and the tangent MT; then, in curves which have a *point of inflection*, the abſciſs AP continually increaſes, and the part AT of the diameter, intercepted between the vertex of the diameter and the tangent MT, increaſes alſo, till the point P fall into E; after which it again begins to diminiſh: whence the line AT muſt become a maximum AL, when the point P falls into the point E.

In thoſe curves which have a point of retrogreſſion, the part AT increaſes continually, and the abſciſs increaſes, till the point T falls in L; after which it again diminiſhes: whence AP muſt become a maximum, when the point T falls in L.

If A E $=x$, E F $=y$, then will A L $=\frac{y\dot{x}}{\dot{y}}-x$, whoſe fluxion, which is $\frac{\dot{y}^2 x - \dot{y}\dot{x}\ddot{y} - \dot{x},}{\dot{y}^2}$ ſuppoſing $\dot{x}$ conſtant, being divided by $\dot{x}$, the fluxion of A L muſt become nothing; *i. e.* $\frac{-\ddot{y}y}{\dot{y}^2}=0$; ſo that multiplying by $\dot{y}^2$, and dividing by $-y$, $\ddot{y}=0$; which is a general form for finding F, the *point of inflection*, or retrogreſſion, in thoſe curves whoſe ordinates are parallel to one another. For the nature of the curve AFK being given, the value of $\dot{y}$ may be found in $\dot{x}$; and taking the fluxion of this value, and ſuppoſing $\dot{x}$ invariable, the value of $\ddot{y}$ will be found x; which being put equal to nothing, or infinity, ſerves in either of theſe ſuppoſitions to find ſuch a value of A E, as that the ordinate E F ſhall interſect the curve A F K in F, the *point of inflection*, or retrogreſſion.

INFLUENCE, a quality ſuppoſed to flow from the bodies of the ſtars, either with their heat, or light, to which aſtrologers vainly attribute all the events which happen on the earth.

Alchymiſts, alſo, who to this aſcribe the philoſophers ſtone, tell us, that every thing in nature is produced by the *influence* of the ſtars, which, in their paſſage through the atmoſphere, imbibe many of its moiſt parts, the groſſeſt whereof they depoſit in the ſands and earths where they fall; that theſe, filtrating through the pores of the earth, deſcend even to the centre, whence they are driven, by the central fire, back again to the ſurface; and in their aſcent, by a natural kind of ſublimation, as they find earths duly diſpoſed, they form natural bodies, as metals, minerals, and vegetables, &c.—Thus, chymiſtry conſiſting in an artificial imitation of theſe natural operations, and in applying active principles to paſſive principles, it is pretended it can form natural bodies, make gold, &c. See TRANSMUTATION, and PHILOSOPHERS STONE.

INFLUENT, a term uſed where a liquor or juice, by the contrivance of nature, and the laws of circulation, falls into any current, or receptacle.

Thus, with reſpect to the common receptacle, the chyle is its *influent* juice; and ſo is the bile to the gall-bladder; the venal blood to the heart in its diaſtole; and the like.

INFORCED. } See the article { REINFORCED.
INFORCEMENT. } See the article { REINFORCEMENT.

IN FORMA PAUPERIS, in law. See FORMA *Pauperis.*

INFORMATION, in law, for the king, is much the ſame with what is called *declaration* for a common perſon: it is not always done directly by the king, or his attorney, or the clerk of the crown office; but ſometimes by another, who ſues as well for the king as himſelf, on a breach of ſome penal law or ſtatute, wherein a penalty is given to the party that will ſue for the ſame. See DECLARATION.

INFORMATUS *non ſum*, or *Non ſum* INFORMATUS, a formal anſwer made of courſe by an attorney, who is commanded by the court to ſay any thing he thinks good in behalf of his client; who, having nothing material to urge, makes anſwer he is not informed: on which judgment paſſes for the other party.

INFORMIS, *unformed*, that which has not the form or perfection it ſhould have.

Stellæ INFORMES, in aſtronomy, are ſuch ſtars as have not yet been reduced into any conſtellation; otherwiſe called *ſporades*.

Of this kind there was a great number left by the antient aſtronomers; but Hevelius, and ſome others of the moderns, have provided for the greater part of them, by making new conſtellations.

INFRACTION *, a rupture, or violation of a treaty, law, ordinance, or the like.

* The word is formed from the prepoſition *in*, and the ſupine of *frango*, I break.

INFRALAPSARII, the name of a ſect of Predeſtinarians, who maintain, that God has created a certain number of men only to be damned, without allowing them the means neceſſary to ſave themſelves, if they would.

This doctrine they maintain in different manners, the ſect itſelf being divided into two branches: ſome hold, that God, independently of every thing, and antecedently to all knowlege or foreſight of the fall of the firſt man, reſolved to ſignalize both his mercy and his juſtice: his mercy, by creating a certain number of men, to make them happy to all eternity; and his juſtice, by creating likewiſe a number of other men, to be miſerable to all eternity.

Others hold, that God did not take this reſolution, but in conſequence of original ſin, and of the knowlege which he had from all eternity, that Adam would commit it: for ſay they, man, by this ſin, having forfeited all pretences to his original juſtice, deſerves nothing now but puniſhment. All mankind is become a maſs of corruption, which God may abandon to eternal deſtruction, without any impeachment of his juſtice. However, to ſhew his mercy too, as well as his juſtice, he has reſolved to ſelect ſome out of this maſs, to ſanctify them, and to make them happy.

Thoſe who maintain the doctrine in the firſt manner, are more properly called *ſupralapſarii*, as believing that God formed the reſolution of damning a number of men, ſupra lapſum, before Adam's fall, and independently of it.

Thoſe of the ſecond opinion are called *infralapſarii*, as holding, that God made that reſolution, infra lapſum, after his knowlege of the fall, and in conſequence thereof.

INFRASPINATUS, a muſcle which ariſes from the inferior parts of the baſis, ſpine, and under-coſta of the ſcapula, and which, filling the lower interſcapulum, paſſes on between the ſpine and teres minor in a triangular form; and, growing tendinous at the cone, is inſerted into the head of the humerus, and draws directly backwards.—See *Tab. Anat.* (Myol.) *fig.* 7. *n.* 33.

INFULA, a name antiently given to one of the pontifical ornaments worn on the head. Feſtus tells us, that the *infulæ* were filaments or fringes of wool, wherewith the antients uſed to adorn their prieſts, their victims, and even their temples.

Several authors confound the *infula* with the mitre, tiara, or cap, worn by the prieſts; but there is a great deal of difference: The *infula* was properly a fillet or headband of white wool, covering that part of the head where the hair grows, as far as the temples; whence, on each ſide, hung down two ſtrings, called *vittæ*, to bind it withal; and this has given occaſion to ſome authors to confound the *infulæ* with *vittæ*.

the *infula* was the ſame thing to prieſts that the diadem was to kings; *viz.* the badge of their dignity and authority. The difference in ſhape between the diadem and the *infula* conſiſted in this, that the diadem was flat and broad, and the *infula* was rounded and twiſted.

INFUNDIBULIFORM *Flowers*. See FLOWERS.

INFUNDIBULUM, a Latin word, ſignifying a funnel; whence divers parts in the human body, having a reſemblance thereto in ſhape, are called by the ſame name.

Such, *e. g.* are, the *infundibulum cerebri*, and *infundibulum renum*. See BRAIN, and KIDNEYS.—See alſo *Tab. Anat.* (Oſteol.) *fig.* 5. *lit. e.*

Hence alſo certain parts of plants are called *infundibuliformes*.

The word *infundibulum* is alſo uſed by the metallurgic writers to ſignify a veſſel of a conic ſhape, uſed to pour a melted metal out of the crucible into. A modern tranſlator of Cramer's Art of Eſſaying, not knowing this, has ordered the pouring ſome melted ſilver into a funnel.

INFUSION, an operation in pharmacy, whereby the virtues of plants, roots, and the like, are drawn out, by letting them ſteep in ſome convenient fluid menſtruum, without boiling them therein.

Infuſion is uſed in bodies of a lax texture, whoſe parts are ſo light, as not to admit of a greater motion, without hazard of flying away in vapour.

Its chief uſe is to communicate the virtues of bodies to liquors, either in order to regulate their force, or correct their ill qualities.

Some *infuſions* are made in common water, others in wine, vinegar, milk, ſpirit of wine, &c.

INFUSION is alſo uſed to ſignify the action of conveying a liquor into the body by the veins. See INJECTION.

Some phyſicians have found out a new method of purging, by *infuſing* a cathartic into the veins, which operates pretty much after the manner of a clyſter.

INGEMINATED *Flowers*, are thoſe where one flower ſtands on, or naturally grows out of, another.

INGENDRING. See the article ENGENDERING.

INGENITE, *Inborn*, ſignifies any diſeaſe, or habit, which comes into the world with a perſon: nearly the ſame with *hereditary*. See HEREDITARY.

INGENUOUS, INGENUUS, among the Romans, a title applicable to a perſon born free, or of free parents. See FREE.

Iſidore ſays, they are called *ingenui*, *qui libertatem habent in genere*, *non in facto*; thoſe who are born free, not thoſe who acquire their freedom.

A perſon was accounted *ingenuus*, if only the mother were free, and the father a ſlave.

Theſe could give their votes, and enjoy offices, from which the *liberti*, or freedmen, &c. were debarred.

INGENUOUS is ſometimes alſo uſed to ſignify a native of a country, in contradiſtinction to a foreigner. See NATIVE.

INGINEER, or ENGINEER. See the article ENGINEER.

INGLUVIES, *Craw*, or *Crop*, a part in granivorous fowls which ſerves for the immediate reception of the food; where it remains ſome time for maceration, before it be tranſmitted to the ſtomach.

This *ingluvies* is furniſhed with glands, which, the patrons of fermentation maintain, convey a menſtruum thither, that impregnates the aliment, and ſerves inſtead of maſtication.

INGOT*, a maſs, or lump of gold, or ſilver, from the mines, melted down and caſt in a ſort of mould, but not coined, or wrought.

* The word ſeems formed from the French *lingot*, which ſignifies the ſame.

INGOT is alſo a name given to the moulds, or cavities, wherein they caſt melted metals, or regulus of ſemimetals.

INGRAFTING, or ENGRAFTING. See ENGRAFTING.

INGRAILED. See the article ENGRAILED.

INGRAVING, or ENGRAVING. See ENGRAVING.

INGREDIENTS, all the ſimples which go into the compoſition of any medicine, ointment, ſawce, or the like.

INGRESS, in aſtronomy, the ſun's entering the firſt ſcruple of one of the four cardinal ſigns, eſpecially Aries.

INGRESSU, in law, a writ of entry, whereby a perſon ſeeks entry into lands or tenements.—It lies in various caſes, and has various forms. See ENTRY.

INGROSSATOR *Magni Rotuli*, is the ſame as *clerk of the pipe*. See CLERK *of the pipe*.

INGROSSER, in common law, is one who buys up corn growing, or any proviſions by wholeſale, before the market, to ſell again.

It alſo ſignifies a clerk, who writes records, or inſtruments of law, on ſkins of parchment.

INGUEN*, that part of the body, reaching from the head of the thigh to above the ſecret parts; commonly alſo called the *groin*, and by anatomiſts *pubes*.

* The word is pure Latin, and is derived, according to ſome, from *unguen*, ointment; becauſe theſe parts are frequently anointed. Others derive it from *ango*, becauſe pains happen frequently there; and others again from *ingenero*, becauſe the genital parts are here.

INGUINALIS, an appellation given to any ſubdiviſions made of the *inguen*; or any thing therein contained, or applied thereto by way of medicine, or the like.

INHARMONICAL *Relation*, in muſic. See RELATION *Inharmonical*.

INHERENCE, in philoſophy, is applied to the juncture or connexion of an accident with its ſubſtance.

Thus quantity has a neceſſary *inherence* in a natural body.

INHERITANCE, *Hæreditas*; a perpetuity in lands and tenements, to a man and his heirs.

Inheritance is not underſtood where a man hath *inheritance* of lands and tenements by deſcent, or heretage; but every fee-ſimple or fee-tail, that a man hath by his purchaſe, may be ſaid to be an *inheritance*, for that his heirs may inherit it after him.

INHIBITION, a writ to inhibit or forbid a judge from farther proceeding in a cauſe depending before him.

Sometimes *prohibition* and *inhibition* are put together, as of the ſame import; but *inhibition* is moſt commonly a writ iſſuing out of an higher court Chriſtian to a lower; and *prohibition* out of the king's court to an inferior court. See PROHIBITION.

INHUMATION. See the article INTERRING.

INJECTION, in pharmacy, any liquid medicine made to be injected or thrown into the body, or any of its parts, by a ſyringe, clyſter-pipe, or other inſtrument.

INJECTION is alſo uſed for the operation of filling the veſſels with coloured wax, or any other proper matter, to ſhew their figures and ramifications.

INITIALIA, a name antiently given to the myſteries of Ceres. See CEREALIA.

INITIANS *Punctum*. See the article PUNCTUM.

INITIATED*, a term properly uſed in ſpeaking of the religion of the antient heathens; where it ſignifies, being admitted to the participation of the ſacred myſteries.

* The word comes from the Latin *initiatus*, of *initiare*, *initiari*; which properly ſignifies to begin ſacrificing, or to receive or admit a perſon to the beginning of the myſteries, or of ceremonies of leſs importance.

The antients never diſcovered the deeper myſteries of their religion, nor even permitted ſome of their temples to be open to any but thoſe who had been *initiated*.

Caſaubon, upon Athenæus, obſerves, that all the myſteries were not communicated at once to the perſons who preſented themſelves for the prieſthood; but that at firſt they purified them, then admitted them to the leſs conſiderable matters, to diſpoſe them for the more important; and at laſt they drew the veil quite, and laid open all the moſt ſacred and ſolemn parts of religion. See MYSTERY.

INJUNCTION, a writ grounded upon an interlocutory order or decree out of the court of chancery or exchequer, ſometimes to give poſſeſſion to the plaintiff, for want of the defendant's appearance; ſometimes to the king's ordinary court, and ſometimes to the court Chriſtian, to ſtop proceedings in a cauſe, upon ſuggeſtion made, that the rigour of the law, if it take place, is againſt equity and conſcience in that caſe.

INJURY*, INJURIA, in a general ſenſe, ſignifies any thing contrary to juſtice and equity; that is, any wrong or damage done to a man's perſon, reputation, or goods.

* The word is derived from the Latin prepoſition *in*, which here has a negative power; and *jus*, law, right: *injuria dicitur omne quod non jure fit*. The antients made a goddeſs of *Injury*, and called her *Ate*. Homer makes her the daughter of Jupiter, and ſays, ſhe did miſchief to every body, even to her father; that ſhe was very nimble and tender-footed, and walked altogether on mens heads, without ever touching the ground.

Civilians define *injury*, a private offence, committed deſignedly, and with an evil intention, to any man's prejudice.—The author of the *Rhetorics* to Herennius ſays, *Injuria eſt quæ aut pulſatione, aut convitio, aut turpitudine, corpus, aures, aut vitam alicujus violavit*.

By the Roman law, the action for an *injury* was annual; that is, no reparation could be required after the expiration of a year. By the law of the twelve tables, where the *injury* was the breaking of a limb, the injured perſon might demand talionem, that is, that he might break the ſame limb of the criminal.

For the breaking of a bone there were alſo conſiderable pecuniary puniſhments aſſigned: for other *injuries* only twenty aſes were decreed, which the poverty of thoſe times thought a ſufficient penalty; but the prætors afterwards finding this too ſlender a ſatiſfaction, in lieu thereof, appointed the injured perſon to ſet a rate on the *injury*, which they afterwards increaſed or leſſened as they thought good.

INK, a liquor wherewith to write on paper or parchment.

The common writing *ink* is a compoſition of vitriol, galls, gum Arabic, and water.

Printing *ink* is made of nut-oil, or linſeed-oil, turpentine, and lamp-black. See PRINTING.

Indian, or Chineſe *ink*, is an admirable compoſition, in vain attempted to be imitated in Europe. It is not fluid, like our writing *inks*; but ſolid, like our mineral colours, though much lighter. They make it of all figures, but the moſt uſual is rectangular, about a quarter of an inch thick. Some of the ſticks are gilt with figures of dragons, birds, flowers, *&c.* In order to do this, they have little wooden moulds, ſo curiouſly wrought, that we could hardly equal them in metals.

To uſe this *ink*, there muſt be a little hollow marble, or other ſtone, with water in it, on which the ſtick of *ink* muſt be ground, till the water becomes of a ſufficient blackneſs. It makes a very black ſhining *ink*; and though it be apt to ſink when the paper is thin, yet it never runs or ſpreads: ſo that the letters are always ſmooth, and evenly terminated, how big ſoever they be. It is of great uſe in deſigning, becauſe it may be weakened or diminiſhed to any degree one pleaſes; and there are abundance of things which cannot be repreſented to the life without it.

The Chineſe make it with ſmoke-black of different kinds; but the beſt is ſaid to be made of the ſmoke of fat pork, burnt at a lamp. They mix a kind of oil with it, to make it more ſmooth, and add ſome odorous ingredients to take away the rankneſs of the ſmell.—After they have mixed it into a paſte of a proper conſiſtence, they put it into a mould to figure it.

Sympathetic INK. See the article SYMPATHETIC.

INLAND implies any thing ſituate in the main land, or heart of a country, far from the ſea-coaſts.

Hence *inland* bills, in traffick, are ſuch bills as are payable in the ſame land wherein they are drawn. See BILL.

INLAYING. See VENEERING, MOSAIC, and MARQUETRY.

INMATES, ſuch perſons as are admitted, for their money, to live in the ſame houſe or cottage with another man, in different rooms, but going in at the ſame door; being uſually ſuppoſed to be poor, and not able to maintain a whole houſe themſelves.—Theſe are inquirable in a court-leet.

INNATE *Air.* } See the article { AIR.
INNATE *Heat.* } { HEAT.

INNATE *Ideas*, or *Principles*, are certain primary notes or characters, by many ſuppoſed to be ſtamped on the mind of man when it firſt receives its being, and which it brings into the world with it.

But the doctrine of *innate ideas* is abundantly confuted by Mr. Locke. See IDEA.

INNER *Barriſters*. See the article BARRISTER.

INNINGS, lands recovered from the ſea, by draining and banking.

INNOCENTS *Day*, the name of a feaſt celebrated in commemoration of the infants murdered by Herod.

Heretofore it was the cuſtom to have dances in the churches on this day, wherein were perſons who repreſented biſhops, by way of deriſion, as ſome ſuggeſt, of the epiſcopal dignity. Though others, with more probability, ſuppoſe it done in honour to the innocence of childhood. See EPISCOPUS *Puerorum*.

By a canon of the Council of Cognac, held in 1260, theſe were expreſly forbid.

INNOMINATI, *Gli* INNOMINATI, *Anonymi*, perſons who have no names; a title by which the academiſts of Parma diſtinguiſh themſelves.

Moſt cities in Italy have an academy, and each has its proper name; thus thoſe at Parma intitle themſelves *Gli innominati*, as if it was their character to have no name at all.

INNOMINATUM, in general, ſignifies any thing without a name.

Many parts of the body are left under this indiſtinct term; as the *innominata glandula oculi*, now called *caruncula oculi*: *innominata tunica oculi*, &c. See EYE.

Os **INNOMINATUM** is that otherwiſe called *Os coxæ*, or *coxendix*: being compoſed of three bones, *viz.* the ilium, the pubis and iſchium, only connected by cartilages.—See *Tab. Anat.* (*Oſteol.*) *fig.* 3. *n.* 16, 17, 18, 19.

INNS.—Our colleges of municipal, or common law profeſſors, and ſtudents, are ſtill called *inns*; the old Engliſh word for houſes of noblemen, biſhops, and others of extraordinary note; being of the ſame ſignification with the French word *hotel*.

INNS *of Court* are ſo called, as ſome think, becauſe the ſtudents there are to ſerve and attend the courts of judicature; or elſe, becauſe antiently theſe colleges received none but the ſons of noblemen, and better ſort of gentlemen, who were here to be qualified to ſerve the king in his court; as Forteſcue affirms.—Of theſe we have four principal ones; *viz.* the two *Temples*, heretofore the dwelling of the knights-templars, purchaſed by ſome profeſſors of the common law about 300 years ago; and *Lincoln's-Inn* and *Gray's-Inn*, antiently belonging to the earls of Lincoln and Gray.

Theſe ſocieties are no corporations, nor have any judicial power over their members; but they have certain orders among themſelves, which have, by conſent, the force of laws: for lighter offences perſons are only excommoned, or put out of commons; for greater, they loſe their chambers, and are expelled the college; and when once expelled out of one ſociety, they are never received by any of the others.

The whole company of gentlemen, in each ſociety, may be divided into four parts; benchers, utter-barriſters, inner-barriſters, and ſtudents. See BENCHER, and BARRISTER.

INNS *of Chancery* were probably ſo called, becauſe antiently inhabited by ſuch clerks as chiefly ſtudied the forming of writs, which regularly belonged to the curſitors, who are officers of chancery.

The firſt of theſe is *Thavies-Inn*, begun in the reign of Edward III. and ſince purchaſed by the ſociety of *Lincoln's-Inn*; beſide this we have *New-Inn*, *Symond's-Inn*, *Clement's-Inn*: *Clifford's-Inn*, antiently the houſe of the lord Clifford; *Staple-Inn*, belonging to the merchants of the ſtaple; *Lions-Inn*, antiently a common inn with the ſign of the lion; *Furnival's-Inn*, and *Bernard's-Inn*.

Theſe were heretofore preparatory colleges for younger ſtudents; and many were entered here, before they were admitted into the *inns* of court. Now they are moſtly taken up by attorneys, ſolicitors, *&c.*

They belong all to ſome of the *inns* of court, who ſend yearly ſome of their barriſters to read to them.

INNUENDO is a word frequently uſed in writs, declarations, and pleadings, to aſcertain a perſon or thing which was named, but left doubtful, before: as, He (*innuendo* the plaintiff) did ſo and ſo; mention being before made of another perſon.

INOCULATION, in agriculture and gardening, a kind of grafting; or an artificial operation, by which the bud of one fruit-tree is ſet into the ſtock or branch of another, ſo as ſometimes to make different ſorts of fruit grow in the ſame tree. See ENGRAFTING.

There are various ways of performing this; the antient method was, by making a ſhallow inciſion in the bark, where the knot of a ſhoot or eye, *oculus* (whence the operation takes its name), begins to bud forth; into this a promiſing ſhoot of another kind was inſerted, and the inciſion cloſed up with fat earth or clay.

The method of *inoculation* among our gardeners, as delivered by Mr. Lawrence, is as follows: They cut off a vigorous ſhoot from the tree that is to be propagated, a month before or after midſummer; then chooſe out a ſmooth place in the ſtock (which ſhould not be above three or four years growth) making a perpendicular ſlit in the bark, a little above an inch long, and another at right angles to it, at the lower end, to give way to the opening of the bark. This done, the bark is gently looſened from the wood on both ſides with a penknife, beginning at the bottom.

They then prepare the bud, cutting it off from the aforeſaid vigorous ſhoot, and taking with it as much of the wood above as below it, and as near as may be to the length of the ſlit in the ſtock. When the bud is thus cut off, they take out the woody part of the bud, and put the bud itſelf in, between the bark and the wood of the ſtock, at the croſs-ſlit before opened, leading it upwards by the ſtalk, where the leaf grew, till it exactly cloſes. They then bind it about with woollen yarn, the better to make all parts of it cloſe exactly, that the bud may imbody itſelf with the ſtock; which it will do in about three weeks time.

This operation is ſaid to be beſt performed in a cloudy day, or in the evening; and it is obſerved, that the quicker it is done, the better it always ſucceeds.

This practice has the advantage of engrafting in many reſpects, both as it is more ſecure, it ſeldom failing of having effect, eſpecially if two or three buds are put into the ſame ſtock; and as its ſucceſs is more readily diſcovered. Indeed when large ſtocks are to be practiſed on, *inoculation* is not proper, and they are then obliged to have recourſe to grafting.

This one rule is obſerved to hold univerſally; *viz.* That no ſucceſs is to be expected in *inoculation*, if the ſap does not run well; that is, if the bark will not part readily from the wood of the ſtock. See Supplement, article INOCULATION.

INOCULATION, in a phyſical ſenſe, is uſed for the tranſplantation of diſtempers from one ſubject to another; particularly for the engraftment of the ſmall-pox; which is a new practice among us, but of antient uſe in the eaſtern countries.

The method of performing the operation is as follows: After the body is rightly diſpoſed and prepared, by proper diet and evacuations, two ſmall inciſions are made, one in the muſcular part of the arm, about the place where an iſſue is uſually cut, and the other in the leg of the oppoſite ſide; then being provided of a ſmall quantity, as a drop or leſs, of well concocted variolous matter, choſen from the diſtinct or beſt ſort of puſtules, before the turn of the diſtemper, and imbibed by two ſmall doſſils of lint; theſe are immediately put into the inciſions, whilſt the matter remains warm, and are kept on by a proper bandage: in a day or two the bandages are opened, the lint thrown away, and only a colewort-leaf or the like applied over the inciſions. This dreſſing is continued daily.

The inciſions uſually grow ſore, inflame and inlarge of themſelves, and diſcharge matter more plentifully as the diſtemper riſes. The eruptions generally appear within eight or ten days after the operation; during which time the patient is not confined, or obliged to obſerve a very ſtrict regimen.

The practice ſeems to be beneficial, becauſe the moſt proper age, the moſt favourable ſeaſon of the year, the moſt regular method of preparation, and all poſſible precautions, may here be uſed, according to the wiſhes of the patient, his parents, and the phyſician; advantages impoſſible to be had when the diſtemper is caught in the natural way.

It has been almoſt conſtantly obſerved, that the beſt ſort of ſmall-pox is hereby occaſioned; that the eruptions are few, the ſymptoms light, the danger next to none, and the recovery eaſy; and that the patient is equally ſecured from this diſtemper for the future, as he would be by having gone through it in the natural manner.

INORDINATE *Proportion* is where three magnitudes being in one rank, and three others proportional to them in another; you compare them in a different order.

E. gr. If there be in one rank theſe three numbers 2, 3, 9; and in another rank, theſe other three, 8, 24, 36, which are proportional to the precedent, in a different order; ſo that 2 be to 3 as 24 to 36, and 3 to 9 as 8 to 24: then caſting away the mean terms in each rank, you conclude the firſt 2 in the firſt rank to be the laſt, 9; as 8, and the firſt of the other rank, to the laſt, 36.

INOSCULATION. See ANASTOMASIS, and ARTERY.

IN PACE, a Latin term, uſed among monks, to ſignify a priſon, where ſuch of them are ſhut up as have committed any grievous fault.

Formerly, there uſed to be a great deal of ceremony at the putting a religious *in pace*; but now it is not much regarded. Such as are ſhut up in perpetual impriſonment, are alſo ſaid to be *in pace*.

Sometimes, alſo, the words *requieſcat in pace* are uſed by way of alluſion to a cuſtom in the Romiſh church, of praying that the ſoul of the defunct may reſt in peace.

The ſame words are alſo frequently ſeen at the bottom of epitaphs, in lieu of thoſe uſed by the antient Romans, S.T.T.L. *i. e. Sit tibi terra levis*, Light lie the earth; or, *Sit humus cineri non oneroſa tuo*.

INPALE. See the article PALE.

INPROMPTU, or IMPROMPTU, a Latin word frequently uſed among the French, and ſometimes in Engliſh, to ſignify a piece made off-hand, or extempore; without any previous meditation; by the mere force and vivacity of imagination.

Many authors pique themſelves on their *inpromptu's*, which yet were in truth done at leiſure, and in cold blood.

INQUEST, or ENQUEST. See ENQUEST, and ARREST.

INQUIRENDO, an authority given a perſon or perſons, to inquire into ſomething for the king's advantage.

INQUIRENDO *Idiota.* }	See the articles	{ IDIOTA.
Ad **INQUIRENDUM.** }		{ AD.

INQUISITION, in the civil and canon law, a manner of proceeding for the diſcovery of ſome crime by the ſole office of the judge, in the way of ſearch, examination, or even torture.

INQUISITION is alſo uſed, in common law, for a like proceſs in the king's behalf, for diſcovery of lands, profits, and the like. In which ſenſe it is alſo confounded with office. See OFFICE.

INQUISITION, or the *Holy Office*, denotes an eccleſiaſtical juriſdiction eſtabliſhed in Spain, Portugal, and Italy, for the tyral and examination of ſuch perſons as are ſuſpected to entertain any religious opinions contrary to thoſe profeſſed in the church of Rome.

It is called *inquiſition*, becauſe the judges of their office take cognizance of crimes on common report, without any legal evidence, except what they themſelves fiſh out.

Some people fanſy, they ſee the original of the *inquiſition*, in a conſtitution made by pope Lucius, at the council of Verona, in 1184. where he orders the biſhops to get information, either by themſelves, or by their commiſſaries, of all ſuch perſons as were ſuſpected of hereſy; and diſtinguiſhes the ſeveral degrees of ſuſpected, convicted, penitent, relapſed, &c. However this be, it is generally allowed, that pope Innocent III. laid the firſt foundation of the *Holy Office*; and that the Vaudois, and Albigenſes, were what gave the occaſion to it. That pontiff ſent ſeveral prieſts, with S. Dominic at their head, to Tholouſe, in order to blow up a ſpirit of zeal and perſecution amongſt the prelates and princes. Theſe miſſionaries were to give an account to the pope of the number of heretics in thoſe parts, and of the behaviour of the princes and perſons in authority to them; and thence they acquired the name of *inquiſitors*: but theſe original *inquiſitors* had not any court, or any authority; they were only a kind of ſpiritual ſpies, who were to make report of their diſcoveries to the pope.

The emperor Frederic II. at the beginning of the 13th century, extended their power very conſiderably; he committed the taking cognizance of the crime of hereſy to a ſet of eccleſiaſtical judges; and as fire was the puniſhment decreed to the obſtinate, the inquiſitors determined indirectly with regard, both to the perſons and the crimes; by which means the laity was cut off from its own juriſdiction, and abandoned to the zeal and devout madneſs of the eccleſiaſtics.

After the death of Frederic, who had long before repented the power he had given the churchmen, as having ſeen ſome of the fruits of it; pope Innocent IV. erected a perpetual tribunal of inquiſitors, and deprived the biſhops and ſecular judges of the little power the emperor Frederic had left them. And this juriſdiction, which depended immediately on himſelf, he took care to introduce into moſt of the ſtates of Europe. But the inquiſitors were ſo firy hot, and made ſuch horrible butchery among the reputed heretics, that they raiſed an univerſal deteſtation, even in ſome catholic countries themſelves. Hence it was that their reign proved very ſhort, both in France and Germany; nor was even Spain intirely ſubject to them, till the time of Ferdinand and Iſabella, in 1448. when their power was increaſed, under pretence of clearing the country of Judaiſm and Mahometaniſm.

The power of the *inquiſition* is very much limited in ſome countries, particularly at Venice; where it is received under ſuch modifications as prove a great check on its authority. Indeed at Venice it ſeems rather a political, than a religious contrivance; and ſerves rather for the ſecurity of the ſtate, than that of the church. There are appeals from the ſubaltern *inquiſitions* in Italy, to the congregation of the holy office reſiding at Rome.

It is the conſtant practice of the inquiſition, to affect, in all their procedures, to inſpire as much terror and amazement as poſſible; every thing is done with the profoundeſt ſilence and ſecrecy, and with the greateſt rigour, and pretended impartiality. When a perſon is ſeized, all the world abandons him; not the neareſt friend dares to ſpeak a word in his defence; that alone would be enough to render them ſuſpected of hereſy, and would bring them within the claws of the *inquiſition*. The criminals are ſeized, examined, tried, tortured, and, unleſs they recant, are even condemned and executed, without ever ſeeing or knowing their accuſers; whence the revengeful have a fair occaſion of wreaking their malice on their enemies. When the *inquiſition* has done with them, and condemned them to death, they are turned over to the ſecular arm, with a world of prayer, and pious intreaty, that their lives may not be touched.

Time is no manner of ſecurity in point of hereſy; nor does the grave itſelf ſhelter the accuſed from the purſuits of the *inquiſition*; even the deceaſed have their tryals, and they proceed in all their form and ſolemnity againſt the dead carcaſes. The executions are always deferred till the number of the condemned is very great, that the multitude of ſufferers may ſtrike the deeper horror, and make the ſcene more terrible and ſhocking. See ACT *of Faith*.

The *inquiſition* of Rome is a congregation of twelve cardinals, and ſome other officers, where the pope preſides in perſon. This is accounted the higheſt tribunal in Rome: it began in the time of pope Paul IV. on occaſion of the of Lutheraniſm.

The *inquiſition* is very ſevere in the Indies. It is true, there muſt there be the oaths of ſeven witneſſes to condemn a man; but the depoſitions of ſlaves or children are taken. The perſon is tortured till he condemns himſelf; for his accuſers are never brought to confront him. Perſons are accuſed for the ſlendereſt expreſſion againſt the church; or even for a diſreſpectful word of the *inquiſition*.

The ſtandard of the *inquiſition* is a piece of red damaſk, on which is painted a croſs, with an olive-branch on one ſide, and a ſword on the other; with theſe words of the pſalm, *Exurge, Domine, & judica cauſam meam.*

INQUISITORS, among us, are ſheriffs, coroners *ſuper viſum corporis*, or the like, who have authority to inquire into certain caſes, *ex officio*.

IN QUO, *Medium in quo*. See the article MEDIUM.

INROLEMENT, in law, the regiſtring, recording, or entering, of any lawful act, or inſtrument, in the records of chancery; as a recognizance acknowleged, or a ſtatute, or a fine levied.

Inrolements are alſo made in the rolls of the exchequer, king's-bench, and common-pleas; in the huſtings at Guildhall, London; and by the clerk of the peace in any county.

Clerk of the INROLEMENTS. See the article CLERK.

INSANUM *Parliamentum*. See PARLIAMENTUM.

INSCONCED, in the military art, denotes, that a part of an army have fortified themſelves with a *ſconce*, or ſmall fort, in order to defend ſome paſs, &c. See SCONCE.

INSCRIBED, in geometry.—A figure is ſaid to be *inſcribed* in another, when all the angles of the figure *inſcribed* touch either the angles, ſides, or planes, of the other.

INSCRIBED *Hyperbola*, is ſuch an one as lies intirely within the angle of its aſymptotes; as the conical *hyperbola* doth. See HYPERBOLA; ſee alſo CIRCUMSCRIBING.

INSCRIPTION, a title, or writing, affixed to any thing, to give ſome further knowlege thereof.

Antiquaries are very curious in examining antient *inſcriptions*, found on ſtones, and other monuments of antiquity. Sanchoniathon, cotemporary, as it is ſaid, with Gideon, drew moſt of the memoirs whereof his hiſtory is compoſed, from *inſcriptions* which he found in temples, and on columns, both among the Heathens, and the Hebrews.

It appears, indeed, that the antients engraved upon pillars the principles of ſciences, as well as the hiſtory of the world. Thoſe mentioned by Herodotus ſhew, that this was the firſt way of inſtructing people, and tranſmitting hiſtories, and ſciences, to poſterity. This is confirmed by Plato, in his *Hippias*, wherein he ſays, that Piſiſtratus engraved, on ſtone pillars, precepts uſeful for huſbandmen. Pliny aſſures us, that the firſt public monuments were made of plates of lead; and that the treaties of confederacy concluded between the Romans and the Jews, were written upon plates of braſs; that, ſays he, the Jews might have ſomething to put them in mind of the peace and confederacy concluded with the Romans. The Greeks and Romans were great dealers in *inſcriptions*, and were extremely fond of being mentioned in them: and hence it is, that we find ſo many in thoſe countries of antient learning, that large volumes have been compoſed of them; as the collection of Gruter, &c.

Since Gruter's collection, Th. Reineſius has compiled another huge volume of *inſcriptions*. M. Fabretti publiſhed another volume at Rome in 1699. wherein he has corrected abundance of errors which had eſcaped Gruter, Reineſius, and other antiquaries, &c. and added a great number of *inſcriptions* omitted by them.—Since all theſe, Græviús has publiſhed a complete collection of *inſcriptions*, in three volumes in folio. In France is an academy of *inſcriptions* and medals, conſiſting of ten honorary, and ten penſionary, members, ten aſſociates, and as many novices; who are to meet twice a week, and employ themſelves in the examination of medals, and antient monuments, and other parts of Greek and Roman literature; and to compoſe an hiſtory of the kings of France from medals.—Such was the academy at the time of its inſtitution, or rather reſtauration, in the beginning of this century; but as they are not now wholly employed about medals and *inſcriptions*, they have changed their name for one of a greater latitude; and are called, *the Academy des Belles Lettres*.

Notes, or Abbreviatures, uſed in INSCRIPTIONS. See CHARACTER.

INSCRUTABLE, *Unſearchable*, in theology, is uſually underſtood of the ſecrets of Providence; and the judgments of God, which cannot be found out, or into which human reaſon cannot penetrate.

INSECTS *, INSECTA, in natural hiſtory, a ſmaller ſort of animals, commonly ſuppoſed to be exſanguinous; and diſtinguiſhed by certain inciſures, cuttings, or indentings, in their bodies.

Inſects, according to Mr. Ray, in his *Methodus Inſectorum*, are either, firſt, Αμεταμορφωτα, ſuch as do not change their form: or, ſecondly, Μεταμορφωμενα, ſuch as do really change their form.

INSECTS *which do not change their form*, are either, 1°, Αποδα, without feet; or, 2°, *Pedata*, with feet; and of theſe there are ſome kinds that caſt their ſkins, and others that do not.

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* The word is originally Latin, formed of *in*, and *ſeco*, I cut; the reaſon of which is, that in ſome of this tribe, as ants, the body ſeems to be cut, or divided, into two; or becauſe the bodies of many, as worms, caterpillers, &c. are compoſed of divers circles, or rings, which form a ſort of inciſuræ.

Insects *without feet* are either *terreſtrial*, i. e. land-*inſects*, or *aquatic*.

Terreſtrial **Insects** are either, firſt, Such as are produced on the land: as the lumbrici terreſtres, which are either of the larger ſort, and called *dew-worms*; or of a ſmaller ſize: and of theſe there are ſome red, and others green, with yellow tails, which laſt are commonly called *gilt tails*.—Or, ſecondly, Such as are found in the bowels of animals; of which ſome are found in the inteſtines of men: as, 1°, The lumbrici teretes. 2°, Lumbrici lati; which are alſo called *tæniæ*.—3°, Cucurbitini, which ſome will have to be only the fragments of the tæniæ. 4°, Aſcarides, which are chiefly found in the rectum.—Others are found in the inteſtines of beaſts, which are of two ſorts, the *oblongi*, and *pellucidi*, of the thickneſs of an horſe-hair, and therefore called *vermiculi ſetiformes*: and the *breves* and *craſſiores*; which are often found in horſes, and are called the *botts*.

To the genus of *terreſtrial inſects*, many natural hiſtorians alſo refer ſnails, whether with or without ſhells.

Aquatic **Insects** without feet, not changing their form, are, either, firſt, Of the greater ſort, which have a peculiar way of moving, by firſt fixing their head to the ground, and then drawing up their tail towards it, *&c.* Of theſe, ſome are *teretes*, round and ſmooth; of which there are three ſorts, as, the *medicinal hirudines*, or leaches, the *common black horſe-leaches*, and the *aſh-coloured ſea-leaches*: but there is alſo a ſort of this kind, which is ſmaller and flatter, found ſticking to ſtones in the bottom of little brooks.—Or, ſecondly, Of the *leſſer ſort*, which have a different way of crawling, or moving, from the former.—Theſe are alſo either round or flat: of the round ſort there is one that is black, with two ſmall horns on its head, found ſticking to wet ſtones on the watry tops of hills; and another which is red, of about a finger's length, with a forceps at the tail, found at the bottom of fiſh-ponds, and ſtagnant waters: the flat ſort are very ſmall and thin, and are called *flukes*, being ſometimes found in waters, and ſometimes in the branches of the porus bilarius in ſheep.

Insects *not changing form, and having feet*, are either, firſt, *Hexapoda*, with ſix feet. Secondly, *Octapoda*, with eight feet. Thirdly, *Decateſſarapoda*, with fourteen feet. Or, fourthly, *Polypoda*, with more numerous feet.

Thoſe that have but ſix feet are either *terreſtrial* or *aquatic*. The *terreſtrial* are either, firſt, Of a larger kind; as, 1°, The *yellowiſh inſect*, found in rotten or decaying oaks. 2°, The *black* one, on the ground, called by Mouffet *vermivorous*. 3°, The *black* one living under-ground, with a forceps at the tail. 4°, A *white* ſort, with ſquare black ſpots on its back. 5°, The *farinarium*, bred in meal, of a whitiſh colour.—Or, ſecondly, a ſmaller ſort, ſome of which are found about the bodies of animals: as, 1°, The *cimex*, bug, or wall-louſe, of a ſtinking ſmell. 2°, *Ricinus*, the tick. 3°, *Pediculus*, the common louſe. 4°, *Pediculus ferus ſeu inguinalis*, the crab-louſe: of ſome of which there are various kinds.—Others are not found on the bodies of animals; as, 1°, One that in bigneſs and figure reſembles a louſe, but is very nimble and ſwift, and is found in books, and rotten wood. 2°, Another with a very long body, and a forcipital tail. 3°, The black *inſect*, found often in the flowers of the chelidonium. 4°, A ſubterraneous ſort, a little whitiſh. 5°, One that ſkips like a graſhopper, but is much leſs.

The *aquatic* are, firſt, The *pediculus marinus grandus*, which adheres to fiſhes. Secondly, The *ſquilla fluviatilis*, with a pyramidal tail, and two hairs, or briſtles, at the end.

Inſects not changing form, and having eight feet, are either thoſe with a tail, as the ſcorpion; or without, as, firſt, The *ſpider*; of which ſome ſpin no web, have but two eyes, and very long legs; as the *opilio*, or ſhepherd: others ſpin a web, and of theſe they count three ſorts: 1°, The *aranea Colceſtrenſis abdomine tumido, ſubrotundo, & elato*. 2°, The ſpider with the thorax, or middle part of his body, as big as the abdomen. 3°, The ſpider with the long abdomen, found among reeds, ruſhes, graſs, *&c.* Secondly, The *ricini octopedes*, which are ſome more flat and compreſſed; as the rambling ticks, that run over the bodies of animals, but do not faſten; and ſome more round and thick, which do adhere to the ſkin. Thirdly, The *ſyrones*, or mites.

Inſects not changing form, and with fourteen feet, and therefore called τεσσαρασδεκαποδα, are the *aſelli*; of which there are three ſorts; as, 1°, The *ſea-aſellus*; the longeſt and largeſt of all, living amongſt the rocks. 2°, *Aſellus lividus*, which rolls itſelf up into a ball. The common wood-lice, ſows, or cheſs-bugs. 3°, *Aſellus aſininus*, with a forked tail, not rolling itſelf up.

To this ſpecies may alſo be added, 1°, The *aſellus marinus figuræ brevioris*, rolling itſelf up. 2°, *Aſellus aquarum dulcium*, with long legs, and two briſtles on its tail. 3°, *Pulex aquaticus*, both in freſh and ſalt water. And, 4°, The *Pediculus aquaticus*, which faſtens upon fiſh.

Inſects not changing form, with twenty-four feet, have the eight fore-feet leſſer, and the ſixteen hinder ones larger: there are two kinds of them obſerved, both with long bodies; one larger, and of an obſcure colour, among the rocks by the ſea-ſide; the other of a ſilver colour, found in houſes.

There is alſo a kind with thirty feet, of an oblong ſhape, cheſnut colour, and full, flattiſh body; uſually lying under logs, and trunks of trees: this is very agile and ſwift.

Inſects not changing form, with yet more numerous feet, called ϖολυποδια, are ſome on land, and either roundiſh in body, with all their legs riſing out of the middle of their belly (nearly), as the *iulus*; or more flat and compreſſed, with their legs not riſing, as before, from a point in the middle of their body, but growing along on the ſides; as the *ſcolopendra*.

Others are aquatic; of which Mr. Ray makes three differences: 1°, The *Corniſh lugs*, uſed for baits in catching fiſh, with thirty-eight legs, and a ſmooth, roundiſh body. 2°, The *ſcolopendra marina corpore plano*. 3°, *Animalculam bicorpor*, or rather *bicaudatum*, lying in the clefts of ſtones, under the ſalt water.

Insects *which undergo a change of their form* are called, μεταμορφωμενα, though improperly; ſince, as Swammerdam ſhews, there is no real transformation, but only an explication of the parts of the animal, latent before in miniature, like the plant in the ſeed, and an increaſe of all the parts, by proper degrees. In theſe the firſt ſpecies of tranſmutation, or change, is inſtantaneous, there being no ſenſible reſt, or ſtop, between the old and the new form.—The *inſects* of this order do not loſe their motion at the time they ſhift the pellicula, at leaſt not to appearance.—This is when the vermiculus, leaving the former ſhape of the nympha, with which it appeared in the egg, and ſubſiſted without food, now beginning to feed, has its members, or parts, viſibly increaſed, and ſtretched out, and takes the form of a new nympha, which is not without motion; and from thence becomes a flying *inſect*.

Inſects of this ſort are, 1°, The *libellæ*, or *perlæ*; which are produced from an *inſect* of ſix feet, one kind of which Mouffet takes for the *pulex marinus*; or, as before he calls it, *locuſta aquatica*.—Out of the cruſtaceous ſkin, or huſk, of this *inſect*, the libella breaks by a fiſſure, which begins between the eyes, and is continued to the roots of the wings, and is there joined to the lateral fiſſures. 2°, The *cymices ſylveſtres*, whoſe characteriſtic marks (according to Willughby), are, firſt, A long proboſcis not ſpiral, but ſtrait. Secondly, Their upper-wings, to the middle, are thick, and like leather; thence the ends thin and membranous. Thirdly, There is the figure of S. Andrew's croſs on their back. 3°, The *locuſta*, which Willughby refers to the αμεταμορφωτα. 4°, The *grylli campeſtres*. 5°, The *grylli domeſtici*, or crickets. 6°, The *gryllo-talpa*, mole-cricket. 7°, The graſhopper. 8°, The *blatta*, according to Swammerdam. 9°, The *tipulæ aquaticæ*, which run very ſwiftly on the ſurface of the water; and have a ſting in their mouths, like the cimices, or ticks. 10°, The *ſcorpius aquaticus*, with a ſting alſo in its mouth. 11°, The *muſcæ aquaticæ*, called by Aldrovandus, *apes amphibiæ*. 12°, The *hemerobius*, or *ephemera*, or *diaria* of Swammerdam. And, 13°, The *forſicula*, or *auricularia*.

The ſecond ſpecies of tranſmutation includes ſuch *inſects* as undergo a double metamorphoſis, or change of ſhape. 1°, Into a *chryſalis*, or ſomething analogous to it. 2°, Into a flying *inſect*.

Theſe kinds of *inſects*, a while before they change, lie quite ſtill, without feeding, or changing place: and, in reſpect of their wings, are, firſt, Κολεοπτερα, or vaginipennia, as the *ſcarabæi*, beetles. Secondly, Ανελυτρα, whoſe wings are open and expanded; and the wings of theſe are either farinaceous, as in the *papiliones*, &c. or membranous, as in the *apes*, *muſcæ*, *&c.* and theſe are either διπτερα, with two wings, or τετραπτερα, with four wings.

The *ſcarabæi* may be divided, 1°, In reſpect of their horns, into the *naſicornis*, *bucerota*, and *cervus volans*, or *taurus*. 2°, In reſpect of their antennæ, which are of many kinds; whereof the moſt eminent are thoſe called *capricorni*. 3°, With regard to their motion, as the *ſaltatrices*. 4°, With regard to their colour, as *cantharides*, green, *&c.*

To the beetle-kind may alſo be referred the *cicindela*, or glow-worm; the *ſtaphylinus*, called by Willughby, ἡμικολεοπτερος; the *proſcarabæus*, or oil-beetle, ſo called from its emitting from its joints a kind of oil, on its being preſſed, or ſqueezed; the *anelytra*, with farinaceous, or mealy wings, are called, *papiliones*, butterflies; and theſe are either diurnal, or nocturnal: the ſpecific diſtinction of the diurnal is, that they always ſettle with their wings erect, are produced from an angulous aurelia, and have their antennæ knobbed: of theſe there are a vaſt number of ſpecies obſerved in England.—The nocturnal butterflies, or *phalænæ*, are vaſtly numerous, and cannot very clearly be methodized: but, for memory and diſtinction-ſake, they may be divided into,

1°, The *geometrigenæ*, which come from an *eruca* (called *geometra*, from the manner of its walk, which is anſatinous, by curling up its back like the handle of a cup), with eight or ten feet. 2°, Such as come from *erucæ*, with fourteen feet:

of this kind, which is very numerous, there hath been diſtinguiſhed the *phalæna faſciata*, whoſe wings are in patches, or areas, of different colours; *phalæna lineata*, whoſe wings are marked with tranſverſe lines; *phalæna punctata*, whoſe wings are marked with one or more points; and, theſe excepted, all the others are diſtinguiſhed into greater, leſſer, and thoſe of a middle ſize, between both.—Some of the larger kinds may be diſtinguiſhed alſo by their inner wings running out beyond the upper, when they ſit or reſt: and another ſort, by the appearance of the figure of the eyes upon the wings: and a third, by their long tails, and narrow ſharp wings; which by ſome are called *phalænæ prædatrices*, or *accipitrinæ*.

The *anelytra*, with membranous wings, are, *bees*, *flies*, *waſps*, *bombylii*, *crabrones*, &c. and to this kind the *culex vulgaris*, or gnat, according to Swammerdam, is referred; as alſo the *formica*, or ant.

Hither alſo muſt be referred ſuch water-*inſects* as are covered by a theca, according to the obſervations of Willughby. Theſe are either, firſt, An immoveable theca, or caſe, which is fixed to the ſtones; and this caſe is either of a round figure, or one more compreſſed and flat. Secondly, A moveable portable theca; and theſe are commonly called *phryganæa*: and their theca is either, 1°, Strait, and that either compoſed of ſtraws, and little feſtucæ, lying parallel one to another; of which there are two kinds: a *greater*, where the feſtucæ are two inches long; and a *leſſer*, which are very common, and are called *ſtraw-worms*. Or elſe the feſtucæ lie tranſverſly, and are ſhorter, having alſo ſometimes pieces of ſhells, or ſtones, intermixed with them: others, whoſe caſes are ſtrait alſo, have no feſtucæ, but always either ſand or gravel; and of theſe ſome have the thecæ round, and are called *cod-baits*; others are flat, and compreſſed. 2°, The crooked, or horned, which run tapering: of theſe Mr. Ray reckons four kinds; a greater and leſs *black* ſort, and a greater and leſs *aſh-coloured* one: theſe all produce flies, with large wings, like butterflies.

The *third* ſpecies of tranſmutation is a ſimple change from a vermiculus to a flying *inſect*, but with a ſenſible ἡσυχια, reſt, or ſtop, between one form and the other. This exchange Swammerdam thus deſcribes: ‘ The vermicle excluded from ‘ the egg gets nouriſhment by little and little from without, ‘ and under that firſt ſkin, or covering, has its members in‘ creaſed by degrees; not ſlipping it, or putting it off, as ‘ other vermiculi do when they change into nymphæ, but aſ‘ ſuming the figure of a nympha in it: for a time it is quite ‘ motionleſs, till the ſuperfluous moiſture is evaporated; and ‘ then, in a few days, it recovers its motion again, and caſt‘ ing off this ſkin, which is, as it were, double, it becomes ‘ a fly.’ Of this kind are our *fleſh-flies*, and all that come from the *nymphæ veriformes*, the *veſpæ ichneumones*, &c. Reaumur and others have, ſince the time of Mr. Ray, greatly improved the hiſtory of inſects. See Supplement, articles Papilio, Eruca, Muscæ, *&c.*

Generation of Insects.—The world is now generally convinced, that *inſects* are not bred of corruption, but *ex ovo*; though the contrary was believed by the antients, becauſe of the vaſt numbers that were ſometimes hatched, as it were, at once, and becauſe they could not diſcern the particular manner of their propagation. See Generation.

Malpighi, Swammerdam, and Redi, have abundantly diſproved the doctrine of equivocal generation, as well as the chimerical transformation of the caterpiller into the butterfly, and other the like metamorphoſes; and have ſhewn, that all the members of the butterfly were originally incloſed under the ſkin or nympha of the caterpiller, as the parts of a plant are in the ſeed.

Inſects take particular care to depoſit their eggs, or ſeed, in ſuch places where they may have a ſufficient incubation, and where the young, when hatched, may have the benefit of proper food till they become able to ſhift for themſelves.—Thoſe whoſe food is in the water, lay their eggs in the water; thoſe to whom fleſh is a proper food, in fleſh; and thoſe to whom the fruits or leaves of vegetables are food, are accordingly depoſited, ſome in this fruit, ſome in that tree, and ſome in one plant, and ſome in another; but conſtantly the ſame kind in the ſame tree, or plant.—As for others, that require a more conſtant and greater degree of warmth, they are provided by the parent animal with ſome place in or about the body of other animals; ſome in the feathers of birds, ſome in the hair of beaſts, ſome in the ſcales of fiſhes, ſome in the noſe, ſome in the fleſh, nay, ſome in the bowels, and inmoſt receſſes of man, and other creatures.—And as for others, to whom none of thoſe methods are proper, the parents make them neſts by perforation in the earth, in wood, in combs, and the like; carrying in and ſealing up proviſions that ſerve both for the production of their young, and for their food, when produced.

In flies, butterflies, *&c.* it is obſerved, there is a kind of gluten, by which the female faſtens her eggs to the bearing-buds of trees, *&c.* ſo that the rains cannot waſh them off.—Theſe eggs will not be hurt by the greateſt froſt.

Andry, *De la Generation de Vers dans le Corps de l' Homme*, takes notice, that the antients were miſtaken in denying that *inſects* did breathe, on the account of their wanting lungs: for modern obſervations convince us, that *inſects* have a greater number of lungs than other animals.

The antients thought, alſo, that *inſects* had no blood; becauſe many of them had no red liquor like our blood: but it is not the colour, but the uſe, of that liquor, that is to be regarded.

They believed, alſo, that *inſects* had no hearts: whereas our microſcopes do now diſcover, that, when *inſects* have ſeveral lungs, they have alſo ſeveral hearts; and, in particular, it is found, that ſilkworms have a continued chain of hearts, reaching from the head almoſt to the very extremity of the tail.—It is this number of hearts and lungs that occaſions thoſe *inſects* to give ſigns of life long after they are divided into ſeveral parts.

Andry obſerves, alſo, that it is wrong to call *inſects* imperfect animals, ſince they want no parts either neceſſary or convenient for their uſe, to render them complete in their kind.—There are ſome who affirm, that the earth-worms, and thoſe round-tailed worms which are found in the inteſtines of men and horſes, *&c.* alſo ſnails and horſe-leaches, are hermaphrodites; but that ſuch worms as become flies, and ſilkworms, are not ſo; being of no ſex, but only peculiar caſes of real animals, which we ſee, in time, come out with wings.

The moderns have proceeded much farther in the knowlege of *inſects* than the antients, as having the advantages of the microſcope, which diſtinguiſhes their minute parts, whereof they have publiſhed draughts, and deſcriptions.—Dr. Hooke has publiſhed a Micrography in folio; and Fran. Redy, a phyſician at Florence, has publiſhed ſeveral figures with new and curious experiments of his own.—Sig. Malpighi, Bartholine, and the *Philoſophical Tranſactions* of London, Paris, and Leipſic, have a great number of fine obſervations and experiments on *inſects*.—Swammerdam has written a general hiſtory of *inſects* in Dutch, and aſſures us, there were, before that, above 400 writers on this ſubject: among others, he ſpeaks well of Wotton, Geſner, Aldrovandus, Mouffet, Harvey, Fabricius ab Aquapendente, Goedart, *&c.* Hoeffnagel, painter to the emperor Rudolphus, has given very good deſigns of above 300 ſpecies; Goedart has deſcribed above 400, and Mr. Albin has given us a new hiſtory of the Engliſh *inſects*, with beautiful figures; and, ſince that, the late Mr. Wilks, and many others, have given hiſtories and figures of many kinds: but the work of the above-mentioned Monſieur De Reaumur is, by far, the moſt valuable treatiſe of the kind.

INSEMINATION, one of the four kinds of tranſplantation in uſe for the ſympathetic cure of certain diſeaſes.

It is performed by mixing the medium impregnated with the mumia taken from the patient, with ſome fat earth, wherein has been ſown the ſeed of a plant appropriate to that diſeaſe; but care muſt be taken, from time to time, to ſprinkle it with the water wherein the part affected has been waſhed. It is ſuppoſed the diſeaſes will decline, in proportion as the plant grows.—By *mumia* is here meant, part of the vital ſpirit of the patient, as the writers on that ſubject expreſs themſelves: but all this idle ſtuff is now laughed out of the world.

INSEPARABLE *modes*. See the article Modes.

INSERTED *column*. See the article Column.

INSERTION, a term frequently uſed, in anatomy, to ſignify the implication of one part within another.

Thus we ſay, the *inſertion* of a muſcle.

The *inſertion* of the bones, muſcles, and nerves, in the members of an animal, is exceeding artful: the vena cava has its *inſertion* in the right ventricle of the heart.

Insertion is alſo uſed, in agriculture, for the incloſing a graft within the cleft of a tree. See Engrafting.

INSESSUS, or Insessio, in medicine, a kind of half-bath, uſually prepared with a decoction of ſeveral herbs proper for the lower parts, wherein the patient ſits down to the navel.

It has ſeveral uſes: as the eaſing of pain, ſoftening the parts, diſpelling of flatulent matter, and frequently promoting the menſes.

INSINUATION denotes a cunning, and covert way of creeping into any perſon's favour.

Insinuation *of a will*, among civilians, is the firſt production of it, or the leaving it with the regiſter, in order to its probate. See Will.

INSIPID, *taſteleſs*, that which has nothing in it pungent enough to affect the palate, tongue, *&c.* and to occaſion that ſenſation we call *taſting*.

INSITION, Insitio, in botany, denotes the ſame with engrafting; *viz.* the act of inſerting and uniting a cyon, bud, or the like, into the ſubſtance of the ſtock. See Engrafting.

INSOLATION *, in pharmacy, a method of preparing certain fruits, drugs, *&c.* by expoſing them to the heat of the ſun's rays; either to dry, to maturate, or to ſharpen them; as is done in vinegar, figs, *&c.*

* The word comes from the Latin verb *inſolare*, which is uſed, by Pliny and Columella; and ſignifies to expoſe to the ſun.

INSOLVENT, a term applied to ſuch perſons as have not wherewithal to pay their juſt debts.

A perſon dying, and not leaving eſtate ſufficient to diſcharge theſe, is ſaid to die *inſolvent*.

INSPECTOR, a perſon to whom the care and conduct of any work is committed.

Inspectors, in the Roman law, were ſuch perſons as examined the quality and value of lands and effects, in order to the adjuſting or proportioning taxes and impoſitions to every man's eſtate.

The Jews alſo have an officer, in their ſynagogue, whom they call *inſpector*, חזן *hhazan*. His buſineſs conſiſts principally in *inſpecting*, or overlooking, the prayers and leſſons, in preparing and ſhewing them to the reader, and in ſtanding by him to take care he reads right; and, if he makes miſtakes, he is to correct him.

INSPICIENDO *ventre*. See the article Ventre.

INSPIRATION, among divines, *&c.* implies the conveying of certain extraordinary and ſupernatural notices, or motions, into the ſoul.

Thus the prophets are ſaid to have ſpoken by divine *inſpiration*; and the ſinner is converted, when he ceaſes to reſiſt the *inſpiration* of grace.

Some authors reduce the *inſpiration* of the ſacred writers to a particular care of providence, which prevented any thing they had ſaid from failing, or coming to nought; maintaining, that they never were really *inſpired*, either with knowlege, or expreſſion.

According to M. Simon, *inſpiration* is no more than a direction of the Holy Spirit, which never permitted the ſacred writers to be miſtaken.

It is a common opinion, that the *inſpiration* of the Holy Spirit regards only the matter, not the ſtyle, or words; and this ſeems to fall in with M. Simon's doctrine of direction.

Among the Heathens, the prieſts and prieſteſſes were ſaid to be divinely *inſpired*, when they gave oracles.

The poets, alſo, laid claim to it; and, to this end, they always invoked Apollo and the muſes, at the beginning of any great work.

Inspiration, in phyſic, is underſtood of that action of the breaſt, by which the air is admitted into the lungs.

In which ſenſe, *inſpiration* is a branch of reſpiration; and ſtands oppoſed to *expiration*.

This admiſſion of the air depends immediately on its ſpring, or elaſticity, at the time when the cavity of the breaſt is enlarged by the elevation of the thorax and abdomen, and particularly by the motion of the diaphragm downwards: ſo that the air does not enter the lungs, becauſe they are dilated; but thoſe dilate, becauſe the air enters within them. Nor is it the dilatation of the breaſt which draws in the air, as is commonly thought; though this is a condition abſolutely neceſſary to *inſpiration*; but there is an actual intruſion of the air into the lungs.

INSPISSATING, in pharmacy, an operation whereby a liquor is brought to a thicker conſiſtence, by evaporating the thinner parts.

Thus, juices, as that of liquorice, are *inſpiſſated*.

INSTALLMENT *, a ſettling, or inſtating, any perſon in a dignity.

* The word is derived from the Latin *in*, and *ſtallum*, a term uſed for a ſeat in church, in the choir, or a ſeat or bench in a court of juſtice, *&c.* though Voſſius is of opinion, the word is of German origin.

Installment is chiefly uſed for the induction of a dean, prebendary, or other eccleſiaſtical dignitary, into the poſſeſſion of his ſtall, or proper ſeat, in the cathedral church to which he belongs.

This is ſometimes alſo called *inſtallation*.

Installment is likewiſe uſed for the ceremony, whereby the knights of the Garter are placed in their rank, in the chapel of S. George at Windſor, and on many other like occaſions.

INSTANT, ſuch a part of duration, wherein we perceive no ſucceſſion; or it is that which takes up the time of only one idea in our minds.

It is a maxim, in mechanics, that no natural effect can be produced in an *inſtant*.—Hence may appear the reaſon, why a burthen ſeems lighter to a perſon, the faſter he carries it; and why, the faſter a perſon ſlides, or ſcates, on the ice, the leſs liable is the ice to break.

The ſchoolmen diſtinguiſh three kinds of *inſtants*; a *temporary*, a *natural*, and a *rational inſtant*.

Temporary **Instant** is a part of time immediately preceding another: thus the laſt *inſtant* of a day, precedes immediately and really the firſt *inſtant* of the following day.

Natural-**Instant** is what we otherwiſe call a *priority of nature*, which obtains in things that are ſubordinated in acting: as, firſt and ſecond cauſes; or cauſes and their effects. For the nature of things requires, that if there be a ſecond cauſe, there muſt be a firſt; and that there muſt be a cauſe, if there be an effect.

Rational **Instant** is not any real *inſtant*, but a point which the underſtanding conceives to have been before ſome other *inſtant*, founded on the nature of the things which occaſion it to be conceived. For inſtance; as God has made ſeveral things voluntarily, which he could otherwiſe have let alone; there is a reaſonable foundation to conceive God, ſuch as he is in himſelf, before he had made any of thoſe voluntary determinations: but as there was no real *inſtant* when God had not formed any determination, this *inſtant* is called a *rational inſtant*, by way of oppoſition to an *inſtant* of time.

INSTANTANEOUS *action*. See the article Action.

INSTATING. See the article Reinstating.

INSTAURATION *, the re-eſtabliſhment, or reſtauration, of a religion, a church, or the like, to its former ſtate.

* The word is by ſome derived from the old Latin, *inſtaurum*, which ſignified the ſtock of things neceſſary for the tilling and managing of grounds; as cattle, tools, harneſs, *&c.* The word *inſtaurum* is only of the middle age; but *inſtauratio* is of much greater antiquity, and by ſome is derived from *inſtar*, like; as importing a thing's being brought to its former likeneſs, or appearance.

INSTINCT, a natural diſpoſition, or ſagacity, wherewith animals are endued; and by virtue whereof they are enabled to provide for themſelves, and know what is good for them, and are determined to preſerve and propagate their ſpecies.

Inſtinct bears ſome analogy to reaſon, and ſupplies the defects of it in brutes.

INSTITUTES, Instituta, in the civil law, a book, containing the elements, or principles, of the Roman law; and which conſtitutes the laſt part of the *corpus juris civilis*.

The *Inſtitutes* are a compendium, or ſummary, of the whole body of civil law, in four books, compoſed by Tribonianus, Theophilus, and Dorotheus, by order of the emperor Juſtinian, for the uſe of young ſtudents; who, having the firſt elements of the whole profeſſion in this little treatiſe, might the ſooner gain a competent knowlege of it, without being diſcouraged by the bulk of the other books.

Institutes likewiſe denote a ſyſtem of laws, or rules, in any ſcience.

INSTITUTION, in a general ſenſe, the act of ordaining, founding, or eſtabliſhing, any thing.

Thus we ſay, Moſes *inſtituted* the ceremonies of the old law; Jeſus Chriſt *inſtituted* the ſacraments of the new.

Institution, in canon and common law, is the act of the biſhop, or of one commiſſioned by him, whereby a clerk is inveſted with the ſpiritualities of a rectory, or vicarage. See Presentation.

The clerk kneels down before the biſhop, whilſt he pronounces theſe words of *inſtitution* (*Inſtituo te rectorem ecclesiæ de* A. B. *cum cura animarum, & accipe curam tuam & meam*); and the clerk holds the written inſtrument, with the epiſcopal ſeal annexed, in his hand, during the ceremony.

Before the clerk is inſtituted, he muſt ſubſcribe the thirty-nine articles of religion, in the preſence of the ordinary, or his ſubſtitute; and this ſubſcription muſt be without reſerve, exception, or qualification; elſe his *inſtitution* is, *ipſo facto*, void and null, and the church is ſtill vacant.—At the ſame time the ordinary requires the clerk to ſubſcribe the other two articles mentioned in the 26th canon about the king's ſupremacy, and the lawfulneſs and uſe, of the liturgy: the clerk muſt alſo, before *inſtitution*, ſubſcribe to that part of the declaration enjoined by the act of uniformity, 14 Car. II. c. 24. viz. *I will conform to the Liturgy of England, as by law eſtabliſhed.*—Before *inſtitution*, he muſt alſo take the oaths mentioned in the firſt ſtatute of William and Mary, c. 8. inſtead of the former oaths of allegiance and ſupremacy, required by ſtat. 1 Eliz. and then he muſt take the oath againſt ſimony, enjoined by the 40th canon, and the oath of canonical obedience: and he is to have certificates given him of his ſubſcribing the declaration contained in the act of uniformity, in Engliſh, in a diſtinct inſtrument, under the hand and ſeal of the biſhop; and of his other ſubſcriptions and oaths, in Latin.

The clerk ought by all means to have witneſſes of his *inſtitution*, his taking the oaths, making ſubſcriptions, *&c.* and therefore he ſhould deſire ſome preſent to write their names on the back of his inſtruments, and make memorandums who they are, and where they live.

The church, by *inſtitution*, is full againſt all perſons, but the king; and the clerk by it may enter upon the glebe, and take the tythes; but he cannot lett or grant them, nor ſue for them, if they be refuſed to be paid, till he be inducted.

After *inſtitution*, the clerk is to receive a written mandate from the ordinary to the archdeacon, or other proper perſon, in order to his induction; without which he has not a full right to his temporalities, unleſs the benefice be a donative. See Induction.

Institutions, in literary matters, denote a ſyſtem of the elements, or rules, of any art or ſcience.

Thus, phyſical or medicinal *inſtitutions* are ſuch as teach the neceſſary præcognita to the practice of medicine, or the cure of diſeaſes.

INSTRUCTIVE *column*. See the article Column.

INSTRUMENT denotes a thing which is ſubſervient to a cauſe for producing its effect. See Effect.

Instruments *of ſacrifice*, in the antique architecture, are ornaments, as vaſes, pateræ, candleſticks, knives, *&c.* wherewith the victims were killed, &c. inſtances of which we ſee in a Corinthian frieze in the remains of a temple behind the capitol at Rome, &c.

INSTRUMENT is alſo uſed, in law, to ſignify ſome public act, or authentic deed, by means whereof any truth is made apparent, or any right or title eſtabliſhed, in a court of juſtice. See ACT, and DEED.

Wind INSTRUMENTS. See the article WIND.

INSTRUMENTAL *arithmetic*. See ARITHMETIC.

INSTRUMENTAL *cauſe*. See the article CAUSE.

INSTRUMENTUM *ſynodale*. See SYNODALE.

INSULATE, or INSULATED, a term applied to a column, or other edifice, which ſtands alone, or free and detached from any contiguous wall, &c. like an iſland in the ſea; whence the denomination is apparently derived.

INSULT, a military term uſed for the attack of any poſt with open force; without the apparatus of trenches, ſaps, or any regular approaches.

INSUPER, a word uſed by the auditors of the Exchequer.— In their accompts they ſay, ſo much remains *inſuper* to ſuch an accomptant; that is, ſo much remains due on his accompt.

INSURANCE, ſecurity given, in conſideration of a ſum of money paid in hand, to make good ſhips, merchandizes, houſes, &c. to the value of that for which the premium is received; in caſe of loſs by ſtorm, pirates, fire, or the like. See ASSURANCE.

INTACTÆ, right lines to which curves do continually approach, and yet can never meet with them; more uſually called *aſymptotes*. See ASYMPTOTE.

INTAGLIO'S, precious ſtones, having the heads of great men, inſcriptions, and the like, engraven on them; ſuch as we frequently ſee ſet in rings, ſeals, &c.

IN-TAKER, a name antiently given to certain banditti, or free-booters, who inhabited part of the north of England, and made frequent incurſions into the very middle of Scotland; plundering the inhabitants where-ever they came.

Thoſe who made the expeditions, were called *out-parters*; and thoſe who were left behind to receive the booty, *intakers*.

INTEGERS, in arithmetic, denote whole numbers; in contradiſtinction to fractions.

Integers may be defined to be, numbers which refer to unity, as a whole to a part.

INTEGRAL, or INTEGRANT, is applied, by the ſchoolmen, to thoſe parts which are neceſſary to the integrity of a whole.

In which ſenſe they ſtand contradiſtinguiſhed from *eſſential* parts.

Thus the arms, legs, &c. are *integral* parts; body and ſoul, eſſential parts of a man.

INTEGRAL *calculus*, in the new analyſis, is the counterpart to the differential calculus.

This laſt has been completely explained by the marquis De l'Hoſpital; but the other ſtill remains imperfect, having been yet but little cultivated.

The *integral calculus* of Leibnitz, and other foreigners, anſwers to what the Engliſh call *inverſe method of fluxions*. See FLUXIONS, and CALCULUS.

INTEGRITY *of the action*. See the article ACTION.

INTEGRUM.—*Reſtitutio in integrum*. See RESTITUTION.

INTEGUMENTS*, in anatomy, denote the common coverings which inveſt the body; as the cuticula, cutis, and even the paniculus carnoſus, and tunica reticularis, if there be really any ſuch part.

* The word is Latin; formed of *in*, and *tegumentum*; of *tego*, I cover.

INTEGUMENT is alſo extended to the particular membranes which inveſt certain parts of the body; as the coats or tunics of the eye.

INTELLECT, a term uſed, among philoſophers, to ſignify that faculty of the ſoul uſually called the *underſtanding*. See UNDERSTANDING.

The Peripatetics make two kinds of *intellect*; *active*, and *paſſive*.

Active INTELLECT, they ſay, is that which receives the impreſſed ſpecies emitted by objects to the exterior ſenſes, and conveys them to the common ſenſorium.

Theſe impreſſed ſpecies, being material and ſenſible, are ſuppoſed to be rendered intelligible by the *active intellect*, and fit to be received into the *paſſive intellect*.

The ſpecies, ſo ſpiritualized, are called *expreſſed ſpecies*, as being expreſſed from thoſe others impreſſed; and it is by theſe, according to them, that the *paſſive intellect* comes to know material things.

INTELLECTUAL *thinking*. See THINKING.

INTELLIGIBLE, any thing capable of being underſtood, or conceived, by the mind.

Philoſophers have invented certain beings which are purely *intelligible*, and only ſubſiſt in the underſtanding: ſuch are the *entia rationis*, univerſal ideas, and other chimæras.

The *intelligible*, or intellectual world, is the idea of the world in the divine mind, frequently ſpoken of by Malebranche.

INTENDANT, one who has the conduct, inſpection, and management, of any thing.

This is a title frequent among the French; they have *intendants of the marine*, who are officers in the ſea-ports, whoſe buſineſs is, to take care the ordinances and regulations, relating to ſea-affairs, be obſerved; *intendants of the finances*, who have the direction of the revenues; *intendants of provinces*, who are appointed by the king to take care of the adminiſtration of juſtice, policy, and finances, in the provinces; alſo, *intendants of buildings*, *of houſes*, &c.

INTENDMENT *of law*, the ſenſe, intention, or true meaning, of the law.

The judges ought to judge according to the common *intendment* of the law. *Coke*.

INTENSIONE, in law, a writ which lies againſt him who enters after the death of the tenant in dower, or tenant for life, and holds out him in the reverſion, or remainder.

INTENT, in the civil law, ſignifies to begin or commence an action, or proceſs.

INTENTION, or INTENSION, in medicine, that judgment, or method, of cure, which a phyſician forms to himſelf from a due examination of the ſymptoms.

INTENTION, in phyſics, the increaſe of the power, or energy, of any quality; as heat, cold, &c.

By which it ſtands oppoſed to *remiſſion*; which ſignifies its decreaſe, or diminution. See REMISSION.

INTENTION, in metaphyſics, denotes an exertion of the intellectual faculties with more than ordinary vigour; when the mind with earneſtneſs fixes its view on any idea, conſiders it on all ſides, and will not be called off by any ſolicitation.

The ſchoolmen alſo ſpeak of terms of firſt and ſecond *intention*.

A term of firſt INTENTION is that which ſignifies a thing; the primary deſign of men, in eſtabliſhing words, being to expreſs things, or the ideas they have of things.

A term of ſecond INTENTION is that which does not ſignify a thing, but another term, or ſign.

Thus, a tree, a man, &c. are terms of *firſt intention*; and the terms in rhetoric, grammar, &c. as figure, kind, &c. are terms of *ſecond intention*.

INTENTIONAL *qualities*. See QUALITIES.

INTERCALARY *day**, denotes the odd day inſerted in the leap-year. See BISSEXTILE.

* The word is derived from the Latin *intercalaris*; of *calo*. *calare*, which antiently ſignified, to call with a loud voice: an *intercalary* day, among the Romans, ſignifying a day inſerted between two other days; which, for that reaſon, was proclaimed by the prieſts with a loud voice.

INTERCESSOR*, a perſon who prays, expoſtulates, or *intercedes*, in behalf of another.

* The word comes from the Latin *inter*, and *cedo*, I go between.

In the Roman law, *interceſſor* was the name of an officer, whom the governors of provinces appointed principally to raiſe taxes, and other dues.

INTERCESSOR is alſo a term heretofore applied to ſuch biſhops as, during the vacancy of a ſee, adminiſtred the biſhopric, till a ſucceſſor to the deceaſed biſhop had been elected. See BISHOP.

The third council of Carthage calls theſe *interventors*.

INTERCOLUMNIATION, or INTERCOLUMNATION, in architecture, ſignifies the ſpace between two columns.

Vitruvius calls it *intercolumnium*; which, according to that author, is of five kinds; viz. *picnoſtyle*, *ſiſtyle*, *euſtyle*, *diaſtyle*, and *aræoſtyle*: which ſee explained under their proper heads; PICNOSTYLE, &c.

For a medium, ſome authors have laid down the following proportions: in the Tuſcan order, the *intercolumnation* is to be four diameters of the body of the column below; in the Doric, three; in the Ionic, two; in the Corinthian, two one quarter; and in the Compoſite, one and a half.

INTERCOMMONING is when the commons of two manors lie together, and the inhabitants of both have, time out of mind, cauſed their cattle to feed promiſcuouſly in each.

INTERCOSTAL, in anatomy, ſignifies any thing between the coſtæ, or ribs.

INTERCOSTAL *nerves* are two nerves ſo called, becauſe, in deſcending, they paſs near the roots of the ribs.—They are formed in the brain by three branches of nerves; two whereof come from the ſixth pair, and the third from the fifth.—The *intercoſtal* nerves have a great communication with thoſe of the eighth pair, and ſend ſeveral branches to the breaſt, and lower belly.

INTERCOSTAL *arteries* are two: the *upper*, which comes from the ſubclavian, and diſtributes itſelf within the four ſpaces of the upper ribs; and the *under*, which comes from the lower trunk of the great artery, and diffuſes itſelf within the ſpaces between the eight lower ribs and the neighbouring muſcle.

INTERCOSTAL *vein* is a vein which ariſes from the four ſpaces between the upper ribs, and terminates in the ſubclavian:

vian.—See Tab. *Anat.* (*Angeiol.*) *fig.* 1. *n.* 31. *fig.* 6. *lit. f.*

INTERCOSTAL *muſcles* are either *external*, or *internal*; and are forty-four in number, one of each ſort being between every two ribs.

They ariſe from the lower edges of each ſuperior rib, and are inſerted into the upper edges of each inferior rib.—Their fibres croſs one another: thoſe of the external run obliquely from the back-part forwards; but thoſe of the internal from the fore-part backwards: they are thin, and fleſhy.—See Tab. *Anat.* (*Myol.*) *fig.* 1. *n.* 43. *fig.* 2. *n.* 27.

INTERDICT, a cenſure inflicted by a pope, or biſhop, ſuſpending the prieſts from their functions, and depriving the people of the uſe of ſacraments, divine ſervice, and Chriſtian burial.

In common law, *interdict* is alſo uſed in the ſame ſenſe as in the canon law; where it is defined to be, *cenſura eccleſiaſtica prohibens adminiſtrationem divinorum.*

INTERDICT is moſt properly underſtood of a general excommunication of a country, or city, as appears by the decretals. See EXCOMMUNICATION.

There is a *local*, and a *perſonal interdict:* where theſe two are joined, the *interdict* is ſaid to be *mixed*.

This puniſhment, as well as general excommunications, were but little known till the time of pope Gregory VII.

In excommunicating a prince, all his adherents, that is, his ſubjects who retain their allegiance, are excommunicated, and the whole country is put under an *interdict*.—In the reign of king John, the kingdom of England lay under a papal *interdict* for above ſix years together: it began *A. D.* 1208.

In imitation of the popes, the biſhops alſo ſoon began to *interdict*; and it became a common thing for a city, or town, to be excommunicated for the ſake of a ſingle perſon whom they undertook to ſhelter: but this ſeverity was found to have ſuch ill effects, that they have been obliged to moderate it.

An *interdict* is denounced, and taken off again, with the ſame formalities as an excommunication.

INTERDICTS, in the Roman law, certain formulæ of words, by which the prætor, when the poſſeſſion of any thing was conteſted between many, ordered or forbid ſomething to be done with it, till the right or property ſhould be legally determined.

Which formulæ were called *interdicts*, becauſe they related to the poſſeſſion of the thing in the interim, or till the right was aſcertained.

They had three kinds of *interdicts: prohibitory, reſtitutory*, and *exhibitory.*

Prohibitory INTERDICTS were thoſe by which the judges forbad any one to vex another in the poſſeſſion of any thing legally belonging to him.

Reſtitutory were thoſe by which the judges appointed any one, who had been expelled out of his eſtate, to be repoſſeſſed, before his right was legally aſcertained; and this was the ſame with what they called the *reintegrant*.

Exhibitory were thoſe by which any thing in diſpute was ordered to be exhibited: as a teſtament, &c.

There was alſo a ſecond diviſion of *interdicts*; viz. into *adipiſcendæ*, *retinendæ*, and *recuperandæ:* the firſt tending to the acquiring a new poſſeſſion, as the *interdict quorum bonorum*, &c. the ſecond to the keeping an old one till it was farther determined, as the *uti poſſidetis*, &c. the laſt to the recovering one loſt, as *unde vi*, &c.

INTERDICTION *of water and fire*, a ſentence antiently pronounced againſt ſuch as, for ſome crime, were to be baniſhed.

They were not directly adjudged to baniſhment; but by giving order, that nobody ſhould receive them, but deny them *fire and water*, they were condemned, as it were, to a civil death: and this they called *legitimum exilium*. Livy.

INTEREST, a ſum of money, reckoned for the loan and forbearance of ſome other ſum, lent for, or due at, a certain time, according to ſome certain rate.

In reſpect hereof, the ſum lent, or forborn, is called the *principal*, becauſe it is the ſum that procreates the *intereſt*, or from which the *intereſt* is reckoned.

Intereſt is either *ſimple*, or *compound.*

Simple INTEREST is that counted from the principal only.

This is eaſily computed by the golden rule, either *ſimple* or *compound*, thus: Let that which is the principal, or cauſe, of the *intereſt*, be put in the firſt place, that which betokened time in the ſecond place, and the remaining in the third; under this conditional part place the two other terms, each under its like, and there will be a blank to ſupply under one of thoſe above, either under the firſt, ſecond, or third.

l. *Months.* *l.*
100 . 12 . 6
50 . 3

Here the blank will be under the third place: multiply the three laſt for a dividend, and the two firſt for a diviſor, the quotient of theſe gives the ſixth; that is, $6 \times 50 \times 3 = 900$, and $100 \times 12 = 1200$. Now 1200) 900.0 (.75 = 15 *s.* required.

If the demand had been, In how many months would 50 *l.* have gained 15 *s.* or, if 100 *l.* in twelve months gain 6 *l.* what ſhall the principal be that in three months would gain 15 *s.*? in theſe caſes, the blank would have been under the firſt or ſecond term: then, by another rule, multiply the firſt, ſecond, and laſt, for a dividend, and the third and fourth for a diviſor; and the quotient is the anſwer.

l. *Months.* *l.*
100 . 12 . 6
3 . 75 = 15 *s.*

Then, by the rule, $100 \times 12 \times .75 = 900.00$ and $6 \times 3 = 18$) 900. (50 *l.* required.

This rule ſhews *ſimple intereſt*, and all that belongs to it, with eaſe, and was thus found: Put P for the principal, T for the time, and G for the gain in the conditions, and $p\,t\,g$ anſwering, it will be, $P : G :: t : p : \frac{Gp}{P}$. And $T : Gp :: t : \frac{Gpt}{TP} = g$, which is the firſt rule; that is, multiply the three laſt for a dividend, and the two firſt for a diviſor. And becauſe $\frac{Gpt}{TP} = g$, therefore $Gtp = TPg$, and conſequently $t = \frac{TPg}{Gp}$ and $p = \frac{TPg}{Gt}$, which is the ſecond rule.

Compound INTEREST is that which is counted both from the principal, and the *ſimple intereſt* forborn; called alſo *intereſt upon intereſt*.

Compound intereſt ariſes from the principal and its *intereſt* put together, as that *intereſt* becomes due.—To find this, it is neceſſary to find the new principal, which is ſtill created by the increaſe of the growing money, at the ſeveral times when the payments of *intereſt* were due.

If R be the amount of one pound for one year; then $\overline{R}^2$ will be the amount for two years, $\overline{R}^3$ for three years, &c.

As one pound is to its amount for any given time; ſo is any propoſed principal ſum to its amount for the ſame time.

Punitory INTEREST. See the article PUNITORY.

INTERFERING, in the manage. See CUTTING.

INTERJECTION, in grammar, an expreſſion uſed to denote ſome ſudden motion, or paſſion, of the mind: as *oh! eh!* &c.

As the greateſt part of the expreſſions uſed on theſe occaſions are taken from nature alone, the real *interjections* in moſt languages are monoſyllables: and as all nations agree in thoſe natural paſſions, ſo do they agree in the ſigns and indications of them; as of love, mirth, &c.

Some deny the *interjections* to be words, or any part of ſpeech; and make them mere natural ſigns of the motions or paſſions of the mind, expreſſed by theſe inarticulate ſounds, ſeveral whereof brutes have in common with us: but as theſe are paſſions, and muſt be repreſented in diſcourſe, the *interjection* has a good foundation in nature, and is a neceſſary part of ſpeech.

The Greeks confound their *interjections* with *adverbs*, and the Hebrews confound them with their *adverbs* and *prepoſitions*; calling them all by the general name *particle*.

INTERIM, a term borrowed from the Latin, ſignifying *in the mean time*. It was firſt brought into popular uſe by Charles V. in order to compoſe the diſturbances of Germany.

The *interim* of that prince was a kind of ordinance, or regulation, to be obſerved in the empire, with regard to the articles of religion then controverted, till ſuch time as they ſhould be determined by a council; and therefore was called *interim*.

It was ſaid to have been drawn up by two Catholics and a Proteſtant: but as it retained moſt of the doctrines and ceremonies of the Romaniſts, excepting that of marriage, which was allowed to prieſts, and communion, which was adminiſtred to the laity under both kinds; moſt of the Proteſtants rejected it.—Thoſe who admitted it were nick-named *Interimiſts*, or *Adiaphoriſts*. Indeed the *interim* equally diſguſted the generality of both parties, the Proteſtants and Catholics.

Beſides this, there were two other *interims* made: the one called the *interim* of Leipſic, the other by the divines of Franconia; who, refuſing to accept the two former, made another for themſelves.

INTERIOR. See INTERNAL, and INTERNUS.

Angle of INTERIOR *figure.* See the article ANGLE.

INTERIOR *polygon.* } See the article { POLYGON.
INTERIOR *talus.* } { TALUS.

INTERLINEATION, ſomething inſerted between two lines.

INTERLOCUTORY *order*, that which decides not the cauſe, but only ſettles ſome intervening matter relating to the cauſe.

As, where an order is made in Chancery, for the plaintiff to have an injunction, to quit poſſeſſion till the hearing of the cauſe; this order, not being final, is called *interlocutory*.

INTERLOPING, the intercepting, or diſturbing, the traffic of a company; or the taking up a new trade, or employment,

ployment, to the prejudice of thoſe who were brought up in it.

INTERLOPERS are properly thoſe, who, without due authority, hinder the trade of a company, or corporation, lawfully eſtabliſhed, by dealing in the ſame way.

INTERLUCATION, in huſbandry, the thinning of a wood, or letting in light between, by lopping or cutting away boughs.

INTERLUDE, an entertainment exhibited on the theatre between the acts of a play; to amuſe the ſpectators while the actors take breath, and ſhift their dreſs; or to give time for changing the ſcenes and decorations.

In the antient tragedy, the chorus ſung the *interludes*, to ſhew the intervals between the acts.

Interludes, among us, uſually conſiſt of ſongs, dances, feats of activity, concerts of muſic, &c.

Ariſtotle and Horace give it for a rule, that the *interludes* ſhould conſiſt of ſongs built on the principal parts of the drama: but ſince the chorus has been laid down, dancers, buffoons, &c. ordinarily furniſh the *interludes*.

INTERMEDIATE, ſomething betwixt two.—It is uſually underſtood of the ſpace of time elapſed from any certain point to any other.

INTERMEWING, in falconry, is a hawk's *mewing*, from the firſt change of her coat till ſhe turn white.

INTERMITTENT, a thing which ceaſes its action for ſome time; which time is called the *interval*.

Thus fevers which go off, and ſoon return again, are called *intermittents*, in oppoſition to thoſe which are always continued.

So a pulſe which after ſo many ſtrokes ſtops, or loſes one in its due time, is called an *intermitting pulſe*. See PULSE.

With regard to this it has been obſerved, that as often as the ſtomach is much inflated with wind, the nerves or plexus cardiacus at its orifice muſt ſuffer a contraction, which, being continued to the heart, will occaſion a twitching; and this, as it is more or leſs violent, will produce either only a ſimple *intermiſſion* of pulſe, or a real palpitation of the heart.

INTERNAL *angles* are all *angles* made by the ſides of any right-lined figure within.

The ſum of all the *internal angles* of any right-lined figure is equal to twice as many right angles as the figure hath ſides, except 4.

In a triangle, as KLM (*Tab. Geometry*, *Fig.* 19.), the angles L and M are particularly called *internal* and *oppoſite*, in reſpect of the external angle IKM, which is equal to them both.

INTERNAL *angle* is alſo applied to the two angles formed between two parallels by a line interſecting thoſe parallels, on each ſide the interſecting line.

Such are the angles *z* and *y*, and *x* and *s* (*Tab. Geometry*, *Fig.* 36.), formed between the parallels OP and QR, on each ſide the interſecting line ST.

The two *internal angles* are always equal to two right angles.

INTERNAL and *oppoſite angle* is alſo applied to the two angles *s* and *y* (*Tab. Geometry*, *Fig.* 36.), formed by a line cutting two parallels.

Theſe are reſpectively equal to A and *u*, called the *external* and *oppoſite angles*.

INTERNAL *affection*.	See	AFFECTION.
INTERNAL *denomination*.		DENOMINATION.
INTERNAL *ear*.		EAR.
INTERNAL *modes*.		MODES.
INTERNAL *orthography*.		ORTHOGRAPHY.
INTERNAL *place*.		PLACE.
INTERNAL *ſenſe*.		SENSE.
INTERNUS *brachiæus*.	See	BRACHIÆUS.
INTERNUS *rectus major capitis*.		RECTUS.
INTERNUS *rectus minor capitis*.		RECTUS.
INTERNUS *cubitæus*.		CUBITÆUS.
INTERNUS *iliacus*.		ILIACUS.
INTERNUS *orbiter*.		ORBITER.
INTERNUS *pterygoideus*.		PTERYGOIDEUS.
INTERNUS *vaſtus*.		VASTUS.

INTERNODIUM, in botany, the ſpace that is between two knots, or joints, of the ſtalk of a plant; *e. gr.* of the ſtalk or ſtraw of wheat, or other corn.

INTEROSSEI *manus*, the muſcles which move the fingers; thus called from their ſituation, as being contained *inter oſſa*, between the ſpaces of the bones of the metacarpus.

Some reckon ſix of them, and others eight.—One half lie between the ſpaces theſe bones leave towards the palm of the hand; theſe are called the *internal interoſſei*, ariſing from the upper part of the bones of the metacarpus next the carpus; and, being inſerted on the internal ſides of the firſt bones of the fingers with the lumbricales, ſerve, as adductores digitorum, to bring the fingers to the thumb.

The other half, called *interoſſei externi*, are contained in the ſpaces that the bones of the metacarpus leave on the back of the hand: theſe riſe from the upper part of the bones of the metacarpus next the carpus, and are inſerted on the external ſides of the firſt bones of the fingers: theſe ſerve, as abductores digitorum, to draw the fingers from the thumb. See *Tab. Anat.* (*Myol.*) *Fig.* 6. *n.* 23. *Fig.* ~. *n.* 9. 50.

INTEROSSEI *pedis*, the muſcles which move the toes; in number, uſe, origin, and inſertion, they anſwer exactly to thoſe of the hand.

INTERPLEAD, or ENTERPLEAD. See ENTERPLEAD.

INTERPOLATION, a term uſed by critics in ſpeaking of antient writings and manuſcripts, in which ſome ſpurious additions or alterations have been ſince made.

To eſtabliſh or aſcertain an *interpolation*, P. Ruinart gives us the five following rules: 1. That the piece ſuppoſed to be *interpolated* appear to have all the antiquity it pretends to. 2. That there be good proofs, that it has been *interpolated*. 3. That the ſuppoſed *interpolations* agree to the time of the *interpolator*. 4. That the *interpolations* do not touch the foundation of the work; and that they be not too frequent, nor intirely disfigure the piece. 5. That the reſtitution made agree perfectly to the reſt of the work.

INTERPOSED *Attic*. See the article ATTIC.

INTERPOSITION, the ſituation of a body between two others, ſo as to hide them, or prevent their action.

The eclipſe of the ſun is occaſioned by an *interpoſition* of the moon between the ſun and us; and that of the moon by the *interpoſition* of the earth between the ſun and moon.

INTERPRETER *, a perſon who explains the thoughts, words, or writings, of ſome other, which before were unintelligible.

* The word *interpres*, according to Iſidore, is compoſed of the prepoſition *inter*, and *partes*, as ſignifying a perſon in the middle betwixt two parties, to make them mutually underſtand each other's thoughts: others derive it from *inter*, and *præs*, i. e. *fidejuſſor*; q. d. a perſon who ſerves as ſecurity between two others, who do not underſtand one another.

There have been great debates about *interpreting* Scripture: The Romaniſts contend, that it belongs abſolutely to the church; adding, that, where ſhe is ſilent, reaſon may be conſulted; but, where ſhe ſpeaks, reaſon is to be diſregarded. The Proteſtants generally allow reaſon to be the ſovereign judge, or *interpreter*; though ſome among them have a ſtrong regard to ſynods, and others to the authority of the primitive fathers. Laſtly, others have recourſe to the ſpirit within every perſon to *interpret* for them. Which is what Bochart calls *αποδειξις τȣ πνευματος*.

INTERREGNUM, the time during which a throne is vacant, or a kingdom without a head.

In hereditary kingdoms, as England, there are properly no *interregnums*. In elective kingdoms, the *interregnums* are extremely liable to factions and diſorders. In Germany, the emperors have loſt the greateſt part of their dominions during the *interregnums*.

INTERREX, a magiſtrate who governs during an *interregnum*, or in the interval between the death of a monarch, and the election or inauguration of his ſucceſſor.

This magiſtrate was eſtabliſhed in Old Rome, and was almoſt as antient as the city itſelf: after the death of Romulus there was an *interregnum* of a year, during which the ſenators were each *interrex* in their turn, five days apiece.

After the eſtabliſhment of conſuls, and a commonwealth, though there were no kings, yet the name and function of *interrex* was ſtill preſerved: for, when the magiſtrates were abſent, or when there was any irregularity in their election, or they had abdicated, ſo that the comitia could not be held; provided they were unwilling to create a dictator, they made an *interrex*, whoſe office and authority were to laſt five days; after which they made another. To the *interrex* was delegated all the regal and conſular authority, and he performed all their functions. He aſſembled the ſenate, held comitia, or courts, took care the election of magiſtrates was according to the rules. Indeed, at firſt it was not the cuſtom of the *interrex* to hold comitia; at leaſt we have no inſtance of it in the antient Roman hiſtory.

The patricians alone had the right of electing an *interrex*.—This office fell with the republic, when the emperors made themſelves maſters of every thing.

INTERRMENT, INTERMENT, or ENTERRMENT, the act of *interring*, i. e. burying, or laying a deceaſed perſon in the ground.

The kings of England are *interred* at Weſtminſter; thoſe of France at Denis, &c.—The excommunicated are not to be *interred* in holy, *i. e.* in conſecrated, ground. The antients did not interr their dead: they burnt them, as the Indians do at this day.

The cuſtom of burning the dead ceaſed among the Romans under the empire of the Antonines; long before the Chriſtians were allowed to *interr* in churches, which was even prohibited kings and emperors.

The Abyſſinians, in lieu of *interring* their dead, ſhut them up in the bodies of trees, dug hollow for this purpoſe.

Gardeners alſo **INTERR**, or earth up, celeri, endive, and lettuce, to blanch, or whiten, and make them the tenderer.

To *interr* wild ſtocks in ditches, is what Columella calls *deponere ſemina ſcrobibus.*—There are ſome trees, as willows, olives, &c. which grow very well, by *interring* their truncheons, *i. e.* cutting a truncheon, or piece, off at both ends, and planting it in the ground: which is what the Latins call *inhumare taleas, taleis ſerere.*

INTERROGATE, a judiciary act, performed by a judge, or commiſſioner deputed to examine or queſtion a party; who firſt gives his oath, that he will anſwer truly to every thing he is *interrogated.*

INTERROGATION, a figure of rhetoric, in which the paſſion of the ſpeaker introduces a thing by way of queſtion, to make its truth more conſpicuous.

The *interrogation* is a kind of apoſtrophe which the ſpeaker makes to himſelf; and it muſt be owned, that this figure generally adds an uncommon briſkneſs, action, and force, to diſcourſe.

INTERROGATION, in grammar, is a point which ſerves to diſtinguiſh ſuch parts of a diſcourſe, where the author ſpeaks as if he were aſking queſtions. Its form is this (?).

INTERRUPTION, in matters of proportion, denotes the ſame with *disjunction.*

It is noted thus (::), and ſignifies the breaking off of the ratio in the middle of four disjunct or diſcrete proportionals: as A:B::C:D; that is, as A is to B, ſo is C to D. See RATIO, PROPORTION, &c.

INTERRUPTION is alſo a figure in rhetoric, wherein a perſon breaks off his diſcourſe ſuddenly, to ſhew ſome paſſion.

INTERSECTION, in mathematics, the cutting of one line, or plane, by another; or the point or line wherein two lines, or two planes, cut each other.

The mutual *interſection* of two planes is a right line. The centre of a circle is in the *interſection* of two diameters. The central point of a regular or irregular figure of four ſides, is the point of *interſection* of the two diagonals.

The equinoxes happen when the ſun is in the *interſections* of the equator and ecliptic.

INTERSOILING, in huſbandry, the laying one kind of ſoil, or mould, upon another; as clay on ſand, ſand on earth, &c.

INTERSPERSUM *vacuum.* See the article VACUUM.

INTERSPINALES *colli*, the name of five pair of ſmall muſcles diſcovered by Mr. Cowper; and by him ſo called, from their poſition along the ſpina.

They ariſe from each double proceſs of the ſpine of the neck, and run from the upper one to the next below, into which they are inſerted.

They ſerve to draw together the vertebræ of the neck; and are more eſpecially proper to this part, as having both their origin and inſertion in it.

INTERSTELLAR, a word uſed by ſome authors to expreſs thoſe parts of the univerſe that are without, and beyond, the limits of our ſolar ſyſtem.

In the *interſtellar* regions are ſuppoſed to be ſeveral other ſyſtems of planets moving round the fixed ſtars; as the centres of their reſpective motions: and if it be true, as it is not improbable, that each fixed ſtar is thus a ſun to ſome habitable orbs, that move round it, the *interſtellar* world will be infinitely the greateſt part of the univerſe.

INTERTIES, or **INTERDUCES**, in architecture, thoſe ſmall pieces of timber which lie horizontally betwixt the ſummers, or betwixt them and the ſell, or reſon.

INTERTRANSVERSALES *colli*, certain muſcles between the *tranſverſe* proceſſes of the vertebræ of the neck; ſerving for divers motions of the head: of the ſame ſize and figure with the *interſpinales*, and obſerved by the ſame author. See *Philoſoph. Tranſact.* n. 251. p. 131.

INTERVAL *, the diſtance or ſpace between two extremes, either in time or place.

> * The word comes from the Latin *intervallum*, which, according to Iſidore, ſignifies the ſpace *inter foſſam & murum*, between the ditch and the wall: others note, that the ſtakes or piles, driven into the ground in the antient Roman bulwarks, were called *valla*, and the interſtices or vacancy between them *inter-valla.*

Angle of **INTERVAL.** See the article ANGLE.
Lucid **INTERVALS.** See the article LUCID.

INTERVAL, in muſic, the difference between two ſounds, in reſpect of acute and grave; or that imaginary ſpace terminated by two ſounds differing in acuteneſs or gravity.

When two or more ſounds are compared in this relation, they are either equal or unequal in the degree of tune: ſuch as are equal are called *uniſons*, with regard to each other, as having one tune; the other, being at a diſtance from each other, conſtitute what we call an *interval* in muſic; which is properly the diſtance in tune between two ſounds.

Intervals are diſtinguiſhed into *ſimple* and *compound.*

Simple **INTERVAL** is that without parts, or diviſion: ſuch are the octave, and all that are within it; as the ſecond, third, fourth, fifth, ſixth, and ſeventh, with their varieties.

Compound **INTERVAL** conſiſts of ſeveral leſſer *intervals*: ſuch are all thoſe greater than the octave; as the ninth, tenth, eleventh, twelfth, &c. with their varieties.

But this diſtinction, it is to be obſerved, regards practice only, becauſe there is really no ſuch thing as a leaſt *interval.* Beſides, by a *ſimple interval* is not meant here the leaſt practiſed, but ſuch as though it were equal to two or more leſſer which are in uſe, yet when we would make a ſound move ſo far up or down, we always paſs immediately from one of its terms to the other.—What is meant then by a *compound interval*, will be very plain: it is ſuch, whoſe terms are in practice taken either in immediate ſucceſſion, or ſuch where the ſound is made to riſe and fall from the one to the other, by touching ſome intermediate degree; ſo that the whole becomes a compoſition of all the *intervals* from one extreme to the other.

What we here call a *ſimple interval*, the antients called a *diaſtem*, and the *compound* they called a *ſyſtem.*

Each of theſe has its differences; even of the *ſimple* there are ſome greater, and others leſs: but they are always diſcord; but of the *compound*, or *ſyſtems*, ſome are concord, others diſcord. Uniſons, it is plain, cannot poſſibly have any variety; for where there is no difference, as in uniſonance, which flows from a relation of equality, it is plain there can be no diſtinction: uniſons therefore muſt all be concords. But an *interval* depending on a difference of tune, or a relation of inequality, admits of variety; and ſo the terms of every *interval*, according to their particular relation or difference, make either concord or diſcord. Some indeed have reſtrained the word *concord* to *intervals*, making it include a difference in tune: but this is precarious; for as the word *concord* ſignifies an agreement of ſounds, it is certainly applicable to uniſons in the firſt degree. *Intervals*, it is plain, may differ in magnitude, and there may be an infinite variety, according to the poſſible degrees of tune; for there is no difference ſo great or ſo little, but a greater or a leſs may poſſibly be conceived. It is true, with regard to practice, there are limits, which are the greateſt and leaſt *intervals* our ears are judges of, and which may be actually produced by voice or inſtrument.

The degrees of tune are proportional to the numbers of vibrations of the ſonorous body in a given time, or the velocity of their courſes and recourſes.—Now theſe differences in tune conſtitute, as has been already ſaid, the *intervals* in muſic; theſe therefore muſt be greater or leſs, as the differences are; and it is the quantity of theſe, which is the ſubject of the mathematical part of muſic.

Thoſe *intervals* are meaſured, not in the ſimple differences, or in arithmetical ratio's of the numbers expreſſing the lengths or vibrations, but in their geometric ratio's; ſo that the ſame *interval* depends on the ſame geometrical ratio, and *vice verſa.* It is however to be obſerved, that in comparing the equality of *intervals*, the ratio's expreſſing them muſt be all of one ſpecies; otherwiſe this abſurdity will follow, that the ſame two ſounds may make different *intervals.*—To deſcribe the particular methods of meaſuring the inequality of *intervals*, would be too tedious: this one rule may be obſerved, that, to determine in general which of two or more *intervals* are the greateſt, take all the ratio's as proper fractions, and the leaſt fraction will be the greateſt *interval.*

The antients were extremely divided about the manner of meaſuring *intervals.*—Pythagoras and his followers meaſured them by the ratio's of numbers. They ſuppoſed the differences of gravity and acuteneſs to depend on the different velocities of the motion which cauſes ſound; and therefore concluded, that they could only be accurately meaſured by the ratio's of thoſe velocities. Which ratio's are ſaid to have been firſt inveſtigated by Pythagoras, on occaſion of his paſſing by a ſmith's ſhop, and obſerving a concordance betwixt the ſounds of hammers ſtriking on the anvil.

Ariſtoxenus oppoſed this. He thought reaſon and mathematics had nothing to do in the caſe, and that ſenſe was the only judge in the diſpute; the other being too ſubtile to be of any uſe. He therefore determined the octave, fifth, and fourth, which are the moſt ſimple concords, by the ear; and by the difference of the fourth and fifth, he found out the tone; which once ſettled as an *interval* the ear could judge of, he pretended to meaſure every *interval* by various additions, and ſubtractions, made of theſe mentioned one with another: but this method is very inaccurate.

Ptolemy keeps a middle courſe betwixt the two: he finds fault with the one for deſpiſing reaſon, and with the other for excluding ſenſe; and ſhews how theſe two may mutually aſſiſt each other in this matter.

Concinnous INTERVALS. See the article CONCINNOUS.
Diminiſhed INTERVAL. See the article DIMINISHED.
Harmonical INTERVAL. See the article HARMONICAL.

INTERTWISTED *Suture*. See the article SUTURE.

INTESTATE, a perſon who dies without making a will.

An heir *ab-inteſtato*, is a perſon who inherits an eſtate by ſome other right, than that of will or teſtament.

Heretofore, thoſe who died *inteſtate*, were held infamous, and accurſed; in regard, by the canons of ſeveral councils, every perſon was injoined to bequeath a part of his eſtate (and Matthew Paris ſays it was at leaſt to be a tenth part) to the church, for the ſafety of his ſoul; which a perſon who neglected to make a will, and to leave this legacy to the church, was judged to have abandoned.—Several councils took on them to command the prieſts to ſolicit dying perſons to be charitable to the church; and this they did ſo earneſtly, that abſolution and the viaticum were denied to thoſe whom they could not prevail on; ſo that they made no difference between theſe *inteſtates* and ſelf-murderers; and they were alike denied Chriſtian burial.—Du Cange adds, that all who died without abſolution, without receiving the viaticum, and without leaving alms to the church (even though they died ſuddenly), had their effects ſeized, and confiſcated to the uſe of the church, the biſhop, &c.

In the Engliſh law there are two kinds of *inteſtates:* the one *de facto*, which are thoſe who make no will at all; the other *de jure*, called alſo *quaſi inteſtati*, which are thoſe who make a will; but ſuch an one as is null and void, either from the executors refuſing to act, or from ſome other cauſe: in which caſe they are judged to die as *inteſtate*, *quaſi inteſtati*.

INTESTINE *motion*, that change of place which is found between the component particles whereof any body or maſs conſiſts.

The Carteſians ſuppoſe a continual *inteſtine motion* eſſential to fluidity.

It is certain, where the attracting corpuſcles of any fluid are elaſtic, they muſt neceſſarily produce an *inteſtine motion*; that is, a viſible motion or change of place among the minute parts of ſuch fluid; and this greater or leſs, according to the degrees of their elaſticity, and attractive forces. For two elaſtic particles, after meeting, will fly from one another (abſtracting the reſiſtance of the medium) with the ſame degree of velocity with which they met: but when, in flying back from one another, they approach other particles, their velocity will be increaſed.

INTESTINE *war*. See the article WAR.

INTESTINES, INTESTINA, in anatomy, the *guts*, or *bowels*; thoſe hollow, membranous, cylindrical parts, extended from the right orifice of the ſtomach to the anus; by which the chyle is conveyed to the lacteals, and the excrements are voided.

The *inteſtines* ſeem to be nothing but a continuation of the ſtomach; as conſiſting of the ſame number of coats, and fabricated in the ſame manner; they are protended with various circumvolutions and inflexions to the anus, through which they diſcharge the excrementitious parts of their contents out of the body.

They are, when ſeparated from the meſentery, to which they are all along connected, of a very great length; ordinarily about ſix times as long as the perſons height whoſe they were. And though they ſeem to be but one continued chanel or fiſtula, yet becauſe in ſeveral parts their magnitude, figure, and thickneſs, are different, they are in general divided into the *thick* and *ſmall*; and theſe are again each of them ſubdivided into three; the three ſmall are called *duodenum*, *jejunum*, and *ileum*; and the thick, *cœcum*, *colon*, and *rectum*.

They have all of them, in common, a kind of vermicular motion, which, beginning at the ſtomach, is propagated downwards, and is called the *periſtaltic motion*. To facilitate that, they are generally lubricated with a great deal of fat, eſpecially the thick ones, whoſe ſurface being ſomewhat more uneven, and the contents leſs fluid, than thoſe of the ſmall, they need ſomewhat more to make them ſlide eaſy.—See *Tab. Anat. (Splanch.) Fig.* 3. *lit. nn. Fig.* 6. *lit. a. b. c. Fig.* 7. *d. e.* ſee alſo PERISTALTIC.

INTESTINA *tenuia*, *the ſmall guts.*—The firſt is called *duodenum*, and reaches from the right orifice of the ſtomach, as far as the vertebræ of the back on the left-ſide, where, at the firſt angle made by the *inteſtines*, it ends; which is about twelve inches; from which meaſure it ſeems to have taken its name. This meaſure, however, is far from being very exact, as being much too largely computed. Into this gut the gall-duct and pancreatic duct empty themſelves, and their ſeveral liquors here mix with the chyle.

The next *inteſtine* is the *jejunum*, ſo called, becauſe it is generally found more empty than the reſt; which may be occaſioned partly by the fluidity of the chyle, which is greater in this *inteſtine* than in any of thoſe that follow it; and partly by its capacity, being ſomewhat larger than that of the duodenum, and therefore it gives a freer paſſage; and perhaps alſo the irritation of this gut through the acrimony of the bile, which is diſcharged into the *inteſtines* a little before the beginning of this gut, may contribute ſomething towards accelerating the paſſage of the contents. However, it may ſeem ſufficient, that through the great number of lacteals, with which this gut abounds more than any other, the deſcent of the contents, which are here deprived of their moſt fluid parts, ſhould in the reſt be more ſluggiſh, by reaſon of their great conſiſtence.—This *inteſtine* is allowed to poſſeſs almoſt the whole umbilical region, and its length is generally computed to be about twelve or thirteen hands breadth.

The *ileum*, which is the third *inteſtine*, is ſituated below the navel, and fills the ilia with its numerous folds and convolutions.—It is much the longeſt of all the *inteſtines*, being eſteemed to be one-and-twenty hands long: but theſe eſtimates are ſomewhat arbitrary, becauſe it is not exactly ſettled among anatomiſts, where the jejunum ends, or the ileum begins; neither is it eaſy or neceſſary to do it.—In both this and the preceding *inteſtine*, the inner tunic is much corrugated, the looſe folds of which have been thought to do, in ſome meaſure, the office of valves, and have therefore by authors been called *valvulæ conniventes*; which are framed, as in the ſtomach, only by the inner coat being larger than the outward.

INTESTINA *craſſa*, the *thick guts.*—The firſt is called the *cœcum*, which has a lateral inſertion into the upper end of the colon; and is not perforated at its other extremity, but hangs to it like the finger of a glove; and is about three or four inches long. The true uſe of this part is not yet determined, and ſome late anatomiſts have thought, that the name likewiſe is miſtaken, not allowing this to be the *cœcum* of the antients, which they imagined to be that thick globous part of the colon, which is immediately appended to the ileum; and therefore they have given this part the name of *appendicula vermiformis*. This cœcum, or appendix, is proportionably bigger in infants than in adults, and in many other animals even ſmaller than in men; and is, at the unperforated extremity, ſlightly connected to the right kidney.

The next of the thick *inteſtines* is the *colon*, which is much the largeſt, and moſt capacious, of them all. It begins with the cœcum, and is with that connected to the right kidney. Thence with a winding courſe it proceeds towards the liver, where it is ſometimes tied to the gall-bladder, and by that is tinged with yellow. From the liver it runs acroſs under the bottom of the ſtomach, where it is by very fine thin membranes faſtened to the ſpleen, and marches over the left kidney, where its cavity is ſometimes very much ſtraitened; and deſcending ſo to the bottom of the os ileum, and from thence returning to the upper part of the os ſacrum, and there making the figure of a circumflex, it ends in the rectum.—At the entrance of the ileum into this gut there is placed a valve, formed out of the production of the inward coat of the ileum, which, like the finger of a glove, when its extremity is cut off, hangs looſe in the cavity of the colon, by which means it ſtops the return of the excrements; though ſometimes, as in inverſions of the periſtaltic motion, it proves not ſufficient for that uſe. It has a great many cellulæ, or, as it were, diſtinct cavities, framed by a coarctation of the gut by two ligaments, or bundles of membranous fleſhy fibres, about half a finger broad, each running on either ſide the gut oppoſite to each other, the whole length of it; and as it were girding it in at certain diſtances, thereby making it reſemble a glaſs incorporat or uſed in mixing oil and vinegar.—

The laſt of the *inteſtines* is the *rectum*, which reaches from the os ſacrum to the anus, and is plain, without cells. It is faſt tied to the oſſa ſacrum and coccygis, by means of the peritonæum, and in men to the neck of the bladder of urine, in women to the vagina uteri, to which it is ſo ſtrongly connected by a membranous ſubſtance, that the ſubſtance of the vagina and *inteſtine* are hardly diſtinguiſhable from one another. The length of this gut is ordinarily about an hand's breadth and an half, and its capacity about the thickneſs of three fingers; its lower end, the anus, is furniſhed with three muſcles, *viz.* the *ſphincter ani*, and two *levatores ani*, which ſee.

There are alſo in the *inteſtines* a great number of glands, which, in the *inteſtina tenuia*, are gathered together in heaps, as it were, like bunches of grapes. In theſe *inteſtines* they are very ſmall, and were it not for their coacervations, would be ſcarce viſible. But in the *inteſtina craſſa* they are much larger, not gathered like the others, but diſperſed; and, though very numerous, they come under the denomination of *ſolitary glands*. Theſe glands diſcharge a liquor into the *inteſtines*, whether ordinarily for any thing more than the lubrication of the *inteſtines*, and diluting their contents, is not certain; though through theſe ſeems the greateſt part of the diſcharge to be made, which, either upon extraordinary fluxes, or upon the adminiſtration of cathartics, we have frequent occaſions to obſerve.

The *inteſtines*, in general, are furniſhed with blood from the meſenteric arteries, which is returned by the meſeraic veins: but the duodenum receives a branch of an artery from the cœliac, which is called *duodena*; to which anſwers a vein of the ſame name, that likewiſe returns the blood to the porta; the rectum receives others, which are called *hæmorrhoids*; the internal from the inferior meſenteric, and the external from the hypogaſtric, with veins correſponding of the ſame name, that alſo go to the porta. Theſe veſſels ſpread the *inteſtines* with abundance of ramifications, and are frequently diverſified in ſeveral ſubjects of the ſame ſpecies; much leſs are they to be depended upon for an uniform appearance in animals of different kinds. The nerves of the *inteſtines* come ſome of them from thoſe of the ſtomach, and ſome from the great meſenteric plexus, which diſtributes branches to all the *inteſtines*. The remaining veſſels of the *inteſtines* are the lymphedućts, and venæ lacteæ.

INTIRE *Tenancy*. See the article Entire Tenancy.

INTRANSITIVE *Verbs*, in grammar, ſuch whoſe action does not *(tranſire)* paſs on an object, or ſubject. See Verbs *Neuter*.

INTRIGUE *, or Intreague, an aſſemblage of events, or circumſtances occurring in an affair, and perplexing the perſons concerned in it.

* The word is French, *intrigue*, formed from the Latin *intricare*; which, according to Nonius, comes from *tricæ*, entanglements; and that from the Greek τριγες, hairs: *quod pullos gallinaceos involvant & impediant capilli.* Which conjecture is adopted by Tripaud, who will have the word *intrigue* to be primarily and properly underſtood of chickens, which have their feet entangled in hair: and to be derived from the Greek ει, and θριξ, hair.

Intrigue is more particularly uſed to ſignify the plot of a play, or romance; or that point wherein the principal characters are the moſt embarraſſed, through the artifice and oppoſition of certain perſons, of the unfortunate falling out of certain accidents, and circumſtances.

In a tragedy, comedy, or epic poem, there are always two deſigns; the firſt and principal is that of the hero of the piece; the ſecond contains the deſigns of all thoſe who oppoſe him. Theſe oppoſite cauſes produce oppoſite effects, to wit, the efforts of the hero for the execution of his deſign, and the efforts of thoſe who thwart it. As thoſe cauſes and deſigns are the beginning of the action, ſo thoſe efforts are the middle, and there form a knot or difficulty, which we call an *intrigue*, that makes the greateſt part of the poem. It laſts as long as the mind of the reader or hearer is ſuſpended about the event of thoſe oppoſite efforts; the ſolution or cataſtrophe commences when the knot begins to unravel, and the difficulties and doubts begin to clear up.

The *intrigue*, or plot, of the *Iliad* is twofold: the firſt comprehends the three days fighting in Achilles's abſence, and conſiſts, on the one ſide, in the reſiſtance of Agamemnon and the Greeks, and on the other, in the inexorable temper of Achilles. The death of Patroclus unravels this *intrigue*, and makes the beginning of a ſecond. Achilles reſolves to be revenged, but Hector oppoſes his deſign; and this forms the ſecond *intrigue*, which is the laſt day's battle.

In the *Æneid* there are alſo two *intrigues*: the firſt is taken up in the voyage and landing of Æneas in Italy; the ſecond in his eſtabliſhment there. The oppoſition he met with from Juno, in both thoſe undertakings, forms the *intrigue*.

As to the choice of the *intrigue*, and the manner of unravelling it, it is certain they ought both to ſpring naturally from the ground and ſubject of the poem.—Boſſu gives us three manners of forming the *intrigue* of a poem; the firſt is that already mentioned; the ſecond is taken from the fable and deſign of the poet; in the third, the *intrigue* is ſo laid, as that the ſolution follows from it of courſe.

INTRINSIC, a term applied to the inner, real, and genuine values, properties, &c. of any thing; in oppoſition to their *extrinſic*, apparent, or popular values, &c. See Extrinsic.

INTRONATI, the name of an academy at Sienna in Italy.

The members of this academy contented themſelves, at their firſt inſtitution, with eſtabliſhing the following ſix ſhort laws: 1°, To pray. 2°, To ſtudy. 3°, To be merry. 4°, To offend nobody. 5°, Not to credit too lightly. 6°, To let the world talk.

INTRUSION *, in the canon law, ſignifies the enjoyment of a benefice, or exerciſe of an office, without a good title to it. See Entrusion.

* The word is derived from the Latin verb *intrudere*, to thruſt in, or enter by force.

Intruſion diſqualifies the party from ever holding the benefice.

INVALID, a perſon wounded, maimed, or diſabled for action by age.

At Chelſea and Greenwich are magnificent hoſpitals, or rather colleges, built for the reception and accommodation of *invalids*, or ſoldiers and ſeamen, worn out and diſabled in the ſervice.

At Paris is a college of the ſame kind, called *les Invalides*, which is accounted one of the fineſt buildings in that city.

INVECTED, in heraldry, denotes a thing fluted, or furrowed.

Invected is the juſt reverſe of *engrailed*, in which the points are turned outward to the field: whereas in *invected* they are turned inward to the ordinary.

INVENTION denotes the act of finding any thing new; or even the thing thus found.

Thus we ſay, the *invention* of gunpowder, of printing, &c.

The alcove is a modern *invention* owing to the Moors.

The Doric, Ionic, and Corinthian orders are of Greek *invention*; the Tuſcan and Compoſite of Latin *invention*.

Janſon ab Almeloveen has written an Onomaſticon of *inventions*, wherein are ſhewn, in an alphabetical order, the names of the inventors, and the time, place, &c. where they were made.—Pancirollus has a treatiſe of old *inventions* that are loſt, and new ones that have been made; Polydore Virgil has alſo publiſhed eight books of the *inventors* of things, *De Inventoribus Rerum*.

Invention is alſo uſed for the diſcovery of a thing hidden.

The Romiſh church celebrates a feaſt on the fourth of May, under the title of, *invention of the holy croſs*.

Invention is alſo uſed for ſubtilty of mind, or ſomewhat peculiar in a man's genius, which leads him to the diſcovery of things new.

In which ſenſe we ſay, a man of *invention*: Wolfius has made ſome eſſays towards an art of *invention*.

Invention, in rhetoric, ſignifies the finding out, and chooſing of certain arguments which the orator is to uſe for the proving his point, or moving his hearers paſſions.

Invention, according to Cicero, is the principal part of oratory: he wrote four books *De Inventione*, whereof we have but two remaining.

This *invention* of the orators cannot, according to lord Bacon, be properly called *invention*: to *invent*, is to diſcover things not yet known, not to recollect thoſe that are; whereas the uſe and office of this rhetorical *invention*, is only, out of the ſtock of knowlege laid up in the mind, to ſelect ſuch articles as make for the purpoſe.

The ſame author divides this faculty of *invention* into two parts, the one *topical*, the other *promptuary*: the firſt points out the way in which we are to purſue the argument; the latter only lays up and diſpoſes things, for which we have frequent occaſion, in the mind.

Invention, in poetry, is applied to whatever the poet adds to the hiſtory of the ſubject he has choſen; as well as to the new turn he gives it.

Invention, in painting, is the choice which the painter makes of the objects that are to enter the compoſition of his piece.

M. Felibien gives the general name *invention* to every thing that depends on the genius of the painter, as the ordonnance, the diſpoſition of the ſubject, and even the ſubject itſelf, when it is new.

In another place that author diſtinguiſhes *invention* into two kinds; to wit, that which ariſes immediately from the mind of the painter, and that which he borrows from ſome other. The firſt is, when he abſolutely invents the ſubject himſelf; and the ſecond, when he borrows it from hiſtory, fable, &c.

De Piles obſerves, that *invention* is different from *diſpoſition*, and that it is thoſe two things together that form *compoſition*: for after having made a good choice of objects proper for the ſubject, they may be ill-diſpoſed; and then, though the *invention* be never ſo good, the diſpoſition or ordonnance will be faulty, and the piece will diſpleaſe.

Of all the parts of painting, *invention*, doubtleſs, is that which gives the painter the faireſt occaſions of ſhewing his genius, his imagination, and his good ſenſe.

INVENTORY, in law, a catalogue, or repertory orderly made, of all a dead man's goods and chattels, prized by four or more credible men, which every executor or adminiſtrator is obliged to exhibit to the ordinary at ſuch time as he ſhall appoint.

The uſe of the *inventory* is borrowed from the civil law: for whereas by the law of the antient Romans the heir was obliged to anſwer all the teſtator's debts; by which means, inheritance ſometimes became rather prejudicial than profitable; to obviate this inconvenience, Juſtinian ordained, that if the heir would firſt exhibit a true *inventory* of all the teſtator's effects, he ſhould be no farther charged than to the value of the *inventory*.

Inventory, in trade, is a liſt or particular valuation of goods, &c. See Value, Appraisement, &c.

INVERSE, is applied to a manner of working the rule of three, or proportion, which ſeems to go backwards, or contrarily to the order of the common and direct rule.

In the rule of three direct, the firſt term is to the ſecond, as the third is to the fourth; that is, if the ſecond be greater than the third, or leſs than the firſt, in any proportion, the fourth is leſs than the third in the ſame proportion.—But in the *inverſe* rule, the fourth term is as much greater than the third, as the ſecond is leſs than the firſt.

In the *inverſe* rule, therefore, the proportion is not as the firſt is to the ſecond, ſo is the third to the fourth; but as the fourth is to the firſt, ſo is the ſecond to the third.

For inſtance, in the direct rule we ſay, If three yards of tapeſtry coſt twenty pounds, how much will ſix coſt? The anſwer is, forty. In the *inverſe* rule we ſay, If twenty workmen make ten yards in four days, in how many days will forty do it? The anſwer to this is, in two days.

INVERSE *Method of Fluxions*. See the article FLUXIONS.

INVERSE *Planting*. See the article PLANTING.

INVERSE *Proportion*. See the article PROPORTION.

INVERSION, the act whereby any thing is inverted, or turned backwards.

Problems in geometry and arithmetic are often proved by *inverſion*; that is, by a contrary rule, or operation.

INVERSION, in grammar, is where the words of a phraſe are ranged in a manner not ſo natural as they might be.

For an inſtance: ‘ Of all vices, the moſt abominable, ‘ and that which leaſt becomes a man, is impurity.’—Here is an *inverſion*; the natural order being this: Impurity is the moſt abominable of all vices, and that which leaſt becomes a man.

An *inverſion* is not always diſagreeable, but ſometimes has a good effect.

INVERTED *Creſcent*. } See the article { CRESCENT.
INVERTED *Point*. } See the article { POINT.
INVERTED *Volt*. } See the article { VOLT.

INVESTIGATION, properly denotes the ſearching or finding any thing out, by the tracks, or prints, of the feet.

Hence, mathematicians, ſchoolmen, and grammarians, came to uſe the term in their reſpective reſearches.

INVESTIGATION *of a Theme*, is the art, method, or manner, of finding the themes of verbs; that is, the primitive tenſe, mood, and perſon, of any verb, far removed from its ſource. To underſtand a Greek author, it is abſolutely neceſſary to be well acquainted with the method of *inveſtigating* a theme. This theme, in the Greek tongue, is the preſent tenſe of the indicative mood.

Clenard was the firſt who introduced this term into grammar: he gives the title *inveſtigatio thematis* to that part where he teaches the manner of finding whence any perſon, or tenſe, of a verb, proceeds, and of reducing it to its primitive word, or finding its indicative.

INVESTING, the act of conferring on any one the right, or property, of a fee, dignity, or office; or of ratifying and confirming what has been obtained elſewhere.

The emperor pretends to a right of *inveſting* ſeveral princes, both in Germany and Italy. There was formerly a particular ceremony for the *inveſting* of biſhops.

After the election of a knight of the garter, he is *inveſted* by the ſovereign with the two principal enſigns of the order, the garter and George.—Before his inſtallation, he is alſo *inveſted* with the habit of the order.

INVESTING, in the military art, ſignifies the opening a ſiege, and the encamping of an army round the place; to block up its avenues, and prevent all ingreſs and egreſs.

It is the cavalry that always begins to *inveſt* a place.

INVESTING, in common law, ſignifies the putting in poſſeſſion. A tenant is *inveſted* by giving him a verge, or rod, into his hands, and adminiſtring an oath.

Others define it thus: *Inveſtire eſt in ſuum jus aliquem introducere*, to give livery of ſeiſin, or poſſeſſion. See LIVERY, and SEISIN.

INVESTITURE is uſed both for the right, and the act, of inveſting a tenant, or vaſſal; that is, of receiving the faith and homage by which a vaſſal becomes ſeiſed, and poſſeſſed of a fee, by his lord.

Inveſtiture was antiently performed by rehearſing a formula of words; afterwards, by the delivery of ſuch things as had the neareſt reſemblance to what was transferred. Thus, land paſſed by the delivery of a turf; and to ſhew the trees were transferred at the ſame time, a bough was cut and delivered along with it.

In after-times, the things by which *inveſtitures* were made were not ſo ſtrictly obſerved.—Many were inveſted by the delivery of a ſtaff, a glove, a knife, a piece of a cloak, of a ſtrap, and a girdle: or by pricking the thumb, by giving the keys, a ſpit, a blow, a ring, a turf, a bough, a ſtraw, &c.

The *inveſtiture* of a kingdom, or lordſhip, was performed by a ſtandard, a banner, a cap, a ſword, a bow, arrows, ſpurs, &c.

The ſymbols were ſometimes preſerved in the repoſitories of the houſes, and were annexed to the titles.

INVESTITURES were alſo uſed with reſpect to ſpiritual benefices. Theſe were frequently performed by delivering the croſier, and paſtoral ring.

The kings of England and France, the emperors of Germany, &c. had formerly this right; ſo that on the death of a prelate, his clergy ſent the croſier, &c. to their ſovereign, to be uſed at the ceremony of *inveſting* his ſucceſſor. The firſt who diſputed this privilege with them, was Gregory VI. Gregory VII. did it to ſome purpoſe; he excommunicated the emperor Henry IV. and forbad all eccleſiaſtics, under pain of *excommunication*, to receive *inveſtiture* at the hands of ſecular princes. Paſchal II. however, was obliged to confirm Henry V. in the right of giving *inveſtitures*; but repenting what he had done, he excommunicated him, and reduced him to a neceſſity of begging abſolution. At length, that emperor was obliged, by pope Gelaſius II. ſolemnly to renounce all *inveſtitures* and elections.

INVOCATION, an act whereby we adore God, and call on him for his aſſiſtance.

The Romaniſts alſo practiſe *invocation* of ſaints, begging them to intercede with God in their behalf. This is one of the grand articles of diſpute between the Romaniſts and the Reformed.

INVOCATION, in poetry, an addreſs at the beginning of a poem, wherein the poet calls for the aſſiſtance of ſome god, particularly of his muſe, or the deity of poetry. See MUSES.

This part is abſolutely neceſſary in an epic poem; in regard the poet relates things which he could not be ſuppoſed to know, unleſs ſome deity inſpired him. Beſides, this ſerves his readers as an example of piety and devotion, which ought to be the foundation of his whole work. To theſe it may be added, that the gods themſelves are to have a part in the action; and it is not decent he ſhould ſet them to work, without firſt aſking them leave.

Indeed, in the courſe of an epic poem there are uſually ſeveral *invocations*; particularly where any thing extraordinary, or miraculous, comes to be related; as that when Virgil deſcribes the metamorphoſis of Æneas's fleet into ſea-nymphs: but the firſt *invocation* is always the moſt conſiderable.

In the *invocation* Boſſu conſiders two things: the firſt is, what the poet requeſts; the ſecond, to what deity he addreſſes his requeſt.—As to the firſt, Homer has joined the *invocation* ſo cloſely to the propoſition, that he ſeems to *invoke* his muſe for the whole work.—But Virgil, on the contrary, only requeſts his muſe to furniſh him with a part of his ſubject; and even mentions what particular part it is he deſires. —After propoſing his matter in all its extent, he begs the muſe to acquaint him with the cauſe of it. See PROPOSITION.

As to the deity *invoked*, the ſame author obſerves, that it muſt always be, either the divinity that preſides over poetry in general, or that which preſides over the particular ſubject of the work.—Ovid's *invocation*, in his *Metamorphoſes*, is of this latter kind; and ſo is that of Lucretius: thoſe of Homer and Virgil are of the former kind; they only invoke the muſes; and thus they diſtinguiſh between the divinities who preſide over poetry; and thoſe who preſide over the actions of the poem, and have parts in it.

By the way, it may be obſerved, that the deities *invoked* are not looked on, even by the poets themſelves, as divine perſonages from whom they expect any real aſſiſtance.—Under the name of muſe, they wiſh for the genius of poetry, and for all the qualities neceſſary for the execution of their deſign. —Theſe are mere allegories, or manners of expreſſing themſelves poetically; juſt as when they make gods of ſleep, of reſt, fame, and other natural and moral things. And thus the muſes come to be of all ages, countries, and religions; there are Pagan, Chriſtian, Greek, Latin, and Engliſh, muſes.

INVOICE, or INVOYCE, a liſt, or account, of commodities, with their value, cuſtoms, proviſion, charges, &c. ſent by a merchant to his factor, or correſpondent, in another country.

Book of INVOICE. See the article BOOK.

INVOLUNTARY *Motion*. See the article MOTION.

INVOLUTION, in algebra, the raiſing any quantity from its root, to any height, or power, aſſigned. See POWER.

Thus, if $a+b$ were to be ſquared, or raiſed to its ſecond power, they ſay, *involve* $a+b$; that is, multiply it into itſelf, and it will produce $aa+2ab+bb$.

And if it be *involved* again, or if that ſquare be multiplied by the root, the cube, or third power, will be produced; *viz.* $aaa+3aab+3bba+bbb$. See EVOLUTION.

INWARD *flanking Angle*. See the article ANGLE.

JOACHIMITES, the name of a ſect, the followers of one Joachim, abbot of Flora, in Calabria, who was eſteemed a prophet while he lived, and left, at his death, ſeveral books of prophecies, beſides other works; which were condemned, together with himſelf, in 1215. by the council of Lateran; and by the council of Arles, in 1260.

The *Joachimites* were particularly fond of certain ternaries. The Father, ſaid they, operated from the beginning till the coming of the Son; the Son from that time to theirs; *viz.* the year 1260. and the Holy Spirit then took it up, and was to operate in his turn.—Hence they divided every thing that related to men, time, doctrine, and manner of living, into three claſſes, or ſtates, according to the three perſons in the Trinity; every one of which ſtates either had already, or was hereafter to ſucceed in its turn; and hence they called their diviſions *ternaries*.

The firſt ternary was that of *men:* this comprehended three ſtates, or orders, of men; the firſt ſtate was that of married people, which had laſted, according to them, the whole period of the Father; that is, the time of the Old Teſtament: the ſecond was that of clerks, which laſted during the time of the Son: the third was that of monks, wherein was to be an uncommon effuſion of grace, by the Holy Spirit.—The ſecond ternary was that of *doctrine*; which they divided alſo into three: the Old Teſtament, which they attributed to the Father: the New, which they attributed to the Son; and the Everlaſting Goſpel, which they attributed to the Holy Spirit.—In the ternary of *time*, they gave all the time elapſed from the beginning of the world, till the coming of Chriſt, to the Father; in which time, ſaid they, the ſpirit of the law of Moſes prevailed. They gave to the Son the 1260 years from Jeſus Chriſt to their time, during which the ſpirit of grace prevailed.—Laſtly, the third, which was to come, and which they called the time of the *greateſt grace*, was for the Holy Spirit.—Another ternary conſiſted in the manner of living. In the firſt time, under the Father, men lived according to the fleſh: in the ſecond, under the reign of the Son, men lived according to the fleſh and the ſpirit: in the third, which was to laſt to the end of the world, they were to live according to the ſpirit only. The *Joachimites* maintained, that in the laſt times all ſacraments and ſigns were to ceaſe; and the truth was to appear openly, and without any veil.

JOBBER, a perſon who undertakes *jobbs*, or ſmall pieces of work.

In ſome ſtatutes, *jobber* is uſed for a perſon who buys and ſells cattle for others. See BROKER.

JOBENT *Nails*. See the article NAILS.

JOGHI's, a ſect of heathen religious in the Eaſt-Indies, who never marry, nor hold any thing in private property; but live on alms, and practiſe ſtrange ſeverities on themſelves.

They are ſubject to a general, who ſends them from one country to another to preach: they are, properly, a kind of penitent pilgrims; and are ſuppoſed to be a branch of the antient Gymnoſophiſts.

They frequent, principally, ſuch places as are conſecrated by the devotion of the people, and pretend to live ſeveral days together without eating or drinking. After having gone through a courſe of diſcipline for a certain time, they look on themſelves as impeccable, and privileged to do any thing; upon which they give a looſe to their paſſions, and run into all manner of debauchery.

JOHN.—*Chriſtians of* S. JOHN.	See	CHRISTIANS.
Hermits of S. JOHN *Baptiſt*.		HERMITS.
Preſter JOHN.		PRESTER.

JOINDER, or JOYNDER, is the coupling, or joining, two perſons in one action, or ſuit, againſt another.

JOINERY.	See the article	JOYNERY.
JOINING *of Iſſue*.		ISSUE.

JOINT, the juncture, articulation, or aſſemblage, of two or more things. See ARTICULATION.

JOINTS, in architecture, denote the ſeparations between the ſtones; which are filled with morter, plaſter, or cement.

JOINT, in carpentry, *&c.* is applied to ſeveral manners of aſſembling, or fitting, pieces of wood together.—Thus we ſay, *a dove-tail joint*, &c. See MORTISE, DOVE-TAIL, *&c.*

JOINT-*Battery*.	See the article	BATTERY.
JOINT-*Rule*.		*Carpenters Joint* RULE.

JOINTENANTS, or JOINT-TENANTS, in law, thoſe who come to, and hold, lands and tenements by one title, *pro indiviſo*, or without partition.

Theſe are diſtinguiſhed from *ſole*, or ſeveral tenants, from *parceners*, and from *tenants in common*.—Antiently they were called *participes*, and not *hæredes*. See SOLE *Tenant*.

Joint-tenants muſt jointly plead, and be jointly impleaded and ſued by others; which is common to them and coparceners.—But *joint-tenants* have a peculiar quality of ſurvivorſhip, which coparceners have not; ſo that if there be two or three *joint-tenants*, and one hath iſſue, and dies, he, or thoſe *joint-tenants* that ſurvive, ſhall have the whole by ſurvivorſhip.

JOINTURE, a covenant whereby the huſband, or ſome friend in his behalf, makes over to his wife, on condition of marriage, certain lands and tenements for term of her life, or otherwiſe, in lieu of dower. See DOWER.

JOISTS, or JOYSTS, in architecture, thoſe pieces of timber framed into the girders and ſummers, on which the boards of floors are laid.

Joiſts are from ſix to eight inches ſquare, and ought ſeldom to lie at a greater diſtance from each other than ten inches, never than twelve; nor ought they ever to bear at a greater length than ten feet; or to lie leſs into the wall than eight inches.

Sometimes the carpenters furr their *joiſts*, as they call it; that is, they lay two rows of *joiſts*, one over the other.

JONCTURE, or JOINTURE, the ſame with *joint*; which ſee.

IONIC, in architecture, the name of one of the five orders of columns.—See *Tab. Archit. fig.* 32.

The firſt idea of the *Ionic* was given by the people of Ionia; who, according to Vitruvius, formed it on the model of a young woman, dreſſed in her hair, and of an eaſy, elegant ſhape: whereas the Doric had been formed on the model of a ſtrong, robuſt man.

The *Ionic* column is the third in order, and is diſtinguiſhed from the Compoſite, in that it has none of the leaves of acanthus in its capital; and from the Tuſcan, Doric, and Corinthian, by the volutes, or rams-horns, which adorn its capital; and from the Tuſcan and Doric too, by the chanels, or fluting, in its ſhaft.

This column is a medium between the maſſive and the delicate orders, the ſimple and the rich. Its height is eighteen modules, or nine diameters of the column taken at the bottom.—When it was firſt invented, its height was but ſixteen modules; but the antients, to render it ſtill more beautiful than the Doric, augmented its height, by adding a baſe to it, which was unknown in the Doric.

M. le Clerc makes its entablature to be four modules, and ten minutes, and its pedeſtal ſix intire modules; ſo that the whole order makes twenty-eight modules ten minutes.

It is ſaid, the temple of Diana, at Epheſus, the moſt celebrated edifice of all antiquity, was of this order.—At preſent, it is properly uſed in churches, and religious houſes, and in courts of juſtice, and other places of tranquillity and devotion.

This order has one advantage above any of the reſt; and it conſiſts in this, that the fore and hind parts of its capital are different from the ſides: but this is attended with an inconvenience, when the ordonnance is to turn from the front of the building to the ſide; to obviate which, the capital may be made angular, as is done in the temple of Fortuna Virilis. Scamozzi, and ſome other modern architects, have introduced the upper part of the Compoſite capital, in lieu of the *Ionic*, imitating that of the temple of Concord, whoſe four ſides are alike: to render it more beautiful, the volute may be made a little oval and inclining.

IONIC *Baſe*.	See the article	BASE.
IONIC *Corniche*.		CORNICHE.
IONIC *Freeze*.		FREEZE.
IONIC *Pedeſtal*.		PEDESTAL.

IONIC *Dialect*, in grammar, a manner of ſpeaking peculiar to the people of *Ionia*.

At firſt, it was the ſame with the antient Attic; but paſſing into Aſia, it did not arrive at that delicacy and perfection to which the Athenians attained: inſtead of that, it rather degenerated in Aſia Minor; being corrupted by the admiſſion of foreign idioms.

In this dialect it was, that Herodotus, Hippocrates, and Galen, wrote.

IONIC *Tranſmigration* was heretofore a celebrated epocha, which took its riſe from the retreat of the Athenian colonies; who, upon the death of Codrus, put themſelves under the command of his ſon Neleus, and eſtabliſhed the twelve cities of Ionia in Aſia.

Thoſe colonies, according to Eratoſthenes, were eſtabliſhed fifty years after the return of the Heraclidæ; and, according to Marſham, ſeventy-ſeven years after the taking of Troy.

IONIC *Sect* was the firſt of the antient ſects of philoſophers.

The founder of this ſect was Thales, who, being a native of Miletus, in Ionia, occaſioned his followers to aſſume the appellation of *Ionic*.

It was the diſtinguiſhing tenet of this ſect, that water was the principle of all natural things.

This is what Pindar alludes to in the beginning of his firſt Olympic ode.

JOVIALE *Arcanum*.	See the article	ARCANUM.
JOVIALE *Bezoardicum*.		BEZOARDICUM.

JOURNAL, a day-book, regiſter, or account of what paſſes daily. See DIARY.

JOURNAL, in merchants accounts, is a book into which every particular article is poſted out of the waſte-book, and made debtor.—This is to be very clearly worded, and fairly engroſſed.

JOURNAL, in ſea-affairs, is a regiſter kept by the pilot, and others, wherein notice is taken of every thing that happens to the ſhip, from day to day, and from hour to hour, with regard to the winds, the rhumbs, the rake, ſoundings, *&c.* in order to enable him to adjuſt the reckoning, and determine the place where the ſhip is.

JOURNAL is now become a common name for news-papers, which detail the daily tranſactions of Europe.

JOURNAL is alſo uſed for the title of ſeveral books which come out at ſtated times; and give abſtracts, accounts, *&c.* of the new books that are publiſhed, and the new improvements daily made in arts and ſciences.

The firſt *journal* of this kind was, the *Journal des Scavans*, printed at Paris: the deſign was ſet on foot for the eaſe of ſuch as are too buſy, or too lazy, to read the intire books themſelves. It ſeems an excellent way of ſatisfying a man's curioſity, and of becoming learned upon eaſy terms: and ſo uſeful ſul has it been found, that it has been executed in moſt other countries, though under a great variety of titles.

Of this kind are the *Philoſophical Tranſactions* of London; the *Acta Eruditorum* of Leipſic; the *Nouvelles de la Republique des Lettres* of Mr. Bayle, *&c.* the *Bibliotheque Univerſelle, Choiſie, & Ancienne & Moderne*, of M. le Clerc; the *Memoires de Trevoux*, &c.

In 1692. Juncker printed in Latin, *An Hiſtorical Treatiſe of the* Journals *of the Learned, publiſhed in the ſeveral parts of Europe*; and Wolfius, Struvius, Morhoff, Fabricius, *&c.* have done ſomething of the ſame kind.

The *Memoirs of the Royal Academy of Sciences*; thoſe of the *Academy des Belles Lettres*; the *Miſcellanea Naturæ Curioſorum*; the experiments of the academy del Cimento; the *Acta Philo-exoticorum Naturæ & Artis*, which appeared from March 1686. to April 1687. and which are an hiſtory of the academy of Breſſe; and the *Miſcellanea Berolinenſia*, or memoirs of the academy of Berlin; are not ſo properly *Journals*, though they are frequently ranked in the number.

Juncker and Wolfius give the honour of the firſt invention of *Journals* to Photius. His *Bibliotheca*, however, is not altogether of the ſame nature with the modern *Journals*; nor was his deſign the ſame. It conſiſts of abridgments, and extracts of books which he had read during his embaſſy in Perſia.

M. Salo firſt began the *Journal des Scavans* at Paris in 1665. under the name of the Sieur de Hedouville; but his death ſoon after interrupted the work. The abbot Gallois then took it up, and he, in the year 1674. gave way to the abbot de la Roque, who continued it nine years, and was ſucceeded by M. Couſin, who carried it on till the year 1702. when the abbot Bignon inſtituted a new ſociety, and committed the care of continuing the *Journal* to them, who improved and publiſhed it under a new form.—This ſociety is ſtill continued, and M. de Voyer has the inſpection of the *Journal*; which is no longer the work of any ſingle author, but of a great number.

The other French *Journals* are the *Memoirs and Conferences of Arts and Sciences*, by M. Dennis, during the years 1672. 1673. and 1674. *New diſcoveries in all the parts of Phyſic*, by M. de Blegny. The *Journal of Phyſic*, begun in 1684. and ſome others, diſcontinued almoſt as ſoon as begun.

The *Nouvelles de la Republique des Lettres*, news from the republic of letters, were begun by M. Bayle in 1684. and carried on by him till the year 1687. when M. Bayle being diſabled by ſickneſs, his friends, M. Bernard and M. de la Roque, took them up, and continued them till 1699. After an interruption of nine years, M. Bernard reſumed the work, and continued it to the year 1710. The *Hiſtory of the Works of the Learned*, by M. Baſnage, was begun in the year 1686. and ended in 1710. The *Univerſal Hiſtorical Library*, by M. le Clerc, was continued to the year 1693. and contained twenty-five volumes. The *Bibliotheque Choiſie* of the ſame author, began in 1703. The *Memoirs for an Hiſtory of Sciences and Arts*, uſually called *Memoires des Trevoux*, from the place were they are printed, began in 1701. The *Eſſays of Literature* reached but to a twelfth volume in 1702. 1703. and 1704. theſe only take notice of antient authors. The *Journal Literaire*, by father Hugo, began and ended in 1705. —At Hamburgh, they have made two attempts for a French *Journal*, but the deſign failed: an *Ephemerides Scavantes* has alſo been undertaken, but that ſoon diſappeared. A *Journal des Scavans*, by M. Dartis, appeared in 1694. and was dropt the year following. That of M. Chauvin, begun at Berlin in 1696. held out three years; and an eſſay of the ſame kind was made at Geneva. To theſe may be added, the *Journal Literaire*, begun at the Hague in 1715. and that of Verdun, and the *Memoires Literaires de la Grande Bretagne*, by M. de la Roche, whereof there have been fifteen tomes, and which is confined to Engliſh books alone.

The Engliſh *Journals* are, the *Hiſtory of the Works of the Learned*, begun at London in 1699. *Cenſura temporum*, in 1708. About the ſame time there appeared two new ones; the one under the title of, *Memoirs of Literature*, containing little more than an Engliſh tranſlation of ſome articles in the foreign *Journals*, by M. de la Roche; the other a collection of looſe tracts, intituled, *Bibliotheca curioſa*, or a *Miſcellany*.

The Italian *Journals* are, that of abbot Nazari, which laſted from 1668. to 1681. and was printed at Rome. That of Venice began in 1671. and ended at the ſame time with the other: the authors were Peter Moretti, and Francis Miletti. The *Journal* of Parma, by Roberti and father Bacchini, was dropped in 1690. and reſumed again in 1692. The *Journal* of Ferrara, by the abbot de la Torre, began and ended in 1691. *La Galerio di Minerva*, begun in 1696. is the work of a ſociety of men of letters. Seignior Apoſtolo Zeno, ſecretary to that ſociety, began another *Journal* in 1710. under the protection of the grand duke: it is printed at Venice, and ſeveral perſons of diſtinction have an hand in it. The *Faſti Eruditi della Bibliotheca Volante*, were publiſhed at Parma.

The principal among the Latin *Journals* is that of Leipſic, kept under the title of *Acta Eruditorum*, begun in 1682. P. P. Manzani began another at Parma. The *Nova Literaria Maris Balthici*, laſted from 1698. to 1708. The *Nova Literaria Germaniæ*, collected at Hamburgh, began in 1703. The *Acta Literaria ex Manuſcriptis*, and the *Bibliotheca curioſa*, begun in 1705. and ended in 1707. are the work of Struvius. Meſſ. Kuſter and Sike, in 1697. began a *Bibliotheca novorum librorum*, and continued it for two years. The Swiſs *Journal*, called *Nova Literaria Helvetiæ*, was begun in 1702. by M. Scheuchzer; and the *Acta Medica Hafnenſia*, publiſhed by T. Bartholin, make five volumes from the year 1671. to 1679.

There are two Low-Dutch *Journals*; the one under the title of *Boockzal van Europe*: it was begun at Rotterdam in 1692. by Peter Rabbus; and continued from 1702. to 1708. by Sewel and Gavern: the other is done by a phyſician, called Ruiter, who began in 1710.

The German *Journals* of beſt note are, the *Monathlichen Unterredungen*, which held from 1689. to 1698. The *Bibliotheca curioſa* begun in 1704. and ended in 1707. both by M. Tentzel. The *Journal* of Hanover begun in 1700. and continued for two years by M. Eccard, under the direction of M. Leibnitz, and afterwards carried on by others. The *Theological Journal*, publiſhed by M. Loeſcher, under the title of *Altes & Neues*, that is, old and new. A third at Leipſic and Francfort, the authors Meſſ. Walterck, Krauſe, and Groſchuffius; and a fourth at Hall, by M. Turk.

JOURNEY, *Sabbath Day's*. See the article SABBATH.

JOURNEY-MAN*, antiently ſignified a perſon who wrought with another by the day; though now, by the ſtatute, it extends to thoſe likewiſe who covenant to work with another in their occupation or trade by the year.

* The word is formed from the French *journée*, a day's work.

JOY. See the articles PLEASURE, and PAIN.

JOYNERS *Preſs*. See the article PRESS.

JOYNERY, the art of working in wood, and of fitting or joining various parts or members of it together.

The French call it *menuiſerie*, from *minutaria*, ſmall work; by which it is diſtinguiſhed from *carpentry*, which is converſant in the larger and leſs curious work.

Column of JOYNERY. See the article COLUMN.

IPECACUANHA, a little wrinkled root, about the thickneſs of a moderate quill, brought hither from ſeveral parts of the Weſt-Indies; much uſed as an emetic, and againſt diarrhœas and dyſenteries.

There are four kinds of *Ipecacuanha*; *viz.* a *brown*, a *black*, a *grey*, and a *white* one:—the grey is moſt eſteemed in phyſic; though the brown is that the moſt uſed, as being eaſieſt had:—this latter is firm, twiſted, difficult to break, of a ſharp bitter taſte, and grows plentifully not far from Carthagena.—The root of the grey *ipecacuanha* is longer than any of the other ſorts: it is alſo more violent in its operation. It comes from Peru, by the way of Porto-bello: The Spaniards call it *bexugillo*.—The white *ipecacuanha* differs from the others, not only in colour, but in figure too, being leſs twiſted, or rugged, than they; and more reſembling the root of white dittany. This grows in Brazil and Martinico.

The *ipecacuanha* is purgative, and aſtringent; it is alſo an excellent vomitive; and is found one of the beſt and ſureſt remedies hitherto diſcovered for a dyſentery.

There are divers falſe ſpecies of *ipecacuanha*, or roots, which, on account of their external appearance, bear the denomination of *ipecacuanha*, and are ſometimes ſold for it.—Dr. Douglaſs mentions two: the one *white*, reſembling the true white, only larger in ſize, ſtraiter, and ſofter to the touch.—The other *brown*, of a deeper colour than the true brown, and ſometimes mixed with red: whence it has alſo been called *red ipecacuanha*.—Theſe are both produced in Maryland and Virginia, where they are uſed as vomitives by the lower ſort. Sir Hans Sloane has diſcovered, that the latter is no other than the root of a poiſonous apocynum, deſcribed by him in his *Natural Hiſtory of Jamaica*. See *Philoſoph. Tranſact.* N° 410. p. 156, ſeqq.

IRASCIBLE, a term in the old philoſophy, applied to an appetite, or a part of the ſoul, where anger, and the other paſſions, which animate us againſt things difficult, or odious, were ſuppoſed to reſide.

Of the eleven kinds of paſſions attributed to the ſoul, philoſophers aſcribe five to the *iraſcible* appetite; *viz.* wrath, boldneſs, fear, hope, and deſpair: the other ſix are charged on the concupiſcible appetite; *viz.* pleaſure, pain, deſire, averſion, love, and hatred.

Plato divided the ſoul into three parts; the reaſonable, *iraſcible*, and concupiſcible parts. The two laſt, according to that philoſopher, are the corporeal and mortal parts of the ſoul, which give riſe to our paſſions.

Plato fixes the ſeat of the *iraſcible* appetite in the heart; and of the concupiſcible in the liver; as the two ſources of blood and ſpirits, which alone affect the mind.

IRENARCHA*, a military officer in the Greek empire; whoſe buſineſs was to provide for the peace, ſecurity, and tranquillity, of the provinces.

* The word is Greek, ειρηναρχης, compoſed of ειρηνη, peace; and αρχος, prince, from αρχη, command, office.

In Juſtinian's code it is mentioned, that *irenarchæ* are ſent into the provinces to maintain the public peace, by puniſhing crimes, and putting the laws in execution.

Beſides this, there was another *irenarcha* in the cities, to whom belonged the preſerving of peace, and quelling ſedition among the citizens. This officer was ſometimes called *præfectus urbis.*

The emperors Theodoſius and Honorius ſuppreſſed the office of *irenarchæ*, on account of their abuſing their truſt, and diſtreſſing and perſecuting the people, inſtead of maintaining peace among them.

IRIS*, *Rainbow.* See the article RAINBOW.

* The word is Greek, Ιρις, ſuppoſed by ſome to be derived from ειρω, I ſpeak, I tell; as being a meteor that is ſuppoſed to foretel rain.

IRIS, in anatomy, a ſtriped variegated circle round the pupil of the eye, formed of a duplicature of the uvea.

The *iris*, in different ſubjects, is of ſeveral very different colours: in its middle is a perforation, through which appears a little black ſpeck, called the *ſight*, *pupil*, or *apple of the eye*, round which the *iris* forms a ring.

IRIS is alſo applied to thoſe changeable colours which ſometimes appear in the glaſſes of teleſcopes, microſcopes, &c. ſo called from their ſimilitude to a rainbow.

The ſame appellation is alſo given to that coloured ſpectrum, which a triangular priſmatic glaſs will project on a wall, when placed at a due angle in the ſun-beams.

IRISH *Terms.* See the article TERMS.

IRON, an hard, fuſible, and malleable metal, of great uſe in the affairs of life.

Iron conſiſts of an earth, ſalt, and ſulphur, but all impure, ill mixed and digeſted; which renders it extremely liable to ruſt.

It is the hardeſt, drieſt, and the moſt difficult to melt, of all metals. It may be ſoftened by heating it often in the fire, hammering it, and letting it cool of itſelf; and it is hardened by extinguiſhing it in water.

It may be rendered white by cooling it in ſal armoniac and quicklime. The ſtrongeſt temper of *iron* is ſaid to be that which it takes in the juice of earth-worms.

A red-hot *iron*, applied to a roll of ſulphur, diſſolves, and falls into a fine duſt.

Iron has a great conformity with copper; and the two are not eaſily ſeparated, when ſoldered together: whence ariſes that uncommon friendſhip which the poets feign between Mars and Venus.

It has a great conformity alſo with the loadſtone. Rohault obſerves that it is itſelf an imperfect loadſtone; and that if it be a long time expoſed in a certan ſituation, it becomes a real loadſtone; and mentions the *iron* in the ſteeple of Notre Dame at Chartres as an inſtance.

There are ſeveral kinds of *iron*, which have properties very different from one another:—as,

Engliſh **IRON**, which is coarſe, hard, and brittle, fit for fire-bars, and ſuch uſes.

Swediſh **IRON**, which is a fine tough ſort, will beſt endure the hammer, is ſofteſt to file, and, in all reſpects, the beſt to work upon.

Spaniſh **IRON**, which would be as good as the Swediſh, were it not ſubject to red-ſear, that is, to crack betwixt hot and cold.

German **IRON**, commonly called among us *Dort ſquare*, becauſe it is brought hither from Dort, and is wrought into bars of three quarters of an inch ſquare: this is a coarſe *iron*, and only fit for ordinary uſes.

There is another ſort uſed for making of wire, which is the ſofteſt, and tougheſt of all: this is not peculiar to any country, but is indifferently made where-ever *iron* is made, though of the worſt ſort; for it is the firſt *iron* that runs from the mine-ſtone, when it is melting, and is reſerved purely for the making of wire.

Generally ſpeaking, the beſt *iron* is that which is ſofteſt and tougheſt, and which, when it breaks, is of an even greyiſh colour, without any glittering ſpecks, or any flaws or diviſions like thoſe ſeen in broken antimony.

To give *iron* a blue colour, with a grind-ſtone they rub off the black ſcurf; then heat it in the fire; and as it grows hot, it will change colour by degrees; become firſt of a gold colour, and then of a beautiful blue. Sometimes the workmen rub a mixture of indigo and ſalad oil on it, while it is heating, and let it cool of itſelf.

Square and flat bars of *iron* are ſometimes twiſted, for ornament; the manner of doing which is this: after the bar is ſquare, or flat-forged, they give it a flame-heat, or if the work be ſmall, only a blood-red heat; in which ſtate it is eaſy to twiſt it about as much or as little as they pleaſe, with the tongs, vice, or the like.

The ſeveral heats which ſmiths give their *iron* in work are, 1°, A ſparkling or welding heat, which is uſed when they double up their *iron*, or weld two pieces of *iron* together, end to end. 2°, A flame or white heat, which is uſed when the *iron* has not its form and ſize, but muſt be forged into both. 3°, A blood-red heat, which is uſed when the *iron* has already its form and ſize, but wants a little hammering to ſmooth and fit it for the file.—If the *iron* be made too hot, it will red-ſear, *i. e.* break or crackle under the hammer while it is working between hot and cold.

We have a great number of *iron* works in moſt parts of England; thoſe in the foreſt of Dean, in Glouceſterſhire, are in moſt repute.

The ore is there found in great abundance, differing much in colour, weight, and goodneſs. The beſt, called *bruſh-ore*, is of a bluiſh colour, very ponderous, and full of little ſhineing ſpecks, like grains of ſilver: this affords the greateſt quantity of *iron*; but, being melted alone, it produces a metal very ſhort and brittle, and therefore not ſo fit for common uſe. For the remedying whereof, the workmen make uſe of another ſort of material, termed *cinder*, which is nothing but the refuſe of the ore, after the metal has been extracted; and which, being mingled with the other, in a due quantity, gives it that excellent temper of toughneſs, which cauſes this *iron* to be preferred before any brought from foreign parts

After they have provided the ore, their firſt work is to calcine it, which is done in kilns, much after the faſhion of our ordinary lime-kilns: theſe they fill up to the top with coal and ore, ſtratum ſuper ſtratum, that is, one layer upon another: and ſo putting fire to the bottom, they let it burn till the coal be waſted, and then renew the kilns with freſh ore and coal, in the ſame manner as before.—This is done without fuſion of the metal, and ſerves to conſume the more droſſy part of the ore, and to make it brittle; ſupplying the beating and waſhing which are uſed in other metals.

From hence they carry it to their furnaces, which are built of brick or ſtone, and are about twenty-four feet ſquare on the outſide, and near thirty feet in height within, not above eight or ten feet over where wideſt, which is about the middle: the top and bottom having a narrow compaſs, much like the ſhape of an egg. Behind the furnace are fixed two huge pair of bellows, the noſes of which meet at a little hole near the bottom: theſe are compreſſed together by certain buttons, placed on the axis of a very large wheel, which is turned about by water, in the manner of an over-ſhot mill. As ſoon as theſe buttons are ſlid off, the bellows are raiſed again by the counterpoiſe of weights, whereby they are made to play alternately, the one giving its blaſt while the other is riſing.

At firſt they fill the furnace with ore and cinder, intermixed with fuel, which in theſe works are always of charcoal, laying them hollow at the bottom, that they may more eaſily take fire; but after they are once kindled, the materials run together into an hard cake or lump, which is ſuſtained by the faſhion of the furnace: and through this the metal, as it melts, trickles down into the receivers ſet at the bottom, where there is a paſſage open, by which the men take away the ſcum and droſs, and let out the metal as they ſee occaſion.

Before the mouth of the furnace there lies a great bed of ſand, wherein they make furrows of the ſhape into which they would have their *iron* caſt. As ſoon as the receivers are full, they let in the metal, which is made ſo very fluid by the violence of the fire, that it not only runs to a conſiderable diſtance, but ſtands afterwards boiling for a good while.

When the furnaces are once at work, they keep them conſtantly employed for many months together, never ſuffering the fire to ſlacken night or day, but ſtill ſupplying the waſting of the fuel, and other materials, with freſh poured in at the top: charcoal is uſed altogether in this work; ſea-coal will ſcarcely do.

From theſe furnaces the workmen bring their *ſows* and *pigs* of *iron*, as they call them, to their forges, where they are wrought into bars.

For the refining of IRON.	See	REFINING.
For the converſion of IRON *into Steel.*	See	STEEL.
Harping IRON.	See	HARPING.

IRON-MOULDS, yellow lumps of earth or ſtone, found in chalk-pits, about the Chiltern in Oxfordſhire, and elſewhere; being in reality a kind of pyrites, or indigeſted *iron* ore.

IRON-SICK, is applied to a ſhip or boat, when her bolts, nails, or ſpikes, are ſo eaten with ruſt, that they make hollows in the planks, whereby the ſhip leaks.

IRONY*, a figure in ſpeech, wherein we plainly intend ſomething very different from what our words expreſs: as when we ſeem to praiſe a perſon at a time when we evidently railly, and diſcommend him.

* The word is derived from the Greek, ειρωνεια, diſſimulation.

Hence Quintilian calls this figure *diverſiloquium*, *diſſimulation*, and *illuſion*.

Thus we ſay, John's a very honeſt fellow! meaning he is a rank knave: A fine hiſtorian indeed! meaning a lyar.—The *irony* diſcovers itſelf rather in the tone of the ſpeaker than in the words.

IRRADIATION, ſignifies an emanation, or ſhooting out of rays, or ſubtile effluvia, from any body. See EMANATION, RAY, EFFLUVIA, and QUALITY.

IRRATIONAL *Numbers*, the ſame as *ſurd numbers*. See Surd, and Number.

Irrational *Quantities.* } See { Rational *Quantities.*
Irrational *Soul.* } { Soul.

IRREGULAR, ſomething that deviates from the common forms or rules.

Thus we ſay, an *irregular* fortification, an *irregular* building, an *irregular* figure, *&c.* See Building, Fortification, Figure, Baſtion, and Place.

Irregulars, in grammar, are ſuch inflexions of words as vary from the general rule, or pattern.

Irregular, among caſuiſts, is applied to a perſon who is unqualified for entering into orders, as being a baſtard, maimed, *&c.* or to an eccleſiaſtic, who is interdicted, ſuſpended, or cenſured, and by that means rendered incapable of holding a benefice, or diſcharging any of the ſacred functions.

Irregular *Bodies*, are ſolids not terminating by equal and ſimilar ſurfaces.

Irregular, in the art of building, is applied not only to the parts of an edifice which deviate from the proportions eſtabliſhed by antique monuments, and confirmed by architects; as when a Doric column is made nine modules high, or a Corinthian eleven; but alſo to the places and figures of buildings, where the angles and ſides are made unequal, as in moſt of the antient caſtles; where, without any neceſſity or confinement from the ſituation, they affected ſuch irregularity.

A column is alſo ſaid to be *irregular*, not only when it deviates from the proportions of any of the five orders, but when its ornaments, whether in the ſhaft, or the capital, are abſurd and ill choſen.

IRREGULARITIES *in the Moon's Motion.* See Moon.

IRREPLEVIABILE *Returnum.* See Returnum.

IRREPLEVIABLE, or Irreplevisable, in common law, ſignifies what may not be replevied, or ſet at large upon ſureties.

IRRORATION ſometimes denotes a kind of tranſplantation, uſed for the cure of certain diſeaſes, by ſympathy.

It conſiſts in ſprinkling every day either trees, or other proper plants, with the urine or ſweat of the patient, or with the water wherein his body, or at leaſt the part affected, has been waſhed; till ſuch time as the diſeaſe is removed.—— As ſoon as the ſprinkling has been made, they throw freſh earth about the roots, in order to prevent the virtue of the mumia, that is, of the vital ſpirit of the liquid, from evaporating into the air. This is all an idle and fooliſh practice, now deſervedly laughed out of the world.

ISCHIADIC* ΙΣΧΙΑΔΙΚΟΣ, an epithet given by phyſicians to two veins of the foot, which terminate in the crural.

> * The word is derived from the Greek, *ισχιας*, or *ισχιον*, *coxa*, the hip.

The firſt, called the *great iſchiadic*, is formed by ten little branches, proceeding from the toes, which, uniting together, paſs by the muſcles of the calf of the leg.

The *leſſer iſchiadic* is formed by ſeveral ramifications, proceeding from the ſkin and muſcles, which encompaſs the articulation of the thigh.—— They are alſo called *ſciatic veins.*

ISCHIAS, Ischiadica, or Ischiatica. See the article Sciatica.

ISCHIUM*, or Ischion, in anatomy, the name of one of the bones of the hip; called alſo *coxa*, and *coxendix.*

> * The word is derived from the Greek, *ισχυς*, *robur*, ſtrength.

In the *iſchium* is a deep cavity, called *cotyle*, or *acetabulum*, which receives the head of the thigh-bone. This cavity is encompaſſed with a cartilaginous circle, which ſerves to ſtrengthen the thigh.

The *iſchium* is one of the oſſa innominata of authors.—See *Tab. Anat. (Oſteol.) fig.* 3. *lit. S. n.* 19. *fig.* 12. *lit. c.*

ISCHURIA*, in phyſic, a diſeaſe conſiſting in an intire ſuppreſſion of urine.

> * The word is Greek, *ισχουρια*, formed from *ισχω*, I ſtop; and *ουρον*, *urine.*

It is occaſioned by any thing which may obſtruct the paſſages of the reins, ureters, or the neck of the bladder, as ſand, ſtone, mucus, *&c.*—It may alſo ariſe from an obſtruction of the nerves, which paſs to the reins or bladder, as we ſee it does, in a palſy of the parts below the diapraghm.—The too great diſtention of the bladder may alſo produce the ſame effect; for the fibres being much lengthened, and conſequently condenſed, the ſpirits neceſſary for their contraction cannot get admittance; whence it is that perſons, who have retained their urine a long time, find a great deal of difficulty in diſcharging it.

ISELASTICS, Iselastica, a kind of games, or combats, celebrated in the cities of Greece and Aſia, in the time of the Roman emperors.

The victors at theſe games had very conſiderable privileges conferred on them; after the example of Auguſtus, and the Athenians, who did the like to the conquerors at the Olympic, Pythian, and Iſthmian games. They were crowned on the ſpot, immediately after their victory; had penſions allowed them; were furniſhed with proviſions at the public coſt; were carried home in triumph, and made to enter their cities through a breach in the walls; whence their appellation, from εισελαυνειν, to enter.

ISIA, ΙΣΕΙΑ, feaſts and ſacrifices antiently ſolemnized in honour of the goddeſs Iſis.

The *iſia* were full of the moſt abominable impurities; and for that reaſon, thoſe who were initiated into them were obliged to take an oath of ſecrecy. They held for nine days ſucceſſively, but grew ſo ſcandalous, that the ſenate aboliſhed them at Rome, under the conſulate of Piſo and Gabinius. —Two hundred years after this, they were re-eſtabliſhed by the emperor Commodus, who himſelf aſſiſted at them, appearing among the prieſts of that goddeſs with his head ſhaven, and carrying the Anubis.

ISIACI, prieſts of the goddeſs Iſis.—Dioſcorides tells us, that they bore a branch of ſea-wormwood in their hands inſtead of olive. They ſung the praiſes of the goddeſs twice a day, *viz.* at the riſing of the ſun, when they opened her temple; after which they begged alms the reſt of the day, and, returning at night, repeated their oriſons, and ſhut up the temple.

Such was the life and office of the *Iſiaci*; they never covered their feet with any thing but the thin bark of the plant papyrus, which occaſioned Prudentius and others to ſay they went bare-footed. They wore no garments but linen, becauſe Iſis was the firſt who taught mankind the culture of this commodity. See Diodorus Siculus, and Plutarch's *Iſis* and *Oſiris.*

ISING GLASS, a name given to Muſcovy talc, and to Ichthyocolla; which ſee.

ISLAND, or Isle, a tract of dry land, encompaſſed with water; either with the ſea, a river, or lake.—In which ſenſe *iſland* ſtands contradiſtinguiſhed from *continent*, or terra firma.

Some conclude, from Gen. x. 5. and from Ecclus. xliii. 23. that *iſlands* are as antient as the world, and that there were ſome at the beginning: whatever become of this proof, it is by no means probable, that the large *iſlands*, far remote from the continent, are new, or that they either aroſe out of the ſea, or were torn from the main land. Nor is it leſs certain, that there have been new *iſlands* formed by the caſting up of vaſt heaps of clay, mud, ſand, *&c.* as that, for inſtance, of Tſongming, in the province of Nanquin in China: or by the violence of the ſea, which has torn off large promontories from the continent, as the antients imagined Sicily, and even Great Britain, to have been formed. It is alſo certain, that ſome have emerged above the waves, as Santorini formerly, and three other *iſles* near it lately; the laſt in 1707. which roſe from the bottom of the ſea, after an earthquake, that was ſuppoſed to have looſened it from its hold.

Several naturaliſts are of opinion, that *iſlands* were formed at the deluge: others think they have been rent and ſeparated from the continent by violent ſtorms, inundations, and earthquakes. Theſe laſt have obſerved, that the Eaſt-Indies, which abound in *iſlands* more than any other part of the world, are likewiſe more annoyed with earthquakes, tempeſts, lightnings, vulcano's, *&c.* than any other part.

Varenius thinks moſt of theſe opinions true in ſome inſtances, and believes that there have been *iſlands* produced each of theſe ways. S. Helena, Aſcenſion, and other ſteep rocky *iſlands*, he ſuppoſes to have become ſo, by the ſea's overflowing their neighbouring champaigns. By the heaping up huge quantities of ſand, and other terreſtrial matters, he thinks the *iſlands* of Zealand, Japan, *&c.* were formed: Sumatra and Ceylon, and moſt of the Eaſt-Indian *iſlands*, he rather thinks were rent off from the main land; and concludes, that the *iſlands* of the Archipelago were formed in the ſame way; imagining it probable, that Deucalion's flood might contribute towards it.

The antients had a notion, that Delos, and ſome few other *iſlands*, roſe from the bottom of the ſea; which, how fabulous ſoever it might appear, agrees very well with ſome later obſervations. Seneca takes notice, that the *iſland* Theraſia roſe thus out of the Ægean ſea in his time, of which the mariners were eye-witneſſes.

They had alſo an opinion, that there are ſome *iſlands* which ſwim in the ſea. Thales, indeed, thought the whole earth, which we inhabit, floated, thus, in the ocean; but his opinion is eaſily refuted, the chanel of the ſea being found continuous to the ſhore: but floating *iſlands* are no-ways improbable, eſpecially if the earth whereof they conſiſt be light and ſulphureous.—Seneca ſays, that near the Cutiliæ he ſaw ſuch an *iſland*, and mentions ſeveral others of the ſame kind; and it was even a common opinion among the antients, that all the Cyclades had done the ſame.

Gryphiander has written a Latin treatiſe expreſly on *iſlands*, *de Inſulis*.

Fortunate ISLANDS. FORTUNATE.
ISLAND *Cryſtal*. See CRYSTAL.
Refraction in ISLAND *Cryſtal*. REFRACTION.

ISLES, in architecture, the ſides or wings of a building. See WING.

ISOCHRONAL, or ISOCHRONOUS, is applied to ſuch vibrations of a pendulum, as are performed in equal times.

Of which kind are all the vibrations or ſwings of the ſame pendulum, whether the arcs it deſcribes be longer or ſhorter; for when it deſcribes a ſhorter arc, it moves ſo much the ſlower; and when a long one, proportionably faſter.

ISOCHRONAL *Line*, is that wherein a heavy body is ſuppoſed to deſcend without any accleration.

Leibnitz, in the *Act. Erud. Lipſ.* for April 1689. has a diſcourſe on the *linea iſochrona*, in which he ſhews, that a heavy body, with a degree of velocity acquired by its deſcent from any height, may deſcend from the ſame point by an infinite number of *iſochronal* curves, which are all of the ſame ſpecies, differing from one another only in the magnitude of their parameters; ſuch as are all the quadratocubical paraboloids, and conſequently ſimilar to one another. He ſhews alſo, how to find a line, in which a heavy body deſcending, ſhall recede uniformly from a given point, or approach uniformly to it.

ISOMERIA, in algebra, a method of freeing an equation from fractions, by reducing all the fractions to one common denominator, and then multiplying each member of the equation by that common denominator.

This amounts to the ſame with what is otherwiſe called *converſion of equations*. See CONVERSION *of equations*.

ISOPERIMETRICAL *Figures*, are ſuch as have equal perimeters, or circumferences.

It is demonſtrated in geometry, that among *iſoperimetrical* figures, that is always the greateſt which contains the moſt ſides, or angles.—From whence it follows, that the circle is the moſt capacious of all figures which have the ſame circumference with it.

That of two *iſoperimetrical* triangles, which have the ſame baſe, and one of them two ſides equal, and the other unequal; that is the greater whoſe ſides are equal.

That of *iſoperimetrical* figures, whoſe ſides are equal in number, that is the greateſt which is equilateral, and equiangular.

Hence flows the ſolution of that popular problem, To make the hedging or walling which will fence in one acre, or any other determinate number of acres, *a*, fence in any other greater number of acres whatever.

For, call *x* one ſide of a parallelogram, whoſe area is the number of acres *a*; then will $\frac{a}{x}$ be the other ſide, and $2\frac{a}{x}+2x$, will be the circumference of the parallelogram: which muſt be equal to four times the ſquare root of *b*, that is, $2\frac{a}{x}+2x=\sqrt{b}$, whence the value of *x* will eaſily be had; and infinite numbers of ſquares and parallelograms may be made, which ſhall have the ſame perimeter, yet different areas.—*E. gr.* If one ſide of a ſquare be 10, and one ſide of a parallelogram be 19, and the other 1, ſuch ſquare and parallelogram will be *iſoperimetrical*, viz. each 40; yet the area of the ſquare will be 100, and of the parallelogram only 19.

ISOSCELES *Triangle*, is a triangle which has two equal ſides.

In an *iſoſceles* triangle, FDE (*Tab. Geometry*, *fig.* 69.), the angles *y* and *u*, oppoſite to the equal ſides, are equal; and a line drawn from the top or vertex, F, cutting the baſe into two equal parts, is perpendicular to the baſe.

ISSUANT, ISSUING, in heraldry, is underſtood of a lion, or other animal, in a coat of arms, that ſeems juſt coming out from under a chief, feſſe, a houſe, a wood, or the like; and only ſhews half his body.

It is not very eaſy to diſtinguiſh the lion *iſſuant* from the lion naiſſant: ſome ſay the *iſſuant* is that which comes out from the bottom of the chief, ſhewing his head, neck, the tip of his fore-legs, and his tail, againſt the chief of the coat; whereas the naiſſant has its riſe about the middle of the field, and ſhews all his fore-part, with the tip of his tail, as if he were riſing out of the earth.

ISSUE, in common law, has divers applications; being ſometimes taken for the children begotten between a man and his wife—ſometimes, for profits growing from amerciaments or fines—ſometimes, for profits of lands and tenements—but more frequently, for the point of matter depending in ſuit, whereupon the parties join, and put their cauſe to the tryal of the jury.

In all theſe occaſions, *iſſue* has but one ſignification, which is, an effect of a cauſe preceding; as the children are the effect of the marriage between the parents: the profits growing to the king or lord, from the puniſhment of any man's offence, are the effect of his tranſgreſſion: the point referred to the tryal of twelve men, is the effect of pleading, or proceſs.

Iſſue, in this laſt ſignification, is either *general*, or *ſpecial*.

General ISSUE ſeems to be that whereby it is referred to the jury to bring in their verdict, whether or no the defendant hath done any ſuch thing as the plaintiff lays to his charge. For example, if it be an offence againſt any ſtatute, and the defendant plead Not guilty; this being put to the jury, is called the *general iſſue*.—So if a man complain of a private wrong, which the defendant denies, and pleads no wrong, nor deſſeiſin; and this be referred to the jury; it is likewiſe the *general iſſue*.

Special ISSUE is that, wherein ſpecial matters being alleged by the defendant in his defence, both parties join on this point, and ſo go to a demurrer, if it be quæſtio juris; or elſe to a tryal by the jury, if it be quæſtio facti: as in aſſault and battery, where the defendant pleads, that the plaintiff ſtruck firſt.

ISSUES, in phyſic, ſmall artificial apertures in a fleſhy part of the body, to drain off ſuperfluous moiſture, or give vent to any noxious humour.

They are uſually made in the arms, legs, or back, either by cauſtics or inciſion. Caution is uſed to place them about the middle of a muſcle, that the neceſſary motion of the part may not incommode them, or pain the patient.—There is an eaſy way of making an *iſſue*, which ſucceeds beſt in children; it is done after this manner: Having applied a ſmall piece of bliſtering plaiſter, about the bigneſs of a ſmall pea, to the part where you would have an *iſſue*, and letting it lie on for a few hours, it will cauſe a bliſter; the ſkin being raiſed, apply a pea, as uſual; and compreſs it tight with a bandage, till by degrees it ſinks in, and forms an *iſſue*. *Iſſues* are very uſeful in many diſtempers, ſeveral of which, when obſtinate, cannot be cured without them; as an hydrocephalus, ophthalmia, old ulcers, &c.

ISTHMIA, ΙΣΘΜΙΑ, or ISTHMIAN *Games*, *Ludi* ISTHMII, were ſolemn ſports, held in honour of Neptune; being the third in rank of thoſe ſo much celebrated in antient Greece.

Plutarch, in the life of Theſeus, tells us, they were inſtitated by that hero in imitation of Hercules, who had before inſtituted the Olympic games; but Archias refers their inſtitution to Melicerta, or Palæmon, whom the Latins call *Portumnus*.—Others ſay, they were inſtituted by Niſis, ſon of Neptune; and others, by Siſyphus, brother of Athamas, king of Corinth, about 1350 years before Chriſt: however this be, it was in the *iſthmus* of Corinth they were celebrated, and hence aroſe their name.

Archias and others ſay, the conqueror's prize at theſe games was a crown of parſley.—Plutarch and Strabo ſay, it was at firſt a crown of pine; and that this was afterwards changed for one of parſley, but that at length the pine was reſumed; and to this was added a reward of 100 ſilver drachmæ.

Theſe games were held every three years, or, according to Pliny, every five; and were eſteemed ſo ſacred, that, after the deſtruction of Corinth, the Sicyonians were charged with the keeping them up. They were ſo celebrated, and the concourſe at them was ſo great, that only the prime perſons of the moſt remarkable cities could have place in them.—The Athenians had only as much room allotted them as the ſail of a ſhip, which they ſent yearly to Delos, could cover.

ISTHMUS, ΙΣΘΜΟΣ, a narrow neck, or ſlip of ground, which joins two continents; or joins a peninſula to the terra firma, and ſeparates two ſeas.

The moſt celebrated *iſthmus's* are thoſe of Panama or Darien, which joins North and South America; that of Suez, which connects Aſia and Africa; that of Corinth, or Peloponneſus, in the Morea; that of Crim-Tartary, otherwiſe called *Taurica cherſoneſus*; that of the peninſula Romania and Eriſſo, or the *iſthmus* of the Thracian cherſoneſus, twelve furlongs broad; being that which Xerxes undertook to cut through.

The antients had ſeveral deſigns of cutting the *iſthmus* of Corinth, which is a rocky hillock, about ten miles over; but they were all vain, the invention of ſluices being not then known.—There have been attempts, too, for cutting the *iſthmus* of Suez, to make a communication between the Red-ſea and the Mediterranean.

ISTHMUS is alſo applied by anatomiſts to ſeveral parts of the human body, particularly that narrow part of the throat, ſituate betwixt the two tonſils.

Alſo, to the ridge that ſeparates the two noſtrils. See NOSE.

ITALIAN, the languge ſpoken in Italy.

This tongue is derived principally from the Latin, and of all the languages formed from the Latin, there is none which carries with it more viſible marks of its original than the *Italian*.

It is accounted one of the moſt perfect among the modern tongues, containing words and phraſes to repreſent all ideas, to expreſs all ſentiments, to deliver one's ſelf on all ſubjects, to name all the inſtruments, and parts of arts, &c.—It is complained indeed, that it has too many diminutives and ſuperlatives, or rather augmentatives; but without any great reaſon: for if thoſe words convey nothing further to the mind than the juſt ideas of things, they are no more faulty than our pleonaſms and hyperbole's.

The character of the Italian tongue, it muſt be owned, is very different from that of our own, which is the reaſon perhaps why we are ſo apt to find fault with it: for though the *Italian* be proper for all kinds of writing, for all ſtiles, and for all ſubjects; yet there are many of their celebrated authors that do not ſucceed when tranſlated into Engliſh, and which an Engliſhman cannot read, with pleaſure, even in their original.—The language correſponds to the genius of the people; they are ſlow and thoughtful; and accordingly, their language runs heavily, though ſmoothly; and many of their words are lengthened out to a great degree.—They have a great taſte for muſic; and, to gratify their paſſion this way, have altered abundance of their primitive words; leaving out conſonants, taking in vowels, ſoftening and lengthening out their terminations, for the ſake of the cadence.

Hence the language is rendered extremely muſical, and ſucceeds better than any other in opera's, and ſome parts of poetry; but it fails in ſtrength and nerves: hence alſo a great part of its words, borrowed from the Latin, become ſo far diſguiſed, that they are not eaſily known again.

The multitude of ſovereign ſtates into which Italy is divided, has given riſe to a great number of different dialects in that language; which, however, are all good in the place where they are uſed.—The Tuſcan is uſually preferred to the other dialects, and the Roman pronunciation to that of the other cities; whence the *Italian* proverb, *Lingua Toſcana in bocca Romana.*

The *Italian* is generally pretty well underſtood throughout Europe, and is frequently ſpoken in Germany, Poland, and Hungary.—At Conſtantinople, in Greece, and in the ports of the Levant, the *Italian* is uſed as commonly as the language of the country; indeed in thoſe places it is not ſpoken ſo pure as in Tuſcany, but is corrupted with many of the proper words and idioms of the place; whence it takes a new name, and is called *Frank Italian.*

ITALIAN *Coins.* See the article COIN.
ITALIAN *Meaſures.* See the article MEASURE.
ITALIAN *Money.* See the article MONEY.
ITALIAN *Silks.* See the article SILK.

ITALIC, or **ITALIAN** *Hours*, are the twenty-four hours of the natural day, accounted from the ſun-ſetting of one day, to the ſame again the next day.

This way of reckoning was uſed by the Jews of old, and is uſed by the Italians to this day.

ITALIC *Character*, in printing. See LETTER.

ITALIC *Sect*, is the name of a party of antient philoſophers, founded by Pythagoras; ſo called, becauſe that philoſopher taught in Italy; ſpreading his doctrine among the people of Tarentum, Metapontus, Heraclea, Naples, &c.

ITCH, a diſeaſe of the ſkin, wherein it is corrupted by the ouſing out of certain ſharp ſaline humours, which gather into puſtules, and occaſion a pruritus, or itching.

There are two kinds of *itch*, a *humid* and a *dry* kind. The latter has been uſually ſuppoſed to be owing to an atrabilary humour, and the former to a ſaline pituita: they are both contagious.

Dr. Bononio has given a much more rational account of the cauſe of this diſtemper, than any author before him: he carefully examined ſeveral globules of the matter pricked out of the puſtules of itchy perſons with a microſcope, and found them to be minute living creatures, in ſhape reſembling a tortoiſe, of briſk motion, with ſix feet, a ſharp head, and two little horns at the end of the ſnout.——Hence he makes no ſcruple to impute this contagious diſeaſe to the continual biting of theſe animalcules in the ſkin; by means of which ſome portion of the ſerum ouſing out through the ſmall apertures of the cutis, little watry bladders are made, within which the inſects continuing to gnaw, the infected are forced to ſcratch, and by ſcratching increaſe the miſchief; breaking not only the little puſtules, but the ſkin too, and ſome little blood-veſſels, and ſo making ſcabs, cruſty ſores, &c.

Hence we perceive how the *itch* comes to be catching; ſince theſe creatures, by ſimple contact, may very eaſily paſs from one body to another; their motion being wonderfully ſwift, and they crawling on the ſurface of the body, as well as under the cuticula.

Hence alſo we learn the reaſon of the cure of this diſeaſe by lixivial waſhes, baths, and ointments made of ſalts, ſulphurs, mercury, &c. theſe being very powerful in killing the vermin lodged in the cavities of the ſkin, which ſcratching will never do; they being too minute to be caught under the nails. And if in practice it is found, that this diſeaſe, after it ſeemed to be cured by unction, frequently returns again; this is eaſily accounted for; ſince, though the ointment may have killed all the living creatures, yet it may not, poſſibly, have deſtroyed all their eggs laid, as it were, in the neſts of the ſkin; from which they afterwards breed again, and renew the diſtemper.

ITINERANT *Judges*, or *Juſtices*, ſuch as were formerly ſent with commiſſions into divers counties, to hear chiefly thoſe cauſes called *pleas of the crown:* the ſame with what are otherwiſe called *juſtices in eyre.* See JUSTICE.

ITINERARY, the deſcription a traveller gives of the courſe of his journey, and of the curioſities, &c. he obſerved therein.

The *Itinerary* of Antonine ſhews all the grand Roman roads in the empire, and all the ſtations of the Roman army.—It was drawn up by order of the emperor Antoninus Pius; but is now very defective, having ſuffered much under the hands of the copiſts and editors.

ITINERARY *Column.* See the article COLUMN.
ITERATION. See the article REITERATION.

JUBILEE*, among the Jews, denotes every fiftieth year; being that following the revolution of ſeven weeks of years; at which time all the ſlaves were made free, and all lands reverted to their antient owners.

* The words, according to ſome authors, comes from the Hebrew, *jobel*, which ſignifies *fifty:* But this muſt be a miſtake; for the Hebrew יובל *jobel*, does not ſignify fifty; neither do its letters, taken as cyphers, or according to their numerical power, make that number; being 10, 6, 2, and 30, that is, 48.—Others ſay, that *jobel* ſignifies a *ram*, and that the *jubilee* was thus called, becauſe proclaimed with a ram's-horn, in memory of the ram that appeared to Abraham in the thicket.—Maſius chooſes to derive the word from *Jubal*, the firſt inventor of muſical inſtruments, which, for that reaſon, were called by his name; whence the words *jobel* and *jubilee* came to ſignify the year of deliverance and remiſſion, becauſe proclaimed with the ſound of one of thoſe inſtruments, which at firſt was no more than the horn of a ram.

JUBILEE, in a more modern ſenſe, denotes a grand church-ſolemnity, or ceremony, celebrated at Rome, wherein the pope grants a plenary indulgence to all ſinners; at leaſt to as many as viſit the churches of S. Peter and S. Paul at Rome.

The *jubilee* was firſt eſtabliſhed by Boniface VIII. on 1300. in favour of thoſe who ſhould go ad limina apoſtolorum; and it was only to return every hundred years. But the firſt celebration brought in ſuch ſtore of wealth to Rome, that the Germans called this the golden year; which occaſioned Clement VI. to reduce the period of the *jubilee* to fifty years. —Urban VI. appointed it to be held every thirty-five years, that being the age of our Saviour; and Sixtus IV. brought it down to every twenty-five, that every perſon might have the benefit of it once in his life.

Boniface IX. granted the privilege of holding *jubilees* to ſeveral princes, and monaſteries: for inſtance, to the monks of Canterbury, who had a *jubilee* every fifty years; when people flocked from all parts to viſit the tomb of Thomas a Becket. *Jubilees* are now become more frequent, and the pope grants them as often as the church, or himſelf, have occaſion for them.—There is uſually one at the inauguration of a new pope.

To be intitled to the privileges of the *jubilee*, the bull injoins faſtings, alms, and prayers. It gives the prieſts a full power to abſolve, in all caſes, even thoſe otherwiſe reſerved to the pope; to make commutations of vows, &c. in which it differs from a *plenary indulgence.* During the time of *jubilee* all other indulgences are ſuſpended.

One of our kings, *viz.* Edward III. cauſed his birth-day to be obſerved in manner of a *jubilee*, when he became fifty years of age, but never before or after. This he did, by releaſing priſoners, pardoning all offences except treaſon, making good laws, and granting many privileges to the people.

There are particular *jubilees* in certain cities, when ſeveral of their feaſts fall on the ſame day: at Puey en Velay, for inſtance, when the feaſt of the Annunciation happens on Good-Friday; and at Lyons, when the feaſt of S. John Baptiſt concurs with the feaſt of Corpus Chriſti.

In 1640. the Jeſuits celebrated a ſolemn *jubilee* at Rome; that being the centenary, or hundredth year from their inſtitution; and the ſame ceremony was obſerved in all their houſes throughout the world.

JUBILEUS, or **JUBILÆUS**, is uſed among the Romaniſts to ſignify a religious who has been fifty years in a monaſtery, or an eccleſiaſtic who has been in orders fifty years.

Such veteran religious are diſpenſed with in ſome places from attending matins, or a ſtrict obſervation of any other of their rules.

JUBILÆUS is alſo extended to any man a hundred years old; and to a poſſeſſion, or preſcription, for fifty years. *Si ager non invenietur in ſcriptione, inquiratur de ſenioribus, quantum temporis fuit cum altero; & ſi ſub certo jubilæo manſit ſine vituperatione, maneat in æternum.*

JUDÆ *Auricula.* See the article AURICULA.

JUDAICUS *Lapis*, a ſmall, grey, ſoft, brittle ſtone, in form of an olive, having lines drawn regularly on its ſurface, as if they were formed by art.

It is of ſome uſe in phyſic; being ſuppoſed to be endued with a lithontriptic power; and therefore is given to diſſolve the ſtone in the bladder. It is a kind of extraneous foſſil, being a ſpine of an echinus marinus petrified. See Supplement, article JUDAICUS LAPIS.

JUDAISM, the religious doctrines and rites of the Jews.

Judaiſm was warranted by divine authority, being delivered to that people immediately from heaven; it was, however, but a temporary diſpenſation, and was to give way, at leaſt the ceremonial part of it, at the coming of the Meſſias.—For a complete ſyſtem of *Judaiſm*, ſee the books of Moſes.

Judaiſm was antiently divided into ſeveral ſects; the principal whereof were the Phariſees, Sadducees, and Eſſenians.

At preſent there are two ſects among the Jews, *viz.* the *Caraites*, who admit of no rule of religion, but the law written by Moſes; and the *Rabbiniſts*, who add to the law the traditions of the Talmud.

It has been obſerved, that *Judaiſm*, of all other religions, is that which is the moſt rarely abjured.—In the 18th of Edward I. the parliament granted the king a fifteenth for the expulſion of *Judaiſm*.

In England, formerly, the Jews and all their goods belonged to the chief lord where they lived, and he had ſuch abſolute property in them, that he might ſell them; for they had not liberty to remove to another lord without leave. Mat. Paris tells us, that Henry III. ſold the Jews to earl Richard his brother for a term of years, that *quos rex excoriaverat, comes eviſceraret.*

They were diſtinguiſhed from the Chriſtians both living and dying; for they had proper judges and courts wherein their cauſes were tried, and they wore a badge on their breaſt over their cloaths in ſhape of a table; and they were fined, if they ſtirred abroad without ſuch badges. They were never buried in the country, but always brought up to London, and interred without the walls.

JUDGE, an officer appointed by the ſovereign powers of any country, to diſtribute that juſtice to their ſubjects which they cannot adminiſter in perſon.

The character of *judge* is a part of the regal authority, whereof the king diveſts himſelf.

The chief function of *judges* is for the tryal of cauſes both civil and criminal.

The Engliſh *judges* are choſen out of the ſergeants at law, and are conſtituted by letters patent. Their commiſſions are bounded with this limitation, *Facturi quod ad juſtitiam pertinet ſecundum legem & conſuetudinem Angliæ*; and at their creation they take an oath, that they will indifferently miniſter juſtice to all them that ſhall have any ſuit or plea before them; and this they will not forbear to do, though the king by his letters, or by expreſs word of mouth, ſhould command the contrary.

The *judges* have ſalaries from the king, beſides many very conſiderable perquiſites; and theſe ſalaries granted them, *quamdiu bene ſe geſſerint*, to keep them free and independent of the court.

Itinerant **JUDGE.** See the article ITINERANT.

JUDGE, in ſcripture, is applied to certain eminent perſons choſen by God himſelf to govern the Jews, from the time of Joſhua, till the eſtabliſhment of the kings.

The Hebrews were governed by fifteen *judges*, for the ſpace of 340 years; *viz.* from the time of Othniel their firſt, to that of Heli their laſt *judge*.

The *judges* were not ordinary magiſtrates, but were appointed by God on extraordinary occaſions, as, to head the armies, to deliver the people from their enemies, *&c.*—Salian has obſerved, that they not only preſided in the courts of juſtice, but were alſo at the head of the councils, the armies, and of every thing that concerned the government of the ſtate; though they never aſſumed the title either of princes, governors, or the like.

In ſome reſpects they reſembled kings; *viz.* 1°, In that their authority was given them for life, and not for a limited time. 2°, They ruled alone, and without any dependency; which occaſioned Joſephus to call their ſtate monarchical.

Salian remarks ſeven points wherein they differed from kings. 1°, They were not hereditary. 2°, They had no abſolute power of life and death, but only according to the laws, and dependently of them. 3°, They never undertook war at their own pleaſure, but only when they were commanded by God, or called to it by the people. 4°, They exacted no tribute. 5°, They did not ſucceed each other immediately, but after the death of one there was frequently an interval of ſeveral years ere a ſucceſſor was appointed. 6°, They did not uſe the enſigns of ſovereignty, the ſceptre or diadem. 7°, They had no authority to make any laws, but were only to take care of the obſervation of the laws of Moſes.

JUDGES, *or book of* **JUDGES**, is a canonical book of the Old Teſtament, containing the hiſtory of the Iſraelite *judges*, whereof we have been ſpeaking.

The author is not known: it is probable the work did not come from any ſingle hand, being rather a collection of ſeveral little hiſtories, which at firſt were ſeparate, but were afterwards collected by Eſdras, or Samuel, into a ſingle volume; and, in all likelihood, were taken from the antient journals, annals, or memoirs, compoſed by the ſeveral *judges*.

JUDGMENT, a faculty of the ſoul, by which it perceives the relation between two, or more, ideas.

Thus, when we *judge*, that the ſun is greater than the moon, the underſtanding firſt compares the two ideas of the ſun and the moon; and, finding the idea of the ſun greater than that of the moon, the will perfectly acquieſces in that perception, nor puts the mind upon any farther inquiry.

It is not the underſtanding then that *judges*, as is ordinarily thought; *judgments* and reaſonings, on the part of the underſtanding, are but mere perceptions; it is the will alone that *judges*, by acquieſcing in what is repreſented to it by the underſtanding.

The only difference then between *perception*, *judgment*, and *reaſoning*, ſo far as the underſtanding is concerned in them, is this; that it perceives a thing ſimply, without any relation to any other thing, in a ſimple perception; that it perceives the relations between two or more things, in *judgments*; and laſtly, that it perceives the relations that are between the relations of things, in reaſonings; ſo that all the operations of the underſtanding are in effect no more than pure perceptions.

Thus, when we perceive, for inſtance, twice 2, or 4, this is no more than a ſimple perception; when we *judge*, that twice 2 are 4, or that twice 2 are not 5, the underſtanding does no more than barely perceive the relation of equality that is between twice 2 and 4, or of inequality between twice 2 and 5. Further, reaſon conſiſts in perceiving the relation, not between two or more things, for that would be a *judgment*, but of two or more relations of two or more things. Thus, when I conclude, that 4 being leſs than 6, twice 2 being 4, are by conſequence leſs than 6; I perceive not only the relation of inequality between 2 and 4, and 6 (for this were only a *judgment*), but alſo the relation of inequality between the relation of twice 2 and 4, and the relation between 4 and 6; which conſtitutes a reaſoning. The underſtanding therefore only perceives, and it is the will that *judges* and reaſons, in aſſenting voluntarily to what the underſtanding repreſents.

Indeed, when the things which we conſider appear clear, and perfectly evident, it ſeems as if it were not voluntarily that the mind conſents to them; whence we are led to think, that it is not properly the will, but the underſtanding, that *judges* of them.—But to clear this point, it muſt be obſerved, that the things which we conſider, never appear intirely evident, till the underſtanding has examined them on all ſides, and has perceived all the relations neceſſary to *judge* of them; whence it happens, that the will, not being able to will any thing without knowlege, cannot act on the underſtanding; that is, cannot deſire it to repreſent any thing new in its object, as having already viewed it on all ſides that have any relation to the queſtion in hand. It is obliged then to reſt in what has been already repreſented, and to ceaſe to agitate and diſturb it any farther; in which ceſſation it is, that *judgment* conſiſts.

This reſt or *judgment*, then, not being free when things are in their laſt evidence, we are apt to imagine, that it is not the effect of the will. So long as there is any thing obſcure in the ſubject that we conſider, or that we are not fully ſatisfied that we have diſcovered every thing neceſſary to reſolve the queſtion, as it happens in moſt of thoſe things that are difficult, and that contain various relations; we remain at liberty not to acquieſce: the will may command the underſtanding to purſue its inquiries further, and to make new diſcoveries; whence it is, that we are more ready to allow the *judgments* formed on theſe ſubjects to be voluntary.

Moſt philoſophers, however, maintain, that even the *judgments* which we form on obſcure things are not voluntary; and will have our conſenting to the truth to be an action of the underſtanding, which they call *aſſent*, to diſtinguiſh it from our conſenting to goodneſs, which they attribute to the will, and call it *conſent.*

But their error is owing to this, that in our preſent ſtate we frequently ſee things to be evidently true, without the leaſt reaſon to doubt of them; in which caſe the will is not at liberty either to give or refuſe her aſſent: but it is not ſo in matters of goodneſs; there being nothing, which we do not know ſome reaſon for forbearing to love. So that we here perceive a manifeſt indifference, and are fully convinced, that when we love any thing, even God, for inſtance, we uſe our liberty, and do it voluntarily. But the uſe we make of our liberty is not ſo apparent, when we conſent to the truth, eſpecially when it appears perfectly evident: and this leads us to think, that our conſent to truth, that is, our *judgment*, is not voluntary; as if an action, to be voluntary, muſt be indifferent; as if the bleſſed above did not love God voluntarily, becauſe they cannot be diverted from it by any other thing; nor we conſent freely to this evident propoſition, that twice 2 are 4, becauſe we have no appearance of reaſon to diſſuade us from it.

In a legal ſenſe, a ſentence or deciſion pronounced by authority of a king, or other power, either by their own mouth, or by that of their *judges*, and officers, whom they appoint to adminiſter juſtice in their ſtead.

Of *judgments*, ſome are definitive, others only preparatory, proviſional or interlocutory. See DEFINITIVE, INTERLOCUTORY, *&c.*

The antient words of *judgment* are very ſignificant, *Conſideratum eſt*, &c. becauſe judgment is ever given by the court, upon conſideration had of the record and matter before them.—In every *judgment* there ought to be three perſons, *actor*, *reus*, and *judex*; plaintiff, or proſecutor, defendant, and judge.

JUDGMENT *of God*.	See	JUDICIUM *Dei*.
Aſſigning falſe JUDGMENT.		ASSIGNING.
Maſs of JUDGMENT.		MASS.
Arreſt of JUDGMENT.		ARREST.
Villainous JUDGMENT.		VILLAINOUS.

JUDICATURE, the quality, or profeſſion, of thoſe who adminiſter juſtice.

In which ſenſe *judicature* is a kind of prieſthood.—In France. offices of *judicature* are venal.

JUDICATURE is alſo uſed to ſignify the extent of the juriſdiction of a judge, and the court wherein he ſits to render juſtice.

JUDICE.—*Coram non* JUDICE. See CORAM.

JUDICIAL.	See the article	EXTRAJUDICIAL.
JUDICIAL *Aſtrology*.		ASTROLOGY.
JUDICIAL *Writs*.		WRIT.

JUDICIALIS *Lex*. See the article LEX.

JUDICIARY *Aſtrology*.	See the article	ASTROLOGY.
JUDICIARY *Depoſit*.		DEPOSIT.

JUDICIO *Falſo*. See the article FALSO.

JUDICIUM *Dei* *, JUDGMENT *of God*, was a term antiently applied to all extraordinary tryals of ſecret crimes; as thoſe by arms, and ſingle combat, and the ordeals; or thoſe by fire, or red-hot plough-ſhares; by plunging the arm in boiling-water, or the whole body in cold water; in hopes God would work a miracle, rather than ſuffer truth and innocence to periſh.

* *Si ſuper defendere non poſſit*, judicio Dei, *ſcil. aqua vel ferro, fieret de eo juſtitia.*

Theſe cuſtoms were a long time kept up, even among Chriſtians; and they are ſtill in uſe in ſome nations. See ORDEAL, WATER, COMBAT, DUEL, and CHAMPION.

Tryals of this ſort were uſually held in churches, in preſence of the biſhops, prieſts, and ſecular judges; after three days faſting, confeſſion, communion, and a world of adjurations and ceremonies, deſcribed at large by Du Cange.

JUDICIUM *Aſſiſæ*. See the article ASSISA.

JUGULAR, among anatomiſts, is applied to certain veins of the neck, which terminate in the ſubclavians. See VEIN.

The *jugular veins* are two on each ſide; the one *external*, receiving the blood from the face, and the external parts of the head; the other *internal*, which receives the blood from the brain. See *Tab. Anat. (Angeiol.) fig. 6. litt ii. ll.*

JUGULAR is alſo applied to certain glands of the neck, in the ſpaces between the muſcles.

The *jugular glands* are in number fourteen; they are of different figures, ſome larger, others leſs; they are faſtened to each other by certain membranes and veſſels; and their ſubſtance is like that of the maxillaries.

They ſeparate a lympha, which is conveyed by thoſe veſſels to the adjacent muſcles.—It is an obſtruction in thoſe glands which occaſions the king's evil. *Dionis.*

JUICE, a liquid ſubſtance, which makes part of the compoſition of plants; being diffuſed among all the ſolid parts, and ſerving for their nutriment and growth.

The *juice*, or ſap, is that to plants, which blood is to animals.

There are *juices* of divers kinds, *aqueous*, *vinous*, *oleaginous*, *gummous*, *reſinous*, and *bituminous*; and of all taſtes and colours.

Dr. Liſter obſerves, that moſt *juices* of plants coagulate, whether they be ſuch as are drawn from the wounds of a plant, or ſuch as ſpontaneouſly exude; and that he has made curds, and cakes, of the *juices* of a great number of plants: he adds, that as the juices of plants ſeem to be compounded and mixed of liquors of different kinds, it is probable, if the caſeous part be narcotic, for inſtance, the whey may not be ſo; or the one may be hurtful, and the other a good and uſeful medicament.

JUICE is alſo applied to ſeveral, and even to all, the fluids, or humours, in an animal body.

Nervous JUICE is a liquor which, according to ſome phyſicians, is found in the canals of the nerves; whence it takes its name. Gliſſon, Wharton, and Willis, were the firſt who made mention of the *nervous juice*: they take it to be a kind of vehicle for the animal ſpirits, ſerving to prevent their diſſipating too haſtily; and think it alſo ſerves to nouriſh the parts of the body: but a great part of our modern phyſicians deny the exiſtence of this *juice.*

Pancreatic JUICE, is a liquor ſeparated [illegible] the glands of the pancreas. See PANCREAS, and PANCREATIC.

JUICE is alſo applied to the vapours and humidities incloſed in the earth.

Thus cryſtal is ſaid to be formed of a lapidific *juice*, and metals to be generated of vapours and *juices* condenſed in the earth.

JUJUBS, JUJUBÆ, *Zizyphæ*, the fruit of a tree of the ſame name, growing very common in Italy, and Provence.

The *jujubs* are about the ſize of a plum, oval, red without, yellow within; of a ſweet and commonly vinous taſte; they are pectoral, and aperitive, ſoften the acrimony of the humours, and promote a diſcharge by ſputation.

In the general they have much the ſame virtues with figs, and are uſed in much the ſame intentions.

Pliny tells us, that Sextus Papirius brought the firſt *jujubs* from Syria; and truffles, from Africa, towards the end of Auguſtus's reign.

JULEP *, or JULAP, JULAPIUM, in pharmacy, an eaſy, agreeable, extemporaneous potion, preſcribed to ſick perſons; uſually compoſed of diſtilled waters, or light decoctions, and ſweetened with ſugar, or proper ſyrups.

* The word, according to Menage, is derived from the Arabic *giulep*; or rather from the Greek *ζȣλαπιον*. Olearius derives it from *gulap*, a Perſian word. ſignifying *roſe-water*.

Juleps are ſometimes uſed as the ordinary drink in certain diſeaſes, but more uſually as a vehicle for other forms of medicines; ſerving chiefly to dilute, to correct the peccant humours, reſtore the declining force of the heart, and promote ſleep.

JULIAN *Year* *. See the article YEAR.

* The *Julian* is the old account of the year. ſtill in uſe among us in England. It is ſo called from its founder Julius Cæſar; and by that name is diſtinguiſhed from the new, or Gregorian, account, uſed in moſt other parts of Europe.

JULIAN *Period*. See the article PERIOD.

The *Julian period* is ſo called, as being adapted to the *Julian* year.

It is made to commence before the creation of the world; and that more or leſs according to the hypotheſis that is followed. Its principal advantage conſiſts in this, that the ſame years of the cycles of the ſun, moon, and indiction, belonging to any year of this *period*, will never fall together again till after the expiration of 7980 years; which, according to the received opinions, will ſcarce happen before the conſummation of all things. The firſt year of the Chriſtian æra, in all our ſyſtems of chronology, is always the 4714th of the *Julian period.*

To find what year of the *Julian period* any given year of Chriſt anſwers to: to the given year of Chriſt add 4713. (becauſe ſo many years of the *Julian period* were expired before A. D. 1.); and the ſum gives the year of the *Julian period* ſought.

For inſtance, I would know what year of the *Julian period* A. D. 1720. anſwers to. Now $1720+4713=6433$, the year ſought of the *Julian period.*

On the contrary, having the year of the *Julian period* given, to find what year of Chriſt anſwers thereto: from the year of the *Julian period* given, ſubtract 4713, and the reſidue will be the year ſought.

For inſtance, I would know what year of Chriſt anſwers to the *Julian period* 6433. wherefore $6433-4713=1720$, the year ſought.

If the year of the *Julian period* given be leſs than 4713, then ſubtract the ſame from 4714 (which is the year of the *Julian period* that anſwers to the year of Chriſt 1.), and the reſidue will ſhew how long before (the beginning of the common computation from the nativity of) Chriſt, the given year of the *Julian period* was.

For inſtance, the city of Rome is ſaid to have been built *J. P.* 3960, I would know how long it was built before Chriſt? Now, $4714-3960=754$. wherefore Rome was built 754 years before Chriſt.

JULIAN *Calendar*.	See the article	CALENDAR.
JULIAN *Epocha*.		EPOCHA.

IULUS *, ΙΟΥΛΟΣ, an antient hymn ſung by the Greeks; and, after them, by the Romans, during the time of their harveſt, in honour of Ceres and Bacchus, to render thoſe deities propitious.

* The word is derived from the Greek ȣλος, whence *ιȣλος*, a ſheaf.

This hymn was ſometimes alſo called *demetrulus*, or *demetriulus*; that is, *Iulus* of Ceres.

IULUS is alſo a name which botaniſts give to thoſe worm-like tufts, or palms (as they are called in willows), which, at the beginning of the year, grow out, and hang pendulous down, from hazels, walnut-trees, oaks, cheſnut-trees, mulberry-trees, aſhes, *&c.* and are by us popularly called *catkins.*

Mr. Ray obſerves, that they are collections of the ſtamina of the flowers of the tree; becauſe, in fertile trees and plants, they have abundance of ſeminal apparatus: which opinion is adopted by Bradley, who makes them to be the male bloſſoms, and to ſerve to impregnate the rudiments of the fruit, or female bloſſoms, which appear on the ſame trees, or others of the ſame ſort. See PLANT, and GENERATION.

JULY *, the ſeventh month of the year; during which the ſun enters the ſign Leo.

* The word is derived from the Latin *Julius*, the ſurname of C. Cæſar the dictator, who was born in it.—Mark Antony firſt gave this month the name *July*, which before was called *Quintilis*, as being the fifth month of the year, in the old Roman calendar eſtabliſhed by Romulus, which began in the month of March —For the ſame reaſon, Auguſt was called *Sextilis*; and September, October, November, and December, ſtill retain the name of their firſt rank.

Quæ ſequitur, numero turba notata ſuo. Ovid. Faſt.

On the 19th day of this month the dog-days are commonly ſuppoſed to begin; when, according to Hippocrates, and Pliny, the ſea boils, wine turns ſour, dogs go mad, the bile is increaſed and irritated, and all animals decline and languiſh, *&c.*

JUNCTURE, any joint, or cloſing, of two bodies. See JOINT.

JUNE *, the ſixth month of the year; during which the ſun enters the ſign of Cancer.

* The word comes from the Latin *Junius*; which ſome derive *a Junone*. Ovid, in the 6th of his *Faſti*, makes the goddeſs ſay,

Junius a noſtro nomine nomen habet.

Others rather derive it *a junioribus*, this being for young people, as the month of May was for old ones.

Junius eſt juvenum, qui fuit ante ſenum.

In this month is the ſummer ſolſtice.

JUNIPER-*Berries*, the fruit of the ſhrub *juniperus*; much uſed in medicine.

Etmuller had a vaſt opinion of *juniper-berries*: the rob made of the expreſſed juice of the green berries has been called by many the *theriaca Germanorum*; ſo much are they eſteemed by that nation for their alexipharmatic qualities.

They are certainly carminative; but their moſt remarkable properties are, in ſcouring the viſcera, and particularly the reins and urinary paſſages, as all things of the turpentine kind do.

The wood of this ſhrub is alſo of conſiderable uſe in phyſic; it ſtrengthens the ſtomach, expels wind, clears the lungs, provokes the menſes, and removes obſtructions of the viſcera: it is farther ſaid to be ſudorific, cephalic, and hyſteric.—From it they draw a ſpirit, a tincture, an elixir, extract, and a ratafia.

It is ſaid it will laſt an hundred years without corrupting; the chemiſts add, that a coal of *juniper*, covered with aſhes of the ſame kind, will keep on fire an intire year.

JUNTA, called alſo JUNTO, and JUNCTO, a council, or company, of ſeveral perſons, meeting for the diſpatch of any buſineſs.

The term is particularly uſed in the Spaniſh, and Portugueſe affairs.—On the death of Charles II. king of Spain, the kingdom was governed, during the abſence of Philip V. by a *junta*.

In Portugal they have three conſiderable *junta's*; the *junta* of *commerce*, that of the *three eſtates*, and that of *tobacco*.—The firſt was eſtabliſhed by king John IV. this is a council of marine. The ſame king alſo aſſembled the ſtates of his kingdom, to create the tribunal of the *junta* of the three eſtates. King Peter II. created the *junta* of tobacco, in 1675. it conſiſts of a preſident and ſix counſellors.

IVORY, the tooth, or tuſk, of an elephant, growing on each ſide of his trunk, ſomewhat in form of an horn.

Ivory is much eſteemed for its colour, its poliſh, and the fineneſs of its grain when wrought.—Dioſcorides ſays, that by boiling it the ſpace of ſix hours with the root of mandragoras, it becomes ſo ſoft and tractable, that any one may manage it as he pleaſes.

The *ivory* of the iſle of Ceylon, and that of the iſland of Achem, have this peculiarity, that they never become yellow, as thoſe of the Terra-firma, and Eaſt-Indies, do; on which account the former are much dearer.

Black IVORY is the native *ivory* burnt, and taken out in leaves, or ſhivers, when become black: it is then either powdered dry, or ground with water, and made up into little cakes, or troches, uſed by the painters.

JUPITER, in mythology, *&c.* See the article GOD.

Flamen of JUPITER. See the articles FLAMEN, and DIALIS.

JUPITER, ♃, in aſtronomy, one of the ſuperior planets, remarkable for its brightneſs; and which, by its proper motion, ſeems to revolve round the earth in about twelve years. See PLANET.

Jupiter is ſituate between Saturn and Mars: it has a rotation round its own axis in 9 hours 56 minutes; and a periodical revolution round the ſun in 4332 days, 12 hours, 20′ 9″.

Jupiter is the biggeſt of all the planets: its diameter to that of the ſun appears, by aſtronomical obſervations, to be as 1077 is to 10000; to that of Saturn, as 1077 to 889; to that of the earth, as 1077 to 104. The force of gravity on its ſurface is to that on the ſurface of the ſun, as 797,15 is to 10000; to that of Saturn, as 797,15 to 534,337; to that of the earth, as 797,15 to 407,832. The denſity of its matter is to that of the ſun, as 7404 to 10000; to that of Saturn, as 7404 to 6011; to that of the earth, as 7404 to 3921. The quantity of matter contained in its body is to that of the ſun as 9,248 to 10000; to that of Saturn as 9,248 to 4,223; to that of the earth, as 9,248 to 0,0044.

The mean diſtance of *Jupiter* from the ſun, is 5201 of thoſe parts whereof the mean diſtance of the earth from the ſun is 1000, though Kepler only makes it 5196 of thoſe parts.—M. Caſſini calculates *Jupiter's* mean diſtance from the earth to be 115,000 ſemidiameters of the earth.—Gregory computes the diſtance of *Jupiter* from the ſun to be above five times as great as that of the earth from the ſun; whence he gathers, that the diameter of the ſun, to an eye placed in *Jupiter*, would not be a fifth part of what it appears to us; and, therefore, his diſk would be twenty-five times leſs, and his light and heat in the ſame proportion.

The inclination of *Jupiter's* orbit, that is, the angle formed by the plane of its orbit, with the plane of the ecliptic, is 1 deg. 20 min. His excentricity is 250; and Huygens computes his ſurface to be four hundred times as large as that of our earth.

Jupiter is one of the ſuperior planets, that is, of the three which are above the ſun: hence it has no parallax, its diſtance from the earth being too great to have any ſenſible proportion to the diameter of the earth. See PARALLAX.

Though it be the greateſt of the planets, yet its revolution about its axis is the ſwifteſt. Its polar axis is obſerved to be ſhorter than its equatorial diameter; and Sir Iſaac Newton determines the difference to be as 8 to 9. So that its figure is a ſpheroid; and the ſwiftneſs of its rotation occaſions this ſpheroidiſm to be more ſenſible than that of any other of the planets.

Jupiter appears almoſt as large as Venus; but he is not altogether ſo bright: he is eclipſed by the moon, by the ſun, and even by Mars.—Hevelius is ſaid to have once obſerved *Jupiter's* diameter ſeven inches, having inequalities like the moon.

Jupiter has three appendages, called *zones*, or *belts*, which Sir Iſaac Newton thinks are formed in his atmoſphere.—In theſe are ſeveral *maculæ*, or ſpots; from whoſe motion, the motion of *Jupiter* round its axis is ſaid to have been firſt determined: the diſcovery of which is controverted between Euſtachio, P. Gotignies, Caſſini, and Campani.

The four little ſtars, or moons, which move round *Jupiter*, were firſt diſcovered by Galileo, who called them the *aſtra Medicæa*; but we the *ſatellites* of *Jupiter*.

Caſſini obſerved, that the firſt, or innermoſt, of theſe ſatellites, was five ſemidiameters of *Jupiter* diſtant from *Jupiter* itſelf, and made its revolution in one day, 18 hours, and 32 minutes. The ſecond, which is ſomewhat greater, he found eight diameters diſtant from *Jupiter*; and its revolution 3 days, 13 hours, and 12 minutes. The third, which is the greateſt of all, is diſtant from *Jupiter* 13 ſemidiameters, and finiſhes its courſe in 7 days, 3 hours, and 50 minutes. The laſt, which is the leaſt of all, is diſtant from *Jupiter* 23 ſemidiameters; its period is 16 days, 18 hours, and 9 minutes.

Theſe four moons muſt make an extremely pleaſing ſpectacle to the inhabitants of *Jupiter*, if it be true, that there are any; for ſometimes they riſe all together; ſometimes they are all together in the meridian, ranged one under another; and ſometimes all appear in the horizon. Add, that they frequently undergo eclipſes; the obſervations whereof are found of eſpecial uſe in determining the longitude. Caſſini has made tables for calculating the immerſions, and emerſions, of *Jupiter's* firſt ſatellite.

Comparative Aſtronomy of JUPITER.—The day and night are of the ſame length in *Jupiter* all over his ſurface; *viz.* five hours each; the axis of his diurnal rotation being nearly at right angles to the plane of his annual orbit. See DAY.

Though there be four primary planets below *Jupiter*, yet an eye placed on his ſurface would never perceive any of them; unleſs, perhaps, as ſpots paſſing over the ſun's diſk, when they happen to come between the eye and the ſun.—The parallax of the ſun, viewed from *Jupiter*, will ſcarce be ſenſible, no more than that of Saturn, neither being much above 20 ſeconds; ſo that the ſun's apparent diameter in *Jupiter* will not be above ſix minutes. The outermoſt of *Jupiter's* ſatellites will appear almoſt as big as the moon does to us; *viz.* five times the diameter, and 25 times the diſk of the ſun.—Dr. Gregory adds, that an aſtronomer in *Jupiter* would eaſily diſtinguiſh two kinds of planets, four nearer him; *viz.* the *ſatellites*; and two; *viz.* the *ſun*, and *Saturn*; more remote. The former, however, will fall vaſtly ſhort of the ſun in brightneſs, notwithſtanding the great diſproportion in the diſtances and apparent magnitude. From theſe four different moons the inhabitants of *Jupiter* will have four different kinds of months; and the numbers of moons in their year will not be leſs than 4500. Theſe moons are eclipſed as often as, being in oppoſition to the ſun, they fall within the ſhadow of *Jupiter*; and again, as oft as, being in conjunction with the ſun, they project their ſhadows to *Jupiter*, they make an eclipſe of the ſun to an eye placed in that part of *Jupiter* where the ſhadow falls. But in regard the orbits of theſe ſatellites are in a plane which is inclined to, or makes an angle with, the plane of *Jupiter*'s orbit, their eclipſes become central, when the ſun is in one of the nodes of theſe ſatellites; and when out of this poſition, the eclipſes may be total, though not central, becauſe the breadth of *Jupiter*'s ſhadow is nearly decuple to that of the breadth of any of the ſatellites; and the apparent diameter of any of theſe moons is nearly quintuple the apparent diameter of the ſun. It is owing to this remarkable inequality of diameters, and the ſmall inclination the plane of the orbits of the ſatellites has to the plane of *Jupiter*'s orbit, that in each revolution there happen eclipſes both of the ſatellites, and of the ſun; though the ſun be at a conſiderable diſtance from the nodes. Further, the inferior among theſe ſatellites, even when the ſun is at its greateſt diſtance from the nodes, will occaſionally eclipſe and be eclipſed by the ſun to an inhabitant of *Jupiter*; though the remoteſt of them, in this caſe, eſcapes falling into *Jupiter*'s ſhadow, and *Jupiter* into his, for two years together. To this it may be added, that one of theſe ſatellites ſometimes eclipſes another; where the phaſis muſt be different, nay frequently oppoſite to that of the ſatellite falling into the ſhadow of *Jupiter* juſt mentioned; for in this the eaſtern limb immerges firſt, and the weſtern immerges laſt; but in the others it is juſt the reverſe.

The ſhadow of *Jupiter*, though it reaches far beyond its ſatellites, yet falls much ſhort of any other planet; nor could any other planet, Saturn alone excepted, be immerged in it, even though it were infinite. Indeed, *Jupiter*'s ſhadow could not reach Saturn, unleſs *Jupiter*'s diameter were half that of the ſun; whereas, in effect, it is not one ninth of it.

The courſes of *Jupiter*'s ſatellites, and their various eclipſes, would render navigation very ſure and eaſy on the globe of *Jupiter*. Even we, at this diſtance, can make very good uſe of them; thoſe eclipſes being found one of our beſt means for determining the longitude at ſea.

JUPITER, among alchymiſts, ſignifies the philoſophers gold.

The gentlemen of this profeſſion apply every thing to their art, which the mythologiſts mention of the god *Jupiter*, pretending that the antient fables are to be underſtood in a figurative ſenſe: for inſtance, *Jupiter* is the maſter of the gods; and gold, ſay they, is the moſt precious of metals. Mercury is the embaſſador of *Jupiter*; and this ſhews with how much eaſe Mercury inſinuates into every thing. *Jupiter* holds the thunderbolt as his ſceptre; which evidently points out the external ſulpher uſed in projection. *Jupiter* has the heavens for his ordinary habitation; this ſhews him volatile, dry, and hot. The debauches of *Jupiter*, who ſought for pleaſure in the low, but prolific and fruitful earth, diſcover, ſay they, its fecundity; and that gold might be made, were but the way of preparing it diſcovered. In a word, *Jupiter* is the ſon of Saturn, which ſhews ſome reſemblance between the qualities of gold and lead.

JURATAM.—*Aſſiſa cadit in juratam*. See ASSISA.

JURATI. See the article JURATS.

Non ponendo in **JURATIS**. See the article NON *ponendo*.

JURATS, JURATI, magiſtrates in the nature of aldermen, for the government of ſeveral corporations. See ALDERMEN.

Thus we meet with the mayor and *jurats* of Maidſtone, Rye, Winchelſea, &c.— So alſo Jerſey has a bailiff and twelve *jurats*, or ſworn aſſiſtants, to govern the iſland.

JURE.—*De* JURE. See *De* FACTO, and POSSESSION.

Quo JURE. See the article QUO *Jure*.

JURIDICI *Dies*. See the article DIES.

JURISCONSULTUS, or JURECONSULTUS, ICTUS, among the Romans, was a perſon learned in the law; a maſter of the Roman juriſprudence; who was conſulted on the interpretation of the laws, and cuſtoms, and the difficult points in law-ſuits.

The fifteen books of the *Digeſt* were compiled wholly from the anſwers, or reports, of the antient *juriſconſulti*. Tribonianus, in deſtroying the two thouſand volumes from whence the *Code* and *Digeſt* were taken, has deprived the public of a world of things, which would have given them light into the office of the antient *juriſconſulti*.

We ſhould ſcarce have known any thing beyond their bare names, had not Pomponius, who lived in the ſecond century, taken care to preſerve ſome circumſtances of their office.

The Roman *juriſconſulti* ſeem to have been the ſame with our chamber-counſellors, who arrived at the honour of being conſulted, through age and experience, but never pleaded at the bar. Their pleading advocates, or lawyers, never became *juriſconſulti*.

In the times of the commonwealth, the *advocati* had by much the more honourable emdloyment, as being in the ready way to attain to the higheſt preferments. They then deſpiſed the *juriſconſulti*, calling them in deriſion *formularii* and *leguleii*, as having invented certain forms, and monoſyllables, in order to give their anſwers the greater appearance of gravity and myſtery. But in proceſs of time they became ſo much eſteemed, that they were called *prudentes* and *ſapientes*, and the emperors appointed the judges to follow their advice. Auguſtus at length advanced them to be public officers of the empire; ſo that they were no longer confined to the petty counſels of private perſons.

Bern. Rutilius has written the lives of the moſt famous *juriſconſulti*, who have lived within theſe 2000 years.

JURISDICTION, a power, or authority, which a man has to do juſtice in caſes of complaint made before him.

There are two kinds of *juriſdiction*, the one *eccleſiaſtical*, the other *ſecular*.

Secular JURISDICTION belongs to the king, and his juſtices, or delegates. See JUSTICE, and COURT.

Eccleſiaſtical JURISDICTION belongs to biſhops, and their deputies. See BISHOP, and OFFICIAL.

Biſhops, &c. have two kinds of *juriſdiction*; the one *internal*, which is exerciſed over the conſcience in things purely ſpiritual; and this they are ſuppoſed to hold immediately of God.

The other is *contentious*, which is a privilege ſome princes have given them of terminating diſputes between eccleſiaſtics, and laymen. See CONTENTIOUS.

JURISPRUDENCE, the ſcience of what is juſt and unjuſt, or of the laws, rights, cuſtoms, ſtatutes, &c. neceſſary for the doing of juſtice.

Civil juriſprudence is that of the Roman law; *canonical*, that of the canon law; and *feudal*, that of fees.

JUROR, JURATOR, in a legal ſenſe, is one of thoſe twenty-four, or twelve men, who are ſworn to deliver truth upon ſuch evidence as ſhall be given them touching any matter in queſtion.

The puniſhment of petty jurors attainted of giving a verdict contrary to evidence, willingly, is very ſevere. See ATTAINT.

Challenge to the JURORS. See the article CHALLENGE.

JURY, in common law, ſignifies twenty-four, or twelve men, ſworn to inquire of a matter of fact, and declare the truth, upon ſuch evidence as ſhall be delivered them touching the matter in queſtion.

The *jury* is to be choſen out of the ſame claſs or rank with the accuſed; and if he be a foreigner, he may demand a *jury* half foreigners, and half Engliſhmen.

There are ordinarily thirty-ſix impanelled, whereof, in criminal caſes, the perſon accuſed has the liberty to challenge or ſet aſide twenty-four, and to pick out twelve at his pleaſure.—Theſe twelve are preſent at the tryal, after which they withdraw into a chamber by themſelves, where they are to be ſhut up without fire or candle, victuals or drink, till ſuch time as they agree in their verdict, and declare unanimouſly, that the defendant is either guilty of the charge laid againſt him, or not guilty. Upon which, the judge paſſes the ſentence preſcribed by the law.

In England there were formerly three ſorts of tryals; *viz.* one by *parliament*, another by *battle*, and a third by *aſſize* or *jury*.

The trial by aſſize (be the action civil or criminal, public or private, perſonal or real) is referred for the fact to a *jury*; and, as they find it, ſo paſſes the judgment. See ASSIZE.

This *jury* is not only uſed in circuits of juſtices errant, but alſo in other courts and matters of office: but though it appertains to moſt courts of the common law, yet it is moſt remarkable in the half-year courts of the juſtices errant, commonly called the *great aſſizes*, and in the quarter-ſeſſions: and in them it is moſt ordinarily called a *jury*: in other courts it is uſually called an *inqueſt*, and in the court baron, a *jury of the homage*.

In the general aſſize there are uſually many *juries*, becauſe there are a great many cauſes, both civil and criminal, commonly to be tried; whereof one is called the *grand jury*, and the reſt the *petit juries*; of which, it ſeems, there ſhould be one in every hundred.

Grand JURY, conſiſts of twenty-four grave and ſubſtantial gentlemen, or ſome of the better ſort of yeomen: theſe are to be choſen indifferently by the ſheriff out of the whole ſhire, to conſider of all bills of indictment preferred to the court; which they do either approve, by writing upon them *billa vera*; or diſallow, by indorſing *ignoramus*.

Such as they do approve, if they touch life and death, are farther referred to another *jury*, to be conſidered of, becauſe the caſe is of much importance; but others of lighter moment are, upon their allowance, without more ado, fined by the bench; except the party traverſe the indictment, or challenge it for inſufficiency, or remove the cauſe to an higher court by certiorari; in which two former caſes it is referred to another *jury*, and, in the latter, tranſmitted to an higher bar. And preſently, upon the allowance of this bill by the grand inqueſt, a man is ſaid to be *indicted*.

Such as they diſallow are delivered to the bench; by whom they are forthwith cancelled, or torn.

Petit Jury, conſiſts of twelve men at the leaſt; and theſe are impanelled as well upon criminal as upon civil cauſes: thoſe that paſs upon offences of life and death, bring in their verdict either guilty, or not guilty; whereupon the priſoner, if he be found guilty, is ſaid to be *convicted*, and receives judgment and condemnation; or otherwiſe he is acquitted, and ſet free.

Thoſe that paſs upon civil cauſes real, are all, or ſo many as can conveniently be had, of the ſame hundred, where the land or tenement in queſtion doth lie, being four at leaſt; and they, upon due examination, bring in their verdict either for the defendant, or tenant.

Clerk of the Juries. See the article Clerk.

JURY-MAST, an appellation given by the ſeamen to an extemporaneous ſort of maſt, patched up of yards, or other pieces of timber, and ſet up in the room of a true maſt, which has been loſt in a fight, or by a ſtorm.

JUS, and Jura. See the articles Law, Right, *&c.*

Jus *Coronæ*, *Rights of the crown*, is part of the law of England, which differs in many things from the general law concerning the ſubject. *Coke* on *Litt.*

Quale Jus.	See the article	Quale *jus*.
Jus *Togæ*.		Toga.

JUST *, a ſportive kind of combat, on horſeback; man againſt man, armed with lances.

* The word is by ſome derived from the French *jouſte*, of the Latin *juxta*, becauſe the combatants fought near one another. Salmaſius derives it from the modern Greek *zouſtra*, or rather τζυϛρα; which is uſed in this ſenſe by Nicephorus Gregoras. Others derive it from *juſta*; which in the corrupt age of the Latin tongue was uſed for this exerciſe, by reaſon it was ſuppoſed a more *juſt* and equal combat than the turnament.

Antiently, *juſts* and turnaments made a part of the entertainment at all ſolemn feaſts, and rejoicings.—The Spaniards borrowed theſe exerciſes from the Moors, and call them *juego de cannas*, reed, or cane-play.--Some take them to be the ſame with the *ludus Trojanus*, antiently practiſed by the youth of Rome.

The Turks uſe them ſtill, and call them *lancing the gerid.*

The difference between *juſts* and turnaments conſiſts in this, that the latter is the genus, of which the former is only a ſpecies: turnaments included all kinds of military ſports and engagements, which were made out of gallantry and diverſions.—*Juſts* were thoſe particular combats where the parties were near each other, and engaged with lance and ſword; add, that the turnament was frequently performed by a number of cavaliers, who fought in a body: the *juſt* was a ſingle combat, of one man againſt another.—Though the *juſts* were uſually made in turnaments, after a general rencounter of all the cavaliers, yet they were ſometimes ſingly, and independent of any turnament.

He who appeared for the firſt time at a *juſt*, forfeited his helm, or caſque, unleſs he had forfeited before at a turnament.

Just *Appui*. See the article Appui.

JUSTICE, Justitia, a conſtant deſire, or inclination, to give every one his due; or a habit by which the mind is diſpoſed and determined to give every man his own.

Juſtice may be divided into *diſtributive*, *commutative*, and *legal*.

Diſtributive Justice is concerned in matters of government, and of beneficence; and is either remuneratory, or punitive: it obſerves an equality in dealing rewards and puniſhments, according to each man's condition and merit; for as actions are either good or evil, for the good, rewards muſt be aſſigned; and for the evil, puniſhments: and herein a geometrical proportion is obſerved.

Commutative Justice, is converſant in matters of commerce, and in the equal commutation, or changing, of things; and proceeds according to arithmetical equality, without any regard to perſons and circumſtances.

Legal Justice is that which reſides in the ſtate, or monarch, by whoſe power and authority the effects of *commutative* and *diſtributive juſtice* are frequently ſuperſeded, or ſuſpended; as in a dearth of corn, if a perſon that has a ſtock by him will not ſell it, it ſhall be taken from him; and the like.

Hand of Justice.	See the article	Hand.
Officers of Justice.		Office.
Poetical Justice.		Poetical.

Temperament ad Justitiam. See the article Temperament.

Justice, Justitiarius, is likewiſe an officer appointed by the king, or commonwealth, to do right by way of judgment.

He is called *juſtice*, not *judge*; antiently *juſtitia*, not *juſtitiarius*, becauſe he has his authority by deputation, as delegate to the king, and not *jure magiſtratus*; ſo that he cannot depute any other in his ſtead; the *juſtice* of the foreſt only excepted.

Of theſe *juſtices* we have various kinds in England; *viz.*

Chief Justice *of the King's-bench*, is the capital *juſtice* of Great Britain, and is a lord by his office.—His buſineſs is chiefly to hear and determine all pleas of the crown; that is, ſuch as concern offences againſt the crown, dignity, and peace, of the king; as treaſons, felonies, *&c.*

This officer was formerly not only *chief juſtice*, but alſo chief baron, of the exchequer, and maſter of the court of wards.—He uſually ſat in the king's palace, and there executed that office, formerly performed *per comitem palatii*; he determined in that place all the differences happening between the barons and other great men.

He had the prerogative of being vicegerent of the kingdom, whenever the king went beyond ſea, and was uſually choſen to that office out of the prime nobility; but his power was reduced by king Richard I. and king Henry I.—His office is now divided, and his title changed from *capitalis Angliæ juſtitiarius*, to *capitalis juſtitiarius ad placita, coram rege tenenda*, or *capitalis juſtitiarius banci regii.*

Chief Justice *of the Common-pleas*, he who, with his aſſiſtants, hears and determines all cauſes at the common law; that is to ſay, all civil cauſes, between common perſons, as well perſonal as real: and he is alſo a lord by his office.

Justice *of the Foreſt*, is a lord by his office, who has power and authority to determine offences committed in the king's foreſts, *&c.* which are not to be determined by any other court, or *juſtice.*

Of theſe there are two; whereof one has juriſdiction over all the foreſts on this ſide Trent, and the other beyond it.

By many antient records, it appears to be a place of great honour and authority, and is never beſtowed but on ſome perſon of great diſtinction.—The court where this *juſtice* ſits, is called, *the juſtice-ſeat of the foreſt.*

This is the only *juſtice* who may appoint a deputy: he is alſo called *juſtice in eyre of the foreſt.*

Justices *in Eyre*, *Juſtitiarii Itinerantes*, or *Errantes*, were thoſe who were antiently ſent with commiſſion into divers counties, to hear ſuch cauſes, eſpecially, as were termed *pleas of the crown*; and that for the eaſe of the ſubject, who muſt elſe have been hurried to the courts of Weſtminſter, if the cauſe were too high for the county courts.

According to ſome, theſe *juſtices* were ſent once in ſeven years; but others will have them to have been ſent oftener.—Camden ſays, they were inſtituted in the reign of king Henry II. but they appear to be of an older date.

They were ſomewhat like our *juſtices* of aſſize at this day; though for authority, and manner of proceeding, very different.

Justices *of Aſſize*, were ſuch as were wont, by ſpecial commiſſion, to be ſent into this or that county, to take aſſizes, for the eaſe of the ſubjects.

For, whereas theſe actions paſs always by jury, ſo many men might not, without great damage and charge, be brought up to London; and therfore *juſtices*, for this purpoſe, by commiſſions particularly authorized, were ſent down to them.

Theſe continue twice every year to paſs the circuit, by two and two, through all England, diſpatching their ſeveral buſineſſes by ſeveral commiſſions; for they have one commiſſion to take aſſizes, another to deliver gaols, and another of oyer and terminer, *&c.*

Justices *of Gaol-delivery*, thoſe commiſſioned to hear and determine cauſes appertaining to ſuch as for any offence are caſt into priſon.

Their commiſſion is now turned over to the *juſtices* of aſſize.

Justices *of Niſi-prius* are now the ſame with *juſtices of aſſize*: it is a common adjournment of a cauſe in the common-pleas, to put it off to ſuch a day, *Niſi prius juſtitiarii venerint ad eas partes ad capiendas aſſiſas*: from which clauſe of adjournment they are called *juſtices of niſi prius*, as well as *juſtices of aſſize*, by reaſon of the writ, and actions they have to deal in.

Justices *of Oyer and Terminer*, were *juſtices* deputed on ſome ſpecial occaſions to hear and determine particular cauſes.

The commiſſion of oyer and terminer is directed to certain perſons, upon any inſurrection, heinous demeanour, or treſpaſs committed.

Justices *of the Peace* are perſons of intereſt and credit, appointed by the king's commiſſion to attend the peace of the county where they live.

Of theſe, ſome, for ſpecial reſpect, are made of the *quorum*, ſo as no buſineſs of importance may be diſpatched without the preſence, or aſſent, of them, or one of them. See Quorum.

The office of a *juſtice* of the peace is, to call before him, examine, and commit to priſon, all thieves, murderers, wandering rogues; thoſe that hold conſpiracies, riots, and almoſt all delinquents which may occaſion the breach of the peace, and quiet of the ſubject; to commit to priſon ſuch as cannot find bail, and to ſee them brought forth in due time to tryal.

The original of *juſtices* of the peace is referred to the fourth year of Edward III. they were firſt called *conſervators*, or *wardens of the pence*.

JUSTIFICATION, in theology, that grace which renders a man juſt in the ſight of God, and worthy of eternal happineſs.

The Romaniſts and Reformed are extremely divided about the doctrine of *juſtification*; the latter contending for *juſtification* by faith alone, and the former by good works.

JUSTIFYING *grace*. See the article GRACE.

JUSTNESS, the exactneſs or regularity of any thing.

Juſtneſs is chiefly uſed in ſpeaking of thought, language, and ſentiments.—The *juſtneſs* of a thought conſiſts in a certain preciſion, or accuracy, by which every part of it is perfectly true, and pertinent to the ſubject.

Juſtneſs of language conſiſts in uſing proper and well-choſen terms; in not ſaying either too much, or too little.

M. De Mere, who has written on *juſtneſs* of mind, diſtinguiſhes two kinds of *juſtneſs*; the one ariſing from taſte and genius; the other, from good ſenſe, or right reaſon.—There are no certain rules to be laid down for the former, *viz.* to ſhew the beauty and exactneſs in the turn, or choice of a thought; the latter conſiſts in the juſt relation which things have to one another.

JUVENALIA, or JUVENALES *Ludi*, games, exerciſes of body, and combats, inſtituted by Nero the firſt time his beard was ſhaved.

They were celebrated in private houſes, and even the women had a ſhare in them: probably, they were the ſame with what were otherwiſe called *Neroniana*.

JUXTAPOSITION, is uſed by philoſophers to denote that ſpecies of growth, which is performed by the appoſition of new matter to the ſurface, or outſide, of old.

In which ſenſe, it ſtands oppoſed to *intuſ-ſuſception*; where the growth of a body is performed by the reception of a juice within it, diffuſed through its canals. See NUTRITION.

K.

K, A double conſonant, and the tenth letter of the alphabet.

It is borrowed from the Greek *kappa*; and was but little uſed among the Latins: Priſcian looked on it as a ſuperfluous letter, and ſays, it was never to be uſed except in words borrowed from the Greek. Dauſquius, after Salluſt, obſerves that it was unknown to the antient Romans.—Indeed we ſeldom find it in any Latin authors, excepting in the word *kalendæ*, where it ſometimes ſtands in lieu of a *c*.—Carthage, however, is frequently ſpelt on medals with a *K*: SALVIS AUG. ET CAES. FEL. KART. and ſometimes the letter *K* alone ſtood for *Carthage*.—M. Beger has obſerved, that a capital *K*, on the reverſe of the medals of the emperors of Conſtantinople, ſignified KONSTANTINUS; and on the Greek medals he will have it to ſignify ΚΟΙΛΗ ΣΥΡΙΑ, Coeleſyria.

Quintilian tells us, that in his time ſome people had gotten a miſtaken notion, that where-ever the letter *c* and *a* occurred at the beginning of a word, *k* ought to be uſed inſtead of the *c*. See C.

Lipſius obſerves, that *K* was a ſtigma, antiently marked on the foreheads of criminals with a red-hot iron.

The letter *K* has various ſignifications in old charters, and diploma's; for inſtance, KR. ſtood for *chorus*, KR. C. for *cara civitas*, KRM. for *carmen*, KR. AM. N. *carus amicus noſter*, KS. *chaos*, KT. *capite tonſus*, &c.

The French never uſe the letter *k*, excepting in a few terms of art, and proper names borrowed from other countries.—Ablancourt, in his dialogue of the letters, brings in *k* complaining, that he has been often in a fair way to be baniſhed out of the French alphabet, and confined to the countries of the North.

In the Engliſh, the *k* is uſed much more than needs be, particularly at the ends of words after *c*, as in publick, phyſick, *&c.* where it is of no manner of ſervice.

K is alſo a numeral letter, ſignifying 250, according to the verſe;

K *quoque ducentos & quinquaginta tenebit.*

When it had a ſtroke at top, K, it ſtood for 250000.

KABIN, KHABIN, KEBIN, or KUBIN, a temporary kind of marriage, in uſe among the Mahometans.

The *kabin* is contracted before the cadi, in whoſe preſence the man eſpouſes the woman for a certain time, upon condition that if he quits her at the end of that term, ſhe ſhall be allowed a certain ſum of money.

Some authors ſay, that the *kabin* is only permitted among the Perſians, and in the ſect of Ali; but others maintain, that it is alſo practiſed among the Turks.

KADARI, or KADARITES, a ſect among the Mahometans, who deny the favourite tenet of the Muſſulmen, predeſtination; and maintain the doctrine of liberty and free-will in all its latitude.

KALENDAR. } See the article { CALENDAR.
KALENDS. } See the article { CALENDS.

KALI, a plant growing on the ſea-coaſts, and ſometimes even in the ſand of the ſea; whoſe aſhes are of great uſe in the making of glaſs, and ſoap.

The name *kali*, or *alkali*, was given it by the Arabians: among naturaliſts it is alſo called *ſalicornia*, *ſoda*, &c. and in Engliſh, *glaſs-wort*, and *ſalt-wort*.

Kali grows in great abundance in Egypt, and Syria; as alſo in Languedoc, and Provence, where it is cultivated by the farmers, who ſow whole fields of it to good effect, and in many other places.

Being burnt, its aſhes made into a lye, and boiled with oil, make the beſt ſoap.

Out of the ſame aſhes, called alſo *pulverine*, is extracted a ſalt, called *alkali ſalt*; which, mixed with a fine ſort of ſand, makes the fine glaſs called *cryſtal*.

The manner of preparing or procuring the aſhes, in Languedoc, is this: When the plant is grown up to its pitch, they cut it down, and let it dry; afterwards they burn and calcine it in certain pits like lime-kilns, dug in the ground for that purpoſe, which are cloſe covered up with earth, ſo as no air may come at the fire.—The matter by this means is not reduced into aſhes only, but is made into a very hard ſtone, like rock-ſalt, which they are forced to break with hammers to get it out; and this matter they call *ſalicor*, or *ſoda in the ſtone*.

They make ſuch quantities of it there, that they export it into ſeveral other countries, but principally into Italy, where the Venetians manufacture it into thoſe beautiful glaſſes, which they afterwards return into moſt countries in Europe. However, the ſoda made here is inferior to that brought from Alicant. The beſt is in little dry ſonorous lumps, of a bluiſh grey colour, and full of little eyes, or holes.

KALIPH. See the article CALIPH.

KAN, or KHAN, the name of an officer in Perſia, anſwering to that of *governor* in Europe.

There are *kans* of provinces, countries, and cities, who have different additions to diſtinguiſh them.

KAPI, a term in the eaſtern countries for *gate*.

Thus the chief gate of the palace of the emperor of Perſia is called *alla kapi*, the gate of God.—Hence alſo, the officer who has the command of the grand ſeignior's palace-gates, is called *kapighi bachi*.

KARABE. See the article CARABE.

KARATA, by ſome called *caraguata maca*, a kind of aloe growing in America; whoſe leaves, when boiled, are made into a thread, of good uſe for making cloth, fiſhing-nets, *&c.* Its root, or leaves, thrown into the water, ſtun the fiſhes to that degree, that they are eaſily taken with the hand: its ſtalk, when dried and burnt, ſerves for tinder; and when briſkly rubbed on a harder wood, it takes fire, and conſumes itſelf.

KARKRONY, a building where the royal manufactures of Perſia are carried on.

Here are made their tapeſtries, cloth of gold, ſilk, wool, and brocades, velvets, taffeties, coats of mail, ſabres, bows, arrows, and other arms.—There are alſo in it painters in miniature, goldſmiths, lapidaries, *&c.*

KARLE, a Saxon word, uſed in our laws, ſometimes ſimply for a *man*, and ſometimes for a *ſervant*, or *clown*.

Hence the Saxons call a ſeaman a *buſcarle*, and a domeſtic ſervant a *buſcarle*.

KASI, a term in the Eaſt, applied to the fourth pontiff of Perſia, who is alſo the ſecond-lieutenant civil, and judges of temporal as well as ſpiritual affairs.

He has two deputies, who determine matters of leſs conſequence; particularly quarrels ariſing in coffee-houſes, which make a great part of their buſineſs.

KAURYSAOUL, a body of ſoldiers who form the laſt of the five corps of the king of Perſia's guards.

They are in number 2000, and are all horſe, commanded by the conſtable, and in his abſence by the captain of the watch.—They keep watch in the night around the palace, ſerve to keep off the croud when the ſophi goes on horſeback, keep ſilence at the audience of embaſſadors, ſeiſe the kans and other officers when diſgraced, and cut off their heads when the ſophi commands it.

KAY*, or KEY, a wharf or place by the water-ſide, in a ſea-port, for the loading and unloading of merchandize.

* The verb *cajare*, in old writers, according to Scaliger, ſignifies to keep in, or reſtrain; and hence came our term *kay*; the ground where keys are made being bound in with planks and poſts.

KAYAGE, the money, or toll, paid for loading, or unloading wares at kays.

KEBER*, the name of a ſect among the Perſians, who, for the generality, are rich merchants.

* The word ſignifies *infidel*, formed from the Turkiſh *kiaphir*, a renegado; or, rather, they both come from כפר *caphar*; which, in the Chaldee, Syriac, and Arabic, ſignifies, *to deny*.

Though they inhabit the middle of Perſia, and are found in great numbers in the ſuburbs of Iſpahan, yet it is not known whether or no they are originally Perſians, as having nothing in common with the other Perſians, but only the language.—They are diſtinguiſhed by their beard, which they wear very long; and by their dreſs, which is quite different from that of the reſt.

They are, in effect, heathens; but are in great reputation for the regularity of their life.—Some authors ſay, they adore fire, in imitation of the antient Perſians; but this is contradicted by others: they believe the immortality of the ſoul, and have ſome things like what the antients taught of hell, and the Elyſian fields.

When any of them die, they let looſe a cock in his houſe, and drive it out into a field; if a fox ſeiſes it, and bears it off, they make no doubt but the ſoul of the defunct is ſaved. If this firſt experiment does not ſatisfy them, they have recourſe to a ſecond, which is concluſive; they carry the carcaſe into the burying-ground, and prop it againſt the wall with a fork: if the birds peck out the right eye, they look on him as one of the predeſtinated, and bury him with a great deal of ceremony, letting him down gently into the grave; but if the birds begin with the left eye, they conclude him a reprobate, and throw him headlong into a ditch.

KEBLA, or KEBLAH, called alſo KEBLEH, KIBLEH, and ALKEBLA, among the Muſſulmen, denotes that point, or quarter, to which they turn themſelves when they ſay their prayers.

Mahomet, at firſt, durſt not propoſe any other *kebla* to his followers but the temple of Jeruſalem, which was the *kebla* of the Jews and Chriſtians.—In the courſe of time, however, being willing to bring his own off from any communication, in matters of religion, with the Jews and Chriſtians; he appointed them, in the *alcoran*, to turn themſelves, at prayer, towards the temple of Mecca: from which time they called thoſe two temples the *keblatan*, or two *keblas*.

Ricaut adds, that it is not the temple of Mecca, properly ſpeaking, that the Turks call *kebla*, but rather the large ſquare tower in the middle of the amphitheatre of that temple.

KEBLA is alſo uſed for an altar, or rather a *niche*, as Ricaut calls it, which the Mahometans have in all their churches, and which is placed very exactly on that ſide towards the temple of Mecca.

Hence alſo *kebla* comes to be uſed, metaphorically, for the object, or end propoſed, in doing any thing.

Thus, the *kebla* of kings, is their crown and authority; that of men of buſineſs, is money; that of gluttons, good chear, *&c.*

KEBLA-NOMA, or **KEBLEH-NOMA**, a name which the Turks and Perſians give to a little pocket-compaſs, which they always carry with them, in order to place themſelves the more exactly when they go to prayers.

KEDGING, a ſea-term, uſed when a veſſel is brought up or down a narrow river by the wind, though the tide be contrary to it.

To do this, the ſeamen ſet their fore-ſail, foretop-ſail, and mizen-ſail, and let her drive with the tide, that they may flat her about.—If ſhe come too near the ſhore, they have a little anchor ready, called the *kedger*, or *kedge-anchor*, with a hawſer faſtened to it from the ſhip; and this they drop in the midſt of the current, by which means they wind her head about; and this done, take up the anchor again.

KEEL, the loweſt piece of timber in a ſhip, placed in the bottom of her hull; one end thereof being let into the ſtern-poſt, and the other into the ſtem.

Into this are all the ground-timbers and hooks faſtened, and bolted, fore and aft.

When a ſhip has a deep *keel*, ſhe is ſaid to have a *rank keel*; and this ſerves to keep her from rolling.—See Tab. *Ship. fig.* 2. *n.* 57.

Falſe **KEEL**. See the article FALSE.

KEEPER *of the foreſt*, otherwiſe called *chief warden of the foreſt*, is an officer who has the principal government of all things belonging to a royal foreſt, and the check of all the other officers.

The lord chief juſtice in eyre of the foreſt, when he thinks fit to hold his juſtice-ſeat, ſends out his general ſummons to the *keeper* forty days before, to warn all under-officers to appear before him at a day aſſigned in the ſummons. See JUSTICE *of the foreſt*.

KEEPER *of the great ſeal* is a lord by his office, and is ſtiled *lord keeper of the great ſeal*. He is one of the king's privy-council, through whoſe hands paſs all charters, commiſſions, and grants of the king under the great ſeal; without which ſeal, all ſuch inſtruments, by law, are of no force: for the king is, in the interpretation of the law, a corporation, and paſſes nothing firmly but under the ſaid ſeal; which is, as the public faith of the kingdom, in the higheſt eſteem and reputation.

The lord *keeper* has the ſame place, authority, pre-eminence, juriſdiction, execution of laws, and all other cuſtoms, commodities, and advantages, as the lord chancellor of England has for the time being.—Both theſe officers cannot properly ſubſiſt at the ſame time, ſince the ſtatute of 5 Eliz.

KEEPER *of the privy ſeal* is a lord by his office; through whoſe hands paſs all charters ſigned by the king, before they come to the great ſeal, and ſome things which do not paſs the great ſeal at all. He is of the king's privy-council, and was antiently called *clerk of the privy ſeal*; yet reckoned in the number of the great officers of the realm. 12 Ric. II. c. 11. 27 Hen. VIII. c. 11.

KEEPING *of books*. See the article BOOK-KEEPING.

KEPLER'*s problem*. See the article PROBLEM.

KERAMIANS, a ſect, among the Muſſulmen, ſo called from Mohammed Ben Keram, its author.

The *Keramians* maintain, that whatever the *alcoran* ſays of the arms, eyes, and ears, of God, is to be underſtood literally: ſo that they admit the tagiaſſum, that is, a kind of corporeity in God; which, however, they explain very variouſly.

KERANA, a long ſort of trumpet, ſomewhat in form of a ſpeaking-trumpet, uſed by the Perſians.

To the ſound of this they add a confuſed noiſe of hautboys, timbrels, drums, and other inſtruments, every evening at ſunſet, and two hours after midnight.

KERMES, a kind of little animal, found in great plenty on an evergreen of the oak kind, and of conſiderable uſe, both in phyſic, and dying.

The *kermes*, called alſo *ſcarlet grain*, and by the Greeks *coccos baphica*, by the Latins *vermiculus*, by the French ſometimes *vermillon*, or *grain de gale*, or *vermeil*, is about the ſize of a juniper-berry, round, ſmooth, and gloſſy; of a beautiful red colour, and full of a mucilaginous juice, of the ſame dye; it is found adhering to the bark on the ſtem and branches of this peculiar ſort of ſcarlet oak, called by botaniſts *ilex aculeata cocciglandifera*; growing in Spain, Languedoc, and other hot countries.

The *kermes* is of a vinous ſmell, a bitter, rough, agreeable taſte; and its pulp, or juice, is pregnant with numerous minute ova.

The animal retains theſe ova under her belly, till they hatch into a very numerous offspring.

Hence, when the *kermes* is dried, there comes out of it an infinite number of little inſects, and flies, ſo ſmall, that they are ſcarce viſible; inſomuch, that the whole inward ſubſtance ſeems converted into them. To prevent this inconvenience, they uſually ſteep the *kermes* in vinegar before it be dry.

They draw the juice, or pulp, from the *kermes*, by pounding it in a mortar, and then ſtraining it through a ſieve: of this they make a ſyrup, by adding a ſufficient quantity of ſugar.—Sometimes they dry the pulp ſeparate from the huſk; which pulp, thus dried, they call *paſtel of kermes*.

The *kermes* grain is of great uſe in phyſic: it is cardiac, deſiccative, and aſtringent; it fortifies the ſtomach, and prevents abortion. Of this is made that celebrated confection called *alkermes*.

It is, however, of greater uſe in dying ſcarlet; for which uſe, the manner of preparing it is as follows:—The *kermes* being taken when ripe, they ſpread it on linen; and at firſt, while it abounds moſt in moiſture, turn it twice or thrice a day, to prevent its heating, till ſuch time as there appears a red powder among it: this they ſeparate, by paſſing it through a ſieve, and then again ſpread abroad the grain on the linen, till they perceive the ſame redneſs of powder, when they repeat the ſifting: thus they proceed, while they diſcover any red powder on the ſurface of the grain, which is ſtill paſſed through the ſearce, till it yield no more.

In the beginning, when the ſmall red grains are found to move, as they will always do, they are ſprinkled over with ſtrong vinegar, and rubbed between the hands.—Were not this precaution taken, out of every grain would be formed little inſects, which would be of no uſe in dying.

The grain being quite emptied of its pulp, or red powder, by the proceſs above-mentioned, is waſhed in wine, and then expoſed to the ſun; after this, it is put up into ſmall bags, and along with it the proportion of red duſt that it had afforded.

According to M. Marſigli's experiments, made at Montpelier, the *kermes* has the effect of galls, when mixed with vitriol; and makes a good ink: mixed with oil of tartar, or lime-water, its colour turns from a vermilion to a crimſon colour. In a decoction of turnſol-flowers it retains its proper colour.—They have not been able to get any fixed eſſential ſalt from it; but a volatile ſalt it yields in abundance; which, in M. Marſigli's opinion, would have a better effect in medicine, if taken in a liquid, than when incloſed in conſerves, and confections, which hinder its action. See Supplement, article KERMES.

KERN, or **KERNE**, a term in the antient Iriſh militia, ſignifying a *foot-ſoldier*.

Camden tells us, the armies of Ireland conſiſted of cavalry, called *galloglaſſes*; and infantry, lightly armed, called *kernes*.—The *kernes* bore ſwords, and darts; to the laſt were fitted cords, by which they could recover them, after they had been launched out.

KERNES, in our laws, ſignify idle perſons, or vagabonds. See VAGABOND.

KETCH, a kind of veſſel. See the article BOMB-KETCH.

KEY, a little iron inſtrument, for the opening of locks.

L. Molinus has a treatiſe of *keys*, *De Clavibus Veterum*, printed at Upſal. He derives the Latin name *clavis* from the Greek *κλειω*, *claudo*, I ſhut; or from the adverb *clam*, privately; and adds, that the uſe of keys is yet unknown in ſome parts of Sweden.

The invention of *keys* is owing to one Theodore of Samos, according to Pliny, and Polydore Vergil; but this muſt be a miſtake, the uſe of *keys* having been known before the ſiege of Troy: mention even ſeems made of them in the nineteenth chapter of Geneſis.

Molinus is of opinion, that *keys*, at firſt, only ſerved for the untying certain knots, wherewith they antiently ſecured their doors: but the Laconic *keys*, he maintains, were nearly akin in uſe to our own: they conſiſted of three ſingle teeth, and made the figure of an E; of which form there are ſome ſtill to be ſeen in the cabinets of the curious.

There was alſo another *key*, called βαλαναγρα, made in the manner of a male ſcrew, which had its correſponding female in a bolt affixed to the door.

Key is, hence, become a general name for ſeveral things ſerving to ſhut up, or cloſe others.

Key, or **Key-Stone**, *of an Arch, or Vault*, is the laſt ſtone placed atop thereof; which, being wider and fuller at the top than bottom, wedges, as it were, and binds in, all the reſt.

The *key* is different in the different orders; in the Tuſcan and Doric, it is a plain ſtone, only projecting; in the Ionic, it is cut, and waved ſomewhat after the manner of conſoles; in the Corinthian and Compoſite, it is a conſole enriched with ſculpture, foliages, &c.—See *Tab. Archit. fig.* 36. *lit. c. fig.* 50. *lit. f.*

The name **Key**-*ſtones*, or *Arch-ſtones*, is ſometimes alſo given to all the ſtones which form the ſweep of an arch, or vault—anſwering to what the French more diſtinctly call *vouſſoirs*.

Key is alſo uſed for the eccleſiaſtical juriſdiction; particularly for the power of excommunicating, and abſolving.

The Romaniſts ſay, the pope has the power of the *keys*, and can open and ſhut Paradiſe as he pleaſes; grounding their opinion on that expreſſion of Jeſus Chriſt, *I will give thee the keys of the kingdom of heaven.*

In S. Gregory we read, that it was the cuſtom heretofore for the popes to ſend a golden *key* to princes, wherein they always incloſed a little of the filings of S. Peter's chains, kept with a world of devotion at Rome; and that theſe *keys* were worn in the boſom, as being ſuppoſed to contain ſome wonderful virtues.

Key, in polygraphy, and ſteganography, denotes the alphabet of a cipher; which is a ſecret known only to the perſon who writes the letter, and him who deciphers it. See **Alphabet**.

Some ciphers have a ſingle *key*, where the ſame characters are uſed throughout; in other ciphers, the characters are varied, and the *key* is double.

Key, in muſic, is a certain fundamental note, or tone, to which the whole piece, be it concerta, ſonata, cantata, &c. is accommodated; and with which it uſually begins, but always ends.

To get an idea of the uſe of the *key*, it may be obſerved, that as in an oration there is a ſubject, *viz.* ſome principal perſon or thing to which the diſcourſe is referred, and which is always to be kept in view, that nothing unnatural, and foreign to the ſubject, may be brought in; ſo in every regular piece of muſic there is one note, *viz.* the *key*, which regulates all the reſt.—The piece begins and ends in this; and this is, as it were, the muſical ſubject, to which a regard muſt be had in all the other notes of the piece.—Again, as in an oration there are ſeveral diſtinct articles, which refer to different ſubjects, yet ſo as they have all a viſible connexion with the principal ſubject, which regulates and influences the whole; ſo in muſic there may be various ſubaltern ſubjects, that is, various *keys*, to which the different parts of the piece may belong: but then they muſt be all under the influence of the firſt and principal *key*, and have a ſenſible connexion with it.

To give a more diſtinct notion of the *key*, we muſt obſerve, that the octave contains in it the whole principles of muſic, both with reſpect to conſonance or harmony, and ſucceſſion, or melody; and if either ſcale be continued to a double octave, there will, in that caſe, be ſeven different orders of the degrees of an octave, proceeding from the ſeven different letters with which the terms of the ſcale are marked.—Any given ſound therefore, *i. e.* a ſound of any determinate pitch or tune, may be made the *key* of the piece, by applying to it the ſeven natural notes ariſing from the diviſion of an octave, and repeating the octave above or below, at pleaſure. The given note is applied as the principal note or *key* of the piece, by making frequent cloſes, or cadences upon it; and, in the progreſs of the melody, no other but thoſe ſeven natural notes can be admitted, while the piece continues in that *key*, every other note being foreign to the fundamental, or *key*.

For inſtance, ſuppoſe a ſong begun in any note, and carried on upwards, or downwards, by degrees, and harmonical diſtances, ſo as never to touch any notes, but what are referable to that firſt note as a fundamental, *i. e.* are the true notes of the natural ſcale proceeding from the fundamental; and let the melody be ſo conducted through thoſe natural notes, as to cloſe and terminate in the fundamental, or any of its octaves above or below; that note is called the *key* of the melody, becauſe it governs all the reſt, limiting them ſo far, as that they muſt be to it, in the relation to the ſeven eſſential notes of an octave; and when any other note is brought in, it is called, *going out of the key.*

From which way of ſpeaking, *viz.* a ſong's continuing in, or going out of the *key*, it may be obſerved, that the whole octave, with its natural notes, come under the idea of a *key*; though the fundamental or principal note is, in a peculiar ſenſe, called the *key*.

In which laſt ſenſe of the word *key* (*viz.* where it is applied to one fundamental note), another note is ſaid to be out of the *key*, when it has not the relation to that fundamental of any of the natural notes belonging to the concinnous diviſion of the octave.

Here too it muſt be added, with reſpect to the two different diviſions of the octave, that a note may belong to the ſame *key*, *i. e.* it may have a juſt muſical relation to the ſame fundamental in one kind of diviſion; and be out of the *key*, with reſpect to another.

Now a piece of muſic may be carried through ſeveral *keys*; *i. e.* it may be given in one *key*, and be led out of that into another, by introducing ſome note foreign to the firſt, and ſo on to another: but a regular piece muſt not only return to the firſt *key*, but thoſe other *keys*, too, muſt have a particular connexion with the firſt.—It may be added, that thoſe other *keys* muſt be ſome of the natural notes of the principal *key*, though not any of them at pleaſure.

As to the diſtinctions of *keys*, we have already obſerved, that to conſtitute any given note or ſound, a *key*, or fundamental note, it muſt have the ſeven eſſential or natural notes added to it; out of which, or their octaves, all the notes of the piece muſt be taken, while it keeps within the *key*, *i. e.* within the government of that fundamental.—It is evident, therefore, there are but two different ſpecies of *keys*, which ariſe according as we join the greater or leſs third, theſe being always accompanied with the ſixth and ſeventh of the ſame ſpecies; the third *g*, for inſtance, with the ſixth and ſeventh *g*; and the third *l*, with the ſixth and ſeventh *l*.

This diſtinction is expreſſed under the names of *ſharp key*, which is that with the third *g*, &c. and the *flat key*, which is that with the third *l*, &c. whence it is plain, that how many different cloſes ſoever there be in a piece, there can be but two *keys*, if we conſider the eſſential difference of *keys*; every *key* being either flat, or ſharp, and every ſharp *key* being the ſame, as to melody, as well as every flat one.

It muſt be obſerved, however, that in common practice the *keys* are ſaid to be different, when nothing is conſidered but the different tune, or pitch of the note, in which the different cloſes are made.—In this ſenſe, the ſame piece is ſaid to be in different *keys*, according as it is begun in different notes, or degrees of tune.

To prevent any confuſion which might ariſe, from uſing the ſame word in different ſenſes, M. Malcolm propoſes the word *mode* to be ſubſtituted inſtead of the word *key*, in the former ſenſe; that is, where it expreſſes the melodious conſtitution of the octave, as it conſiſts of ſeven eſſential or natural notes, beſides the fundamental; and in regard there are two ſpecies of it, he propoſes, that that with a third *g* be called the *greater mode*; and that with a third *l*, the *leſſer mode*; appropriating the word *key* to thoſe notes of the piece in which the cadence is made; all of which may be called *different keys*, in reſpect of their different degrees of tune.

To diſtinguiſh, then, accurately between a *mode* and a *key*, he gives us this definition; *viz.* an octave, with all its natural and eſſential degrees, is a *mode*, with reſpect to the conſtitution, or manner of dividing it; but, with reſpect to its place in the ſcale of muſic, *i. e.* the degree, or pitch of tune, it is a *key*; though that name is peculiarly applied to the fundamental.

Whence it follows, that the ſame mode may be with different *keys*; *i. e.* an octave of ſounds may be raiſed in the ſame order, and kind of degrees, which makes the ſame mode; and yet be begun higher or lower; *i. e.* be taken at different degrees of tune, with reſpect to the whole, which makes different *keys*; and, *vice verſa*, that the ſame *key* may be with different modes, *i. e.* the extremes of two octaves may be in the ſame degree of tune, yet the diviſion of them be different.

Keys alſo denote thoſe little pieces in the forepart of an organ, ſpinette, or harpſichord; by means whereof the jacks are played, ſo as to ſtrike the ſtrings of the inſtrument; and wind is given to the pipes; by raiſing and ſinking the ſucker of the ſound-board.

They are in number twenty-eight, or twenty-nine. In large organs, there are ſeveral ſets of theſe *keys*; ſome to play the ſmall ſecond organ, ſome for the main organ, ſome for the trumpet, and ſome for the echoing-trumpet. In ſome there are but a part that play, the reſt being for ornament. There are twenty ſlits in large *keys*, which make the half notes.

M. Bulioufki, of Douliez, pretends to have invented a new kind of *keys*, much preferable to the common ones. With theſe, he ſays, he can expreſs ſounds, which follow each other in a continual geometrical proportion; and ſo can furniſh all the ſounds in muſic, and by conſequence all the imaginary intervals and concords; whereas the common *keys* do but yield ſome of them.

Key, in a naval ſenſe. See the article **Kay**.

KHAZINE, the grand ſeignior's treaſury. See **Treasury**, and **Exchequer**.

Here are kept regiſters of receipts, accounts of provinces, in drawers, marked with the years, and the places names: here alſo is kept part of the emperor's wardrobe.

Every day of the divan this treaſury is opened, either to take out, or put ſomething in: and the principal officers, who have the charge of it, are all to aſſiſt at this opening. The Tchaouch-bachi, in their preſence, firſt breaks the wax wherewith the keyhole had been ſealed up, and, carrying it to the grand vizier, that miniſter firſt kiſſes it, and then draws out of his boſom the grand ſignor's gold ſeal; in the mean time he looks narrowly after the officer, who, when he has done his buſineſs in the treaſury, locks and ſeals up the place, and returns the ſeal to the vizier with the ſame ceremony as before.

Beſides this, there are other apartments for the money, where the officers are never allowed to enter with any cloaths that have pockets in them.

KIBES. See the article Chilblain.

KIDNEY, *rein*; a part of an animal, whoſe uſe is to ſeparate the urine.

The *kidneys* are two, ſituate one on each ſide; one between the liver and muſculus lumbaris, on the right ſide; the other between the ſpleen and the ſame muſcle, on the left ſide. In man, the right is lower than the left; but, in quadrupeds, it is uſually the contrary; they are faſtened to the loins, and the diaphragm, by their exterior membrane, and to the bladder by the ureters; the right is alſo faſtened to the inteſtine cæcum, and the left to the colon: their figure reſembles a bean, or rather a creſcent, being curve on the ſide of the vena cava, and on the outſide gibbous.

There are ordinarily but two *kidneys*, though ſometimes three have been found, and ſometimes four, and ſometimes on the other hand only one. In men they are commonly about five inches long, and three broad, and one and an half thick: their ſubſtance is compoſed of glands, and very ſmall urinary pipes, or canals; the glands form the circumference, and ſerve to ſeparate the urine; the papillæ, or urinary tubes, form the inner part; they come out of the glands, and carry the urine into a cavity, in the concave part of the *kidney*, called the *pelvis*, whence it paſſes through the ureters into the bladder. See Pelvis.

The *kidneys* are covered with two membranes, they have each of them arteries and veins; the arteries come from the aorta, and the veins terminate in the cava; theſe are all called *emulgents*. They have nerves alſo, which take their origin from the plexus renalis, formed by the ramifications of the intercoſtal nerve, and the nerves of the loins.

The *kidneys* ſecrete the urine from the blood, which, by the motion of the heart, is driven through the arteries into the emulgent arteries, and theſe carry it into the little glands; where its ſeroſity, being ſeparated, is received in at the orifices of the urinary pipes, which go from the glands to the pelvis, and thence runs by the ureters into the bladder; the blood, which could not enter the glands, is brought back by the emulgent veins.—See *Tab. Anat. (Splanch.) Fig. 1. lit. II. Fig. 4. lit. bb. cc.*

KILDERKIN, a kind of liquid meaſure, which contains two firkins, or eighteen gallons, beer-meaſure, and ſixteeen ale-meaſure.

Two *kilderkins* make a barrel, and four an hogſhead.

KING *, a monarch, or potentate, who rules ſingly and ſovereignly over a people. See Sovereign, Prince, *&c.*

Kings, both among the antient Greeks and Romans, were prieſts as well as princes. Virgil, ſpeaking of Anius, king of Delos, ſays,

> *Rex Anius, rex idem hominum, Phœbique ſacerdos.*

As to the Romans, Livy and Dionyſius are expreſs; they ſay, that though Numa inſtituted a great number of orders of prieſthood, yet ſome he diſcharged himſelf, and in perſon.—After the expulſion of the *kings*, they were obliged to create a *rex ſacrorum*, a *king* of the ſacrifices, for the adminiſtration of the prieſtly part of the royalty.

Lawyers ſay, the *king* of England is a mixed perſon, a prieſt as well as a prince: at his coronation he is anointed with oil, as the prieſts and *kings* of Iſrael were, to intimate, that his perſon is ſacred.

Among the Greeks, the *king* of Perſia had antiently the appellation of *the great king*; the *king* of France now has that of *the moſt Chriſtian king*, and the king of Spain has that of *catholic king*. See Catholic.

The *king* of the Romans is a prince choſen by the emperor, as a coadjutor in the government of the empire.

The *kings* of England, by the Lateran council, under pope Julius II. had the title of *Chriſtianiſſimus* conferred on them; and that of *defender of the faith* was added by pope Leo X. though it had been uſed by them ſome time before.

The title of *grace* was firſt given to our *kings* about the time of Henry IV. and that of *highneſs* and *majeſty* firſt to Henry VIII.

In all public inſtruments and letters, the *king* ſtyles himſelf *nos*, we, though till the time of *king* John, he ſpoke in the ſingular number.

The Hungarians formerly gave the name *king* to their queen Mary, to avoid the infamy which the laws of that country caſt upon thoſe who are governed by women: accordingly, ſhe bore the title of *king* Mary, till her marriage with Sigiſmund, at which time ſhe laid aſide her kingſhip, and took up the quality of queen.

The laws make it high treaſon barely to imagine or intend the death of the *king*; and, becauſe the deſtruction of the *king* may enſue that of his great counſellers or officers, it is felony in any of the *king*'s ſervants to conſpire even that; though in other capital caſes, it is a rule, that *voluntas non reputabitur pro facto*; and an Engliſhman ſhall not, in any other caſe, be put to death, unleſs the deed follow the intent.

The *king*'s office (as he promiſes at his coronation) is to preſerve the rights and privileges of the church, the prerogative of the crown, the laws and cuſtoms of the realm, *&c.* or as Forteſcue has it, he is *pugnare bella populi ſui, & eos rectiſſime judicare.* He acknowleges no precedence in any other prince but the emperor.

He has the ſupreme right of patronage, called *patronage paramount*, over all the eccleſiaſtical benefices in England.

He has power, by his prerogative, without any act of parliament, to make war or peace, conclude leagues and treaties, give commiſſions for impreſſing ſoldiers, diſpoſe of magazines, caſtles, ſhips, public moneys, *&c.* He convokes, adjourns, prorogues, and diſſolves parliaments; and may refuſe his aſſent to any bill paſſed by both houſes, without giving his reaſons for it.

He may increaſe the number of members of either houſe at pleaſure, by creating new peers, and beſtowing privileges on other towns for ſending burgeſſes to parliament. He has alſo power to enfranchiſe an alien, and make him a denizen.

Debts due to him are always to be ſatisfied in the firſt place, in caſe of executorſhip, *&c.* and till his debt is diſcharged, he may protect the creditor from the arreſts of others. He may diſtrain for the whole debt on a tenant that holds but part of the land, is not obliged to demand his rent as others are, may ſue in what court he pleaſes, and diſtrain where he liſts. In all doubtful caſes, *ſemper præſumitur pro rege:* no ſtatute reſtrains him, unleſs he be particularly named. In all caſes where the *king* is plaintiff, his officers may enter with an arreſt; and, if entrance be denied, break open an houſe, and ſeize the party; though in other caſes a man's houſe is his caſtle, and has a privilege to protect him againſt all arreſts.

He has cuſtody of the perſons and eſtates of idiots and lunatics: he is *ultimus hæres regni*, and to him revert all eſtates, when no heir appears. All treaſure-trove (*i. e.* money, plate, or bullion, found, and the owners not known) belongs to him; ſo all waifs, ſtrays, wrecks, lands recovered from the ſea, gold and ſilver mines, royal fiſhes, *&c.* belong to him. He can unite, ſeparate, enlarge, or contract, the limits of biſhopricks, or eccleſiaſtical benefices, and by his letters erect new biſhopricks, colleges, *&c.* See Regalia.

He can diſpenſe with the rigour of the eccleſiaſtical laws, except thoſe which have been confirmed by an act of parliament, or declared by the bill of rights; as, for a baſtard to be a prieſt, for a biſhop to hold a benefice in commendam, *&c.* He has alſo power to diſpenſe with ſeveral acts of parliament, and penal ſtatutes, by a non-obſtante, where himſelf is alone concerned; to moderate the rigour of the law, according to equity; to pardon a man condemned by law, except in appeals of murder; and to interpret by his judges, in ſtatutes and caſes not defined by law.

The laws eſteem him God's vicegerent on earth, and aſcribe various perfections to him, not belonging to any other man. No flaw or weakneſs is found in him; no injuſtice or error; no negligence, infamy, ſtain, or corruption of blood. By his crown he is, ipſo facto, cleared of all attainder: no nonage or minority are allowed in him; and his very grants of lands, though held in his natural capacity, cannot be avoided by nonage. Nay more, the law aſcribes a kind of perpetuity, or immortality, to him; *Rex Angliæ non moritur*. His death is termed his *demiſe*, becauſe the crown is thereby demiſed to another.

He is ſaid not to be liable to death, as being a corporation of himſelf, that lives for ever. There is no interregnum, but the minute one *king* dies, his heir is *king*, fully and abſolutely, without any coronation, ceremony, *&c.*—To theſe it may be added, that the law attributes a kind of ubiquity to the *king*; he is in a manner every-where, in all his courts, and therefore cannot be nonſuited.

Some things, however, there are which the *king* cannot do; *viz.* he cannot do wrong, nor can he diveſt himſelf, or ſucceſſors, of any part of his regal prerogative, authority, *&c.*

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* Camden derives the word from the Saxon Cyning, which ſignifies the ſame; and that from Can, power, or Ken, knowlege, wherewith every monarch is ſuppoſed to be inveſted. The Latin *rex*, the Scythian *reix*, the Punic *reſch*, the Spaniſh *rey*, and French *roy*, come all, according to Poſtel, from the Hebrew ראש *roſch*, chief, head.

There are ſeveral things alſo which he cannot do *ſalvo jure, ſalvo juramento, & ſalva conſcientia ſua*: in particular, there are two things which he cannot do without the conſent of parliament; *viz.* make new laws, or raiſe new taxes.

Champion of the KING.	See the article	CHAMPION.
Charters of the KING.		CHARTER.
Committee of the KING.		COMMITTEE.
Peace of the KING.		PEACE.
Quarantain of the KING.		QUARANTAIN.
Tenant of the KING.		TENANT.
Widow of the KING.		WIDOW.

KING *of the ſacrifices, Rex ſacrificulus,* or *ſacrorum,* was a title of an antient prieſt, or miniſter of religion, at Rome; who was ſuperior to the flamen dialis, but inferior to the pontifex maximus.

He was created at the comitia centuriata, or aſſembly of the centuries, and was at firſt choſen out of the number of the patricians. He could not, during his office, hold any magiſtracy, nor harangue the people. He preſided at all the ſacrifices, proclaimed the feaſts, *&c.*

His wife bore the title of *queen of the ſacrifices, regina ſacrorum*; and had herſelf a part in the ſacred ceremonies.

KING *at arms,* or *of arms,* is an officer of great antiquity, and antiently he was of great authority: his buſineſs is to direct the heralds, preſide at their chapters, and have the juriſdiction of armory.

In England we have three kings of arms; *viz. Garter, Clarencieux,* and *Norroy*

Garter, principal KING *at arms.* See the article GARTER.

This officer was inſtituted by Henry V. His buſineſs is to attend the knights of the garter at their aſſemblies, to marſhal the ſolemnities at the funerals of the higheſt nobility, and to carry the garter to kings and princes beyond the ſea; on which occaſion he uſed to be joined in commiſſion with ſome principal peer of the kingdom.

Clarencieux KING *at arms* is ſo called from the duke of Clarence, to whom he firſt belonged. His office is to marſhal and diſpoſe the funerals of all the inferior nobility, as baronets, knights, eſquires, and gentlemen, on the ſouth-ſide of the Trent.

Norroy KING *at arms* is to do the ſame on the north-ſide of the river Trent.

Theſe two laſt are alſo called *provincial heralds,* in regard they divide the kingdom between them into two provinces.

Theſe, by charter, have power to viſit noblemens families, to ſet down their pedigrees, diſtinguiſh their arms, appoint perſons their arms, and, with *Garter,* to direct the other heralds.

Antiently the *kings at arms* were created, and ſolemnly crowned, by the kings of England themſelves; but of later days the earl marſhal has a ſpecial commiſſion, at every creation, to perſonate the king.

To theſe may be added, *Lyon* KING *at arms,* for Scotland, who is the ſecond *king at arms* for Great Britain; he is inveſted and crowned with great ſolemnity. To him belong the publiſhing the king's proclamations, marſhalling funerals, reverſing arms, *&c.*

KINGDOM, among chemiſts, is a term which they apply to each of the three orders, or claſſes, of natural bodies; *animal, vegetable,* and *mineral.*

KING'S *bench, bancus regius,* a court, or judgment-ſeat, ſo called, in regard the king is ſuppoſed to ſit in perſon as judge of the court, and may do ſo whenever he pleaſes; for which reaſon all writs, and other proceſs in this court, are made returnable coram nobis, that is, before the king himſelf, and not coram juſtitiariis noſtris, as is the form in the common-pleas.

The *judges* of this court are the lord chief juſtice, and three other puiſne juſtices.

In this court are principally determined matters relating to the crown, and the peace.—When any perſon is aggrieved by an order of juſtices, or quarter-ſeſſions, they have recourſe hither; the rights of elections of mayors, bailiffs, conſtables, *&c.* are often, upon mandamus's, brought before this court to be ſettled; and prohibitions are hence iſſued out to ſtay proceedings in the eccleſiaſtical, admiralty, or any inferior court, where the matters appear to be triable at common law.

The ſubject has alſo a right to ſue in this court for any debt or contract, as well as in any other court, and may as advantageouſly and expeditiouſly proceed.

The *chief juſtice* is conſtituted by writ; and he is to hold, quamdiu ſe bene geſſerit; and ſo cannot be diſplaced without ſome great miſdemeanour; though formerly the chief juſtice, and other inferior judges, were made only durante beneplacito, and accordingly were turned out at the king's pleaſure. The ſalary of the lord chief juſtice uſed to be but 1500 l. per ann. but it is now 500 l. per term.—He preſides under his majeſty in this court; but when the court divides, in giving judgment upon any ſpecial argument, he hath but one voice; ſo that if the opinion of the court ſhould be equally divided, the matter muſt reſt till one of the judges ſhall ſee juſt reaſon to alter his opinion.—He is to attend the lords in parliament, though he has no vote, unleſs he be a peer himſelf, but is to give his opinion and advice to the houſe by virtue of a writ of aſſiſtance; and is frequently therefore conſulted by them, both in making and repealing laws, and in altering or explaining them. He makes a return of all writs of error in parliament directed to this court, and with his own hand delivers the writ of error, and a tranſcript of the proceedings in the cauſe, into the houſe of lords.

The three puiſne or *inferior judges* of this court go the circuits, and are in commiſſion of oyer and terminer at the Old-Baily. Their ſalary is 375 *l.* per term, to which they, as well as the chief juſtice, are intitled, though they happen not to ſit one day in court in the term, unleſs they give their aſſent ſo ſlightly, as, on a ſcire facias, to be charged with negligence: theſe alſo hold by quamdiu ſe bene geſſerint.

There are ſeveral *officers* belonging to this court, as two chief clerks, or prothonotaries, who are ſuppoſed to enter all the pleadings and judgments between party and party; although this is in reality done by an entering-clerk under them; and all writs of latitat, non omittas, bills of Middleſex, habeas corpus, *&c.* are ſubſcribed with the names of theſe chief clerks.

The *ſecondary* acts as maſter of the office on the pleas ſide, and is the chief clerk's deputy; his buſineſs is to examine any perſon, who is to be ſworn an entering-clerk, or attorney at large, whether he be duly qualified, and to preſent him to the chief juſtice.—He alſo ſigns all judgments, and gives coſts upon them; and the court, upon any motion, in relation to the irregular practice of any clerk or attorney, generally refers the examination thereof to him.—He alſo takes all affidavits in court (unleſs on the crown-ſide), and the acknowlegement of all deeds in court.

KING'S *evil.*	See the article	EVIL.
KING'S *exchange.*		EXCHANGE.

KING'S *houſhold.* See HOUSHOLD, GREENCLOTH, COFFERER, *&c.*

KING'S *privy-council.* See the article COUNCIL.

KING'S *ſilver,* the money due to the king in the court of common-pleas, pro licentia concordandi, in reſpect of a licence there granted to any man for levying a fine of lands, or tenements, to another perſon.

KING'S *thanes.*	See the article	THANES.
KING'S *war.*		WAR.

KING'S *wardrobe.* See the article WARDROBE.

KINTAL, or QUINTAL, a weight of one hundred pounds, more or leſs, according to the different uſage of divers nations. The *kintal* of Smyrna is 123 pounds, 3 ounces, 9 drachms; or 120 pounds, 7 ounces, 12 drachms; but that of Aleppo is 465 pounds, 11 ounces, 15 drachms.

KIPPER-TIME, a ſpace of time between the feſtival of the finding of the Holy Croſs, May the third, and Twelfth-day; during which, ſalmon-fiſhing in the river Thames, from Graveſend to Henley, is forbidden by *Rot. Parl.* 50 Edw. III.

KIRK-MOTE, a ſynod. See the article SYNOD.

Sometimes the word is alſo taken for a meeting in the church, or veſtry. See MOTE.

KIRK-SESSIONS, the name of a petty eccleſiaſtical judicatory in Scotland. Each pariſh, according to its extent, is divided into ſeveral particular diſtricts, every one of which has its own elder and deacon to overſee it. A conſiſtory of the miniſters, elders, and deacons of a pariſh, form a *kirk-ſeſſions.*

Theſe meet once a week, the miniſter being their moderator, but without a negative voice. It regulates matters relating to public worſhip, elections, catechizing, viſitations, *&c.* It judges in matters of leſs ſcandal; but greater, as adultery, are left to the preſbytery; and in all caſes an appeal lies from it to the preſbytery.

KIZILBASCH, or KEZELBASCH, a Turkiſh term, ſignifying *red-head*: applied by way of obloquy to the Perſians, ever ſince Iſhmael Sophi, founder of the family laſt reigning in Perſia, who ordered his ſoldiers to wear a red cap, round which is a ſcarf or turban with a dozen plaits in it, in memory of the twelve imams, ſucceſſors of Ali, from whom he pretended to deſcend.

Viginere writes the word *kezeilbaſs,* and adds, that, according to the vulgar interpretation among the Perſians, the twelve plaits ſignify the twelve ſacraments of their law. Viginere, not contented with this, looks out for another original, and tells us there is a myſtery in it, derived from the antient paganiſm, when the Perſians adored fire, whoſe heat is denoted by the red colour, which in ſome meaſure ſymbolizes with the ſun, held by them in the higheſt veneration. He adds, that the twelve plaits ſhew the twelve months of the year, and the twelve ſigns in which that luminary performs his courſe.

KNAVE[*], an old appellation for a man-ſervant, and ſo uſed in 14 E. III. ſtat. 1. cap. 3.

KNAVE alſo ſignifies a male-child or boy; in which ſenſe

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[*] The word is formed from the Saxon *cnapa,* or Flemiſh *knape,* which ſignify the ſame.

knave-child has been frequently uſed, in contradiſtinction to a *girl*; and in this ſenſe Wicliff uſes the word in his tranſlation of Exod. i. 16. and other places of the Bible. In the old Saxon tranſlation of Mat. viii. 6. *Puer meus jacet in domo paralyticus*, was turned, *Myn knapa*.

KNAVE has ſometimes alſo been uſed as an addition; as Willielmus Cowper de Denbigh, *knave*, &c.

It is a common opinion, that Rom. i. 1. was tranſlated, *Paul a knave of Jeſus Chriſt*. This miſtake was occaſioned by a Bible in the duke of Lauderdale's library, where the word *kneawe* is inſerted in leſs characters than the others, and a raſure might be eaſily diſcerned.

KNEELING. See the article GENUFLEXION.

KNEES.—*Carling* KNEES. See CARLING.

KNIGHT * properly ſignifies a perſon, who for his virtue, and martial prowess, is, by the king, raiſed above the rank of gentlemen, into an higher claſs of dignity and honour.

* The word *knight*, in its original German, *knecht*, ſignifies a *ſervant*; and has ſince been uſed for a ſoldier, or man of war.—We have but one inſtance among us where *knight* is uſed in the firſt ſenſe, and that is in *knight of the ſhire*, who properly *ſerves* in parliament for ſuch a county.—In the Latin, French, Spaniſh, Italian, and Dutch languages, *knight* is expreſſed by a word which properly ſignifies an *horſeman*, as being uſually employed on horſeback. Indeed our common law calls them *milites*, ſoldiers, becauſe they uſually held lands in *knight*-ſervice, to ſerve the king as ſoldiers in his wars; in which ſenſe the word *miles* was uſed *pro vaſſallo*.

Knighthood was the firſt degree of honour in the antient armies, and was uſually conferred with a great deal of ceremony on thoſe who had diſtinguiſhed themſelves by ſome notable exploit in arms. They were originally ſaid to be adopted, which we now call *dubbed*; as being ſuppoſed, in ſome meaſure, the ſons of him who knighted them.

The ceremonies at the creation of a *knight* have been various. The principal were a box on the ear, and a ſtroke with a ſword on the ſhoulder. Then they put on him a ſhoulder-belt, and gilt ſword, ſpurs, and the other military accoutrements; after which, being armed as a *knight*, he was led in great pomp to the church.

The manner of making a *knight* with us, is deſcribed by Camden in a few words: *Qui equeſtrem dignitatem ſuſcipit, flexis genibus leviter in humero percutitur: princeps his verbis affatur, Sus vel ſois chevalier au nom de Dieu, Surge vel ſis eques in nomine Dei*. This is meant of *knights-bachelors*, which is the loweſt, though the moſt antient, order of knighthood among us.

Knights grew ſo very numerous, that the dignity became of much leſs repute. Charles V. is ſaid to have made five hundred in a ſingle day: on which account, therefore, new orders of knighthood were inſtituted, in order to diſtinguiſh the more deſerving from the croud.—For the ſeveral kinds of *knights* among us, ſee BACHELOR, BANNERET, BARONET, BATH, GARTER, &c.

KNIGHT is alſo underſtood of a perſon admitted into any order, either purely military, or military and religious, inſtituted by ſome king or prince, with certain marks and tokens of honour and diſtinction.

Such are the *knights of the garter*, *of the elephant*, *of the Holy Ghoſt*, *of Malta*, &c. All which ſee under their proper names, GARTER, ELEPHANT, &c.

KNIGHT, *Eques*, among the Romans, was the ſecond degree of the nobility; following immediately that of the ſenators.

At the time of building the city of Rome, the whole army of Romulus conſiſted of 3000 foot, and 300 horſe; which 300 horſe were the original of the Roman *equites*, or *knights*. Theſe made the ſecond order that had places in the ſenate.

Manutius and Sigonius are of opinion, that beſides the equeſtrian order, and thoſe *knights* immediately below the ſenators, Romulus inſtituted a military order, whereof the Roman cavalry was compoſed. But no antient author takes notice of any order of knighthood inſtituted on purpoſe for the war, nor any other *knights* but thoſe 300, which, as we have obſerved, were the firſt foundation of the equeſtrian order.

The *knights* had an horſe kept them at the public charge; but when they were taken in among the ſenators, they reſigned that privilege: to be a *knight*, it was neceſſary they ſhould have a certain revenue, that their poverty might not diſgrace the order; and when they failed of the preſcribed revenue, they were expunged out of the liſt of *knights*, and thruſt down among the plebeians. Ten thouſand crowns is computed to have been the revenue required.

The *knights* grew ſo very powerful, that they became a balance between the power of the ſenate and the people. They neglected the exerciſes of war, and betook themſelves principally to civil employments in Rome; inſomuch that Pliny obſerves, in his time, they had no longer an horſe kept at the public expence.

Some ſay, that the order of *knights*, as diſtinct from the people, did not begin before the time of the Gracchi; others ſay the privilege was then firſt granted them, that no judge ſhould be choſen, but out of their order: ſome time after which, they took them into the ſenate. This, however, is certain, it was only from that time that a certain revenue was neceſſary, and that this intitled them to the knighthood, without being deſcended from antient *knights*.

KNIGHTHOOD, a military order, or honour; or a mark or degree of antient nobility, or reward of perſonal virtue and merit.

There are four kinds of *knighthood*; *military*, *regular*, *honorary*, and *ſocial*.

Military KNIGHTHOOD is that of the antient knights, who acquired it by high feats of arms.

Theſe are called *milites*, in antient charters and titles, by which they were diſtinguiſhed from bare *bachelors*, &c.

Theſe knights were girt with a ſword, and pair of gilt ſpurs; whence they were called *equites aurati*.

Knighthood is not hereditary, but acquired. It does not come into the world with a man, like nobility; nor can it be revoked. The ſons of kings, and kings themſelves, with all other ſovereigns, heretofore had *knighthood* conferred on them as a mark of honour. They were uſually knighted at their baptiſm or marriage, at their coronation, before or after a battle, &c.

Regular KNIGHTHOOD is applied to all military orders, which profeſs to wear ſome particular habit, to bear arms againſt the infidels, to ſuccour and aſſiſt pilgrims in their paſſage to the Holy Land, and to ſerve in hoſpitals where they ſhould be received; ſuch were the knights templars, and ſuch ſtill are the knights of Malta, &c.

Honorary KNIGHTHOOD is that which princes confer on other princes, and even on their own great miniſters and favourites; ſuch are knights of the garter, S. Michael, &c.

Social KNIGHTHOOD is that which is not fixed, nor confirmed by any formal inſtitution, nor regulated by any laſting ſtatutes; of which kind there have many orders been erected on occaſion of factions, of tilts and tournaments, maſquerades, and the like.

The abbat Bernardo Juſtiniani, at the beginning of his hiſtory of *knighthood*, gives us a complete catalogue of the ſeveral orders: according to this computation, they are in number 92. Favin has given us two volumes of them under the title of *Theatre d'Honneur & de Chevalerie*. Menenius has publiſhed *Deliciæ Equeſtrium Ordinum*, and Andr. Mendo has written *de Ordinibus Militaribus*. Beloi has traced their original, and Geliot, in his *Armorial Index*, has given us their inſtitutions.

To theſe may be added, Father Meneſtrier, *de la Chevalerie Ancienne & Moderne*, Michieli's *Treſor Militaire*, Caramuel's *Theologia Regolare*, Miræus's *Origines Equeſtrium ſive Militarium Ordinum*: but, above all, Juſtiniani's *Hiſtorie Chronologiche dell' Origine de gl' Ordine Militari, e di tutte le Religione Cavalereſche*: the edition which is fulleſt, is that of Venice in 1692. in 2 vols. fol.

KNIGHTS *of S. Catherine of Mount Sina*. See CATHERINE.

KNIGHTS *of the Chapel.*	See the article	CHAPEL.
KNIGHTS *of the Collar.*		COLLAR.

KNIGHTS-ERRANT, a pretended order of chivalry, whereof ample mention is made in the old romances.

They were a kind of heroes, who travelled the world in ſearch of adventures, redreſſing wrongs, reſcuing damſels, and taking all occaſions of ſignalizing their prowess.

This romantic bravery of the old *knights* was heretofore the chimæra of the Spaniards; among whom there was no cavalier but had his miſtreſs, whoſe eſteem he was to gain by ſome heroic action. The duke of Alva, for all his age and gravity, is ſaid to have vowed the conqueſt of Portugal to a young lady.

KNIGHTS *of S. George.*	See the article	GEORGE.
KNIGHTS *of Honour.*		HONOUR.

KNIGHT-MARSHAL, an officer in the king's houſe, who has juriſdiction, and cognizance of any tranſgreſſion within the king's houſe, and verge; as alſo of contracts made there, whereof one of the houſe is party.

KNIGHTS *of the Mine*. See the article MINE.

KNIGHTS *of Mary.*	See the article	MARY.
KNIGHTS *of Mount Carmel.*		CARMEL.
Rad KNIGHTS.		RAD.
KNIGHTS *of the round Table.*		TABLE.

KNIGHTS *of the Shire*, or KNIGHTS *of Parliament*, are two gentlemen of worth, choſen on the king's writ in pleno comitatu, by ſuch of the freeholders of every county as can expend 40*s*. per ann. to repreſent ſuch county in parliament.

Theſe, when every man who had a knights-fee was cuſtomarily conſtrained to be a *knight*, were of neceſſity to be *milites gladio cincti*, for ſo the writ runs to this day; but now cuſtom admits eſquires to be choſen to this office.

They muſt have at leaſt 500*l*. per ann. and their expences properly are to be defrayed by the county; though this is ſeldom, now, required.

KNIGHTS, in a ſhip, two thick, ſhort pieces of timber, uſually

ally carved in the figure of ſome head, having in each four ſhivers, three for the halliards, and one for the top-ropes to run in.

One of them ſtands abaft the main-maſt, and for that reaſon is called the *main-knight*. The other ſtands abaft the fore-maſt, on the ſecond deck, and is called the *fore-knight*.

Knights-Fee, an antient law-term, ſignifying ſo much land of inheritance as was eſteemed ſufficient to maintain a knight with ſuitable retinue; which, in Henry the Third's days, was reckoned at 15 *l.* per ann. And by a ſtat. 1 Edw. II. ſuch as had 20 *l.* per ann. in fee, or for life, might be compelled to be knights.—But this ſtatute is repealed 17 Car. I. Sir T. Smith rates a *knight's-fee* at 40 *l.* yearly.—According to Coke, a *knight's-fee* contained twelve carucates, or plough-lands.—Stow ſays, that there were found in England, at the time of the Conqueror, 60211 *knights-fees*; according to others, there were 60215: whereof the religious houſes, before their ſuppreſſion, were poſſeſſed of 28015. See Fee.

Knights-Service, *ſervitium militare*, a tenure whereby ſeveral lands in this nation were antiently held of the king; which drew after it homage, ſervice in war, eſcuage, wardſhip, marriage, &c. but taken away by the ſtatute 12 Car. II. c. 24.

KNIT *ſtockings*. See the article Stockings.

KNOCKING-*mill*. See the article Stamping.

KNOT properly denotes a part of a tree, from whence it ſhoots out branches, roots, or even fruit.

The wood is harder and cloſer in the *knots* than in any other part, but it is alſo more ſubject to ſplit there. Vines and dwarf fruit-trees are pruned at the ſecond *knot* of the new ſhoot.

The uſe of the *knots* of plants is to ſtrengthen the ſtem: they ſerve alſo as ſearces to filtrate, purify, and refine, the juice raiſed up for the nouriſhment of the plant.

Knots of the log-line, at ſea, are the diviſions of it. See Log.

Theſe are uſually ſeven fathoms or forty-two feet aſunder, but they ſhould be fifty feet; and then, as many *knots* as the log-line runs out in half a minute, ſo many miles doth the ſhip ſail in an hour, ſuppoſing her to keep going at an equal rate, and allowing for yaws, lee-way, &c.

Knot, in medicine, a protuberance in the joints of old gouty people: conſiſting of a thick, viſcous, crude, indigeſted pituita, accompanied with a bilious humour, hot and acrimonious; the groſſeſt and moſt terreſtrial part whereof clogs and converts into a ſtony ſubſtance like chalk.

Knots appear to be generated like ſtones in the bladder.

Phyſicians ſometimes alſo call them *nodes*, and *tophi*. See Tophus, and Node.

Knot is alſo uſed for the intrigue of a romance, or dramatic piece; being that part where the perſons are the moſt embarraſſed, by a conjuncture of affairs whoſe end it is not eaſy to foreſee.

Ariſtotle, under this term, includes all the incidents of a tragedy, from its beginning to the place where it begins to unravel. The *knot* holds as long as the mind is kept ſuſpended about the event. The *knot* ought always to laſt to the middle of the fifth act, otherwiſe the reſt of the piece languiſhes.

Order of the **Knot** is the name of a military order in the kingdom of Naples, inſtituted in 1352. by queen Jane I. on occaſion of the peace eſtabliſhed between her and the king of Hungary, by means of her marriage with Louis prince of Tarentum.

The order conſiſted of ſixty knights: Clement VI. approved this order, and gave it the rule of S. Baſil: it choſe S. Nicolas for its protector; but it dwindled away after the death of its foundreſs.

KNOWING, *principles and rules of*. See Principle, and Rule.

KNOWLEGE, according to Mr. Locke, conſiſts in the perception of the connexion and agreement, or diſagreement and repugnancy, of our ideas. See Idea.

In which ſenſe, *knowlege* ſtands oppoſed to *ignorance*. See Ignorance.

To *know that white is not black*, is only to perceive that theſe two ideas do not agree. So, in *knowing* that the three angles of a triangle are equal to two right ones; what do we more than perceive, that equality to two right ones neceſſarily agrees to, and is inſeparable from, the three angles of a triangle?

Kinds of **Knowlege**.—For what relates to the agreement or diſagreement of ideas, we may reduce the whole doctrine, and conſequently the whole ſtock, of our *knowlege*, to four heads; *viz. identity* or *diverſity*, *relation*, *co-exiſtence*, and *real exiſtence*.

As to the identity or diverſity of our ideas, we may obſerve, that it is the firſt act of the mind to perceive its own ideas; and, ſo far as it perceives them, to *know* each what it is, and thereby to perceive their difference; that is, the one not to be the other: by this the mind clearly perceives each idea to agree with itſelf, and to be what it is; and all diſtinct ideas to diſagree.—This it does without any pains, or deduction, by its natural power of perception, and diſtinction: and for doing this, men of art have eſtabliſhed certain general rules, or principles; as, that what is, is; and that is impoſſible for the ſame thing to be, and not to be.—But no maxim can make a man *know* clearer, that round is not ſquare, than the bare perception of the two ideas, which the mind, at firſt ſight, perceives to diſagree.

The next kind of agreement, or diſagreement, the mind perceives, in any of its ideas, may be called *relative*, and is nothing but the perception of the relation between any two ideas, of what kind ſoever; that is, their agreement, or diſagreement, one with another, in the ſeveral ways, or reſpects, the mind takes of comparing them.

The third ſort of agreement, or diſagreement, to be found in our ideas, is coexiſtence, or non-coexiſtence, in the ſame ſubject; and this belongs particularly to ſubſtances.—Thus when we pronounce concerning gold, that it is fixed, it amounts to no more but this; that fixedneſs, or a power to remain in the fire unconſumed, is an idea which always accompanies that particular ſort of yellowneſs, weight, fuſibility, &c. which make our complex idea ſignified by the word *gold*.

The fourth ſort is that of actual and real exiſtence, agreeing to any idea.

Within theſe four ſorts of agreement, or diſagreement, ſeems contained all the *knowlege* we have, indeed all we are capable of; for all that we *know*, or can affirm, concerning any idea, is, that it is, or is not, the ſame with ſome other; as, that blue is not yellow: that it does, or does not, coexiſt with another in the ſame ſubject; as, that iron is ſuſceptible of magnetical impreſſions: that it hath that or this relation to ſome other ideas; as, that two triangles upon equal baſes, between the ſame parallels, are equal: or, that it has a real exiſtence without the mind; as, that God is.

The mind becomes poſſeſſed of truth in ſeveral manners, which conſtitute ſo many different ſpecies of *knowlege*.—Thus, when the mind has a preſent view of the agreement or diſagreement of any of its ideas, or of the relation they have one with another, it is called *actual knowlege*.

Secondly, a man is ſaid to *know* any propoſition, when, having once evidently perceived the agreement or diſagreement of the ideas whereof it conſiſts, and ſo lodged it in his memory, that whenever it comes to be reflected on again, the mind aſſents to it without doubt or heſitation, and is certain of the truth of it: this may be called *habitual knowlege*.—And thus a man may be ſaid to *know* all thoſe truths which are lodged in his memory, by a foregoing, clear, and full perception.

Of habitual *knowlege*, there are two ſorts; the one conſiſts of ſuch truths, laid up in the memory, as whenever they occur to the mind, it actually perceives the relation that is between their ideas; and this is in all thoſe truths where the ideas themſelves, by an immediate view, diſcover their agreement or diſagreement one with another.—The other is of ſuch truths, whereof the mind having been convinced, it retains the memory of the conviction, without the proofs.—Thus a man that remembers certainly, that he once perceived the demonſtration, that the three angles of a triangle are equal to two right ones, *knows* it to be true, when that demonſtration is gone out of his mind, and cannot poſſibly be recollected: but he *knows* it in a different way from what he did before; namely, not by the intervention of thoſe intermediate ideas; whereby the agreement, or diſagreement, of thoſe in the propoſition was at firſt perceived; but by remembering, that is, *knowing*, that he was once certain of the truth of this propoſition, that the three angles of a triangle are equal to two right ones.—The immutability of the ſame relations between the ſame immutable things, is now the idea, that ſhews him, that if the three angles of a triangle were once equal to two right ones, they will always be ſo.—And hence he comes to be certain, that what was once true, is always true; what ideas once agreed, will always agree; and conſequently, what he once *knew* to be true, he will always *know* to be true, as long as he can remember that he once *knew* it.

Degrees of **Knowlege**.—As to the different degrees, or clearneſs of our *knowlege*, it ſeems to lie in the different way which the mind has of perceiving the agreement or diſagreement of any of its ideas.—When the mind perceives this agreement or diſagreement of two ideas immediately by themſelves, without the intervention of any other, we may call it *intuitive knowlege*; in which caſe the mind perceives the truth, as the eye doth light, only by being directed towards it.—Thus the mind perceives, that white is not black; that three are more than two, and equal to one and two.—This part of *knowlege* is irreſiſtible; and, like the bright ſun-ſhine, forces itſelf immediately to be perceived, as ſoon as ever the mind turns its view that way.—It is on this intuition that depends all the certainty and evidence of our other *knowledge*; which certainty every one finds to be ſo great, that he cannot imagine, and therefore cannot require, a greater.

The next degree of *knowledge* is, where the mind perceives not this agreement, or diſagreement, immediately, or by the juxtapoſition, as it were, of the ideas; becauſe thoſe ideas, concerning whoſe agreement, or diſagreement, the inquiry is made, cannot, by the mind, be ſo put together, as to ſhew it. —In this caſe, the mind is obliged to diſcover the agreement, or diſagreement, which it ſearches for, by the intervention of other ideas: and this is that which we call *reaſoning*.

Thus, if we would *know* the agreement, or diſagreement, in bigneſs, between the three angles of a triangle and two right angles, we cannot do it by an immediate view and compariſon of them, becauſe the three angles of a triangle cannot be brought together at once, and compared with any other one or two angles; and ſo of this the mind has no immediate or intuitive *knowledge*.—But we muſt find out ſome other angles, to which the three angles of a triangle have equality; and, finding thoſe equal to two right ones, we come to *know* the equality of theſe three angles to two right ones.

Thoſe intervening ideas, which ſerve to ſhew the agreement of any two others, are called *proofs*; and where the agreement, or diſagreement, is by this means plainly and clearly perceived, it is called *demonſtration*: and a quickneſs in the mind to find thoſe proofs, and to apply them right, is that which is called *ſagacity*.

This *knowledge*, though it be certain, is not ſo clear and evident as intuitive *knowledge*; it requires pains and attention, and ſteady application of mind, to diſcover the agreement, or diſageement, of the ideas it conſiders; and there muſt be a progreſſion by ſteps and degrees, before the mind can, in this way, arrive at any certainty.—Before demonſtration, there was a doubt, which, in intuitive *knowledge*, cannot happen to the mind, that has its faculty of perception left in a degree capable of diſtinct ideas, no more than it can be a doubt to the eye (that can diſtinctly ſee white and black), whether this ink and paper be all of a colour. —Now, in every ſtep that reaſon makes in demonſtrative *knowledge*, there is an intuitive *knowledge* of that agreement, or diſagreement, it ſecks, with the next intermediate idea, which it uſes as a proof; for, if it were not ſo, that yet would need a proof, ſince, without the perception of ſuch agreement, or diſagreement, there is no *knowledge* produced.

By which it is evident, that every ſtep in reaſoning, that produces *knowledge*, has intuitive certainty; which when the mind perceives, there is no more required, but to remember it, to make the agreement, or diſagreement, of the ideas, concerning which we inquire, viſible and certain.— This intuitive perception of the agreement, or diſagreement, of the intermediate ideas in each ſtep and progreſſion of the demonſtration, muſt alſo be exactly carried in the mind; and a man muſt be ſure, that no part is left out, which becauſe in long deductions the memory cannot eaſily retain, this *knowledge* becomes more imperfect than intuitive, and men often embrace falſhoods for demonſtrations.

It has been generally taken for granted, that mathematics alone are capable of demonſtrative certainty: but to have ſuch an agreement, or diſagreement, as may be intuitively perceived, being, as we imagine, not the privilege of the ideas of number, extenſion, and figure alone, it may, poſſibly, be the want of due method and application in us, and not of ſufficient evidence in things, that demonſtration has been thought to have ſo little to do in other parts of *knowledge*. For, in whatever ideas the mind can perceive the agreement, or diſagreement, immediately, there it is capable of intuitive *knowledge*; and, where it can perceive the agreement, or diſagreement, of any two ideas, by the intuitive perception of the agreement, or diſagreement, they have with any intermediate ideas, there the mind is capable of demonſtration, which is not limited to the ideas of figure, number, extenſion, or their modes.

The reaſon why it has been generally ſuppoſed to belong to theſe only, is, becauſe, in comparing their equality or exceſs, the modes of numbers have every the leaſt difference very clear and perceivable: and, in extenſion, though every the leaſt exceſs is not ſo perceptible, yet the mind has found out ways to diſcover the juſt equality of two angles, extenſions, or figures; and both numbers and figures can be ſet down by viſible and laſting marks.——But, in other ſimple ideas, whoſe modes and differences are made and counted by degrees, and not quantity, we have not ſo nice and accurate a diſtinction of their differences, as to perceive or find ways to meaſure their juſt equality, or their leaſt differences. For, thoſe other ſimple ideas being appearances, or ſenſations produced in us, by the ſize, figure, motion, *&c.* of minute corpuſcles, ſingly inſenſible, their different degrees alſo depend on the variation of ſome or all of thoſe cauſes; which, ſince it cannot be obſerved by us in particles of matter, whereof each is too ſubtile to be perceived, it is impoſſible for us to have any exact meaſures of the different degrees of theſe ſimple ideas.

Thus, not knowing what number of particles, nor what motion of them, is fit to produce any preciſe degree of whiteneſs, becauſe we have no certain ſtandard to meaſure them by, nor means to diſtinguiſh every the leaſt difference; the only help we have, is from our ſenſes, which, in this point, fail us. But where the difference is ſo great, as to produce in the mind ideas clearly diſtinct, theſe ideas, as we ſee in colours of different kinds, blue and red for inſtance, are as capable of demonſtration, as ideas of number and extenſion.—And what is here ſaid of colours, holds true in all ſecondary qualities.

Theſe two then, *intuition* and *demonſtration*, are the degrees of our *knowledge*; and whatever comes ſhort of one of theſe, is only *faith*, or *opinion*, not *knowledge*, at leaſt, in all general truths.

There is, indeed, another perception of the mind, employed about the particular exiſtence of finite beings without us, which, going beyond probability, but not reaching to either of the foregoing degrees of certainty, paſſes under the name of *knowledge*.

Nothing can be more certain, than that the idea we receive from an external object is in our minds: this is intuitive *knowledge*; but whether we can thence certainly infer the exiſtence of any thing without us, correſponding to that idea, is that, whereof ſome men think there may be a queſtion made; becauſe men may have ſuch an idea in their minds, when no ſuch thing exiſts, nor any ſuch object affects their ſenſes.

But it is evident, that we are invincibly conſcious to ourſelves of a different perception, when we look on the ſun in the day, and when we think on it by night; when we actually taſte wormwood, or ſmell a roſe, or only think on that ſavour or odour; ſo that we may add, to the two former ſorts of *knowledge*, this alſo of the exiſtence of particular external objects, by that perception and conſciouſneſs we have of the actual entrance of ideas from them; and allow theſe three degrees of *knowledge*, viz. *intuitive*, *demonſtrative*, and *ſenſitive*.

But, ſince our *knowledge* is founded on, and employed about, our ideas only, will it follow thence, that it muſt be conformable to our ideas, and that where our ideas are clear and diſtinct, obſcure and confuſed, there our *knowledge* will be ſo too?—We anſwer, No; for our *knowledge* conſiſting in the perception of the agreement, or diſagreement, of any two ideas; its clearneſs or obſcurity conſiſts in the clearneſs or obſcurity of that perception, and not in the clearneſs or obſcurity of the ideas themſelves.—A man (for inſtance), who has a clear idea of the angles of a triangle, and of equality to two right ones, may yet have but an obſcure perception of their agreement, and ſo have but a very obſcure *knowledge* of it: but obſcure and confuſed ideas can never produce any clear or diſtinct *knowledge*; becauſe, as far as any ideas are obſcure or confuſed, ſo far the mind can never perceive clearly, whether they agree or diſagree; or, to expreſs the ſame thing in other words, he that has not determined ideas to the words he uſes, cannot make propoſitions of them, of whoſe truth he can be certain.

From all this it follows; 1°, That we can have no *knowledge* farther than we have ideas.

2°, That we have no *knowledge* farther than we can have perception of the agreement, or diſagreement, of our ideas, either by intuition, demonſtration, or ſenſation.

3°, We cannot have an intuitive *knowledge*, that ſhall extend itſelf to all our ideas, and all that we would *know* about them; becauſe we cannot examine and perceive all the relations they have one to another by juxtapoſition, or in immediate compariſon one with another.—Thus, we cannot intuitively perceive the equality of two extenſions, the difference of whoſe figures makes their parts incapable of an exact immediate application.

4°, Our rational *knowledge* cannot reach to the whole extent of our ideas; becauſe, between two different ideas which we would examine, we cannot always find ſuch proofs, whereby we can connect one to another with an intuitive *knowledge* in all the parts of the deduction.

5°, Senſitive *knowledge*, reaching no farther than the exiſtence of things actually preſent to our ſenſes, is yet much narrower than either of the former.

6°, From all which it is evident, that the extent of our *knowledge* comes not only ſhort of the reality of things, but even of the extent of our own ideas.—We have the ideas of a ſquare, a circle, and equality; and yet, perhaps, ſhall never be able to find a circle equal to a ſquare. See CIRCLE.

Extent and Limits of KNOWLEDGE.—The affirmations or negations we make concerning the ideas we have, being reduced to the four ſorts above-mentioned, *viz.* identity, coexiſtence, relation, and real exiſtence, let us inquire how far our *knowledge* extends in each of theſe: 1°, As to identity and diverſity, or intuitive *knowledge*, is as far extended, as our ideas themſelves; and there can be no idea in the mind, which it does not preſently, by an intuitive *knowledge*, perceive to be what it is, and to be different from any other.

2°, As to the agreement, or diſagreement, of our ideas of co-exiſtence, our *knowledge* herein is very defective, though it is in this that the greateſt and moſt material part of our *knowledge*, concerning ſubſtances, conſiſts: for our ideas of ſubſtances being nothing but certain collections of ſimple ideas co-exiſting in one ſubject (our idea of flame, for inſtance, is a body hot, luminous, and moving upwards); when we would know any thing farther, concerning this, or any other ſort of ſubſtance, what do we but inquire what other qualities, or powers, theſe ſubſtances have, or have not? which is nothing elſe but to *know* what other ſimple ideas do, or do not exiſt with thoſe which make up ſuch complex idea.—The reaſon of this is, that the ſimple ideas, which make up our complex ideas of ſubſtances, have no viſible neceſſary connection, or inconſiſtence, with other ſimple ideas, whoſe coexiſtence with them we would inform ourſelves about.——Theſe ideas being likewiſe, for the moſt part, ſecondary qualities, which depend upon the primary qualities of their minute or inſenſible parts, or on ſomething yet more remote than theſe from our comprehenſion, it is impoſſible we ſhould *know* which have a neceſſary union, or inconſiſtence, one with another; ſince we *know* not the root from whence they ſpring, or the ſize, figure, and texture, of parts on which they depend, and from which they reſult.—Beſides this, there is no diſcoverable connection between any ſecondary quality, and thoſe primary qualities that it depends on.—We are ſo far from *knowing* what figure, ſize, or motion, produces (for inſtance) a yellow colour, or ſweet taſte, or ſharp ſound, that we can by no means conceive how any ſize, figure, or motion, can poſſibly produce in us the idea of any colour, taſte, or ſound, whatſoever; there being no conceivable connection between the one and the other.

Our *knowledge*, therefore, of co-exiſtence reaches little farther than experience. Some few, indeed, of the primary qualities have a neceſſary dependence, and viſible connection, one with another: as figure neceſſarily ſuppoſes extenſion; receiving or communicating motion by impulſe ſuppoſes ſolidity: but qualities co-exiſtent in any ſubject, without this dependence and connection, cannot certainly be *known* to co-exiſt, any farther than experience, by our ſenſes, informs us.—Thus, though, upon trial, we find gold yellow, weighty, malleable, fuſible, and fixed; yet, becauſe none of theſe have any evident dependence, or neceſſary connection, with the other, we cannot certainly *know*, that, where any four of theſe are, the fifth will be there alſo, how highly probable ſoever it may be. But the higheſt degree of probability amounts not to certainty, without which there can be no true *knowledge*; for this co-exiſtence can be no farther *known* than it is perceived; and it cannot be perceived, but either, in particular ſubjects, by the obſervation of our ſenſes, or, in general, by the neceſſary connection of the ideas themſelves.

As to incompatibility, or repugnancy to co-exiſtence, we *know*, that no ſubject can have of each ſort of primary qualities, more than one particular at once, as one extenſion, or one figure; and ſo of ſenſible ideas peculiar to each ſenſe: for whatever, of each kind, is preſent in any ſubject, excludes all other of that ſort; for inſtance, one ſubject cannot have two ſmells, or two colours, at the ſame time.

As to powers of ſubſtances, which make a great part of our inquiries about them, our *knowledge* reaches a little farther than experience; becauſe they conſiſt in a texture and motion of parts, which we cannot by any means come to diſcover; and I doubt, whether, with thoſe faculties we have, we ſhall ever be able to carry our general *knowledge* much farther in this part. Experience is that, which, in this part, we muſt depend on; and it were to be wiſhed, that it were more improved.—We find the advantages ſome mens generous pains have this way brought to the ſtock of natural *knowledge*; and if others, eſpecially the philoſophers by fire, had been ſo wary in their obſervations, and ſincere in their reports, as thoſe who call themſelves *philoſophers* ought to have been, our acquaintance with the bodies here about us, and our inſight into their powers and operations, might have been yet much greater.

As to the third ſort, the agreement, or diſagreement, of our ideas in any other relation; this is the largeſt field of *knowledge*, and it is hard to determine how far it may extend: this part depending on our ſagacity in finding intermediate ideas, that may ſhew the habitudes and relations of ideas, it is an hard matter to tell when we are at an end of ſuch diſcoveries.—They, who are ignorant of algebra, cannot imagine the wonders of this kind that are to be done by it: and what farther improvements and helps, advantageous to other parts of *knowledge*, the ſagacious mind of man may yet find out, is not eaſy to determine.

This, at leaſt, we may believe, that the ideas of quantity are not the only ones capable of demonſtration and *knowledge*; and that other, and, perhaps, more uſeful parts of contemplation, would afford us certainty, if vices, paſſions, and domineering intereſt, did not oppoſe or menace endeavours of this kind.

As to the fourth ſort of *knowledge*, viz. *of the real, actual exiſtence of things*, we have an intuitive *knowledge* of our own exiſtence, a demonſtrative *knowledge* of the exiſtence of God, and a ſenſitive *knowledge* of the objects that preſent themſelves to our ſenſes.

Hitherto we have examined the extent of our *knowledge*, in reſpect of the ſeveral ſorts of beings that are: there is another extent of it, in reſpect of univerſality, which will alſo deſerve to be conſidered; and this, in regard our *knowledge* follows the nature of our ideas.—If the ideas, whoſe agreement, or diſagreement, we perceive, are abſtract, our *knowledge* is univerſal; for what is *known* of ſuch general ideas, will be true of every particular thing, in which that eſſence, that is, that abſtract idea, is found: and what is once *known* of ſuch ideas, will be perpetually and for ever true; ſo that, as to all general *knowledge*, we muſt ſearch and find it only in our own minds; and it is only the examining our own ideas that furniſhes us with it.—Truths belonging to eſſences of things (that is, to abſtract ideas) are eternal, and are to be found out by the contemplation only of thoſe eſſences; as the exiſtence of things is to be *known* only from experience.

Reality of KNOWLEDGE.—It is evident, that the mind *knows* not things immediately, but by the intervention of the ideas it has of them.—Our *knowledge*, therefore, is real only ſo far as there is a conformity between our ideas, and the reality of things. But how ſhall we *know* when our ideas agree with things themſelves? It is anſwered, There are two ſorts of ideas, that we may be aſſured agree with things: theſe are,

1°, *Simple ideas*, which, ſince the mind can by no means make to itſelf, muſt be the effect of things operating upon the mind in a natural way, and producing therein thoſe perceptions, which, by the will of our Maker, they are ordained and adapted to.—Hence it follows, that ſimple ideas are not fictions of our fancies, but the natural and regular productions of things without us, really operating upon us, which carry with them all the conformity our ſtate requires, which is to repreſent things under thoſe appearances they are fitteſt to produce in us.—Thus, the idea of whiteneſs, as it is in the mind, exactly anſwers that power which is in any body to produce it there; and this conformity between our ſimple ideas, and the exiſtence of things, is ſufficient for real *knowledge*.

2°, All our *complex ideas*, except only thoſe of ſubſtances, being archetypes of the mind's own making, and not referred to the exiſtence of things, as to their originals, cannot want any conformity neceſſary to real *knowledge*; for that which is not deſigned to repreſent any thing but itſelf, can never be capable of a wrong repreſentation.—Here the ideas themſelves are conſidered as archetypes, and things are no otherwiſe regarded than as conformable to them.—Thus, the mathematician conſiders the truth and properties belonging to a rectangle, or circle, only as they are ideas in his own mind, which poſſibly he never found exiſting mathematically, that is, preciſely, true; yet his *knowledge* is not only certain, but real, becauſe real things are no farther concerned, nor intended to be meant by any ſuch propoſitions, than as things really agree to thoſe archetypes in the mind.

3°, But the *complex ideas*, which we refer to archetypes without us, may differ from them; and ſo our *knowledge* about them may come ſhort of being real: and ſuch are our ideas of ſubſtances.—Theſe muſt be taken from ſomething, that does or has exiſted, and not be made up of ideas arbitrarily put together, without any real pattern.—Herein, therefore, is founded the reality of our *knowledge* concerning ſubſtances, that all our complex ideas of them muſt be ſuch, and ſuch only, as are made up of ſuch ſimple ones as have been diſcovered to co-exiſt in nature: and our ideas, being thus true, though not, perhaps, very exact copies, are the ſubject of real *knowledge* of them.—Whatever ideas we have, the agreement we find they have with others, will be *knowledge*.—If thoſe ideas be abſtract, it will be general *knowledge*; but, to make it real concerning ſubſtances, the ideas muſt be taken from the real exiſtence of things.—Where-ever, therefore, we perceive the agreement, or diſagreement, of our ideas, there is certain *knowledge*; and where-ever we are ſure thoſe ideas agree with the reality of things, there is certain, real *knowledge*.

Method of improving or inlarging KNOWLEDGE.—It being the received opinion amongſt men of letters, that maxims are the foundation of all *knowledge*, and that ſciences are each of them built upon certain præcognita, from whence the underſtanding is to take its riſe, and by which it is to conduct itſelf in its inquiries in the matters belonging to that ſcience; the beaten road of the ſchools has been to lay down, in the beginning, one or more general propoſitions, called *principles*, as foundations whereon to build the *knowledge* that was to be had of that ſubject.

That which gave occaſion to this way of proceeding was, the good ſucceſs it ſeemed to have in mathematics, which, of all other ſciences, have the greateſt certainty, clearneſs, and evidence in them. But, if we conſider it, we ſhall find, that the great advancement and certainty of real *knowledge* men arrive to in theſe ſciences, was not owing to the influence of thoſe principles, but to the clear, diſtinct, and complete, ideas their thoughts were employed about, and to the relation of equality and exceſs, ſo clear between ſome of them, that they had an intuitive *knowledge*, and by that a way to diſcover it in others, and this without the help of thoſe maxims. For is it not poſſible for a lad to *know*, that his whole body is bigger than his little finger, but by virtue of this axiom, 'The whole is bigger than a part;' nor be aſſured of it till he has learned that maxim? Let any one conſider which is *known* firſt and cleareſt by moſt people, the particular inſtance, or the general rule; and which it is that gives life and birth to the other: theſe general rules are but the comparing our more general and abſtract ideas, which ideas are made by the mind, and have names given them, for the eaſier diſpatch in its reaſonings: but *knowledge* began in the mind, and was founded on particulars, though afterwards, perhaps, no notice be taken thereof, it being natural for the mind to lay up thoſe general notions, and make the proper uſe of them, which is to diſburden the memory of the cumberſome load of particulars.——The way to improve in *knowledge* is, not to ſwallow principles with an implicit faith, and without examination, which would be apt to miſlead men, inſtead of guiding them into truth; but to get and fix in our minds clear and complete ideas, as far as they are to be had, and to annex to them proper and conſtant names: and thus, barely by conſidering our ideas, and comparing them together, obſerving their agreement or diſagreement, their habitudes, and relations, we ſhall get more true and clear *knowledge*, by the conduct of this one rule, than by taking up principles, and thereby putting our minds into the diſpoſal of others.

We muſt therefore, if we will proceed as reaſon adviſes us, adapt our methods of inquiry to the nature of the ideas we examine, and the truth we ſearch after.—General and certain truths are only founded in the habitudes and relations of abſtract ideas; therefore a ſagacious, methodical application of our thoughts for the finding out theſe relations, is the only way to diſcover all, that can, with truth and certainty, be put into general propoſitions. By what ſteps we are to proceed in theſe, is to be learned in the ſchools of the mathematicians, who, from very plain and eaſy beginnings, by gentle degrees, and a continued chain of reaſonings, proceed to the diſcovery and demonſtration of truths, that, at firſt ſight, appeared beyond human capacity.—This may reaſonably be ſaid, that, if other ideas that are real, as well as nominal eſſences of their ſpecies, were purſued in the way familiar to mathematicians, they would carry our thoughts farther, and with greater evidence and clearneſs, than poſſibly we are apt to imagine.—This is reaſon ſufficient to advance that conjecture above-mentioned; *viz.* 'That morality is capable of 'demonſtration, as well as mathematics;' for moral ideas being real eſſences, which have a diſcoverable connection and agreement one with another, ſo far as we can find their habitudes and relations, ſo far we ſhall be poſſeſſed of real and general truths.

In our *knowledge* of ſubſtances, we are to proceed after a quite different method; the bare contemplation of their abſtract ideas (which are but nominal eſſences) will carry us but a very little way in the ſearch of truth and certainty.—Here experience muſt teach us what reaſon cannot; and it is by trying alone, that we can certainly *know* what other qualities co-exiſt with thoſe of our complex idea; for inſtance, whether that yellow, heavy, fuſible body, I call *gold*, be malleable, or no; which experience (however it prove in that particular body we examine) makes us not certain, that it is ſo in all, or any other yellow, heavy, fuſible bodies, but that which we have tried; becauſe it is no conſequence, one way or other, from our complex idea. The neceſſity or inconſiſtence of malleability has no viſible connection with the combination of that colour, weight, and fuſibility, in any body.—What is here ſaid of the nominal eſſence of gold, ſuppoſed to conſiſt of a body of ſuch a determinate colour, weight, and fuſibility, will hold true, if other qualities be added to it.—Our reaſonings from thoſe ideas will carry us but a little way in the certain diſcovery of the other properties in thoſe maſſes of matter wherein all thoſe are to be found. As far as our experience reaches, we may have certain *knowledge*, and no farther.—It is not denied, but that a man, accuſtomed to rational and regular experiments, ſhall be able to ſee farther into the nature of bodies, and their unknown properties, than one that is a ſtranger to them: but this is but judgment and opinion, not *knowledge* and certainty.

This would make it ſuſpected, that natural philoſophy is not capable of being made a ſcience. From experiments, and hiſtorical obſervations, we may draw advantages of eaſe and health, and thereby increaſe our ſtock of conveniencies for this life; but, beyond this, it is to be feared, our talents reach not, nor are our faculties able to advance farther. See PHYSICS.

From whence it is obvious to conclude, that, ſince our faculties are not permitted to penetrate the real eſſences of bodies, but yet plainly to diſcover to us the being of a God, and the *knowledge* of ourſelves, enough to give us a clear diſcovery of our duty, and great concernment, it will become us, as rational creatures, to employ our faculties about what they are moſt adapted to, and follow the direction of nature, where it ſeems to point us out the way; for it is rational to conclude, that our proper employment lies in thoſe inquiries, and that ſort of *knowledge*, which is moſt ſuited to our natural capacities, and carries in it our greateſt intereſt; and therefore it is, that morality is the proper ſcience and buſineſs of mankind in general (who are both concerned and fitted to ſearch out their ſummum bonum), as ſeveral arts, converſant about the ſeveral parts of nature, are the lot and private talent of particular men, for the common uſe of human life, and their own particular ſubſiſtence in this world.

The ways to inlarge our *knowledge*, as far as we are capable, ſeem to be theſe two: the firſt is, to get and ſettle in our minds, as far as we can, clear, diſtinct, and conſtant, ideas of thoſe things we would conſider and *know*; for it being evident, that our *knowledge* cannot exceed our ideas, where they are either imperfect, confuſed, or obſcure, we cannot expect to have certain, perfect, or clear *knowledge*.—The other art is, of finding out the intermediate ideas, which may ſhew us the agreement or repugnancy of other ideas, which cannot be immediately compared.

That theſe two (and not relying on maxims, and drawing conſequences from ſome general propoſitions) are the right method of improving our *knowledge* in the ideas of other modes, beſides thoſe of quantity, the conſideration of mathematical *knowledge* will eaſily inform us; where, firſt, we ſhall find, that he, who has not clear and perfect ideas of thoſe angles or figures, of which he deſires to *know* any thing, is utterly thereby incapable of any *knowledge* about them.—Suppoſe a man not to have an exact idea of a right angle, ſcalenum, or trapezium, and it is clear, that he will in vain ſeek any demonſtration about them.

And farther it is evident, that it was not the influence of maxims or principles that led the maſters of this ſcience into thoſe wonderful diſcoveries they have made: let a man of good parts *know* all the maxims of mathematics ever ſo well, and contemplate their extent and conſequences as much as he pleaſes, he will, by their aſſiſtance, ſcarce ever come to *know*, that the ſquare of the hypothenuſe, in a right-angled triangle, is equal to the ſquares of the two other ſides. This, and other mathematical truths, have been diſcovered by the thoughts otherwiſe applied. The mind had other objects, other views before it, far different from thoſe maxims, which men, well enough acquainted with thoſe received axioms, but ignorant of their method who firſt made thoſe demonſtrations, can never ſufficiently admire.

Our *knowledge*, as in other things, ſo in this alſo, has ſo great a conformity with our ſight, that it is neither wholly neceſſary, nor wholly voluntary. Men, who have ſenſes, cannot chooſe but receive ſome ideas by them; and, if they have memory, they cannot but retain ſome of them; and, if they have any diſtinguiſhing faculty, cannot but perceive the agreement, or diſagreement, of ſome of them one with another. As he that has eyes, if he will open them by day, cannot but ſee ſome objects, and perceive a difference in them; yet he may chooſe whether he will turn his eyes towards an object, curiouſly ſurvey it, and obſerve accurately all that is viſible in it. But what he doth ſee, he cannot ſee otherwiſe than he doth; it depends not on his will to ſee that black, which appears yellow. Juſt thus it is with our underſtanding: all that is voluntary in our *knowledge*, is the employing or with-holding any of our faculties from this or that ſort of objects, and a more or leſs accurate ſurvey of them; but, they being employed, our will hath no power to determine the *knowledge* of the mind one way or other; that is done only by the objects themſelves, as far as they are clearly diſcovered. Thus, he that has got the ideas of numbers, and has taken the pains to compare one, two, and three, to ſix, cannot chooſe but *know* they are equal. He alſo, that hath the idea of an intelligent, but weak and frail being, made by, and depending on, another, who is eternal, omnipotent, and perfectly wiſe and good, will as certainly know, that man is to honour, fear, and obey God, as that the ſun ſhines when he ſees it. But yet, be theſe truths ever ſo certain, ever ſo clear, he may be ignorant of either or both of them, who will not take the pains to employ his faculties as he ſhould, to inform himſelf about them.

KNOPPA. See the article *Numeral* CHARACTERS.

KûL, or **KOOL**, a Turkiſh term, properly ſignifying a *ſlave*, or *ſervant*.

Meninſky tells us, the name is given to all the ſoldiers in the Ottoman empire, particularly to thoſe of the grand ſignior's guard, and the infantry.—The captains of the infantry, and thoſe who command the guards, are called *kûl zâbytlers*, and the ſoldiers of the guard *kapu kûlleri*, i. e. *ſlaves of the court*.—Others inform us, that all who hold any places depending on the crown, or receive wages from it; in a word, all who are, in any meaſure, the grand ſignior's ſervants; take the title of *kûl*, or *kool*, i. e. *ſlave*, as more creditable than that of ſubject; even the grand vizir and the baſhaws value themſelves upon it. A *kûl*, or ſlave, of the grand ſignior, has authority to abuſe any who are only his ſervants; but a ſubject, who ſhould affront a *kûl*, or ſlave, would be ſeverely puniſhed. The *kûls* are intirely devoted to the will of the grand ſignior, and look on it as a kind of martyrdom, that merits heaven, when they die either by his order, or in the execution of his commands.

KURTCHI, an order of ſoldiery among the Perſians.

The word, in its original, ſignifies *army*; and is applied to a body of cavalry, conſiſting of the nobility of the kingdom of Perſia, and the poſterity of thoſe conquerors, who placed Iſmael ſophi on the throne. They are in number about 18,000 men.

Their commander is called *kurtchi baſchi*, which was formerly the firſt poſt in the kingdom; equivalent to a conſtable of France.

KYPHONISM *, KYPHONISMUS, or CYPHONISMUS, an antient puniſhment, which was frequently undergone by the martyrs in the primitive times; wherein the body of the perſon to ſuffer was anointed with honey, and ſo expoſed to the ſun, that the flies and waſps might be tempted to torment him. This was performed in three manners; ſometimes they only tied the patient to a ſtake; ſometimes they hoiſted him up into theair, and ſuſpended him in a baſket; and ſometimes they ſtretched him out on the ground, with his hands tied behind him.

* The word is originally Greek, and comes from *κυφων*, which ſignifies either the *ſtake* to which the patient was tied, the *collar* fitted to his neck, or an *inſtrument* wherewith they tormented him: the ſcholiaſt on Ariſtophanes ſays, it was a wooden lock, or cage; and that it was ſo called from *κυπτειν*, to crook, or bend, becauſe it kept the tortured in a crooked, bowing poſture: others take the *κυφων* for a log of wood laid over the criminal's head, to prevent his ſtanding upright: Heſychius deſcribes the *κυφων* as a piece of wood, whereon criminals were ſtretched and tormented. In effect, it is probable the word might ſignify all theſe ſeveral things. It was a generical name, whereof theſe were the ſpecies.

Suidas gives us the fragment of an old law, which puniſhed thoſe who treated the laws with contempt, with *kyphoniſm* for the ſpace of twenty days; after which, they were to be precipitated from a rock, dreſſed in womens habit.

KYSTIS, ΚΥΣΤΙΣ, in medicine. See the article CYSTIS.

The End of the FIRST VOLUME.